

Brocade ICX 6450-C Compact Switch Hardware Installation Guide

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Contents

Preface.....	5
Document conventions.....	5
Notes, cautions, and warnings.....	5
Text formatting conventions.....	5
Command syntax conventions.....	6
Brocade resources.....	6
Document feedback.....	6
Contacting Brocade Technical Support.....	7
Brocade customers.....	7
Brocade OEM customers.....	7
About This Document.....	9
What's new in this document.....	9
Supported Software.....	9
Product Overview.....	11
Network and management interfaces.....	11
Console management interface	11
Out-of-band management interface.....	11
Reset button.....	12
Network interfaces for an ICX 6450-C device.....	12
Port, system, and power status LEDs.....	13
Port status LEDs.....	13
System status LEDs.....	14
Network connection status LEDs.....	15
Power supplies.....	17
AC power mode.....	18
PD power mode.....	19
ICX 6450-C Installation.....	21
Items included with an ICX 6450-C device.....	21
Summary of installation tasks.....	21
Installation precautions.....	22
General precautions.....	22
Lifting precautions.....	22
Power precautions.....	22
Preparing the installation site.....	23
Cabling infrastructure.....	23
Installation location.....	23
Rack-mount installation considerations.....	23
Installing the device.....	24
Desktop installation.....	24
Rack mount installation.....	25
Wall mount installation.....	26
Wall mount installation using wall mount brackets.....	30
Mounting the device with a magnet.....	32
Powering on the system.....	38

Configuring an ICX 6450-C Device.....	39
IP address configuration.....	39
Managing an ICX 6450-C Device.....	41
Temperature settings.....	41
Displaying the temperature.....	41
Changing the temperature warning level	42
Temperature shutdown levels.....	42
Brocade ICX 6450-C Compact Switch Technical Specifications.....	43
System specifications.....	43
Ethernet.....	43
LEDs.....	43
Other.....	44
Weight and physical dimensions.....	44
Environmental requirements.....	44
Power supply specifications (per PSU).....	45
Power consumption (maximum configuration).....	45
Data port specifications (Ethernet).....	45
Serial port specifications (pinout RJ-45).....	45
Memory specifications.....	46
Regulatory compliance (EMC).....	46
Regulatory compliance (safety).....	46
Regulatory compliance (environmental).....	46
Troubleshooting	49
Diagnosing switch indicators.....	49
Power and cooling problems.....	49
Installation.....	49
Virtual cable testing.....	49
Virtual Cable Testing configuration notes.....	50
Virtual Cable Test command syntax.....	50
Viewing the results of the cable analysis.....	50
Regulatory Statements.....	53
BSMI statement (Taiwan).....	53
Canadian requirements.....	53
China CC statement.....	54
Europe and Australia (CISPR 22 Class A Warning).....	54
FCC warning (US only).....	55
Germany.....	55
KCC statement (Republic of Korea).....	55
VCCI statement.....	55
Cautions and Danger Notices.....	57
Cautions.....	57
General cautions.....	57
Electrical cautions.....	58
Danger Notices.....	59
General dangers.....	59
Electrical dangers.....	59
Dangers related to equipment weight.....	61
Laser dangers.....	61

Preface

- Document conventions..... 5
- Brocade resources..... 6
- Document feedback..... 6
- Contacting Brocade Technical Support..... 7

Document conventions

The document conventions describe text formatting conventions, command syntax conventions, and important notice formats used in Brocade technical documentation.

Notes, cautions, and 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 a stronger note, for example, to alert you when traffic might be interrupted or the device might reboot.

 **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.

Text formatting conventions

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

Format	Description
bold text	Identifies command names.
	Identifies keywords and operands.
	Identifies the names of GUI elements.
<i>italic text</i>	Identifies text to enter in the GUI.
	Identifies emphasis.
	Identifies variables.
Courier font	Identifies document titles.
	Identifies CLI output.

Format	Description
	Identifies command syntax examples.

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.
<i>italic text</i>	Identifies a variable.
value	In Fibre Channel products, a fixed value provided as input to a command option is printed in plain text, for example, --show WWN.
[]	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. In Fibre Channel products, square brackets may be used instead for this purpose.
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, <i>member[member...]</i> .
\	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.

Brocade resources

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

White papers, data sheets, and the most recent versions of Brocade software and hardware manuals are available at www.brocade.com. Product documentation for all supported releases is available to registered users at MyBrocade.

Click the **Support** tab and select **Document Library** to access product documentation on MyBrocade or www.brocade.com. You can locate documentation by product or by operating system.

Release notes are bundled with software downloads on MyBrocade. Links to software downloads are available on the MyBrocade landing page and in the Document Library.

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Online	Telephone
Preferred method of contact for non-urgent issues: - Case management through the MyBrocade portal. - Quick Access links to Knowledge Base, Community, Document Library, Software Downloads and Licensing tools	Required for Sev 1-Critical and Sev 2-High issues: - Continental US: 1-800-752-8061 - Europe, Middle East, Africa, and Asia Pacific: +800-AT FIBREE (+800 28 34 27 33) Toll-free numbers are available in many countries. - For areas unable to access a toll-free number: +1-408-333-6061

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- Brocade provides backline support for issues that cannot be resolved by the OEM/solution provider.
- Brocade Supplemental Support augments your existing OEM support contract, providing direct access to Brocade expertise. For more information, contact Brocade or your OEM.
- For questions regarding service levels and response times, contact your OEM/solution provider.

About This Document

- [What's new in this document.....](#) 9
- [Supported Software.....](#) 9

What's new in this document

There are no enhancements in this edition.

Supported Software

For information about the features supported on a hardware platform, refer to the appropriate *Features and Standards Support Matrix* document.

Product Overview

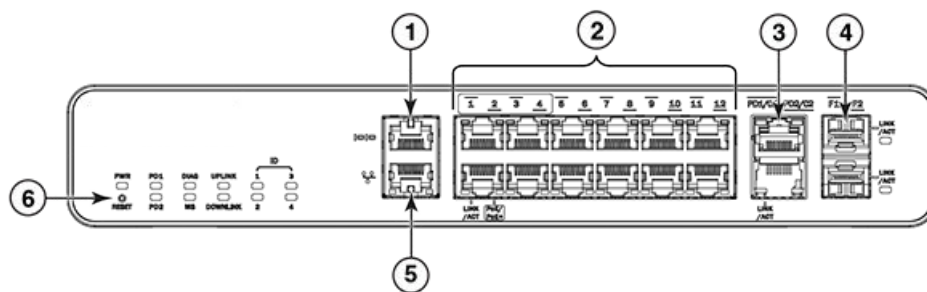
• Network and management interfaces.....	11
• Port, system, and power status LEDs.....	13
• Power supplies.....	17

Network and management interfaces

The ICX 6450-C12-PD device includes the following management interfaces, and a reset button on the front panel of the device:

- Console management interface (RJ-45 serial port)
- Out-of-band management interface (RJ-45 port)
- Reset button

FIGURE 1 Management interfaces on an ICX 6450-C12-PD device



1. Console port
2. Slot 1 (10/100/1000 Mbps ports)
3. Slot 2 (Copper uplink and PD ports)
4. Slot 3 (SFP uplink ports)
5. Out-of-band management port
6. Reset button

Console management interface

The console management interface is an RJ-45 serial port that allows you to configure and manage the device using a third-party terminal emulation application from a directly connected PC.

Out-of-band management interface

The out-of-band management interface is an RJ-45 port that allows you to configure and manage the device from the network.

Reset button

The reset button allows you to restart the system without switching the power supplies off and on or using the CLI. When the reset button is pressed, the system resets and the software is reloaded. The button is directly below the power LED on the left of the front panel.

The reset button allows you to restart the system without switching the power supplies off and on or using the CLI or Web Management Interface. When the reset button is pressed, the system resets and the software is reloaded. The button is directly below the power LED on the left of the front panel.

Network interfaces for an ICX 6450-C device

An ICX 6450-C device contains the following interfaces:

- 12 10/100/1000 BASE-T RJ-45 copper connectors (Slot 1, Ports 1-12)
 - Ports 1- 4 are dedicated PoE/PoE+ ports.
- 4 100 Mbps/1 GbE ports:
 - 2 10/100/1000 BASE-T, RJ-45 ports (Slot 2, ports PD1/C1-PD2/C2); can be used as uplink or PD ports
 - 2 100 Mbps/1 GbE SFP uplink ports (Slot 3, ports F1-F2)

Slot designations

The following table lists the slot designations for an ICX 6450-C device. Refer to [Figure 1](#) on page 11 for the location of slots 1- 3 on the front panel of an ICX 6450-C device.

TABLE 1 Slot designations for an ICX 6450-C device

Device	Slot 1 (10/100/1000 BASE-T RJ-45 ports)	Slot 2 (10/100/1000 BASE-T RJ-45 uplink ports)	Slot 3 (1 GbE SFP uplink ports)
ICX 6450-C12-PD	Ports 1-12	Ports PD1/C1-PD2/ C2	Ports F1-F2

10/100/1000 BASE-T RJ-45

An ICX 6450-C device provides 12 RJ-45 ports that reside on Slot 1 of the device. The 12 RJ-45 ports operate at 10 Mbps or 100 Mbps half or full duplex, or at 1000 Mbps full duplex. Because all ports support automatic MDI or MDI-X operation, you can use straight-through cables for all network connections to PCs or servers, or to other devices or hubs. In addition, it is ideal (and preferred) to use straight-through cables for switch-to-switch connections.

Each port supports auto-negotiation, so the optimum transmission mode (half or full duplex), and the data rate (10, 100, or 1000 Mbps) can be selected automatically. If a device connected to one of these ports does not support auto-negotiation, the communication mode of the port can be configured manually.

Ports 1-4 are PoE-capable. Ports 5-12 are non-PoE.

SFP and RJ-45 uplink ports

The 10/100/1000 BASE-T RJ-45 PD1/C1 and PD2/C2 ports, residing on slot 2 of the device, can be used as uplink ports or additional network connections. They can also be used as PD ports.

The other two uplink ports are 100 Mbps/1 GbE small form factor pluggable (SFP) ports (ports F1 and F2), which reside on slot 3 of the switch. The SFP ports support 100 Mbps/1 GbE port speeds.

For information about supported SFP transceivers, refer to the "BROCADE ETHERNET OPTICS FAMILY datasheet" on the Brocade website.

