

Cisco Firepower 4112, 4115, 4125, and 4145 Hardware Installation Guide

First Published: 2019-06-20

Last Modified: 2026-08-12

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED “AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: https://www.cisco.com/c/en/us/about/legal/trademarks.html. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

© 2019-2026 Cisco Systems, Inc. All rights reserved.



CONTENTS

CHAPTER 1 **Overview** 1

- Features 1
- Package contents 4
- Serial number location 5
- Front panel 7
- Front panel LEDs 7
- Rear panel 9
- Power switch 9
- Management, console, USB, and network ports 10
- Network modules 11
- 8-Port 10-Gbps network module 11
- 4-Port 40-Gbps network module 12
- 2-Port 100-Gbps network module 13
- Hardware bypass network modules 15
- 8-Port 1-Gbps network module with hardware bypass 16
- 2-Port 40-Gbps network module with hardware bypass 17
- 6-Port 1-Gbps SX/6-port 10-Gbps SR/10-Gbps LR network module with hardware bypass 19
- Power supply modules 21
- Fan modules 24
- Supported transceivers 24
- Hardware specifications 30
- Product ID numbers 31
- Power cord specifications 34

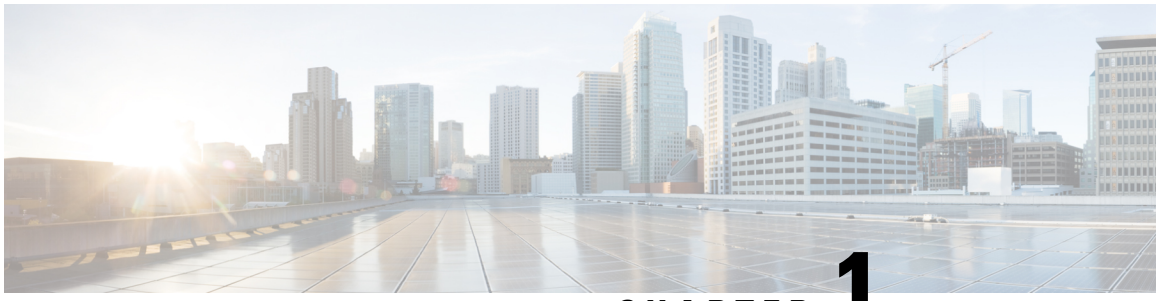
CHAPTER 2 **Installation Preparation** 41

- Installation warnings 41

Network Equipment-Building System (NEBS) statements 43
Safety recommendations 45
Maintain safety with electricity 46
Prevent ESD damage 46
Site environment 46
Site considerations 47
Power supply considerations 47
Rack configuration considerations 47

CHAPTER 3 **Rack-Mount and Ground the Chassis** 49
Unpack and inspect the chassis 49
Rack-mount the chassis 50
Ground the chassis 54

CHAPTER 4 **Installation, Maintenance, and Upgrade** 57
Install, remove, and replace the network module 57
Remove and replace the fan module 60
Remove and replace the SSD 62
Remove and replace the power supply module 65
Connect the DC power supply module 69
Secure the power cord on the AC power supply module 75
Install the FIPS opacity shield 79



CHAPTER 1

Overview

- Features, on page 1
- Package contents, on page 4
- Serial number location, on page 5
- Front panel, on page 7
- Front panel LEDs, on page 7
- Rear panel, on page 9
- Power switch, on page 9
- Management, console, USB, and network ports, on page 10
- Network modules, on page 11
- 8-Port 10-Gbps network module , on page 11
- 4-Port 40-Gbps network module , on page 12
- 2-Port 100-Gbps network module , on page 13
- Hardware bypass network modules, on page 15
- 8-Port 1-Gbps network module with hardware bypass , on page 16
- 2-Port 40-Gbps network module with hardware bypass , on page 17
- 6-Port 1-Gbps SX/6-port 10-Gbps SR/10-Gbps LR network module with hardware bypass , on page 19
- Power supply modules, on page 21
- Fan modules, on page 24
- Supported transceivers, on page 24
- Hardware specifications, on page 30
- Product ID numbers, on page 31
- Power cord specifications, on page 34

