COMMSCOPE®
RUCKUS®

RUCKUS ICX 7550 Switch Hardware Installation Guide

Copyright, Trademark and Proprietary Rights Information

Contents

Preface

Contacting RUCKUS Customer Services and Support

The Customer Services and Support (CSS) organization is available to provide assistance to customers with active warranties on their RUCKUS products, and customers and partners with active support contracts.

For product support information and details on contacting the Support Team, go directly to the RUCKUS Support Portal using https:// support.ruckuswireless.com, or go to https://www.ruckuswireless.com and select **Support**.

What Support Do I Need?

Technical issues are usually described in terms of priority (or severity). To determine if you need to call and open a case or access the self-service resources, use the following criteria:

- Priority 1 (P1)—Critical. Network or service is down and business is impacted. No known workaround. Go to the **Open a Case** section.
- Priority 2 (P2)—High. Network or service is impacted, but not down. Business impact may be high. Workaround may be available. Go to the **Open a Case** section.
- Priority 3 (P3)—Medium. Network or service is moderately impacted, but most business remains functional. Go to the **Self-Service Resources** section.
- Priority 4 (P4)—Low. Requests for information, product documentation, or product enhancements. Go to the **Self-Service Resources** section.

Open a Case

When your entire network is down (P1), or severely impacted (P2), call the appropriate telephone number listed below to get help:

- Continental United States: 1-855-782-5871
- Canada: 1-855-782-5871
- Europe, Middle East, Africa, Central and South America, and Asia Pacific, toll-free numbers are available at https:// support.ruckuswireless.com/contact-us and Live Chat is also available.
- Worldwide toll number for our support organization. Phone charges will apply: +1-650-265-0903

We suggest that you keep a physical note of the appropriate support number in case you have an entire network outage.

Self-Service Resources

The RUCKUS Support Portal at https://support.ruckuswireless.com offers a number of tools to help you to research and resolve problems with your RUCKUS products, including:

- Technical Documentation—https://support.ruckuswireless.com/documents
- Community Forums—https://forums.ruckuswireless.com/ruckuswireless/categories
- Knowledge Base Articles—https://support.ruckuswireless.com/answers
- Software Downloads and Release Notes—https://support.ruckuswireless.com/#products_grid
- Security Bulletins—https://support.ruckuswireless.com/security

Using these resources will help you to resolve some issues, and will provide TAC with additional data from your troubleshooting analysis if you still require assistance through a support case or RMA. If you still require help, open and manage your case at https://support.ruckuswireless.com/case_management.

Document Feedback

RUCKUS is interested in improving its documentation and welcomes your comments and suggestions.

You can email your comments to RUCKUS at #Ruckus-Docs@commscope.com.

When contacting us, include the following information:

- Document title and release number
- Document part number (on the cover page)
- Page number (if appropriate)

For example:

- RUCKUS SmartZone Upgrade Guide, Release 5.0
- Part number: 800-71850-001 Rev A
- Page 7

RUCKUS Product Documentation Resources

Visit the RUCKUS website to locate related documentation for your product and additional RUCKUS resources.

Release Notes and other user documentation are available at https://support.ruckuswireless.com/documents. You can locate the documentation by product or perform a text search. Access to Release Notes requires an active support contract and a RUCKUS Support Portal user account. Other technical documentation content is available without logging in to the RUCKUS Support Portal.

White papers, data sheets, and other product documentation are available at https://www.ruckuswireless.com.

Online Training Resources

To access a variety of online RUCKUS training modules, including free introductory courses to wireless networking essentials, site surveys, and products, visit the RUCKUS Training Portal at https://commscopeuniversity.myabsorb.com/.

Document Conventions

The following table lists the text conventions that are used throughout this guide.

TABLE 1 Text Conventions

Convention	Description	Example
`monospace`	Identifies command syntax examples	`device(config)# interface ethernet 1/1/6`
bold	User interface (UI) components such as screen or page names, keyboard keys, software buttons, and field names	On the **Start** menu, click **All Programs**.
italics	Publication titles	Refer to the *RUCKUS Small Cell Release Notes* for more information.

Notes, Cautions, and Safety Warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

> **NOTE**
> A NOTE provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

> **ATTENTION**
> An ATTENTION statement indicates some information that you must read before continuing with the current action or task.

> **CAUTION**
> **A CAUTION statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.**

> **DANGER**
> *A DANGER statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.*

Command Syntax Conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
italic text	Identifies a variable.
[ ]	Syntax components displayed within square brackets are optional.
	Default responses to system prompts are enclosed in square brackets.
{**x**| **y**| **z**}	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x|**y**	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, *member*[*member*...].
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

About This Document

What's New in This Document

This manual includes new information in the following topics:

- Port Statistics Clearing Behavior on page 64

- ICX 7550 Stacking Configuration Notes on page 59

Supported Hardware and Software

The ICX 7550 supports FastIron software versions 8.0.95 and later.

This document is applicable for the various Ruckus ICX 7550 Ethernet switch models. The following tables list the device models and rack mount kits supported.

TABLE 2 ICX 7550 Ethernet Switch Models

Model Number	Short Description	Introduced (OS)	Currently Supported (OS)	Notes
ICX 7550-24	24x1 GbE RJ-45 plus 2x40 Gbps QSFP Stacking plus one slot	FastIron 08.0.95	Yes	
ICX 7550-48	48x1 GbE RJ45 plus 2x40 Gbps QSFP Stacking plus one slot	FastIron 08.0.95	Yes	
ICX 7550-24P	24x1 GbE RJ45 plus 2x40 Gbps QSFP Stacking plus one slot plus 45W PoE	FastIron 08.0.95	Yes	
ICX 7550-48P	48x1 GbE RJ45 plus 2x40 Gbps QSFP Stacking plus one slot plus 45W PoE	FastIron 08.0.95	Yes	
ICX 7550-24ZP	12x2.5 GbE with 12x10G RJ45 with 2x100 Gbps zQSFP Stacking plus one slot plus 90W PoE	FastIron 08.0.95	Yes	Has external reference clock input
ICX 7550-48ZP	36x2.5 GbE plus 12x10 GbE RJ45 plus 2x100 Gbps zQSFP Stacking plus one slot plus 90W PoE	FastIron 08.0.95	Yes	Has external reference clock input
ICX 7550-24F	24x10 GbE SFP plus 2x100 Gbps zQSFP Stacking plus one slot	FastIron 08.0.95	Yes	Has external reference clock input
ICX 7550-48F	36x1 GbE SFP plus 12x10 GbE SFP plus 2x100 Gbps zQSFP Stacking plus one slot	FastIron 08.0.95	Yes	Has external reference clock input

TABLE 3 Rack Mount Kits

Part Number	Short Description	Notes
ICX7000-RMK	Default two-post kit for the ICX 7550	Included in the accessory kit.
ICX-RMK-4POST-TL	Tool-less 2/4 post mounting bracket	Not included with the device. Optionally orderable.
XBR-R000295	1U, 1.5U, and 2U Universal Kit for Four-Post Racks	Not included with the device. Optionally orderable.

TABLE 4 Supported Adaptor

Part number	Short description	Notes
10GbE-SFPP-LRM-1-ADP	1 Dual Port adapter with 1 LRM optic	Not included with the device. Additional LRM optics can be ordered: 10GbE-SFPP-LRM (1-pack) and 10GbE-SFPP-LRM-8 (8-pack)
10GbE-SFPP-LRM-2-ADP	1 Dual Port adapter with 2 LRM optics	

Device Overview

Hardware Features

The RUCKUS ICX 7550 offers the following hardware features and capabilities:

- Equipped with RJ-45 ports with 1GBASE-T / MultiGiG for downlink ports

- Equipped with SFP and SFP+ for downlink ports

- Supports two stacking ports with 40 Gbps or 100 Gbps

- Supports 1-GbE out-of-band management Ethernet port

- QSFP28 ports supporting 100-GbE and 40-GbE transceivers, including support for 4x25-GbE and 4x10-GbE breakout transceivers beginning with FastIron release 09.0.00.

    NOTE
    In the case of 4x10 breakout, links might come up on the peer side if you merely insert the breakout cable on both sides (without configuring breakout). If this occurs, you should still perform the breakout configuration.

- Flexible and high switching bandwidth

- On-chip packet buffer memory with dynamic buffer management for maximum burst absorption

- Supports Jumbo Frame up to 12288 bytes

- Contains learned and programmed MAC addresses; indicates destination port and additional properties of each MAC address

- Store-and-forward transmission to remove bad packets from the network

- Swappable redundant power suppies

- Swappable fan assemblies

- Supports uplink port slot modules

- Standard 1U chassis height

- 17-inch rack mountable

TABLE 5 Switch Model and Corresponding I/O Port Configurations

Switch Model	Downlink Ports	PoE Ports	Max PoE Power Per Port	Up Link Ports	Stacking Ports
ICX 7550-24	24x1 GbE RJ-45	N/A	N/A	4x10 GbE SFP, 2x 40 GbE QSFP	2x40 Gbps QSFP
ICX 7550-48	48x1 GbE RJ45	N/A	N/A	4x10 GbE SFP, 2x40 GbE QSFP	2x40 Gbps QSFP
ICX 7550-24P	24x1 GbE RJ45	24	45W	4x10 GbE SFP, 2x40 GbE QSFP	2x40 Gbps QSFP
ICX 7550-48P	48x1 GbE RJ45	48	45W	4x10 GbE SFP, 2x40 GbE QSFP	2x40 Gbps QSFP
ICX 7550-24ZP	12x2.5 GbE + 12x10 GbE RJ45	24	95W	4x10 GbE SFP, 2x40 GbE QSFP, 1x100 GbE QSFP	2x100 Gbps zQSFP
ICX 7550-48ZP	36x2.5 GbE + 12x10 GbE RJ45	48	95W	4x10 GbE SFP, 2x40 GbE QSFP, 1x100 GbE QSFP	2x100 Gbps zQSFP
ICX 7550-24F	24x10 GbE SFP plus	N/A	N/A	4x10 GbE SFP, 2x40 GbE QSFP, 1x100 GbE QSFP	2x100 Gbps zQSFP

TABLE 5 Switch Model and Corresponding I/O Port Configurations (continued)
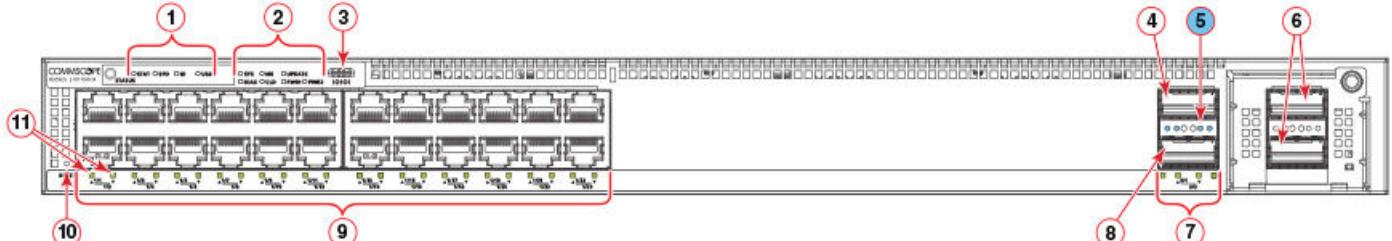
Switch Model	Downlink Ports	PoE Ports	Max PoE Power Per Port	Up Link Ports	Stacking Ports
ICX 7550-48F	36x1G SFP + 12x10 GbE SFP plus	N/A	N/A	4x10 GbE SFP, 2x40 GbE QSFP, 1x100 GbE QSFP	2x100 Gbps zQSFP

TABLE 6 Switch Model and Corresponding PoE Support

Model	VAC (V)	#PSU	Max PoE output power draw (W)	Maximum Number of Ports Supported							
				802.3af/at /bt Class 3	802.3at/bt Class 4	PoE overdrive	802.3bt Class 5	802.3bt Class 6	802.3bt Class 7	802.3bt Class 8	PoH
				2-Pair	2-Pair	2-Pair	4-Pair	4-Pair	4-Pair	4-Pair	4-Pair
				15.4W	30W	45W	45W	60W	75W	90W	95W
ICX7550-24P	100 - 180	1	812	24	24	18					
		2	1624	24	24	24					
	181 - 240	1	950	24	24	21					
		2	1900	24	24	24					
ICX7550-48P	100 - 180	1	812	48	27	18					
		2	1624	48	48	36					
	181 - 240	1	950	48	31	21					
		2	1900	48	48	42					
ICX7550-24ZP	100 - 180	1	815	24	24	18	18	13	10	9	8
		2	1630	24	24	24	24	24	21	18	17
	181 - 240	1	954	24	24	21	21	15	12	10	10
		2	1908	24	24	24	24	24	24	21	20
ICX7550-48ZP	100 - 180	1	763	48	25	16	16	12	10	8	8
		2	1526	48	48	33	33	25	20	16	16
	181 - 240	1	929	48	30	20	20	15	12	10	9
		2	1858	48	48	41	41	30	24	20	19
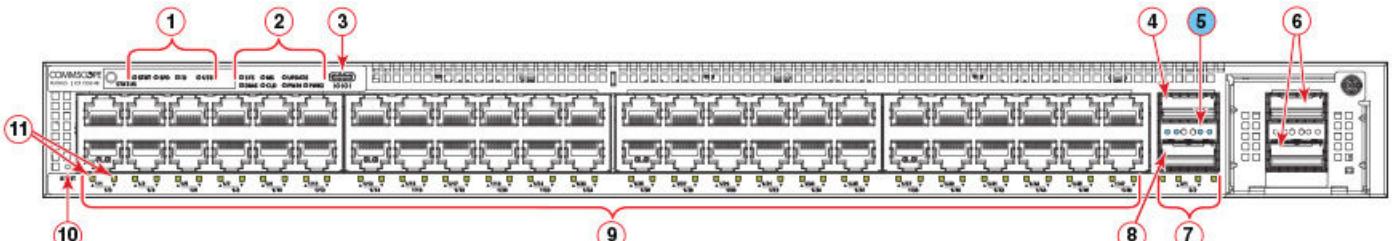
Port-Side View of the Ruckus ICX 7550 Switch

FIGURE 1 Port-Side View of ICX 7550-24

1.	Mode status LEDs: STAT, SPD, ID, USB	
2.	System LEDs	
3.	Type-C USB console port	
4.	40 Gbps stacking port 2/1	
5.	40 Gbps link/activity LEDs (blue) for stacking port 2/1	
6.	Expansion module ports (optional)	
7.	40 Gbps link/activity LEDs for stacking port 2/2	
8.	40 Gbps stacking port 2/2	
9.	24x10/100/1000 Mbps RJ-45 ports	
10.	Reset button	
11.	RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)	

FIGURE 2 Port-Side View of ICX 7550-48

1.	Mode status LEDs: STAT, SPD, ID, USB	
2.	System LEDs	
3.	Type-C USB console port	
4.	40 Gbps stacking port 2/1	
5.	40 Gbps link/activity LEDs (blue) for stacking port 2/1	
6.	Expansion module ports (optional)	
7.	40 Gbps link/activity LEDs for stacking port 2/2	
8.	40 Gbps stacking port 2/2	
9.	48x10/100/1000 Mbps RJ-45 ports	
10.	Reset button	
11.	RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)	

Device Overview
Port-Side View of the Ruckus ICX 7550 Switch

FIGURE 3 Port-Side View of ICX 7550-24P

1.	Mode status LEDs: STAT, SPD, ID, USB, PoE	7.	40 Gbps link/activity LEDs for stacking port 2/2
2.	System LEDs	8.	40 Gbps stacking port 2/2
3.	Type-C USB console port	9.	24x10/100/1000 Mbps RJ-45 ports
4.	40 Gbps stacking port 2/1	10.	Reset button
5.	40 Gbps link/activity LEDs (blue) for stacking port 2/1	11.	RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
6.	Expansion module ports (optional)		

NOTE
Ports 1 through 24 support PoE.

FIGURE 4 Port-Side View of ICX 7550-48P

1.	Mode status LEDs: STAT, SPD, ID, USB, PoE	7.	40 Gbps link/activity LEDs for stacking port 2/2
2.	System LEDs	8.	40 Gbps stacking port 2/2
3.	Type-C USB console port	9.	48x10/100/1000 Mbps RJ-45 ports
4.	40 Gbps stacking port 2/1	10.	Reset button
5.	40 Gbps link/activity LEDs (blue) for stacking port 2/1	11.	RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
6.	Expansion module ports (optional)		

NOTE
Ports 1 through 48 support PoE.

FIGURE 5 Port-Side View of ICX 7550-24ZP

1.	Mode status LEDs: STAT, SPD, ID, USB, PoE	
2.	System LEDs	
3.	Type-C USB console port	
4.	40/100 GbE uplink/stacking port 2/1	
5.	40/100 Gbps link/activity LEDs for stacking port 2/1	
6.	40/100 Gbps stacking port 2/2 LEDs (blue)	
7.	Expansion module ports (optional)	
8.	40/100 GbE uplink/stacking port 2/2	
9.	12x1/2.5/5/10 GbE RJ-45 ports	
10.	12x1/2.5 GbE RJ-45 ports	
11.	Reset button	
12.	RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)	

FIGURE 6 Port-Side View of ICX 7550-48ZP
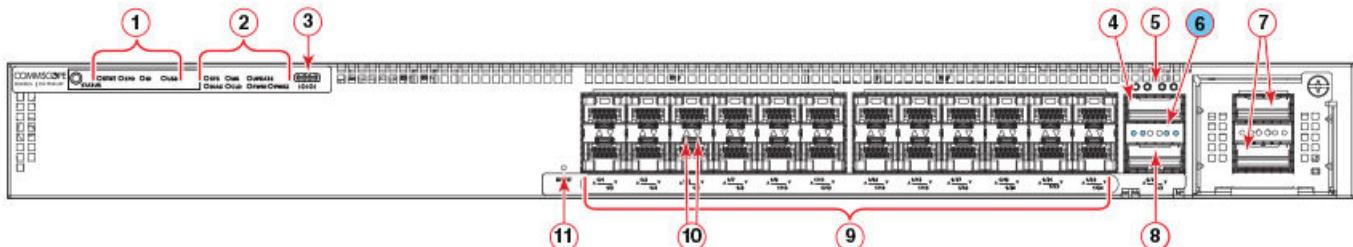
1.	Mode status LEDs: STAT, SPD, ID, USB, PoE	
2.	System LEDs	
3.	Type-C USB console port	
4.	40/100 GbE uplink/stacking port 2/1	
5.	40/100 Gbps link/activity LEDs for stacking port 2/1	
6.	40/100 Gbps stacking port 2/2 LEDs (blue)	
7.	Expansion module ports (optional)	
8.	40/100 GbE uplink/stacking port 2/2	
9.	12x1/2.5/5/10 GbE RJ-45 ports	
10.	36x1/2.5G GbE RJ-45 ports	
11.	Reset button	
12.	RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)	
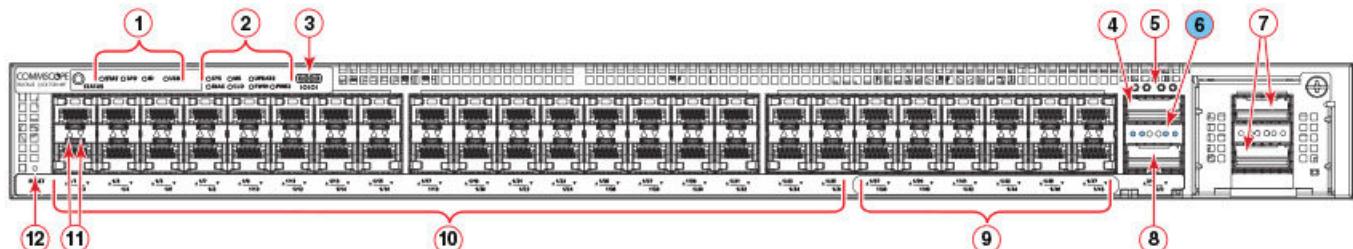
FIGURE 7 Port-Side View of ICX 7550-24F

1. Mode status LEDs: STAT, SPD, ID, USB
2. System LEDs
3. Type-C USB console port
4. 40/100 GbE uplink/stacking port 2/1
5. 40/100 Gbps link/activity LEDs for stacking port 2/1
6. 40/100 Gbps stacking port 2/2 LEDs (blue)

7. Expansion module ports (optional)
8. 40/100 GbE uplink/stacking port 2/2
9. 24x10 GbE SFP ports
10. SFP port status LEDs (upper-pointing triangles are for upper ports; lower-pointing triangles are for lower ports)
11. Reset button
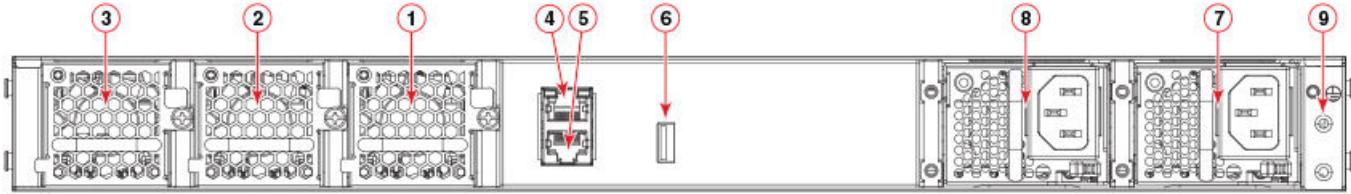
FIGURE 8 Port-Side View of ICX 7550-48F

1. Mode status LEDs: STAT, SPD, ID, USB
2. System LEDs
3. Type-C USB console port
4. 40/100 GbE Uplink/Stacking port 2/1
5. 40/100 Gbps link/activity LEDs for stacking port 2/1
6. 40/100 Gbps stacking port 2/2 LEDs (blue)
7. Expansion module ports (optional)

8. 40/100 GbE uplink/stacking port 2/2
9. 12x10 GbE SFP ports
10. 36x1 GbE SFP ports
11. SFP port status LEDs (upper-pointing triangles are for upper ports; lower-pointing triangles are for lower ports)
12. Reset button
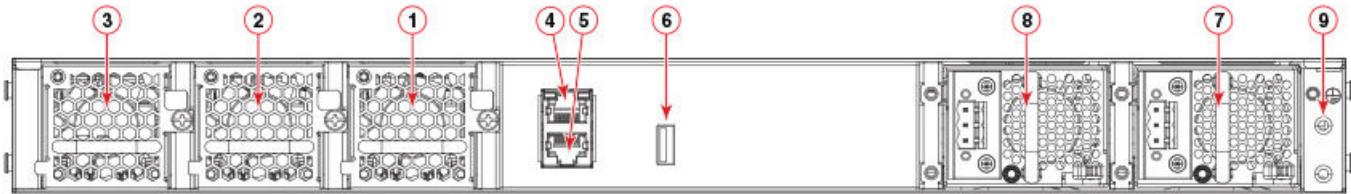
Nonport-Side View of the RUCKUS ICX 7550 Switch

FIGURE 9 Nonport-Side View of ICX 7550-24 and ICX 7550-48 (with 400 AC Power)
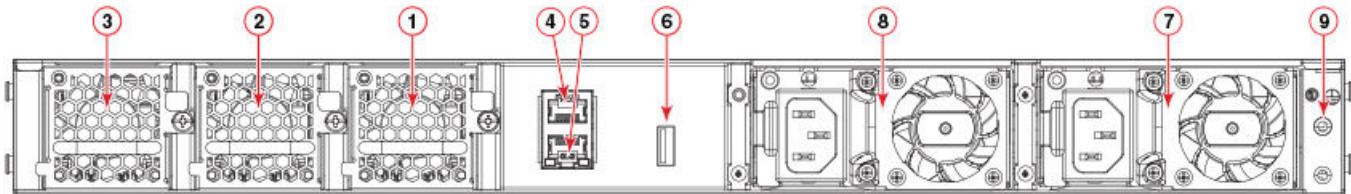
1.	Fan assembly 1	6.	USB port (for flash drive)
2.	Fan assembly 2	7.	Power supply unit 1
3.	Fan assembly 3	8.	Power supply unit 2
4.	RJ-45 console port	9.	Grounding terminal
5.	Out-of-band management port		

FIGURE 10 Nonport-Side View of ICX 7550-24 and ICX 7550-48 (with 400 DC Power)

1.	Fan assembly 1	6.	USB port (for flash drive)
2.	Fan assembly 2	7.	Power supply unit 1
3.	Fan assembly 3	8.	Power supply unit 2
4.	RJ-45 console port	9.	Grounding terminal
5.	Out-of-band management port		

FIGURE 11 Nonport-Side View of ICX 7550-24P and ICX 7550-48P (with 1200 AC Power)
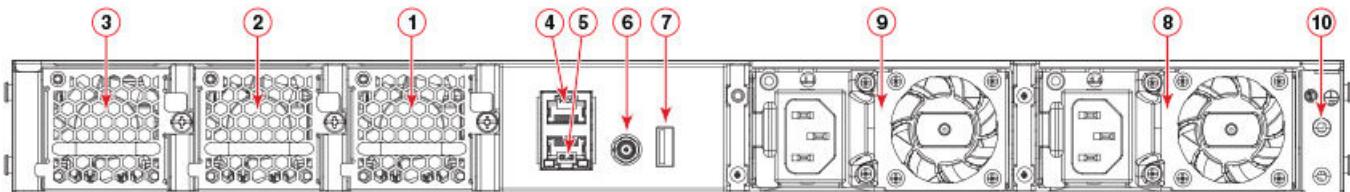
1.	Fan assembly 1	6.	USB port (for flash drive)
2.	Fan assembly 2	7.	Power supply unit 1
3.	Fan assembly 3	8.	Power supply unit 2
4.	RJ-45 console port	9.	Grounding terminal
5.	Out-of-band management port		
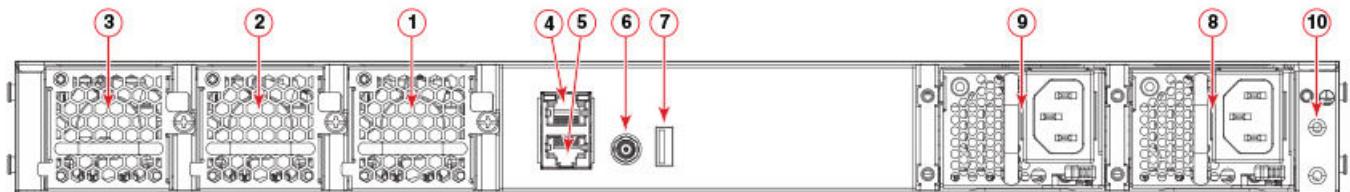
FIGURE 12 Nonport-Side View of ICX 7550-24ZP and ICX 7550-48ZP (with 1200 AC Power)
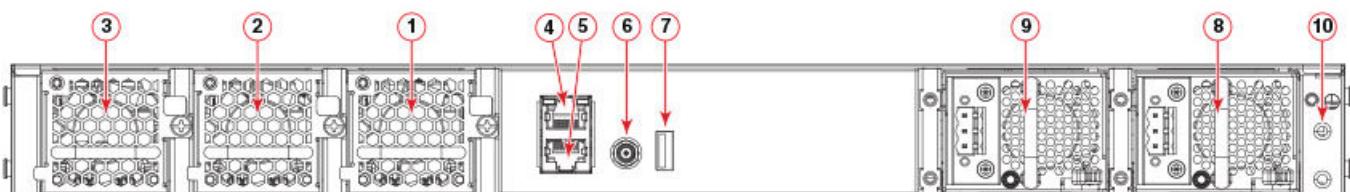
1.	Fan assembly 1	6.	External reference clock input
2.	Fan assembly 2	7.	USB port (for flash drive)
3.	Fan assembly 3	8.	Power supply unit 1
4.	RJ-45 console port	9.	Power supply unit 2
5.	Out-of-band management port	10.	Grounding terminal

FIGURE 13 Nonport-Side View of ICX 7550-24F and ICX 7550-48F (with 400 AC Power)

1.	Fan assembly 1	6.	External reference clock input
2.	Fan assembly 2	7.	USB port (for flash drive)
3.	Fan assembly 3	8.	Power supply unit 1
4.	RJ-45 console port	9.	Power supply unit 2
5.	Out-of-band management port	10.	Grounding terminal

FIGURE 14 Nonport-Side View of ICX 7550-24F and ICX 7550-48F (with 400 DC Power)

1.	Fan assembly 1	6.	External reference clock input
2.	Fan assembly 2	7.	USB port (for flash drive)
3.	Fan assembly 3	8.	Power supply unit 1
4.	RJ-45 console port	9.	Power supply unit 2
5.	Out-of-band management port	10.	Grounding terminal