Port, system, and power status LEDs

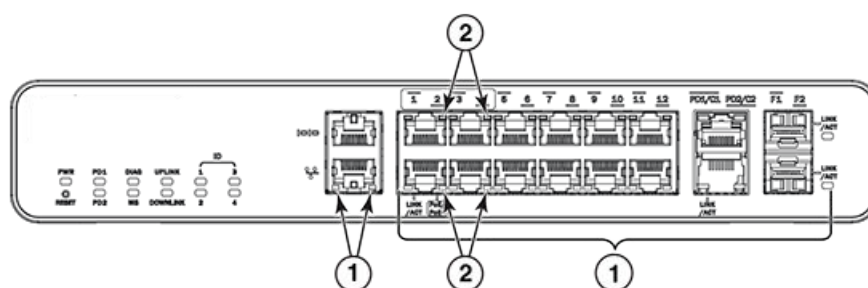
An ICX 6450-C device include LEDs that indicate the status of device components:

- [Port status LEDs](#) on page 13
- [System status LEDs](#) on page 14 (including power status LEDs)
- [Network connection status LEDs](#) on page 15

Port status LEDs

The following figure shows the location of the port status LEDs on the ICX 6450-C12-PD model.

FIGURE 2 Port status LEDs an ICX 6450-C12-PD device



1. Port status LEDs
2. PoE/PoE+ LEDs

The following table lists the port status LEDs on an ICX 6450-C device and their corresponding conditions and status.

TABLE 2 Port status LEDs

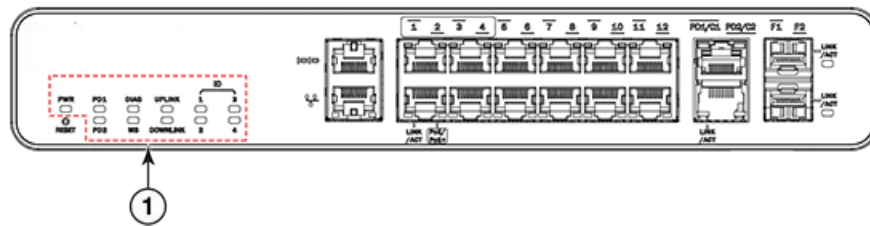
LED	Condition	Status
Out-of-band management port (2 LEDs)	Off (right side)	Offline
	On/Flashing (left side)	Link-up. Flashing indicates the port is transmitting and receiving user packets.
	On/Green (right side)	1 Gbps Link-up
	Right LED off, left LED on or flashing	10/100 Mbps Link-up. Flashing indicates the port is transmitting and receiving user packets.
1 GbE ports (1 - 12, Slot 1) Link/Act	Off (right side)	The right LED on the ports indicates PoE/PoE+ activity and is only active on ports 1-4. On non-PoE/PoE+ ports, the right LED remains off.
	Off (left side)	A link is not established with a remote port.
	On/Flashing Green (left side)	The port has established a valid link at 10, 100, or 1000 Mbps. Flashing indicates the port is transmitting and receiving user packets.
PoE/PoE+ (1 - 4)	On/Green (right side)	The port is providing PoE or PoE+ power to a connected device.
	Off (right side)	The port is not providing PoE or PoE+ power.
100 Mbps/1 GbE RJ-45 ports (PD1/C1 - PD2/C2, Slot 2)	On/ Flashing Green	The port is operating at 1 Gbps. Flashing indicates the port is transmitting and receiving user packets at 1 Gbps.

TABLE 2 Port status LEDs (continued)

LED	Condition	Status
Link/Act	Off	A link is not established with a remote port.
100 Mbps/1 GbE SFP ports (F1 - F2, Slot 3)	On/ Flashing Green	The SFP port is operating at 1 Gbps. Flashing indicates the port is transmitting and receiving user packets at 1 Gbps.
Link/Act	Off	A link is not established with a remote port.

System status LEDs

The following figure shows the location of the system status LEDs on an ICX 6450-C device.

FIGURE 3 System status LEDs on an ICX 6450-C12-PD device

1. System status LEDs

The following table lists the system status LEDs on an ICX 6450-C device and their corresponding conditions and status.

TABLE 3 System status LEDs

LED	Condition	Status
PWR (Power)	Green	Power source is the AC power supply and is operating normally.
	Amber	Power source is the PD ports and is operating normally.
	Off	Power supply off.
PD1 and PD2	Green	PD port source is PoE+.
	Amber	PD port source is PoE.
	Off	PD port source is off.
Diag (Diagnostic)	Flashing Green	System self-diagnostic test in progress. System reloads automatically.
	Steady Amber	System self-diagnostic test has detected a fault. (Fan, thermal, or any interface fault.) The user must reload the system.
	Steady Green	System self-diagnostic test passed.
Uplink	Off	LED is reserved for future use.
Downlink	Off	LED is reserved for future use.
ID (1-4)	Off	LED is reserved for future use.

Network connection status LEDs

After you install the network cables, you can observe certain LEDs to determine if the network connections are functioning properly. The following table outlines the LEDs related to the network connections, the desired state of each LED, possible abnormal states of each LED, and what to do if an LED indicates an abnormal state.

TABLE 4 Network connection-related LED states

LED	Desired state	Meaning	Abnormal state	Meaning or action
Ethernet (1-12, Slot 1) Link/Act	On or flashing (Green)	The port has established a valid link at 10, 100, or 1000 Mbps. Flashing indicates the port is transmitting and receiving user packets.	Off	A link is not established with the remote port. You can do the following: - Verify that the connection to the other network device has been properly made. Also, make certain that the other network device is powered on and operating correctly. - Verify that the port has not been disabled through a configuration change. You can use the CLI. If you have configured an IP address on the device, you also can use the Web management interface or Brocade Network Advisor. - If the other actions do not resolve the problem, try using a different port or a different cable.
PoE/PoE+ (1-4, Slot 1)	On (Green)	Ports 1-4 have two LEDs. The one on the left indicates Link/Act activity as described previously. The LED on the right, if on (steady green), indicates that this device is acting as Power Sourcing Equipment (PSE) and is providing PoE/PoE+ power to downstream devices.	Off	A link is not established with the PoE device. You can do the following: - Verify that the connection to the other network device has been properly made. - If the other actions do not resolve the problem, try using a different

TABLE 4 Network connection-related LED states (continued)

LED	Desired state	Meaning	Abnormal state	Meaning or action
				port or a different cable.
SFP (F1 - F2, Slot 3)	On or flashing (Green)	The SFP port is operating. Flashing green indicates the port is transmitting and receiving user packets.	Off	A link is not established with the remote port. You can do the following: • Verify that the connection to the other network device has been properly made. Also, make certain that the other network device is powered on and operating correctly. • Verify that the transmit port on the device is connected to the receive port on the other network device, and that the receive port on the device is connected to the transmit port on the other network device. If you are not certain, remove the two cable connectors from the port connector and reinsert them in the port connector, reversing their order. • Dust may have accumulated in the cable connector or port connector. • Verify that the port has not been disabled through a configuration change. • If the other actions do not resolve the problem, try using a different port or a different cable.

TABLE 4 Network connection-related LED states (continued)

LED	Desired state	Meaning	Abnormal state	Meaning or action
Uplink ports (PD1/C1-PD2/C2, Slot 2)	On or flashing (Green)	The ports are operating. Flashing green indicates the port is transmitting and receiving user packets.	Off	A link is not established with the remote port. You can do the following: • Verify that the connection to the other network device has been properly made. Also, make certain that the other network device is powered on and operating correctly. • Verify that the port has not been disabled through a configuration change. You can use the CLI. If you have configured an IP address on the device, you also can use the Web management interface or Brocade Network Advisor. • If the other actions do not resolve the problem, try using a different port or a different cable.

If a problem persists after taking these actions, contact Brocade Technical Support.

Power supplies

An ICX 6450-C device has one standard power supply receptacle on the rear panel of the device for the AC power cord.

FIGURE 4 ICX 6450-C AC power connection



- 1. Kensington lock hole
- 2. AC power supply socket

AC power mode

The following table shows the device power usage and the PoE/PoE+ power configurations available to PSE ports in the AC power mode.

When you use the AC power supply, PD is disabled. The only power to the system comes from the AC power supply. In this mode, the ICX 6450-C device can provide PSE power through ports 1-4 to down-stream devices. The total power available to the PSE ports (ports 1-4) is 68W.

TABLE 5 Device power usage and available PoE/PoE+ power configurations in the AC power mode

Power input	Uplink (PD ports) power inputs	Minimum input poer (W)	Effective power (W)	System power (W)	Does ICX 6450-C12-PD turn on?	Power available to PSE ports (W)
AC input only or AC input with uplink PD inputs	All PD inputs are disabled if AC power is present.	Two uplink 802.3af PD ports or one uplink 802.3at PD port	100	20.07	Yes	68 in one of these configurations: • Four Class 3 devices • One Class 4 device, two Class 3 devices, and one Class 2 device • One Class 3 device • Two Class 4 devices and one Class 2 device

When using the ICX 6450-C device to provide PoE/PoE+ power to downstream devices, keep in mind that the maximum allowed continuous power per cable depends on the standard being used, as shown in the following table:

TABLE 6 Maximum PSE output power

Standard	Maximum power
IEEE 802.3af (PoE)	15.40W
IEEE 802.3at (PoE+)	30W

PD power mode

In the PD power mode, the ICX 6450-C switch is powered by a PSE source through the PD ports (ports PD1 and PD2). Also in this mode, the switch can provide passthrough PoE power to downstream devices through the PSE ports (ports 1-4).

The following table shows the ICX 6450-C switch power usage in the PD power mode. When powering the device using the PD ports, keep in mind that the maximum allowed continuous power per cable depends on the standard being used, as shown in [AC power mode](#) on page 18.

TABLE 7 Device power usage and available PoE/PoE+ power configurations in the PD power mode

AC input	Uplink (PD ports) power inputs	Minimum input power (W)	System power (W)	Is the PD power enough to turn ICX 6450-C12-PD on?	Power available to PSE ports (W)
None	1 PoE	12.95	N/A	No	N/A
None	2 PoE	25.9	20.07	Yes	N/A
None	1 PoE+	25.4	20.07	Yes	N/A
None	1 PoE+ and 1 PoE	38.35	20.07	Yes	7
None	2 PoE+	50.8	20.07	Yes	22.4

NOTE

When the **show chassis** command displays the message "Power supply present status failed," it is an indication that there is no AC power supply and that the device is powered through PD ports, drawing PoE.

NOTE

In the PD power mode, if the ICX 6450-C switch is powered by one PoE input, the switch does not turn on, but consumes approximately 6.5 Watts of power.

ICX 6450-C Installation

• Items included with an ICX 6450-C device.....	21
• Summary of installation tasks.....	21
• Installation precautions.....	22
• Preparing the installation site.....	23
• Installing the device.....	24
• Powering on the system.....	38

Items included with an ICX 6450-C device

An ICX 6450-C device ships with all of the following items included in your shipping container. Verify the contents of your shipping container. If any items are missing, contact the place of purchase.