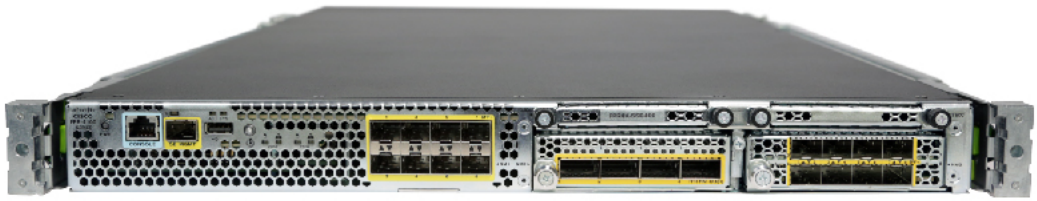
Features

The Cisco Firepower 4100 is a standalone modular security services platform. It is capable of running multiple security services simultaneously and so is targeted at the data center as a multiservice platform. The series includes the Firepower 4112, 4115, 4125, and 4145.

The Firepower 4100 supports Cisco Secure Firewall Threat Defense, Cisco Secure Firewall eXtensible Operating System (FXOS), and Cisco Secure Firewall ASA software.

The following figure shows the Firepower 4100.

Figure 1: Firepower 4100



The following table lists the features for the Firepower 4100.

Table 1: Firepower 4100 features

Feature	FPR4112	FPR4115	FPR4125	FPR4145
Form factor	1 RU Fits a standard 19-inch (48.3cm) square-hole rack			
Rack mount	Slide rails, mount ears, and screws included (4-post EIA-310-D rack)			
Airflow	Front to rear Cold aisle to hot aisle			
Memory	96 GB	192 GB	192 GB	384 GB
Maximum number of interfaces	24 With two 8-port network modules installed			
Management port	One Gigabit Ethernet Supports 1-Gbps fiber or copper SFPs			
Serial port	One Cisco Serial (RS-232 on RJ-45)			
USB port	One USB 2.0 Type A			
Network ports	Eight fixed 1-Gbps and 10-Gbps SFP+ ports (named Ethernet 1/1 through 1/8)			
Small form-factor pluggable (SFP) ports	Eight fixed 1-Gbps and 10-Gbps SFP+ ports			
Pullout asset card	Displays the serial number; on the front panel			
Grounding lug	On rear panel			
Locator beacon	On front panel			
Power switch	On rear panel			

Feature	FPR4112	FPR4115	FPR4125	FPR4145
Network modules	Two network module slots (network module 2 and network module 3)			
Supported network modules	• 8-port 10-Gbps SFP+ • 4-port 40-Gbps QSFP+ • 2-port 100-Gbps QSFP28 **Note** First supported in threat defense Version 7.3.1 and ASA Version 9.18.1. • 8-port 1-Gbps copper with hardware bypass • 2-port 40-Gbps QSFP+ (built-in) with hardware bypass • 6-port 1-Gbps SX fiber SFP (built-in) with hardware bypass • 6-port 10-Gbps SR fiber SFP+ (built-in) with hardware bypass • 6-port 10-Gbps LR fiber SFP+ (built-in) with hardware bypass			
AC power supply	Two (1+1) power supply module slots Ships with one 1100-W AC power supply module Hot-swappable		Two (1+1) power supply module slots Ships with two 1100-W AC power supply modules Hot-swappable	
DC power supply (optional)	Two (1+1) power supply module slots 950-W DC power supply module Hot-swappable			
Redundant power	1+1			
Fan	Six fan module slots 5+1 redundancy Hot-swappable			
Storage	Two SSD slots Ships with one 400-GB SSD installed in slot 1. Slot 1 is the primary SSD and should always be present. Slot 1 is reserved for the logical device application instance (threat defense or ASA). **Note** RAID is not supported. **Caution** The SSD must be installed in slot 1. Slot 2 is reserved only for the optional Malware Storage Pack (MSP).		Two SSD slots Ships with one 800-GB SSD installed in slot 1. Slot 1 is the primary SSD and should always be present. Slot 1 is reserved for the logical device application instance (threat defense or ASA). **Note** RAID is not supported. **Caution** The SSD must be installed in slot 1. Slot 2 is reserved only for the optional MSP.	