Supported transceivers and cables

For a list of supported transceivers and cables, refer to the Ruckus Optics Family Data Sheet.
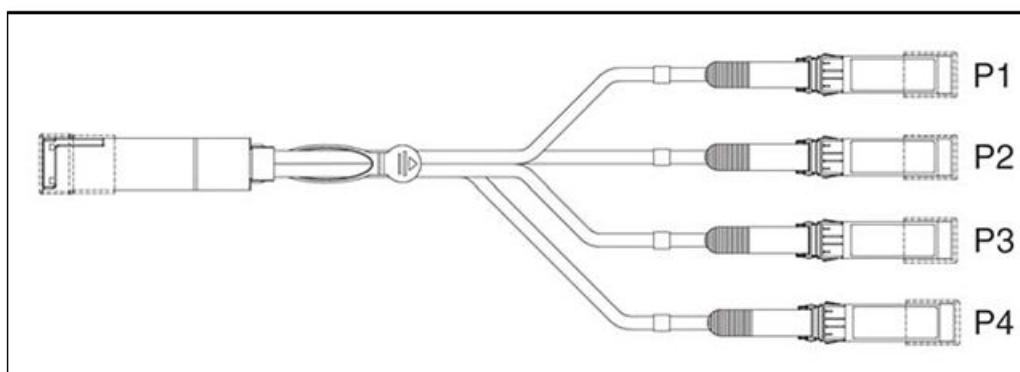
Breakout cables

The Ruckus ICX 7550 can support the following breakout cables:

TABLE 7 Breakout cables supported on the Ruckus ICX 7550

Ports	Description
40G QSFP+ or 100G QSFP28 Ports:	
E40G-QSFP-SR4-INT	40GBASE-SR4 QSFP+ optic (MTP 1x8 or 1x12), 100m over MMF, compatible with 10GBASE-SR, 10G breakout-capable, 1-pack
E40G-QSFP-LR4-INT	40GBASE-LR4 QSFP+ to 4 SFP+ optic (MTP 1x8 or 1x12), for up to 10 km over SMF
E40G-QSFP-4SFP-AOC-1001	4x10GbE Direct Attach QSFP+ to 4 SFP+ Active Optical Breakout Cable, 10m
E40G-QSFP-4SFP-C-0101	4x10GbE Direct Attach QSFP+ to 4 SFP+ Active Copper Breakout Cable, 1 m
E40G-QSFP-4SFP-C-0301	4x10GbE Direct Attach QSFP+ to 4 SFP+ Active Copper Breakout Cable, 3 m
E40G-QSFP-4SFP-C-0501	4x10GbE Direct Attach QSFP+ to 4 SFP+ Active Copper Breakout Cable, 5 m
100G QSFP28 Ports Only:	
E100G-QSFP28-SR4	100GBASE-SR4 QSFP28 optic (MTP 1x12), for up to 100 m over MMF
E100G-QSFP-4SFP-P-0101	4x25GE Direct Attached QSFP28 to 4 SFP28 PASSIVE Copper Breakout Cable, 1m, 1-pack
E100G-QSFP-4SFP-P-0301	4x25GE Direct Attached QSFP28 to 4 SFP28 PASSIVE Copper Breakout Cable, 3m, 1-pack
E100G-QSFP-4SFP-P-0501	4x25GE Direct Attached QSFP28 to 4 SFP28 PASSIVE Copper Breakout Cable, 5m, 1-pack
E100G-QSFP-ESR4	100GBASE-ESR4 QSFP+ optic (MTP 1x8 or 1x12), for up to 300m over MMF

FIGURE 15 QSFP+ to 4 SFP+ (4x10 GbE) breakout cable

The Ruckus ICX 7550 ports available for breakout are shown for each model in the following table:

TABLE 8 Ruckus ICX 7550 breakout ports

Model	Front panel Slot 1 ports	Front panel Slot 2 ports	Front module Slot 3 ports
ICX7550-24/24P/24F/24ZP	Not applicable	1/2/1-1/2/2 40 GbE 1/2/2 100 GbE (ICX7550-24F/24ZP only)	40GbE module: 1/3/1-1/3/2 100GbE module: 1/3/1 (24F/24ZP only)

TABLE 8 Ruckus ICX 7550 breakout ports (continued)

Model	Front panel Slot 1 ports	Front panel Slot 2 ports	Front module Slot 3 ports
ICX7550-48/48P/48F/48ZP	Not applicable	1/2/1-1/2/2 40 GbE 1/2/2 100 GbE (ICX7550-48F/48ZP only)	40GbE module: 1/3/1-1/3/2 100GbE module 1/3/1 (48F/48ZP only)

QSFP+ to SFP+ adapter support

The Ruckus ICX 7550 supports a third-party QSFP+ to SFP+ adapter for cost-effective connections between 40 GbE QSFP+ ports and 10 GbE hardware using standard SFP+ optical cabling rather than breakout cables.

An SFP+ transceiver (SR, LR, or USR) inserted in the QSFP+ to SFP+ adapter behaves as if it is connected to the first of the four breakout ports on the 40 GbE QSFP+ interface with no other ports available in the breakout. The 4x10 GbE breakout mode must be configured on the QSFP+ interface.

> **NOTE**
> Ruckus has not qualified a QSFP28 to SFP28 adapter.

10G-SFPP-TX-A transceiver support

The 10G-SFPP-TX-A transceiver consumes significantly more power than typical 10G transceivers. This section provides guidelines for deploying the 10G-SFPP-TX-A transceiver within the power capabilities of the supported ICX 7550 switches.

If the guidelines in this section are not followed, there is a risk of system instability and/or reboot.

Follow the guidelines provided in the following table to avoid a power violation.

For each 10G-SFPP-TX-A transceiver installed, another SFP+ slot MUST be left empty. For example, if you are using four 10G-SFPP-TX-A transceivers, you must leave four SFP+ ports empty.

TABLE 9 Ruckus ICX 7550 10G-SFPP-TX-A transceiver support

Model	10G-SFPP-TX-A installed location	For each 10G-SFPP-TX-A inserted, this many SFP+ ports must remain unused
ICX7550-24F	Built-In SFP+ ports 1/1/1 - 1/1/24	1
ICX7550-48F	Built-In SFP+ ports 1/1/37 to 1/1/48	1
ICX7650-4X10GF module	Built-In SFP+ ports 1/3/1 - 1/3/4	1

Preparing for the Installation

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

For translations of safety notices for this product, refer to Cautions and Danger Notices on page 131.

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).

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.

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.

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.

CAUTION

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

Laser Precautions

DANGER

All fiber-optic interfaces use Class 1 lasers.

DANGER

Laser Radiation. Do Not View Directly with Optical Instruments. Class 1M Laser Products.

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.

Facility Requirements

Before installing the device, be sure the facilities requirements are met.

TABLE 10 Facility Requirements

Type	Requirements
General	- The site should be accessible for installing, cabling, and maintaining the devices. - Maintain the operating environment as specified in the Technical Specifications. - Allow at least 7.62 cm (3 in.) of space between the front and the back of the device and walls or other obstructions for proper airflow. - Allow at least 7.62 cm (3 in.) of space at the front and back of the device for the twisted-pair, fiber-optic, and power cabling. - Allow the status LEDs to be clearly visible. - Allow for the unit to be connected to a separate grounded power outlet that provides 100 to 240 VAC, 50/60 Hz, within 2 m (6.6 ft) of each device, and is powered from an independent circuit breaker. As with any equipment, a filter or surge suppressor is recommended. - Allow for twisted-pair cables to be routed away from power lines, fluorescent lighting fixtures, and other sources of electrical interference, such as radios and transmitters.
Electrical	- Adequate supply circuit, line fusing, and wire size, as specified by the electrical rating on the switch nameplate - Circuit protected by a circuit breaker and grounded in accordance with local electrical codes Tor complete power supply specifications, refer to RUCKUS ICX 7550 Switch Technical Specifications on page 117.

TABLE 10 Facility Requirements (continued)

Type	Requirements
Thermal	• A minimum airflow of 39.1 cubic meters/hour (23 cubic ft/min.) available in the immediate vicinity of the switch **NOTE** Although this airflow may exceed the airflow maximum listed in the device Technical Specifications, the additional airflow is recommended to pressurize the inlet (cool isle) side of rack installations relative to the exhaust side to minimize recirculation of hot air back to the inlet side. • Ambient air temperature not exceeding 45℃ (113℉) while the switch is operating
Rack (when rack-mounted)	• One rack unit (1U) in a 48.3 cm (19-inch) rack • All equipment in the rack grounded through a reliable branch circuit connection • Additional weight of switch not to exceed the rack's weight limits • Temperature: Because the temperature within a rack assembly may be higher than the ambient room temperature, check that the rack-environment temperature is within the specified operating temperature range. • Airflow: Be sure that the airflow direction for all equipment in a rack is the same or consistent. • Mechanical loading: Do not place any equipment on top of a rack-mounted unit. • Rack secured to ensure stability in case of unexpected movement • Circuit overloading: Be sure that the supply circuit to the rack assembly is not overloaded.

Quick Installation Checklists

The following checklists provide 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 these checklists and take them to the installation site.

Pre-Installation tasks

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 11 Installation Prerequisites

Task	Task Details or Additional Information	Completed
Unpack the device.	Take an inventory of the hardware components included in your shipment. Refer to Shipping Carton Contents on page 28.	
Gather necessary components and required tools.	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 on page 29. • Installing Transceivers and Cables on page 69.	
Review the safety precautions.	Refer to Safety Precautions on page 23. For translation of these messages, refer to Cautions and Danger Notices on page 131.	
Remove port covers	Refer to Removing Port Covers on page 30.	
Plan the installation.	Decide whether you want to install the unit on a flat surface or in a rack. For rack installation, obtain the appropriate rack mount kit. Refer to Mounting Options on page 29.	

TABLE 11 Installation Prerequisites (continued)

Task	Task Details or Additional Information	Completed
Review and verify installation requirements.	Verify that the following requirements are met. Refer to Facility Requirements on page 25. • General requirements • Power requirements • Environmental requirements • Clearance for standalone or rack installation	
Gather network configuration parameters.	• IP address: • Subnet mask: • Default gateway: • Time zone:	

Installation and Initial Configuration

The initial setup includes mounting the device on a flat surface or in a rack and completing the configuration tasks necessary to bring the device online and verify the operation.

TABLE 12 Installation and Basic System Configuration

Task	Task Details or Additional Information	Completed
Mount the device.	Choose one of the following mounting options: • Mount the device on a desktop or flat surface. Refer to Mounting on a Desktop or Flat Surface on page 30. • Mount the device on a two-post rack: – Two-Post Rack Mount Installation (ICX7000-RMK) on page 31 – Two-Post Rack Mount Installation (ICX-RMK-4POST-TL) on page 34 • Mount the device on a four-post rack: – Four-Post Rack Mount Installation (ICX-RMK-4POST-TL) on page 37 – Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295) on page 41	
Gather all components required for the initial setup.	Refer to Items Required on page 61.	
Provide power to the device.	Refer to Providing Power to the Device on page 61.	
Attach a management station, establish a console connection, and configure the various levels of passwords.	Refer to Establishing a First-Time Connection to the Console Port on page 62. After completing this task, log in to the console port to configure the device.	
Set the IP address, subnet mask, and the default gateway IP address.	Use the **ip address** command to configure a static device IP address, subnet mask, and gateway IP address, or you can use a DHCP server to obtain the information dynamically. Refer to Configuring an IP Address for the Device on page 64 .	
Set the date and time.	Use the **clock set** command to set the current date and time for the device. For more information, refer to Setting the Date and Time on page 66.	
Customize the host name and chassis name.	• Use the **hostname** command to change the default host name and CLI prompt. • Use the **chassisname** command to change the default chassis name or ID. For more information, refer to Customizing the Host name and Chassis Name on page 65.	
Establish a connection to the out-of-band management port.	By establishing a connection to the out-of-band management port, you can complete the device configuration using an SSH session, Telnet, or management application. Refer to Establishing a Connection to the Out-of-Band Management Port on page 66.	

TABLE 12 Installation and Basic System Configuration (continued)

Task	Task Details or Additional Information	Completed
Verify that the device operates correctly.	• Check the LEDs to verify operation of functional parts. Refer to Verifying the Correct Operation on page 67. • The following commands can be useful to establish an operational baseline for the device. Refer to the *RUCKUS FastIron Command Reference* Guide 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**	
Back up the configuration.	Use the **write memory** command to replace the startup configuration with the running configuration. Refer to Backing Up the Running Configuration on page 67.	

Shipping Carton Contents

RUCKUS ICX 7550 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 RUCKUS ICX 7550 device.

- An accessory kit containing the following items:

  - Rack mounting kit containing two L-shaped mounting brackets and one set of eight sink-head screws
  - Two-post rack kit containing four rack-mounting screws and four cage nuts
  - Four rubber feet
  - One grounding kit, containing one grounding lug and one grounding screw
  - Power:

    › "W" SKUs: No power cords. An example of a "W" SKU is "ICX7550W48ZP-E2".
    › Non-"W" SKUs: Two US power cords and two cord retaining clamps. An example of a "non-W" SKU is "ICX7550-48ZP-E2".
  - One RJ45-to-RJ45 console cable
  - One RJ45-to-DB9 adapter
  - Installed filler panels for the power supply slot, expansion module slots, or fan tray slot where such modules are not supplied for the switch
  - China-RoHS Hazardous/Toxic Substance statement
  - Read Me First document

  NOTE
  A stacking cable is not included in the shipping carton and must be ordered separately.

Mounting the Device

Mounting Options

You can install the device in several ways:

- As a standalone unit on a flat surface, such as a table top. Use the rubber feet included with the shipment to secure the device on the surface. No other equipment is required for desktop installation.

- You will need a Universal Two-Post Rack Kit (ICX7000-RMK or ICX-RMK-4POST-TL) to install in a two-post telecommunications (Telco) rack.

- In a four-post EIA rack using a fixed-rail rack mount kit: You will need the ICX-RMK-4POST-TL kit or the optional four-post universal rack mount kit (XBR-R000295), which can be ordered from your switch retailer to support up to a 30-inch-deep rack. The four-post rack mount kit includes mid-mount and rear-mount brackets.

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.

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 fabric during this procedure.**

Removing Port Covers

Port covers are used on some ports as shock protection during shipment.

Before inserting any network connectors, pull out all port covers by using either a slot-head screwdriver (recommended) or similar tool. Refer to the following illustration.

FIGURE 16 Using Screwdriver to Remove Port Covers
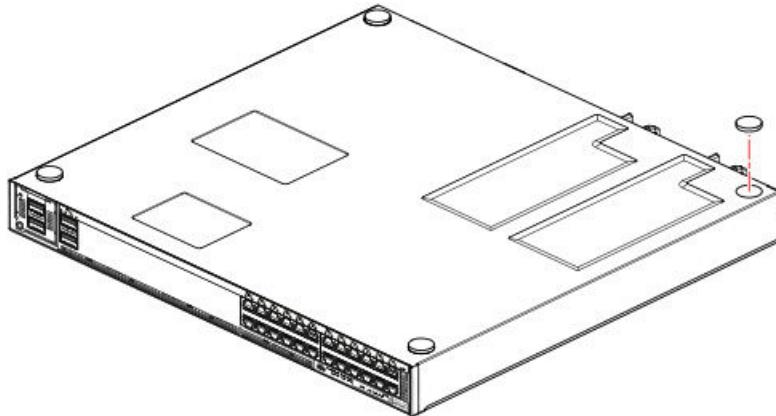
Mounting on a Desktop or Flat Surface

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 17 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.

4. Power on the system.

Two-Post Rack Mount Installation (ICX7000-RMK)
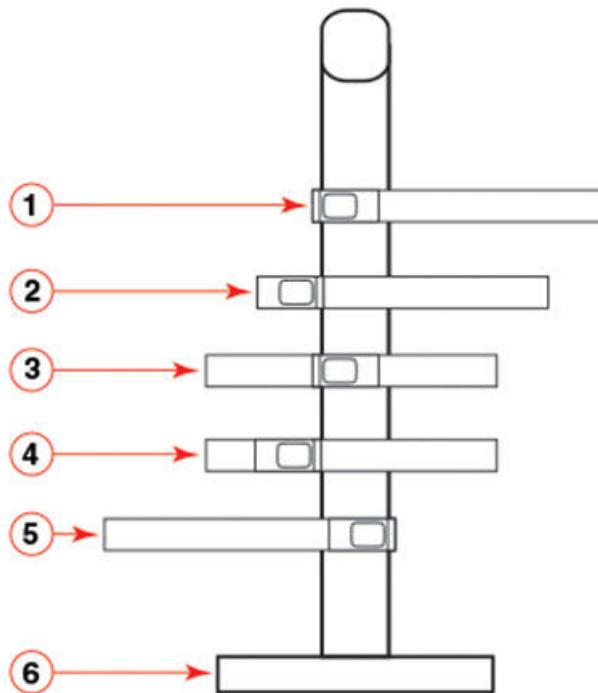
The ICX7000-RMK rack mount kit is the default two-post kit for the ICX 7550.

The RUCKUS ICX 7550 can be installed in the two-post rack in various mounting positions, as shown in the following figure:

FIGURE 18 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 7550 in a two-post rack.
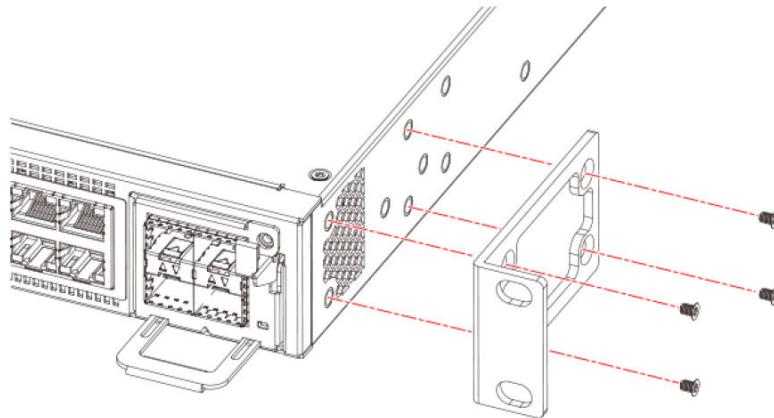
> **NOTE**
> Hardware devices illustrated in these procedures are only for reference and may not depict the device you are installing into the rack.

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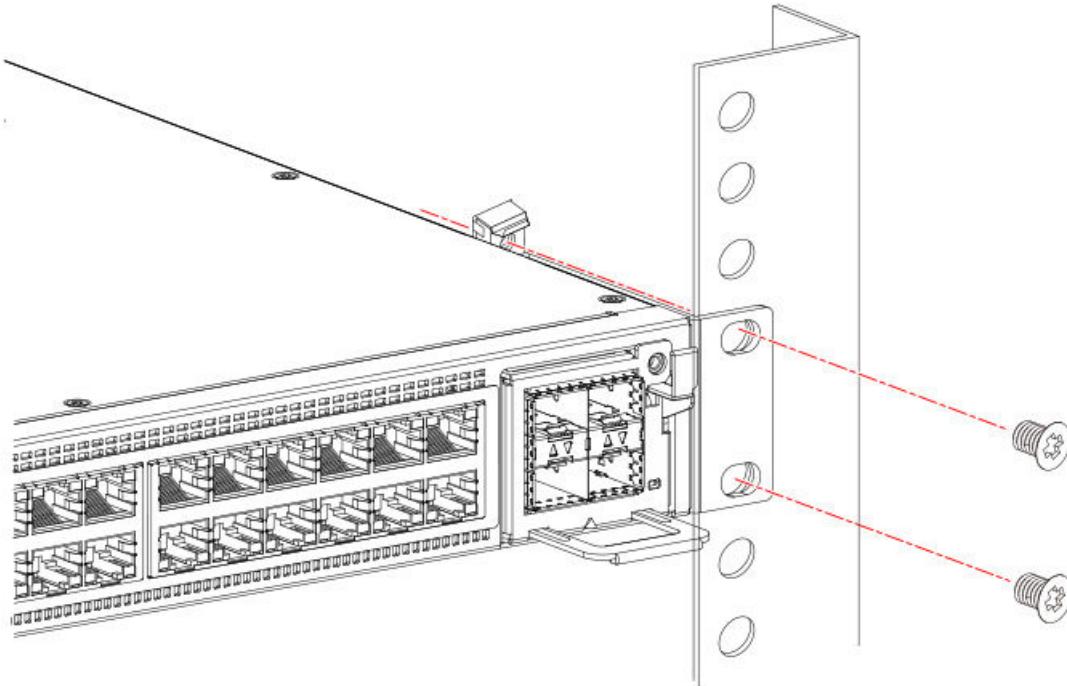
   > **NOTE**
   > Be sure to use only the screws included in the RUCKUS ICX7000-RMK kit.

FIGURE 19 Attaching the Mounting Brackets for a RUCKUS ICX 7550

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 20 Installing the RUCKUS ICX 7550 in a Two-Post Rack
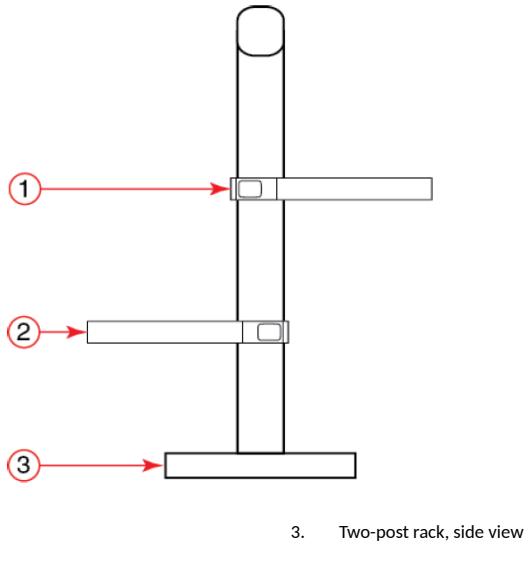
Two-Post Rack Mount Installation (ICX-RMK-4POST-TL)

This is an optional kit that is not included with the base system.

The RUCKUS ICX 7550 can be installed in a two-post rack in various mounting positions, as shown in the following figure.

FIGURE 21 Two-Post Rack Mounting Positions (ICX-RMK-4POST-TL)

1.	Front flush mount	3.	Two-post rack, side view
2.	Rear mount		

Use the instructions in the following sections to install the RUCKUS ICX 7550 switch into two-post Telco racks using the front brackets in the four-post flush-mount rack kit (ICX-RMK-4POST-TL).

> **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 the installation.
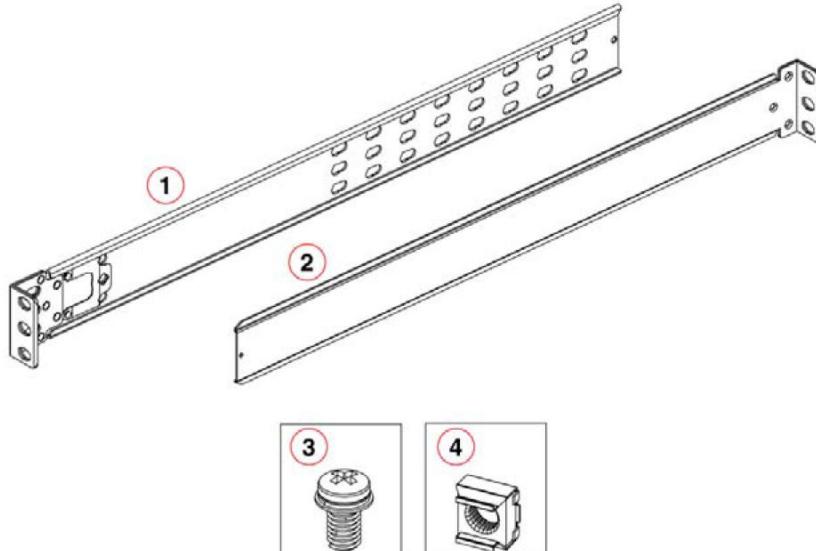
The following items are required to install the device using the four-post flush-mount rack kit (ICX-RMK-4POST-TL):

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

Parts List

The parts provided in the four-post flush-mount rack kit (ICX-RMK-4POST-TL) are illustrated in the following figure.

FIGURE 22 Items in the Four-Post Flush-Mount Rack Kit

1.	Front brackets (2)	3.	Screw, 10-32 x 5/8-inch, panhead Phillips (12)
2.	Rear brackets (2)	4.	Retainer nut, 10-32 (12)

Ensure that the items listed and illustrated in the preceding figure are included in the kit.

Flush-Front Mounting

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

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

1. Attaching the Front Brackets

2. Installing the Device in the Rack

Attaching the Front Brackets
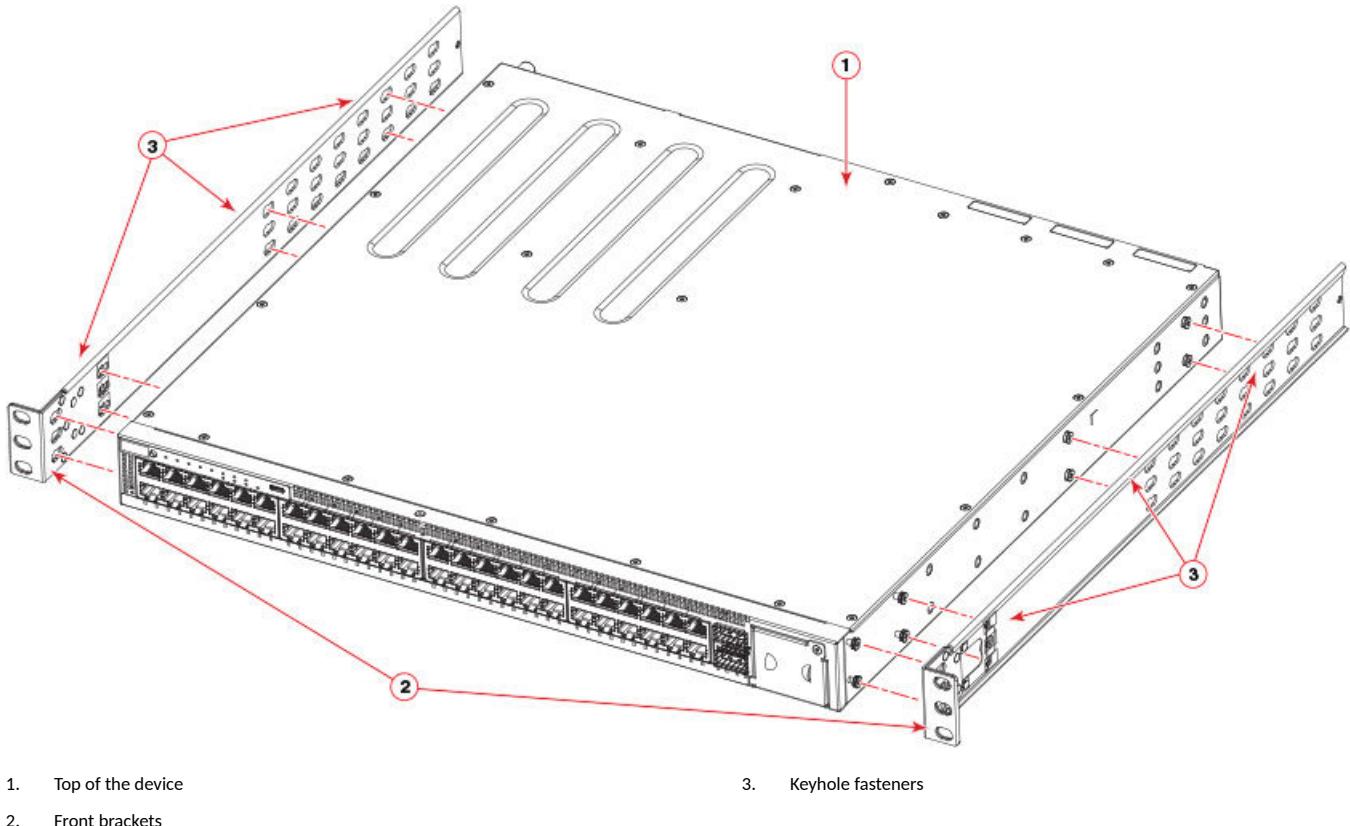
Complete the following steps to attach the front brackets to the device.

1. Position the right front bracket with the flat side against the right side of the device over the eight keyhole fasteners, as shown in Figure 23.