- ICX 6450-C12-PD device
- Wall mounting kit containing two wall-mount screws and two plastic anchors
- One AC power cord - US only (cords for other countries must be ordered separately)
- Power cable clip
- Console cable
- Four rubber feet
- China ROHS sheet
- Read Me First document
- Wall Mount Holes Location template (single sheet)

Alternative mounting options available for order include the following:

- A wall mount option is available to order for a secure wall mount, in addition to the basic wall mount. Brocade part number ICX 6400-RMK.
- An additional rack-mounting kit is available to order to mount the device in a two-post rack. Brocade part number ICX 6400-C12-RMK.
- A magnet mount option is available to order to mount the device securely on a metal surface. Brocade part number ICX 6400-C12-MGNT.

Summary of installation tasks

Follow the steps listed in the following table to install your device. Details for each of these steps are provided in the sections indicated.

TABLE 8 Installation tasks

Task number	Task	Where to find more information
1	Ensure that the physical environment that will host the device has the proper cabling, ventilation, and clearance.	Preparing the installation site on page 23
2	Unpack the device and all included accessories,	Items included with an ICX 6450-C device on page 21

TABLE 8 Installation tasks (continued)

Task number	Task	Where to find more information
3	Install the device on a desktop, in an equipment rack, on a wall, or on a metal surface.	Installing the device on page 24
4	Once the device is installed, plug the device into a nearby power source that adheres to the regulatory requirements outlined in this manual.	Powering on the system on page 38

Installation precautions

Follow all precautions when installing a device.

General precautions



DANGER

All fiber-optic interfaces use Class 1 lasers.



CAUTION

Do not install the device in an environment where the operating ambient temperature might exceed 40°C (104°F).



CAUTION

Never leave tools inside the chassis.

Lifting precautions



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.

Power precautions



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.



DANGER

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



CAUTION

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

**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.

Preparing the installation site

Before installing the device, plan its location and orientation relative to other devices and equipment.

Cabling infrastructure

Ensure that the proper cabling is installed at the site. For information about supported SFP and SFP+ transceivers and cable lengths and types, refer to the “BROCADE ETHERNET OPTICS FAMILY datasheet” on the Brocade website.

Installation location

Devices can be mounted in a standard 19-inch equipment rack, on a flat surface, on a wall, or on a metal surface.

The site should meet the following requirements:

- Maintain the operating environment as specified in the “Brocade ICX 6450-C Compact Switch Technical Specifications” section.
- Allow a minimum of 7.62 cm (3 in.) of space above the device and 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.
- The site should be accessible for installing, cabling and maintaining the devices.
- Allow the status LEDs to be clearly visible.
- 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.
- Allow for the unit to be connected to a separate grounded power outlet that provides 100 to 240 VAC, 50 to 60 Hz, is 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.
- For a two-post rail mount configuration, order the appropriate mounting kit and refer to the kit documentation.
- When using the magnet mount installation to install the device on a metal surface, the device cannot be installed above 1.1 meters.

Rack-mount installation considerations

Before mounting the device in a rack, ensure that the following rack-mount installation requirements are met:

- 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. Refer to the “Brocade ICX 6450-C Compact Switch Technical Specifications” section.
- Mechanical loading: Do not place any equipment on top of a rack-mounted unit.
- Circuit overloading: Be sure that the supply circuit to the rack assembly is not overloaded.
- Grounding: Rack-mounted equipment should be properly grounded.

Installing the device

You can install the device on a desktop, an equipment rack, a wall, or on a metal surface:

- [Desktop installation](#) on page 24
- [Rack mount installation](#) on page 25
- [Wall mount installation](#) on page 26
- [Wall mount installation using wall mount brackets](#) on page 30
- [Mounting the device with a magnet](#) on page 32



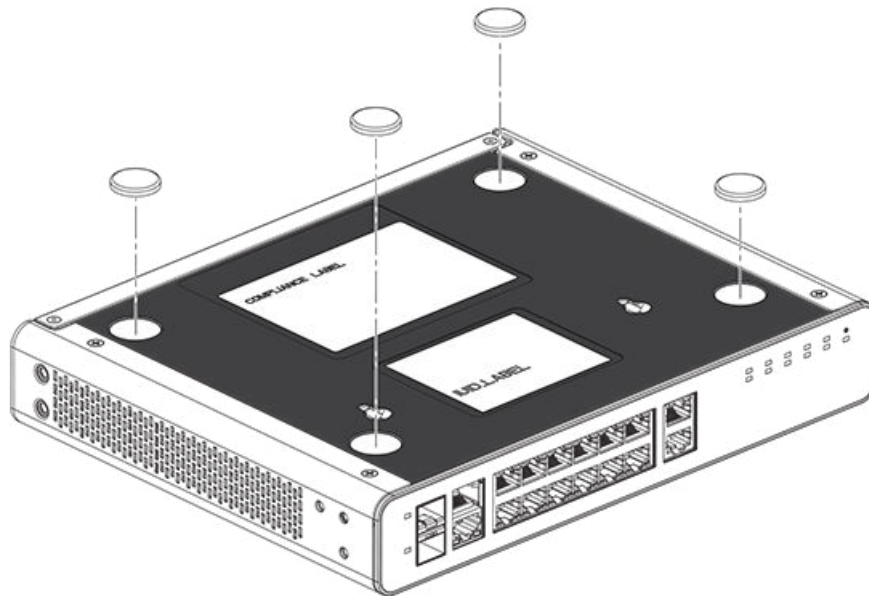
DANGER

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

Desktop installation

Complete the following steps to install the ICX 6450-C device on a desktop or other flat surface.

FIGURE 5 Attaching the adhesive feet



1. Attach the four adhesive feet to the bottom of the 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-inch) clearance is recommended on each side.
3. If installing a single device only, go to the section [Powering on the system](#) on page 38. Place each device squarely on top of the one below.
4. If installing multiple devices, attach the adhesive feet to each device.

Rack mount installation

The devices use stationary mounting when mounted in a rack. The rack-mount kit is not included with the device and is available to order separately.



DANGER

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



CAUTION

Ensure that adequate ventilation is provided for the system. A 3 cm clearance is recommended above the device and 8 cm clearance is recommended on each side.

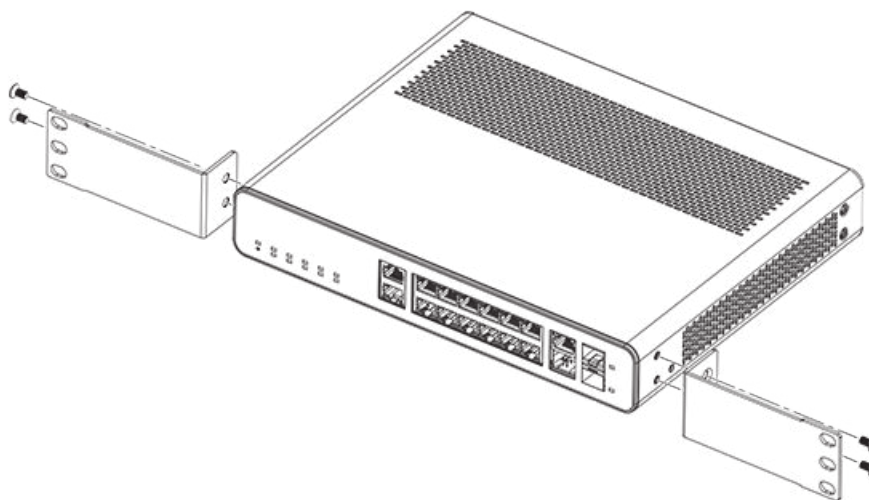
NOTE

You need a #2 Phillips screwdriver for rack mount installation.

Complete the following steps to mount devices in a rack.

1. Remove the rack mount kit from the shipping carton. The kit contains two L-shaped mounting brackets and four sink-head screws.
2. Using a Phillips screwdriver, attach the mounting brackets to the sides of the device using four sink-head screws.

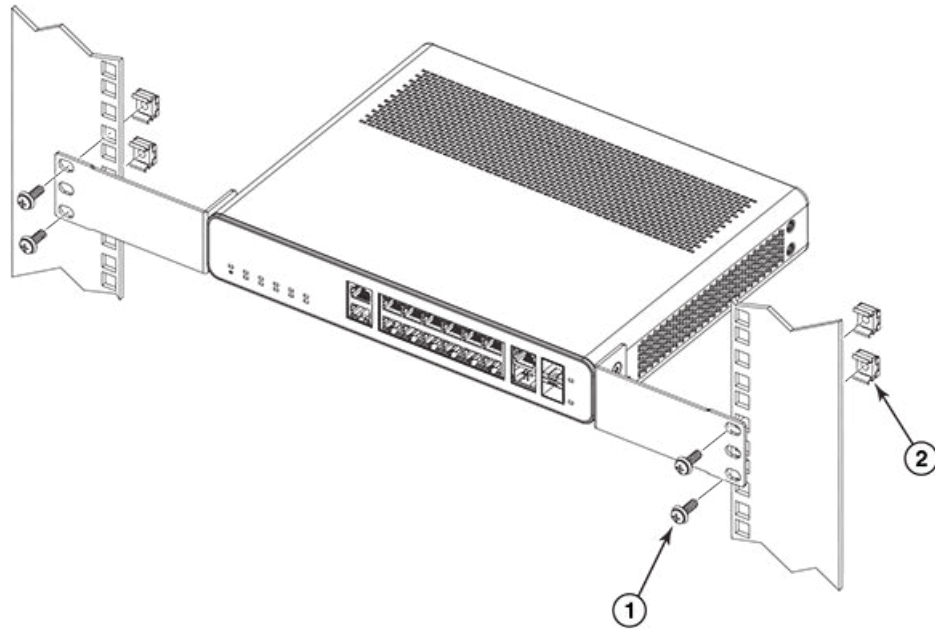
FIGURE 6 Attaching the mounting brackets for an ICX 6450-C device



3. Remove the two-post rack kit from the shipping carton. The kit contains four rack-mounting screws and four cage nuts.
4. Insert the cage nuts in the two-post rack where you want to mount the device.

5. Using a Phillips screwdriver, mount the device in a two-post rack using four rack-mounting screws.

FIGURE 7 Installing the device in a two-post rack



1. Rack-mounting screws
 2. Cage nuts
6. If installing a single device only, proceed to the section [Powering on the system](#) on page 38. If installing multiple devices, mount them in the rack, one below the other.

Wall mount installation

Use the following items to wall mount the device directly to a wall:

- #2 Phillips screwdriver
- Hammer
- Drill
- Wall mount anchors
- Wall mount screws
- Wall Mount Holes Location template
- Tape

To mount the device to a wall using the wall mount brackets, refer to [Wall mount installation using wall mount brackets](#) on page 30.

