

RUCKUS ICX 8100 Switch Hardware Installation Guide

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- www.RN-pat.com (RUCKUS Networks)

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New in This Document

The following table includes descriptions of new information added to this version of this guide.

TABLE 1 Summary of Enhancements in This Version of the Guide

Feature	Description	Described in
Updates to address defect	Updated: Minor content and editorial updates were made throughout the document to address defects.	Throughout the guide.

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Supported Hardware and Software

The ICX 8100 supports FastIron software versions 10.0.10f and later.

This document is applicable for all RUCKUS ICX 8100 Ethernet switch part numbers. The following tables list the device models and rack mount kits supported.

TABLE 2 ICX 8100 Switch Part Numbers

Part Number	Short Description	Introduced (OS)	Currently Supported (OS)	Notes
ICX8100-C08PF	8x10/100/1000 Mbps RJ-45 PoE+ ports and 2x1 Gbps SFP ports	FastIron 10.0.10f	Yes	Memory: DDR4 2 GB, integrated power supply, power budget: 154 W (PoE budget: 124 W), PoE support up to 30 W per port, fanless
ICX8100-C08PF-V	8x10/100/1000 Mbps RJ-45 PoE+ ports and 2x1 Gbps SFP ports	FastIron 10.0.10	Yes	Memory: DDR4 2 GB, integrated power supply, power budget: 154 W (PoE budget: 124 W), PoE support up to 30 W per port, fanless
ICX8100-C16P	16x10/100/1000 Mbps RJ-45 PoE+ ports and 2x1 Gbps SFP ports	FastIron 10.0.10h	Yes	Memory: DDR4 2 GB, integrated power supply, power budget: 154 W (PoE budget: 124 W), PoE support up to 30 W per port, fanless
ICX8100-24	24x10/100/1000 Mbps RJ-45 ports and 4x1Gbps SFP ports	FastIron 10.0.10f	Yes	Memory: DDR4 2 GB, integrated power supply, fanless
ICX8100-24P	24x10/100/1000 Mbps RJ-45 PoE+ ports and 4x1 Gbps SFP ports	FastIron 10.0.10f	Yes	Memory: DDR4 2 GB, integrated power supply, power budget: 550 W (PoE budget: 370 W), PoE support up to 30 W per port, embedded fans: 2
ICX8100-24P-V	24x10/100/1000 Mbps RJ-45 PoE+ ports and 4x1 Gbps SFP ports	FastIron 10.0.10i	Yes	Memory: DDR4 2 GB, integrated power supply, power budget: 550 W (PoE budget: 370 W), PoE support up to 30 W per port, embedded fans: 2
ICX8100-48	48x10/100/1000 Mbps RJ-45 ports and 4x1Gbps SFP ports	FastIron 10.0.10f	Yes	Memory: DDR4 2 GB, integrated power supply, power budget: 65 W, fanless
ICX8100-48P	48x10/100/1000 Mbps RJ-45 PoE+ ports and 4x1Gbps SFP ports	FastIron 10.0.10f	Yes	Memory: DDR4 2 GB, integrated power supply, power budget: 550 W (PoE budget: 370 W), PoE support up to 30 W per port, embedded fans: 2

About This Document

Supported Hardware and Software

TABLE 2 ICX 8100 Switch Part Numbers (continued)

Part Number	Short Description	Introduced (OS)	Currently Supported (OS)	Notes
ICX8100-48PF	48x10/100/1000 Mbps RJ-45 PoE+ ports and 4x1Gbps SFP ports	FastIron 10.0.10h	Yes	Memory: DDR4 2 GB, PoE budget 740W, 802.3bt 2-PairType 2 Class 4, perpetual and Fast PoE, embedded fans: 3
ICX8100-48PF-V	48x10/100/1000 Mbps RJ-45 PoE+ ports and 4x1Gbps SFP ports	FastIron 10.0.10i	Yes	Memory: DDR4 2 GB, PoE budget 740W, 802.3bt 2-PairType 2 Class 4, perpetual and Fast PoE, embedded fans: 3

TABLE 3 Rack Mount Kits

Part Number	Short Description	Notes
XBR-R000295	1U, 1.5U, and 2U universal kit for four-post racks	Not included with the device. Optionally orderable.
ICX7000-RMK	Two-post fixed rack mount kit	Not included with the device. Optionally orderable.
ICX7000-C12-RMK	Compact switch mount kit	Not included with the device. Optionally orderable.
ICX-DIN-MNT	DIN rail mount kit	Not included with the device. Optionally orderable.

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Hardware Features

The RUCKUS ICX 8100 is an entry-level, fixed-configuration access switch designed to provide basic Ethernet connectivity for campus network edge deployments. This switch is ideal for organizations requiring 1 GbE port density and Power over Ethernet (PoE) capabilities to power devices such as wireless access points, IP phones, and IP cameras. The ICX 8100 supports fiber uplink ports for seamless integration, ensuring scalable and reliable network connectivity.

- ICX 8100 switches have the following features:
 - 8, 16, 24, or 48 1-GbE copper ports that support 10/100/1000 Mbps operation.
 - Two or four SFP ports that support 1/10-Gbps operation; the last SFP ports can be used for uplink ports
 - › 1/2/1 to 1/2/4 default 1G ports in ICX8100-24/24P/24P-V/48/48P/48PF/48P-V
 - › 1/2/1 to 1/2/2 default 1G ports in ICX8100-C08PF/C08PF-V/C16P
 - › 1/2/1 to 1/2/4 default 10G ports in ICX8100-24-X/24P-X/48-X/48P-X/48PF-X
 - › 1/2/1 to 1/2/2 default 10G ports in ICX8100-C08PF-X/C16P-X
 - The ICX8100-C08PF, ICX8100-C16P, ICX8100-24P, ICX8100-48P, and ICX8100-48PF switches comply with the IEEE 802.3bt Type 2 PSE 30W maximum per port.
- The following table lists the ICX 8100 switch models with 8, 16, 24, or 48 auto-negotiating 10/100/1000 Mbps full duplex RJ-45 ports that can be used for downlink. These ports reside on slot 1 of the switch and can be non-PoE, PoE, or PoE+.

TABLE 4 Switch Part Numbers and Corresponding IO Port Configurations

Part Number	Downlink Ports	PoE Ports	PoE Budget	Uplink Ports	Stacking Ports
ICX8100-C08PF	8x1G Copper	8	124 W	2x1G SFP	N/A
ICX8100-C08PF-V	8x1G Copper	8	124 W	2x1G SFP	N/A
ICX8100-C16P	16x1G Copper	16	124 W	2x1G SFP	N/A
ICX8100-24	24x1G Copper	N/A	N/A	4x1G SFP	N/A
ICX8100-24P	24x1G Copper	24	370 W	4x1G SFP	N/A
ICX8100-24P-V	24x1G Copper	24	370 W	4x1G SFP	N/A
ICX8100-48	48x1G Copper	N/A	N/A	4x1G SFP	N/A
ICX8100-48P	48x1G Copper	48	370 W	4x1G SFP	N/A
ICX8100-48PF	48x1G Copper	48	740W	4x1G SFP	N/A
ICX8100-48P-V	48x1G Copper	48	370 W	4x1G SFP	N/A

- Power LED
- RESET button
- Type-C USB console port (Type-C USB cable not included with the device)

Port-side view

FIGURE 1 Port-side View of ICX8100-C08PF and ICX8100-C08PF-V

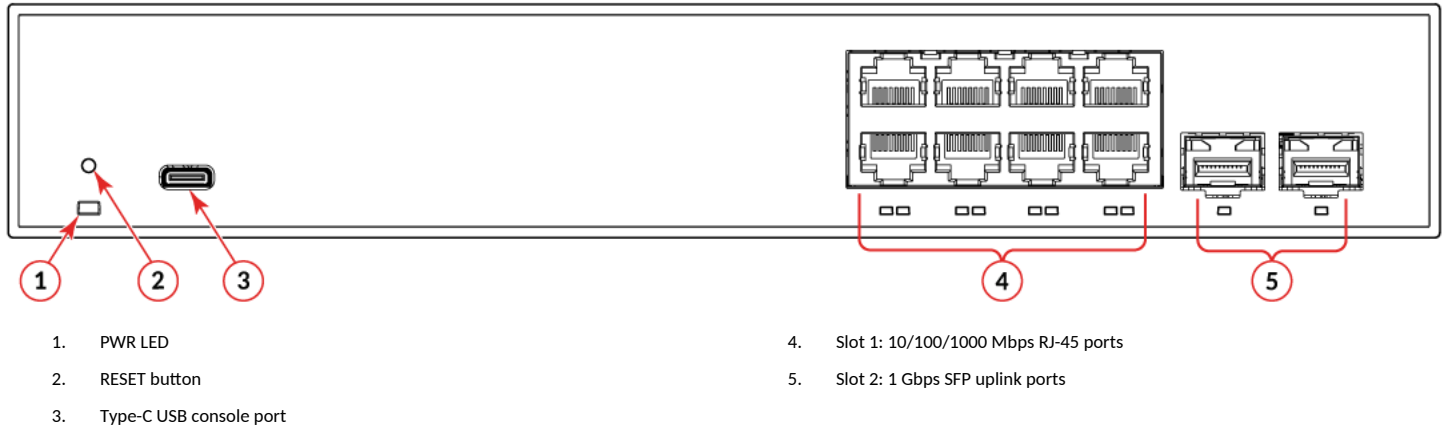


FIGURE 2 Port-side View of ICX8100-C16P

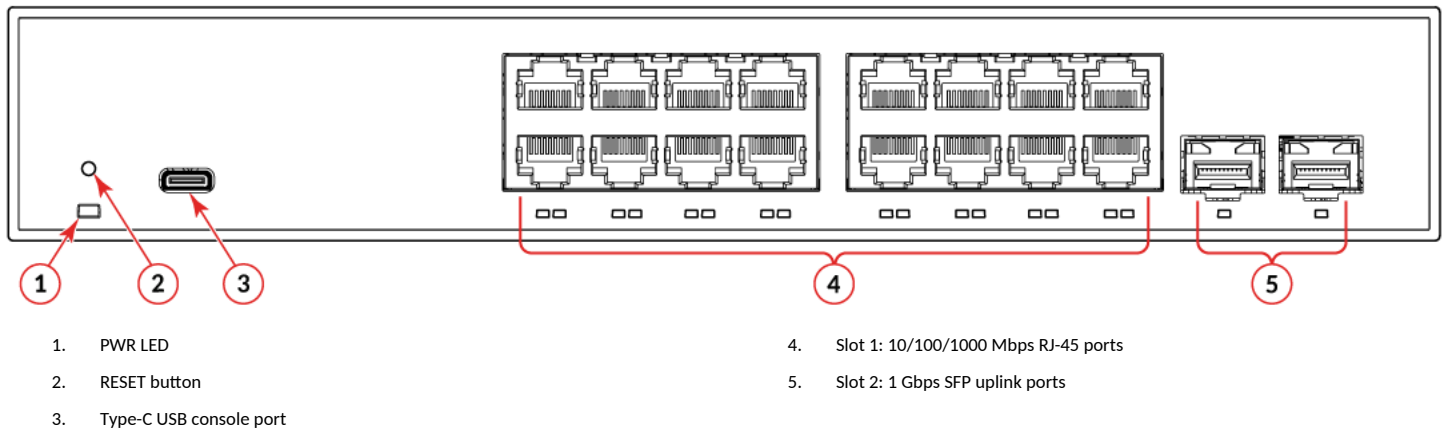


FIGURE 3 Port-side View of ICX8100-24

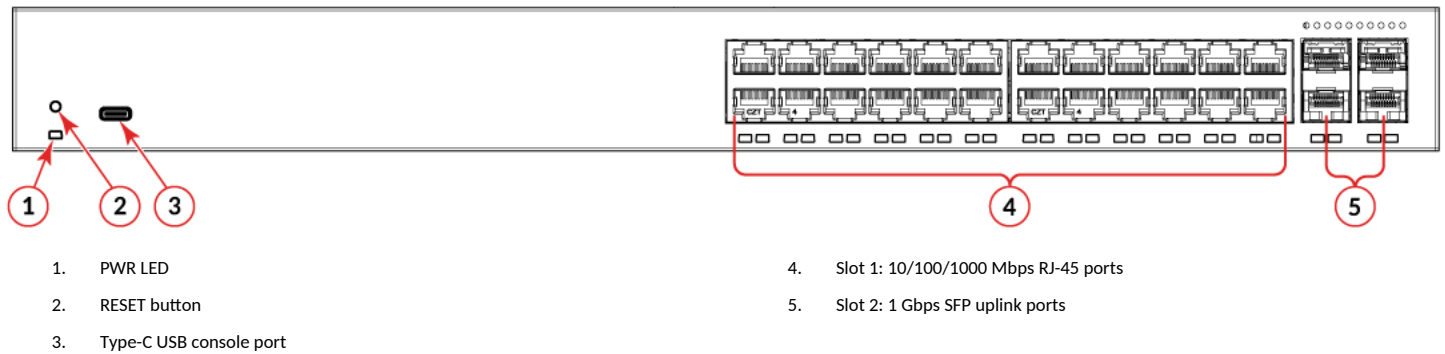


FIGURE 4 Port-side View of ICX8100-24P and ICX8100-24P-V

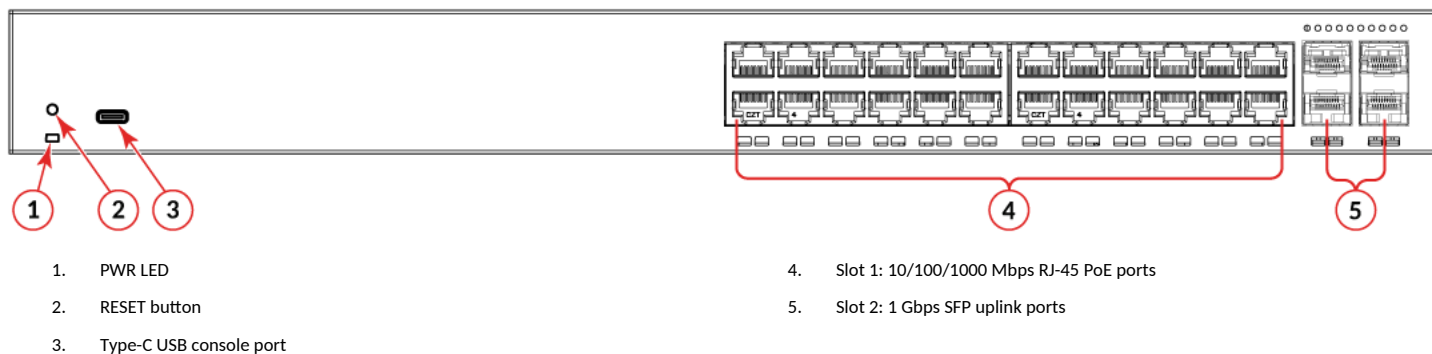


FIGURE 5 Port-side View of ICX8100-48

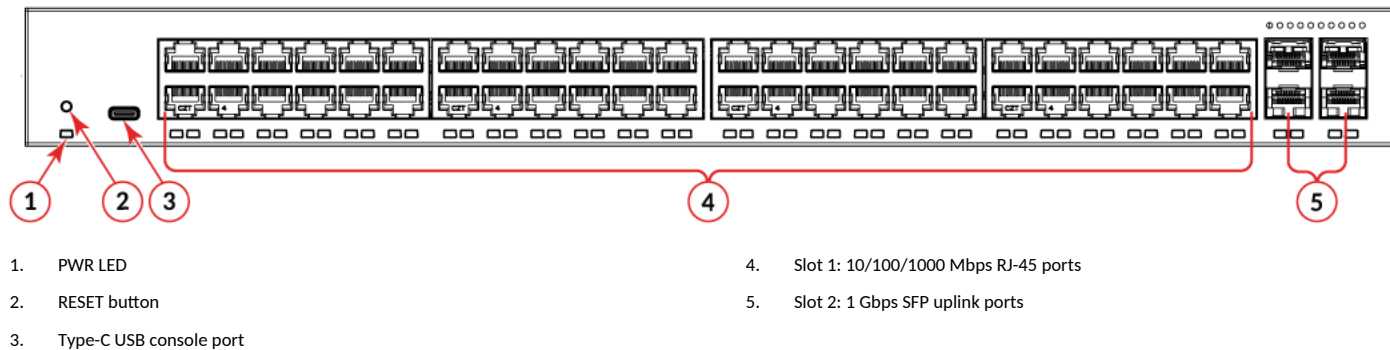


FIGURE 6 Port-side View of ICX8100-48P

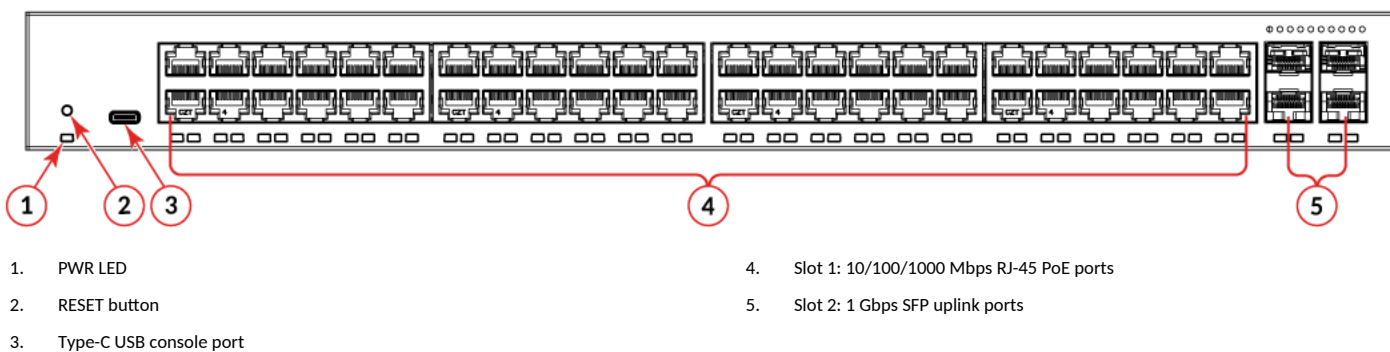
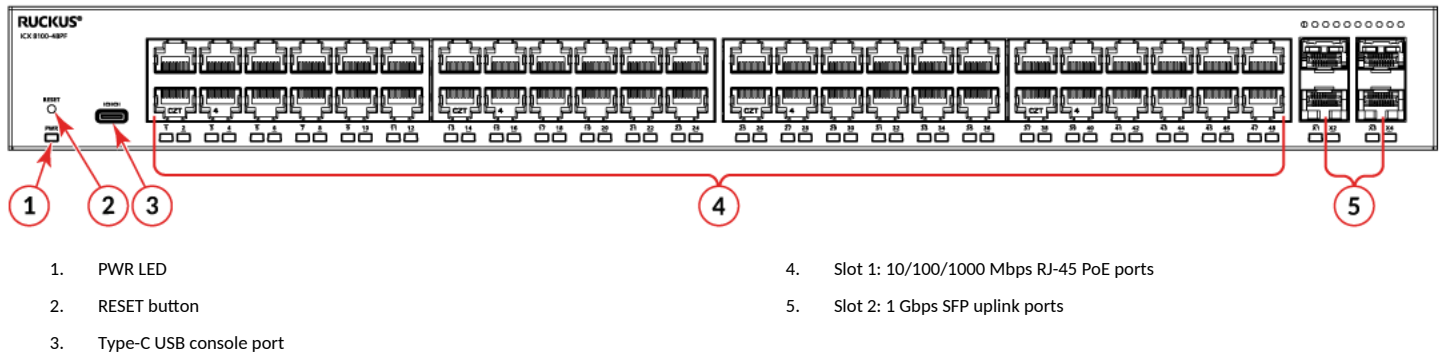


FIGURE 7 Port-side View of ICX8100-48PF and ICX8100-48PF-V



Nonport-side View

FIGURE 8 Nonport-side View of ICX8100-C08PF and ICX8100-C08PF-V

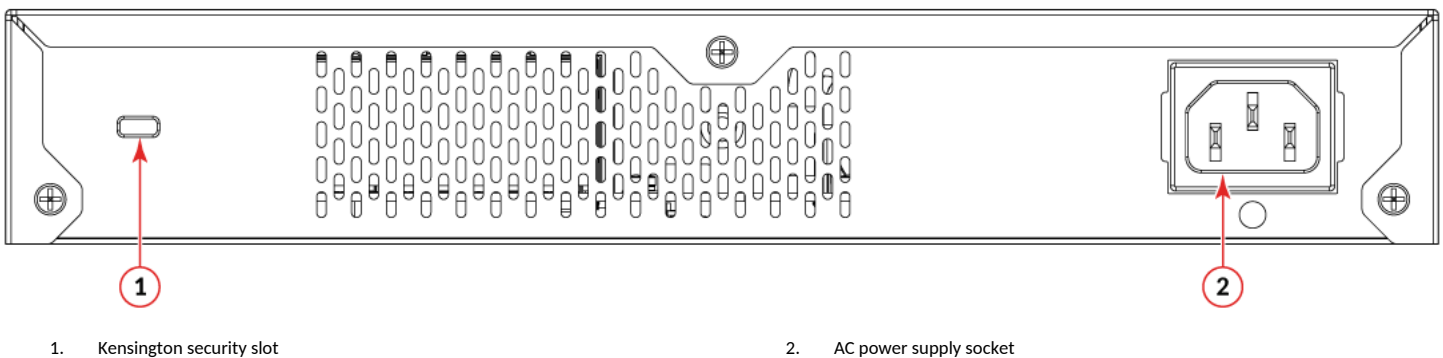


FIGURE 9 Nonport-side View of ICX8100-C16P

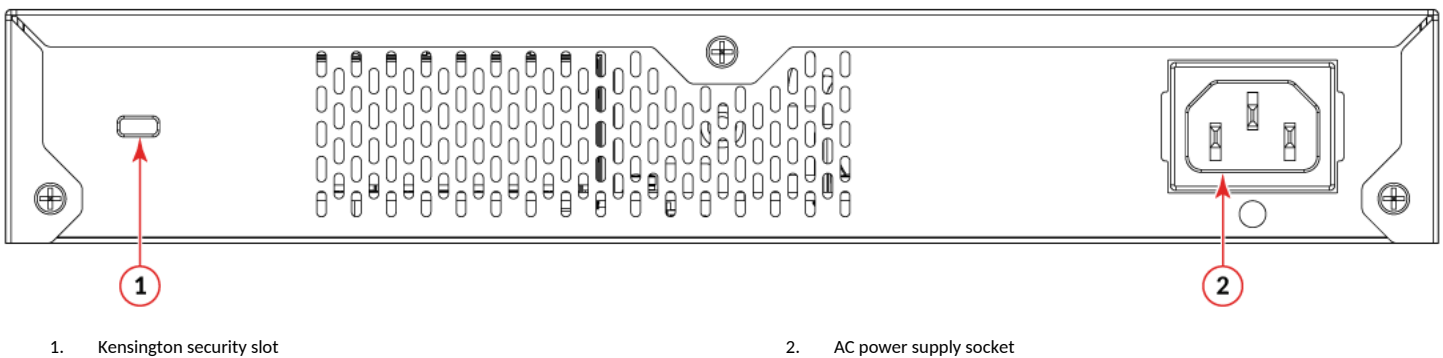
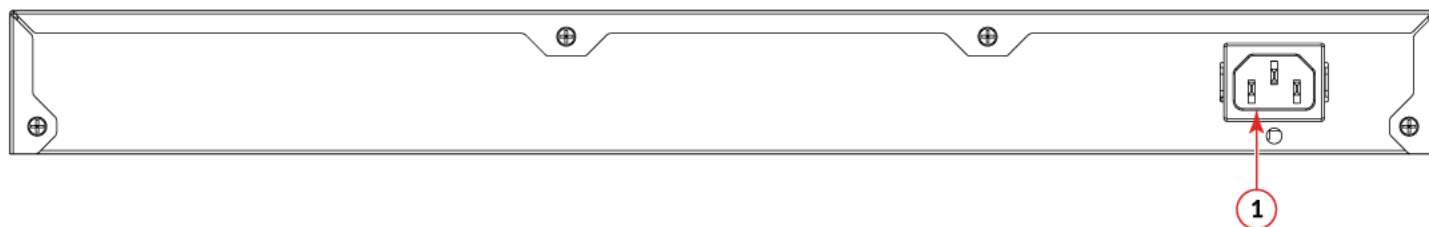
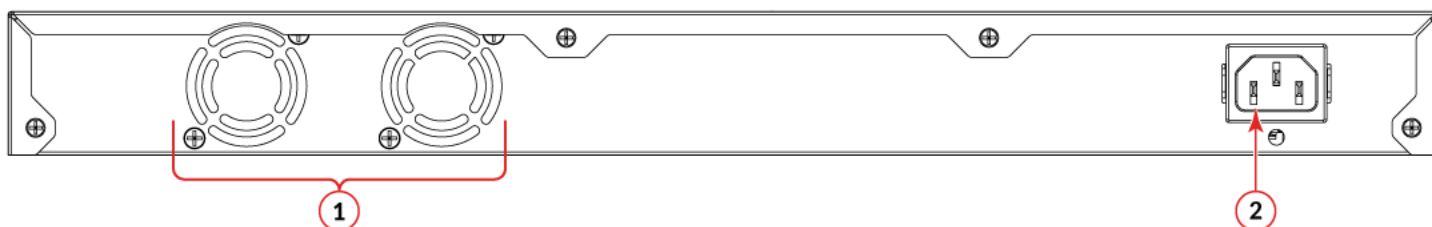


FIGURE 10 Nonport-side View of ICX8100-24



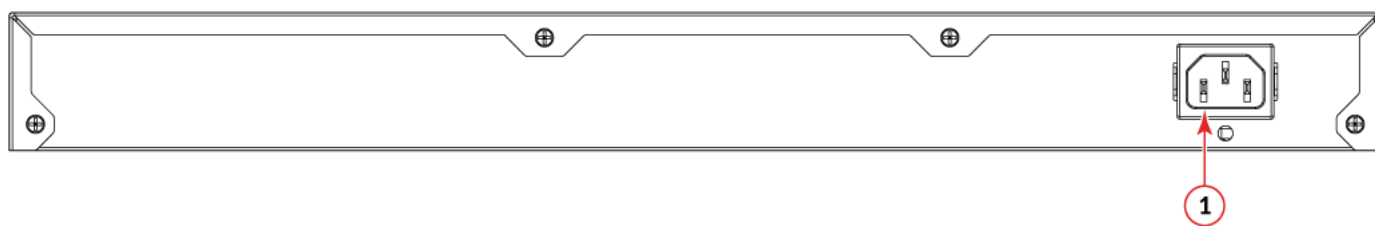
1. AC power supply socket

FIGURE 11 Nonport-side View of ICX8100-24P and Nonport-side View of ICX8100-24P-V



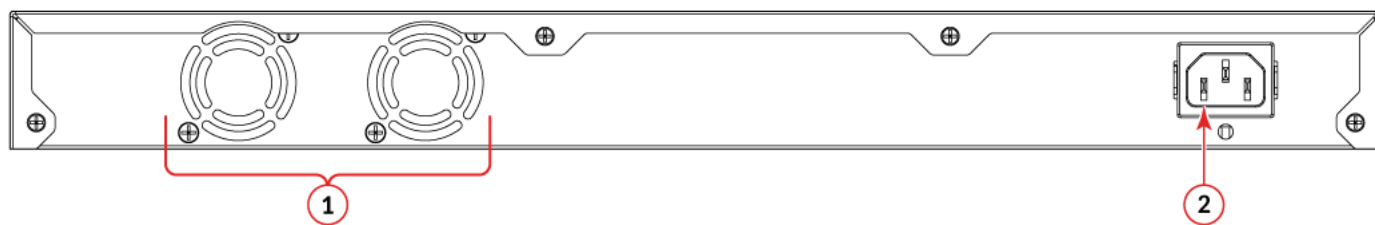
1. Fan 2 and Fan 1
2. AC power supply socket

FIGURE 12 Nonport-side View of ICX8100-48



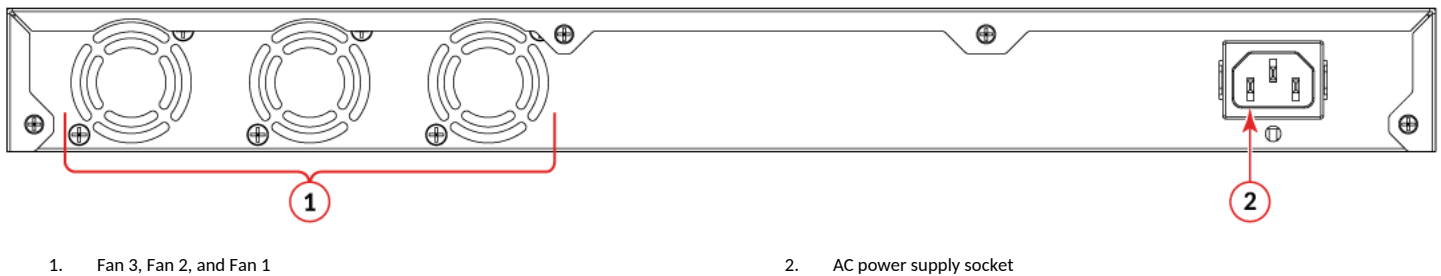
1. AC power supply socket

FIGURE 13 Nonport-side View of ICX8100-48P



1. Fan 2 and Fan 1
2. AC power supply socket

FIGURE 14 Nonport-side View of ICX8100-48PF and ICX8100-48PF-V



Device Management Options

You can use the built-in management functions of the device to monitor the topology, port status, physical status, and other information that help you analyze the switch performance, and to accelerate system debugging. The device automatically performs power-on self-test (POST) each time it is turned on. Errors, if any, are recorded in the syslog messages.