2. Slide the bracket toward the front of the device until the bracket latch clicks into its secure position.

3. Repeat the preceding steps to attach the left front bracket to the left side of the device.

FIGURE 23 Attaching the Front Brackets
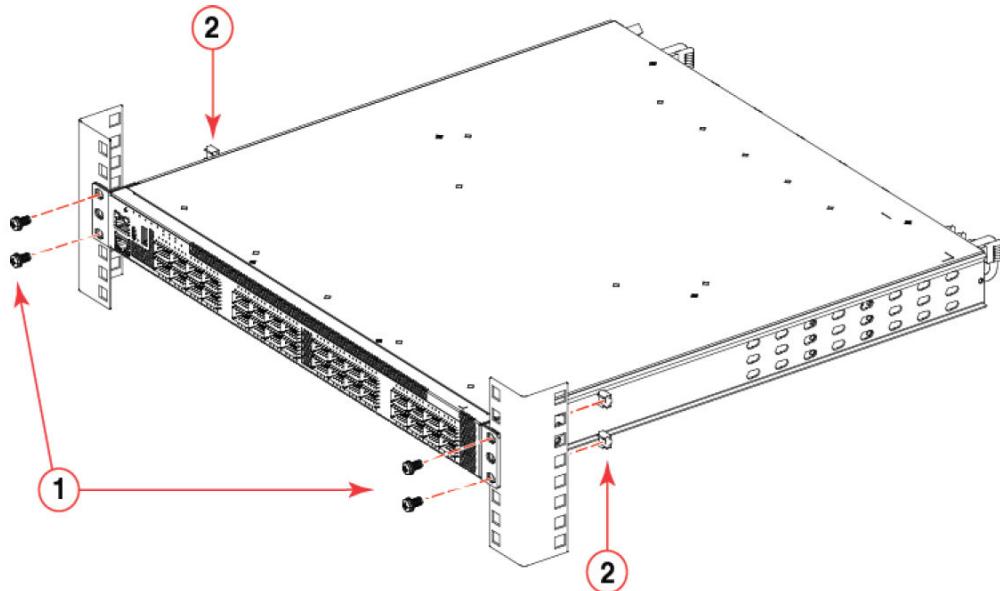
1.	Top of the device	3.	Keyhole fasteners
2.	Front brackets		

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 24, 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-inch 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-inch panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.

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

FIGURE 24 Positioning the Device in the Rack

1.	Screws, 10-32 x 5/8-inch, panhead Phillips	2.	Retainer nuts, 10-32

Four-Post Rack Mount Installation (ICX-RMK-4POST-TL)

Use the following instructions to install the RUCKUS ICX 7550 switch in EIA racks that are between 46 cm and 79 cm (18 inches to 31 inches) using the four-post flush-mount rack kit included with the switch.

> **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 the installation.

The following items are required to install the device using the four-post flush-mount rack kit (ICX-RMK-4POST-TL):

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

Parts List

The parts provided in the four-post flush-mount rack kit (ICX-RMK-4POST-TL) are illustrated in the following figure.

FIGURE 25 Items in the Four-Post Flush-Mount Rack Kit

1.	Front brackets (2)	3.	Screw, 10-32 x 5/8-inch, panhead Phillips (12)
2.	Rear brackets (2)	4.	Retainer nut, 10-32 (12)

Ensure that the items listed and illustrated in the preceding figure are included in the kit.

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

Flush-Front Mounting

⚠️ **CAUTION**
The device must be turned off and disconnected from the fabric during this procedure.

Complete the following tasks to install the device in a four-post rack:
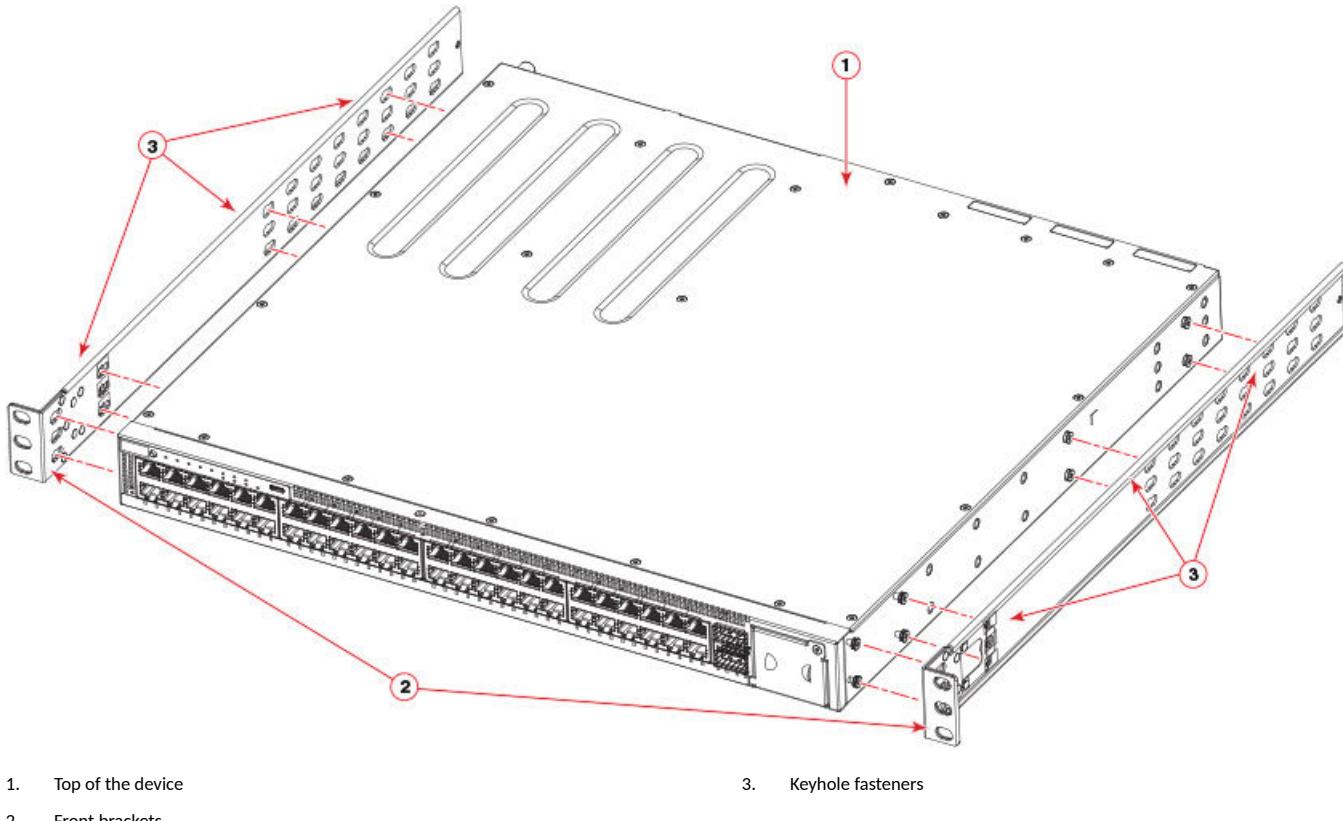
1. Attaching the Front Brackets on page 38

2. Installing the Device in the Rack on page 39

3. Attaching the Rear Brackets to the Rack Posts on page 40

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 over the eight keyhole fasteners, as shown in Figure 26.

2. Slide the bracket toward the front of the device until the bracket latch clicks into its secure position.

3. Repeat the preceding steps to attach the left front bracket to the left side of the device.

FIGURE 26 Attaching the Front Brackets
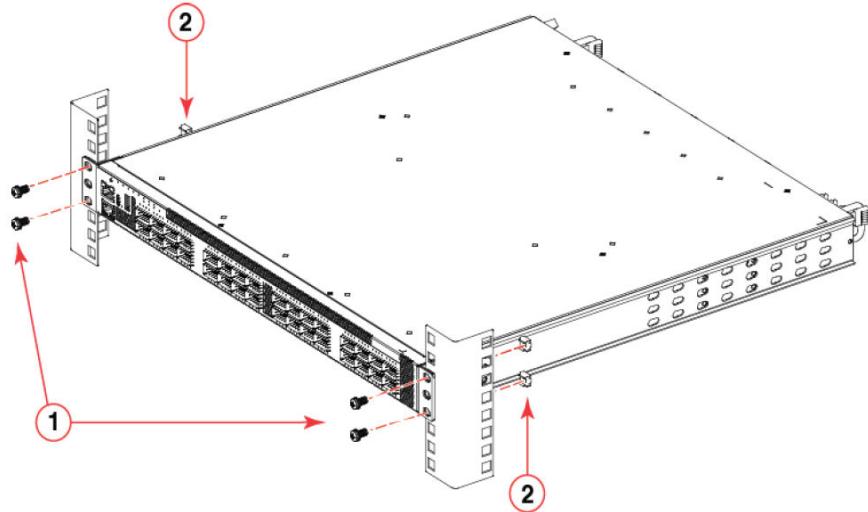
1. Top of the device	3. Keyhole fasteners
2. Front brackets	

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 27, 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-inch 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-inch panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.

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

FIGURE 27 Positioning the Device in the Rack
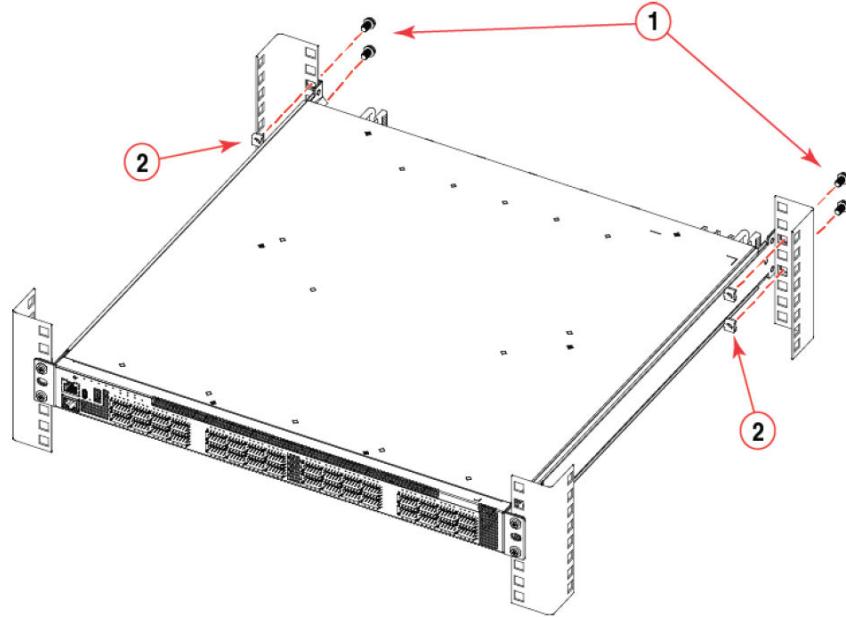
1. Screws, 10-32 x 5/8-inch, panhead Phillips	2. Retainer nuts, 10-32

Attaching the Rear Brackets to the Rack Posts

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

1. Slide the right rear bracket into the right front bracket and the left rear bracket into the left front bracket.

2. Adjust the rear brackets to the rack depth.

3. Attach the right rear bracket to the right rear rack post using two 10-32 x 5/8-inch panhead screws and two retainer nuts, as shown in Figure 28. Use the upper and lower holes in the bracket.

4. Attach the left rear bracket to the left rear rack post using two 10-32 x 5/8-inch panhead screws and two retainer nuts. Use the upper and lower holes in the bracket.

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

FIGURE 28 Attaching the Rear Brackets to the Rack Posts

| 1. | Screws, 10-32 x 5/8-inch, panhead Phillips | | 2. | Retainer nuts, 10-32 |

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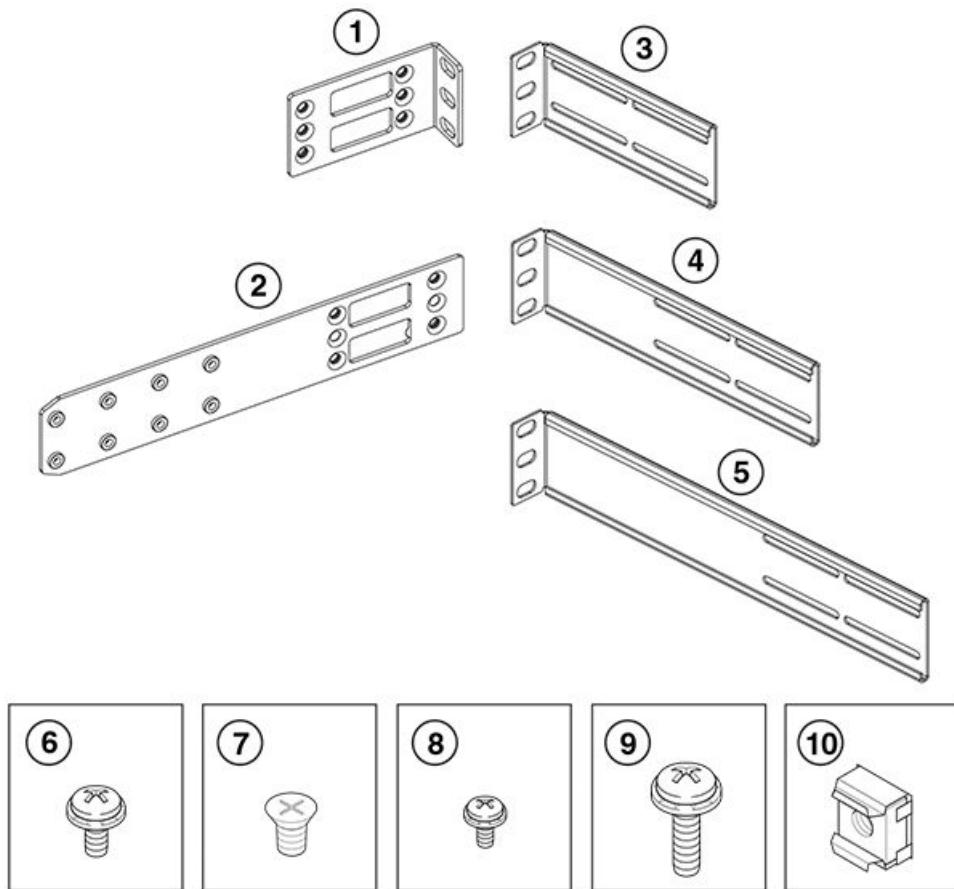
Mounting the Device
Installing the 1U, 1.5U, and 2U Universal Kit for Four-Post Racks (XBR-R000295)

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

1.	Front brackets (2)	
2.	Bracket extensions (2)	
3.	Rear brackets, short (2)	
4.	Rear brackets, medium (2)	
5.	Rear brackets, long (2)	

6. Screw, 8-32 x 5/16-in., panhead Phillips (8)
7. Screw, 8-32 x 5/16-in., flathead Phillips (16)
8. Screw, 6-32 x 1/4-in., panhead Phillips (8)
9. Screw, 10-32 x 5/8-in., panhead Phillips (8)
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.

Flush-Front Mounting the Device in a Rack

CAUTION
The device must be turned off and disconnected from the fabric 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 43

2. Attaching the Bracket Extensions to the Device on page 44

3. Installing the Device in the Rack on page 45

4. Attaching the Rear Brackets to the Extensions on page 46

5. Attaching the Rear Brackets to the Rack Posts on page 48

Attaching the Front Brackets

Complete the following steps to attach the front brackets to the device.
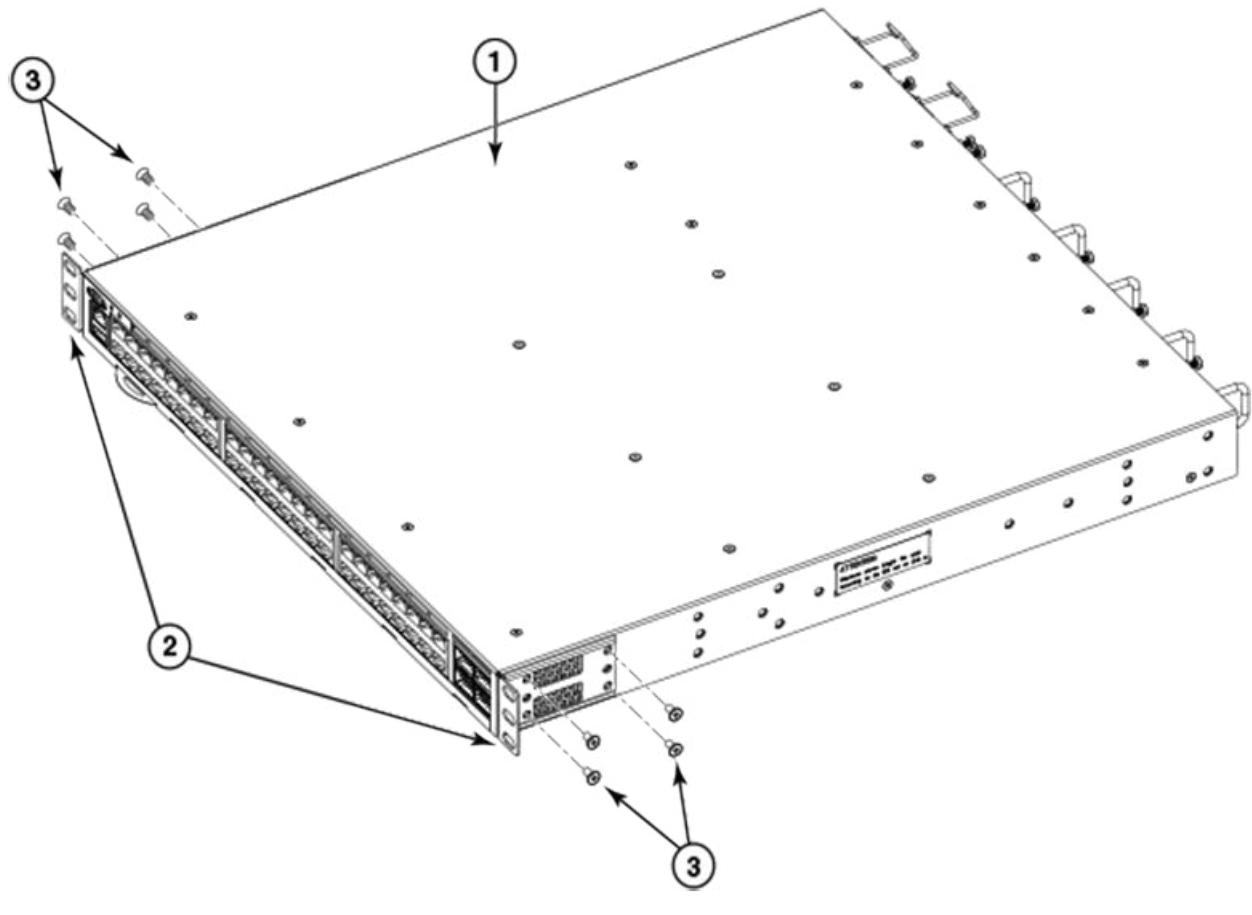
1. Position the right front bracket with the flat side against the right side of the device at the front of the device, as shown in Figure 30.

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 30 Attaching the Front Brackets

1.	RUCKUS ICX switch	3.	Screws, 8-32 x 5/16-in., flathead Phillips
2.	Front brackets		
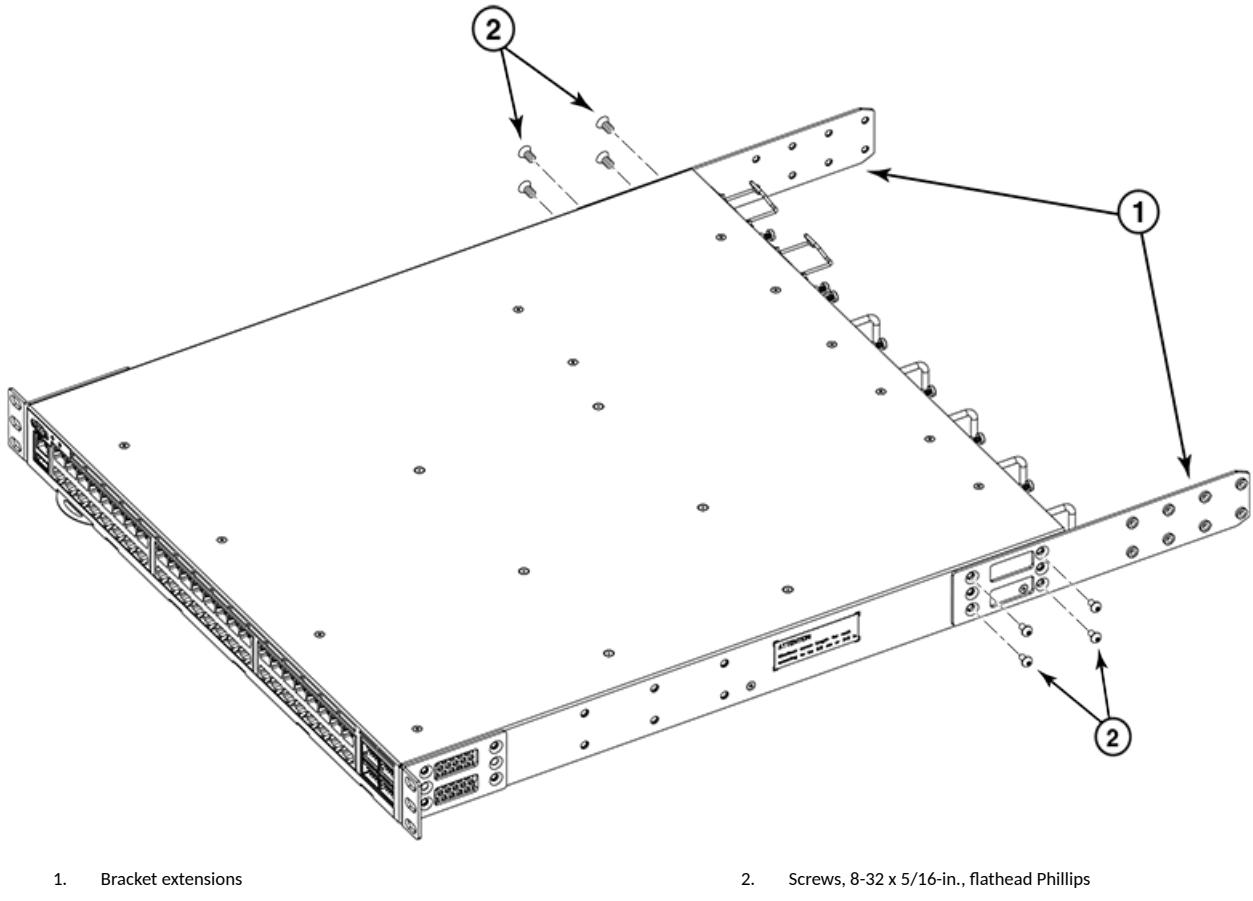
Attaching the Bracket Extensions to the Device

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 31.

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.

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

FIGURE 31 Attaching the Bracket Extensions to the Device

1.	Bracket extensions	2.	Screws, 8-32 x 5/16-in., flathead Phillips

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 , 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 32 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 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 33.

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

   Refer to Figure 34 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.

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 33 Attaching the Short Rear Brackets to the Extensions

| 1. | Rear brackets | 2. | Screws, 6-32 x 1/4-in., panhead Phillips |
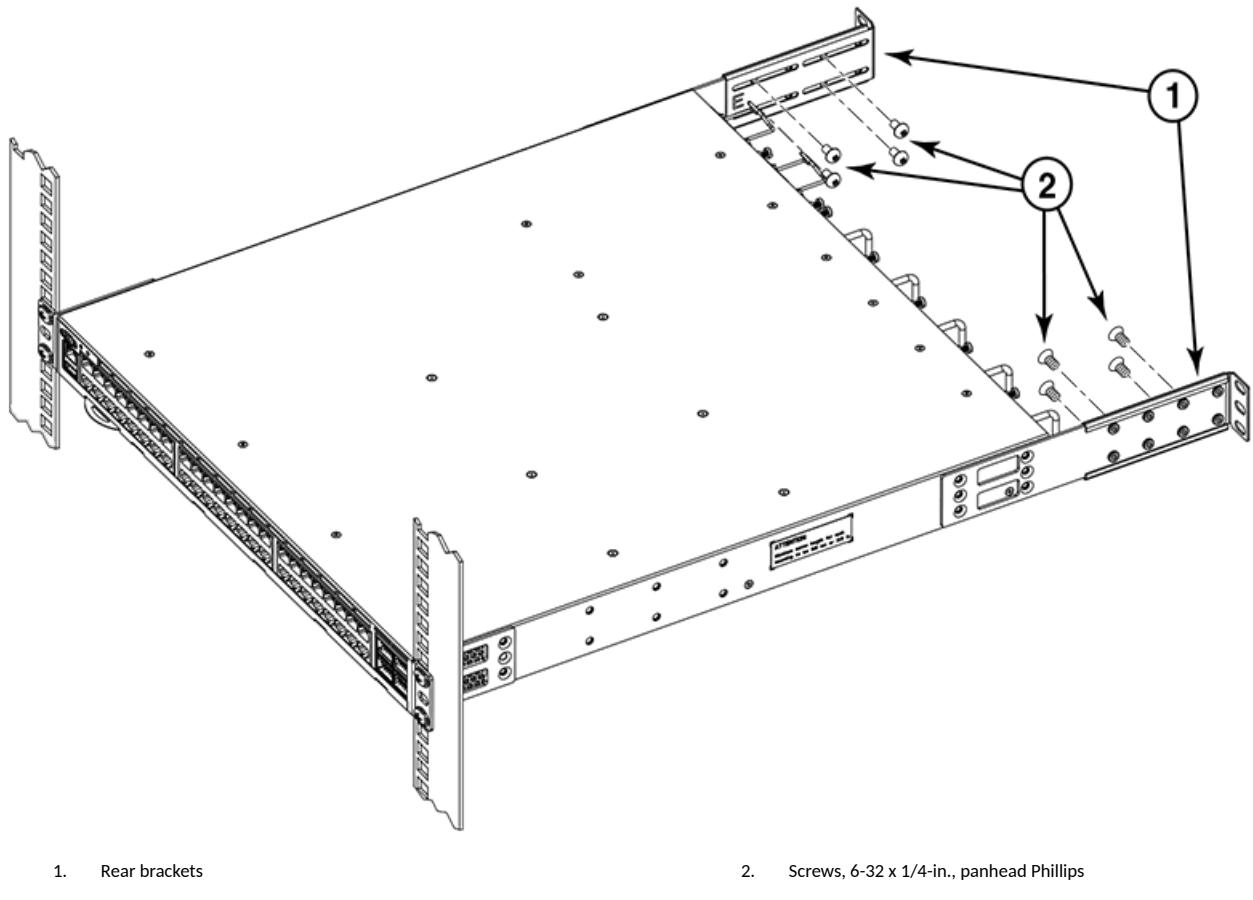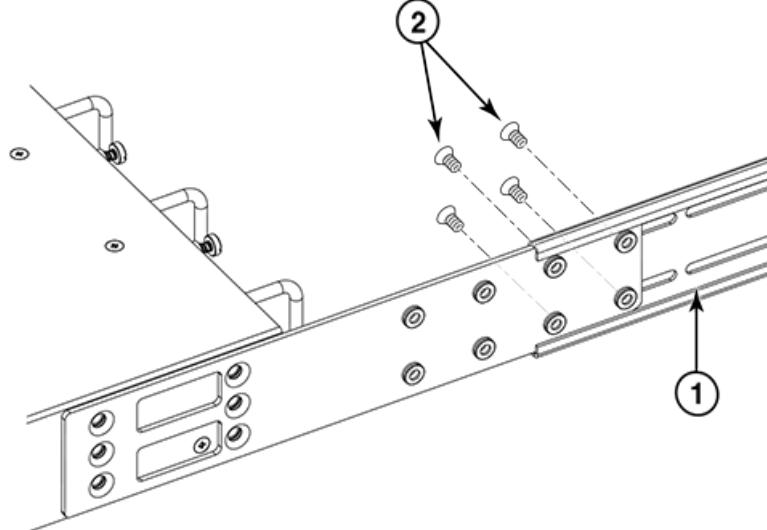
FIGURE 34 Attaching the Medium or Long Rear Brackets to the Extensions
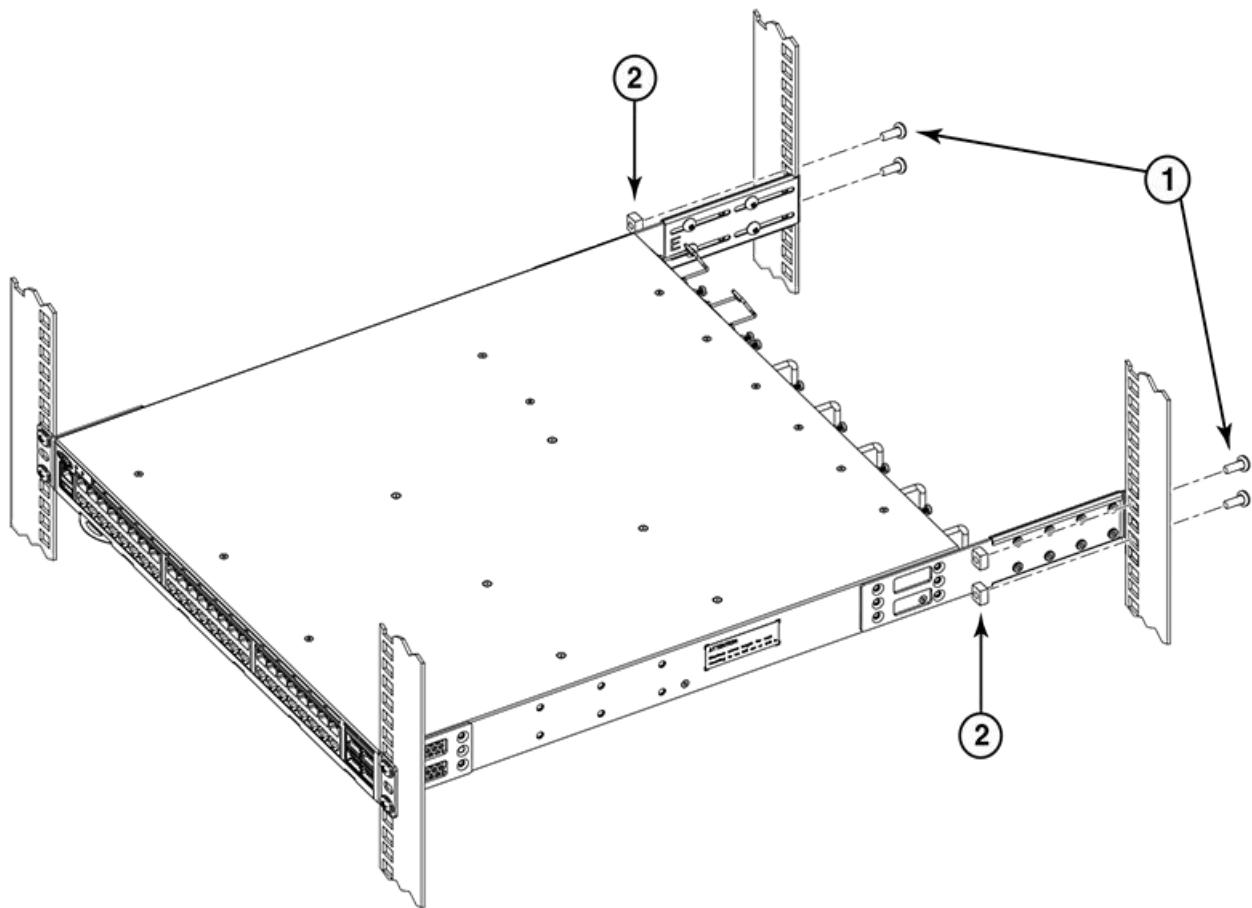
1. Rear bracket, medium or long
2. Screws, 6-32 x 1/4-in., panhead Phillips