NOTE

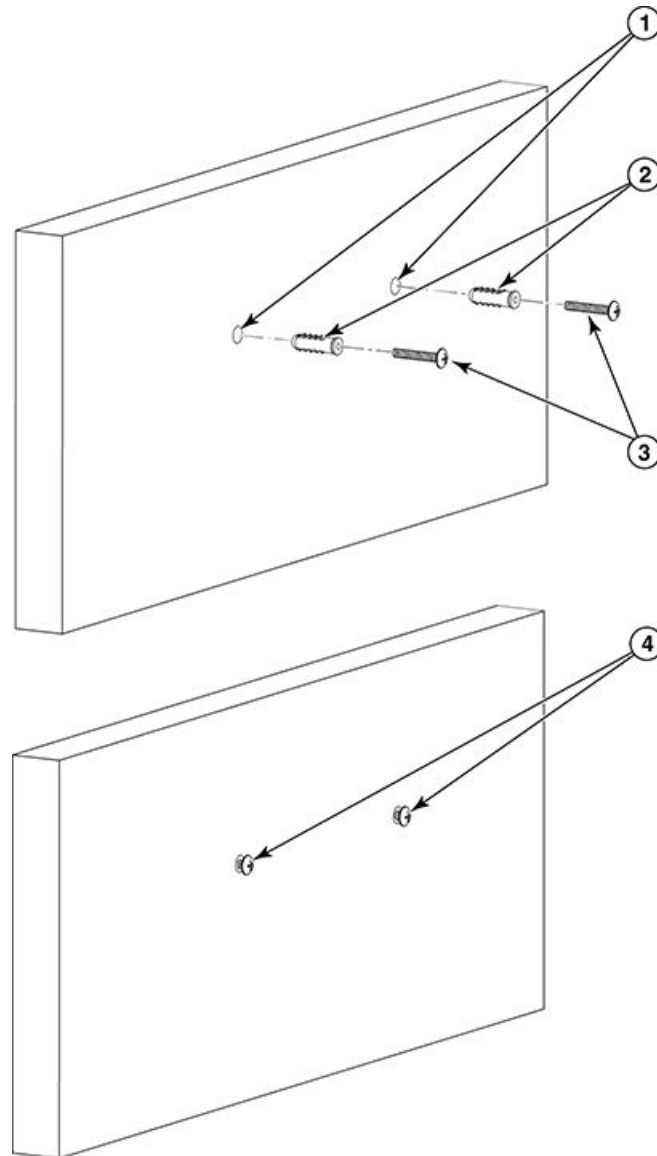
When mounting the device on a wall, Brocade recommends that you mount the device with the port side down.

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

1. Use tape to place the Wall Mount Holes Location template against the wall, in the same position that you plan to place the device against the wall. The Wall Mount Holes Location template serves as a guide to drilling the screws and wall mount anchors into the correct location on the wall in order to place the device in the desired location.
2. Using the Wall Mount Holes Location template as a guide, drill two holes on the wall where you want to mount the device.
3. Hammer the wall mount anchors into the two holes.

4. Use the #2 Phillips screwdriver to secure the two wall mount screws into the wall mount anchors. Leave a gap of 4.0 to 4.5 mm between the screw head and the wall.

FIGURE 8 Preparing to wall mount the device



1. Drilled holes in wall
2. Wall mount anchors
3. Wall mount screws
4. 4.0-4.5 mm space between screw head and wall

5. With the port side of the device facing down, aim the mounting holes on the bottom panel of the device towards the wall mounting screws on the wall and hang the device securely against the wall, so that the wall mount screws are inserted into the mounting holes.

FIGURE 9 Wall mounting the ICX 6450-C device - View of rear panel

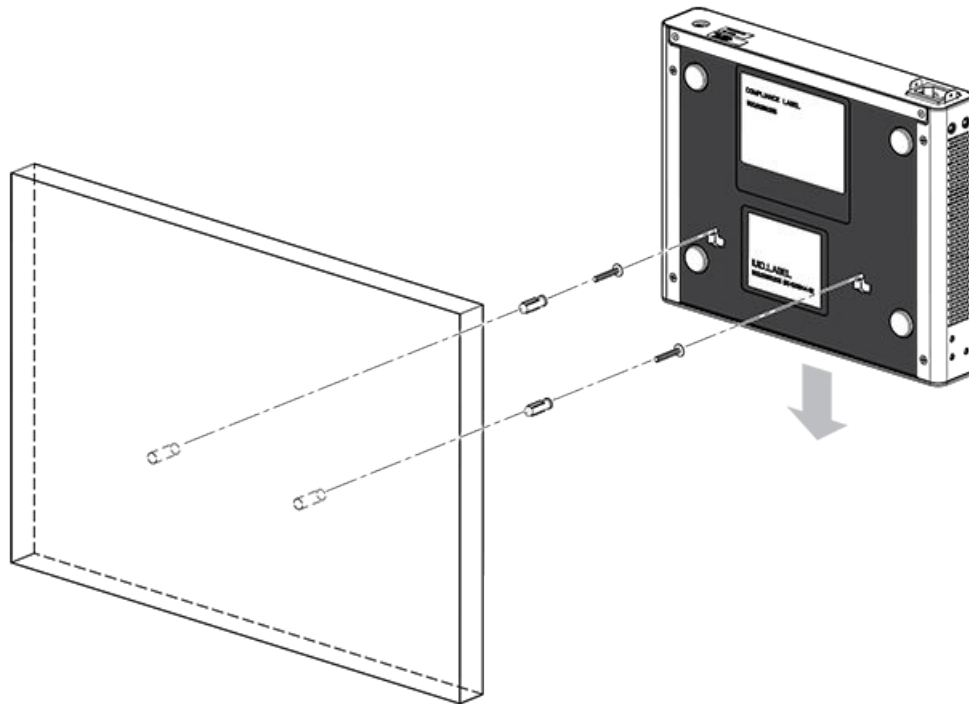
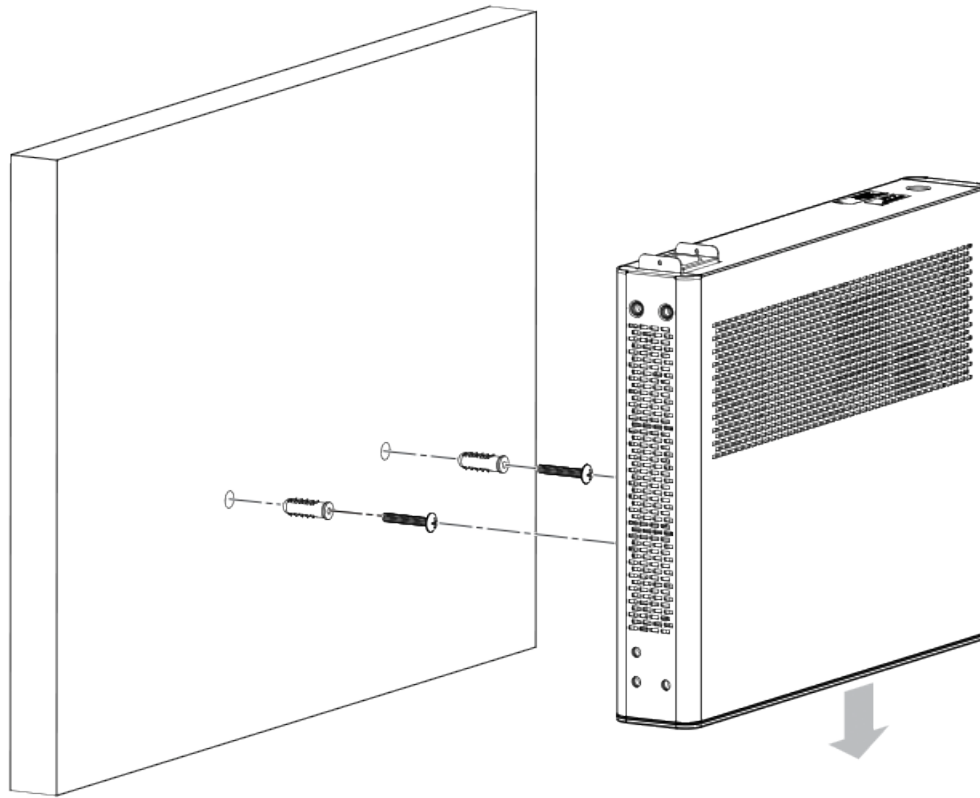


FIGURE 10 Wall mounting the ICX 6450-C device - View of the top panel



Wall mount installation using wall mount brackets

NOTE

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

NOTE

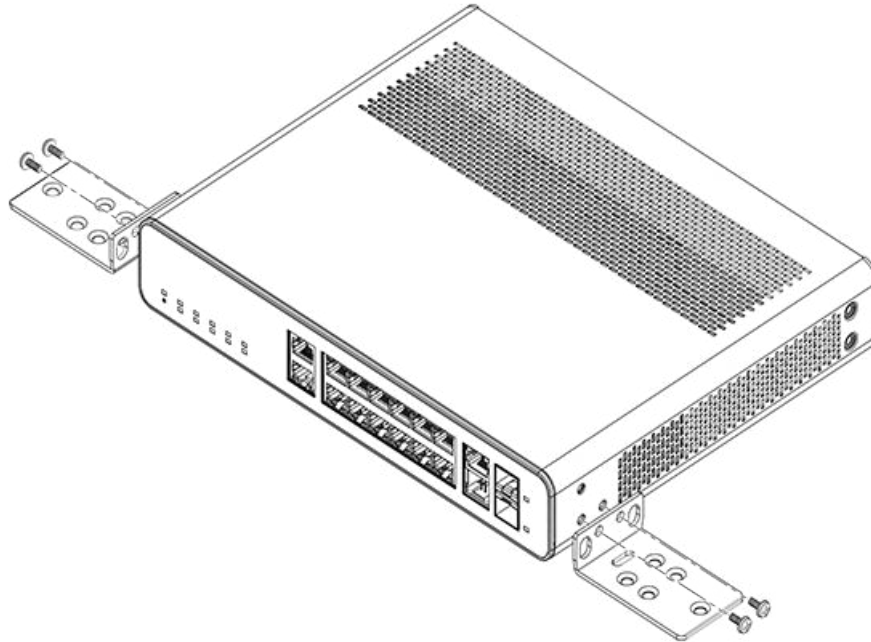
When mounting the device on a wall, Brocade recommends that you mount the device with the port side down.

To mount the ICX 6450-C device to a wall, use the rack-mount kit that can be ordered separately from the device (Brocade Part Number: ICX6400-RMK). The rack-mount kit is not included with the device.