You can manage the device using any of the management options listed in the following table.

TABLE 5 Management Options for the Device

Management tool	Out-of-band support	Reference documents
Command line interface (CLI)	Ethernet, serial connection, or USB console	<i>RUCKUS FastIron Command Reference</i> Feature-based Configuration Guides
SmartZone	Ethernet or connection via IP address	<i>RUCKUS SmartZone Access Points and Switch Management Guide</i>
Standard SNMP applications	Ethernet or serial connection	<i>RUCKUS FastIron MIB Reference</i>
RUCKUS FastIron Web Management Interface	Ethernet or connection via IP address	<i>RUCKUS FastIron Web Management Interface User Guide</i> NOTE Not all FastIron features are supported through the web management interface.
RUCKUS One	Ethernet or connection via IP address	<i>RUCKUS One User Guide</i>
RUCKUS Unleashed	Ethernet or connection via IP address	<i>RUCKUS Unleashed User Guide</i>

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Safety Precautions

When using this product, observe all danger, caution, and attention notices in this manual. The safety notices are accompanied by symbols that represent the severity of the safety condition

Refer to [Cautions and Danger Notices](#) on page 79 at the end of this guide for translations of safety notices for this product.

ESD Precautions



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megohm resistor.



CAUTION

Before plugging a cable into any port, be sure to discharge the voltage stored on the cable by touching the electrical contacts to ground surface.



CAUTION

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

NOTE

Wear a wrist grounding strap connected to the chassis ground (if the device is plugged in) or to a bench ground.

General Precautions



DANGER

The procedures in this manual are for qualified service personnel.



DANGER

Before beginning the installation, see the precautions in "Power Precautions."



DANGER

The equipment ports are intra-building type and must not be directly connected to metallic outside plant (OSP) cable conductors.



CAUTION

Changes or modifications made to this device that are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



CAUTION

Make sure the airflow around the front and back of the device is not restricted.



CAUTION
Never leave tools inside the chassis.



CAUTION
To protect the serial port from damage, keep the cover on the port when not in use.



CAUTION
Do not install the device in an environment where the operating ambient temperature might exceed 45°C (113°F).

Power Precautions



DANGER
Make sure that the power source circuits are properly grounded.



DANGER
Make sure you use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the device.



DANGER
To reduce the risk of electric shock, disconnect all power cords before servicing.



DANGER
Disconnect the power cord from all power sources to completely remove power from the device.



DANGER
To avoid high voltage shock, do not open the device while the power is on.



DANGER
Batteries used for RTC/NVRAM backup are not located in operator-access areas. There is a risk of explosion if a battery is replaced by an incorrect type. Dispose of used components with batteries according to local ordinance and regulations.



CAUTION
Ensure that the device does not overload the power circuits, wiring, and over-current protection. To determine the possibility of overloading the supply circuits, add the ampere (amp) ratings of all devices installed on the same circuit as the device. Compare this total with the rating limit for the circuit. The maximum ampere ratings are usually printed on the devices near the input power connectors.

Laser Precautions



DANGER
All fiber-optic interfaces use Class 1 lasers.



DANGER
Use only optical transceivers that are qualified by RUCKUS and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 60825 and EN60825. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.

Lifting and Weight-related Precautions



DANGER

Use safe lifting practices when moving the product.



DANGER

Mount the devices you install in a rack as low as possible. Place the heaviest device at the bottom and progressively place lighter devices above.



DANGER

Make sure the rack housing the device is adequately secured to prevent it from becoming unstable or falling over.



CAUTION

Do not use the port cover tabs to lift the module. They are not designed to support the weight of the module, which can fall and be damaged.

Quick Installation Checklist

The following checklist provides a high-level overview of the basic installation process from the planning stage to the point where the device comes online and is ready to be deployed. Completing all the tasks in the suggested order ensures successful installation. It is recommended that you print this checklist and take it to the installation site.

Review all installation requirements ahead of time as part of your site preparation. Careful planning and site preparation ensures seamless installation, especially when installing multiple devices.

TABLE 6 Tasks

Task Number	Task	Where to Find More Information	Completed
1	Ensure that the physical environment that will host the device has the proper cabling and ventilation.	Refer to Facility Requirements.	
2	Unpack the device.	Take an inventory of the hardware components included in your shipment. Refer to Shipping Carton Contents .	
3	Mount the device	Review the time and items required information at the beginning of each chapter to ensure you have gathered all necessary components required for the following installation tasks: • Mounting the Device • Installing Transceivers and Cables	
4	Plug the device into a nearby power source that adheres to the regulatory requirements outlined in this manual.	Refer to: • Power Supply Specifications (per PSU) • Power Precautions • Powering up the Device	
5	Attach a terminal or laptop to the device. This will enable you to configure the device through the command line interface (CLI).	Establishing a First-Time Connection to the Console Port	
6	Assign a password for additional access security. No default password is assigned to the CLI.	<i>RUCKUS FastIron Command Reference Guide</i>	

TABLE 6 Tasks (continued)

Task Number	Task	Where to Find More Information	Completed
7	Before attaching equipment to the device, you must configure an interface IP address to the subnet on which the device will be located. Initial IP address configuration is performed using the CLI with a direct serial connection.	Configuring an IP Address for the Device	
8	Connect network equipment to the system.	Installing the Ethernet RJ-45 Cables	
9	Test IP connectivity to other devices by pinging them and tracing routes.	<i>RUCKUS FastIron Command Reference Guide</i>	
10	Continue configuring the device using the CLI.	<i>RUCKUS FastIron Command Reference Guide</i>	
11	Secure access to the device.	<i>RUCKUS FastIron Management Configuration Guide</i>	

Shipping Carton Contents

RUCKUS ICX 8100 devices ship with all of the following items included in the shipping carton. When unpacking the device, verify that the contents of the shipping carton are complete. If any items are missing, contact the place of purchase.

- The ICX 8100 device
- An accessory kit containing the following items:
 - Rack mounting kit. The kit containing one set of eight and one set of six sink-head screws (24-port and 48-port models only)
 - Two-post rack-mounting kit. The kit containing four rack-mounting screws and four cage nuts (included only with 24-port and 48-port models)
 - Wall mounting kit containing two wall-mount screws and two plastic anchors (8-port models)
 - One power cord clip
 - China-RoHS Hazardous/Toxic Substance statement
 - Read Me First document

Mounting the Device

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Mounting Options

The RUCKUS ICX 8100 24-port and 48-port switches support the following mounting options:

- In a two-post Telco rack using a two-post rack mount kit (ICX7000-RMK). The two-post rack mount brackets are included with the switch and support various mounting positions.
- In a four-post EIA rack using the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295). The rack kit can be used to install devices in EIA racks that are between 61 cm and 81 cm (24 in. to 32 in.) deep.
- As a standalone unit on a wall.
- As a standalone unit on a flat surface.

The RUCKUS ICX8100-C08PF and ICX8100-C16P compact switch supports the following mounting options:

- In a two-post Telco rack using the compact switch mount kit (ICX7000-C12-RMK).
- As a standalone unit on a wall using the wall anchors and M4L8 Pan-head screws.
- As a standalone unit on a flat surface.
- As a standalone unit under a flat surface or on a ceiling using the compact switch mount kit (ICX7000-C12-RMK).
- As a standalone unit on a wall using the wall mounting brackets included with the shipment. No other equipment is required for wall mount installation.

Precautions Specific to Mounting

The following precautions specifically apply to mounting the device.



DANGER

Use safe lifting practices when moving the product.



DANGER

Make sure the rack housing the device is adequately secured to prevent it from becoming unstable or falling over.



DANGER

Mount the devices you install in a rack as low as possible. Place the heaviest device at the bottom and progressively place lighter devices above.



DANGER

This equipment is suitable for mounting on concrete or other noncombustible surfaces only.

Mounting the Device

Mounting on a Desktop or Flat Surface



CAUTION

Make sure the airflow around the front and back of the device is not restricted.



CAUTION

Never leave tools inside the chassis.



CAUTION

Use the screws specified in the procedure. Using longer screws can damage the device.



CAUTION

The device must be turned off and disconnected from the network during this procedure.

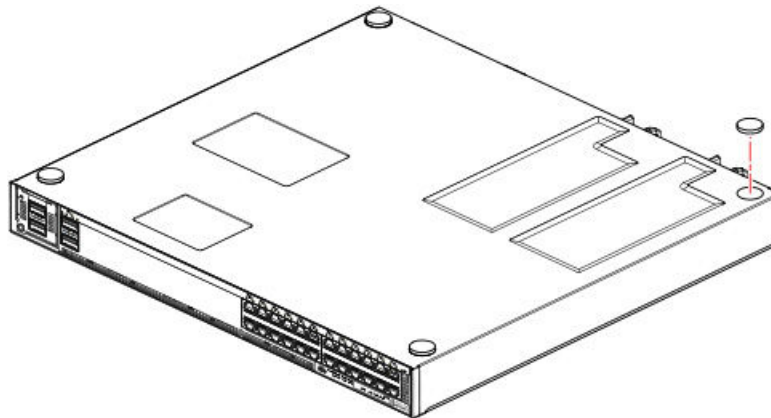
Mounting on a Desktop or Flat Surface

Complete the following steps to install the device on a desktop or other flat surface.

NOTE

The hardware device illustrated in this procedure is only for reference and may not depict the actual device that you are installing.

FIGURE 15 Attaching the Adhesive Feet



1. Attach the four adhesive feet to the bottom of the device. If installing multiple devices, attach the adhesive feet to each device.
2. Set the device on a flat desktop, table, or shelf near an AC power source. Make sure that adequate ventilation is provided for the system. A 7.62 cm (3 in.) clearance is recommended on each side.
3. If installing multiple devices, place each device squarely on top of the one below.

Mounting on a Wall Using the Wall-Mount Brackets

NOTE

You need a #2 Phillips screwdriver, a hammer, and a drill for wall mount installation.

NOTE

Mount the devices that have fans so that there is enough space for ventilation on the air-intake and air-exhaust sides to maintain the ambient operating temperature.

RUCKUS recommends that you install the 24P and 48P models with the port-side down to maintain the ambient temperature.



DANGER

This equipment is suitable for mounting on concrete or other noncombustible surfaces only.

NOTE

The hardware device illustrated in this procedure is only for reference and may not depict the actual device that you are installing.

Mounting the Device

Mounting on a Wall Using the Wall-Mount Brackets

Complete the following steps to mount the device to a wall.

1. Using a Phillips screwdriver, attach the wall-mount brackets to the sides of the device using two #6-32 sink-head screws on each side.

NOTE

The ICX 8100-C08PF may be attached directly to the wall using M4L8 pan-head screws slid into the keyholes on the back side of the device or it may be attached to the ceiling using brackets attached with M4L8 pan-head screws.

FIGURE 16 Attaching the Wall-Mount Brackets to a 24-port Device

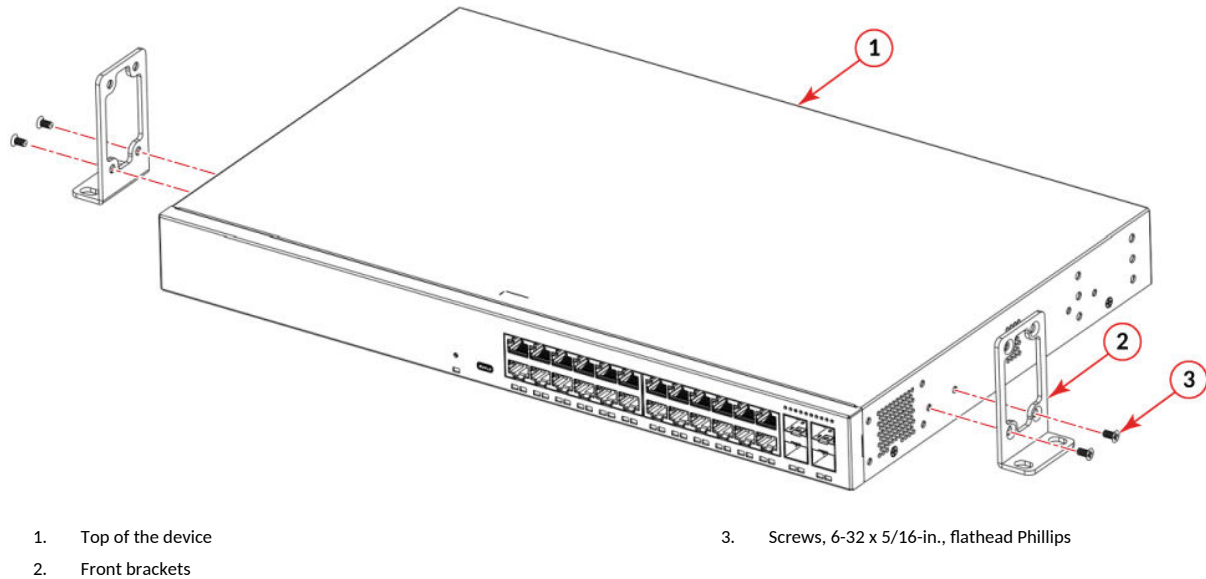
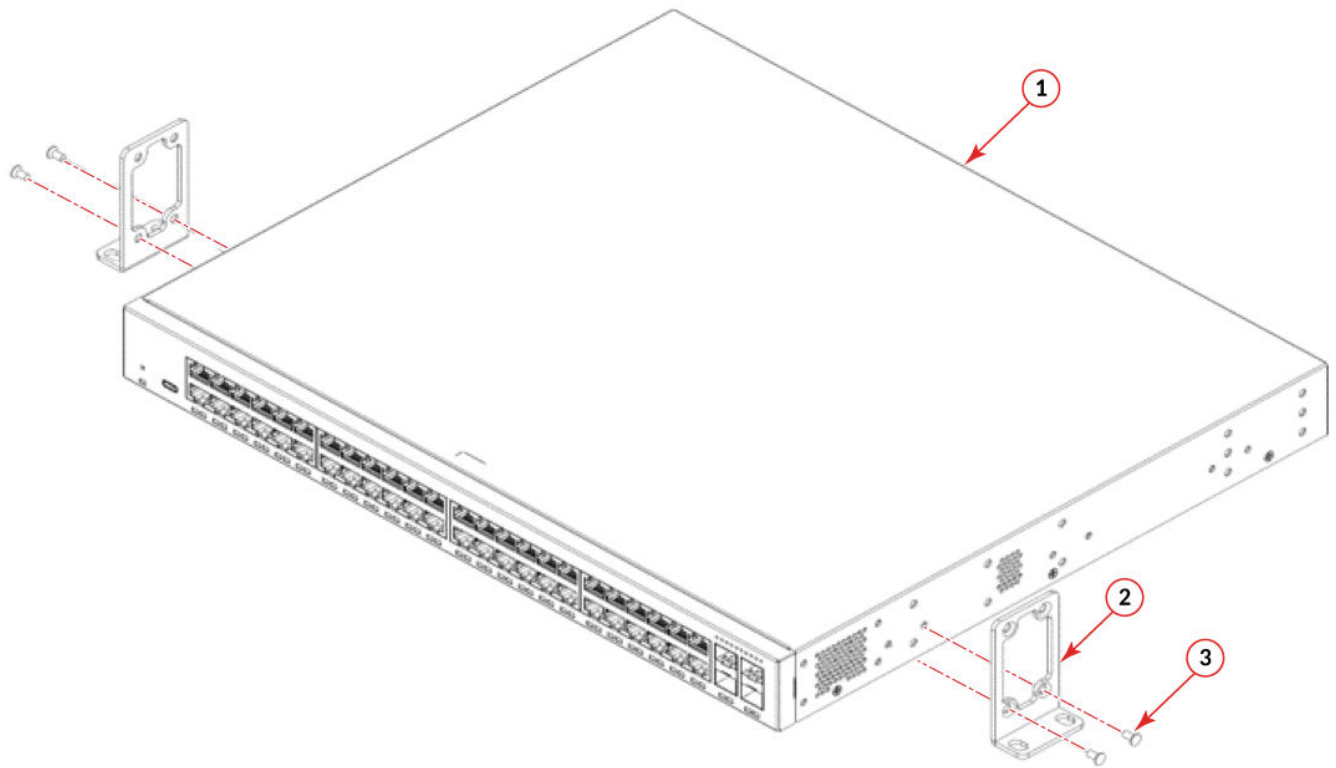


FIGURE 17 Attaching the Wall-Mount Brackets to a 48-port Device



- 1. Top of the device
- 2. Front brackets

- 3. Screws, 6-32 x 5/16-in., flathead Phillips

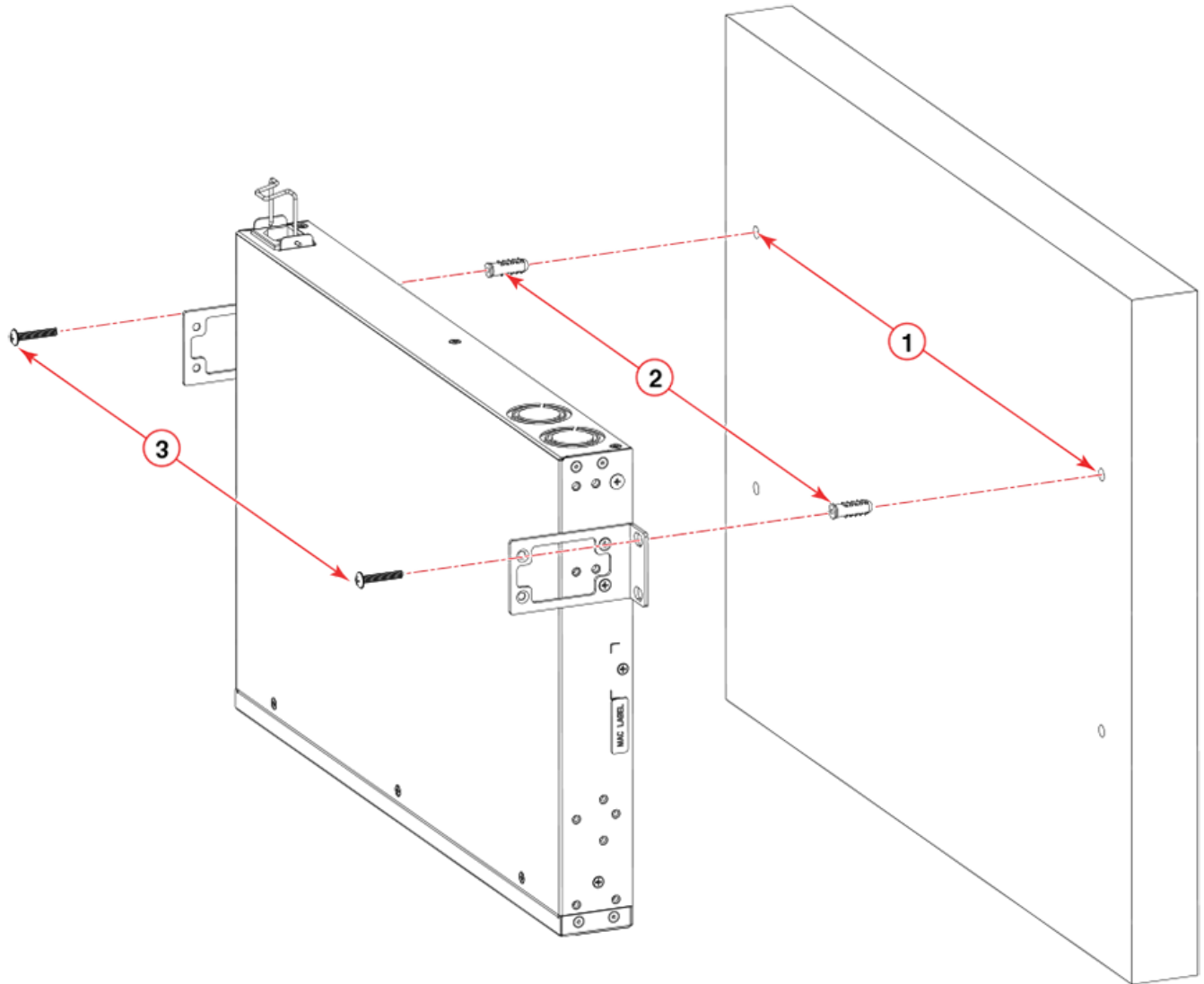
- 2. Drill two holes on the wall where you want to mount the device.
- 3. Hammer two wall-mount anchors into the holes on the wall.

Mounting the Device

Mounting on a Wall Using the Wall-Mount Brackets

4. Use the two wall-mount screws to fasten the device to the wall-mount anchors.

FIGURE 18 Wall-Mounting a 24-port Device



1. Drilled holes
2. Wall-mount anchors

3. Wall-mount screws

FIGURE 19 Wall-Mounting a 48-port Device Port-side Down

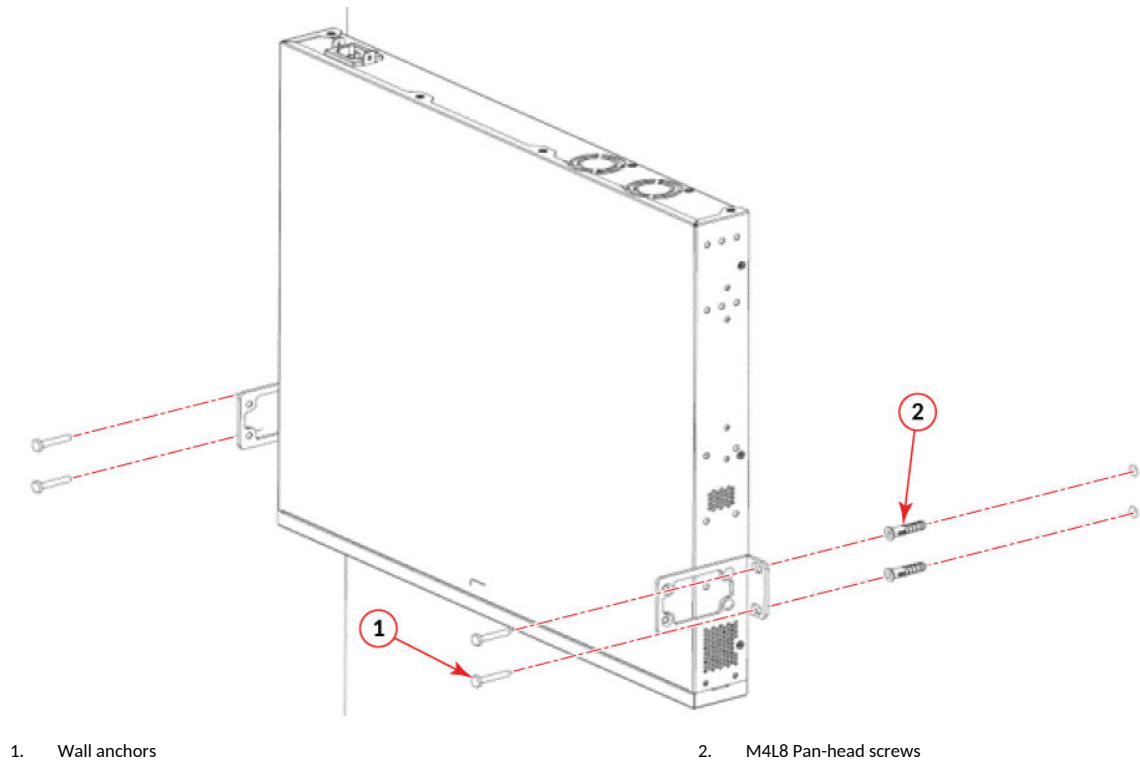
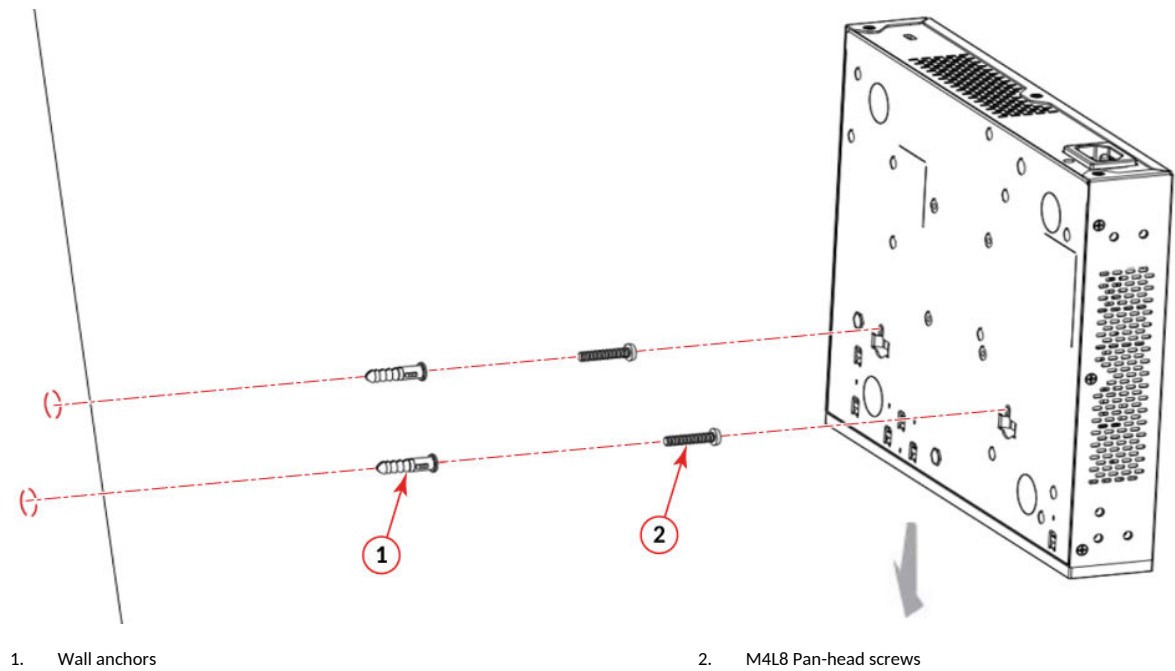


FIGURE 20 Wall-Mounting an ICX 8100-C08PF Device Port-side Down



- a) Using a Phillips screwdriver, attach the wall-mount kit to the back of the device using four M3 screws.
- b) Drill two holes on the wall where you want to mount the device.