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 35. 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 35 Attaching the Rear Brackets to the Rack Posts

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

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 fabric 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:

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.
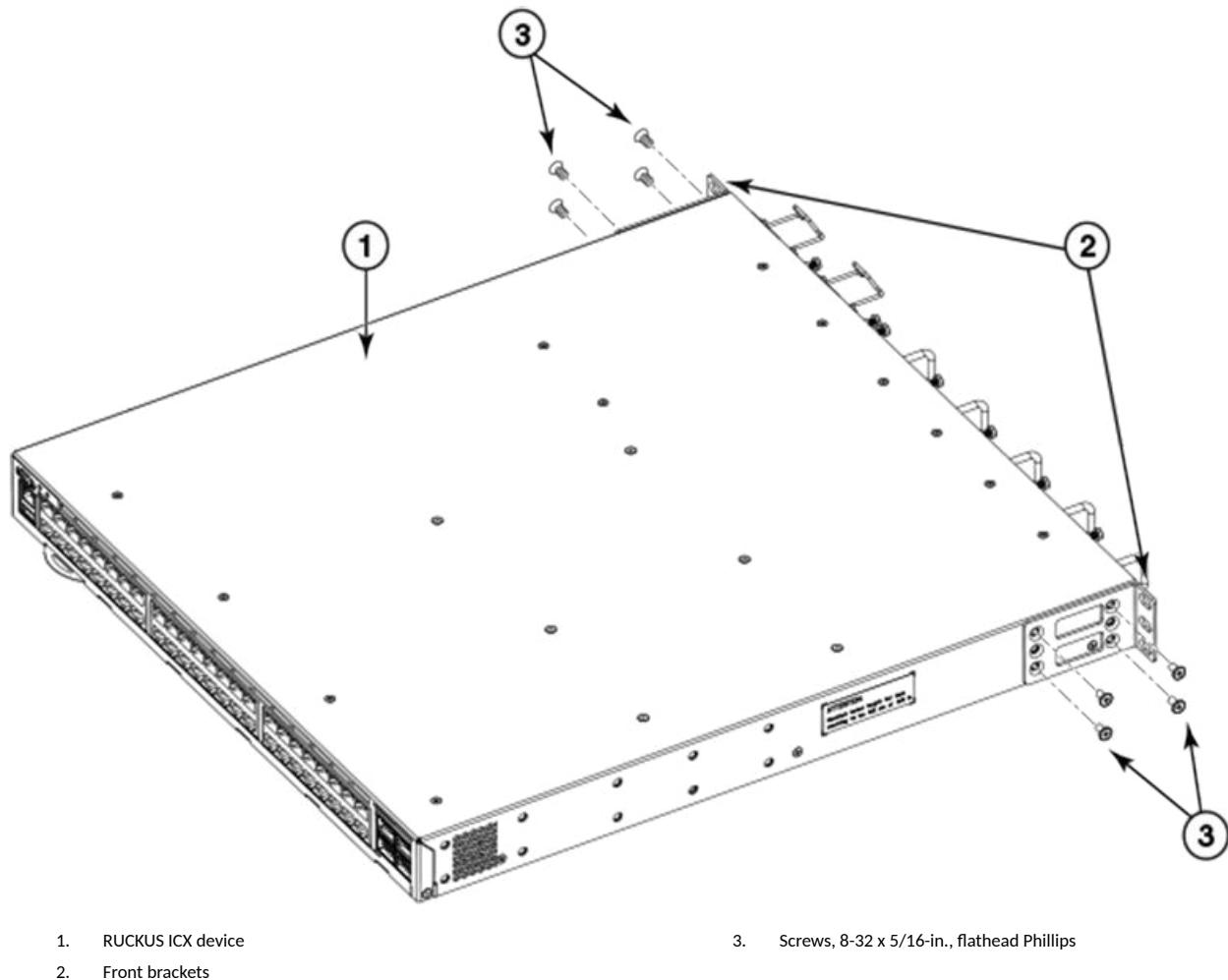
1. Position the right front bracket with the flat side against the right rear side of the device, as shown in Figure 36.

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 36 Front Brackets to the Rear of the Device
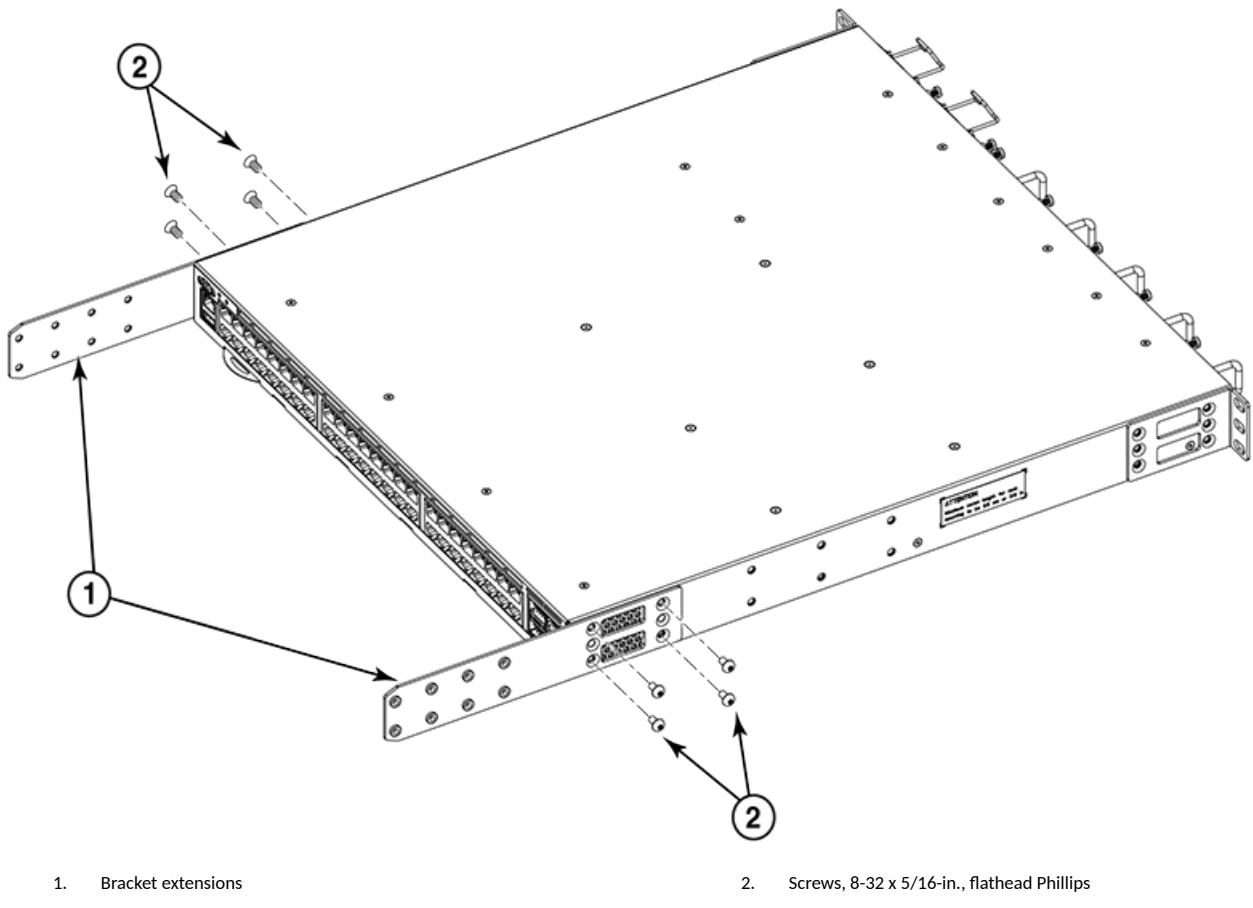
1.	RUCKUS ICX device	3.	Screws, 8-32 x 5/16-in., flathead Phillips
2.	Front brackets		

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 37.

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.

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

FIGURE 37 Attaching the Bracket Extensions to the Device

| 1. | Bracket extensions | 2. | Screws, 8-32 x 5/16-in., flathead Phillips |

Installing the Device in the Rack

Complete the following steps to install the device in the rack.
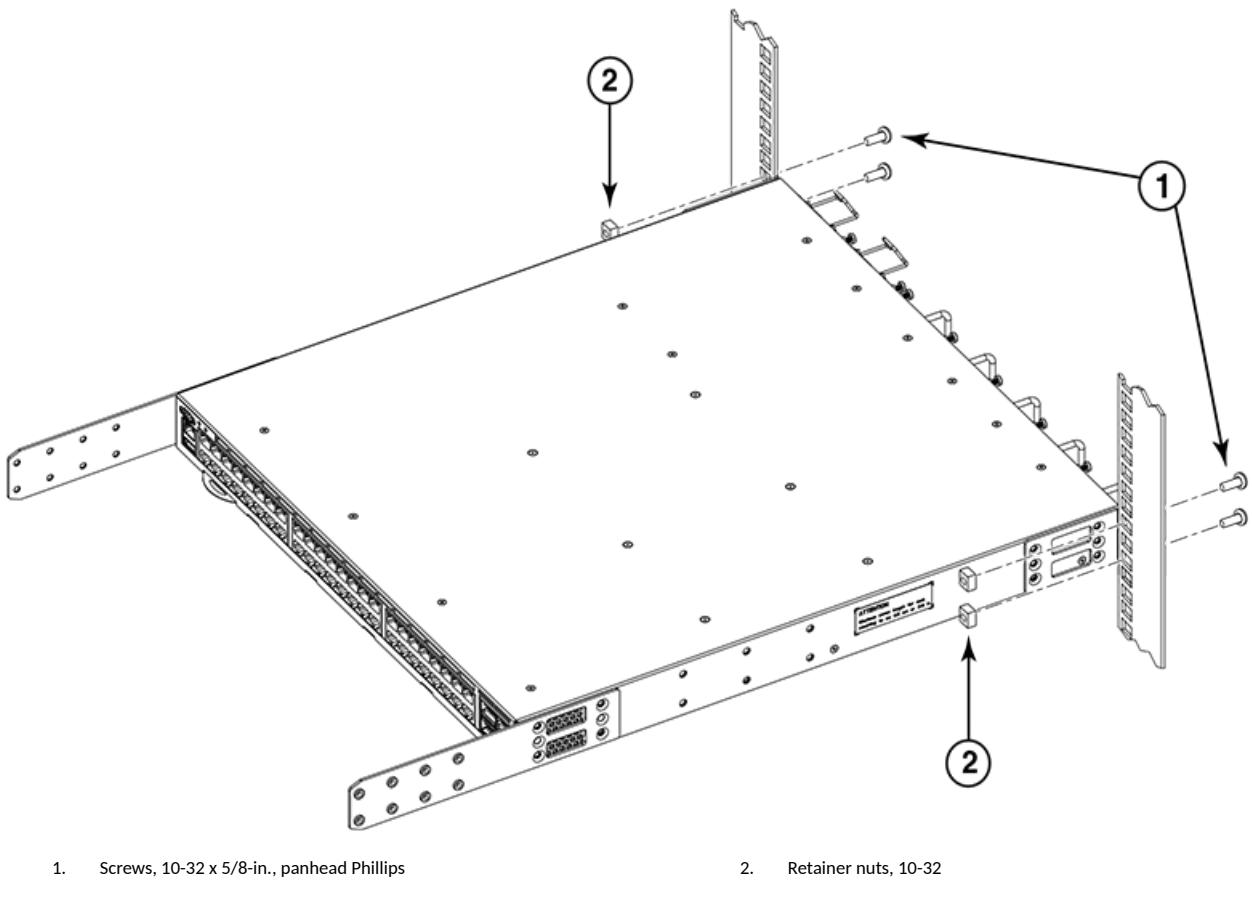
1. Position the device in the rack, as shown in Figure 38, providing temporary support under the device until the rail kit is secured to the rack.

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 38 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 39.
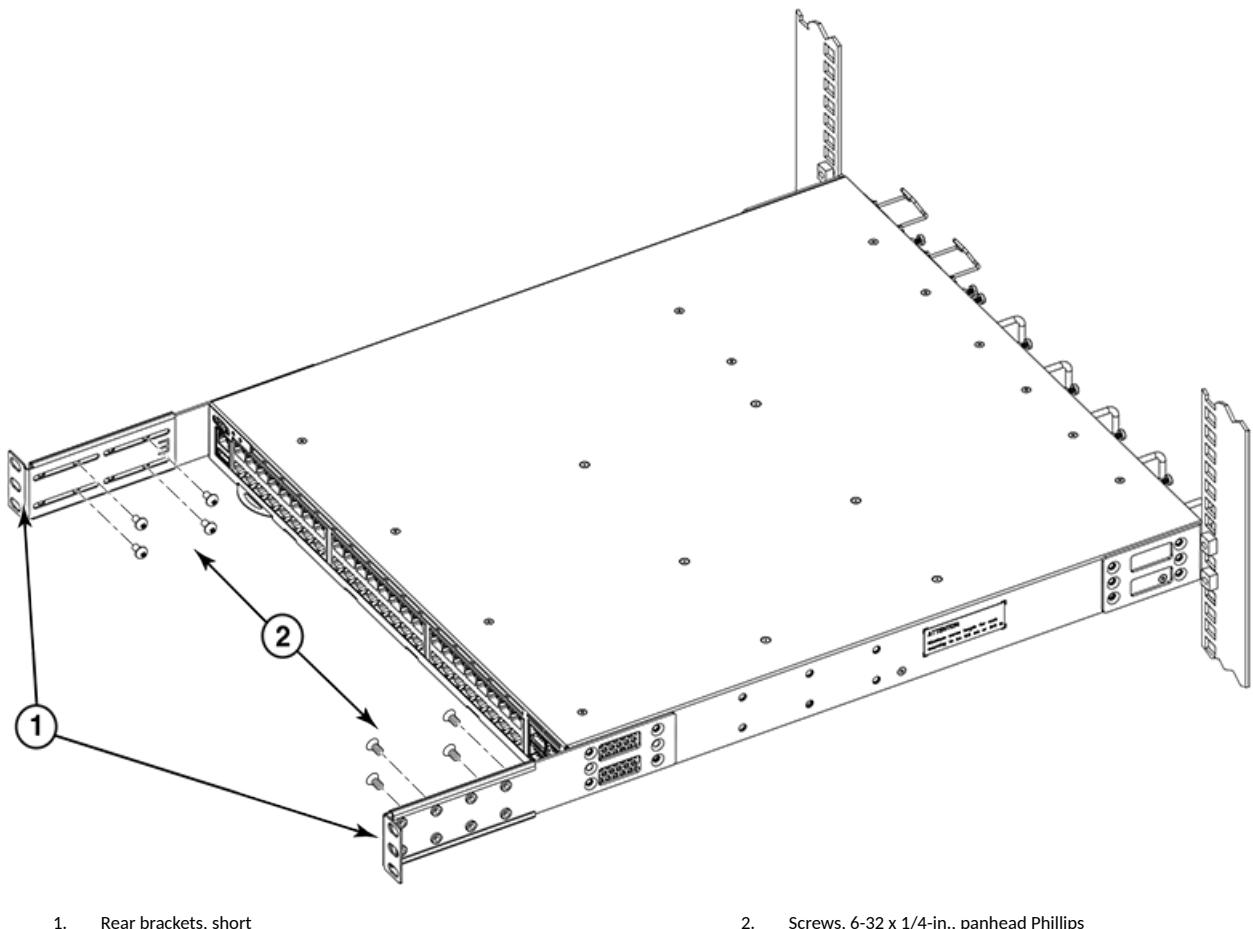
      The short rear brackets are shown. Use the first and third vertical pairs of holes for the screws.

      Refer to Figure 40 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.

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).
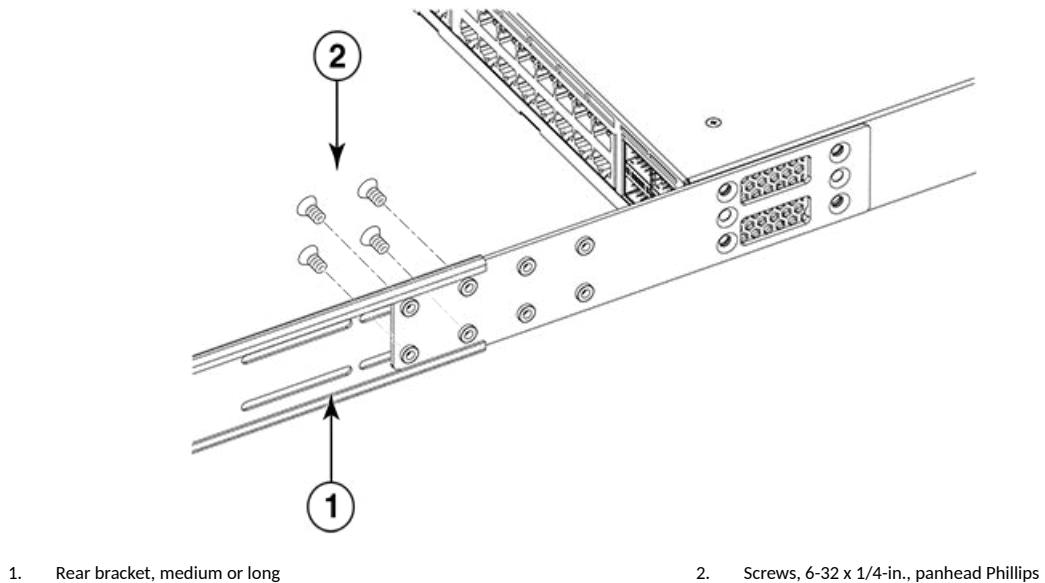
FIGURE 39 Attaching the Short Rear Brackets to the Extensions at the Front of the Device

1. Rear brackets, short	2. Screws, 6-32 x 1/4-in., panhead Phillips

FIGURE 40 Attaching the Medium or Long Rear Brackets to the Extensions

1.	Rear bracket, medium or long	2.	Screws, 6-32 x 1/4-in., panhead Phillips
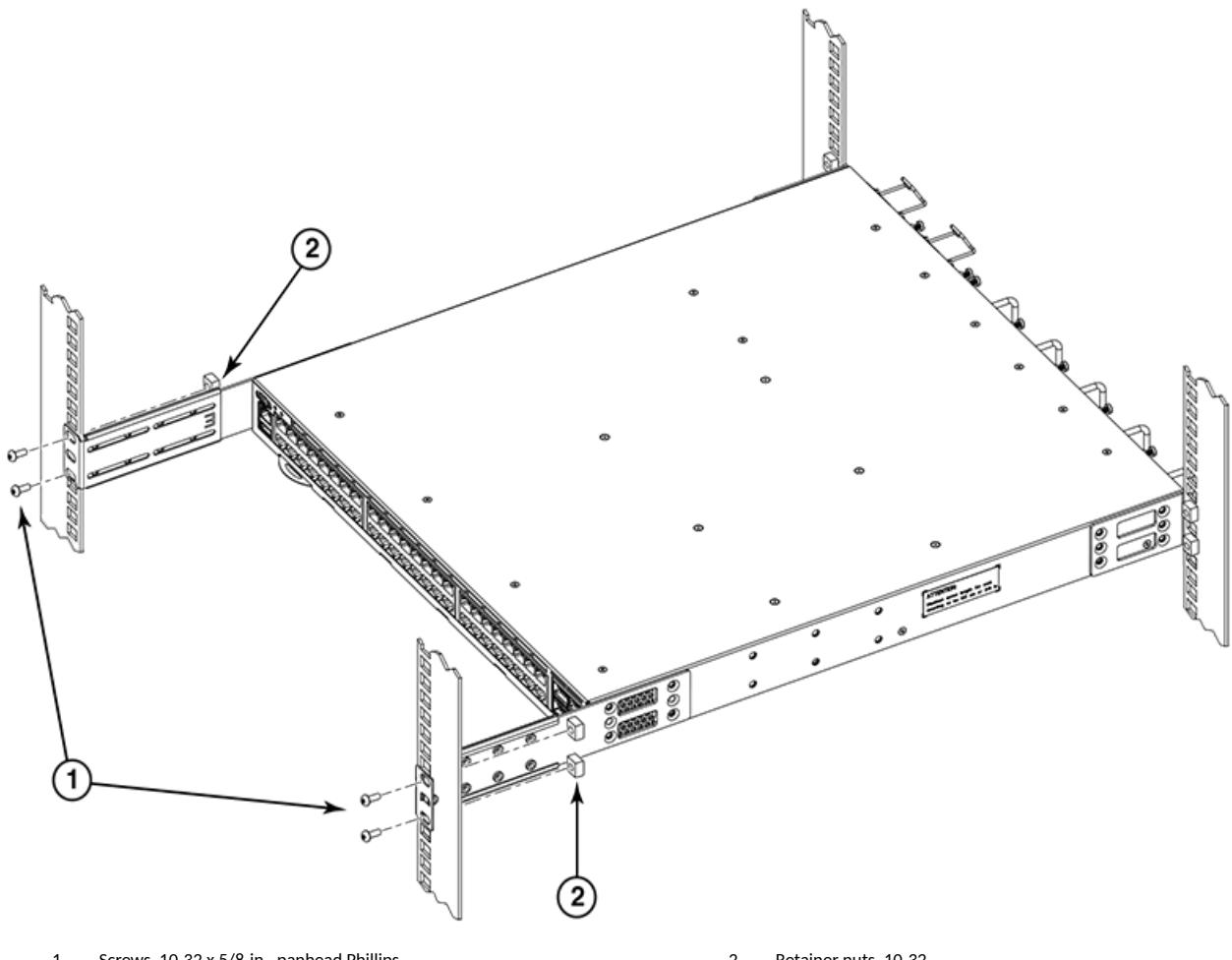
Attaching the Rear Brackets to the Front Rack Posts

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 41. 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.

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

    FIGURE 41 Attaching the Rear Brackets to the Front Rack Posts

1. Screws, 10-32 x 5/8-in., panhead Phillips   2. Retainer nuts, 10-32

Connecting ICX 7550 Devices in a Stack

Stacking configuration requirements
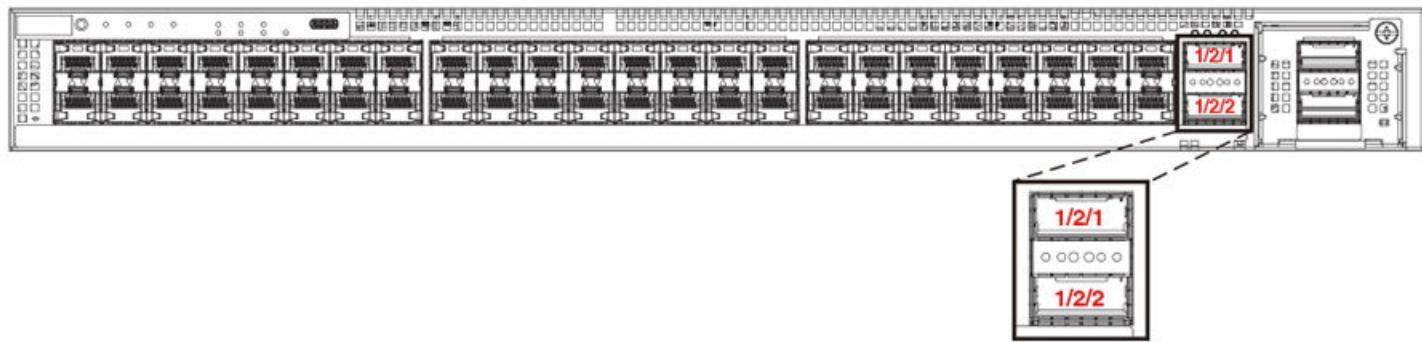
Before configuring the stack using the CLI, physically connect the devices using stacking cables. For information about configuring a stack, refer to the *Ruckus FastIron Stacking Configuration Guide*.
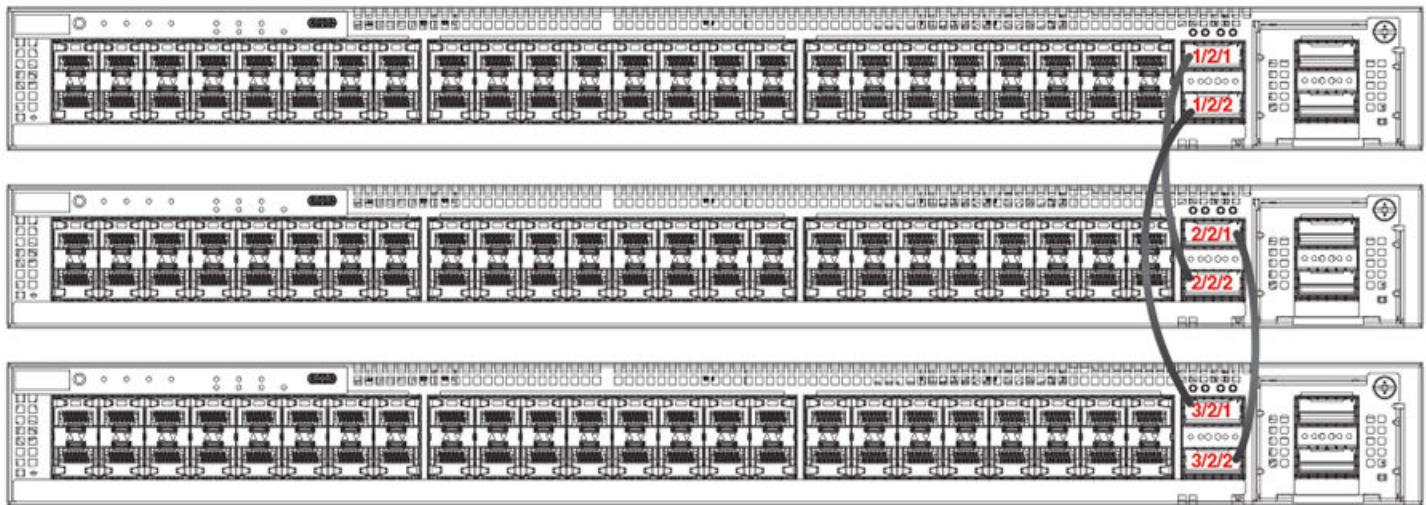
ICX 7550 Stacking Topologies

The following figures show available ICX 7550 stacking ports on the front panel. The model shown is an ICX 7550-48F. Although the front-panel port configuration varies among ICX 7550 models, all ICX 7550 models stack from Module 2 as shown.