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

1. Using a Phillips screwdriver, attach the wall mount brackets to the sides of the device using four sink-head screws.

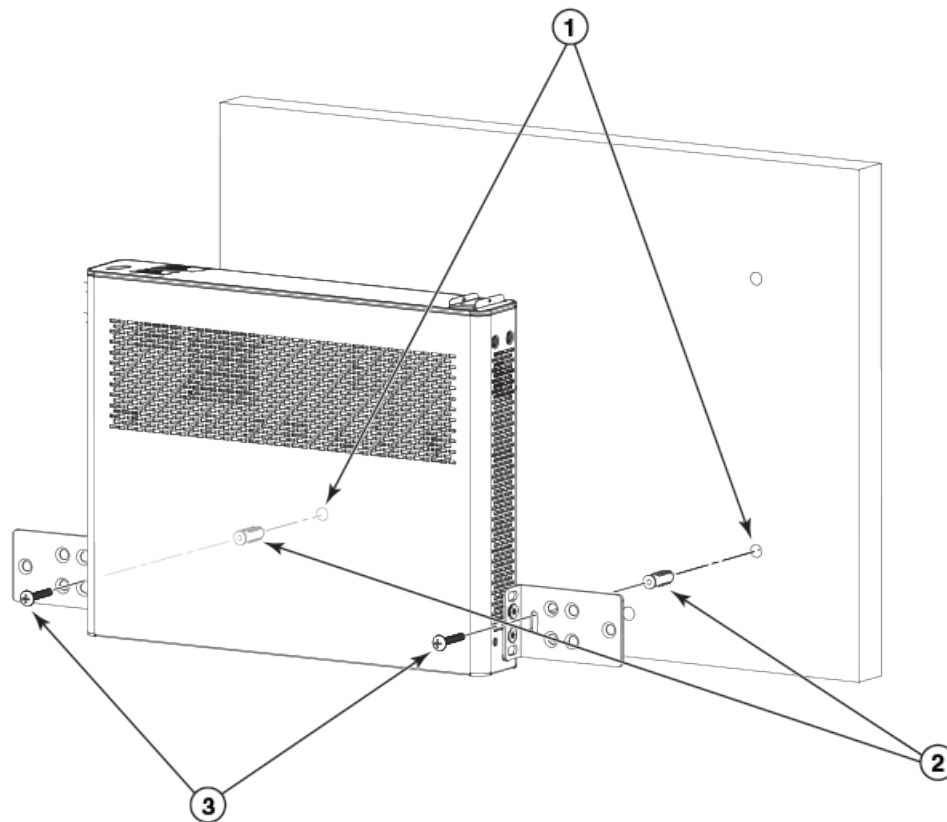
FIGURE 11 Attaching the wall mount brackets for an ICX 6450-C device



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

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

FIGURE 12 Wall mounting the ICX 6450-C device



1. Drilled holes
2. Wall mount anchors
3. Wall mount screws

Mounting the device with a magnet



CAUTION

Ensure that adequate ventilation is provided for the system. A 3 cm clearance is recommended above the device and 8 cm clearance is recommended on each side.



CAUTION

Do not install the switch in a position where it can easily become unstable and fall, causing injury or damage to the switch.

Use the magnet mount kit to mount the device on a metal wall or a metal surface, including underneath a metal desk. The magnet mount kit is available for order separately from the device and consists of a single magnet sheet.

Before mounting the device to a metal surface using the magnet sheet, ensure that the following requirements are met:

- Adequate ventilation is provided for the system. Allow 3 cm. of clearance above the device and 8 cm. of clearance on each side.

- The magnet sheet is attached to the bottom panel of the device. Refer to [Attaching the magnet sheet to the device](#) on page 33.
- Ensure that the device is not installed above a height of 1.1 meters. from the floor.

Note the following important installation considerations before installing the device on a metal surface using the magnet mount:

- The strength of the magnet will vary depending on the surface it is used on.
- The magnet's force may weaken over time. Check the strength of the magnet regularly, for about one year. Move the device up and down and confirm the magnet strength.

When adequate ventilation is provided and the magnet is attached to the device, you can securely mount the device in the following locations:

- A metal wall or metal surface. Refer to [Mounting the device on a metal surface or metal wall](#) on page 34.
- Underneath a metal desktop. Refer to [Mounting the device under a metal desk](#) on page 36.

Attaching the magnet sheet to the device

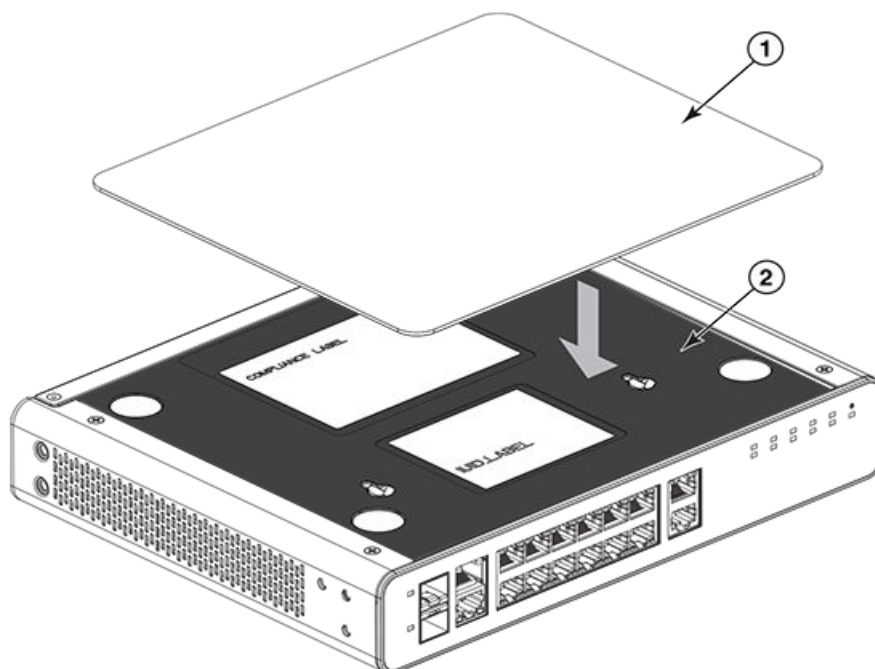
Before mounting the device to a metal surface, place the logo side of the magnet sheet (displaying the Brocade logo) squarely against the bottom panel of the device to attach the device to the magnet sheet.



CAUTION

The magnet sheet can only be placed against the bottom panel of the device. Do not attempt to attach the magnet sheet to any other panels on the device.

FIGURE 13 Attaching the logo side of the magnet sheet to the bottom panel of the ICX 6450-C device



1. Magnet
2. Mylar sheet covering the bottom panel

NOTE

Do not install the rubber feet or remove the rubber feet if they are already installed.

Mounting the device on a metal surface or metal wall

NOTE

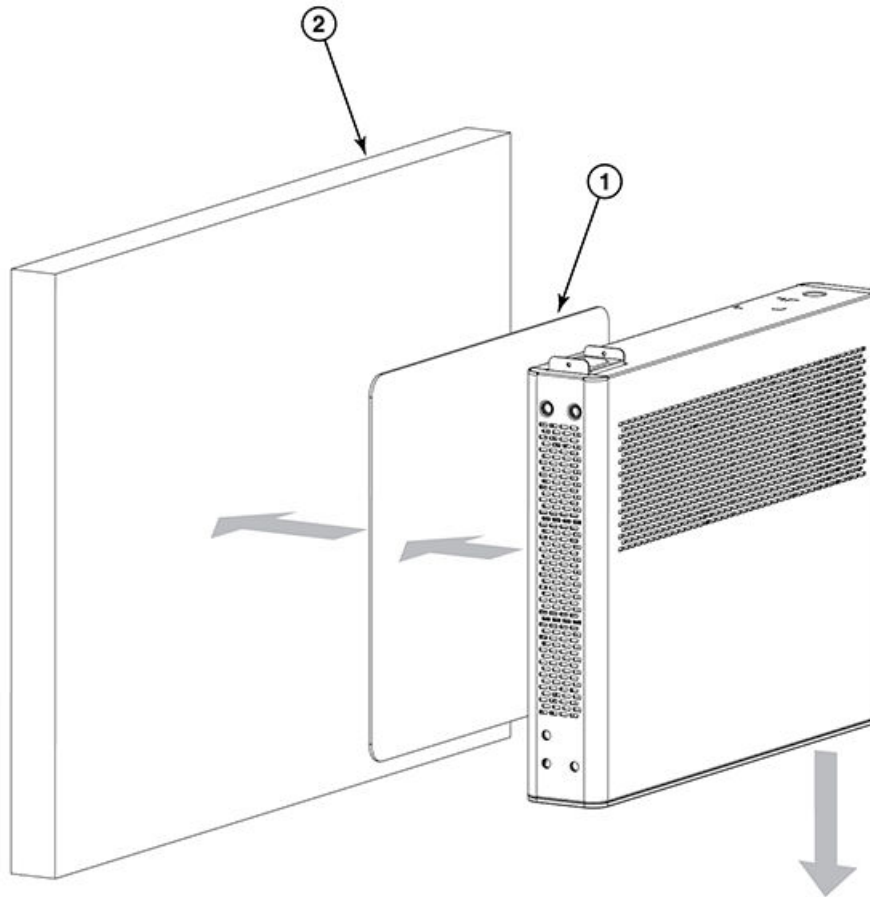
When mounting the device on a vertical metal surface, Brocade recommends that you mount the device with the port side down.

Complete the following steps to securely mount an ICX 6450-C device on a metal surface or metal wall:

1. Ensure that the magnet sheet is attached to the bottom panel of the device. Refer to [Attaching the magnet sheet to the device](#) on page 33.

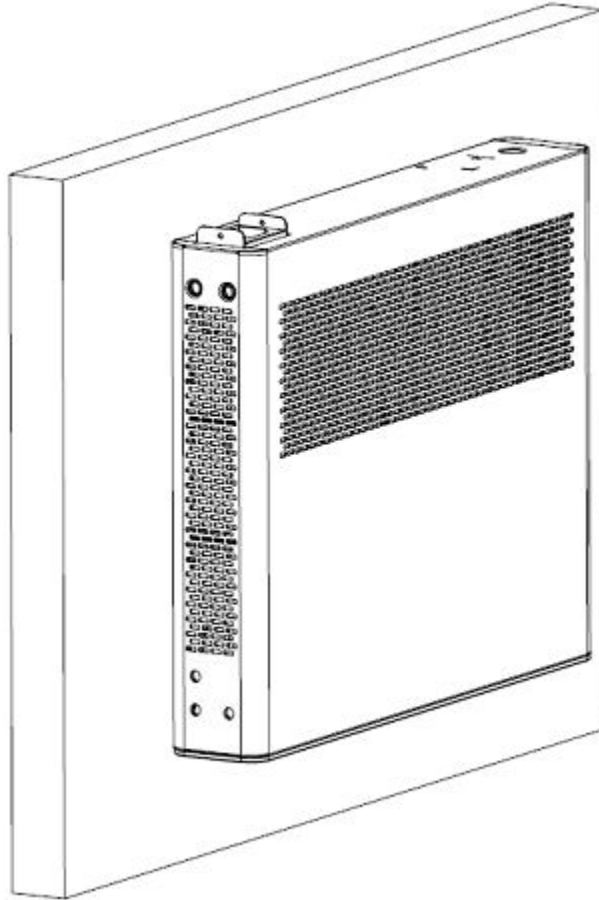
2. Place the magnet sheet (with the logo side now attached to the bottom panel of the device) against the metal surface or metal wall.