Mounting the Device

Mounting on a Ceiling

- c) Hammer two wall-mount anchors into the holes on the wall
5. Hammer two wall-mount anchors into the holes on the wall.
6. Use the two wall-mount screws to fasten the device to the wall-mount anchors.

Mounting on a Ceiling

NOTE

You need a #2 Phillips screwdriver, a hammer, and a drill for ceiling-mount installation.

NOTE

Mount the devices that have fans so that there is enough space for ventilation on the air-intake and air-exhaust sides to maintain the ambient operating temperature.

- Only the ICX8100-C08PF model may be mounted to a ceiling.
- The ceiling must be made of a hard material; it cannot be a suspended or drop-ceiling.

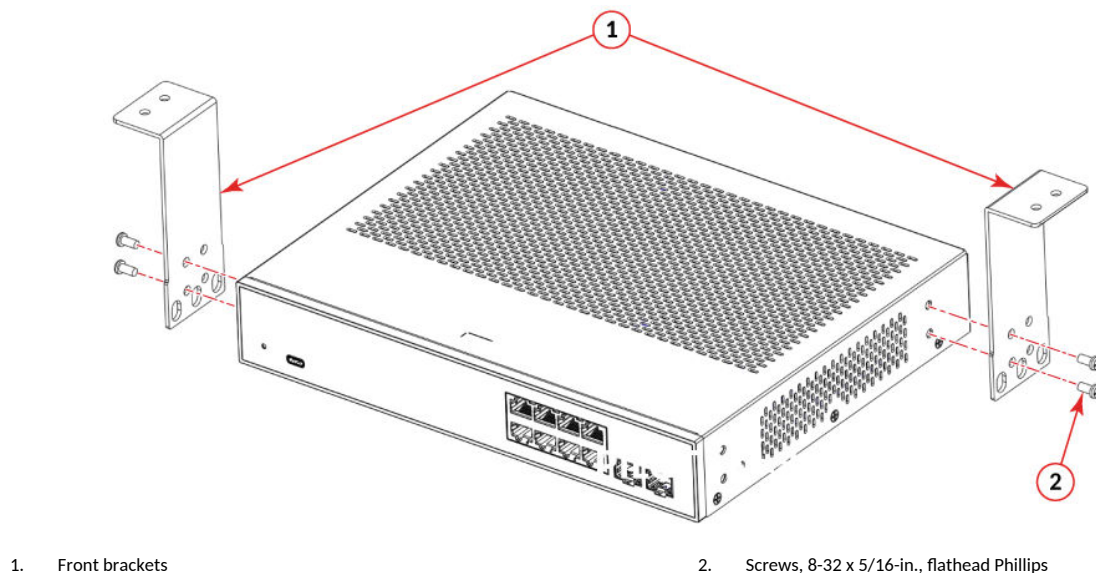
NOTE

The hardware device illustrated in this procedure is only for reference and may not depict the actual device that you are installing.

Complete the following steps to mount the device to a ceiling.

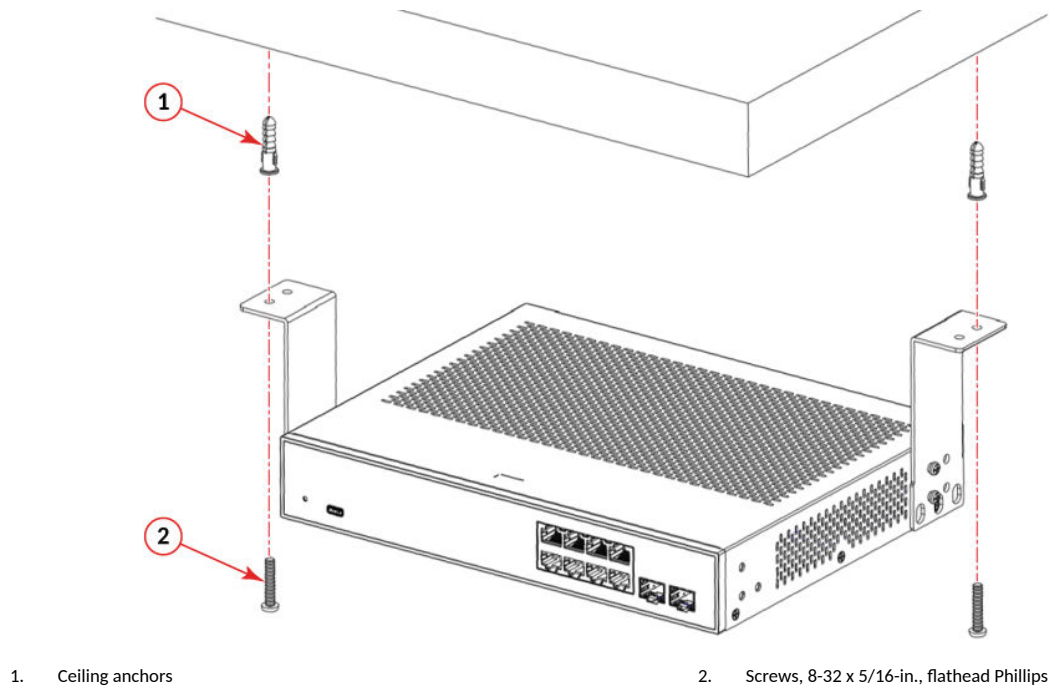
1. Using a Phillips screwdriver, attach the ceiling-mount brackets to the sides of the device using two #6-32 sink-head screws on each side.
2. Drill two holes on the ceiling where you want to mount the device.
3. Hammer two ceiling-mount anchors into the holes on the wall.
4. Use the wall-mount screws to fasten the device to the ceiling-mount anchors.
5. Using a Phillips screwdriver, attach the ceiling-mount brackets to the sides of the device using two #6-32 sink-head screws on each side.

FIGURE 21 Attaching the Ceiling-Mount Brackets to an ICX8100-C08PF



6. Drill two holes on the ceiling where you want to mount the device.

FIGURE 22 Ceiling-Mounting an ICX8100-C08PF Device



7. Hammer two ceiling-mount anchors into the holes on the ceiling.
8. Use the two ceiling-mount screws to fasten the device to the ceiling-mount anchors.

Two-Post Rack Mount Installation (ICX7000-RMK)

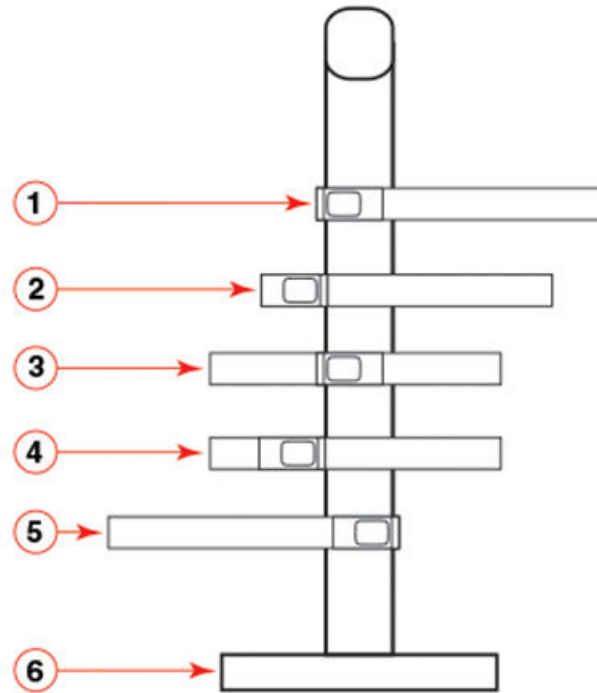
The ICX7000-RMK rack mount kit is the default two-post kit for the ICX 8100 (except model ICX8100-C08PF).

The RUCKUS ICX 8100 can be installed in the two-post rack in various mounting positions, as shown in the following figure:

Mounting the Device

Two-Post Rack Mount Installation (ICX7000-RMK)

FIGURE 23 Two-Post Rack Mounting Positions (ICX7000-RMK)



- | | |
|------------------------|-----------------------------|
| 1. Front flush mount | 4. Reverse mid-mount |
| 2. Reverse-front mount | 5. Rear mount |
| 3. Front mid-mount | 6. Two-post rack, side view |

Complete the following steps to mount the RUCKUS ICX 8100 in a two-post rack.

NOTE

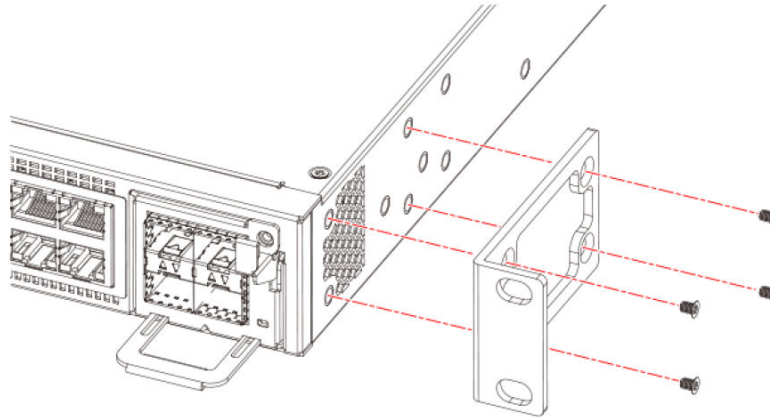
Hardware devices illustrated in these procedures are only for reference and may not depict the device you are installing into the rack.

1. Remove the rack mount kit from the shipping carton. The kit contains the following items:
 - Two L-shaped mounting brackets
 - Eight 8-32 x 5/16-inch, panhead Phillips screws
2. Attach the mounting brackets to the sides of the device, using the 8-32 x 5/16-inch screws, as shown in the following figure.

NOTE

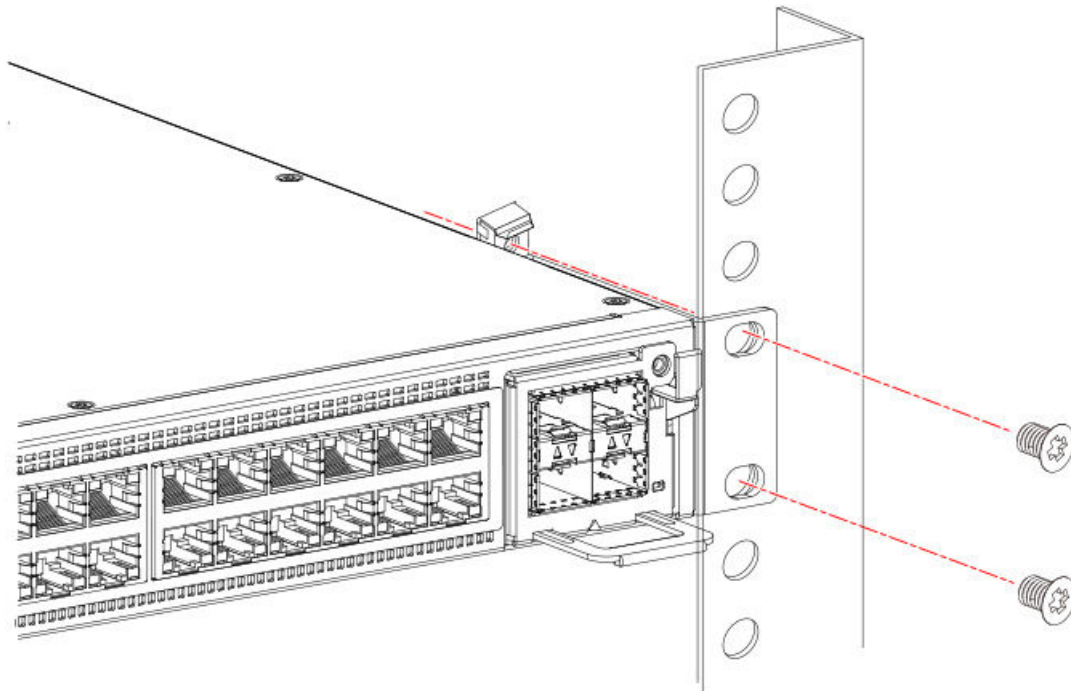
Be sure to use only the screws included in the RUCKUS ICX7000-RMK kit.

FIGURE 24 Attaching the Mounting Brackets to a RUCKUS ICX 8100



3. Position the device in the rack, providing temporary support under the switch until the rail kit is secured to the rack.
4. Attach the front right bracket to the rail rack using two 10-32 x 5/8-inch screws and the appropriate round-hole or square-hole retainer nuts.
5. Repeat the preceding step to attach the left front bracket to the left front rack rail, and tighten all 10-32 x 5/8-inch screws to a torque of 25 in-lb (29 cm-kg).

FIGURE 25 Installing the RUCKUS ICX 8100 in a Two-Post Rack



Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

Use the following instructions to install a device in a 19-in. (48.3 cm) EIA rack using the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295).

Observe the following considerations when mounting this device:

- The device can be installed so that the port side is either flush with the front posts or recessed with the nonport side flush with the rear posts. A recessed position allows a more gradual bend in the fiber-optic cables connected to the device and less interference in the aisle at the front of the rack.
- Use Electronic Industries Association (EIA) standard racks. Provide space in a 19-in. (48.3 cm) EIA rack, as required for the device, with a minimum distance of 24 in. (60.96 cm) and a maximum distance of 32 in. (81.28 cm) between the front and back posts.
- Two people are required to install the device in a rack. One person should hold the device, while the other secures the device in the rack.
- Before mounting your device, review any specific installation and facility requirements in this guide.

NOTE

Hardware devices illustrated in these procedures are only for reference and may not depict the device you are installing into the rack.

Time and Items Required

Allow 15 to 30 minutes to complete this procedure.

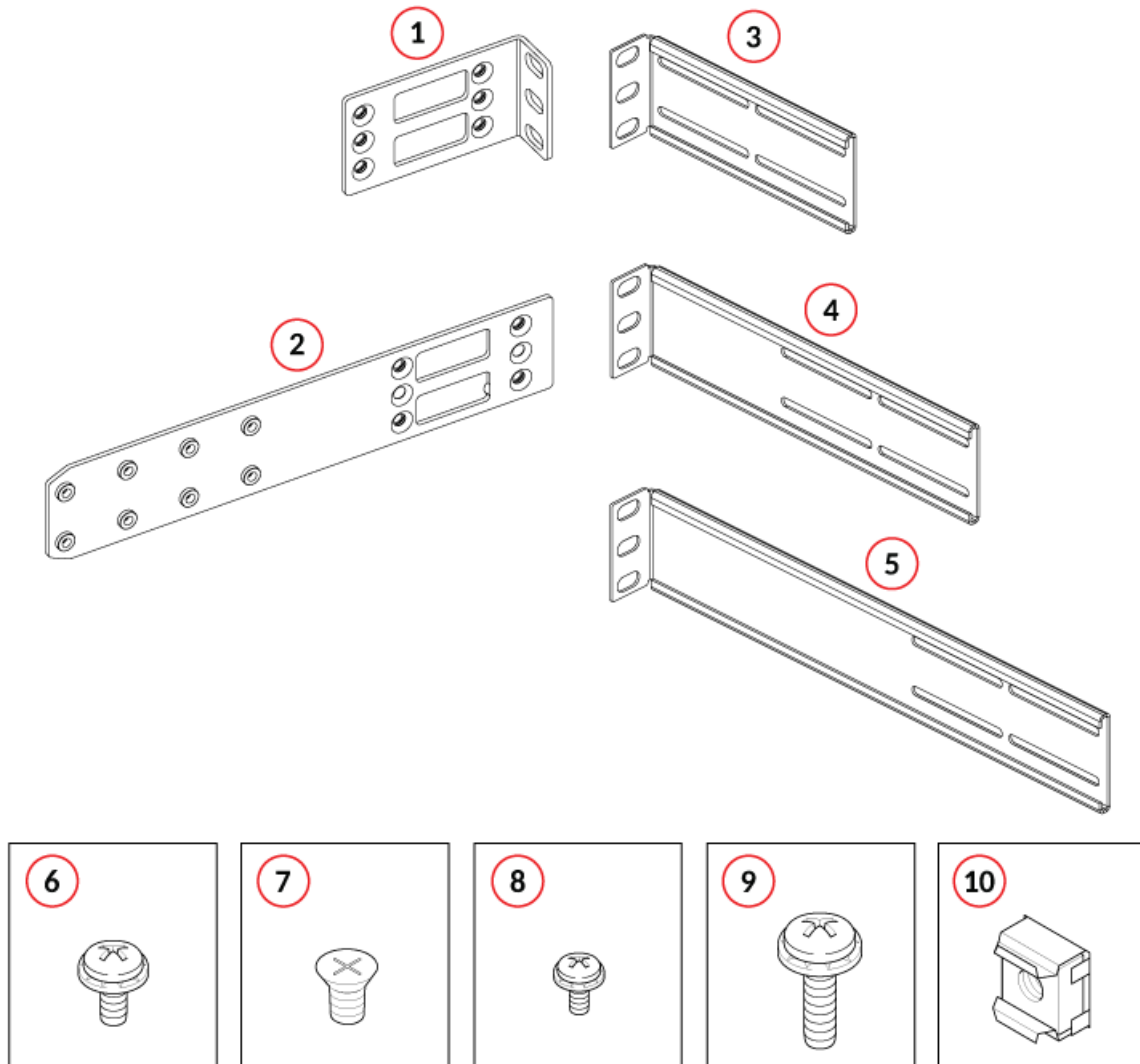
The following items are required to install the device using the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks:

- #2 Phillips torque screwdriver
- 1/4-inch slotted-blade torque screwdriver

Parts List

The parts provided in the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295) are illustrated in the following figure.

FIGURE 26 Items in the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)



- | | |
|------------------------------|---|
| 1. Front brackets (2) | 6. Screw, 8-32 x 5/16-in., panhead Phillips (8) |
| 2. Bracket extensions (2) | 7. Screw, 8-32 x 5/16-in., flathead Phillips (16) |
| 3. Rear brackets, short (2) | 8. Screw, 6-32 x 1/4-in., panhead Phillips (8) |
| 4. Rear brackets, medium (2) | 9. Screw, 10-32 x 5/8-in., panhead Phillips (8) |
| 5. Rear brackets, long (2) | 10. Retainer nut, 10-32 (8) |

Ensure that the items listed and illustrated are included in the kit. Note that not all parts may be used with certain installations depending on the device type.



CAUTION

Use the screws specified in the procedure. Using longer screws can damage the device.

Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

Flush-Front Mounting the Device in a Rack



CAUTION

The device must be turned off and disconnected from the network during this procedure.

NOTE

Illustrations in these rack installation procedures are for reference only and may not show the actual device that you are installing.

Complete the following tasks to install the device in a four-post rack:

1. [Attaching the Front Brackets](#) on page 34
2. [Attaching the Bracket Extensions to the Device](#) on page 35
3. [Installing the Device in the Rack](#) on page 36
4. [Attaching the Rear Brackets to the Extensions](#) on page 37
5. [Attaching the Rear Brackets to the Rack Posts](#) on page 38

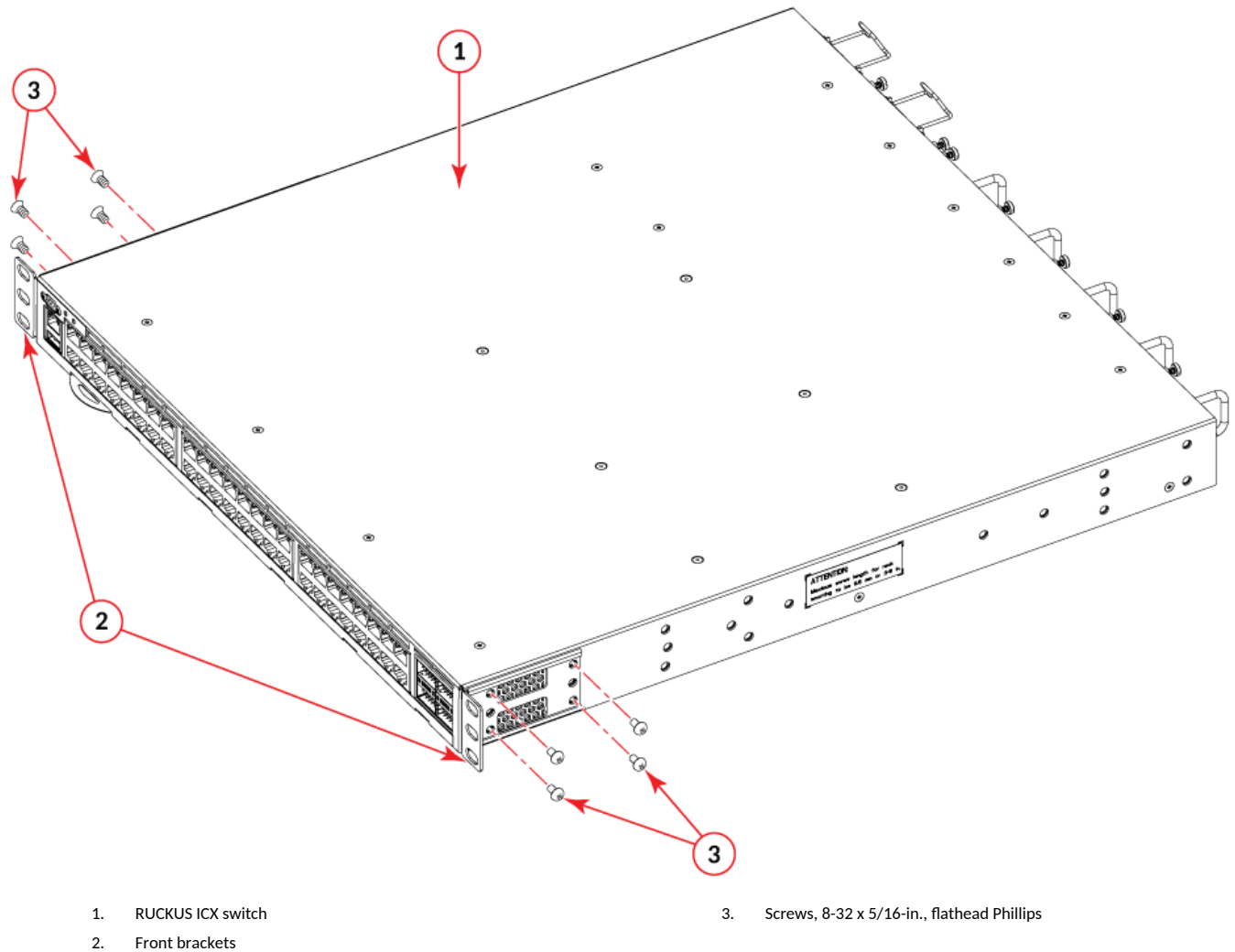
Attaching the Front Brackets

Complete the following steps to attach the front brackets to the device.

1. Position the right front bracket with the flat side against the right side of the device at the front of the device, as shown in [Figure 27](#).
2. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket and then into the holes on the side of the device. Use the upper and lower screw holes, leaving the center holes empty.
3. Repeat [Step 1](#) and [Step 2](#) to attach the left front bracket to the left side of the device.

4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 27 Attaching the Front Brackets



Attaching the Bracket Extensions to the Device

Complete the following steps to attach the bracket extensions to the device.