Available front panel stacking ports are 1/2/1 and 1/2/2. These two ports form the ICX 7550 valid-stack-port set.

FIGURE 42 ICX 7550 Stacking Ports

The following figure shows an ICX 7550-48F linear stack.

FIGURE 43 ICX 7550 Linear Stack

The following figure shows an ICX 7550-48F ring stack.
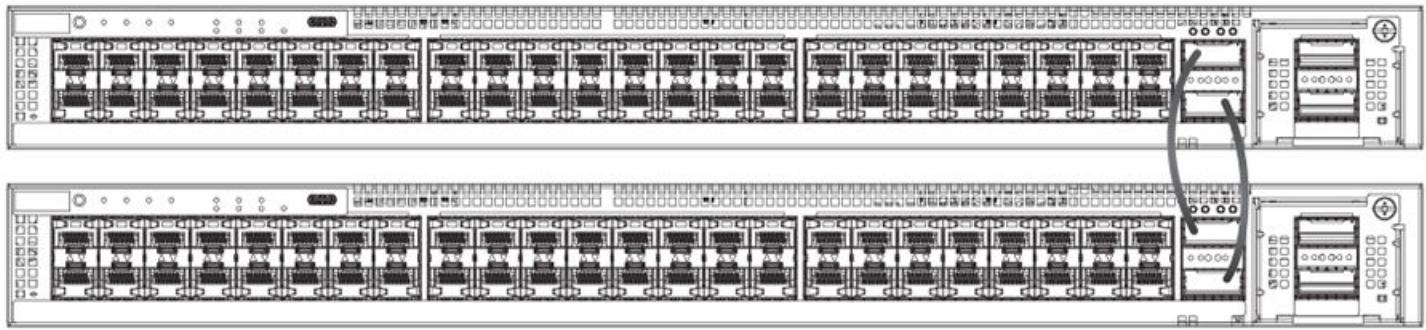
FIGURE 44 ICX 7550 Ring Stack

ICX 7550 Two-unit Stack with Linear-Topology Trunk

The following figure depicts an ICX 7550-48F two-unit stack with a linear-topology trunk. This is the only form of stacking trunk available for ICX 7550 devices. For more information, refer to the "Configuring Two-unit Stack Linear-topology Trunks" section of the *RUCKUS FastIron Stacking Configuration Guide*.

FIGURE 45 ICX 7550 Two-Unit Stack with Linear-Topology Trunk

ICX 7550 Stacking Configuration Notes

Consider the following points when configuring an ICX 7550 stack:

- Any ICX 7550 models can be linked to form a stack from Module 2.

- Module 2 ports can be used for stacking or data uplink. Refer to the "Converting from Stacking to Data Uplink on ICX 7550 Module 2" section of the *RUCKUS FastIron Stacking Configuration Guide*.

- Stacking cannot be enabled on an ICX 7550 device containing configuration for Module 2, including port speed. The configuration must be removed before stacking is enabled.

- ICX 7550-24, ICX 7550-24P, ICX 7550-48, and ICX 7550-48P devices support only 40-Gbps stacking.

- ICX 7550-24F, ICX 7550-48C, ICX 7550-48F, ICX 7550-24ZP, and ICX 7550-48ZP devices support both 40-Gbps and 100-Gbps stacking.

- ICX 7550-24F, ICX 7550-48C, ICX 7550-48F, ICX 7550-24ZP, and ICX 7550-48ZP models can support a 100-Gbps port in one direction and a 40-Gbps port in the other direction in a stacking ring topology; however, this configuration is not recommended.

- ICX 7550 stacking links can have a speed of 40 Gbps or 100 Gbps, depending on the model and the installed optics.

  Stacking port speed is not manually configurable for ICX 7550 devices and is automatically determined by the optics installed on the device.

  ICX 7550 100G stacking is supported only on passive cables.

- Module 2 port speeds can be configured on an ICX 7550 standalone (but not on a stack). Refer to the "Converting from Stacking to Data Uplink on ICX 7550 Module 2" section of the *RUCKUS FastIron Stacking Configuration Guide*.

- A stacking trunk between ICX 7550 devices is only possible in a two-unit configuration (refer to the "Configuring Two-unit Stack Linear-topology Trunks" section of the *RUCKUS FastIron Stacking Configuration Guide*).

- If Module 3 has a 2 X 40-Gbps module installed, the user will be unable to configure Module 2 for data uplink.

- When 100G stacking is operational, LEDs1 and 3 (for ports 1/2/1 and 1/2/2) glow (solid green).

ICX 7550 Module 2 Stacking and Uplink Options

ICX 7550 Module 2 supports stacking by default. Port speed is automatically detected based on the optic inserted.

You can convert a standalone ICX 7550 for 100-Gbps data uplink (ports may then operate at 100-Gbps or 40-Gbps depending on module and optics). Refer to the "Converting from Stacking to Data Uplink on ICX 7550 Module 2" section of the *RUCKUS FastIron Stacking Configuration Guide*.

> **NOTE**
> In 100-Gbps uplink mode on ICX 7550-24F or ICX 7550-24ZP, port 1/2/1 is invalid.

The following table summarizes available Module 2 stacking and uplink options for each ICX 7550 model.

TABLE 13 ICX 7550 Module 2 Stacking and Uplink Options

ICX 7550 Model	Stacking		Uplink	
	40-Gbps	100-Gbps	40-Gbps	100-Gbps
ICX 7550-24 ICX 7550-24P ICX 7550-48 ICX 7550-48P	2 X 40-Gbps	N/A	2 X 40-Gbps	N/A
ICX 7550-24F ICX 7550-24ZP	2 X 40-Gbps	2 X 100-Gbps	2 X 40-Gbps	1 X 100-Gbps
ICX 7550-48F ICX 7550-48ZP	2 X 40-Gbps	2 X 100-Gbps	2 X 40-Gbps	2 X 100-Gbps

ICX 7550 Module 2 Profile Compatibility with Module 3

The following table summarizes compatibility between Module 2 stacking or data uplink speed configurations and Module 3 physical connections.

> **NOTE**
> ICX 7550 devices use the same flex modules (also known as expansion modules) as ICX 7650 devices.

TABLE 14 ICX 7550 Module 2 Stacking and Uplink Compatibility with Module 3 User Profiles

ICX 7550 Model	Module 2	Module 3		
	Stacking / Uplink	Uplink Flex Module (Any One)		
		40-Gbps Module	100-Gbps Module	10-Gbps Module
ICX 7550-24 ICX 7550-24P	2 X 40-Gbps stacking	2 X 40G	N/A	4 X 10GF
ICX 7550-48 ICX 7550-48P	2 X 40-Gbps stacking	2 X 40G	N/A	4 X 10GF
ICX 7550-24F ICX 7550-24ZP	2 X 40-Gbps stacking or 2 X 100-Gbps stacking	2 X 40G	1 X 100G	4 X 10GF
	1 X 100-Gbps data uplink	N/A		
ICX 7550-48F ICX 7550-48ZP	2 X 40-Gbps stacking or 2 X 100-Gbps stacking	2 X 40G	1 X 100G	4 X 10GF
	2 X 100-Gbps data uplink	N/A		

Initial Setup and Verification

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
- An USB console cable with Type-C connector (Type-C USB cable not included with the device)
- An RJ-45 to RJ-45 eight-foot serial console cable (included with the switch in the accessory kit)
- RJ-45 to DB-9 adapter (included with the switch in the accessory kit)
- An Ethernet cable
- Access to a TFTP server or USB removable media for backing up (uploading) or downloading the device configuration (optional)

Providing Power to the Device

After you complete the physical installation, you can power on the system.

1. Install alternating-current (AC) or direct-current (DC) power supplies in the switch.

2. Attach AC or DC power cables to the power supply connectors on the rear panel.

3. Connect the power cables to the 100-240 VAC or 40-72 VDC power source.

   NOTE
   To turn the system off, simply unplug the power cable or cables.

   NOTE
   The equipment should be installed near a power source and in an easily accessible location.

Establishing a First-Time Connection to the Console Port

You can use either the USB Type-C console port or the RJ-45 serial 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 or RJ-45 serial cable. Perform the following steps to log in to the device for the first time through the console connection.

1. Do one of the following:

   - Connect a standard USB cable to the USB Type-C console connector on the device and to a USB port on the workstation. To connect the USB Type-C console port on the device 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.

   - Connect a standard RJ-45 cable to the RJ-45 serial console connector on the device and to an RS232 serial port on the 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 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 sessions parameters as follows:

   - In a Windows environment, use the following 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 CLI prompt, enter the following command to change to the privileged EXEC mode:

   ```
   device> enable
   device#
   ```

   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. You can also assign other passwords using Alto SZ after an enable password has been configured for a Super User on the device using the CLI.

   - 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 CONFIG mode but only with read access.

     > **NOTE**
     > Passwords can be up to 32 characters long. They must begin with an alphabetic character. They can include numeric characters, the period (.), and the underscore (_) only. Passwords are case-sensitive, and they are not displayed when you enter them on the command line.

6. Access the configuration mode of the CLI by entering the following command:

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

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

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

   > **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
```

Performing the Factory Reset

Complete the following steps to perform a factory reset.

1.   Remove power from the switch.

2.   Press and hold the reset button while applying power to the switch.

3.   Release the reset button after all of the system LEDs flash amber.

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

Recovering from a Lost Password

If a password has been configured for the device but the password has been lost, you can regain Super User access to the device using the following procedure.

Recovery from a lost password requires direct access to the serial port and a system reset.

1.   Start a CLI session over the serial interface to the RUCKUS ICX device.

2.   Reboot the device.

3.   While the system is booting, before the initial system prompt appears, enter **b** to enter the boot monitor mode.

4.   Enter **no password**. (You cannot abbreviate this command.)

5.   Enter **boot**. This command causes the device to bypass the system password check.

6.   After the console prompt reappears, assign a new password.

Port Statistics Clearing Behavior

Port statistics will be cleared on all ports when one of the following actions is performed:

●   Power cycle of the switch

●   Switch reload

Port statistics will be cleared only on a specific port or ports when the speed is changed on those ports.

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 assign an IP address for a device running Layer 2 software.

```
device(config)# ip address 10.22.3.44 255.255.255.0
device(config)# ip default-gateway 10.22.3.1
device(config)# write memory
```

> **NOTE**
> You do not need to assign a default gateway address for single subnet networks.

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 1/1/1
device(config-if-e1000-1/1/1)#
device(config-if-e1000-1/1/1)#ip address 10.10.10.20 255.255.255.0
```

> **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.

3. Assign an interface IP address to the out-of-band management Ethernet port.

```
device(config)#interface management 1
device(config-if-mgmt-1)#
device(config-if-mgmt-1)#ip address 10.22.3.44 255.255.255.0
```

The management port number is always 1.

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. The SNMP text strings do not require quotation marks when they contain blanks but the host name does.

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

   ```
   device(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.

```
device# clock set
  hh:mm:ss   Current Time
device# clock set 10:05:45
  mm-dd-yy/yyyy   Current Date
device# clock set 10:05:45 12-01-16
```

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

Establishing a Connection to the Out-of-Band Management Port

The Gigabit Ethernet management port (RJ-45) on the RUCKUS ICX 7550 non-port side panel provides an out-of-band network connection to the device.

After you assign an IP address, you can access the RUCKUS ICX 7550 from anywhere in the attached network using Telnet, a web browser, or other network management tools. To prevent unauthorized access, RUCKUS recommends that the management port only be connected to a secure private network.

To manage the RUCKUS ICX 7550 through its management port, connect the port to the management Ethernet network using Category 5 or better cable.

Management of the RUCKUS ICX 7550 is described in detail in the *RUCKUS FastIron Management Configuration Guide*.

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.

```
device# 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

Time and 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 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 46 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.
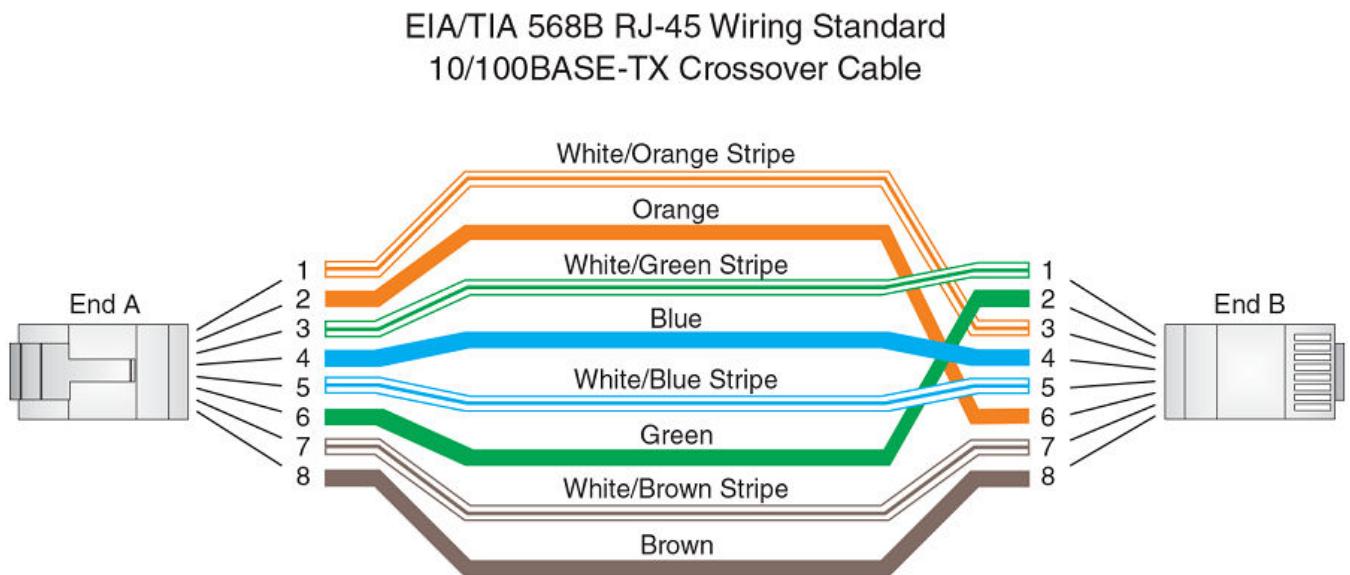
- The minimum bend radius for a 50 micron cable is 2 inches under full tensile load and 1.2 inches with no tensile load.
- Plan for rack space required for cable management before installing the switch.
- Leave at least 1 m (3.28 ft) of slack for each port cable. This provides room to remove and replace 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. The 802.3ab standard (automatic MDI or MDIX detection) 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 47 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 48 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, 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, SFP+, or QSFP+ connector, make sure to keep the protective covering in place.

Installing a New Fiber-Optic Transceiver

To monitor the transceivers, the **show media** command output shows the transceiver information for all interfaces on the device. RUCKUS provides support for third-party transceivers, but may require a RUCKUS transceiver be used for troubleshooting.

Support will not be provided if there is an issue with a third-party transceiver.

> **NOTE**
> RUCKUS-branded removable media devices are recommended for proper operation of the device.

You can install a new transceiver in a slot while the device is powered on and running. For ports not configured in breakout mode, a fixed speed can also be set using the CLI (refer to the *RUCKUS FastIron Management Configuration Guide*). Port speed changes are dynamic and do not require a system reboot.

ATTENTION
Any mismatch between a transceiver and port speed in "fixed speed" mode causes the port to be disabled. Note that the auto-negotiation of link speed with a link partner is not supported on any port.

Installed transceivers are validated against a predefined list and categorized as Qualified, Unqualified, or Unsupported. Qualified transceivers operate normally. Unqualified transceivers are allowed to operate, but a log message is generated to inform the user. Unsupported transceivers are rejected and a port fault log message is generated.

Before installing a fiber-optic transceiver, have an ESD wrist strap available with a plug for connection to the ESD connector on the device.

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

DANGER
Laser radiation. Do not view directly with optical instruments. Class 1M laser products.
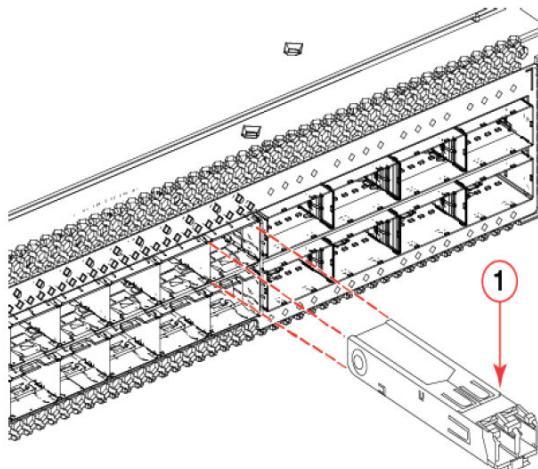
Use the following steps to install a transceiver:

1. Put on the ESD wrist strap and ground yourself by attaching the clip end to a metal surface (such as an equipment rack) to act as ground.

2. Remove the new transceiver from the protective packaging.

3. Remove any protector plugs from the transceivers and the ports.

4. Making sure that the bail (wire handle) is in the unlocked position, place the transceiver in the correctly oriented position on the port, as shown in the following figure.

5. Slide the transceiver into the port until you feel it click into place; then close the bail. Transceivers are keyed to prevent incorrect insertion.

   NOTE
   Each fiber-optic transceiver has a 10-pad gold-plated edge connector on the bottom. The correct position to insert a fiber-optic transceiver in the upper row of ports is with the gold-plated edge down. The correct position to insert a fiber-optic transceiver in the lower row of ports is with the gold-plated edge up.

FIGURE 49 Installing an SFP+ Transceiver in a Port Slot

1. SFP+ transceiver

> **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. Refer to Cleaning the Fiber-Optic Connectors on page 72 .

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.

   > **NOTE**
   > To verify that a RUCKUS ICX 7550 can reach another device through the network, use the **ping** command at any level of the CLI. For more information, refer to the *RUCKUS FastIron Management Configuration Guide*.

Replacing a Fiber-Optic Transceiver

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

While replacing a fiber-optic module, be sure to wear an ESD wrist strap with a plug that can be inserted in the ESD connector on the device.

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

To replace a transceiver from an SFP, SFP+, or QSFP+ 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 fiber cable connector from the port connector.

3. Unlock the transceiver by pulling the bail latch forward, away from the front of the slot.

   > **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.

   > **NOTE**
   > The bail latch may be attached to either the top or the bottom of the SFP, SFP+, QSFP+, SFP28, or QSFP28 transceiver.

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

5. Store the copper or fiber-optic transceiver in a safe, static-free place or in an anti-static bag.

6. Install the new module into the slot.

Long-Reach Multimode Adapter Module

All ICX 7550 models support LRM optics through the ICX7650-4x10G module. Downlink ports on ICX 7550-24F and ICX 7550-48F require LRM adapter modules to support LRM optic transceivers.

The RUCKUS LRM adapter module has two 280-mm Twinax tails and two corresponding SFP+ sockets which operate independently. Power for each of the SFP+ sockets and for the adapter is provided through the Twinax connections.

The LRM adapter module is not field-configurable. Rather, you can apply all configuration to the host switch port. Use the **show lrm-adapter ethernet** command to display the status of the LRM adapter module.
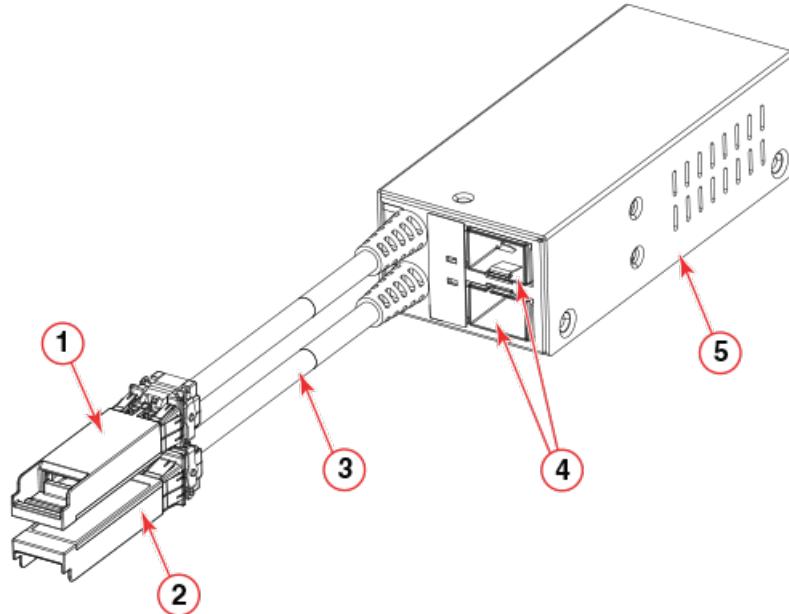
LRM Adapter Module Part Numbers

The LRM adapter module is available in the models listed in the following table.

TABLE 15 LRM Adapter Module Part Numbers

Model/Part Number	Description
10G-SFPP-LRM-1-ADP	10G LRM SFP+ Optic, 1-pack bundle with LRM adapter; includes a rack-mount bracket.
10G-SFPP-LRM-2-ADP	10G LRM SFP+ Optic, 2-pack bundle with LRM adapter; includes rack-mount brackets.
RMK-LRM-ADP	19-inch LRM Adapter Rack Mount Shelf Kit (supports 8 units).

FIGURE 50 LRM Adapter Module

1. Port 1
2. Port 2
3. Passive cable (280 mm)

4. 10G LRM cages
5. LRM Adapter body

The LRM adapter module ships with either one or two LRM optics (10G-SFPP-LRM) depending on the model that you purchased.
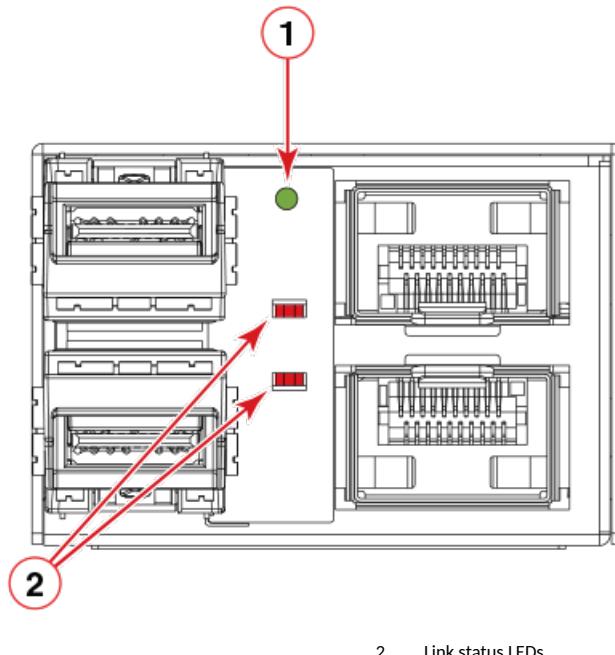
LRM Adapter Module Specifications

- Compatible with SFP+ ports on the ICX 7550-24F and RUCKUS ICX 7550-48F

- Two independent SFP+ sockets for LRM optics

- Two integrated Twinax cables for power and data connectivity to the host switch

- Each port can operate at either 1 Gbps or 10 Gbps

LEDs

On the LRM adapter module, two LEDs indicate the power status and link status of each connection.

FIGURE 51 System and Link LEDs

| 1. | System LED | 2. | Link status LEDs |

TABLE 16 System and Link Status LEDs

System Component	Description
System LED	LED Off: No power Amber: Power applied, no link
Link status LEDs	Steady Green: Link up Blinking Green: Link activity

ICX 7550 Platform Support for the LRM Adapter Module

The following table shows the maximum number of modules and LRM connections for the ICX 7550 models that support the LRM adapter module.

TABLE 17 ICX 7550 Platform Support for the LRM Adapter Module

Platform	Total Number of Modules Supported	Total Number of LRM Connections
ICX7550-24F	12	24

TABLE 17 ICX 7550 Platform Support for the LRM Adapter Module (continued)

Platform	Total Number of Modules Supported	Total Number of LRM Connections
ICX7550-48F	6	12

Unpacking the LRM Adapter Module

When unpacking the LRM adapter module, verify that the shipping carton has the following listed items. Save the shipping carton and packaging in case you need to return the shipment.

- One LRM adapter module
- One or two L-shaped mounting brackets (depending on the model purchased)
- One or two 10G-SFPP-LRM optics (depending on the model purchased)
- China-RoHS Hazardous and Toxic Substance statement

Monitoring the Device

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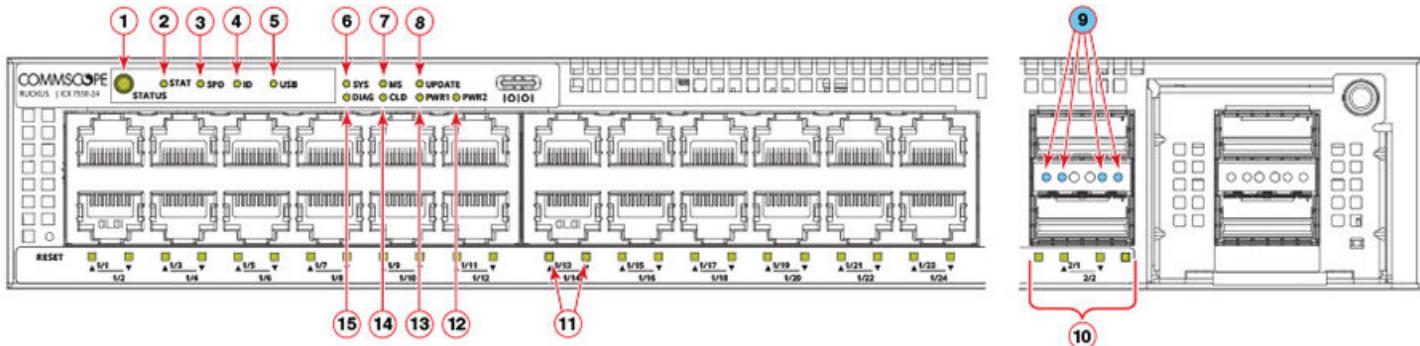
After you install the network cables, you can observe certain LEDs to determine if the network connections are functioning.

The following figures and tables outline the state of each LED, the status of the hardware, and any recommended action.

NOTE
The illustrations are somewhat truncated to show all LEDs.