FIGURE 14 Mounting an ICX6450-C device to a metal surface using the magnet mount



1. Magnet
2. Metal surface

FIGURE 15 An ICX 6450-C device mounted on a metal surface with ports facing down



Mounting the device under a metal desk

NOTE

When mounting the device on a vertical metal surface, Brocade recommends that you mount the device with the port side down.



CAUTION

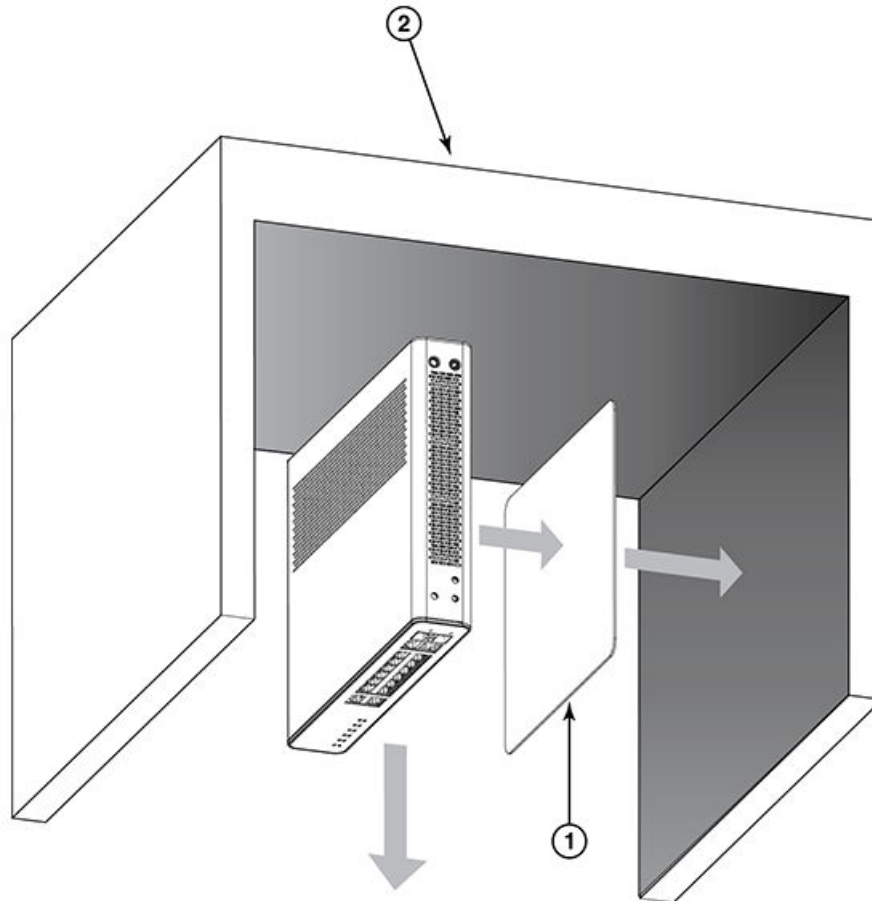
Do not mount the ICX 6430-C device or the ICX 6450-C device directly underneath a desktop surface with the top panel facing downward. Only mount the ICX 6430-C device or the ICX 6450-C device underneath a desktop by attaching it to the metal side surface of the desk, with the front panel and ports facing downward.

Complete the following steps to securely mount an ICX 6450-C device under a metal desktop:

1. Ensure that the magnet sheet is attached to the bottom panel of the device. Refer to [Attaching the magnet sheet to the device](#) on page 33.

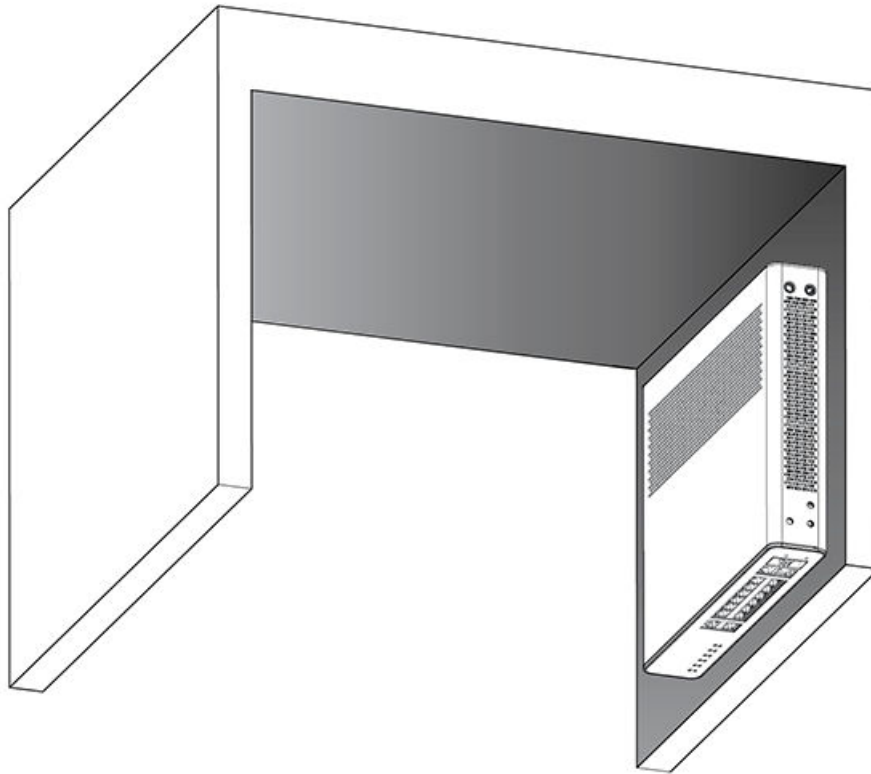
2. Place the bottom panel of the device with the magnet sheet attached under the metal desk, against the side of the device. Ensure that the front panel (port side) of the device is facing downward.

FIGURE 16 Mounting an ICX 6450-C device underneath a metal desktop using the magnet mount



1. Magnet
2. Metal desk

FIGURE 17 An ICX 6450-C device mounted underneath a metal desk with the port side down



Powering on the system

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

NOTE

The socket should be installed near the equipment and should be easily accessible.

NOTE

To turn the system off, simply unplug the power cord or cords.

1. Remove the power cord from the shipping container.
2. Attach the AC power cord to the AC connector on the rear panel.
3. Insert the power cord plug into a 100V-240V outlet.

Configuring an ICX 6450-C Device

- IP address configuration..... 39

IP address configuration

You must configure at least one IP address using the serial connection to the CLI before you can manage the system using the other management interfaces.

Brocade devices support both classical IP network masks (Class A, B, and C subnet masks, and so on) and Classless Interdomain Routing (CIDR) network prefix masks.

- To enter a classical IP network mask, enter the mask in IP address format. For example, enter "209.157.22.99 255.255.255.0" 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 "209.157.22.99/24" for an IP address that has a network mask with 24 significant ("mask") bits.

By default, the CLI displays network masks in classical IP address format (for example, 255.255.255.0). You can change the display to the prefix format.

Managing an ICX 6450-C Device

- Temperature settings.....41

Temperature settings

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 93°C.
- 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 will shut down in 5 minutes. The system restarts 5 minutes after the device reaches the temperature shutdown level.

TABLE 9 Temperature thresholds

Model	Warning level temperature threshold (°C)	Critical (shutdown) temperature threshold (°C)
ICX 6450-C12-PD	Brocade recommends setting the warning level temperature no higher than 93°C.	96°C

Displaying the temperature

To display the temperature of a device, enter the **show chassis** command at any level of the CLI. The **show chassis** command displays the power supply status, and temperature threshold levels for fan speed.

NOTE
The displayed temperature reflects the temperature of the board inside the device.

```
device# show chassis
The stack unit 1 chassis info:
Power supply present, status ok
Fanless model
Sensor B Temperature Readings:
  Current temperature : 60.5 deg-C
Sensor A Temperature Readings:
  Current temperature : 60.5 deg-C
  Warning level.....: 93.0 deg-C
  Shutdown level.....: 96.0 deg-C
Boot Prom MAC : cc4e.2407.9c20
Management MAC: cc4e.2407.9c20
```

Syntax: show chassis

Changing the temperature warning level

To change the temperature at which the device sends a warning message, enter a command similar to the following at the Privileged EXEC level of the CLI.

```
device# temperature warning 83
```

Syntax: `temperature warning value`

The *value* variable is the temperature warning level, in Celsius. The possible values are between 0 and 93°C. The maximum value of the temperature warning level is 3 degrees below the shutdown level, which is automatically set by the device.

The following console and syslog message is displayed when the temperature reaches the warning level:

```
!!! Temperature is over warning level on stack unit 1!!!
```

Temperature shutdown levels

When the temperature crosses the critical (shutdown) threshold levels, the device will reset after 5 minutes. The following console and syslog message is displayed:

```
!!! Temperature is over shutdown level, please shutdown your stack unit 1 to avoid hw damage!!!
```

NOTE

Brocade recommends that you shut down your stack unit to avoid any hardware damage.

Brocade ICX 6450-C Compact Switch

Technical Specifications

This document highlights the features and specifications for the Brocade ICX 6450-C compact switch.

System specifications

System component	Description
Enclosure	Compact, fanless, standalone chassis
Power inlet	C14
Power supplies	Integrated AC power supply for system and PoE power
Fans	None
Cooling	Ambient airflow
System architecture	12-port 1 GbE compact switch (4 PoE+), 2×100 Mbps/1 GbE SFP and 2×100 Mbps/1 GbE copper uplinks, fanless, L3 static, PoE-powered

Ethernet

System component	Description
Ethernet management ports	One 10/100/1000 Mbps or 1-GbE RJ-45 port
Uplink ports	Two 100 Mbps or 1-GbE SFP ports Two 100 Mbps or 1-GbE RJ-45 ports
PoE Class 3 ports (internal power supply)	4
PoE+ ports (internal power supply)	2
PoE/PoE+ power budget (internal power supply)	68 W

LEDs

System component	Description
Port status LEDs	
Out-of-band management port (2 LEDs)	Indicates whether a link is up and the port is transmitting and receiving traffic.
Link/Act (1 GbE ports)	Indicates whether a link is established with a remote port and the port is operating at 10, 100, or 1000 Mbps.
PoE/PoE+ (1-4)	Indicates whether the port is providing PoE or PoE+ power to a connected device.
Link/Act (100 Mbps/1 GbE RJ-45 ports)	Indicates whether a link is established with a remote port and the uplink port is operating at 1 Gbps.