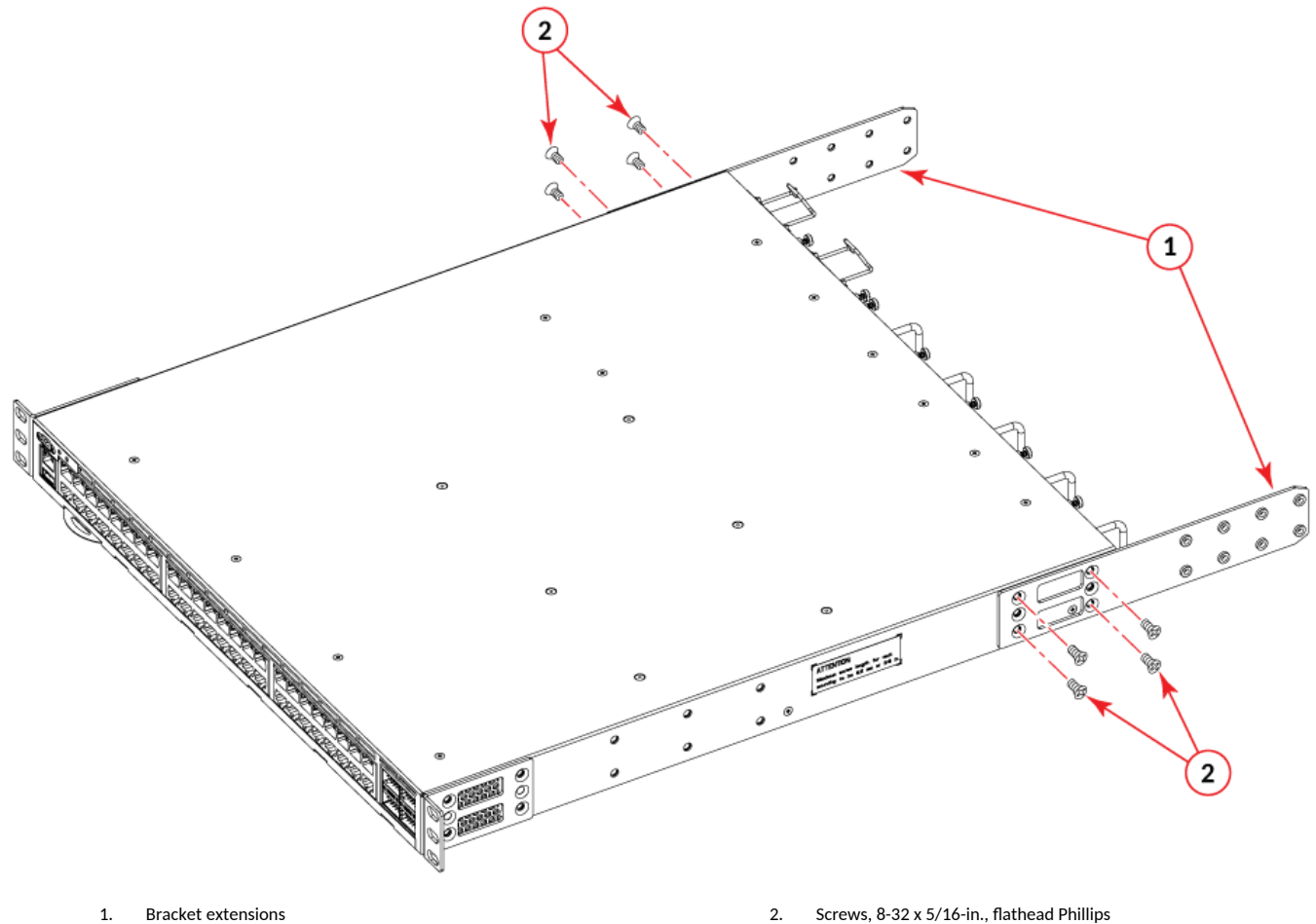
1. Position the right bracket extension along the side of the device as shown in [Figure 28](#).
2. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket extension and then into the holes on the side of the device. Use the upper and lower screw holes, leaving the center holes empty.
3. Repeat [Step 1](#) and [Step 2](#) to attach the left bracket extension to the left side of the device.

Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 28 Attaching the Bracket Extensions to the Device



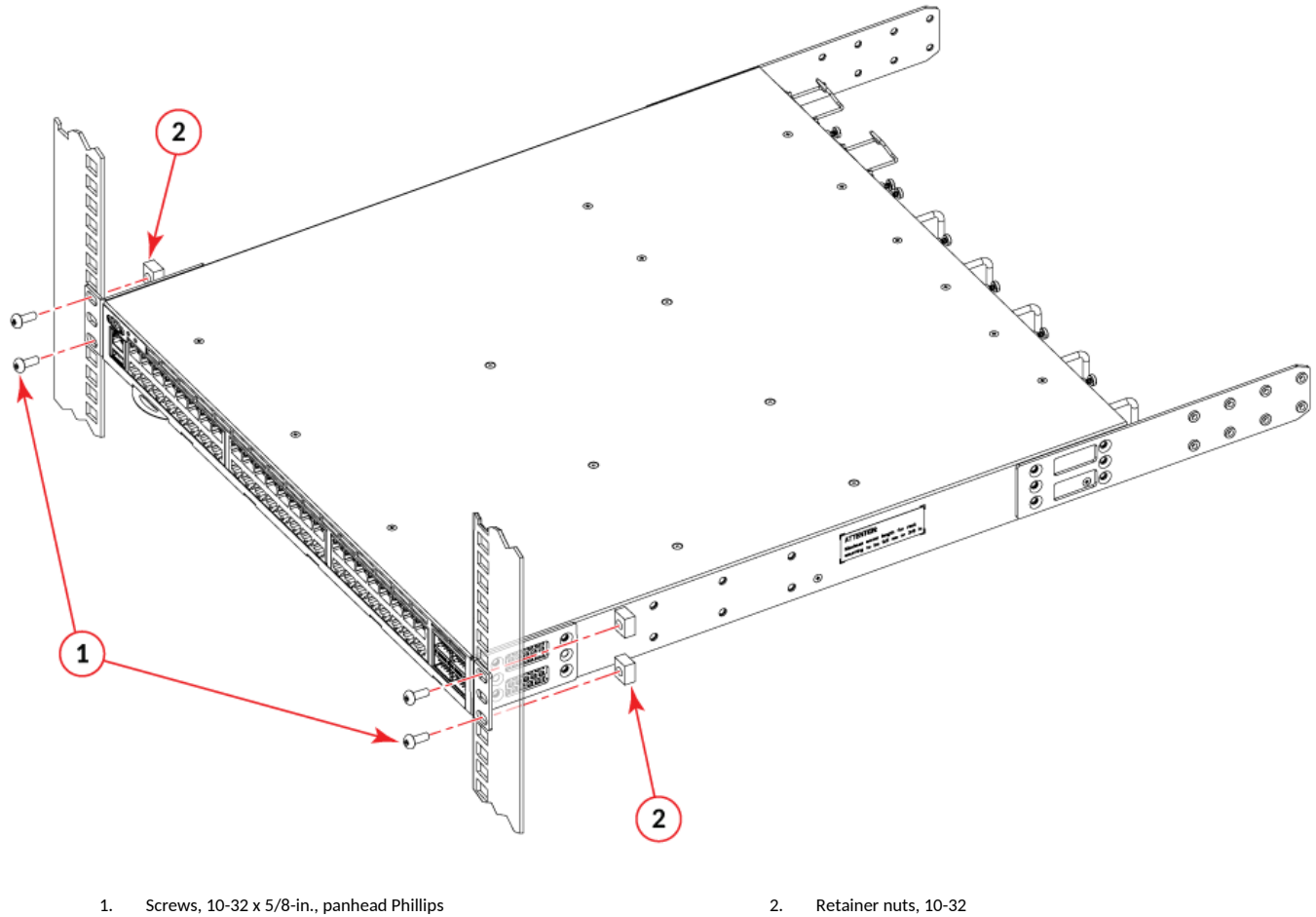
Installing the Device in the Rack

Complete the following steps to install the device in the rack.

1. Position the device in the rack, as shown in [Figure 29](#), providing temporary support under the device until the rail kit is secured to the rack.
2. Attach the right front bracket to the right front rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.
3. Attach the left front bracket to the left front rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.

4. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lb (29 cm-kg).

FIGURE 29 Positioning the Device in the Rack



Attaching the Rear Brackets to the Extensions

Complete the following steps to attach the rear brackets to the extensions. There are short, medium, and long rear brackets that you can use for this step.

1. Select the proper length rear bracket for your rack depth.
2. Slide the right rear bracket onto the right extension, as shown in [Figure 30](#).

The short rear brackets are shown. Use the first and third vertical pairs of holes for the screws.

Refer to [Figure 31](#) for the positioning of the medium or long brackets and screws.

3. Attach the brackets using four 6-32 x 1/4-in. panhead screws.
4. Repeat [Step 2](#) and [Step 3](#) to attach the left rear bracket to the left extension.

Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

5. Adjust the brackets to the rack depth and tighten all the 6-32 x 1/4-in. screws to a torque of 9 in-lb (10 cm-kg).

FIGURE 30 Attaching the Short Rear Brackets to the Extensions

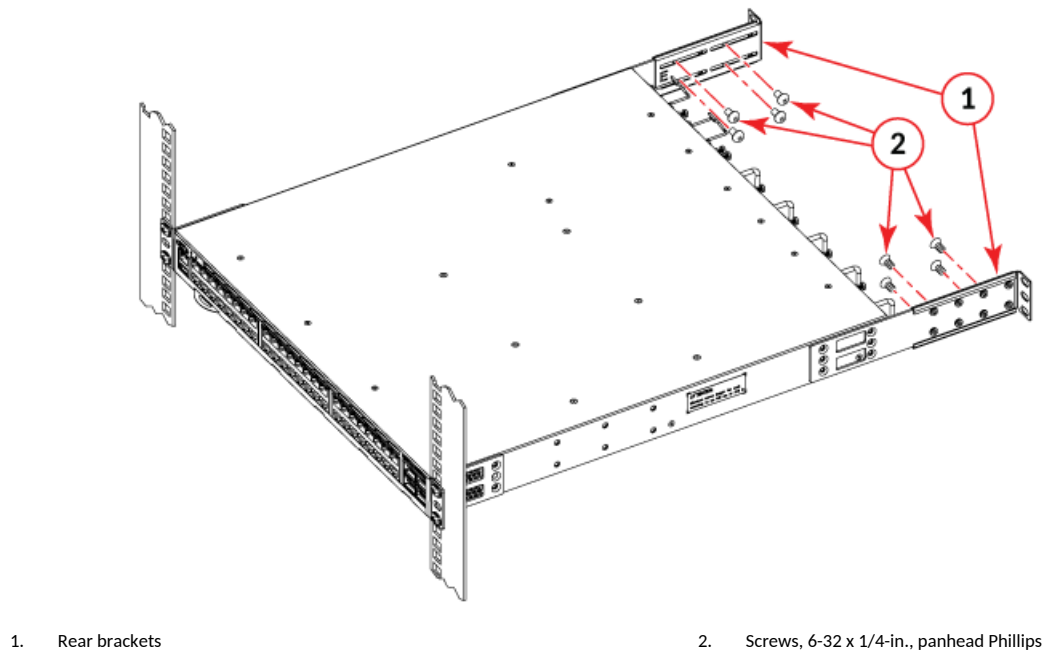
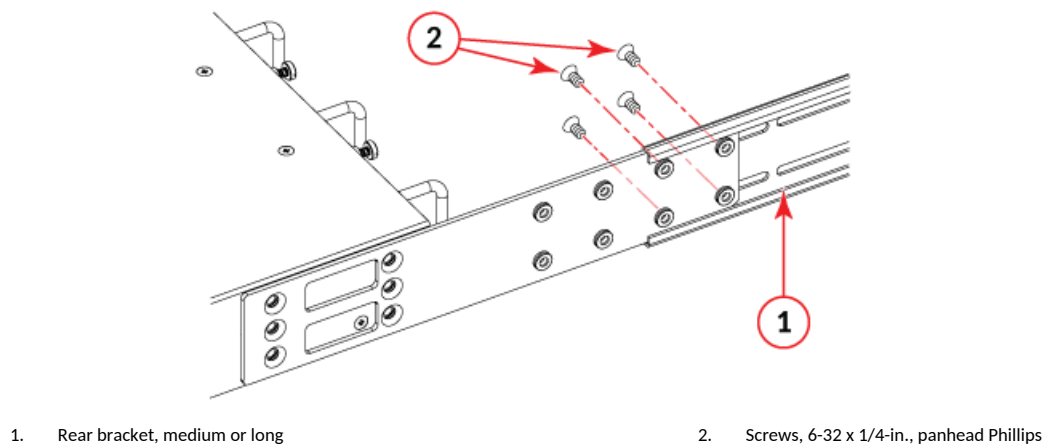


FIGURE 31 Attaching the Medium or Long Rear Brackets to the Extensions



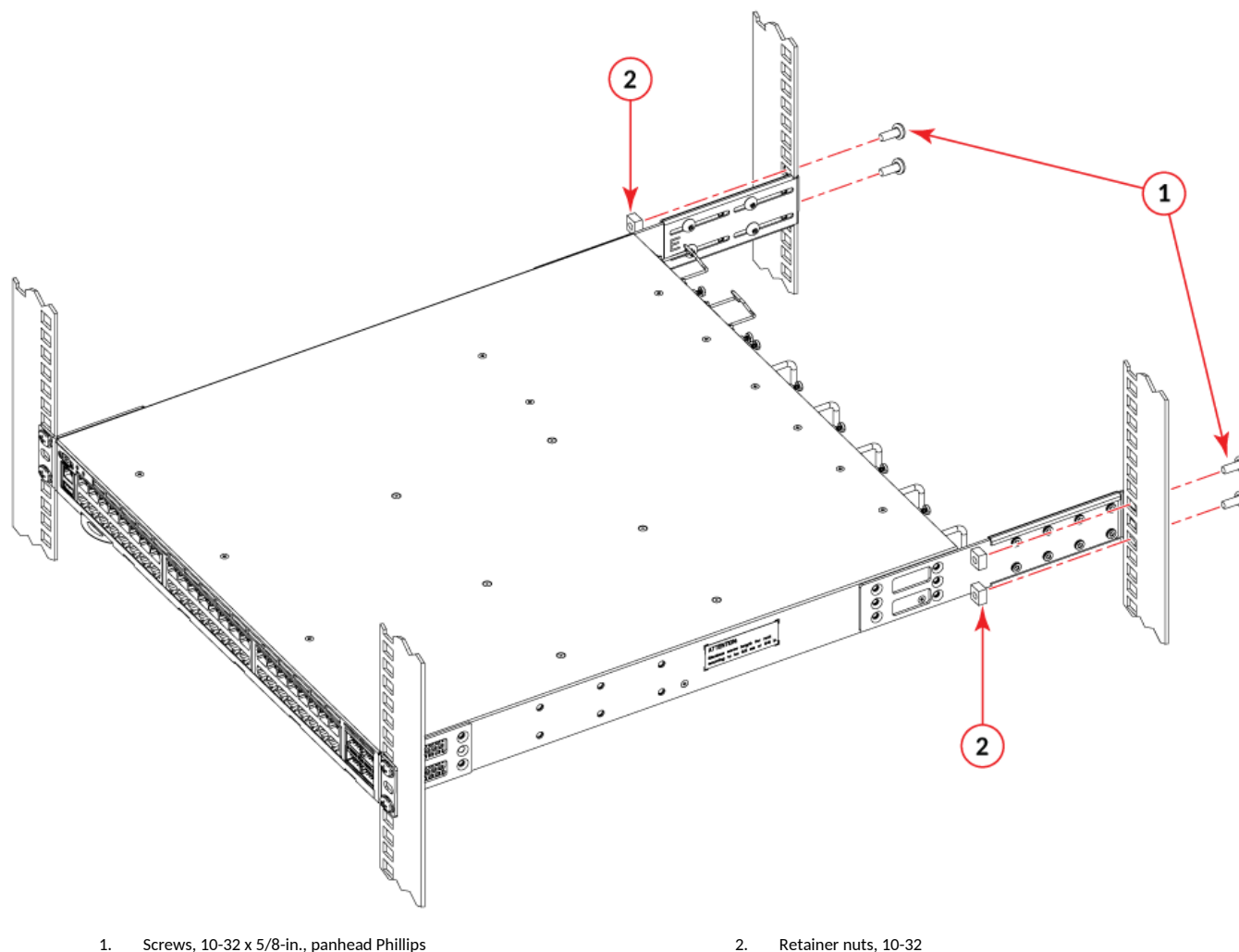
Attaching the Rear Brackets to the Rack Posts

Complete the following steps to attach the rear brackets to the rack posts.

1. Attach the right rear bracket to the right rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts, as shown in [Figure 32](#). Use the upper and lower holes in the bracket.
2. Attach the left rear bracket to the left rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.

3. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lb (29 cm-kg).

FIGURE 32 Attaching the Rear Brackets to the Rack Posts



Flush-Rear (Recessed) Mounting the Device in the Rack

The flush-rear (recessed) mounting is similar to the flush-front mounting except that the brackets are reversed on the device.



CAUTION

The device must be turned off and disconnected from the network during this procedure.

NOTE

Illustrations used in these rack installation procedures are for reference only and may not show the actual device that you are installing.

Complete the following tasks to install the device in a four-post rack:

1. [Front Brackets to the Rear of the Device](#) on page 40
2. [Attaching the Bracket Extensions to the Front of the Device](#) on page 41

Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

3. [Installing the Device in the Rack](#) on page 42
4. [Attaching the Rear Brackets to the Bracket Extensions at the Front of the Device](#) on page 43
5. [Attaching the Rear Brackets to the Front Rack Posts](#) on page 45

Front Brackets to the Rear of the Device

NOTE

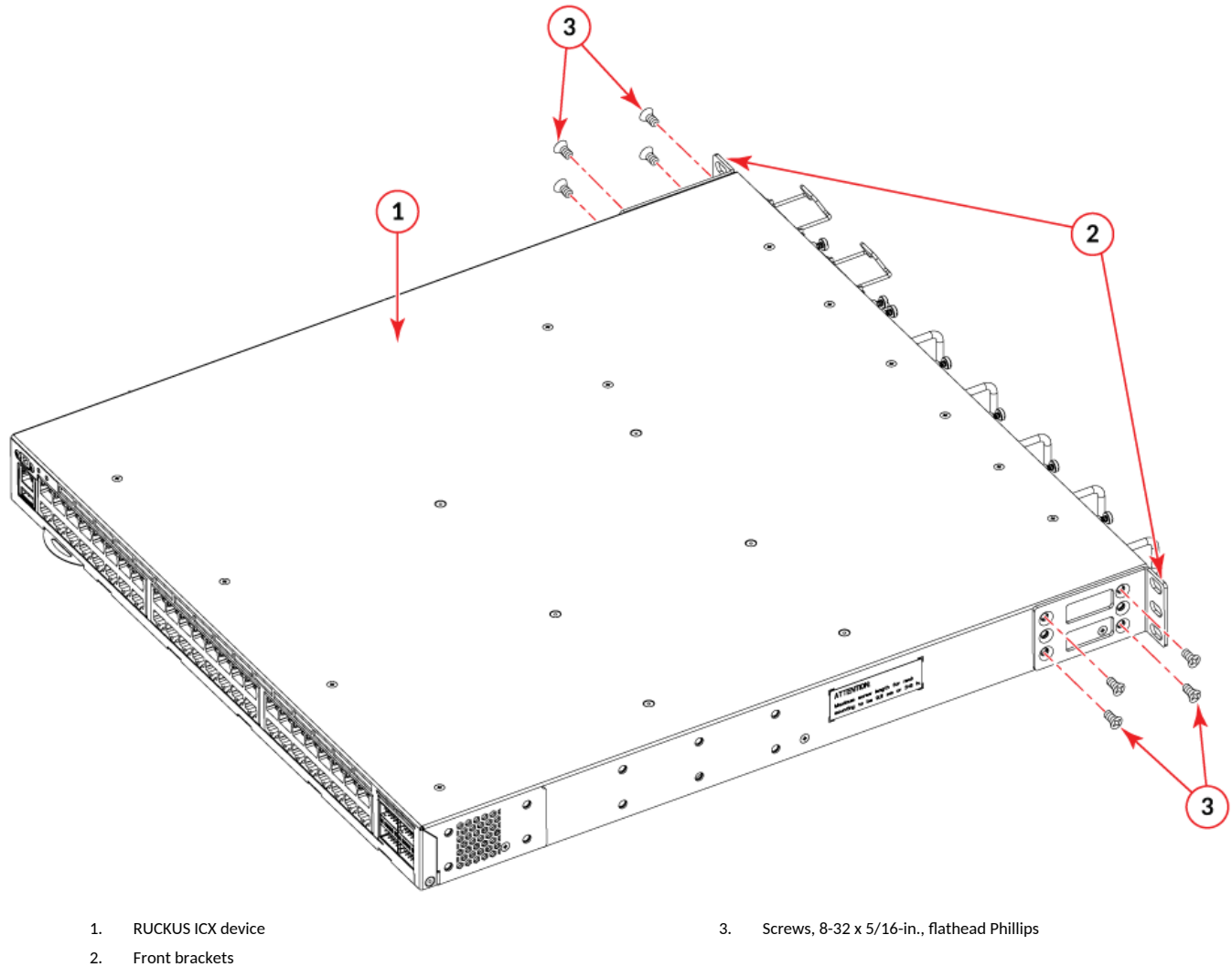
In this installation, the brackets are named as listed in the parts list even though the installation of the brackets is reversed from the flush-front installation.

Complete the following steps to attach the front brackets to the rear of the device.

1. Position the right front bracket with the flat side against the right rear side of the device, as shown in [Figure 33](#).
2. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket and then into the holes on the side of the device. Use the upper and lower screw holes, leaving the center holes empty.
3. Repeat [Step 1](#) and [Step 2](#) to attach the left front bracket to the left rear side of the device.

4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 33 Attaching the Front Brackets to the Rear of the Device



Attaching the Bracket Extensions to the Front of the Device

Complete the following steps to attach the bracket extensions to the front of the device.

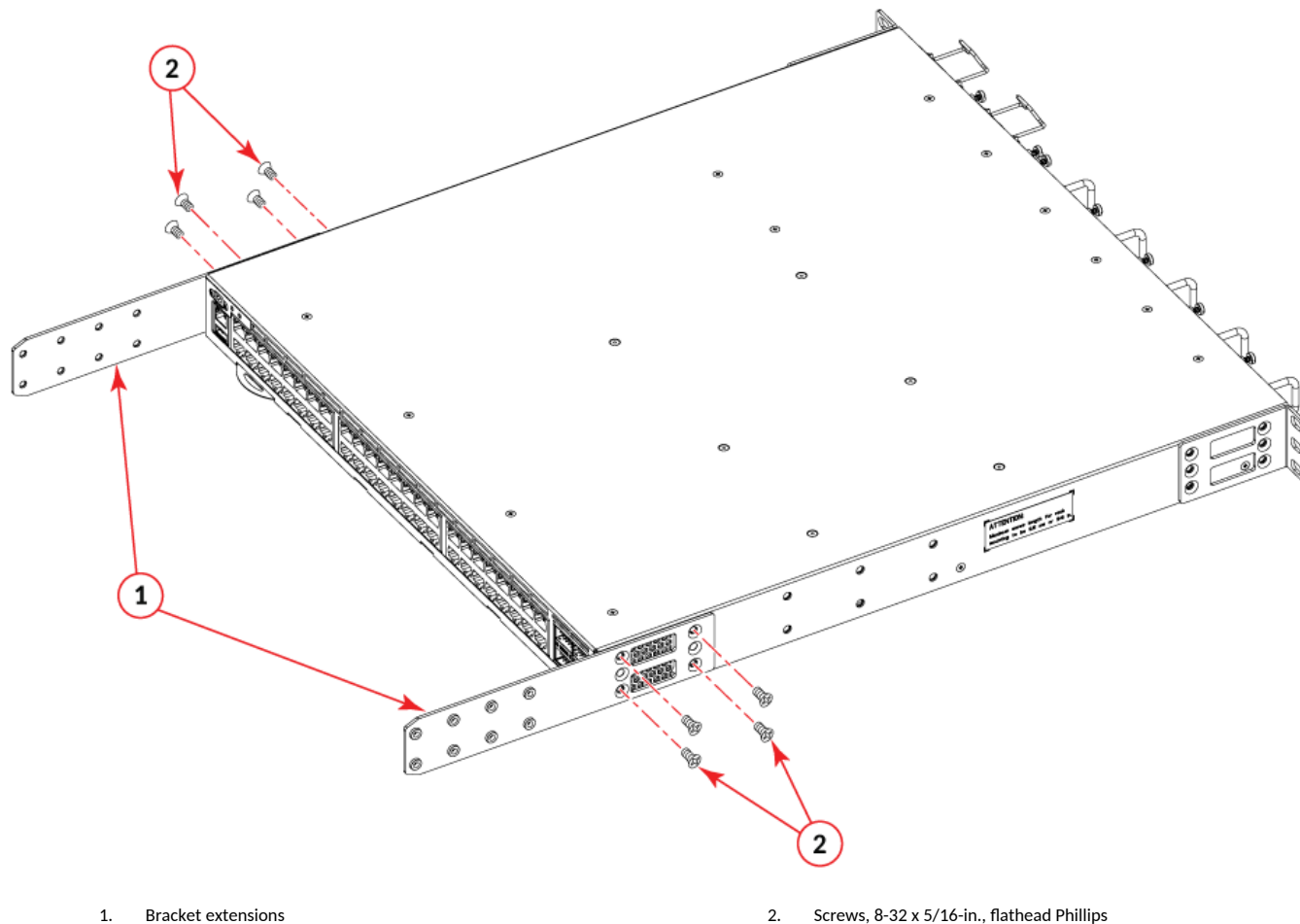
1. Position the right bracket extension along the side of the device as shown in [Figure 34](#).
2. Insert four 8-32 x 5/16-in. flathead screws through the vertically aligned holes in the bracket extension and then into the holes on the side of the device. Use the upper and lower screw holes, leaving the center holes empty.
3. Repeat [Step 1](#) and [Step 2](#) to attach the left bracket extension to the left side of the device.

Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

4. Tighten all the 8-32 x 5/16-in. screws to a torque of 15 in-lb (17 cm-kg).

FIGURE 34 Attaching the Bracket Extensions to the Device



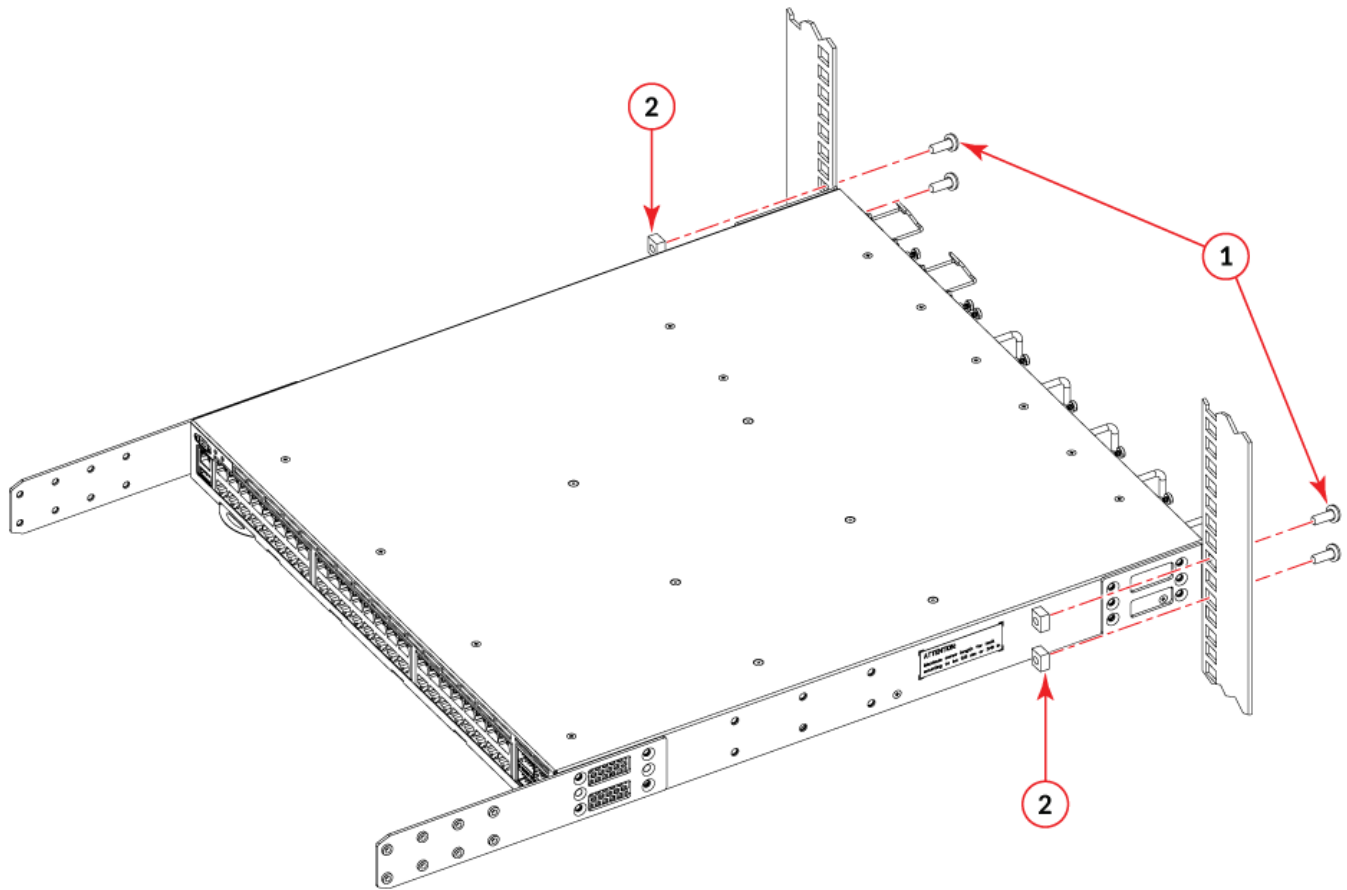
Installing the Device in the Rack

Complete the following steps to install the device in the rack.