FIGURE 52 Port-Side LEDs of ICX 7550-24
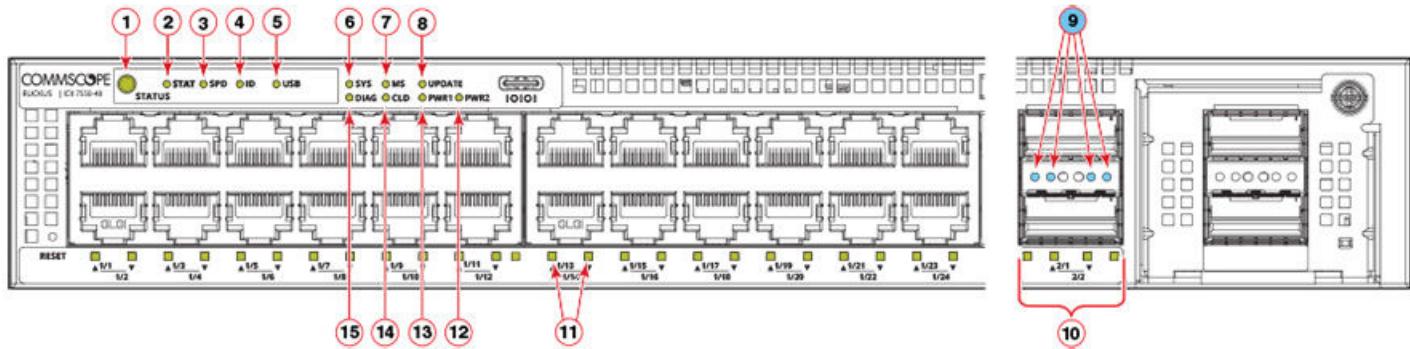
1. Port status mode selection button	9. 40 Gbps link/activity LEDs for stacking port 2/1 (blue)
2. Port link status mode LED	10. 40 Gbps link/activity LEDs for stacking port 2/2
3. Port speed status mode LED	11. RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
4. Member ID status mode LED	
5. USB status mode LED	12. Power 2 LED
6. System status LED	13. Power 1 LED
7. Master/Slave status LED	14. Cloud/On-premise-SmartZone management status LED
8. Software update status LED	15. Diagnostics status LED

FIGURE 53 Port-Side LEDs of ICX 7550-48
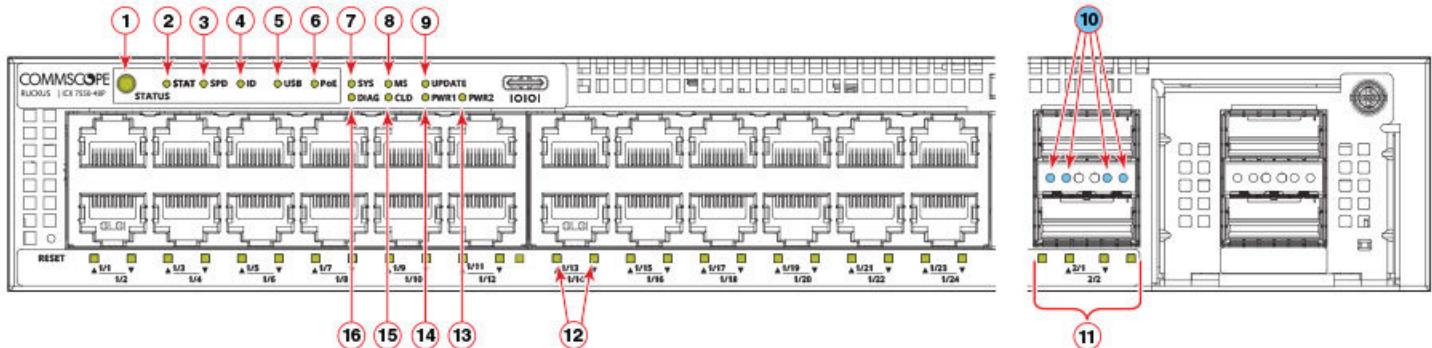
1. Port status mode selection button
2. Port link status mode LED
3. Port speed status mode LED
4. Member ID status mode LED
5. USB status mode LED
6. System status LED
7. Master/Slave status LED
8. Software update status LED

9. 40 Gbps link/activity LEDs for stacking port 2/1 (blue)
10. 40 Gbps link/activity LEDs for stacking port 2/2
11. RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
12. Power 2 LED
13. Power 1 LED
14. Cloud/On-premise-SmartZone management status LED
15. Diagnostics status LED

FIGURE 54 Port-Side LEDs of ICX 7550-24P
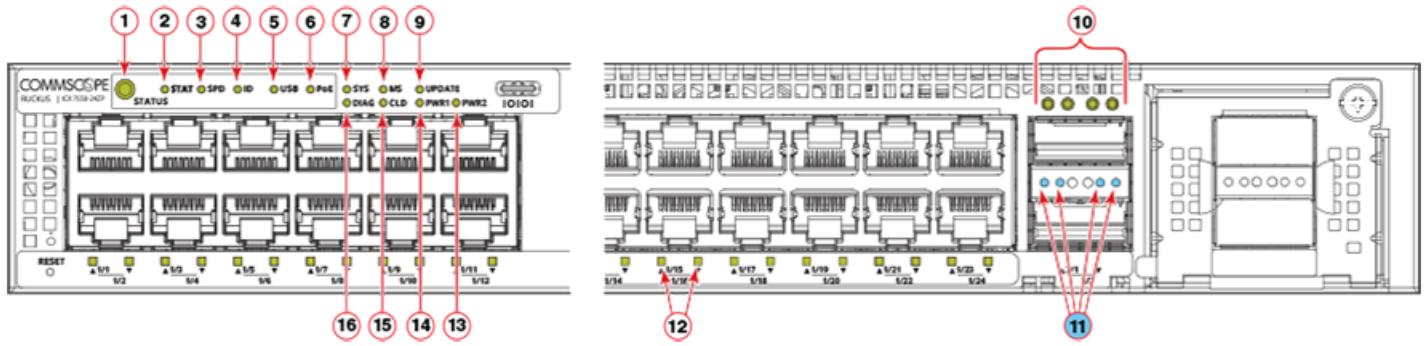
1. Port status mode selection button
2. Port link status mode LED
3. Port speed status mode LED
4. Member ID status mode LED
5. USB status mode LED
6. PoE LED
7. System status LED
8. Master/Slave status LED
9. Software update status LED

10. 40 Gbps link/activity LEDs for stacking port 2/1 (blue)
11. 40 Gbps link/activity LEDs for stacking port 2/2
12. RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
13. Power 2 LED
14. Power 1 LED
15. Cloud/On-premise-SmartZone management status LED
16. Diagnostics status LED

FIGURE 55 Port-Side LEDs of ICX 7550-48P

1. Port status mode selection button
2. Port link status mode LED
3. Port speed status mode LED
4. Member ID status mode LED
5. USB status mode LED
6. PoE LED
7. System status LED
8. Master/Slave status LED
9. Software update status LED

10. 40 Gbps link/activity LEDs for stacking port 2/1 (blue)
11. 40 Gbps link/activity LEDs for stacking port 2/2
12. RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
13. Power 2 LED
14. Power 1 LED
15. Cloud/On-premise-SmartZone management status LED
16. Diagnostics status LED

FIGURE 56 Port-Side LEDs of ICX 7550-24ZP

1. Port status mode selection button
2. Port link status mode LED
3. Port speed status mode LED
4. Member ID status mode LED
5. USB status mode LED
6. PoE LED
7. System status LED
8. Master/Slave status LED
9. Software update status LED

10. 40/100 Gbps link/activity LEDs for stacking port 2/1
11. 40/100 Gbps link/activity LEDs for stacking port 2/2 (blue)
12. RJ-45 port status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
13. Power 2 LED
14. Power 1 LED
15. Cloud/On-premise-SmartZone management status LED
16. Diagnostics status LED

NOTE
In default 100G stacking mode, LEDs 1 and 3 glow (solid green) when a 100G link is up in Module 2.

FIGURE 57 Port-Side LEDs of ICX 7550-48ZP

1.   Port status mode selection button

2.   Port link status mode LED

3.   Port speed status mode LED

4.   Member ID status mode LED

5.   USB status mode LED

6.   PoE LED

7.   System status LED

8.   Master/Slave status LED

9.   Software update status LED

10. 40/100 Gbps link/activity LEDs for stacking port 2/1

11. 40/100 Gbps link/activity LEDs for stacking port 2/2 (blue)

12. RJ-45 port-status LEDs (odd numbers are for upper ports; even numbers are for lower ports)

13. Power 2 LED

14. Power 1 LED

15. Cloud/On-premise-SmartZone management status LED

16. Diagnostics status LED

NOTE
In default 100G stacking mode, LEDs 1 and 3 glow (solid green) when a 100G link is up in Module 2.

FIGURE 58 Port-Side LEDs of ICX 7550-24F

1. Port status mode selection button
2. Port link status mode LED
3. Port speed status mode LED
4. Member ID status mode LED
5. USB status mode LED
6. System status LED
7. Master/Slave status LED
8. Software update status LED

9. 40/100 Gbps link/activity LEDs for stacking port 2/1
10. 40/100 Gbps link/activity LEDs for stacking port 2/2 (blue)
11. RJ-45 port-status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
12. Power 2 LED
13. Power 1 LED
14. Cloud/On-premise-SmartZone management status LED
15. Diagnostics status LED

NOTE
In default 100G stacking mode, LEDs 1 and 3 glow (solid green) when a 100G link is up in Module 2.

FIGURE 59 Port-Side LEDs of ICX 7550-48F

1. Port status mode selection button
2. Port link status mode LED
3. Port speed status mode LED
4. Member ID status mode LED
5. USB status mode LED
6. System status LED
7. Master/Slave status LED
8. Software update status LED

9. 40/100 Gbps link/activity LEDs for stacking port 2/1
10. 40/100 Gbps link/activity LEDs for stacking port 2/2 (blue)
11. RJ-45 port-status LEDs (odd numbers are for upper ports; even numbers are for lower ports)
12. Power 2 LED
13. Power 1 LED
14. Cloud/On-premise-SmartZone management status LED
15. Diagnostics status LED

NOTE
In default 100G stacking mode, LEDs 1 and 3 glow (solid green) when a 100G link is up in Module 2.

Status Mode Selection Button and STATUS LEDs

You must press the Status mode selection button to display the corresponding status indicated by the port status LED. Each press of the status mode selection button selects the next mode in the following sequence:

1. STAT: Port link status mode (default)

2. SPD: Port speed status mode

3. ID: Member ID status mode

4. USB: USB status mode

5. PoE: PoE status mode (applies only to the P and ZP models)

    NOTE
    When in USB mode, pressing the status mode selection button for more than five seconds copies files, such as image and manifest files, configuration files, and Show Tech (supportsave) files from the device to the USB drive.

Port Link Status Mode (STAT) LED

The port link status mode (STAT) LED displays the link status and activities of each port. Each unit within the stack will also display the local port status.

Refer to the following table to interpret the port link status mode LED.

TABLE 18 Link Status Mode (STAT) LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	The port does not have a valid link.	None.
Steady green	The link is up and there is no traffic.	None.
Flashing green	The link is up and traffic and packets are transmitted or received.	None.
Steady amber	In Error or Out Error.	Possible causes of errors that you should check and attempt to fix include: ● External factors (such as faulty or loose cables, bad optics, and environmental electromagnetic factors). ● Configuration issues (such as mismatch in duplex settings). **Clear stats** CLI impacts the steady amber state; if no more errors exist, the port moves out of the steady amber state.
Flashing amber	Possible reasons for flashing amber include: ● UDLD is configured only on the local unit but not on the peer unit. ● LACP ports are in "Blocking" state. ● A port is in "Error-Disabled" state due to traffic-related issues.	Verify that your configuration is correct, and check the traffic over the link.

Port Speed Status Mode (SPD) LED

Port speed status mode (SPD) displays the speed setting of each downlink and uplink port (including modules).

Refer to the following table to interpret the port speed status mode LED.

TABLE 19 Speed Status (SPD) LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	There is no valid link.	None.
Steady green	Highest speed.	None.
Flashing green	Second highest speed.	None.
Steady amber	Third highest speed.	None.
Flashing amber	Fourth highest speed.	None.
Alternating amber and green	Fifth highest speed.	None.

Member ID Status Mode (ID) LED

The member ID status mode (ID) LED displays the Stack ID.

With the switch configured in traditional stacking mode, this LED displays the stack member ID of the unit within the stack:

- The member ID LED displays green.
- Port LEDs are used to display the stack ID from 1 to 12 of each member within the stack.

Refer to the following table to interpret the member ID status mode LED.

TABLE 20 Member ID Status Mode (ID) LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Steady green	Port number is the same as the stack ID. Or Port number is the first digit of the PE ID.	None.

Status Mode (USB) LED

Refer to the following tables to interpret the status mode (USB) LED.

TABLE 21 Status Mode LED When Copying Files from the System Flash to the USB Drive Is Enabled

LED Color	Status of Hardware	Recommended Action
Steady green	USB drive is present and no operation in progress.	None.
Flashing green	Status mode selection button has been pressed for five seconds; the USB-mode copy has started.	None.
Steady amber	USB drive is not detected.	None.
Flashing amber	Copy failure or application error, or USB drive is present but a mount or access failure is indicated.	None.

TABLE 22 Status Mode LED When Copying Files from the USB Drive to the System Flash Is Enabled

LED Color	Status of Hardware	Recommended Action
Steady green	USB drive is plugged in or auto-copy is complete.	None.
Flashing green	The flash upgrade is initiated.	None.
Steady amber	USB drive is not detected.	None.
Flashing amber	Copy failure or application error, or USB drive is present but a mount or access failure, or corruption,is indicated.	None.

Status Mode (PoE) LED (N/A for Non-PoE)

Status mode (PoE) displays the PoE status of each downlink port. Refer to the following table to interpret the Power over Ethernet (PoE) status LED.

TABLE 23 PoE Status Mode LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	Port is not providing PoE power for reasons such as: • PoE is disabled. • There is no device connected to the port. • The device connected to the port is not a PoE device.	None.
Steady green	PoE/PoE+/PoH is on. Port is providing power.	None.
Flashing amber	PoE is off due to a fault or not enough PoE power budget set for the port.	None.

System Status (SYS) LED

Refer to the following table to interpret the system status (SYS) LED.

TABLE 24 System Status LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	The device is not powered on.	None
Flashing green	The device is initializing and running initial bootup tests.	None.
Steady green	The device is operating normally.	None.
Steady amber	The device is booting up or has stopped at the booting stage.	None.
Flashing amber	The device is in the crash state or the watchdog timeout state.	None.

Master/Slave Status (MS) LED

Refer to the following table to interpret the master and slave status (MS) LED.

TABLE 25 Master/Slave Status LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	System is standalone or stack member or PE.	None.
Flashing green	This device is initializing as a stacking unit, and roles are being assigned.	None.
Flashing amber	The device is in non-operational mode; that is, stacking is enabled but the current unit is not able to join the stack due to a stack-related error condition such as image mismatch, configuration mismatch, or license mismatch. The device has lost its connection with the master unit.	None.
Steady green	Stacking mode is enabled and this device is the master unit in the stack or when the unit is standalone.	None.
Steady amber	Stacking mode is enabled and this device is a slave unit in the stack.	None.

Software Update Status (UPDATE) LED

Refer to the following table to interpret the software update status (UPDATE) LED.

TABLE 26 Software Update Status LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	Software update is not enabled.	None.
Flashing green	Software installation is in progress and it can take up to 12 minutes.	None.
Steady green	Software auto-installation is successfully completed.	None.
Flashing amber	Device tried to boot up from last upgraded software image but could not; booting up from a different image or image upgrade failed.	Contact Technical Support.

Diagnostics Status (DIAG) LED

Refer to the following table to interpret the diagnostics status (DIAG) LED.

TABLE 27 Diagnostics Status LED During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	System is functioning normally or the device did not perform diagnostics test in the most recent reload.	None.
Flashing green	System self-diagnostic tests are in progress.	None.
Steady green	System self-diagnostic tests have successfully completed.	None.
Flashing amber	System self-diagnostic tests have detected a fan, thermal, or interface fault.	- Check the syslog messages details. - Power cycle the device to try and clear the condition. - If the condition persists, contact Technical Support.

Cloud/On-premise-SmartZone management status LED

Refer to the following table to interpret the Cloud/On-premise-SmartZone management status LED.

TABLE 28 Cloud/On-premise-SmartZone management status LED

LED color	Status of hardware	Recommended action
Off (no light)	Switch is not connected to cloud/SmartZone management platform, or cloud/SmartZone management has been disabled on the switch.	None.
Flashing green	Switch is attempting to connect to a cloud/SmartZone management platform.	None.
Steady green	Switch successfully connected to cloud/SmartZone management platform, and is operational.	None.
Flashing amber	Switch is being configured by cloud/SmartZone management platform.	None.

Power Status (PWR1 and PWR2) LEDs

Refer to the following table to interpret the system power status (PWR1 and PWR2) LEDs.

TABLE 29 Power Status LEDs During Normal Operation

LED Color	Status of Hardware	Recommended Action
Off	No power.	- Check if internal power supply is disconnected. - Check the connections between the device, the power cord, and the wall outlet. - Contact Technical Support.
Steady green	Internal power supply is working normally.	None.
Steady amber	Internal power supply for the PoE ports has failed.	Contact Technical Support.

Interpreting Nonport-Side LEDs

The RUCKUS ICX 7550 contains the following LEDs on the rear panel:

- Power supply LEDs: Two single-color status LEDs (green) on each installed power supply
- Fan assembly LEDs: One bicolor status LED (green and amber) on each installed fan assembly
- Management port (RJ-45) LEDs: One for link/activity and one for speed. Each of these LEDs is green.
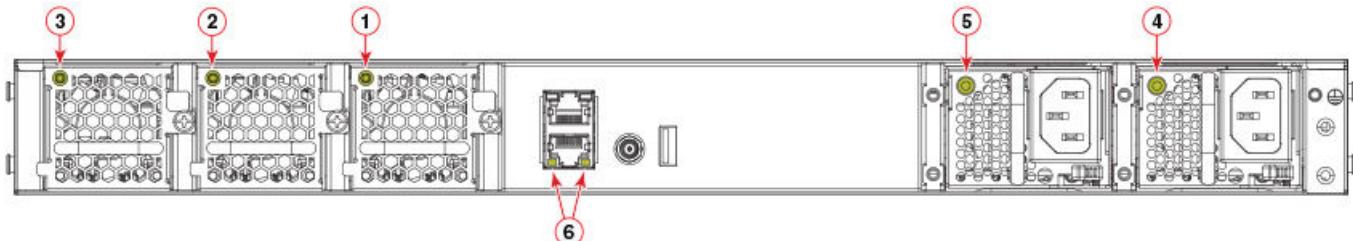
  NOTE
  The external reference clock input is not included in the ICX 7550-24, ICX 7550-48, ICX 7550-24P, and ICX 7550-48P models.

Rear Panels
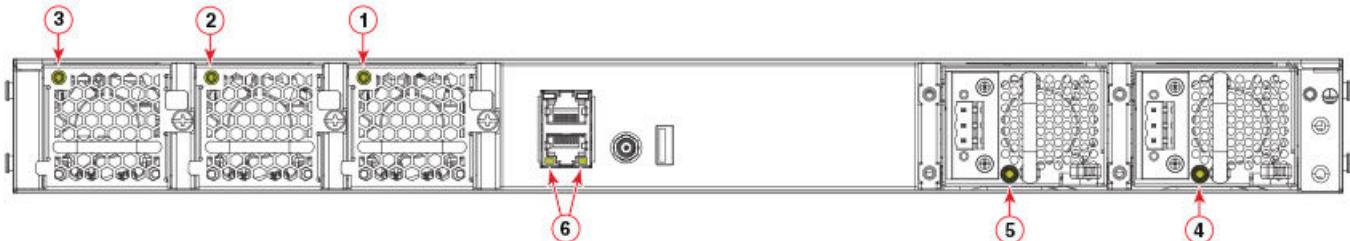
The ICX 7550 supports the following types of rear panels for the specified models:

FIGURE 60 Rear-Panel LEDs for 400 AC Power Module: Used by ICX 7550-24, ICX 7550-48, ICX 7550-24F, and ICX 7550-48F
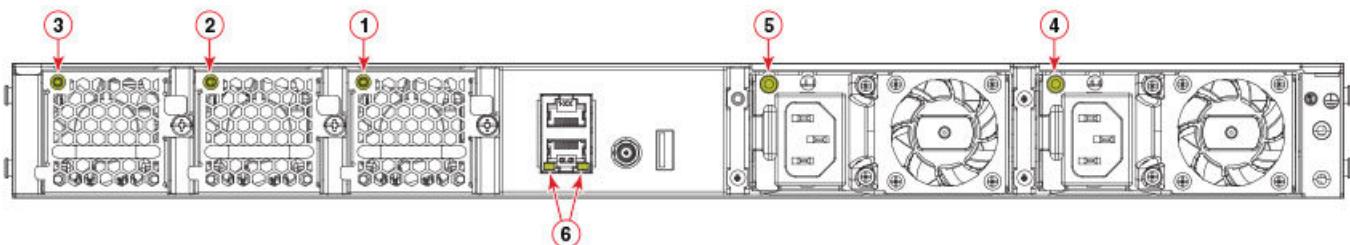
1. Fan assembly 1 LED
2. Fan assembly 2 LED
3. Fan assembly 3 LED
4. PSU1 status LED

5. PSU2 status LED
6. Management port (RJ-45): LED on left is for link/activity; LED on right is for speed

FIGURE 61 Rear-Panel LEDs for 400 DC Power Module: Used by ICX 7550-24, ICX 7550-48, ICX 7550-24F, and ICX 7550-48F

1.	Fan assembly 1 LED	5.	PSU2 status LED
2.	Fan assembly 2 LED	6.	Management port (RJ-45): LED on left is for link/activity; LED on right is for speed
3.	Fan assembly 3 LED		
4.	PSU1 status LED		

FIGURE 62 Rear-Panel LEDs for 1200 AC Power Module: Used by ICX 7550-24P, ICX 7550-48-P, ICX 7550-24ZP, and ICX 7550-48ZP

1.	Fan assembly 1 LED	5.	PSU2 status LED
2.	Fan assembly 2 LED	6.	Management port (RJ-45): LED on left is for link/activity; LED on right is for speed
3.	Fan assembly 3 LED		
4.	PSU1 status LED		

LED Patterns

TABLE 30 400 AC and DC PSU LEDs

LED Color	Status of Hardware	Recommended Action
Off (no light)	There is no power to this PSU.	Check the input power connection.
Steady green	PSU is on and functioning properly.	No action required.
0.5 Hz flashing amber and green	Power supply warning.	Disconnect and reconnect input power. If the issue persists, replace the PSU.
Steady amber	PSU is missing power or in a faulty state (such as PSU fan failure).	• Verify that the PSU power cord is connected to a functioning power source. • Replace power supply.

TABLE 31 1200 AC PSU LEDs

LED Color	Status of Hardware	Recommended Action
Off (no light)	There is no power to this PSU.	Check the input power connection.
Steady green	PSU is on and functioning properly.	No action required.
0.5 Hz flashing amber and green	Power supply warning.	Disconnect and reconnect input power. If the issue persists, replace the PSU.

TABLE 31 1200 AC PSU LEDs (continued)

LED Color	Status of Hardware	Recommended Action
Steady amber	PSU is missing power or in a faulty state (such as PSU fan failure).	• Verify that the PSU power cord is connected to a functioning power source. • Replace power supply.

TABLE 32 Fan Tray LEDs

LED Color	Status of Hardware	Recommended Action
Off (no light)	Fan assembly is not powered on.	No action required.
Steady green	Fan assembly is on and functioning properly.	No action required.
Steady amber	Fan assembly has non-functioning fans.	Replace fan assembly.

TABLE 33 Management Port Left LED Link Status

LED Color	Status of Hardware	Recommended Action
Off (no light)	Offline.	No action required
Steady green	Link is up.	No action required
Blinking green	Packet transmission or reception.	No action required

TABLE 34 Management Port Right LED Speed Status

LED Color	Status of Hardware	Recommended Action
Off (no light)	Offline or 10/100 Mbps	No action required
Steady green	Linked at 1000 Mbps	No action required

Pinging an IP Address

To verify that a device can reach another device through the network, enter a command similar to the following at any level of the CLI.

```
device> ping 10.33.4.7
```

Tracing a Route

To determine the path through which a device can reach another device, enter a command similar to the following at any level of the CLI on the device.

```
device> traceroute 10.33.4.7
```

The CLI displays trace route information for each hop as soon as the information is received. Traceroute requests display all responses to a given TTL. In addition, if there are multiple equal-cost routes to the destination, the device displays up to two responses by default.

Digital Optical Monitoring

You can configure your device to monitor optical transceivers in the system, either globally or by specified port. When digital optical monitoring is enabled, the system monitors the temperature and signal power levels for the optical transceivers in the specified ports. Console messages and syslog messages are sent when optical operating conditions fall below or rise above the SFP and SFP+ manufacturer's recommended thresholds. For more information about digital optical monitoring, refer to the *RUCKUS FastIron Monitoring Configuration Guide*.

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.

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. It is configurable up to 100°C (212°F).
- 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 reaches 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 35 Temperature Thresholds

Model	Low Limit Temperature (oC)	High Limit Temperature (oC)	Critical (Shutdown) Temperature (oC)
ICX 7550-24	37	45	64
ICX 7550-48	37	45	64
ICX 7550-24P	40	48	65
ICX 7550-48P	40	48	65
ICX 7550-24ZP	40	48	65
ICX 7550-48ZP	40	48	65
ICX 7550-24F	37	45	64
ICX 7550-48F	37	45	64

> **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.

```
GZ48P-Chamber#show chassis
The stack unit 1 chassis info:

Power supply 1 (AC - PoE) present, status ok
 Model Number: YPEA1200Ê,M
Serial Number: T0A04A2362017000095
Firmware Ver:  77.45
Power supply 1 Fan Air Flow Direction:  Front to Back
Power supply 2 not present

Fan 1 ok, speed (auto): [[1]]<->2
Fan 2 ok, speed (auto): [[1]]<->2
Fan 3 ok, speed (auto): [[1]]<->2

Fan controlled temperature: 6.9 deg-C

Fan speed switching temperature thresholds:
 Speed 1: NM<----->48       deg-C
 Speed 2:       40<-----> 65 deg-C (shutdown)

Fan 1 Air Flow Direction:  Front to Back
Fan 2 Air Flow Direction:  Front to Back
Fan 3 Air Flow Direction:  Front to Back
Slot 1 Current Temperature: 12.9 deg-C (Sensor 1), 9.6 deg-C (Sensor 2), 2.2 deg-C (Sensor 3), 12.8 deg-C
(Sensor 4), 3.5 deg-C (Sensor 5), 6.9 deg-C (Sensor 6), 53.7 deg-C (Sensor 7), 11.0 deg-C (Sensor 8)
Slot 2 Current Temperature: NA
Slot 3 Current Temperature: Empty / Powered Down
Warning level.......: 55.0 deg-C
Shutdown level......: 65.0 deg-C
Boot Prom MAC : c803.f53a.94ae
Management MAC: c803.f53a.94ae
GZ48P-Chamber#
```

Power Supplies

Power Supply Overview

The RUCKUS ICX 7550 switch supports alternating-current (AC) 400 watt and 1200 watt power supplies, and a direct-current (DC) 400 watt power supply. The RUCKUS ICX 7550 is capable of running on one power supply but requires a minimum of two fan assemblies. The second power supply and additional fan assemblies provide redundancy.

If the second power supply and additional fan assembly slots are unused, cover them with filler panels.

> **NOTE**
> RUCKUS recommends that the RUCKUS ICX 7550 switch operates with two power supplies and three fan assemblies installed. If a power supply or fan assembly fails, it must be replaced as soon as possible.

> **CAUTION**
> **AC and DC power supplies cannot be installed and used in the same device. Mismatched power supplies in the same device cause continual reboot on power up.**

The power supplies in the RUCKUS ICX 7550 switch chassis can be removed and replaced without special tools. The device can continue operating during the replacement.

The ICX 7550 supports the following power supplies:

- AC 400 watt power supply supports the following ICX 7550 models:

  - ICX 7550-24 and ICX 7550-48
  - ICX 7550-24F and ICX 7550-48F

- AC 1200 watt power supply supports the following ICX 7550 models:

  - ICX 7550-24P and ICX 7550-48P
  - ICX 7550-24ZP and ICX 7550-48ZP

- DC 400 watt power supply supports the following ICX 7550 models:

  - ICX 7550-24 and ICX 7550-48
  - ICX 7550-24F and ICX 7550-48F

Each power supply supports the following airflow directions:

- Nonport-side air exhaust. This unit moves the air from the port side to the nonport-side of the device.

- Nonport-side air intake. This unit moves the air from the nonport side to the port side of the device.