System component	Description
Link/Act (100 Mbps/1 GbE SFP ports)	Indicates whether a link is established with a remote port and the SFP port is operating at 1 Gbps.
System status LEDs	
PWR (Power)	Indicates whether the power supply is operating normally.
Diag (Diagnostic)	Indicates the status of the system self-diagnostic test.
Uplink	Reserved for future use.
Downlink	Reserved for future use.
ID	Reserved for future use.
Network connection status LEDs	
Link/Act (Ethernet)	Indicates whether a link is established with a remote port and the port is operating normally.
PoE/PoE+	Indicates whether the port is providing PoE or PoE+ power to a connected device.
Link/Act (uplink ports)	Indicates whether a link is established with a remote port and the uplink port is operating normally.
Link/Act (SFP ports)	Indicates whether a link is established with a remote port and the SFP port is operating normally.

Other

System component	Description
Serial cable	RJ-45 serial
RJ-45 connector	100 Mbps/1 Gbps SFP ports for uplink: FX, SX, LX, TX, LHA, LHB; 10/100/1000 Mbps RJ-45 ports for uplink

Weight and physical dimensions

Model	Height	Width	Depth	Weight
ICX6450-C12-PD	4.3 cm	26.9 cm	21.3 cm	2.1 kg
	1.7 in.	10.6 in.	8.4 in.	4.6 lbs

Environmental requirements

Condition	Operational	Non-operational
Ambient temperature	0°C to 45°C (32°F to 113°F)	-40°C to 70°C (-40°F to 158°F)
Relative humidity (non-condensing)	5% to 95%	0% to 95%
Altitude (above sea level)	3000 m (10,000 feet)	4572 m (15,000 feet)
Shock	IEC 68-2-27 IEC 68-2-32	N/A
Vibration	IEC 68-2-36, IEC 68-2-6	N/A
Heat dissipation	68.3 BTU/hr	N/A

Power supply specifications (per PSU)

Power supply model	Maximum output power rating (DC)	Input voltage	Input line frequency	Maximum input current	Input line protection	Maximum inrush current
ICX 6450-C12-PD	100 Watts	100 - 240 VAC	50 to 60 Hz	1.8 A	Line fused	250 A maximum at 220 VAC, 25°C cold start

Power consumption (maximum configuration)

Maximum: Fully configure all ports with 100% traffic throughput and maximum Power over Ethernet (PoE) load.

NOTE

The Brocade ICX 6450-C compact switch does not support -48 VDC input power.

Model name	@100 VAC input	@200 VAC input	@-48 VDC input	Minimum number of power supplies	Notes
ICX 6450-C12-PD	Switch-only: 0.39 A 19.6 W 67.1 BTU/hr Switch and PoE: 0.94 A 93.7 W 386.7 BTU/hr	Switch-only: 0.24 A 19.8 W 67.6 BTU/hr Switch and PoE: 0.50 A 94.01 W 388.5 BTU/hr	N/A	1	The power and thermal specification values for switch-only and switch and PoE are listed separately.

Data port specifications (Ethernet)

Model	Port type	Number of ports	Description
ICX 6450-C12-PD	1-GbE RJ-45	12	Supports twelve 1-GbE RJ-45 ports
	1-GbE RJ-45 uplink	2	Supports two 1-GbE RJ-45 uplink ports
	1-GbE SFP uplink	2	Supports two 1-GbE SFP uplink ports

Serial port specifications (pinout RJ-45)

Pin	Signal	Description
1	Not supported	N/A
2	Not supported	N/A
3	UART0_TX	Transmit data
4	GND	Logic ground
5	GND	Logic ground

Pin	Signal	Description
6	UART0_RX	Receive data
7	Not supported	N/A
8	Not supported	N/A

Memory specifications

Memory	Type	Size
Main memory	DDR2 RAM	256 MB
Boot Flash	Flash	32 MB

Regulatory compliance (EMC)

- FCC Part 15, Subpart B (Class A)
- EN 55022 (CE mark) (Class A)
- EN 55024 (CE mark) (Immunity) for Information Technology Equipment
- ICES-003 (Canada) (Class A)
- AS/NZ 55022 (Australia) (Class A)
- VCCI (Japan) (Class A)
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-6-1

Regulatory compliance (safety)

- CAN/CSA-C22.2 No. 60950-1-07/UL60950-1 - Safety of Information Technology Equipment
- EN 60825-1 Safety of Laser Products - Part 1: Equipment Classification, Requirements and User's Guide
- EN 60825-2 Safety of Laser Products - Part 2: Safety of Optical Fibre Communications Systems
- EN 60950-1, IEC 60950-1 Safety of Information Technology Equipment

Regulatory compliance (environmental)

- 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)

Troubleshooting

- Diagnosing switch indicators..... 49
- Virtual cable testing.....49

Diagnosing switch indicators

TABLE 10 Troubleshooting chart

Symptom	Action
Power LED is Off	• Internal power supply is disconnected. • Check connections between the device, the power cord, and the wall outlet. • Contact Technical Support.
Power LED is Amber	Power source is the PD ports and is operating normally.
Diag LED is Amber	• The device self test has detected a fault. • Power cycle the device to try and clear the condition. If the condition persists, contact Technical Support.
Link LED is Off	• Verify that the device and attached device are powered on. • Be sure the cable is plugged into both the device and corresponding device. • Verify that the proper cable type is used and its length does not exceed specified limits. • Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.

Power and cooling problems

If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply. However, 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 Technical Support for assistance.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (such as the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

Virtual cable testing

Most FastIron devices support Virtual Cable Test (VCT) technology. VCT technology enables the diagnosis of a conductor (wire or cable) by sending a pulsed signal into the conductor, then examining the reflection of that pulse. This method of cable analysis is referred to as Time Domain Reflectometry (TDR). By examining the reflection, the Brocade device can detect and report cable statistics such as local and remote link pair, cable length, and link status.

Virtual Cable Testing configuration notes

- VCT is supported on copper ports only. It is not supported on fiber ports.
- VCT is only supported when Ethernet port speed is configured to Auto. VCT does not work on ports with fixed speeds.
- VCT is not supported on the SX-FI48GPP module running FastIron software release 07.2.02 or later.
- VCT is not supported on these FastIron devices: ICX 6610-24F, SX-FI2XG, SX-FI8XG, SX-FI24HF, SX-FI24GPP, and SX-FI48GPP modules running FastIron software release 07.3.00 or later.
- The port to which the cable is connected must be enabled when you issue the command to diagnose the cable. If the port is disabled, the command is rejected.
- If the port is operating at 100 Mbps half-duplex, the TDR test on one pair will fail.
- If the remote pair is set to forced 100 Mbps, any change in MDI/MDIX may cause the device to interpret the Multilevel Threshold-3 (MLT-3) as a reflected pulse, in which case, the device will report a faulty condition. In this scenario, it is recommended that you run the TDR test a few times, clearing the registers before each test, for accurate results.

Virtual Cable Test command syntax

To diagnose a cable using TDR, enter commands such as the following at the Privileged EXEC level of the CLI.

```
device# phy cable-diagnostics tdr 1/1/1
```

The **clear-diag tdr** command clears results of any previous TDR test from test registers for port 1/1/1 (port 1 on slot 1 on device 1).

NOTE

It is recommended that you clear the TDR test registers before each test.

```
device# clear cable-diagnostics tdr 1/1/1
```

The command in the previous example diagnoses the cable attached to port 1/1/1.

When you issue the **phy cable-diagnostics** command, the command brings the port down for a second or two, and then immediately brings the port back up.

Syntax: **clear cable-diagnostics tdr** *stackid/slot/port*

Syntax: **phy cable-diagnostics tdr** *stackid/slot/port*

Viewing the results of the cable analysis

To display the results of the cable analysis, enter a command such as the one shown in the following examples at the Privileged EXEC level of the CLI.

In the first example, the command displays TDR test results for port 1, slot 1 on device 1 in the stack. The results indicate that the port is down or the cable is not connected.

```
device>show cable-diagnostics tdr 1/1/1
Port      Speed Local pair Pair Length Remote pair Pair status
-----
01        UNKWN          Pair A      <=3 M          Open
          Pair B      <=3 M          Open
          Pair C      <=3 M          Open
          Pair D      <=3 M          Open
```

In the second test example, the TDR test results for the same port show details for an active port.

```
device>show cable-diagnostics tdr 1/1/1
Port      Speed Local pair Pair Length Remote pair Pair status
-----
01        1000M                Pair A    <50M    Pair B    Terminated
                Pair B    <50M    Pair A    Terminated
                Pair C    <50M    Pair D    Terminated
                Pair D    <50M    Pair C    Terminated
```

Syntax: `show cable-diagnostics tdr stackid/slot/port`

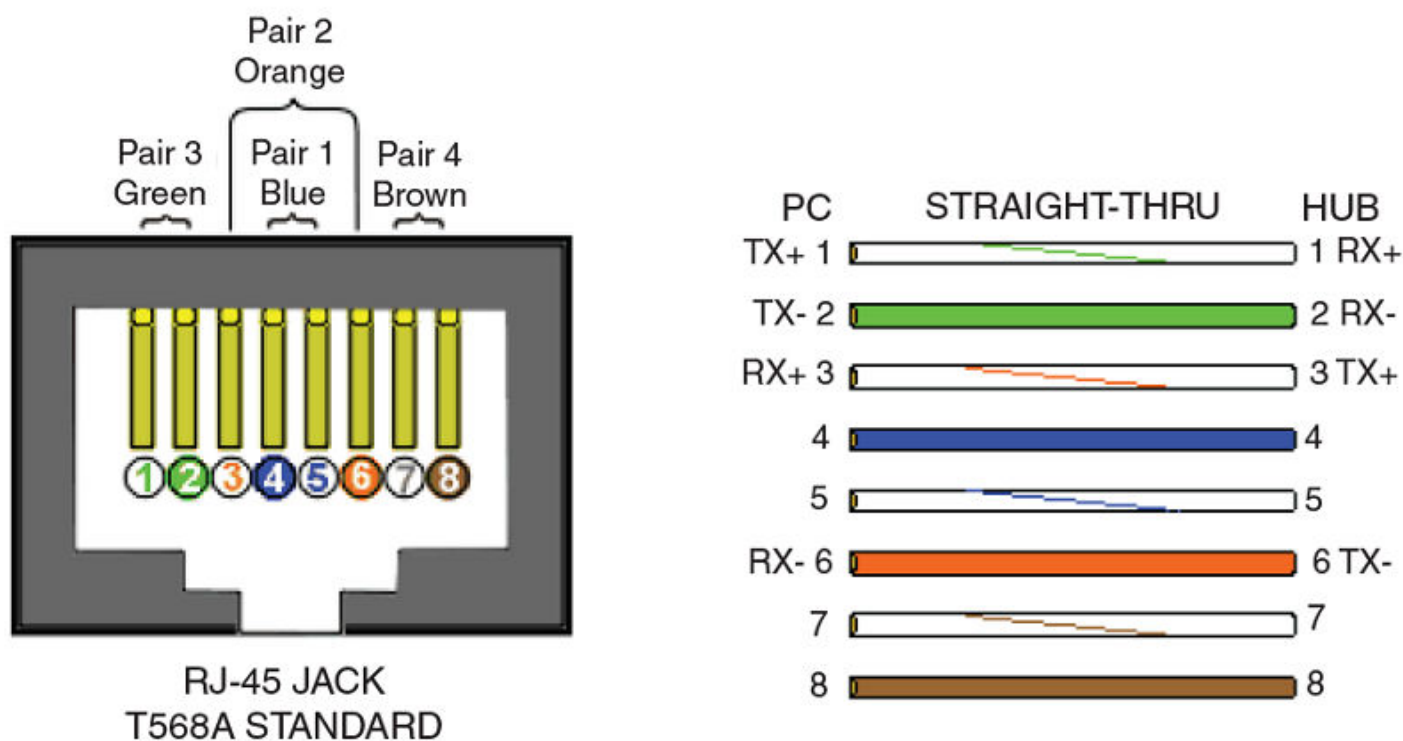
In the output shown, "Local pair" indicates the assignment of wire pairs from left to right, where Pair A is the left-most pair. The following table shows the "Local pair" mapping to the T568A pin/pair and color assignment from the TIA/EIA-568-B standard.