1. Position the device in the rack, as shown in [Figure 35](#), providing temporary support under the device until the rail kit is secured to the rack.
2. Attach the right front bracket to the right rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.
3. Attach the left front bracket to the left rear rack post using two 10-32 x 5/8-in. panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.

4. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lb (29 cm-kg).

FIGURE 35 Positioning the Device in the Rack



1. Screws, 10-32 x 5/8-in., panhead Phillips

2. Retainer nuts, 10-32

Attaching the Rear Brackets to the Bracket Extensions at the Front of the Device

Complete the following steps to attach the rear brackets to the bracket extensions. There are short, medium, and long rear brackets that you can use for this step.

1. Select the proper length rear bracket for your rack depth.
2. Slide the right rear bracket onto the right extension, as shown in [Figure 36](#).

The short rear brackets are shown. Use the first and third vertical pairs of holes for the screws.

Refer to [Figure 37](#) for the positioning of the medium or long brackets and screws.

3. Attach the brackets using four 6-32 x 1/4-in. panhead screws.
4. Repeat [Step 2](#) and [Step 3](#) to attach the left rear bracket to the left extension.

Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

5. Adjust the brackets to the rack depth and tighten all the 6-32 x 1/4-in. screws to a torque of 9 in-lb (10 cm-kg).

FIGURE 36 Attaching the Short Rear Brackets to the Extensions at the Front of the Device

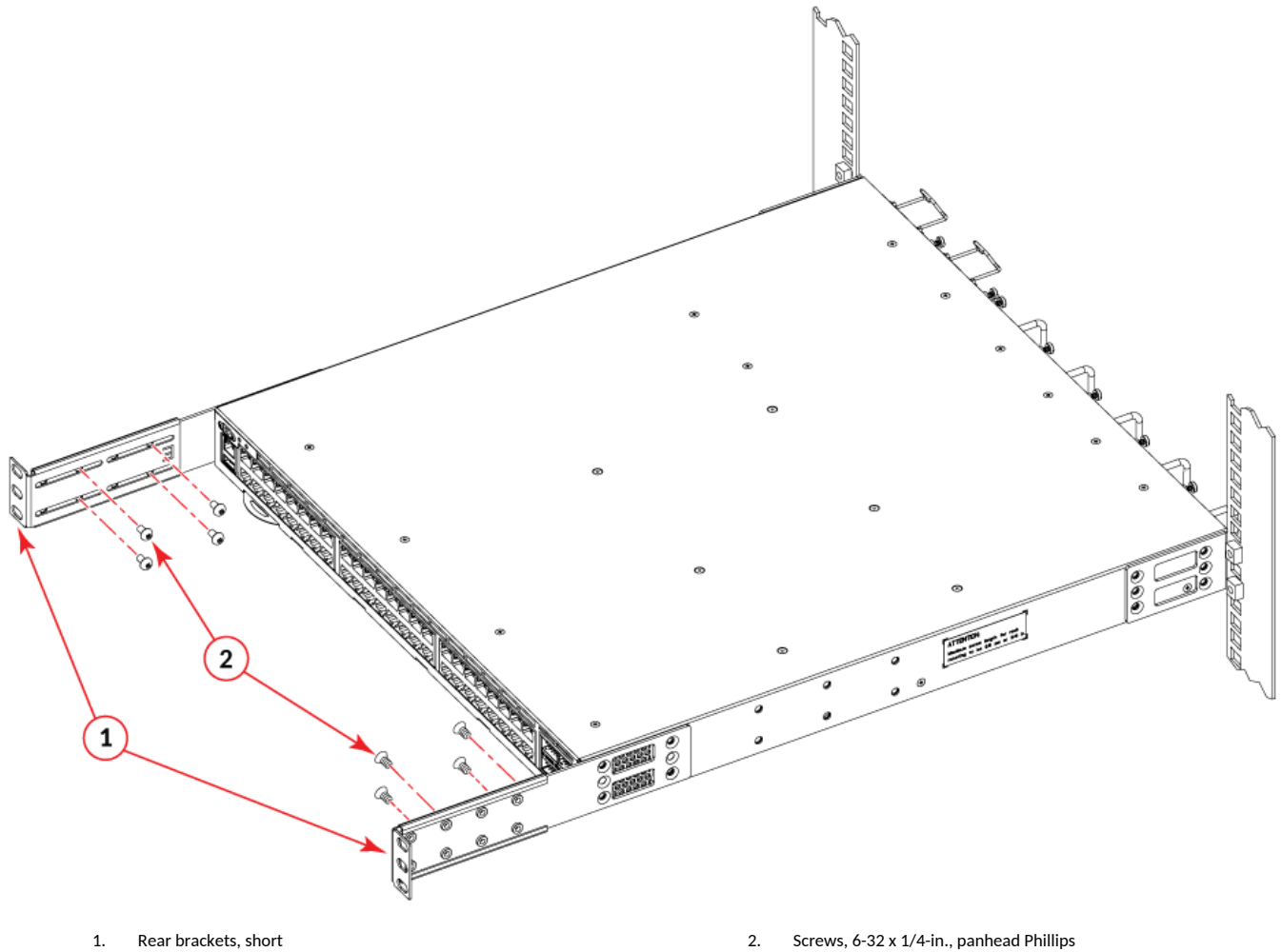
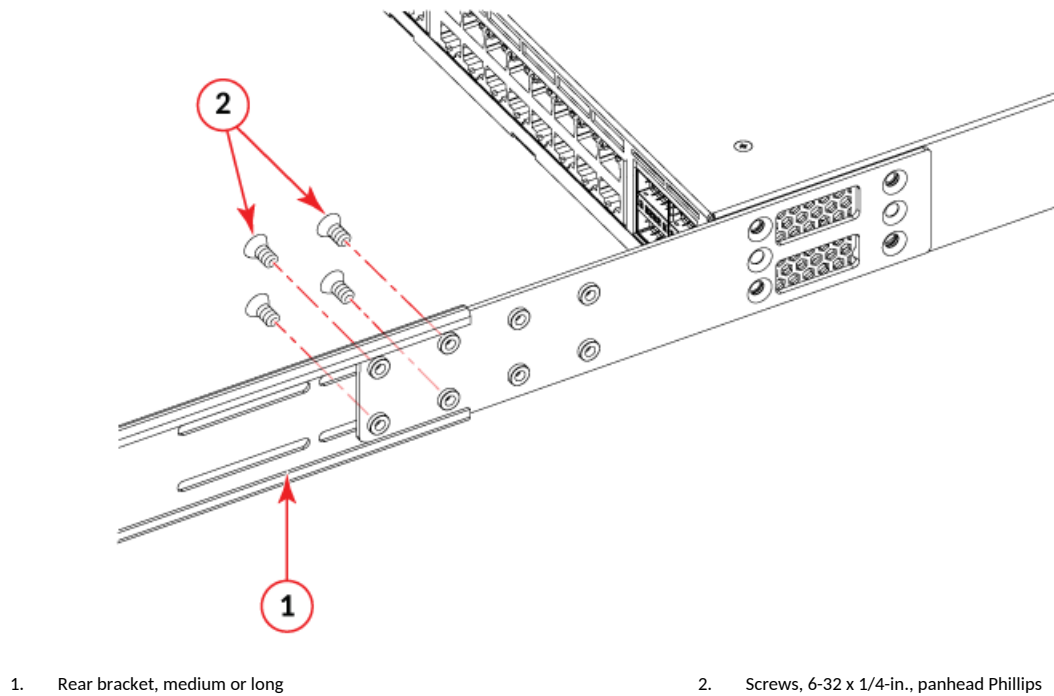


FIGURE 37 Attaching the Medium or Long Rear Brackets to the Extensions



Attaching the Rear Brackets to the Front Rack Posts

Complete the following steps to attach the rear brackets to the front rack posts.

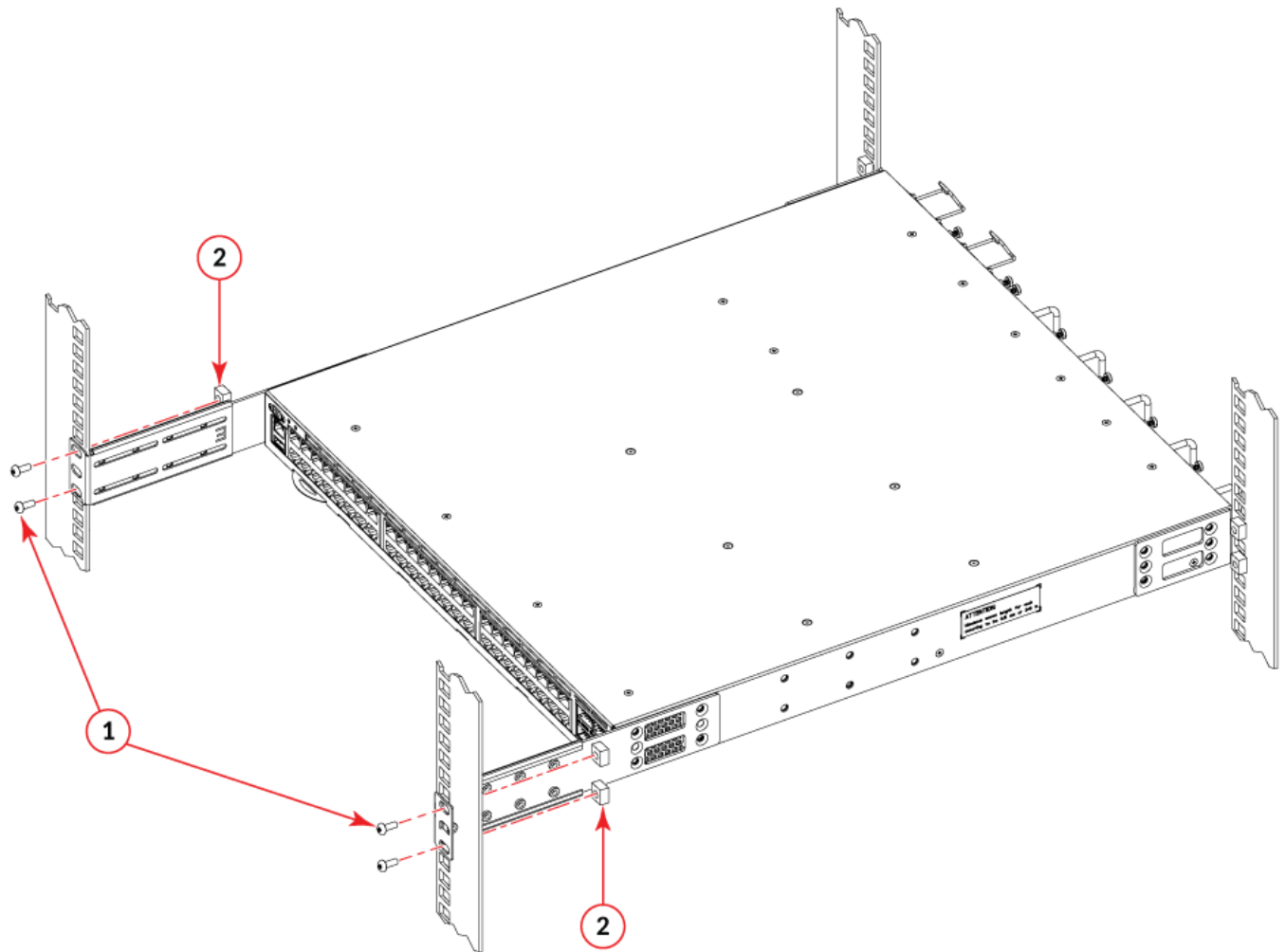
1. Attach the right rear bracket to the right front rack post using two 10-32 x 5/8-in. screws and two retainer nuts, as shown in [Figure 38](#). Use the upper and lower holes in the bracket.
2. Attach the left rear bracket to the left front rack post using two 10-32 x 5/8-in. screws and two retainer nuts. Use the upper and lower holes in the bracket.

Mounting the Device

Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

3. Tighten all the 10-32 x 5/8-in. screws to a torque of 25 in-lb (29 cm-kg).

FIGURE 38 Attaching the Rear Brackets to the Front Rack Posts



1. Screws, 10-32 x 5/8-in., panhead Phillips

2. Retainer nuts, 10-32

Initial Setup and Verification

• Items Required.....	47
• Powering up the Device.....	47
• Establishing a First-Time Connection to the Console Port.....	48
• Configuring an IP Address for the Device.....	50
• Customizing the Host Name and Chassis Name	51
• Setting the Date and Time.....	52
• Getting In-band Access.....	52
• Verifying the Correct Operation.....	52
• Backing up the Running Configuration.....	52

Items Required

The following items are required for initial setup and verification of the device:

- The device, mounted and installed with the required power supply, fan assemblies, transceivers, and cables
- A workstation computer with a terminal emulator application installed, such as HyperTerminal for Windows
- An unused IP address with corresponding subnet mask and gateway address
- A USB console cable with a Type-C connector (Type-C USB cable not included with the device)
- An Ethernet cable
- Access to a TFTP server for backing up (uploading) or downloading the device configuration (optional)

Powering up the Device

Perform the following steps to power up device.

1. Unpack the power cord and the power cord retainer clip from the shipping carton container.
2. Install the power cord retainer clip to the power supply inlet on the device.
3. Connect the power cord to the power supply inlet on the device. Ensure that the power cords have a minimum service loop of 6 inches available and are routed properly to avoid stress.
4. Insert the power cord plug to power sources on separate circuits if there is more than one power cord for a single device in order to protect against power failure.
5. If applicable, power on the power sources by flipping the switches to the on position. The PWR LED displays amber until power-on self-test (POST) is complete and then starts blinking green until the device is completely up. The device usually requires several minutes to boot and complete POST.

NOTE

Power is supplied to the device as soon as the first power supply is connected and turned on. If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply.

Initial Setup and Verification

Establishing a First-Time Connection to the Console Port

6. After POST is complete, verify that the switch power LED is green.

NOTE

The power (PWR) LED should always display solid green to ensure a working power supply. If the LED is amber, it indicates a faulty power supply.

Establishing a First-Time Connection to the Console Port

Use the USB Type-C console port to establish the first-time connection to the device. The console port allows you to configure and manage the device using a third-party terminal emulation application from a workstation that is directly connected to the port using a standard USB Type-C cable. Perform the following steps to log in to the device for the first time through the console connection.

1. Connect a standard USB cable to the USB Type-C console connector on the device and to a USB port on the workstation. You need a standard USB cable that has a USB Type-C connector on one end and a USB connector on the other end that matches the USB port on your workstation.
2. Allow the workstation to automatically discover and configure the newly found USB device.

NOTE

If the workstation is unable to automatically discover and configure the newly found USB device, you can perform a search and manually download the necessary device drivers for Windows®, macOS®, and Linux® from the following website: <https://support.ruckuswireless.com//>.

3. Open a terminal emulator application such as HyperTerminal® on a Windows PC, or TERM, TIP, or Kermit in a UNIX® environment, and configure the session parameters as follows:
 - In a Windows environment, use the following values (and only these values):

Parameter	Value
Baud: Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

NOTE

Flow control is not supported on the console connection when attached to a remote terminal and must be disabled on the customer-side remote terminal server in addition to the host-side clients.

- In a UNIX environment using TIP, enter the following string at the prompt:

```
tip /dev/ttyb -9600
```

If ttyb is already in use, use ttya instead and enter the following string at the prompt:

```
tip /dev/ttya -9600
```

4. When the terminal emulator application stops reporting information, press **Enter** to display the device prompt.

Depending on the device you purchased, and the code (Layer 2 or Layer 3) loaded on your system, the device prompt is displayed accordingly.

```
device>
```

When the device prompt is displayed, you are connected to the device. You can customize the prompt by changing the device name. If you do not see this prompt, make sure the cable is securely connected to your workstation and to the device and check the settings in your terminal emulation program. In addition to the previously configured session settings, make sure the terminal emulation session is running on the same serial port you attached to the device.

The device CLI prompt has the following access levels:

- **User EXEC:** This is the level you enter when you first start a CLI session. At this level, you can view some system information but you cannot configure system or port parameters.
- **Privileged EXEC:** This level is also called the Enable level and can be secured by a password. You can perform tasks such as managing files on the flash module, saving the system configuration to flash, and clearing caches at this level.
- **CONFIG:** The configuration level. This level allows you to configure the system IP address and configure switching and routing features. To access the CONFIG mode, you must already be logged in to the Privileged EXEC level.

5. At the opening device CLI prompt, enter the **enable** command to change to the Privileged EXEC mode:

```
device> enable  
device#
```

6. Access the configuration mode of the CLI by entering the **configure terminal** command:

```
device# configure terminal  
device(config)#
```

Initial Setup and Verification

Configuring an IP Address for the Device

7. Enter the following command to set the Super User password:

```
device(config)# enable super-user-password joe
```

By default, the CLI is not protected by passwords. To secure CLI access, RUCKUS strongly recommends assigning passwords. You can set the following levels of passwords:

- Super User: Allows complete read-and-write access to the system. This is generally for system administrators and is the only password level that allows you to configure other passwords.

NOTE

You must set a Super User password before you can set other types of passwords.

- Port Configuration: Allows read-and-write access to specific ports but not for global (system-wide) parameters.
- Read-Only: Allows access to the Privileged EXEC mode and USER CONFIG mode. but only with read access.

NOTE

Passwords must follow these rules:

- Begin with an alphabetic character
- Minimum length of eight characters (unless strict password enforcement is enabled, which enforces a 15-character minimum)
- Maximum length of 32 characters
- Contain at least two uppercase characters
- Contain at least two lowercase characters
- Contain at least two numeric characters
- Contain at least two special characters

Passwords are case-sensitive, and they are not displayed when you enter them on the command line.

NOTE

Make sure to write down the new passwords and keep the information in a secure location.

8. Enter the following commands to set the port configuration and read-only passwords.

```
device(config)# enable port-config-password john
device(config)# enable read-only-password sam
```

Recovering From a Lost Password

Refer to the "Password and Device Recovery" section in the *RUCKUS FastIron Management Configuration Guide*, supporting releases 10.0.10f or later.

Configuring an IP Address for the Device

You must configure at least one IP address using the serial connection to the CLI before you can manage the device using the other management interfaces. You can use the classical IP network masks (Class A, B, and C subnet masks, and so on) or Classless Interdomain Routing (CIDR) network prefix masks.

- To enter a classical IP network mask, enter the mask in IP address format. For example, enter "10.157.22.99 255.255.255.0" for an IP address with a Class C subnet mask.

- To enter a prefix number for a network mask, enter a forward slash (/) and the number of bits in the mask immediately after the IP address. For example, enter "10.157.22.99/24" for an IP address that has a network mask with 24 significant ("mask") bits.
1. At the opening CLI prompt, enter the following commands.

```
device> enable
device# erase startup-config
device# configure terminal
```

NOTE

Use the **erase startup-config** command only for new systems. If you enter this command on a system you have already configured, the command erases the configuration. If you accidentally erase the configuration on a configured system, enter the **write memory** command to save the running configuration to the startup-config file.

2. Enter the following commands to add an IP address and mask to a router port on a device running Layer 3 software.

```
device(config)# interface ethernet 1
device(config)# ip route 0.0.0.0/0 10.22.3.1
device(config)# write memory
```

NOTE

Before attaching any equipment to a device running Layer 3 software, you must assign an interface IP address to the subnet on which the device will be located. You must use the serial connection to assign the first IP address. For subsequent addresses, you can use the CLI through Telnet.

Customizing the Host Name and Chassis Name

Changing the host name, contact, and location is important for distinguishing and identifying the device uniquely and for accurate tracking of logs and errors. The messages that appear in the log are labeled with the chassis name, which makes tracking the errors much easier. Specify an easily understandable and meaningful host name and chassis name.

Perform the following steps to change the host name and then the chassis name.

1. Customize the host name, contact, and location using the following commands. When you configure a host name, the name replaces the default system name in the device CLI prompt.

```
device(config)# hostname sj_device1
sj_device1(config)# snmp-server contact Support Services
sj_device1(config)# snmp-server location San Jose
sj_device1(config)# end
sj_device1# write memory
```

The name, contact, and location each can be up to 255 alphanumeric characters. The text strings can contain blanks; however, you must enclose the string in double quotation marks for a host name and an SNMP location.

2. Change the chassis name by using the **chassis name** command.

```
sj_device1# configure terminal
sj_device1(config)# chassis name SJ001
sj_device1(config)# end
sj_device1# write memory
```

The **chassis name** command does not change the device CLI prompt. Instead, the command assigns an administrative ID to the device.

Setting the Date and Time

Use the following command to set the current date and time for the device.

```
sj_device1# clock set  
  hh:mm:ss    Current Time  
sj_device1# clock set 10:05:45  
  mm-dd-yy/yyyy    Current Date  
sj_device1# clock set 10:05:45 12-01-24
```

NOTE

After a power cycle, the date and time settings are not retained because the device does not have an RTC battery.

Getting In-band Access

You can access the management agent in the device from anywhere within the attached network using Telnet or other network management software. However, you must first configure the device with a valid IP address, subnet mask, and default gateway. If you have trouble establishing a link to the management agent, check to see if you have a valid network connection. Then verify that you entered the correct IP address. Also, be sure the port through which you are connecting to the device has not been disabled. If it has not been disabled, then check the network cabling that runs between your remote location and the device.

Verifying the Correct Operation

Check the LEDs to verify operation of functional parts. The following commands can be useful to establish an operational baseline for the device. Refer to the *RUCKUS FastIron Command Reference* for more information on these commands.

- **show chassis**
- **show version**
- **show cpu**
- **show flash**
- **show files**
- **show run**
- **show boot-preference**
- **show configuration**
- **show running-config**
- **show logging**

Backing up the Running Configuration

Use the **write memory** command to replace the startup configuration with the running configuration every time you make changes to the device configuration. To back up the device configuration to an external TFTP server, use the **copy running-config tftp** command.

```
sj_device1# copy running-config tftp 2001:DB8:e0ff:7837::3 newrun.cfg
```

This command example copies the running configuration to a TFTP server with the IPv6 address of 2001:DB8:e0ff:7837::3 and names the file on the TFTP server newrun.cfg.

Installing Transceivers and Cables

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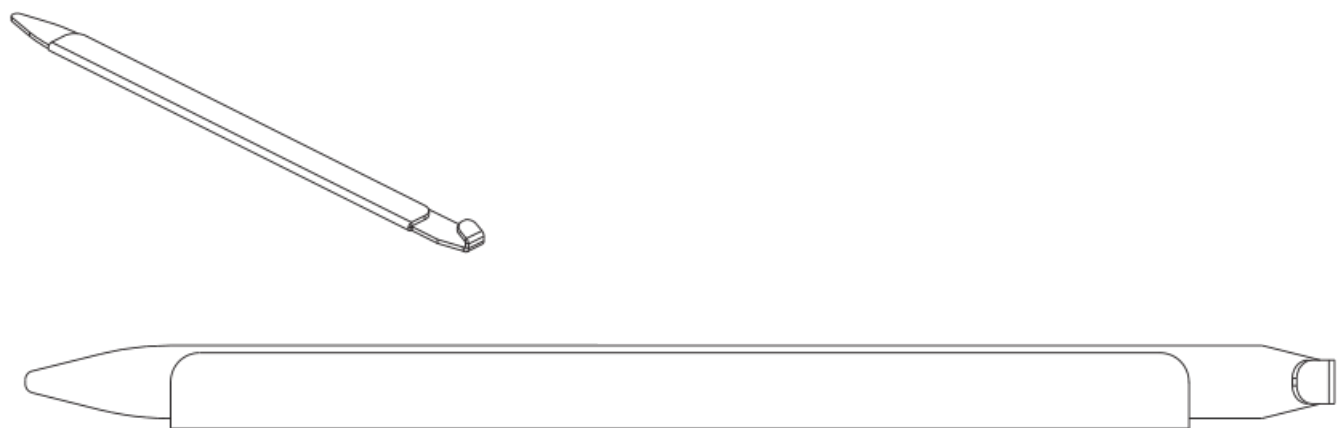
Items Required

The installation or replacement procedure for one transceiver takes less than five minutes. Ensure that the following items are available:

- Required number of compatible power cables
- Required number of supported RUCKUS-branded transceivers
- Refer to the RUCKUS Optics Family Datasheet for the list of supported transceivers and cables.
- Required number of compatible Ethernet (RJ-45) and fiber-optic cables
- Optical transceiver extraction tool (for 10-Gbps transceiver only)

NOTE
Most RUCKUS switches come with a transceiver extraction tool and holster. The extraction tool is designed to remove transceivers from modules where the space is limited.

FIGURE 39 Optical Transceiver Extraction Tool



Precautions Specific to Transceivers and Cables



DANGER

The procedures in this manual are for qualified service personnel.



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megohm resistor.



DANGER

All fiber-optic interfaces use Class 1 lasers.



DANGER

Use only optical transceivers that are qualified by RUCKUS and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 60825 and EN60825. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.