FIGURE 63 AC 400 Watt Power Supply
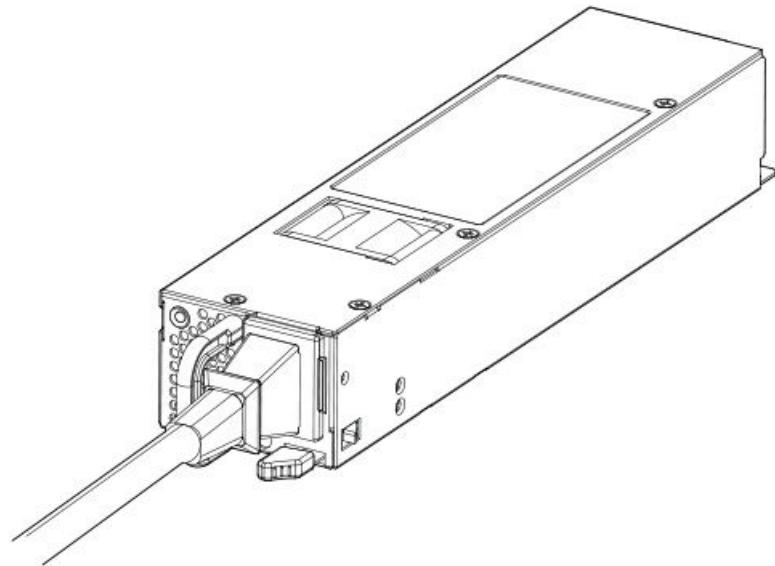
FIGURE 64 AC 1200 Watt Power Supply
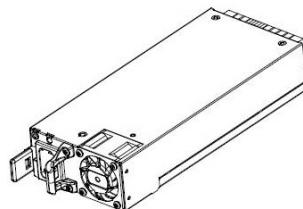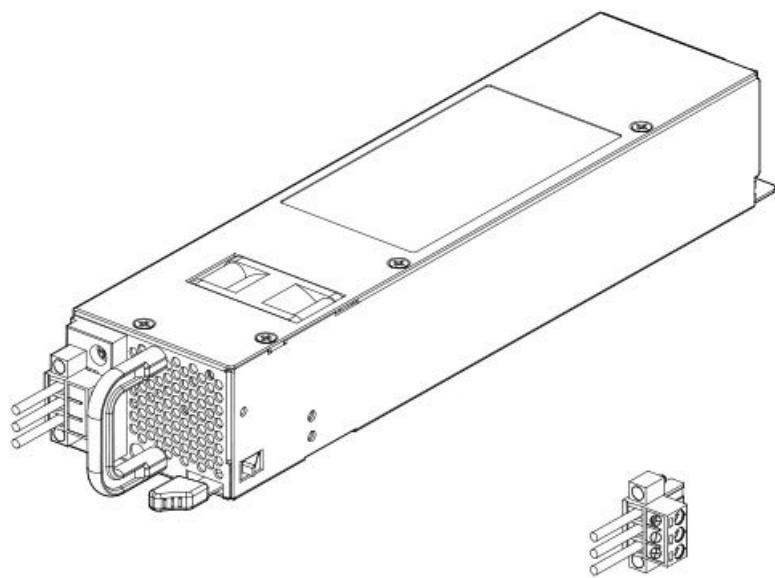
FIGURE 65 DC Power Supply

Precautions Specific to Power Supplies

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.

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.

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.

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

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.

CAUTION
Use a UL listed or CSA Certified DC power source to connect to a DC PSU.

Identifying the Airflow Direction

The power supply and fan assemblies are identified by the following airflow directions:

- Intake power supply and fan assembly with an orange "I" label or without any label: Pulls air from the nonport-side of the switch and exhausts it out the port side.

  - Nonport-side air intake
  - Port-side air exhaust
  - Back-to-front (nonport-side to port-side) airflow
  - Part numbers ending with **-R**

FIGURE 66 Intake Power Supply with Orange Label

- Exhaust power supply and fan assembly with a green "E" label: Pulls air from the port side of the switch and exhausts it out the nonport side.
  - Nonport-side air exhaust
  - Port-side air intake
  - Front-to-back (port-side to nonport-side) airflow
  - Part numbers ending with **-E2**

FIGURE 67 Exhaust Power Supply with Green Label

Time and Items Required

Installing or removing and replacing a power supply should require less than five minutes to complete.

A new power supply (with the same airflow direction as the power supply being replaced) is required to replace a power supply.

Replacing a Power Supply

When installing or replacing a power supply unit, consider the following:

- Power supplies can be swapped in or out while the device is running. The remaining power supplies provide enough power for the device.
- The airflow direction of the power supply must match that of the installed fan assemblies. All must be either exhaust or intake.

CAUTION
Power supplies are hot-swappable. However, they should be inserted or removed without a power cord being connected to a power source to avoid damage.

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

CAUTION
When installing a power supply unit into a switch that has the two-hole grounding lug, be sure to install the unit in the slot next to the location of the lug screw holes because a blank plate could interfere with the lug.
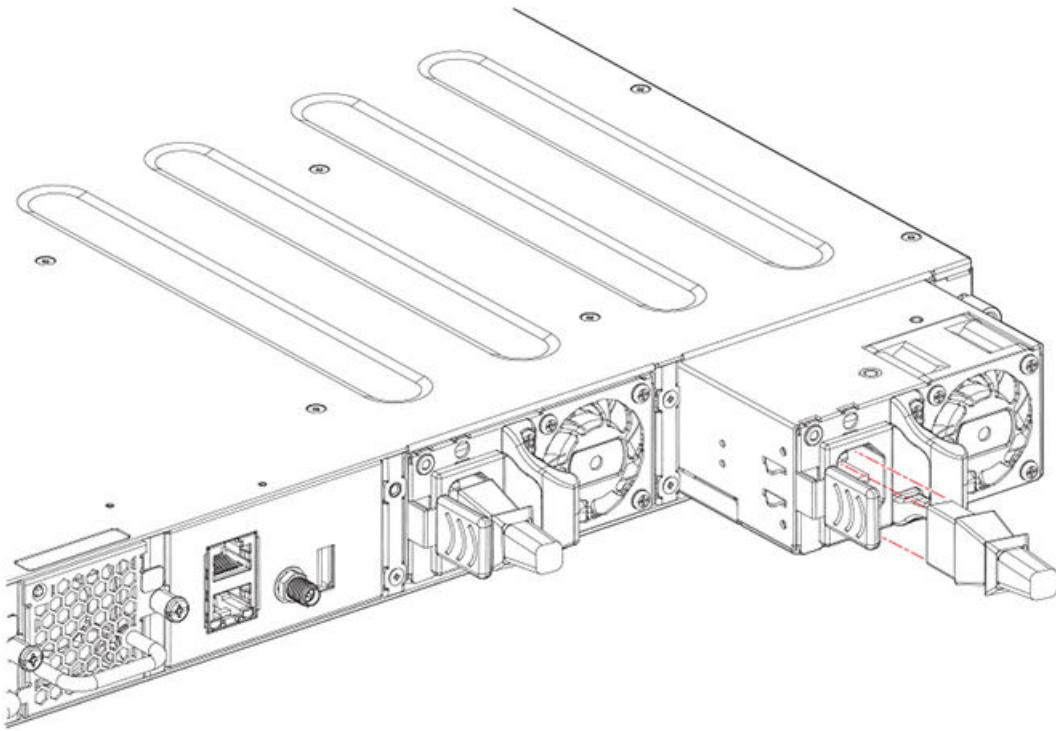
Inserting a New AC Power Supply

Use the following steps to install an AC power supply (the 400 watt or 1200 watt power supply) in the RUCKUS ICX 7550 switch.

NOTE
The AC PSU uses a C14 connector for the AC power inlet. The mating connector is a C13 connector.

FIGURE 68 Installing an AC Power Supply Unit

1. If replacing a power supply:

   a. Remove the AC power cord.

   b. Remove the installed power supply from the slot by pressing the green/orange release tab toward the power supply handle and pulling out the power supply.

2. If installing a new power supply into a slot covered with a filler panel:

   a. Using a Phillips screwdriver, unscrew the screws on the filler panel.

   b. Remove the filler panel.

3. Before opening the package that contains the power supply, touch the bag to the switch casing to discharge any potential static electricity. RUCKUS recommends using an ESD wrist strap during installation.

4. Remove the power supply from the anti-static shielded bag.

5. Holding the power supply level, guide it into the carrier rails on each side and gently push it all the way into the slot, ensuring that it firmly engages with the connector. At the same time, the release tab should also snap into the locking hole.

6. Insert the power cord into the AC power inlet.

When the RUCKUS ICX 7550 switch is powered on, the LED on the power supply rear panel should light up green to confirm that the power supply is correctly installed and supplying power.
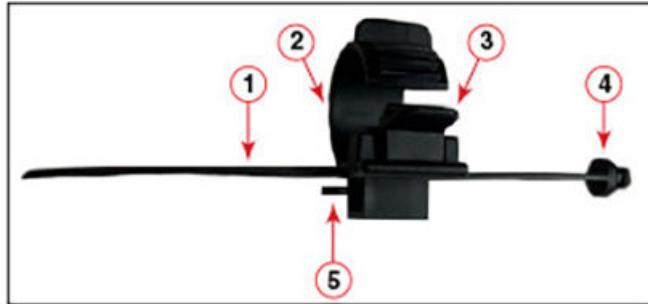
⚠️ **CAUTION**
Empty fan assembly and power supply slots must be covered using filler panels.

Installing the AC Power Cord Strap

The AC power cord strap is shown below:

FIGURE 69 AC Power Cord Strap Components

1.	Strap position slider		4.	Attachment point
2.	Cord strap		5.	Strap latch position
3.	Strap tightness adjustment latch			

Use the following steps to install the AC power cord strap for the RUCKUS ICX 7550 switch:

1. Use the strap position latch to move the cord strap furthest away from the attachment point.

2. Push the attachment point to the power inlet on the PSU, as shown in the illustration below.

   FIGURE 70 Moving Attachment Point Toward PSU Power Inlet

   1 - PSU power inlet

3. Observe and follow the orientation of the cord strap:

FIGURE 71 Power Strap Orientation

4. Attach the power cord to the AC power inlet.

5. Slide the cord strap next to the power cord:

FIGURE 72 Sliding Cord Strap Near Power Cord

6. Wrap the cord strap on the power cord:

FIGURE 73 Wrapping Cord Strap on Power Cord

7. Adjust the cord strap tightness using the strap tightness adjustment latch:
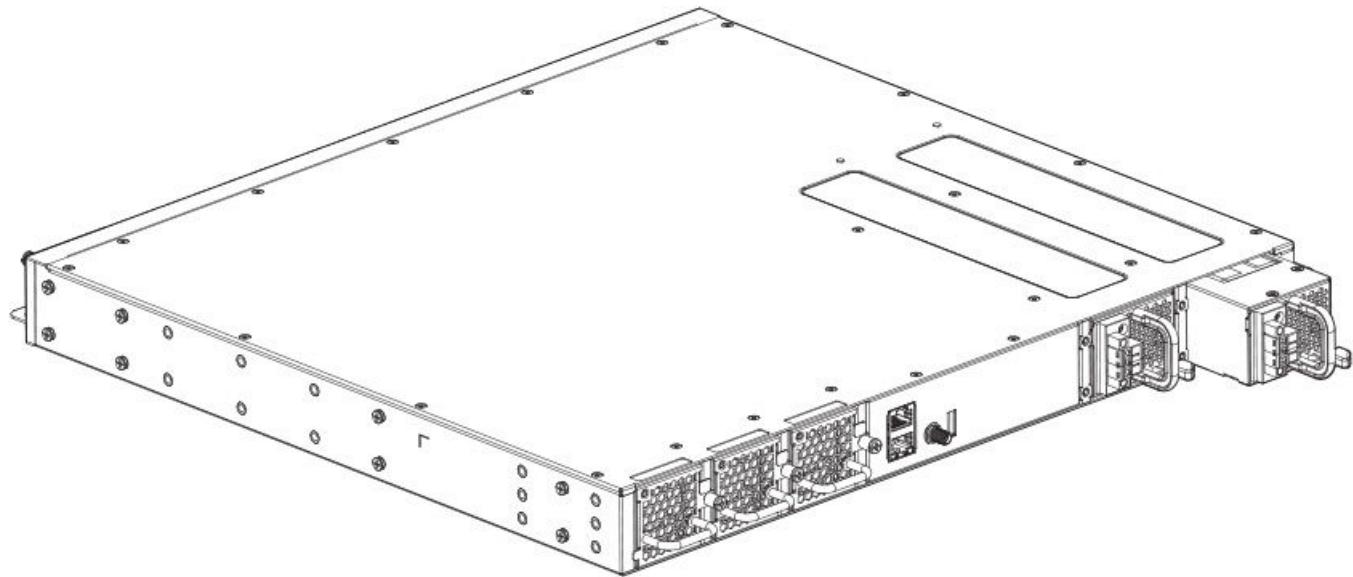
    FIGURE 74 Adjusting Strap Tightness

Inserting a New DC Power Supply

Use the following steps to install a DC power supply (400W only) in the RUCKUS ICX 7550 switch.

FIGURE 75 Installing a DC Power Supply Unit
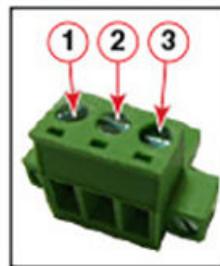
1. The DC PSU uses A Dinkle 2EHDP-03P connector, and the mating connector is a Dinkle 2ESDVM-03P or equivalent, as shown in the following illustrations. Ensure that the pin assignments are properly observed.

FIGURE 76 Dinkle 2EHDP-03P Connector

FIGURE 77 Dinkle 2ESDVM-03P Mating Connector

- 1: Ground
- 2: -
- 3: **+**

2. If replacing a power supply:

   a. Remove DC input power from the power supply.

      - The DC input power cables are attached to a mating connector, which is secured by to the power supply connector by two screws.

      - Use a flat-head screwdriver to unscrew the two screws and detach the mating connector from the power supply connector.

   b. Remove the installed power supply from the slot by pressing the green/orange release tab toward the power supply handle and pulling out the power supply.

3. If installing a new power supply into a slot covered with a filler panel:

   a. Using a Phillips screwdriver, unscrew the screws on the filler panel.

   b. Remove the filler panel.

4. Before opening the package that contains the DC power supply, touch the bag to the switch casing to discharge any potential static electricity. Commscope recommends using an ESD wrist strap during installation.

5. Remove the power supply from the anti-static shielded bag.

6. Holding the power supply level, guide it into the carrier rails on each side and gently push it all the way into the slot, ensuring that it firmly engages with the connector. At the same time, the release tab should also snap into the locking hole.

7. If the DC power wiring not completed yet, connect the DC power wires to the mating connector. Observe the correct pin assignments.

8. Connect the cabled-mating connector to the DC power inlet.

When the RUCKUS ICX 7550 switch is powered on, the power LED on the front of the device lights up green to confirm that the power supply is correctly installed and supplying power.
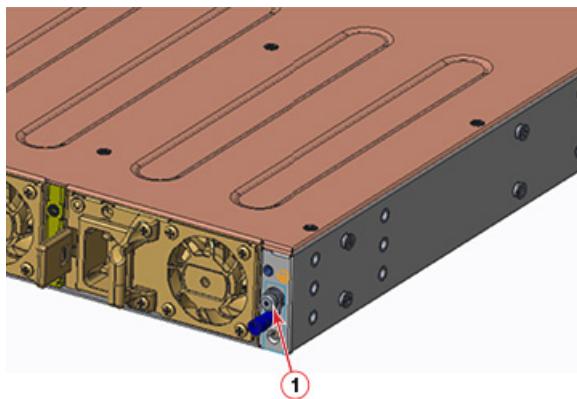
Grounding the RUCKUS ICX 7550 Switch

The rear panel of the RUCKUS ICX 7550 includes a grounding terminal. The surface area around this terminal is not painted to provide a good electrical connection. Before connecting power to the device, the grounding terminal must be connected to ground to ensure proper operation and to meet electromagnetic interference (EMI) and safety requirements.

Default and Optional Lugs

The default lug for the grounding terminal is the one-hole lug, but there is also an option for a two-hole lug. Both are shown below.

FIGURE 78 Connecting the Grounding Terminal With Default (One-Hole) Lug
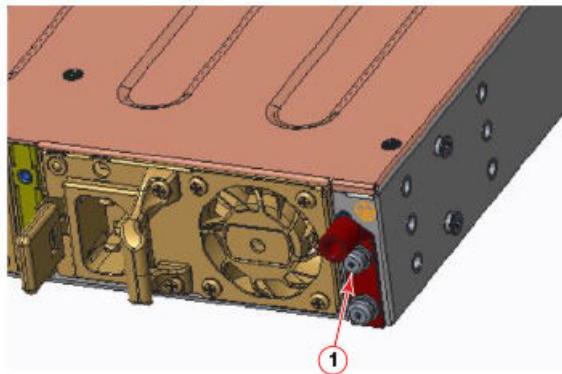
1.   Grounding terminal

One-lug information:

- Manufacturer of grounding lug: Jeesoon Terminals
- Part Number: 90R2-4LA
- Screw: Machine Screw, M4-0.7x8

FIGURE 79 Connecting the Grounding Terminal With Optional (Two-Hole) Lug

1. Grounding terminal

Two-lug information:

- Manufacturer of grounding lug: Panduit

- Part Number: LCD10-10AF-L

- Screws: Two Machine Screws, M4-0.7x8

Connecting to the Grounding Terminal

Regardless of which lug you are using, perform the following steps to connect to the grounding terminal.

⚠ **CAUTION**
When installing a power supply unit, be sure to install the unit in the slot next to the location of the lug screw hole(s) because a blank plate could interfere with the lug.

1. Ensure that the rack in which the RUCKUS ICX 7550 is mounted is properly grounded and in compliance with local regulations.

2. Ensure that there is a good electrical connection to the grounding point on the rack (no paint or isolating surface treatment).

3. Crimp the included grounding lug to a grounding wire of at least 12 American Wire Gauge (AWG). The 12 AWG wire and grounding lug should be crimped together using a proper tool.

4. Attach the 12 AWG stranded copper wire to the grounding terminal on the RUCKUS ICX 7550 using the screw(s) included in the grounding kit.

   NOTE
   You must connect the wire to the *top* hole of the grounding terminal, as shown in the previous figures.

5. Attach the grounding wire to the grounding point on the rack.

   NOTE
   The terminal for the connection of a grounding conductor is not to be used with an aluminum conductor.

Fan Assemblies

Fan Assembly Overview

The RUCKUS ICX 7550 switch includes three redundant, hot-swappable fan assemblies.

If power supply and fan assembly slots are unused, you must cover them with filler panels.
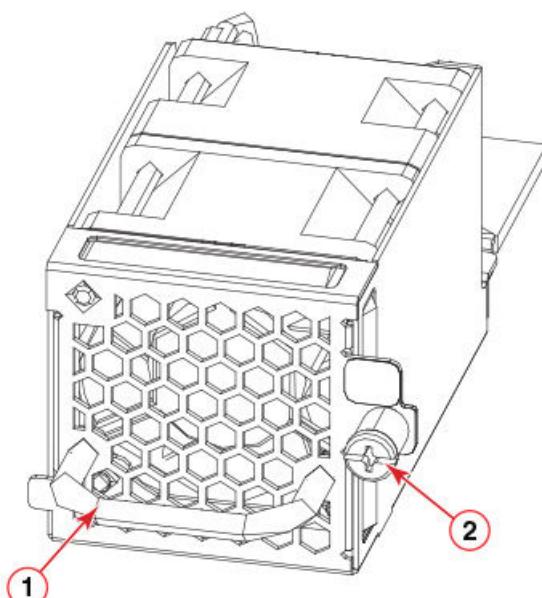
> **NOTE**
> RUCKUS recommends that the RUCKUS ICX 7550 operate with two power supplies and three fan assemblies installed. If a power supply or fan assembly fails, it must be replaced as soon as possible.

The fan assemblies in the RUCKUS ICX 7550 switch chassis can be removed and replaced without special tools. The device can continue operating during the replacement.

The ICX 7550 supports the following fan assemblies:

- Fan assembly with nonport-side air exhaust: This unit moves the air from the port side to the nonport side of the device.
- Fan assembly with nonport-side air intake: This unit moves the air from the nonport side to the port side of the device.

FIGURE 80 Fan Assembly

1. Fan assembly handle
2. Captive screw

Precautions Specific to Fan Assemblies

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

⚠ **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.

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

⚠ **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.

Identifying the Airflow Direction

The power supply and fan assemblies are identified by the following airflow directions:

- Intake power supply and fan assembly with an orange "I" label or without any label: Pulls air from the nonport-side of the switch and exhausts it out the port side.

  - Nonport-side air intake
  - Port-side air exhaust
  - Back-to-front (nonport-side to port-side) airflow
  - Part numbers ending with **-R**

  FIGURE 81 Intake Power Supply with Orange Label

- Exhaust power supply and fan assembly with a green "E" label: Pulls air from the port side of the switch and exhausts it out the nonport side.

  - Nonport-side air exhaust
  - Port-side air intake
  - Front-to-back (port-side to non-port-side) airflow
  - Part numbers ending with **-E2**

FIGURE 82 Exhaust Power Supply with Green Label

Time and Items Required

Installing or removing and replacing a fan assembly in the RUCKUS ICX 7550 should require less than two minutes to complete.

The following items are required to replace a fan assembly:

- A new fan assembly (must have the same part number and the same airflow label as the fan assembly being replaced; refer to Figure 81 on page 106 and Figure 82 on page 107 for the location of the airflow label)
- #1 Phillips screwdriver

Replacing a Fan Assembly

When installing or replacing a fan assembly unit, consider the following:

- Fan assemblies can be swapped in or out while the device is running. The remaining fan assemblies provide enough airflow for the device.
- The airflow direction of the fan assembly must match that of the installed fan assemblies. All must be either exhaust or intake.

> **CAUTION**
> **Ensure that the airflow direction of the power supply unit matches that of the installed fan assemblies. The power supplies and fan assemblies are clearly labeled with either a green arrow with an "E", or an orange arrow with an "I."**
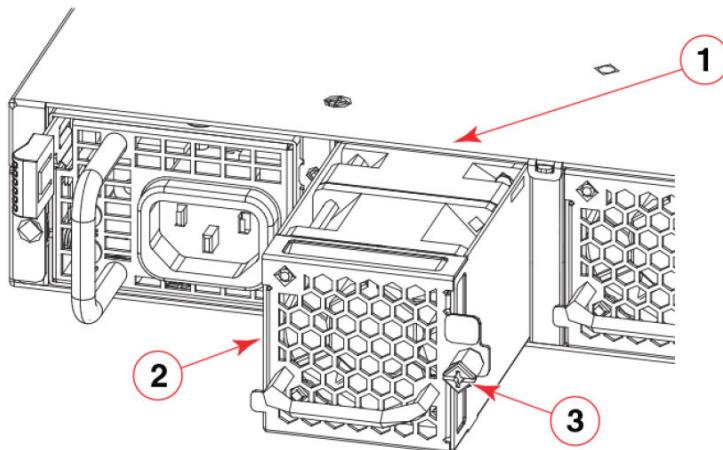
Inserting a New Fan Assembly

Use the following steps to install a fan assembly in the RUCKUS ICX 7550 switch.

FIGURE 83 Installing a Fan Assembly

1.	Fan assembly slot	3.	Captive screw
2.	Fan assembly		

1. If replacing a fan assembly:

   a. Using a Phillips screwdriver, unscrew the captive screw on the fan assembly.

   b. Remove the fan assembly from the chassis by pulling the handle on the fan assembly out and away from the chassis.

   c. Ensure that the replacement fan assembly has the same part number and airflow label as the fan assembly being replaced.

2. If installing a new fan assembly into a slot covered with a filler panel:

   a. Using a Phillips screwdriver, unscrew the captive screw on the filler panel.

   b. Remove the filler panel.

3. Before opening the package that contains the new fan assembly, touch the bag to the switch casing to discharge any potential static electricity. It is recommended that you wear an ESD wrist strap during installation.

4. Remove the fan assembly from the anti-static shielded bag.

   ⚠️ **CAUTION**
   Do not force the installation. If the fan assembly does not slide in easily, ensure that it is correctly oriented before continuing.

5. Holding the fan assembly level, guide it into the carrier rails on each side and gently push it all the way into the slot, ensuring that it firmly engages with the connector.

6. When you are sure the fan assembly has properly engaged the connector, tighten the captive screw to secure the fan assembly in the slot.

   NOTE
   The fans are controlled automatically by the device.

7. Verify correct installation by running the **show chassis** command.

When a fan assembly is installed in a slot, the power LED on the fan assembly lights up green to confirm that the fan assembly is correctly installed and running. Refer to LED Patterns on page 89.

CAUTION
Empty fan assembly and power supply slots must be covered using filler panels.

Expansion Modules

Expansion Module Overview

The RUCKUS ICX 7550 switch includes one port-side slot for media expansion modules, including a 4-port SFP+ 10-GbE module, a 2-port QSFP+ 40-GbE module, and a 1-port QSFP28 100-GbE module. If not installed, the empty expansion module slot must be covered using a filler panel.

The following media expansion modules are supported:

- ICX7600-4X10GF 4-port 40G Module : A 4-port 1/10 GbE SFP+ expansion module. The expansion module supports 1 GbE and 10 GbE optics.

    NOTE
    The 4X10GF module supports MACsec when the appropriate license is purchased. For more information, refer to the *RUCKUS FastIron Software Licensing Guide*.

- ICX7600-2X40GQ 2-port 80G Module: A 2-port 40 GbE QSFP+ expansion module. The expansion module supports 40 GbE optics.
- ICX7600-1X100G 1-port 100G Module: A 1-port 100 GbE QSFP28 expansion module. The expansion module supports 100 GbE optics.

The modules can be used for data uplink, as shown in the following table.

TABLE 36 RUCKUS ICX 7550 Supported Media Modules
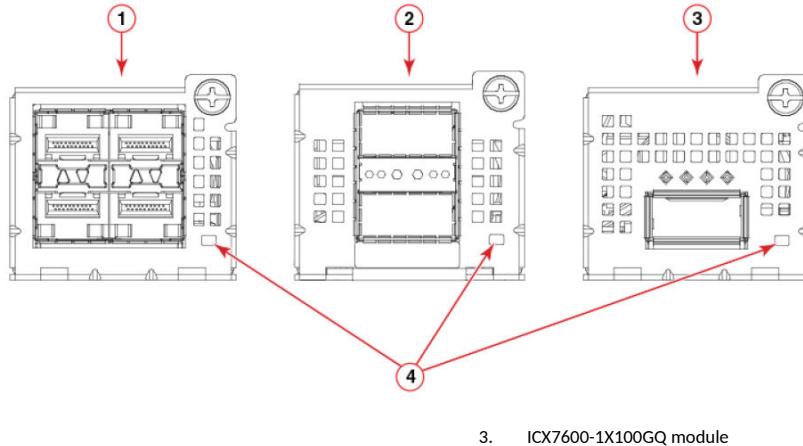
Switch Model	ICX7600-4X10GF Module	ICX7600-2X40GQ Module	ICX7600-1X100GQ Module
ICX 7550-24	Uplink supported	Uplink supported	Not supported
ICX 7550-48	Uplink supported	Uplink supported	Not supported
ICX 7550-24P	Uplink supported	Uplink supported	Not supported
ICX 7550-48P	Uplink supported	Uplink supported	Not supported
ICX 7550-24ZP	Uplink supported	Uplink supported	Uplink supported
ICX 7550-48ZP	Uplink supported	Uplink supported	Uplink supported
ICX 7550-24F	Uplink supported	Uplink supported	Uplink supported
ICX 7550-48F	Uplink supported	Uplink supported	Uplink supported

Instructions for installing or replacing an expansion module are described in

FIGURE 84 RUCKUS ICX 7550 Media Expansion Modules

1. ICX7600-4X10GF module	3. ICX7600-1X100GQ module
2. ICX7600-2X40GQ module	4. Expansion module power LED

Precautions Specific to Expansion Modules

⚠️ **CAUTION**
Disassembling any part of the expansion module voids the warranty and regulatory certifications. There are no user-serviceable parts inside the expansion module assembly.

⚠️ **CAUTION**
The expansion modules are not hot-swappable.

⚠️ **CAUTION**
Do not force the installation. If the expansion module does not slide in easily, ensure that it is correctly oriented before continuing.

⚠️ **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.

Time and Items Required

Replacing an expansion module in the RUCKUS ICX 7550 should take less than two minutes to complete.

You need the following items to replace an expansion module in the RUCKUS ICX 7550:

- A new expansion module
- A #1 Phillips screwdriver

Installing or Replacing an Expansion Module

Complete the following steps to install or replace an expansion module in the RUCKUS ICX 7550.

1. Power off the switch.

2. If replacing an expansion module:

    a) Using a Phillips screwdriver, unscrew the captive screw on the expansion module.

    b) Remove the expansion module from the chassis by pulling the handle on the expansion module out and away from the chassis.

3. If installing a new expansion module into a slot covered with a filler panel:

    a) Using a Phillips screwdriver, unscrew the captive screw on the filler panel.

    b) Remove the filler panel.

4. Before opening the package that contains the new expansion module, touch the bag to the switch casing to discharge any potential static electricity. It is recommended that you wear an ESD wrist strap during installation.

5. Remove the expansion module from the anti-static shielded bag.
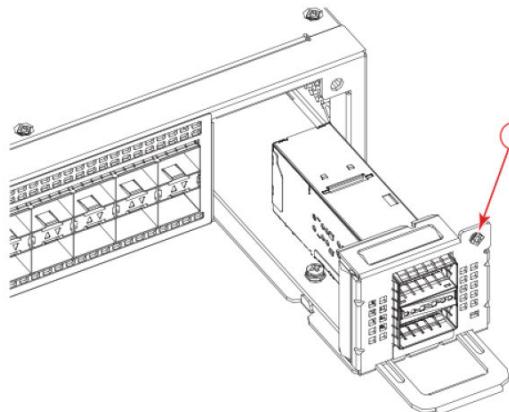
⚠ **CAUTION**
> **Do not force the installation. If the expansion module does not slide in easily, ensure that it is correctly oriented before continuing.**

6. Holding the expansion module level, guide it into the carrier rails on each side and gently push it all the way into the slot, ensuring that it firmly engages with the connector.