TABLE 11 Local pair definition

Local pair	T568A pair and color assignment
Pair A	Pair 3 (green)
Pair B	Pair 2 (orange)
Pair C	Pair 1 (blue)
Pair D	Pair 4 (brown)

The following figure illustrates the T568A pin/pair assignment.

FIGURE 18 T568A pin/pair assignment



The following table describes the fields shown in the `show cable-diagnostics port` command output.

TABLE 12 Cable statistics

Field	Meaning
Port	The port that was tested.
Speed	The port current line speed.
Local pair	The local link name. Refer to the previous local pair definition table.
Pair Length	The cable length when terminated, or the distance to the point of fault when the line is not up.
Remote pair	The remote link name.
Pair status	The status of the link. This field displays one of the following: • Terminated: The link is up. • Shorted: A short is detected in the cable. • Open: An opening is detected in the cable. • ImpedMis: The impedance is mismatched. • Failed: The TDR test failed.

Regulatory Statements

- BSMI statement (Taiwan)..... 53
- Canadian requirements..... 53
- China CC statement..... 54
- Europe and Australia (CISPR 22 Class A Warning)..... 54
- FCC warning (US only)..... 55
- Germany..... 55
- KCC statement (Republic of Korea)..... 55
- VCCI statement..... 55

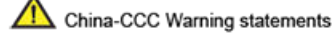
BSMI statement (Taiwan)

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，
在這種情況下，使用者會被要求採取某些適當的對策。

Warning:
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.

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.



安全 说明 和标 记	汉文	“仅适用于非热带气候条件下安全使用。”
	藏文	《འགྲོ་བཤུ་དང་། སྒྱིན་པའི་སྐབས་སུ་ལེགས་སྒྲིག་གིས་འཇུག་པར་ཉན་པའི་སྐབས་སུ་ཡོད་པའི་ཁྱེད་ཀྱི་མི་ཚེ་ལེགས་སྒྲིག་གི་ཡིན།》
	蒙古文	“ “ ཆ་བཞི་ས་ཁུལ་གྱི་གནས་གཤིས་མིན་པ་ལེ་ས་ཁུལ་ཁོ་ནར་ཉན་མེད་བཅུ་དྲུག་པའུས།”
	壮文	Dan hab yungh youq gij dienheiq diuzgen mbouj dwg diegndat haenx ancienz sawjyung.
	维文	غەمىرى ئۇسسىق بەلباغ ھاۋا كىلىماتى شاراائىتىدىلا بىخەتەر، ئىشلەتكىلى بولىدۇ



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	《2000m རེ་གྲངས་མཐོན་པོར་བཟོས་ཀྱི་སྒྲིལ་ཁྱུད་ཀྱི་འཇཉག་ཏུ་ཆོས་ལུགས་ཤིན་ཏུ་གསལ།》
	蒙古文	“ Бүтээгдэхүүн нь 2000м-ийн дундаар хэрэглэгдэх зориулалтын бүтээгдэхүүн юм. ”
	壮文	Dan hab yungh youq gjij digih haijbaz 2000m doxroengz haenx ancienz sawjyungl.
	维文	دېڭىز يۈزىدىن 2000 مېتىر تۆۋەن رايونلاردا بىخەتەر ئىشلەتكىلى بولىدۇ
	哈文	本产品在海拔2000米以下的地区安全适用。

声明

English translation of above statement

Europe and Australia (CISPR 22 Class A Warning)

Brocade ICX 6450-C Compact Switch Hardware Installation Guide
Part Number: 53-1003619-02

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.

Germany

Machine noise information regulation - 3. GPSGV, the highest sound pressure level value is 70.0 dB(A) in accordance with EN ISO 7779.

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 70.0 dB(A) gemäss EN ISO 7779.

KCC statement (Republic of Korea)

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

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

VCCI statement

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

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.

Cautions and Danger Notices

• Cautions.....	57
• Danger Notices.....	59

Cautions

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

Ein Vorsichtinweis warnt Sie vor potenziellen Personengefahren oder Beschädigung der Hardware, Firmware, Software oder auch vor einem möglichen Datenverlust

Un message de mise en garde vous alerte sur des situations pouvant présenter un risque potentiel de dommages corporels ou de dommages matériels, logiciels ou de perte de données.

Un mensaje de precaución le alerta de situaciones que pueden resultar peligrosas para usted o causar daños en el hardware, el firmware, el software o los datos.

General cautions



CAUTION

Do not install the device in an environment where the operating ambient temperature might exceed 40°C (104°F).

VORSICHT	Das Gerät darf nicht in einer Umgebung mit einer Umgebungsbetriebstemperatur von über 40°C (104°F) installiert werden.
MISE EN GARDE	N'installez pas le dispositif dans un environnement où la température d'exploitation ambiante risque de dépasser 40°C (104°F).
PRECAUCIÓN	No instale el instrumento en un entorno en el que la temperatura ambiente de operación pueda exceder los 40°C (104°F).



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

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**

Ensure that adequate ventilation is provided for the system. A 3 cm clearance is recommended above the device and 8 cm clearance is recommended on each side.

VORSICHT	Stellen Sie sicher, dass das System ausreichend belüftet wird. Über dem Gerät wird 3 cm Freiraum, auf beiden Seiten jeweils 8 cm Freiraum empfohlen.
MISE EN GARDE	Assurez-vous que le circuit est correctement ventilé. Il est recommandé de conserver un espace de 3 cm au-dessus du dispositif, et de 8 cm sur chaque côté.
PRECAUCIÓN	Asegúrese de proporcionar una ventilación adecuada al sistema. Se recomienda dejar 3 cm de espacio libre por encima del dispositivo y 8 cm a cada lado.

**CAUTION**

The magnet sheet can only be placed against the bottom panel of the device. Do not attempt to attach the magnet sheet to any other panels on the device.

VORSICHT	Die magnetische Matte kann nur an der Unterseite des Geräts angebracht werden. Versuchen Sie nicht, die magnetische Matte an den anderen Seiten des Geräts anzubringen.
MISE EN GARDE	Il est uniquement possible de placer la feuille magnétique contre la face inférieure du dispositif. Ne tentez pas de placer la feuille magnétique à d'autres endroits.
PRECAUCIÓN	La hoja magnética solo se puede colocar sobre el panel inferior del dispositivo. No intente conectar la hoja magnética a ningún otro panel del dispositivo.

**CAUTION**

Do not mount the ICX 6430-C device or the ICX 6450-C device directly underneath a desktop surface with the top panel facing downward. Only mount the ICX 6430-C device or the ICX 6450-C device underneath a desktop by attaching it to the metal side surface of the desk, with the front panel and ports facing downward.

VORSICHT	Installieren Sie den ICX 6430-C oder den ICX 6450-C nicht über Kopf (Oberseite weist nach unten) direkt unter einer Tischplatte. Der ICX 6430-C oder der ICX 6450-C darf nur unter einer Tischplatte installiert werden, indem er an der metallenen Seitenwand des Schreibtisches befestigt wird, wobei die Vorderseite und die Anschlüsse nach unten weisen.
MISE EN GARDE	N'installez pas le dispositif ICX 6430-C ou le dispositif ICX 6450-C directement sous une surface de bureau, en orientant la face supérieure vers le bas. Faites-le uniquement en le plaçant sous un bureau et en le reliant à la surface latérale métallique du bureau, en orientant la face avant et les ports vers le bas.
PRECAUCIÓN	No monte el dispositivo ICX 6430-C o el el dispositivo ICX 6450-C directamente debajo de la superficie de un escritorio con el panel superior orientado hacia abajo. Solo se debe montar el dispositivo ICX 6430-C o el el dispositivo ICX 6450-C debajo de la superficie de un escritorio sujetándolo a la superficie lateral metálica del escritorio, con el panel frontal y los puertos orientados hacia abajo.

Electrical cautions

**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**

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

Danger Notices

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.

Ein Gefahrenhinweis warnt vor Bedingungen oder Situationen die tödlich sein können oder Sie extrem gefährden können.

Sicherheitsetiketten sind direkt auf den jeweiligen Produkten angebracht um vor diesen Bedingungen und Situationen zu warnen.

Un paragraphe Danger indique des conditions ou des situations potentiellement mortelles ou extrêmement dangereuses. Des labels de sécurité sont posés directement sur le produit et vous avertissent de ces conditions ou situations

Una advertencia de peligro indica condiciones o situaciones que pueden resultar potencialmente letales o extremadamente peligrosas. También habrá etiquetas de seguridad pegadas directamente sobre los productos para advertir de estas condiciones o situaciones.

General dangers

**DANGER**

The procedures in this manual are for qualified service personnel.

GEFAHR	Die Vorgehensweisen in diesem Handbuch sind für qualifiziertes Servicepersonal bestimmt.
DANGER	Les procédures décrites dans ce manuel doivent être effectuées par un personnel de maintenance qualifié.
PELIGRO	Los procedimientos de este manual deben llevarlos a cabo técnicos cualificados.

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

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

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

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



DANGER

For safety reasons, the ESD wrist strap should contain a series 1 megaohm 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

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

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

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.

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 fibres optiques utilisent des lasers de classe 1.
PELIGRO	Todas las interfaces de fibra óptica utilizan láser de clase 1.