CAUTION

Before plugging a cable into any port, be sure to discharge the voltage stored on the cable by touching the electrical contacts to ground surface.

Managing Cables

Cables can be organized and managed in a variety of ways, for example, using cable channels on the sides of the rack or patch panels to minimize cable management. Follow these recommendations:

NOTE

You should not use tie wraps with optical cables because they are easily overtightened and can damage the optic fibers.



CAUTION

Before plugging a cable into any port, be sure to discharge the voltage stored on the cable by touching the electrical contacts to ground surface.

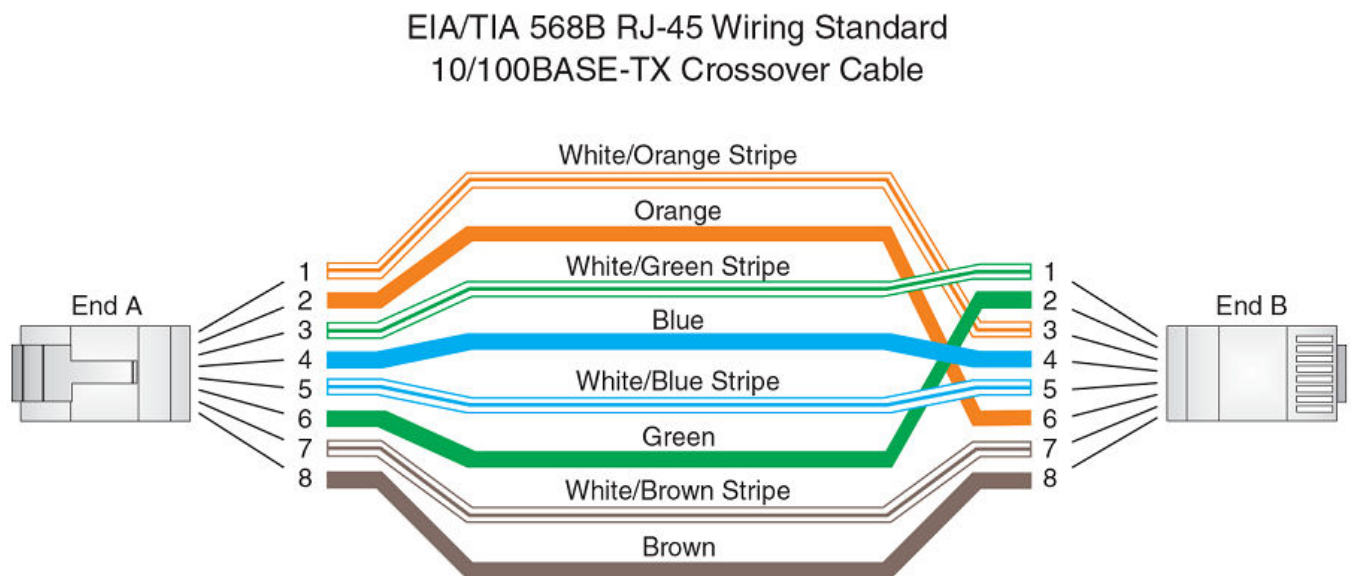
- The minimum bend radius for a 50-micron cable is 2 inches under full tensile load and 1.2 inches with no tensile load.
- Plan for rack space required for cable management before installing the switch.
- Leave at least 1 m (3.28 ft) of slack for each port cable. This provides room to remove and replace the switch, allows for inadvertent movement of the rack, and helps prevent the cables from being bent to less than the minimum bend radius.
- If you are using ISL Trunking, consider grouping cables by trunking groups. The cables used in trunking groups must meet specific requirements, as described in the RUCKUS Optics Family Datasheet.
- For easier maintenance, label the fiber-optic cables and record the devices to which they are connected.
- Keep LEDs visible by routing port cables and other cables away from the LEDs.
- Use hook and loop style straps to secure and organize fiber-optic cables.

Installing the Ethernet RJ-45 Cables

The device supports connection to other vendors' routers, switches, hubs, as well as other RUCKUS devices, through the appropriate ports, transceivers, and cables.

- For copper connections to Ethernet hubs, a 10/100Base-TX or 1000Base-T switch, or another RUCKUS device, a crossover cable is required as shown in the following figure. If the hub is equipped with an uplink port, it requires a straight-through cable instead of a crossover cable. Automatic Media Dependent Interface (auto-MDI) and automatic Media Dependent Interface Crossover (auto-MDIX) detection, as described in IEEE Std. 802.3ab, calls for automatic negotiation of the connection between two 1000Base-T ports. In this case, a straight-through cable may work just as well as a crossover cable.

FIGURE 40 UTP Crossover Cable



- Straight-through UTP cabling is required for direct UTP attachment to workstations, servers, or routers using network interface cards (NICs). Fiber-optic cabling is required for direct attachment to Gigabit NICs or switches and routers through fiber ports.

FIGURE 41 Straight-through cable



- All 10/100 and 1000 Mbps Ethernet copper ports on the devices support automatic Media Dependent Interface (auto-MDI) or automatic Media Dependent Interface Crossover (auto-MDIX) detection. Auto-MDI or auto-MDIX is enabled on all 10/100 and 1000 Mbps copper ports by default. For each port, you can disable auto-MDI or auto-MDIX, designate the port as an MDI port, or designate the port as an MDIX port.

Cleaning the Fiber-Optic Connectors

To avoid problems with the connection between the fiber-optic transceiver (SFP+ or QSFP) and the fiber cable connectors, RUCKUS strongly recommends cleaning both connectors each time you disconnect and reconnect them. Dust can accumulate on the connectors and cause problems such as reducing the optic launch power.

To clean the fiber cable connectors, RUCKUS recommends using a fiber-optic reel-type cleaner. When not using an SFP+ or QSFP connector, make sure to keep the protective covering in place.

Installing a New Fiber-Optic Transceiver

For direct attachment from the device to a Gigabit NIC, switch, or router, using a fiber-optic transceiver, you need fiber cabling with an LC connector. You can install a new fiber-optic transceiver in an SFP or SFP+ slot while the device is powered on and running. While installing a transceiver, wear a properly grounded ESD wrist strap.



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megohm resistor.



DANGER

All fiber-optic interfaces use Class 1 lasers.

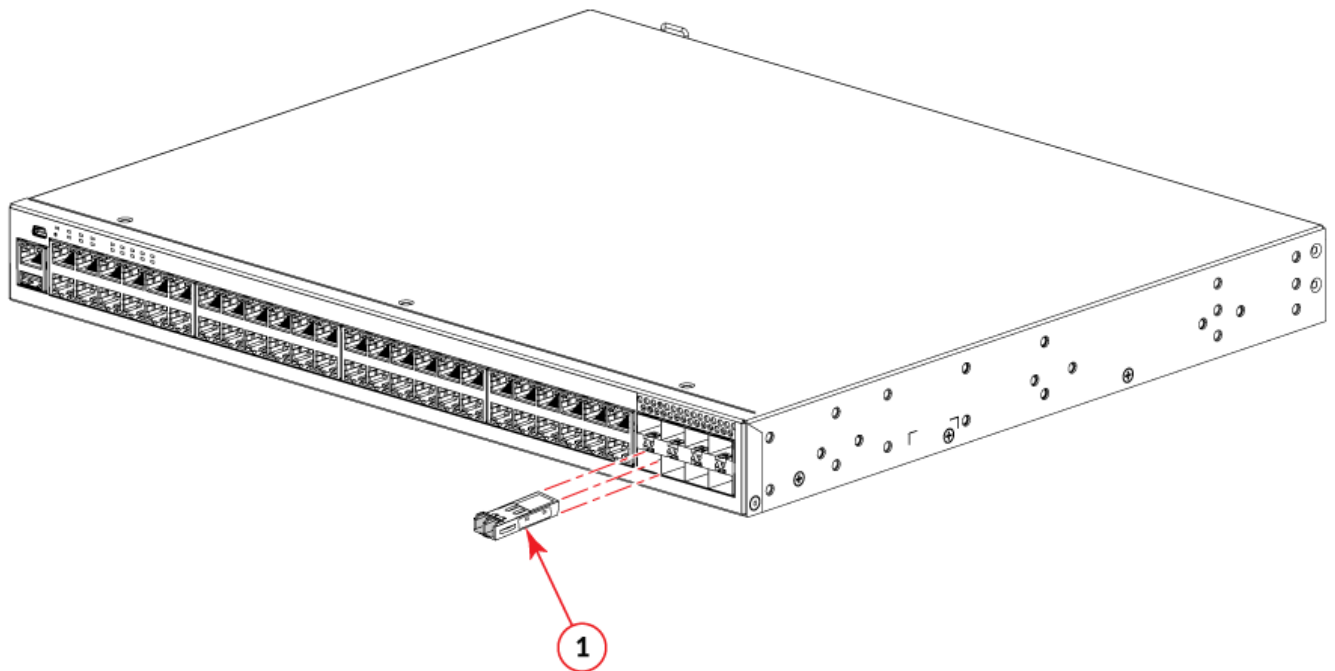
Perform the following steps to install a fiber-optic transceiver.

1. Put on the ESD wrist strap and ground yourself by attaching the clip end to a properly grounded, bare-metal surface (such as an equipment rack).
2. Remove the new transceiver from the protective packaging.
3. Gently insert the transceiver into the slot until it clicks into place. Transceivers are keyed to prevent incorrect insertion.

NOTE

The location of the fiber-optic interface shown is for illustration purposes only. They may be in a slightly different location on the device you are using.

FIGURE 42 Installing a Transceiver



1. Transceiver

NOTE

If a 1-Gbps optic transceiver is inserted, you must configure the port using the **speed-duplex 1000-full-master** command at the interface level.

NOTE

If a fiber optic transceiver is unplugged and plugged in again rapidly, the link may not come up. Allow a delay of two to five seconds between unplugging and reinserting the optic to ensure optic detection so that the link comes up without issues.

Cabling a Fiber-Optic Transceiver

Perform the following steps to cable a fiber-optic transceiver.

1. Remove the protective covering from the fiber-optic port connectors and store the covering for future use.

NOTE

Before cabling a fiber-optic transceiver, RUCKUS strongly recommends cleaning the cable connectors and the port connectors.

2. Gently insert the cable connector (a tab on each connector should face upward) into the transceiver connector until the tabs lock into place.
3. Observe the link and active LEDs to determine if the network connections are functioning properly.

Replacing a Fiber-Optic Transceiver

You can replace a fiber-optic SFP transceiver while the device is powered on and running.

While replacing a fiber-optic module, you must wear a properly grounded ESD wrist strap.



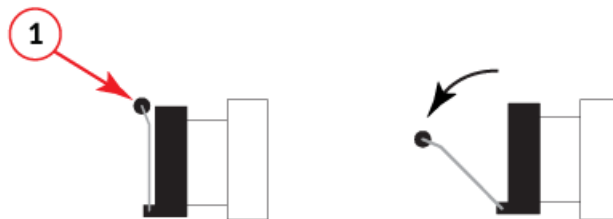
DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megohm resistor.

To replace a transceiver in an SFP slot, complete the following steps.

1. Put on the ESD wrist strap and ground yourself by attaching the clip end to a metal surface (such as an equipment rack).
2. Disconnect the cable connector from the port connector.
3. Unlock the transceiver by pulling the bail latch forward, away from the front panel of the module. This unlocks the module from the front panel.

FIGURE 43 Unlocking the Bail Latch



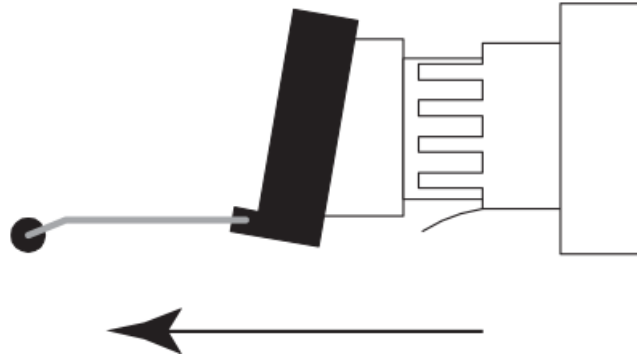
1. Bail latch

NOTE

On 1000Base-SX ports, the bail latch is enclosed in a black sleeve, and on 1000Base-LX ports, the bail latch is enclosed in a blue sleeve.

4. Grasp the bail latch and pull the transceiver out of the port.

FIGURE 44 Removing the Fiber-optic Module



5. Store the transceiver in a safe, static-free place or in an anti-static bag.
6. If you are installing a new module or replacing a module, install the new module in the port.

Monitoring the Device

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LED Activity Interpretation

After you install the network cables, you can observe certain LEDs to determine if the network connections are functioning.

There are three possible LED states: off (no light), a steady light, and a flashing light. Flashing lights may be slow, fast, or flickering. The LED colors are either green or amber for all models.

Sometimes, the LEDs flash either of the colors during boot, POST, or other diagnostic tests. This is normal; it does not indicate a problem unless the LEDs do not indicate a healthy state after all boot processes and diagnostic tests are complete.

RUCKUS ICX 8100 LEDs

The RUCKUS ICX8100-C08PF, ICX8100-C08PF-V, ICX8100-C16P, ICX8100-24, ICX8100-24P, ICX8100-24P-V, ICX8100-48, ICX8100-48P, ICX8100-48PF, and ICX8100-48PF-V have the following LEDs:

- One power supply unit (PSU) bicolor status LED (green and amber) labeled PWR.
- Bicolor (green and amber) status LEDs for RJ-45 ports. The LED indication is dependent on the mode set by the **led mode** command. Refer to the *RUCKUS FastIron Command Reference Guide, 10.0.10f* for more information.
 - STAT: Port LEDs indicate link and traffic activity.
 - SPD: Port LEDs indicate the link speed.
 - PoE: Port LEDs indicate the Power-over-Ethernet mode status. PoE is supported only on the ICX8100-C08P, ICX8100-C08PF-V, ICX8100-C16P, ICX8100-24P, ICX8100-24P-V, ICX8100-48P, ICX8100-48PF, and ICX8100-48PF-V.
 - ID: Port LEDs mode to indicate stack ID mode.

Status Mode CLI command and LEDs

The **led mode** command is used to select the corresponding status indicated by the port status LEDs.

1. STAT: Port LEDs indicate link and traffic activity (the default mode).
2. SPD: Port LEDs indicate the link speed.
3. PoE: Port LEDs indicate if PoE power is enabled and the amount of power allocated.

LED Patterns

Refer to the following table to interpret the LED patterns.

TABLE 7 Power Status LEDs During Normal Operation

System LED	Description	Notes
Power (Green/Amber)	• OFF: System is not powered. • ON, Solid Green: System is operating normally. • Solid Amber: System is receiving power but is not operating properly. • Blinking Amber: Factory reset mode. • Blinking Green: Cloud connected. • Alternating Flashing Green and Amber: Cloud connection in Progress or Cloud configuration in progress.	Dedicated LED regardless of STATUS selection
Default Port Status Mode (Green/Amber)	Port Status mode displays the link status and activities of each port. The port status mode will be the DEFAULT mode. The port status mode LED turns on steady Green. Each port LED displays the following: • Off - no valid link Steady Green - link is up and no traffic • Blinking Green - link is up and traffic/packets are transmitted or received	Selected by CLI command. For example: <pre>device# led mode stat</pre>
Port Speed Status Mode (Green/Amber)	Port Speed status mode displays the speed setting of each downlink port. The port speed mode LED turns on green. Each port LED displays the following: • Off - not connected • Steady green - highest speed for the port • Blinking green - next lower speed of steady green • Steady amber - next lower speed of blinking green	Selected by CLI command. For example: <pre>device# led mode spd</pre>
PoE Status Mode (Green/Amber)	PoE status mode displays the PoE setting of each downlink port. PoE status mode LED turns on green. Each port LED displays the following to indicate PoE is enabled and the amount of power allocated: • Off - Port is not providing PoE power because of one of the following reasons: - PoE is disabled. - There is no device connected to the port. - The device connected to the port is not a PoE device. • Steady Green: PoE is on. Port is providing power. • Blinking Amber: PoE is off due to a fault or not enough PoE power budget set for the port.	Selected by CLI command. For example: <pre>device# led mode poe</pre>

Diagnostic Test and Monitoring

During system diagnostic testing, the system is completely under the control of the diagnostic software. All hardware components are verified, and results are displayed on the console. In cases where a failure is detected, results and corrective actions will be displayed. After the system diagnostic testing is complete, the system exits from the diagnostic mode and reloads the system for normal operation. System diagnostic testing runs at link speeds of 1 Gbps depending on the speed of the link being tested and the type of port. The RUCKUS device is engineered for reliability and requires no routine operational steps or maintenance. You can monitor the device by paying attention to the following information:

- The LEDs showing the status of system components
- A description of the operations that the device performs when you power it on

The following commands can be especially helpful in monitoring the health status of various device components. For details about these commands, refer to the *RUCKUS FastIron Management Configuration Guide*:

- **show chassis**
- **show system**

Performing a Factory Reset

Complete the following steps to perform a factory reset using the reset button.

1. Remove power from the switch.
2. Press and hold the reset button while applying power to the switch.
3. Release the reset button as soon as all the system LEDs begin to flash amber.

NOTE

If you do not release the reset button within five seconds of the PWR LED beginning to flash amber, the factory reset will not occur.

When the PWR LED blinks, all the configuration data is erased and the switch is returned to its factory configuration. When the PWR LED is solid green, the erase process is complete and the system reloads. Once reloaded and the PWR LED is steady green, the factory reset is complete.

NOTE

You can also perform the factory reset by using the CLI. For instructions, refer to the **erase system factory-default** command in the *RUCKUS FastIron Command Reference Guide*. Be aware that this command erases the configuration file, the license, and all core dump files. If you want to keep your license, you can run the **erase startup-config** command, then reload ICX switch without saving the configuration file when prompted.

Monitoring Power and Cooling

If the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet, and use the **show chassis** command to verify that the temperature is below the shutdown threshold. If you still cannot isolate the problem, then the internal power supply may be defective. In this case, contact RUCKUS Technical Support for assistance.

Models with Fans

The device contains temperature sensors that the software reads based on a configurable device poll time. The device has two automatic speed fan control settings based on the temperature. To protect the device from overheating, the following temperature threshold levels exist:

- The warning level is the temperature at which the device generates a syslog message.
- The shutdown level is the temperature at which the device reboots. It is set by the device and is not configurable. When the device temperature reaches the shutdown level, it generates a warning message that the device's temperature is over the shutdown level and the device shuts down in two minutes. The system restarts 120 seconds after the device falls back to the temperature shutdown level.

The switch fans have two speeds, low and high. The fan speed settings are set by the device, and are not configurable. During system bootup, the fans run at high speed. After bootup, the fans operate at low speed when the temperature of the switch is below the high limit temperature that is specified in the following table. If the switch reaches the high limit temperature, the fans operate at high speed until the switch reaches the low limit temperature specified in the table, at which time the fans decrease to low speed. If the switch reaches or exceeds the critical (shutdown) temperature for two minutes, the switch shuts down.

NOTE

In addition to the overall temperature of the device, the PoE-supported models monitor the temperature of the Power over Ethernet (PoE) power supply unit (PSU). When the low limit and high limit temperatures are reached, the PoE PSU fans change speed using the same algorithm as the module fans. There is no change to the Critical (shutdown) temperature value for these modules.

TABLE 8 Temperature Thresholds

Switch Model	Low Limit Temperature (°C)	High Limit Temperature (°C)	Critical (Shutdown) Temperature (°C)
ICX8100-C08PF	37	45	64
ICX8100-C08PF-V	37	45	64
ICX8100-C16P	37	45	64
ICX8100-24	37	45	64
ICX8100-24P	40	48	65
ICX8100-24P-V	40	48	65
ICX8100-48	40	48	65
ICX8100-48P	40	48	65
ICX8100-48PF	40	48	65
ICX8100-48PF-V	40	48	65

NOTE

Other RUCKUS platforms contain sensors on chips or are measured inside the chipsets, thereby yielding higher temperature readings than the ambient temperature measured in this switch. Both have comparable end results.

To display the temperature of a device, enter the **show chassis** command at any level of the CLI. The **show chassis** command displays the current temperature, the power supply status, and temperature threshold levels. The displayed temperature reflects the temperature of the board inside the device.

```
device# show chassis
The stack unit 1 chassis info:

Power supply 1 (AC - PoE) present, status ok

Fanless model

Slot 1 Current Temperature: 44.7 deg-C (Sensor 1), 46.2 deg-C (Sensor 2), 45.7 deg-C (Sensor 3), 52.0 deg-C
(Sensor 4), 45.0 deg-C (Sensor 5)
Warning level.....: 77.0 deg-C
Shutdown level.....: 80.0 deg-C
Boot Prom MAC : 5c83.6c3f.d5ea
Management MAC: 5c83.6c3f.d5ea
Stack unit-1: The system was last powercycled on Friday, 2024-11-08 at 17:23:28+0000 (UTC), powercycle
count: 16
```

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System Specifications

System Component	Description
Power inlet	AC power
Power supplies	Integrated power supplies, Non-PoE models use 65 W AC and DC power supplies. PoE models use 370 W AC power supplies.
Fans	Embedded fan assemblies with intake or exhaust airflow
Cooling	Forced-air cooling front-to-back or back-to-front
System architecture	Non-blocking shared-memory switch
System processors	AlleyCat5X packet processor, 1.5 GHz

Ethernet

System Component	Description	Maximum Ports Supported
1 GbE RJ-45 ports	10/100/1000 Mbps RJ-45 port	• 8 (ICX8100-C08PF) • 16 (ICX8100-C16P) • 24 (ICX8100-24) • 24 (ICX8100-24P) • 48 (ICX8100-48) • 48 (ICX8100-48P) • 48 (ICX8100-48PF)

LEDs

PWR LED Color	Description
Off	Device is not receiving power.
Solid amber	Power supply fault detected. Device is not in factory reset mode. Cloud connection or Cloud configuration status can be any.
Flashing amber only	Device is in factory reset mode. Power supply can be good or faulty. Cloud connection or Cloud configuration status can be any.
Solid green	Power supply is good. Device is not connected to the Cloud.
Flashing green only	Power supply is good. Device is connected to the Cloud.
Alternating Flashing green and amber	Power supply is good. Cloud connection or Cloud configuration is in progress.

System Component	Description
Ports	Port LEDs indicate: - Link and traffic activity (the default mode) - Link speed - PoE status (for PoE-capable devices only) - Stack ID mode

Others

System Component	Description
AC power cord	IEC 320-C14

Weight and Physical Dimensions

Model	Height	Width	Depth	Weight (With Basic Modules)
ICX8100-C08PF	4.40 cm	27.00 cm	21.40 cm	2.11 kg
	1.73 inches	10.63 inches	8.42 inches	4.65 lb
ICX8100-C08PF-V	4.40 cm	27.00 cm	21.40 cm	2.11 kg
	1.73 inches	10.63 inches	8.42 inches	4.65 lb
ICX8100-C16P	4.40 cm	27.00 cm	21.40 cm	3.44 kg
	1.73 inches	10.63 inches	8.42 inches	7.58 lb
ICX8100-24	4.40 cm	44.00 cm	28.00 cm	3.6 kg
	1.73 inches	17.32 inches	11.02 inches	7.94 lb

Model	Height	Width	Depth	Weight (With Basic Modules)
ICX8100-24P	4.40 cm	44.00 cm	28.00 cm	4.3 kg
	1.73 inches	17.32 inches	11.02 inches	9.8 lb
ICX8100-24P	4.40 cm	44.00 cm	28.00 cm	4.3 kg
	1.73 inches	17.32 inches	11.02 inches	9.8 lb
ICX8100-48	4.40 cm	44.00 cm	37.00 cm	4.61 kg
	1.73 inches	17.32 inches	14.57 inches	10.16 lb
ICX8100-48P	4.40 cm	44.00 cm	37.00 cm	5.3 kg
	1.73 inches	17.32 inches	14.57 inches	11.68 lb
ICX8100-48PF	4.40 cm	44.00 cm	37.00 cm	5.6 kg
	1.73 inches	17.32 inches	14.57 inches	12.34 lb
ICX8100-48PF-V	4.40 cm	44.00 cm	37.00 cm	5.6 kg
	1.73 inches	17.32 inches	14.57 inches	12.34 lb

Environmental Requirements

Condition	Operational	Non-operational
Ambient temperature	0°C to 45°C (32°F to 113°F) at sea level	-40°C to 70°C (-40°F to 158°F)
Relative humidity (non-condensing)	10% to 90% at 50°C (122°F)	5% to 95% at 70°C (158°F)
Altitude (above sea level)	0 to 3,048 m (10,000 feet)	0 to 12,000 m (39,370 feet)
Shock	20 G, 11 ms, half-sine wave	33 G, 11 ms, half-sine wave
Vibration	1 G sine, 0.4 G _{rms} random, 5-500 Hz	2.4 G sine, 1.1 G _{rms} random, 5-500 Hz
Airflow	Nominal: 10-14 cubic feet per minute (CFM), Maximum: 56-84 CFM	N/A
Heat Dissipation (+/- 5%)	Refer to the Power Consumption Specification sections	N/A
Operating noise	ICX8100-24P: 23.2 dBA ICX8100-48P: 24.5 dBA ICX8100-48PF: 39 dBA	N/A

Power Supply Specifications (per PSU)

All the AC PSUs use a C14 inlet and connect to standard AC power.

Power Consumption (Typical Configuration) Alternating-Current (AC)

All downlink ports and uplink ports are linked up with 10% traffic rate. No PoE load on PoE models. Fans are at nominal speed.

RUCKUS ICX 8100 Specifications

Power Consumption (Maximum Configuration) Alternating-Current (AC)

Part Number (Input Power +/-5%)	@100 VAC Input	@200 VAC Input	Minimum Number of Power Supplies
ICX8100-C08PF	18.1 W 61.78 BTU/hr	18 W 61.44 BTU/hr	1PSU
ICX8100-C08PF	18.1 W 61.78 BTU/hr	18 W 61.44 BTU/hr	1PSU
ICX8100-C16P	24 W 83 BTU/hr	24 W 82.5 BTU/hr	1PSU
ICX8100-24	31.1 W 106.15 BTU/hr	31.4 W 107.17 BTU/hr	1PSU
ICX8100-24P	37 W 126.28 BTU/hr	36.5 W 124.58 BTU/hr	1PSU
ICX8100-24P-V	37 W 126.28 BTU/hr	36.5 W 124.58 BTU/hr	1PSU
ICX8100-48	45.40 W 154.95 BTU/hr	47.10 W 160.77 BTU/hr	1PSU
ICX8100-48P	50.00 W 170.65 BTU/hr	49.10 W 167.58 BTU/hr	1PSU
ICX8100-48PF	21 W 145 BTU/hr	20 W 138 BTU/hr	1PSU
ICX8100-48PF	21 W 145 BTU/hr	20 W 138 BTU/hr	1PSU

Power Consumption (Maximum Configuration) Alternating-Current (AC)

All downlink ports, stacking ports, and uplink ports are linked up with 100% traffic rate. 100% PoE load on PoE models. Fans are at high speed.