FIGURE 85 Installing an Expansion Module

1. Captive screw

7. When you are sure the expansion module has properly engaged the connector, tighten the captive screw to secure the expansion module in the slot.

8. Power on the switch.

9. Verify correct installation by running the **show module** command.

⚠ **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.**

Resolving Module 3 Mismatches

When an expansion module is replaced, it can result in a mismatch with the switch configuration for the previous module. For example, if a 4x10 GbE module is replaced with a 1x100 GbE module, there may be an existing configuration for port x/2/4 that no longer applies to the new module. When these configuration mismatches occur, action must be taken to resolve the mismatch.

The procedures to resolve a Module 3 mismatch in a standalone RUCKUS ICX 7550 switch and a mismatch in a RUCKUS ICX 7550 stack are different.

Resolving Module 3 Mismatches in a Standalone RUCKUS ICX 7550 Switch

Use the following procedure to resolve a Module 3 configuration mismatch for a RUCKUS ICX 7550 switch in standalone mode.

1. Power down the switch, replace the installed module, and then reboot the switch.

2. Use the **no module** command to remove the current Module 3 configuration.

   ```
   Router(config-unit-1)#no module 3 icx7600-xgf-4port-40g-module
     icx7600-100g-1port-100g-module
     icx7600-qsfp-2port-80g-module
     icx7600-xgf-4port-40g-module
   ```

3. Configure Module 3 for the installed module.

   ```
   Router(config-unit-1)#module 3 icx7600-xgf-4port-40g-module
     icx7600-100g-1port-100g-module
     icx7600-qsfp-2port-80g-module
     icx7600-xgf-4port-40g-module
   ```

4. Use the **write memory** command and then check the configuration with the **show config** command.

   ```
   Router#sh conf
   !
   Startup-config data location is flash memory
   !
   Startup configuration:
   !
   ver 08.0.95_b1555T243
   !
   stack unit 1
     module 1 icx7550-24p-port-management-module
     module 2 icx7550-qsfp-2port-80g-module
    module 3 icx7600-xgf-4port-40g-module
    stack-port 1/2/1
     stack-port 1/2/2
   !
   ```

Resolving Module 3 Mismatches in a RUCKUS ICX 7550 Stack

When a RUCKUS ICX 7550 stack unit rejoins a stack with a different module type installed as Module 3, a configuration mismatch occurs, and the active controller places the stack unit in non-operational mode.

Follow these steps to correct a module configuration mismatch in a RUCKUS ICX 7550 stack.

1. Enter the **show stack** command to confirm that a unit has become non-operational due to a configuration mismatch. An error message such as the following may be presented:

   ```
   ICX7550-48F Router# T=3m26.3: Election, I 4cb1.cd20.29f8 was alone --> active, ID=1, pri=128,
   2U(1-2), A=u1, nbr#=1 1, reason: u2: port-up, ,
   Error - configuration mismatch at u2 module 3, config = icx7600-100g-1port-100g-module, but is
   ```

```
icx7600-qsfp-2port-80g-module.
Please remove u2 and edit config, or delete module config and let it learn.
```

2. Use one of the following options to resolve an identified configuration mismatch:

    ●   Option 1: Remove the unit from the stack and allow it to rejoin.

    ●   Option 2: Remove the incorrect module configuration and allow the correct module information to be learned. Within Option 2, you can choose from the following:

        –   Option 2a: In global configuration mode, enter the **no stack** unit command followed by the stack number of the offending device.

            ```
            ICX7550-48F Router(config)#no stack unit 2
            ```

            The example removes stack unit 2 from the stack and shows the unit rejoining the stack with the correct configuration.

        –   Option 2b: In stack unit configuration mode for the non-operational unit, enter the **no module 3** command.

            ```
            ICX7550-48F Router(config)#stack unit 2
            ICX7550-48F Router(config-unit-2)#no module 3
            ```

3. (Optional) Enter the **show module** command to verify that the new configuration for Module 3 has been learned.

```
ICX7550-48F Router#show module
        Module                                          Status Ports Starting MAC
U1:M1  ICX7550-48F 48-port Management Module              OK     48   4cb1.cd20.29f8
U1:M2  ICX7550-100G 2-port 200G Module                    OK     8    4cb1.cd20.2a29
U1:M3  ICX7600-2X40GQ 2-port 80G Module                   OK     8    4cb1.cd20.29f8
U2:M1  ICX7550-48ZP POE 48-port Management Module         OK     48   c803.f53a.7c46
U2:M2  ICX7550-100G 2-port 200G Module                    OK     8    c803.f53a.7c77
U2:M3  ICX7600-2X40GQ 2-port 80G Module                   OK     8    c803.f53a.7c7f
```

The example displays the updated configuration of Module 3 in stack unit 2 as a 2-port 80-Gbps module.

4. (Optional) Enter the **show stack** command to confirm that the stack unit has returned to operation.

```
ICX7550-48F Router#sh stack
T=11h44m16.0: alone: standalone, D: dynamic cfg, S: static
ID   Type          Role    Mac Address    Pri State   Comment
1  S ICX7550-48F    active  4cb1.cd20.29f8 128 local   Ready
2  S ICX7550-48ZP   standby c803.f53a.7c46 128 remote  Ready
```

RUCKUS ICX 7550 Switch Technical Specifications

This content highlights the features and specifications for the RUCKUS ICX 7550 switch.

System Specifications

System Component	Description
Enclosure	Stackable up to 12 switches per stack, chassis-mountable (1U) in a standard 2 or 4-post rack
Power inlet	C14 for AC power; terminal block for DC power
Power supplies	Dual redundant, hot-swappable power supplies supported with intake or exhaust airflow. Non-PoE models use 400W AC and DC power supplies. PoE models use 1200W AC power supplies.
Fans	Dual redundant, hot-swappable 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	Broadcom BCM56370 integrated ARM-based Cortex-A72 CPU running at 1.7 GHz.

Ethernet

System Component	Description	Maximum Ports Supported
100 GbE QSFP28 ports	40/100 GbE QSFP28 stacking or uplink port	3 [2 stacking + 1 uplink]: • ICX 7550-24ZP • ICX 7550-48ZP • ICX 7550-24F • ICX 7550-48F
40 GbE QSFP+ ports	40 GbE QSFP+ stacking or uplink port	4 [2 stacking + 2 uplink]: • ICX 7550-24 • ICX 7550-48 • ICX 7550-24P • ICX 7550-48P 2 [2 uplink]: • ICX 7550-24ZP • ICX 7550-48ZP • ICX 7550-24F • ICX 7550-48F

System Component	Description	Maximum Ports Supported
10 GbE SFP+ ports	1/10 GbE SFP+ port	16 [12 downlink + 4 uplink]: • ICX 7550-24F • ICX 7550-48F 4 [4 uplink]: • ICX 7550-24 • ICX 7550-48 • ICX 7550-24P • ICX 7550-48P • ICX 7550-24ZP • ICX 7550-48ZP
1 GbE SFP ports	1 GbE SFP port	36 (ICX 7550-48F)
10 GbE RJ-45 Ports	100 Mbps/1 GbE/2.5 GbE/5 GbE/10 GbE RJ-45 port	12 (ICX 7550-24ZP and ICX 7550-48ZP)
2.5 GbE RJ-45 ports	100/1000/2500 Mbps RJ-45 port	• 12 (ICX 7550-24ZP) • 36 (ICX 7550-48ZP)
1 GbE RJ-45 ports	10/100/1000 Mbps RJ-45 port	• 24 (ICX 7550-24) • 24 (ICX 7550-24P) • 48 (ICX 7550-48) • 48 (ICX 7550-48P)
Ethernet management port	10/100/1000 Mbps RJ-45 port	All models

LEDs

System Component	Description
Switch Status and Management	The following LED types indicate switch status: • PWR1 and PWR2 (power supply units) • DIAG (diagnostics) • SYS (system status) • MS (stacking configuration) • CLD (cloud/on-premise-SmartZone management status) • UPDATE (software update) • STAT, SPD, ID, USB status mode
Ports	LEDs indicate port status or switch ID based on the status mode selection.

Other

System Component	Description
Serial cable	1 (RJ-45 to RJ-45)
RJ-45 to DB9 adapter	1 adapter
AC power cord	IEC 320-C14

Weight and Physical Dimensions

Model	Height	Width	Depth	Weight (with basic modules)
ICX 7550-24	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	6.11 kg 13.47 lb
ICX 7550-48	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	6.30 kg 13.89 lb
ICX 7550-24P	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	6.74 kg 14.86 lb
ICX 7550-48P	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	7.10 kg 15.65 lb
ICX 7550-24ZP	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	6.98 kg 15.39 lb
ICX 7550-48ZP	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	7.36 kg 16.23 lb
ICX 7550-24F	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	6.04 kg 13.32 lb
ICX 7550-48F	4.4 cm 1.73 inches	44.00 cm 17.32 inches	40.64 cm 16 inches	6.42 kg 14.15 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 gms random, 5-500 Hz	2.4 G sine, 1.1 gms random, 5-500 Hz
Airflow	Nominal: 10-14 cfm, Maximum: 56-84 cfm.	N/A
Heat Dissipation (+/- 5%)	Refer to Power Consumption specification sections	N/A
Operating noise	ICX 7550-24: 51 dBA ICX 7550-48: 51 dBA ICX 7550-24P: 51 dBA ICX 7550-48P: 51 dBA ICX 7550-24ZP: 51 dBA ICX 7550-48ZP: 56.7 dBA ICX 7550-24F: 51 dBA ICX 7550-48F: 51 dBA	N/A

Power Supply Specifications (Per PSU)

All the RUCKUS ICX 7550 power supply units (PSUs) are field replaceable. All the AC PSUs use a C14 inlet and connect to standard AC power. All the DC PSUs use a three-input 48V DC connector and connect to a standard 48V DC power source.

Power Supply Model	Maximum Output Power Rating (DC)	Input Voltage	Input Line Frequency	Maximum Input Current	Input Line Protection	Maximum Inrush Current
RPS21-E	400 W	100-240V AC	50-60Hz	6A	Fuses	35A
RPS21-I	400 W	100-240V AC	50-60Hz	6A	Fuses	35A
RPS21DC-E	400 W	-48 - -60V DC	-	14.7 A	Fuses	100A
RPS21DC-I	400 W	-48 - -60V DC	-	14.7 A	Fuses	100A
RPS22-E	1030 W	100-180V AC	50-60Hz	15A	Fuses	50A
	1200 W	180-240V AC	50-60Hz	8A	Fuses	60A
RPS22-I	1030 W	100-180V AC	50-60Hz	15A	Fuses	50A
	1200 W	180-240V AC	50-60Hz	8A	Fuses	60A

Power Consumption (Typical Configuration)

All downlink ports, stacking ports, and slot 2x40 GbE are linked up with 10 percent traffic rate; no PoE load on PoE models; two fan FRUs at nominal speed.

Model Name (Input Power +/-5%)	@100 VAC Input	@200 VAC Input	@-48 VDC Input	Minimum Number of Power Supplies	Notes
ICX 7550-24	53.2 W 181.4 BTU/hr	53.7 W 183.12 BTU/hr	55.68 W 189.87 BTU/hr	1 x 400W AC or 1 x 400W DC	1 PSU
	61 W 208.01 BTU/hr	62.1 W 211.76 BTU/hr	63.84 W 217.69 BTU/hr	2 x 400W AC or 2 x 400W DC	2 PSUs
ICX 7550-48	65 W 221.65 BTU/hr	65.3 W 222.67 BTU/hr	65.28 W 222.6 BTU/hr	1 x 400W AC or 1 x 400W DC	1 PSU
	70 W 238.7 BTU/hr	70.7 W 241.09 BTU/hr	72.96 W 248.79 BTU/hr	2 x 400W AC or 2 x 400W DC	2 PSUs
ICX 7550-24P	68.5 W 233.59 BTU/hr	69.1 W 235.63 BTU/hr	N/A	1 x 1200 W AC	1 PSU No PoE load
	81.4 W 277.57 BTU/hr	82.7 W 282.01 BTU/hr	N/A	2 x 1200 W ACDC	2 PSUs No PoE load
ICX 7550-48P	83.1 W 283.37 BTU/hr	83.4 W 284.39 BTU/hr	N/A	1 x 1200 W AC	1 PSU No PoE load
	94.2 W 321.22 BTU/hr	95.3 W 324.97 BTU/hr	N/A	2 x 1200 W AC	2 PSUs No PoE load
ICX 7550-24ZP	99.3 W 338.61 BTU/hr	99.8 W 340.32 BTU/hr	N/A	1 x 1200 W AC	1 PSU No PoE load
	121.3 W 413.63 BTU/hr	122.5 W 417.73 BTU/hr	N/A	2 x 1200 W AC	2 PSUs No PoE load

Model Name (Input Power +/-5%)	@100 VAC Input	@200 VAC Input	@-48 VDC Input	Minimum Number of Power Supplies	Notes
ICX 7550-48ZP	139.7 W 476.38 BTU/hr	138.6 W 472.63 BTU/hr	N/A	1 x 1200 W AC	1 PSU No PoE load
	151.7 W 517.3 BTU/hr	152.1 W 518.66 BTU/hr	N/A	2 x 1200 W AC	2 PSUs No PoE load
ICX 7550-24F	66.7 W 227.44 BTU/hr	66.8 W 227.78 BTU/hr	69.17 W 235.89 BTU/hr	1 x 400 W AC or 1 x 400 W DC	1 PSU
	68.6 W 233.92 BTU/hr	76.7 W 261.54 BTU/hr	74.94 W 255.55 BTU/hr	2 x 400 W AC or 2 x 400 W DC	2 PSUs
ICX 7550-48F	81.3 W 277.23 BTU/hr	81.2 W 276.89 BTU/hr	84.0 W 286.44 BTU/hr	1 x 400 W AC or 1 x 400 W DC	1 PSU
	92.7 W 316.11 BTU/hr	93.6 W 319.18 BTU/hr	91.2 W 311 BTU/hr	2 x 400 W AC or 2 x 400 W DC	2 PSUs

Power Consumption (Maximum Configuration)

All downlink ports, stacking ports, and slot 2x40 GbE are linked up with 100 percent traffic rate; 100 percent PoE load on PoE models; three fan FRUs at high speed.

Model Name (Input Power +/-5%)	@100 VAC Input	@200 VAC Input	@-48 VDC Input	Minimum Number of Power Supplies	Notes
ICX 7550-24	135 W 460.35 BTU/hr	134.2 W 457.62 BTU/hr	141.12 W 381.22 BTU/hr	1 x 400W AC or 1 x 400W DC	1 PSU
	146.9 W 500.93 BTU/hr	147.6 W 503.32 BTU/hr	154.56 W 527.05 BTU/hr	2 x 400W AC or 2 x 400W DC	2 PSUs
ICX 7550-48	142.7 W 486.61 BTU/hr	141.7 W 483.2 BTU/hr	148.32 W 505.77 BTU/hr	1 x 400W AC or 1 x 400W DC	1 PSU
	154.3 W 526.16 BTU/hr	154.7 W 527.53 BTU/hr	161.76 W 551.6 BTU/hr	2 x 400W AC or 2 x 400W DC	2 PSUs
ICX 7550-24P	1123.7 W 3831.82 BTU/hr	1248.2 W 4256.36 BTU/hr	N/A	1 x 1200 W AC	1 PSU
	1413 W 4818.33 BTU/hr	1357.5 W 4629.08 BTU/hr	N/A	2 x 1200 W AC	2 PSUs required for PoE loading
ICX 7550-48P	1131.6 W 3858.76 BTU/hr	1252.2 W 4270 BTU/hr	N/A	1 x 1200 W AC	1 PSU
	2134.5 W 7278.65 BTU/hr	2345.2 W 7997.13 BTU/hr	N/A	2 x 1200 W AC	2 PSUs required for PoE loading
ICX 7550-24ZP	1152 W 3928.32 BTU/hr	1290 W 4398.9 BTU/hr	N/A	1 x 1200 W AC	1 PSU
	2113 W 7205.33 BTU/hr	2353.1 W 8024.07 BTU/hr	N/A	2 x 1200 W AC	2 PSUs required for PoE loading

Model Name (Input Power +/-5%)	@100 VAC Input	@200 VAC Input	@-48 VDC Input	Minimum Number of Power Supplies	Notes
ICX 7550-48ZP	1183.7 W 4036.42 BTU /hr	1315.8 W 4486.88 BTU/hr	N/A	1 x 1200 W AC	1 PSU
	2159.8 W 7364.92 BTU/hr	2373.9 W 8095 BTU/hr	N/A	2 x 1200 W AC	2 PSUs required for PoE loading
ICX 7550-24F	142.7 W 486.6 BTU/hr	142 W 484.22 BTU/hr	147.96 W 504.55 BTU/hr	1 x 400W AC or 1 x 400W DC	1 PSU
	156 W 531.96 BTU/hr	156.4 W 533.32 BTU/hr	161.89 W 552.06 BTU/hr	2 x 400W AC or 2 x 400W DC	2 PSUs
ICX 7550-48F	166.8 W 568.78 BTU/hr	166.0 W 566.06 BTU/hr	168.07 W 573.12 BTU/hr	1 x 400W AC or 1 x 400W DC	1 PSU
	178.6 W 609.03 BTU/hr	177.7 W 605.96 BTU/hr	181.52 W 618.98 BTU/hr	2 x 400W AC or 2 x400W DC	2 PSUs

Power Consumption (Modules)

NOTE
The module names were inherited from the ICX7650.

Name	Description	Power Consumption
ICX7650-4X10GF	4-port 1/10 GbE SFP+ expansion module	Typical = 12.96 W Maximum = 15.72 W
ICX7650-2X40GQ	2-port 40 GbE QSFP+ data uplink/stacking module	Typical = 5.64 W Maximum = 7.38 W
ICX7650-1X100GQ	1-port 100 GbE QSFP28 data uplink/stacking module	Typical = 5.64 W Maximum = 7.38 W
ICX-FAN12-E	Power-supply-side for exhaust airflow fan assembly	Typical = 4.68 W Maximum = 16.68 W
ICX-FAN12-I	Power-supply-side for intake airflow fan assembly	Typical = 4.68 W Maximum = 16.68 W

Data Port Specifications (Ethernet)

NOTE
The pluggable-module names listed below were inherited from the ICX7650.

Model	Port Type	Number of Ports (in Module)	Description
ICX 7550-24	40 GbE	2 (slot 2)	QSFP+ stacking ports, 40 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	24 (slot 1)	10/100 Mbps/1 GbE RJ-45 ports

Model	Port Type	Number of Ports (in Module)	Description
ICX 7550-48	40 GbE	2 (slot 2)	QSFP+ stacking ports, 40 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	48 (slot 1)	10/100 Mbps/1 GbE RJ-45 ports
ICX 7550-24P	40 GbE	2 (slot 2)	QSFP+ stacking ports, 40 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	24 (slot 1)	10/100 Mbps/1 GbE RJ-45 ports with up to 45W per port PoE support
ICX 7550-48P	40 GbE	2 (slot 2)	QSFP+ stacking ports, 40 Gbps, compatible with optical transceivers, or direct attached copper cable
	1 GbE	48 (slot 1)	10/100 Mbps/1 GbE RJ-45 ports with up to 45W per port PoE support
ICX 7550-24ZP	100 GbE	2 (slot 2)	QSFP28 stacking ports, 40/100 Gbps, compatible with optical transceivers, or direct attached copper cable
	10 GbE	12 (slot 1)	100 Mbps/1 GbE/2.5 GbE/10 GbE RJ-45 ports with up to 90W per port PoE support
	2.5 GbE	12 (slot 1)	100 Mbps/1 GbE/2.5 GbE RJ-45 ports with up to 90W per port PoE support
ICX 7550-48ZP	100 GbE	2 (slot 2)	QSFP28 stacking ports, 40/100 Gbps, compatible with optical transceivers, or direct attached copper cable
	10 GbE	12 (slot 1)	100 Mbps/1 GbE/2.5 GbE/10 GbE RJ-45 ports with up to 90W per port PoE support
	2.5 GbE	36 (slot 1)	100 Mbps/1 GbE/2.5 GbE RJ-45 ports with up to 90W per port PoE support
ICX 7550-24F	100 GbE	2 (slot 2)	QSFP28 stacking ports, 40/100 Gbps, compatible with optical transceivers, or direct attached copper cable
	10 GbE	24 (slot 1)	SFP+ ports, 1/10 Gbps, compatible with ER, LR, SR, ZR, or USR optical transceivers
ICX 7550-48F	100 GbE	2 (slot 2)	QSFP28 stacking ports, 40/100 Gbps, compatible with optical transceivers, or direct attached copper cable
	10 GbE	12 (slot 1)	SFP+ ports, 1/10 Gbps, compatible with ER, LR, SR, ZR, or USR optical transceivers
	1 GbE	36 (slot 1)	SFP ports, compatible with 100Base-FX IR or LR SMF, 100Base-FX MMF, 1000Base-BXD SMF, 1000Base-BXU SMF, 1000Base-LHA SFP SMF, 1000Base-LX SMF, 1000Base-SX MMF, 1000BASE-TX SFP Copper
ICX7650-1X100GQ	100 GbE	1 (slot 3)	Pluggable module with QSFP28 uplink port, compatible with optical transceivers, or direct attached copper cable. Only supported in ICX 7550-24ZP, ICX 7550-48ZP, ICX 7550-24F, and ICX 7550-48F
ICX7650-2X40GQ	40 GbE	2 (slot 3)	Pluggable module with QSFP+ uplink ports, compatible with optical transceivers, or direct attached copper cable
ICX7650-4X10GF	10 GbE	4 (slot 3)	Pluggable module with SFP+ uplink ports, compatible with ER, LR, LRM, SR, ZR. Or USR optical transceivers

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

Pin	Signal	Description
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 (Pinout RJ-45)

Pin	Signal	Description
1	Not supported	N/A
2	Not supported	N/A
3	UART1_TXD	Transmit data to ICX
4	GND	Logic ground
5	Not supported	N/A
6	UART1_RXD	Receive data from ICX
7	Not supported	N/A
8	Not supported	N/A

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 2400 on board DRAM	4 GB
Boot flash	SPI flash (dual boot)	16 MB
eUSB SSD flash	SLC NAND flash	4 GB

Regulatory Compliance (EMC)

- FCC Title 47 CFR, Part 15, Subpart B, 2012 (for frequency above 1G) Class A
- ICES-003: 2016 Issue 6 (Canada) Class A
- VCCI V-3: 2013.04 /V-4: 2012.04 (Japan) Class A
- EN 55032: 2010+AC: 2017 Class A
- AS/NZS CISPR 32(Australia/New Zealand) Class A
- EN 55032: 2010+AC: 2017 Class A
- EN 61000-3-3: 2013
- EN 55024: 2010 + A1:2015
- EN 300 386 (V2.1.1)
- BSMI CNS 13438:95 (2006)
- TCVN 7189: 2009

Regulatory Compliance (Safety)

- CAN/CSA-C22.2 NO. 60950-1-07, end Edition. Am 1 (2011) +Am 2 (2014)
- UL 60950-1 (2nd Edition), am 1 (2011) +Am 2 (2014)
- IEC 60950-1 (2nd Edition) Am 1:2009 +Am 2 2013
- EN 60950-1:2006 + A11:2009 + A1:2010 + A12: 2011 +Am 2 2013
- EN 60825-1:2007 2014 (2017-6-19 replace 2007 version)
- EN 60825-2:2004+A1 A2
- BSMI CNS14336-1:99 (2010)
- UL 62368-1, 2nd Edition
- CAN/CSA C22.2 No. 62368-1-14
- IEC 62368-1:2014 (Second Edition)
- EN 62368-1:2014+A11:2017

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

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, 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 which case 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.

VCCI Statement

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)

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 need to take note of this.

China CCC Statement

⚠ China-CCC Warning statements

在维修的时候一定要断开所有电源 (English translation"disconnect all power sources before service")

For non tropical use:

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	...
	蒙古文	...
	壮文	Dan hab yungh youq gij dienheiq diuzgen mbouj dwg diegndat haenx ancienz sawjyungh.
	维文	...

For altitude 2000 meter and below:

安全说明和标记	汉文	仅适用于海拔2000m以下地区安全使用。
	藏文	...
	蒙古文	...
	壮文	Dan hab yungh youq gij digih haijbaz 2000m doxroengz haenx ancienz sawjyungh.
	维文	...

Warning for Class A:

声 明

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

English translation of above statement

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.

BSMI Statement (Taiwan)

型號: ICX 7550-24

系列型號: ICX 7550-24P, ICX 7550-48, ICX 7550-48P, ICX 7550-24ZP, ICX 7550-48ZP, ICX 7550-24F, ICX 7550-48F

Warning:

Regulatory Statements
BSMI Statement (Taiwan)

This is 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.

設備名稱：網路交換機 ，型號（型式）： Equipment name Type designation (Type)			ICX-7550-24, ICX-7550-24P, ICX 7550-24F, ICX 7550-24ZP, ICX 7550-48, ICX 7550-48P, ICX 7550-48F, ICX 7550-48ZP			
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr+6)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
金屬部件	-	○	○	○	○	○
電路模組	-	○	○	○	○	○
塑膠和聚合物部件	○	○	○	○	○	○
電纜及電纜組件	-	○	○	○	○	○
電源組件	-	○	○	○	○	○

備考1. "超出0.1 wt %" 及 "超出0.01 wt %" 係指限用物質之百分比含量超出百分比含量基準值。
Note 1："Exceeding 0.1 wt%" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2. "○" 係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2："○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

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

Cautions and Danger Notices

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.

⚠️ **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.

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 Steckplatztafel 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.

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 estan 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.

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.

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 alimentacion 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 Stromkreiszweiges 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 dispositive 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 Mindestnenntemperatur 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.

> **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 Srromquelle anzuschließen.
DANGER	Vérifiez que les circuits de sources d'alimentation sont bien mis à la terre, puis utilisez lecordon 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 accidently 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 areas 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 politicas 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.

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 régulations 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 Schutzerdung 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 energia cuenten con una conexión a tierra apropriada.

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.

DANGER

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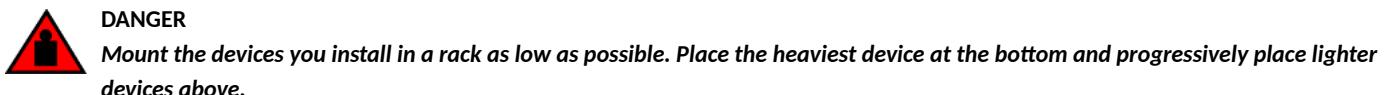
GEFAHR	Schließen Sie das Netzkabel nur an eine geerdete Steckdose an.
DANGER	Le cordon d'alimentation ne doit être raccordé qu'à une prise de courant mise à la terre.
PELIGRO	Conecte el cable de alimentación únicamente a una toma de corriente con conexión a tierra.

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.
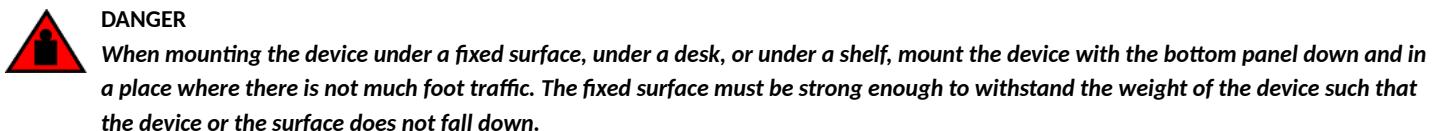
GEFAHR	Stellen Sie sicher, dass das Gestell für die Unterbringung des Geräts auf angemessene Weise gesichert ist, so dass das Gestell oder der Schrank nicht wackeln oder umfallen kann.
DANGER	Vérifiez que le bâti abritant le dispositif est bien fixé afin qu'il ne devienne pas instable ou qu'il ne risque 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 piétonniaire. La surface fixe doit être suffisamment solide pour supporter le poids de l'appareil de telle sorte que ni l'apprareil ni la surface ne puissent tomber.

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.

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	Radiacion de Laser. No vea directamente con Instrumentos Opticos. 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１Ｍ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.

COMMSCOPE®
RUCKUS®