Part Number (Input Power +/-5%)	@100 VAC Input	@200 VAC Input	Minimum Number of Power Supplies
ICX8100-C08PF	154.2 W 526.3 BTU/hr	150.6 W 514.01 BTU/hr	1PSU
ICX8100-C08PF-V	154.2 W 526.3 BTU/hr	150.6 W 514.01 BTU/hr	1PSU
ICX 8100-C16P	157 W 543.3 BTU/hr	157 W 534 BTU/hr	1PSU
ICX8100-24	38.7 W 132.09 BTU/hr	38.7 W 132.09 BTU/hr	1PSU
ICX8100-24P	459 W 1566.6 BTU/hr	445 W 1518.82 BTU/hr	2PSUs
ICX8100-24P-V	459 W 1566.6 BTU/hr	445 W 1518.82 BTU/hr	2PSUs
ICX8100-48	53.1 W 181.23 BTU/hr	54.1 W 184.48 BTU/hr	1PSU
ICX8100-48P	465 W 1587.08 BTU/hr	451 W 1539.3 BTU/hr	2PSUs
ICX8100-48PF	898 W 3065 BTU/hr	848 W 2895 BTU/hr	1PSU
ICX8100-48PF-V	898 W 3065 BTU/hr	848 W 2895 BTU/hr	1PSU

Data Port Specifications (Ethernet)

Part Number	Port Type	Number of Ports (in Module)	Description
ICX8100-C08PF	1 GbE	2	SFP ports, 1 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	8	10/100 Mbps/1 GbE RJ-45 ports
ICX8100-C16P	1 GbE	2	SFP ports, 1 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	16	10/100 Mbps/1 GbE RJ-45 ports
ICX8100-24	1 GbE	4	SFP ports, 1 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	24	10/100 Mbps/1 GbE RJ-45 ports

Part Number	Port Type	Number of Ports (in Module)	Description
ICX8100-24P	1 GbE	4	SFP ports, 1 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	24	10/100 Mbps/1 GbE RJ-45 ports with up to 30 W per port PoE support
ICX8100-48	1 GbE	4	SFP ports, 1 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	48	10/100 Mbps/1 GbE RJ-45 ports
ICX8100-48P	1 GbE	4	SFP ports, 1 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	48	10/100 Mbps/1 GbE RJ-45 ports with up to 30 W per port PoE support
ICX8100-48PF	10 GbE	4	SFP ports, 1 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	48	10/100 Mbps/1 GbE RJ-45 ports with up to 30 W per port PoE support

Serial Port Specifications (Pinout USB Type-C)

Pin	Signal	Description
A1	USB-C_GND	Ground
A2	Reserved	Not used
A3	Reserved	Not used
A4	USB_TYPE_C_5V_IN	5 V bus power
A5	USB-C_CC1	Configuration channel
A6	USB-C_AD1+	Data A positive
A7	USB-C_AD1-	Data A negative
A8	Reserved	Not used
A9	USB_TYPE_C_5V_IN	5 V bus power
A10	Reserved	Not used
A11	Reserved	Not used
A12	USB-C_GND	Ground
B1	USB-C_GND	Ground
B2	Reserved	Not used
B3	Reserved	Not used
B4	USB_TYPE_C_5V_IN	5 V bus power
B5	Reserved	Not used
B6	USB-C_BD2+	Data B positive
B7	USB-C_BD2-	Data B negative
B8	Reserved	Not used
B9	USB_TYPE_C_5V_IN	5 V bus power
B10	Reserved	Not used
B11	Reserved	Not used
B12	USB-C_GND	Ground

Serial Port Specifications (Protocol)

Parameter	Value
Baud	9600 bps
Data bits	8
Parity	None
Stop bits	1
Flow control	None

Memory Specifications

Memory	Type	Size
Main memory	DDR4	2 GB
Boot flash	SPI flash (dual boot)	8MB x 2
eMMC flash	NAND flash	8 GB

Regulatory Compliance (EMC)

- FCC Title 47 CFR, Part 15, Subpart B, 2012 (for frequency above 1G) Class A
- ICES-003: 2016 Issue 7 (Canada) Class A
- VCCI-CISPR 32: 2016 (Japan) Class A
- AS/NZS CISPR 32(Australia/New Zealand) Class A
- EN 55032: 2015 + A11:2015:2020 Classs A
- EN 55024: 2010 + A1:2015
- EN 55035: 2017+AAA: 2020
- EN 300 386 (V2.1.1)
- BSMI CNS 15936:105 (2016)

Regulatory Compliance (Safety)

- IEC 60950-1 (2nd Edition) Am 1:2009 +Am 2 2013
- EN 60825-1:2007 2014 (2017-6-19 replace 2007 version)
- EN 60825-1:2014
- EN 60825-2:2004+A1 A2
- BSMI CNS 15998-1:109 (2020)
- UL 62368-1:19
- CAN/CSA C22.2 No. 62368-1-19
- IEC 62368-1:2014
- EN 62368-1:2014+A11:2017

- EN 62368-1:2018
- EN IEC 62368-1:2020+A11:2020

Regulatory Compliance (Environmental)

- 2014/35/EU and 2014/30/EU
- 2011/65/EU - Restriction of the use of certain hazardous substance in electrical and electronic equipment (EU RoHS)
- 2012/19/EU - Waste electrical and electronic equipment (EU WEEE)
- 94/62/EC - Packaging and packaging waste (EU)
- 2006/66/EC - Batteries and accumulators and waste batteries and accumulators (EU battery directive)
- 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (EU REACH)
- Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 - U.S. Conflict Minerals
- 30/2011/TT-BCT - Vietnam circular
- SJ/T 11363-2006 Requirements for Concentration Limits for Certain Hazardous Substances in EIPs (China)
- SJ/T 11364-2006 Marking for the Control of Pollution Caused by EIPs (China)
- CNS 15663 (BSMI) (Taiwan)

Regulatory Statements

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FCC Warning (US Only)

This equipment has been tested and complies with the limits for a Class A computing 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, it might 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 the user's own expense.

Canadian Requirements

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations, ICES-003 Class A.

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

Europe and Australia (CISPR 32 Class A Warning)

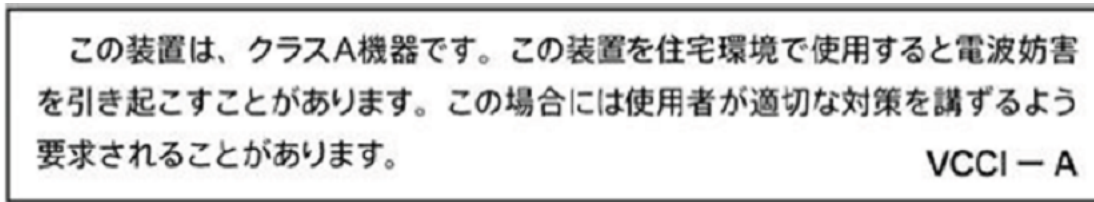
This is a Class A product. In a domestic environment, this product may cause radio interference. In such cases, the user may be required to take adequate measures.

Germany

Machine noise information regulation - 3. GPSGV, the highest sound pressure level value is 53.0 dB(A) in accordance with EN ISO 7779.

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 53.0 dB(A) gemäß EN ISO 7779.

Japan (VCCI)



This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance might arise. When such trouble occurs, the user might be required to take corrective actions.

KCC Statement (Republic of Korea)

A급 기기 (업무용 방송통신기기): 이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

Class A device (Broadcasting Communication Device for Office Use): This device obtained EMC registration for office use (Class A), and may be used in places other than home. Sellers and/or users should take note of this.



安全 说明 和标 记	汉文	“仅适用于非热带气候条件下安全使用。”
	藏文	(འགྲོ་བུ་རྒྱལ་ སྤངས་ རྒྱུ་གནད་མ་གཞི་ས་ཅིན་པའི་ས་ཁུལ་ཁོ་ན་ནིན་ཟེ་བེད་སྤྱོད་བྱས་འཇུག།)
	蒙古文	“ <u>“ဆံပေါ်းလွယ်ခြေရာဒ်မုရိန်အိုင်ပေါ်းလွယ်ခိုက်ဒ်ဒဲဒ်ဝေ့နွဲ့ငှာသွင်းရမ်းၥ”</u>
	壮文	Dan hab yungh youq gij dienheiq diuzgen mbouj dwg diegndat haenx ancienz sawjyung.
	维文	غەيرى ئىسسىق بەلباغ ھازا كېلىماتى شارانئىدىنلا بىخەتەر ئىشلەتكىلى بولىدۇ

[illegible]

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，可能需要用户对干扰采取切实可行的措施。

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.

China ROHS

RUCKUS ICX 8100 Switch Hardware Installation Guide
Part Number: 53-1005839-05

BSMI statement (Taiwan)

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

English translation of above statement

Warning: To avoid electromagnetic interference, this product should not be installed or used in a residential environment.

設備名稱/Equipment Name: 網路交換機			型號(型式)/Type Designation (Type): ICX 8100			
	限用物質及其化學符號 Restricted Substances and Its Chemical Symbols					
單元/Unit	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr+6)	多溴聯苯 Polybrominate d biphenyls (PBB)	多溴二苯醚 Polybrominated diphenylethers (PBDE)
外殼/ Case	○	○	○	○	○	○
塑膠機構件/ Plastic parts	○	○	○	○	○	○
金屬機構件/ Metal parts	○	○	○	○	○	○
印刷電路板及組件/ PCBA	-	○	○	○	○	○
線材/ Wire	○	○	○	○	○	○
電源供應器/OPEN FRAME	-	○	○	○	○	○
備考1. "○" 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 1 : "○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.						
備考2. "-" 係指該項限用物質為排除項目。						
Note 2 : The "-" indicates that the restricted substance corresponds to the exemption.						

型號(型式) : ICX 8100-24, ICX 8100-24P, ICX 8100-C08PF, ICX 8100-48, ICX 8100-48P, ICX 8100-48PF
風扇不適用於 ICX 8100-C08PF, ICX 8100-C16P

台灣康普通信系統有限公司
臺北市內湖區瑞光路411號11樓

CE statement

ATTENTION

This is a Class A product. In a domestic environment, this product might cause radio interference, and the user might be required to take corrective measures.

The standards compliance label on this device contains the CE mark which indicates that this system conforms to the provisions of the following European Council directives, laws, and standards:

- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Low Voltage Directive (LVD) 2014/35/EU
- EN 55032/EN 55035 (European Immunity Requirements)
 - EN61000-3-2/IEIDA (European and Japanese Harmonics Spec)
 - EN61000-3-3

Cautions and Danger Notices

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Cautions

- A caution calls your attention to a possible hazard that can damage equipment.
- "Vorsicht" weist auf die Gefahr einer möglichen Beschädigung des Gerätes hin.
- Une mise en garde attire votre attention sur un risque possible d'endommagement de l'équipement.
- Un mensaje de precaución le advierte sobre un posible peligro que pueda dañar el equipo.

General Cautions



CAUTION

Make sure the airflow around the front, sides, and back of the device is not restricted.

VORSICHT	Stellen Sie sicher, dass an der Vorderseite, den Seiten und an der Rückseite der Luftstrom nicht behindert wird.
MISE EN GARDE	Vérifiez que rien ne restreint la circulation d'air devant, derrière et sur les côtés du dispositif et qu'elle peut se faire librement.
PRECAUCIÓN	Asegúrese de que el flujo de aire en las inmediaciones de las partes anterior, laterales y posterior del instrumento no esté restringido.



CAUTION

Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the manufacturer's instructions.

VORSICHT	Es besteht Explosionsgefahr, wenn ein unzulässiger Batterietyp eingesetzt wird. Verbrauchte Batterien sind entsprechend den geltenden Vorschriften zu entsorgen.
MISE EN GARDE	Risque d'explosion en cas de remplacement de la pile par un modèle incorrect. Débarrassezvous des piles usagées conformément aux instructions.
PRECAUCIÓN	Riesgo de explosión si se sustituye la batería por una de tipo incorrecto. Deshágase de las baterías usadas de acuerdo con las instrucciones.



CAUTION

To prevent damage to the chassis and components, never attempt to lift the chassis using the fan or power supply handles or port cover tabs. These handles were not designed to support the weight of the chassis.

VORSICHT	Alle Geräte mit Wechselstromquellen sind nur zur Installation in Sperrbereichen bestimmt. Ein Sperrbereich ist ein Ort, zu dem nur Wartungspersonal mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer anderen Schutzvorrichtung Zugang hat.
MISE EN GARDE	Pour éviter d'endommager le châssis et les composants, ne jamais tenter de soulever le châssis par les poignées du ventilateur ou de l'alimentation. Ces poignées n'ont pas été conçues pour supporter le poids du châssis.
PRECAUCIÓN	Para prevenir daños al chasis y a los componentes, nunca intente levantar el chasis usando las asas de la fuente de alimentación o del ventilador. Tales asas no han sido diseñadas para soportar el peso del chasis.

Cautions and Danger Notices

Cautions



CAUTION

Do not install the device in an environment where the operating ambient temperature might exceed 45°C (113°F).

VORSICHT	Das Gerät darf nicht in einer Umgebung mit einer Umgebungsbetriebstemperatur von über 45°C (113°F) installiert werden.
MISE EN GARDE	N'installez pas le dispositif dans un environnement où la température d'exploitation ambiante risque de dépasser 45°C (113°F).
PRECAUCIÓN	No instale el instrumento en un entorno en el que la temperatura ambiente de operación pueda exceder los 45°C (113°F).



CAUTION

Ensure that the airflow direction of the power supply unit matches that of the installed fan tray. The power supplies and fan trays are clearly labeled with either a green arrow with an "E", or an orange arrow with an "I".

VORSICHT	Vergewissern Sie sich, dass die Luftstromrichtung des Netzteils der eingebauten Lüftereinheit entspricht. Die Netzteile und Lüftereinheiten sind eindeutig mit einem grünen Pfeil und dem Buchstaben "E" oder einem orangefarbenen Pfeil mit dem Buchstaben "I" gekennzeichnet.
MISE EN GARDE	Veillez à ce que le sens de circulation de l'air du bloc d'alimentation corresponde à celui du tiroir de ventilation installé. Les blocs d'alimentation et les tiroirs de ventilation sont étiquetés d'une flèche verte avec un "E" ou d'une flèche orange avec un "I".
PRECAUCIÓN	Asegúrese de que la dirección del flujo de aire de la unidad de alimentación se corresponda con la de la bandeja del ventilador instalada. Los dispositivos de alimentación y las bandejas del ventilador están etiquetadas claramente con una flecha verde y una "E" o con una flecha naranja y una "I".



CAUTION

If you observe that the switch has powered down approximately two minutes after a power supply replacement, it is likely because the new power supply has a mismatched airflow. Check your console for error messages.

VORSICHT	Falls Sie feststellen, dass der Switch ca. 2 Minuten nach Austausch des Netzteils heruntergefahren wird, ist die mögliche Ursache, dass das neue Netzteil für einen Luftstrom in der falschen Richtung ausgelegt ist. Prüfen Sie auf der Konsole, ob Fehlermeldungen vorliegen.
MISE EN GARDE	Si vous remarquez que le commutateur s'éteint deux minutes après le remplacement d'un bloc d'alimentation, il est probable que le nouveau bloc d'alimentation ait un flux d'air différent de l'ancien. Vérifiez que la console n'affiche aucun message d'erreur.
PRECAUCIÓN	Si observa que el conmutador se ha apagado aproximadamente dos minutos después del cambio de la fuente de alimentación, es posible que se deba a que la nueva fuente de alimentación tenga un flujo de aire incompatible. Revise la consola para ver si hay mensajes de error.



CAUTION

This document describes how to change field-replaceable units (FRUs) for units with either a port-side air exhaust or a port-side air intake. You must replace a failed FRU with a FRU of the same type. This applies to both power supplies and fan assemblies. A new FRU must have the same part number (P/N) as the FRU being replaced. The manufacturing P/N is located on the top of the FRU. The P/N ends in either -F (front-to-rear airflow) or -R (rear-to-front airflow). You must use a replacement FRU that has the same airflow designator with the part number.

VORSICHT	Das vorliegende Dokument erläutert, wie Austauschkomponenten (FRUs) in Geräten ersetzt werden, bei denen entweder der Luftauslass oder der Lufteinlass auf der Portseite liegt. Ausgefallene FRUs müssen stets durch FRUs desselben Typs ersetzt werden. Dies gilt sowohl für Netzteile als auch für Lüftereinheiten. Neue FRUs müssen stets dieselbe Teilenummer wie die ersetzten FRUs aufweisen. Die Hersteller-Teilenummer befindet sich auf der Oberseite der FRU. Die Teilenummer endet entweder auf „-F“ (Luftstrom von der Vorderseite des Geräts zur Rückseite) oder auf „-R“ (Luftstrom von der Rückseite des Geräts zur Vorderseite). Austauschteile müssen stets Teilenummern mit demselben Kennbuchstaben für den Luftstrom wie das auszutauschende Teil aufweisen.
MISE EN GARDE	Ce document décrit comment changer les pièces détachées des unités qui comportent un refroidissement par une entrée ou une sortie d'air côté port. Vous devez remplacer une pièce détachée défectueuse par une autre du même type. Cela s'applique aux blocs d'alimentation et aux ventilateurs. La pièce détachée doit avoir la même référence que l'ancienne. La référence du fabricant se trouve sur le dessus de la pièce détachée. La référence se termine par -F (flux d'air de l'avant vers l'arrière) ou par -R (flux d'air de l'arrière vers l'avant). Vous devez utiliser une pièce détachée dont l'indicatif de flux d'air est le même.

PRECAUCIÓN	Este documento describe cómo cambiar las unidades reemplazables sobre el terreno (FRU, por sus siglas en inglés) por unidades con salida o entrada de aire por el lado de los puertos. La unidad FRU averiada debe cambiarse por otra del mismo tipo. Esto aplica a las fuentes de alimentación y a los módulos de ventilación. La nueva unidad FRU debe tener el mismo número de parte (P/N) que la unidad FRU que se va a sustituir. El P/N de fabricación se encuentra en la parte superior de la unidad FRU. El P/N termina en -F (flujo de aire de adelante hacia atrás) o -R (de atrás hacia adelante). Debe utilizar una unidad FRU de repuesto que tenga la misma designación de flujo de aire que el número de parte reemplazado.
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CAUTION

Disassembling any part of the power supply and fan assembly voids the warranty and regulatory certifications. There are no user-serviceable parts inside the power supply and fan assembly.

VORSICHT	Das Zerlegen von Netzteilen oder Lüftereinheiten macht die Garantie und die gesetzlichen Zertifizierungen ungültig. Die Netzteile und Lüftereinheiten enthalten keine Teile, die vom Benutzer gewartet werden können.
MISE EN GARDE	Le démontage d'une pièce du bloc d'alimentation ou du ventilateur annule la garantie et les certificats de conformité. Aucune pièce du bloc de l'alimentation ou du ventilateur ne peut être réparée par l'utilisateur.
PRECAUCIÓN	Si se desmonta cualquier pieza del módulo de fuente de alimentación y ventiladores, la garantía y las certificaciones normativas quedan anuladas. En el interior del módulo de fuente de alimentación y ventiladores no hay piezas que pueda reparar el usuario.



CAUTION

Never leave tools inside the chassis.

VORSICHT	Lassen Sie keine Werkzeuge im Chassis zurück.
MISE EN GARDE	Ne laissez jamais d'outils à l'intérieur du châssis
PRECAUCIÓN	No deje nunca herramientas en el interior del chasis.



CAUTION

If you do not install a module or a power supply in a slot, you must keep the slot filler panel in place. If you run the chassis with an uncovered slot, the system will overheat.

VORSICHT	Falls kein Modul oder Netzteil im Steckplatz installiert wird, muss die Steckplatzttafel angebracht werden. Wenn ein Steckplatz nicht abgedeckt wird, läuft das System heiß.
MISE EN GARDE	Si vous n'installez pas de module ou de bloc d'alimentation dans un slot, vous devez laisser le panneau du slot en place. Si vous faites fonctionner le châssis avec un slot découvert, le système surchauffera.
PRECAUCIÓN	Si no instala un módulo o un fuente de alimentación en la ranura, deberá mantener el panel de ranuras en su lugar. Si pone en funcionamiento el chasis con una ranura descubierta, el sistema sufrirá sobrecalentamiento.



CAUTION

Changes or modifications made to this device that are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

VORSICHT	Falls dieses Gerät verändert oder modifiziert wird, ohne die ausdrückliche Genehmigung der für die Einhaltung der Anforderungen verantwortlichen Partei einzuholen, kann dem Benutzer der weitere Betrieb des Gerätes untersagt werden.
MISE EN GARDE	Les éventuelles modifications apportées à cet équipement sans avoir été expressément approuvées par la partie responsable d'en évaluer la conformité sont susceptibles d'annuler le droit de l'utilisateur à utiliser cet équipement.
PRECAUCIÓN	Si se realizan cambios o modificaciones en este dispositivo sin la autorización expresa de la parte responsable del cumplimiento de las normas, la licencia del usuario para operar este equipo puede quedar anulada.



CAUTION

Because the cooling system relies on pressurized air, do not leave any of the power supply and fan assembly slots empty longer than two minutes while the switch is operating. If a power supply or fan assembly fails, leave it in the switch until it can be replaced.

VORSICHT	Das Kühlsystem beruht auf Überdruck. Lassen Sie die Einschübe für Netzteile und Lüfter daher nicht länger als zwei Minuten unbelegt, während der Switch in Betrieb ist. Falls ein Netzteil oder ein Lüfter ausfällt, belassen Sie die Komponente im Switch, bis sie ausgetauscht werden kann.
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Cautions and Danger Notices

Cautions

MISE EN GARDE	Comme le système de refroidissement repose sur l'air pressurisé, ne laissez aucun logement du bloc d'alimentation ou du ventilateur vide plus de deux minutes, lorsque le commutateur est utilisé. Si un bloc d'alimentation ou un ventilateur est défectueux, laissez-le dans le commutateur jusqu'à ce qu'il puisse être remplacé.
PRECAUCIÓN	Como el sistema de refrigeración depende del aire presurizado, no deje ninguna de las ranuras de los módulos de fuente de alimentación y ventiladores vacías durante más de dos minutos mientras el conmutador esté funcionando. Si se produce una avería en el módulo de fuente de alimentación y ventiladores deje el dispositivo en cuestión en el conmutador hasta que lo pueda cambiar.



CAUTION

Use the screws specified in the procedure. Using longer screws can damage the device.

VORSICHT	Verwenden Sie die in der Anleitung aufgeführten Schrauben. Mit längeren Schrauben wird das Gerät möglicherweise beschädigt.
MISE EN GARDE	Utilisez les vis mentionnées dans les instructions. L'utilisation de vis plus longues peut endommager l'appareil.
PRECAUCIÓN	Utilice los tornillos especificados en el procedimiento. Si utiliza tornillos de mayor longitud, podría dañar el dispositivo.



CAUTION

Be sure not to exceed the minimum recommended bend radius for the cables: 2 inches for MRJ-21 cables, and 1.5 inches for Category 5 (RJ-45) and fiber-optic cables.

VORSICHT	Der empfohlene Mindestbiegeradius für die Kabel darf nicht überschritten werden: 2 Zoll (5,08 cm) bei MRJ-21-Kabeln und 1,5 Zoll (3,81 cm) bei Kabeln der Kategorie 5 (RJ-45) und Glasfaserkabeln.
MISE EN GARDE	Respecter le rayon de courbure minimal recommandé pour les câbles (5,08 cm pour les câbles MRJ-21 et 3,81 cm pour les câbles Ethernet de catégorie 5 (RJ-45) et les fibres optiques).
PRECAUCIÓN	Asegúrese de no exceder el radio de curvatura recomendado para los cables: 2" para los cables MRJ-21 y 1,5" para cables de Categoría 5 (RJ-45) y de fibra óptica.



CAUTION

To protect the serial port from damage, keep the cover on the port when not in use.

VORSICHT	Um den seriellen Anschluss vor Beschädigungen zu schützen, sollten Sie die Abdeckung am Anschluss belassen, wenn er nicht verwendet wird.
MISE EN GARDE	Mettre le bouchon de protection sur le port série lorsqu'il ne sert pas pour éviter de l'endommager.
PRECAUCIÓN	Para evitar que se dañe el puerto serie, mantenga la cubierta colocada sobre el puerto cuando no lo utilice.



CAUTION

The 1-GbE Management Port is suitable for connection to intrabuilding or unexposed wiring or cabling only. The 1-GbE Management Port **MUST NOT** be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 6) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

VORSICHT	Der 1-GbE-Management-Port eignet sich nur für den Anschluss an eine gebäudeinterne oder geschützte Verkabelung. Der 1GbE-Management-Port DARF NICHT metallisch mit Schnittstellen verbunden werden, die an die Netzinfrastruktur bzw. dessen Verkabelung angeschlossen sind. Diese Schnittstellen sind nur als gebäudeinterne Schnittstellen gedacht (Typ 2- oder Typ 4-Anschlüsse wie in GR-1089-CORE, Ausgabe 6 beschrieben) und müssen von der OSP-Verkabelung (OSP = outside plant) isoliert sein. Ein zusätzlicher Primärschutz ist kein ausreichender Schutz bei der metallischen Verbindung dieser Schnittstellen mit der OSP-Verdrahtung.
MISE EN GARDE	Le port de gestion 1GbE est conçu uniquement pour le câblage intra-bâtiment ou isolé. Le port de gestion 1GbE NE DOIT PAS avoir de connexion métallique à des interfaces qui sont connectées au réseau extérieur ou à son câblage. Ces interfaces sont conçues pour être utilisées uniquement comme des interfaces intra-bâtiment (de type 2 ou 4, comme décrit dans le GR-1089-CORE, 6e édition) et doivent être isolées du câblage à découvert du réseau extérieur. L'ajout d'une protection primaire n'est pas suffisant pour réaliser une connexion métallique entre ces interfaces et le câblage du réseau extérieur.

PRECAUCIÓN	El Puerto de administración 1GbE solo es apropiado para la conexión de cableado en interior de edificios o a cableado no expuesto. El Puerto de administración 1GbE NO DEBE SER conectado de forma metálica a interfaces que se conecten al OSP o a su cableado. Estas interfaces están diseñadas para uso como interfaces solo en interior de edificios (puertos de Tipo 2 o Tipo 4, como se describe en GR-1089-CORE, Número 6) y requieren aislamiento del cableado OSP expuesto. Añadir Protectores principales no es protección suficiente para conectar estas interfaces de forma metálica a cableado OSP.
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Electrical Cautions



CAUTION

Before plugging a cable into any port, be sure to discharge any static charge stored on the cable by touching the electrical contacts to a ground surface.

VORSICHT	Bevor Sie ein Kabel in einen Anschluss einstecken, entladen Sie jegliche im Kabel vorhandene elektrische Spannung, indem Sie mit den elektrischen Kontakten eine geerdete Oberfläche berühren.
MISE EN GARDE	Avant de brancher un câble à un port, assurez-vous de décharger la tension du câble en reliant les contacts électriques à la terre.
PRECAUCIÓN	Antes de conectar un cable en cualquier puerto, asegúrese de descargar la tensión acumulada en el cable tocando la superficie de conexión a tierra con los contactos eléctricos.



CAUTION

To avoid high voltage shock, do not open the device while the power is on.

VORSICHT	Das eingeschaltete Gerät darf nicht geöffnet werden, da andernfalls das Risiko eines Stromschlags mit Hochspannung besteht.
MISE EN GARDE	Afin d'éviter tout choc électrique, n'ouvrez pas l'appareil lorsqu'il est sous tension.
PRECAUCIÓN	Para evitar una descarga de alto voltaje, no abra el dispositivo mientras esté encendido.



CAUTION

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

VORSICHT	Statische Elektrizität kann das System und andere elektronische Geräte beschädigen. Um Schäden zu vermeiden, entnehmen Sie elektrostatisch empfindliche Geräte erst aus deren antistatischer Schutzhülle, wenn Sie bereit für den Einbau sind.
MISE EN GARDE	L'électricité statique peut endommager le châssis et les autres appareils électroniques. Pour éviter tout dommage, conservez les appareils sensibles à l'électricité statique dans leur emballage protecteur tant qu'ils n'ont pas été installés.
PRECAUCIÓN	La electricidad estática puede dañar el chasis y otros dispositivos electrónicos. A fin de impedir que se produzcan daños, conserve los dispositivos susceptibles de dañarse con la electricidad estática dentro de los paquetes protectores hasta que esté listo para instalarlos.



CAUTION

All devices with DC power supplies are intended for installation in restricted access areas only. A restricted access area is a location where access can be gained only by trained service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

VORSICHT	Alle Geräte mit DC-Netzteil sind nur für die Installation in Bereichen mit beschränktem Zugang gedacht. Ein Bereich mit beschränktem Zugang ist ein Ort, zu dem nur ausgebildetes Wartungspersonal mit Spezialwerkzeug, Schloss und Schlüssel oder anderen Sicherheitsvorrichtungen Zugang hat. Dieser Zugang wird von für den Bereich zuständigen Personen überwacht.
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Cautions and Danger Notices

Cautions

MISE EN GARDE	Tous les équipements dotés de sources d'alimentation C.C. sont destinés à être installés uniquement dans des zones à accès réglementé. Une zone à accès réglementé est une zone dont l'accès n'est possible qu'au personnel de service qualifié utilisant un verrou, une clé ou un outil spécial, ou d'autres moyens de sécurité, et qui est contrôlée par les autorités responsables du site.
PRECAUCIÓN	Todos los dispositivos con fuentes de alimentación de corriente continua (CC) han sido diseñados únicamente para su instalación en áreas restringidas/ zonas de acceso restringido. Se entiende como área de acceso restringido un lugar al que solo puede acceder personal de servicio mediante el uso de una herramienta especial, llave y cerrojo u otro medio de seguridad similar, y que esté controlado por la autoridad responsable de esa ubicación.



CAUTION

All devices with AC power sources are intended for installation in restricted access areas only. A restricted access area is a location where access can be gained only by trained service personnel through the use of a special tool, lock and key, or other means of security.

VORSICHT	Alle Geräte mit Wechselstromquellen sind nur zur Installation in Sperrbereichen bestimmt. Ein Sperrbereich ist ein Ort, zu dem nur ausgebildetes Wartungspersonal mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer anderen Schutzvorrichtung Zugang hat.
MISE EN GARDE	Tous les équipements dotés de sources d'alimentation C.A. sont destinés à être installés uniquement dans des zones à accès réglementé. Une zone à accès réglementé est une zone dont l'accès n'est possible qu'au personnel de service qualifié utilisant un verrou, une clé ou un outil spécial, ou d'autres moyens de sécurité.
PRECAUCIÓN	Todos los dispositivos con fuentes de alimentación de corriente alterna (AC), están diseñados únicamente para su instalación en zonas de acceso restringido. Se entiende como área de acceso restringido un lugar al que solo puede acceder personal de servicio mediante el uso de una herramienta especial, llave y cerrojo u otro medio de seguridad similar, y que esté controlado por la autoridad responsable de esa ubicación.



CAUTION

Use a separate branch circuit for each power cord, which provides redundancy in case one of the circuits fails.

VORSICHT	Es empfiehlt sich die Installation eines separaten Stromkreisweiges für jede Elektroschnur als Redundanz im Fall des Ausfalls eines Stromkreises.
MISE EN GARDE	Utilisez un circuit de dérivation différent pour chaque cordon d'alimentation ainsi, il y aura un circuit redondant en cas de panne d'un des circuits.
PRECAUCIÓN	Use un circuito derivado separado para cada cordón de alimentación, con lo que se proporcionará redundancia en caso de que uno de los circuitos falle.



CAUTION

Ensure that the device does not overload the power circuits, wiring, and over-current protection. To determine the possibility of overloading the supply circuits, add the ampere (amp) ratings of all devices installed on the same circuit as the device. Compare this total with the rating limit for the circuit. The maximum ampere ratings are usually printed on the devices near the input power connectors.

VORSICHT	Stromkreise, Verdrahtung und Überlastschutz dürfen nicht durch das Gerät überbelastet werden. Addieren Sie die Nennstromleistung (in Ampere) aller Geräte, die am selben Stromkreis wie das Gerät installiert sind. Somit können Sie feststellen, ob die Gefahr einer Überbelastung der Versorgungsstromkreise vorliegt. Vergleichen Sie diese Summe mit der Nennstromgrenze des Stromkreises. Die Höchstnennströme (in Ampere) stehen normalerweise auf der Geräterückseite neben den Eingangsstromanschlüssen.
MISE EN GARDE	Assurez-vous que le dispositif ne risque pas de surcharger les circuits d'alimentation, le câblage et la protection de surintensité. Pour déterminer le risque de surcharge des circuits d'alimentation, additionnez l'intensité nominale (ampères) de tous les dispositifs installés sur le même circuit que le dispositif en question. Comparez alors ce total avec la limite de charge du circuit. L'intensité nominale maximum en ampères est généralement imprimée sur chaque dispositif près des connecteurs d'entrée d'alimentation.
PRECAUCIÓN	Verifique que el instrumento no sobrecargue los circuitos de corriente, el cableado y la protección para sobrecargas. Para determinar la posibilidad de sobrecarga en los circuitos de suministros, añada las capacidades nominales de corriente (amp) de todos los instrumentos instalados en el mismo circuito que el instrumento. Compare esta suma con el límite nominal para el circuito. Las capacidades nominales de corriente máximas están generalmente impresas en los instrumentos, cerca de los conectores de corriente de entrada.

**CAUTION**

Remove the power cord from a power supply before you install it in or remove it from the device. Otherwise, the power supply or the device could be damaged as a result. (The device can be running while a power supply is being installed or removed, but the power supply itself should not be connected to a power source.)

VORSICHT	Nehmen Sie vor dem Anschließen oder Abtrennen des Geräts das Stromkabel vom Netzteil ab. Ansonsten könnten das Netzteil oder das Gerät beschädigt werden. (Das Gerät kann während des Anschließens oder Annehmens des Netzteils laufen. Nur das Netzteil sollte nicht an eine Stromquelle angeschlossen sein.)
MISE EN GARDE	Enlevez le cordon d'alimentation d'un bloc d'alimentation avant de l'installer ou de l'enlever du dispositif. Sinon, le bloc d'alimentation ou le dispositif risque d'être endommagé. (Le dispositif peut être en train de fonctionner lorsque vous installez ou enlevez un bloc d'alimentation, mais le bloc d'alimentation lui-même ne doit pas être connecté à une source d'alimentation.)
PRECAUCIÓN	Retire el cordón de corriente del suministro de corriente antes de instalarlo o retirarlo del instrumento. De no hacerse así, el suministro de corriente o el instrumento podrían resultar dañados. (El instrumento puede estar encendido mientras se instala o retira un suministro de corriente, pero el suministro de corriente en sí no deberá conectado a la corriente).

**CAUTION**

For the DC input circuit to the system, make sure there is a 10 Amp circuit breaker, maximum 60 VDC, double pole, on the input terminal block to the power supply. The input wiring for connection to the product should be copper wire, 18 AWG, marked VW-1, and rated minimum 90°C.

VORSICHT	Für den Eingangs-Gleichstromkreis zum System ist ein 10 A, maximum -60 V DC, doppelpoliger Stromkreisunterbrecher am Eingang zur Reihenklemme zu installieren. Bei der Eingangsverdrahtung zum Anschluss des Produkts sollte es sich um einen 18 AWG-Kupferdraht (VW-1) und einer Mindesttemperatur von 90° C handeln.
MISE EN GARDE	Pour le circuit d'alimentation C.C du système, assurez-vous de la présence d'un disjoncteur de 10 ampères, minimum -60 V C.C., double coupure, sur l'entrée vers le bloc d'alimentation. Les câbles d'alimentation pour le produit doivent être en fils de cuivre, 18 AWG (American Wire Gauge), marqués VW-1 et classés 90 degrés Celsius.
PRECAUCIÓN	Para el circuito de entrada de CC al sistema, verifique que existe un cortacircuitos catalogado de 10 amperios, como mínimo, -60 VCC, bipolar, en la entrada al bloque terminal. El cableado de entrada para la conexión al producto deberá ser de cable de cobre catalogado, 18 AWG, marcado con VW-1, y tener una capacidad nominal mínima para 90 grados centígrados.

Danger Notices

- A danger notification calls your attention to a possible hazard that can cause injury or death.
- "Gefahr" weist auf eine mögliche Gefährdung hin, die zu Verletzungen oder Tod führen können.
- Un danger attire votre attention sur un risque possible de blessure ou de décès.
- Una señal de peligro le llama la atención sobre cualquier posible peligro que pueda ocasionar daños personales o la muerte.

General Dangers

**DANGER**

The procedures in this manual are for qualified service personnel.

GEFAHR	Die Verfahren in diesem Handbuch sind nur für qualifiziertes Wartungspersonal gedacht.
DANGER	Les procédures décrites dans ce manuel doivent être effectuées par le personnel de service qualifié uniquement.
PELIGRO	Los procedimientos de este manual se han hecho para personal de servicio cualificado.

Cautions and Danger Notices

Danger Notices



DANGER

Make sure that the power source circuits are properly grounded, then use the power cord supplied with the device to connect it to the power source.

GEFAHR	Stellen Sie sicher, dass die Stromkreise ordnungsgemäß geerdet sind. Benutzen Sie dann das mit dem Gerät gelieferte Stromkabel, um es an die Stromquelle anzuschließen.
DANGER	Vérifiez que les circuits de sources d'alimentation sont bien mis à la terre, puis utilisez le cordon d'alimentation fourni avec le dispositif pour le connecter à la source d'alimentation.
PELIGRO	Verifique que circuitos de la fuente de corriente están conectados a tierra correctamente; luego use el cordón de potencia suministrado con el instrumento para conectarlo a la fuente de corriente



DANGER

This equipment is suitable for mounting on concrete or other noncombustible surfaces only.

GEFAHR	Dieses Gerät darf nur auf Beton oder auf andere, nicht brennbare Flächen installiert werden.
DANGER	Cet équipement est adapté à être monté sur du béton ou seulement sur d'autres surfaces non combustibles.
PELIGRO	Este equipo es apto para el montaje solamente en superficies de concreto ó en otro tipos de superficies no combustibles.



DANGER

The equipment ports are intrabuilding type and must not be directly connected to metallic outside plant (OSP) cable conductors.

GEFAHR	Die Geräte-Ports sind für den Gebrauch in geschlossenen Gebäuden konzipiert und dürfen nicht direkt an metallische Leiter von Kabeln für den Außeneinsatz angeschlossen werden.
DANGER	Les ports de l'équipement sont de type intra-bâtiment et ils ne doivent pas être directement connectés aux conducteurs de câbles métalliques des installations extérieures (OSP, Outside Plant).
PELIGRO	Los puertos del equipo son para uso interno del edificio y no deben ser conectados directamente a conductores de cables metálicos OSP (Fuera de la planta).

Electrical Dangers



DANGER

Before beginning the installation, see the precautions in "Power Precautions."

GEFAHR	Vor der Installation siehe Vorsichtsmaßnahmen unter "Power Precautions" (Vorsichtsmaßnahmen in Bezug auf elektrische Ablagen).
DANGER	Avant de commencer l'installation, consultez les précautions décrites dans "Power Precautions" (Précautions quant à l'alimentation).
PELIGRO	Antes de comenzar la instalación, consulte las precauciones en la sección "Power Precautions" (Precauciones sobre corriente).



DANGER

Be careful not to accidentally insert your fingers into the fan tray while removing it from the chassis. The fan may still be spinning at a high speed.

GEFAHR	Die Finger dürfen nicht versehentlich in das Ventilatorblech gesteckt werden, wenn dieses vom Gehäuse abgenommen wird. Der Ventilator kann sich unter Umständen noch mit hoher Geschwindigkeit drehen.
DANGER	Faites attention de ne pas insérer vos doigts accidentellement dans le boîtier du ventilateur lorsque vous le retirez du châssis. Il est possible que le ventilateur tourne encore à grande vitesse.
PELIGRO	Procure no insertar los dedos accidentalmente en la bandeja del ventilador cuando esté desmontando el chasis. El ventilador podría estar girando a gran velocidad.



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megohm resistor.

GEFAHR	Aus Sicherheitsgründen sollte ein EGB-Armband zum Schutz von elektronischen gefährdeten Bauelementen mit einem 1 Megaohm-Reihenwiderstand ausgestattet sein.
DANGER	Pour des raisons de sécurité, la dragonne ESD doit contenir une résistance de série 1 méga ohm.
PELIGRO	Por razones de seguridad, la correa de muñeca ESD deberá contener un resistor en serie de 1 mega ohmio.



DANGER

To reduce the risk of electric shock, disconnect all power cords before servicing.

GEFAHR	Trennen Sie stets die Verbindung aller Netzkabel, bevor Sie Wartungsarbeiten durchführen, um die Gefahr eines Stromschlags auszuschließen.
DANGER	Afin de réduire les risques de choc électrique, débranchez tous les cordons d'alimentation avant d'effectuer l'entretien de l'appareil.
PELIGRO	Para reducir el riesgo de descarga eléctrica, desconecte todos los cables de alimentación antes de darle servicio.



DANGER

Disconnect the power cord from all power sources to completely remove power from the device.

GEFAHR	Ziehen Sie das Stromkabel aus allen Stromquellen, um sicherzustellen, dass dem Gerät kein Strom zugeführt wird.
DANGER	Débranchez le cordon d'alimentation de toutes les sources d'alimentation pour couper complètement l'alimentation du dispositif.
PELIGRO	Para desconectar completamente la corriente del instrumento, desconecte el cordón de corriente de todas las fuentes de corriente.



DANGER

Make sure you use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the device.

GEFAHR	Achten Sie darauf, dass Sie ein Netzstromkabel verwenden, das entsprechend Ihrer nationalen Sicherheitsvorschriften gekennzeichnet ist. Durch die Kennzeichnung ist sichergestellt, dass das Netzkabel gefahrlos für das Gerät verwendet werden kann.
DANGER	Assurez-vous d'utiliser un cordon d'alimentation portant la marque de l'organisme responsable des normes de sécurité locales. Cette marque vous assure que vous pouvez utiliser le cordon d'alimentation avec le dispositif en toute sécurité.
PELIGRO	Asegúrese de utilizar un cable de alimentación que muestre la marca de la agencia de seguridad que define las normas para los cables de alimentación en su país. La marca es su garantía de que el cable de alimentación puede utilizarse de forma segura con el dispositivo.



DANGER

Batteries used for RTC/NVRAM backup are not located in operator-access areas. There is a risk of explosion if a battery is replaced by an incorrect type. Dispose of used components with batteries according to local ordinance and regulations.

GEFAHR	Die für die RTC/NVRAM-Sicherung verwendeten Batterien, befinden sich nicht in für den Bediener zugänglichen Bereichen. Bei Ersetzen der Batterie durch einen falschen Typ besteht Explosionsgefahr. Entsorgen Sie gebrauchte Komponenten mit Batterien gemäß den lokalen Auflagen und Vorschriften.
DANGER	Les batteries utilisées pour la sauvegarde de l'horloge et de la mémoire ne sont pas remplaçables par l'opérateur. Il y a risque d'explosion si la batterie est remplacée par une d'un type incompatible. Jetez/recyclez les batteries conformément aux normes locales.
PELIGRO	Las baterías usadas para respaldo de RTC/NVRAM no se encuentran en áreas de acceso del operador. Existe riesgo de explosión si una batería es remplazada por un tipo incorrecto. Deshágase de los componentes usados con las baterías según las políticas y regulaciones locales.



DANGER

To avoid high voltage shock, do not open the device while the power is on.

GEFAHR	Das eingeschaltete Gerät darf nicht geöffnet werden, da andernfalls das Risiko eines Stromschlags mit Hochspannung besteht.
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Cautions and Danger Notices

Danger Notices

DANGER	Afin d'éviter tout choc électrique, n'ouvrez pas l'appareil lorsqu'il est sous tension.
PELIGRO	Para evitar una descarga de alto voltaje, no abra el dispositivo mientras esté encendido.



DANGER

If the installation requires a different power cord than the one supplied with the device, make sure you use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the device.

GEFAHR	Falls für die Installation ein anderes Stromkabel erforderlich ist (wenn das mit dem Gerät gelieferte Kabel nicht passt), müssen Sie sicherstellen, dass Sie ein Stromkabel mit dem Siegel einer Sicherheitsbehörde verwenden, die für die Zertifizierung von Stromkabeln in Ihrem Land zuständig ist. Das Siegel ist Ihre Garantie, dass das Stromkabel sicher mit Ihrem Gerät verwendet werden kann.
DANGER	Si l'installation nécessite un cordon d'alimentation autre que celui fourni avec le dispositif, assurez-vous d'utiliser un cordon d'alimentation portant la marque de l'organisation responsable de la sécurité qui définit les normes et réglementations pour les cordons d'alimentation dans votre pays. Cette marque vous assure que vous pouvez utiliser le cordon d'alimentation avec le dispositif en toute sécurité.
PELIGRO	Si la instalación requiere un cordón de corriente distinto al que se ha suministrado con el instrumento, verifique que usa un cordón de corriente que venga con la marca de la agencia de seguridad que defina las regulaciones para cordones de corriente en su país. Esta marca será su garantía de que el cordón de corriente puede ser utilizado con seguridad con el instrumento.



DANGER

High Touch Current. Earth connection essential before connecting supply.

GEFAHR	Hoher Ableitstrom. Vor Anschluss ans Netz Schutzterdung herstellen.
DANGER	Courant de fuite élevé. Mise à la terre obligatoire avant la connexion de l'alimentation.
PELIGRO	Alta tensión al tacto. La conexión a tierra es esencial antes de conectar la alimentación.



DANGER

Make sure to choose the appropriate circuit device depending on the number of AC power supplies installed in the chassis. The minimum current draw for the system is one AC power supply.

GEFAHR	Je nach Anzahl der Wechselstrom-Netzteile im Gehäuse muss das passende Stromgerät ausgewählt werden. Für die Mindeststromentnahme für das System ist ein Wechselstrom-Netzteil erforderlich.
DANGER	Assurez-vous de choisir le dispositif de circuit approprié selon le nombre de blocs d'alimentation C.A. installés dans le châssis. L'appel de courant minimum pour le système est d'un bloc d'alimentation C.A.
PELIGRO	Verifique que elige el instrumento para circuitos apropiado dependiendo del número de suministros de energía de CC instalados en el chasis. La llamada de corriente mínima para el sistema es de un suministro de energía de CC.



DANGER

Make sure that the power source circuits are properly grounded.

GEFAHR	Achten Sie darauf, dass die Stromquellen-Schaltkreise ordnungsgemäß geerdet sind.
DANGER	Assurez-vous que les circuits de la source d'alimentation soient équipés de mise à la terre.
PELIGRO	Asegúrese que los circuitos de la fuente de energía cuenten con una conexión a tierra apropiada.



DANGER

Power-down your device before you install or replace a power supply or module for safety purposes and to avoid instability due to a delay in power cycling.

GEFAHR	Schalten Sie das Gerät aus Sicherheitsgründen und zum Vermeiden von Instabilitäten aufgrund von Spannungsverzögerungen aus, bevor Sie ein Netzteil oder ein Modul einbauen oder austauschen.
DANGER	Mettez votre appareil hors tension avant d'installer ou de remettre en place une source ou un module d'alimentation pour des raisons de sécurité et pour éviter une instabilité due au délai de redémarrage.

PELIGRO	Apague el dispositivo antes de instalar o sustituir una fuente de alimentación o módulo, por motivos de seguridad y para evitar la inestabilidad debida a un retraso del ciclo de encendido.
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DANGER

Connect the power cord only to a grounded outlet.

GEFAHR	Schließen Sie das Netzkabel nur an eine geerdete Steckdose an.
DANGER	Le cordon d'alimentation ne doit être raccordé qu'à une prise de courant mise à la terre.
PELIGRO	Conecte el cable de alimentación únicamente a una toma de corriente con conexión a tierra.

Dangers Related to Equipment Weight



DANGER

Make sure the rack housing the device is adequately secured to prevent it from becoming unstable or falling over.

GEFAHR	Stellen Sie sicher, dass das Gestell für die Unterbringung des Geräts auf angemessene Weise gesichert ist, so dass das Gestell oder der Schrank nicht wackeln oder umfallen kann.
DANGER	Vérifiez que le bâti abritant le dispositif est bien fixé afin qu'il ne devienne pas instable ou qu'il ne risque pas de tomber.
PELIGRO	Verifique que el bastidor que alberga el instrumento está asegurado correctamente para evitar que pueda hacerse inestable o que caiga.



DANGER

Mount the devices you install in a rack as low as possible. Place the heaviest device at the bottom and progressively place lighter devices above.

GEFAHR	Montieren Sie die Geräte im Gestell so tief wie möglich. Platzieren Sie das schwerste Gerät ganz unten, während leichtere Geräte je nach Gewicht (je schwerer desto tiefer) darüber untergebracht werden.
DANGER	Montez les dispositifs que vous installez dans un bâti aussi bas que possible. Placez le dispositif le plus lourd en bas et le plus léger en haut, en plaçant tous les dispositifs progressivement de bas en haut du plus lourd au plus léger.
PELIGRO	Monte los instrumentos que instale en un bastidor lo más bajos posible. Ponga el instrumento más pesado en la parte inferior y los instrumentos progresivamente más livianos más arriba.



DANGER

Use safe lifting practices when moving the product.

GEFAHR	Beim Bewegen des Produktes ist auf eine sichere Hubtechnik zu achten.
DANGER	Utiliser des techniques de levage sûres pour déplacer le produit.
PELIGRO	Tenga mucho cuidado al levantar el producto para moverlo



DANGER

When mounting the device under a fixed surface, under a desk, or under a shelf, mount the device with the bottom panel down and in a place where there is not much foot traffic. The fixed surface must be strong enough to withstand the weight of the device such that the device or the surface does not fall down.

GEFAHR	Wenn Sie das Gerät unter einer festen Oberfläche, einem Tisch oder einem Regal montieren, tun Sie dies mit der Unterseite nach unten und an einem Ort, an dem nicht viele Personen vorbeilaufen. Die feste Oberfläche muss stabil genug sein, um dem Gewicht des Geräts standzuhalten.
DANGER	Lors du montage de l'appareil sous une surface fixe (sous un bureau ou une étagère), installez l'appareil avec le panneau arrière pointé vers le bas et dans un endroit où il n'y a beaucoup de circulation piétonnaire. La surface fixe doit être suffisamment solide pour supporter le poids de l'appareil de telle sorte que ni l'appareil ni la surface ne puissent tomber.

Cautions and Danger Notices

Danger Notices

PELIGRO	Cuando instale el dispositivo debajo de una superficie fija, debajo de un escritorio, o debajo de un estante, hágalo con el panel inferior hacia abajo, en un lugar donde no se transite mucho. La superficie fija debe ser lo suficientemente fuerte como para soportar el peso del dispositivo, de modo que el dispositivo o la superficie no se desprendan.
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Laser Dangers



DANGER

All fiber-optic interfaces use Class 1 lasers.

GEFAHR	Alle Glasfaser-Schnittstellen verwenden Laser der Klasse 1.
DANGER	Toutes les interfaces en fibre optique utilisent des lasers de classe 1.
PELIGRO	Todas las interfaces de fibra óptica utilizan láser de clase 1.



DANGER

Class 1M laser radiation. Do not view directly with optical instruments.

GEFAHR	Laserstrahlung! Schauen Sie nicht direkt mit optischen Instrumenten in den Laserstrahl herein. Klasse 1M Laserprodukte.
DANGER	Rayonnement de laser. Ne regardez pas directement avec les instruments optiques. Produits de laser de la classe 1M.
PELIGRO	Radiación de Laser. No vea directamente con Instrumentos Ópticos. Clase 1M de Productos de Laser.
警告	レーザ放射 光学器具で直接ビームを見ないこと クラス 1 M レーザ製品



DANGER

Use only optical transceivers that are qualified by RUCKUS and comply with the FDA Class 1 radiation performance requirements defined in 21 CFR Subchapter I, and with IEC 60825 and EN60825. Optical products that do not comply with these standards might emit light that is hazardous to the eyes.

GEFAHR	Verwenden Sie nur optische Transceiver, die von Ruckus zugelassen sind und die die Anforderungen gemäß FDA Class 1 Radiation Performance Standards in 21 CFR, Unterkapitel I, sowie IEC 60825 und EN60825 erfüllen. Optische Produkte, die diese Normen nicht erfüllen, können Strahlen aussenden, die für das menschliche Auge gefährlich sind.
DANGER	Utilisez uniquement des émetteurs-récepteurs optiques certifiés par Ruckus et conformes aux exigences sur la puissance de rayonnement de catégorie 1 de la FDA définies au sous-chapitre 21 CFR I et à les normes IEC 60825 et EN60825. Les produits optiques non-conformes à ces normes sont susceptibles d'émettre une lumière dangereuse pour les yeux.
PELIGRO	Utilice sólo transceptores ópticos aprobados por Ruckus y que cumplan con las normas IEC 60825 y EN60825, y con los estándares de rendimiento Clase 1 de FDA definidos en el subcapítulo I de 21 CFR. Los productos ópticos que no cumplan con estos estándares pueden emitir luz dañina para los ojos.



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