Feature	FPR4112	FPR4115	FPR4125	FPR4145
MSP (optional)	Installed in the second SSD slot only			
Network Equipment Building Systems (NEBS) certification	—	—	Certified	—

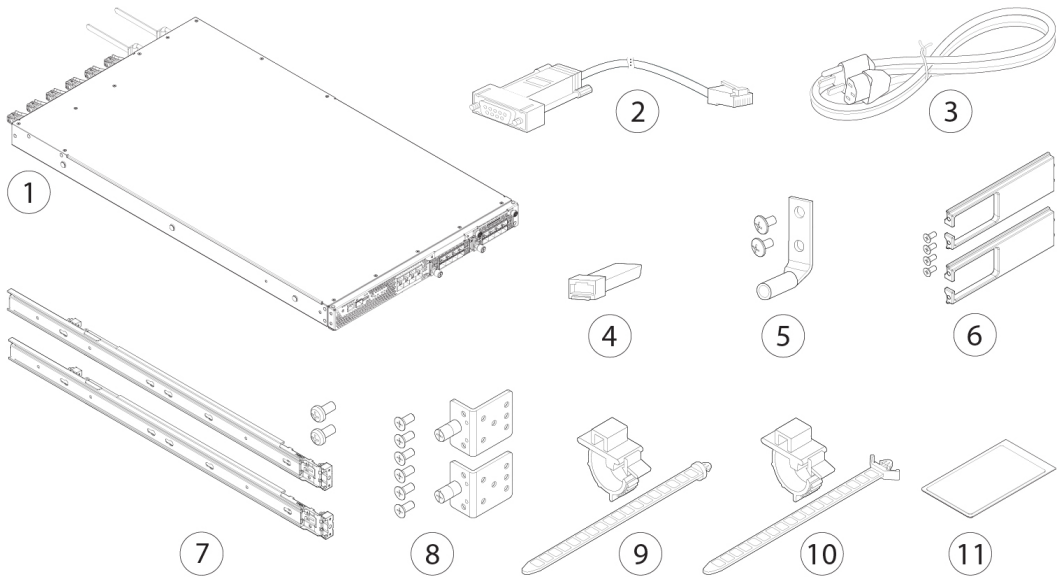
Related Topics

Product ID numbers, on page 31
Cisco Firepower 4100/9300 FXOS Compatibility
Supported transceivers, on page 24

Package contents

The following figure shows the package contents for the Firepower 4100. Note that the contents are subject to change and your exact contents might contain additional or fewer items.

Figure 2: Firepower 4100 package contents



1	Firepower 4100 chassis	**2**	Blue console cable PC terminal adapter
3	Two power cords (country-specific)	**4**	10/100/1000BASE-T SFP transceiver

5	Ground lug kit: • One ground lug #6 AWG, 90 degree, #10 post • Two 10-32 x 39-8-inch Phillips Head screws	**6**	Cable management bracket kit • Two cable management brackets • Four 8-32 x 0.375-inch Phillips screws
7	Two slide rails with two M3 x 0.5 x 6-mm screws	**8**	Two slide rail locking brackets Six 8-32 x 0.375-inch Phillips screws
9	Artesyn tie wrap and tie wrap clamp	**10**	Flextronics tie wrap and tie wrap clamp
11	*Cisco Secure Firepower 4100* This document has links to the hardware installation guide, regulatory and safety information guide, and warranty and licensing information. It also contains a QR code and URL that point to the Digital Documentation Portal. The portal contains links to the product information page, the hardware installation guide, the regulatory and safety information guide, and the getting started guide.		—

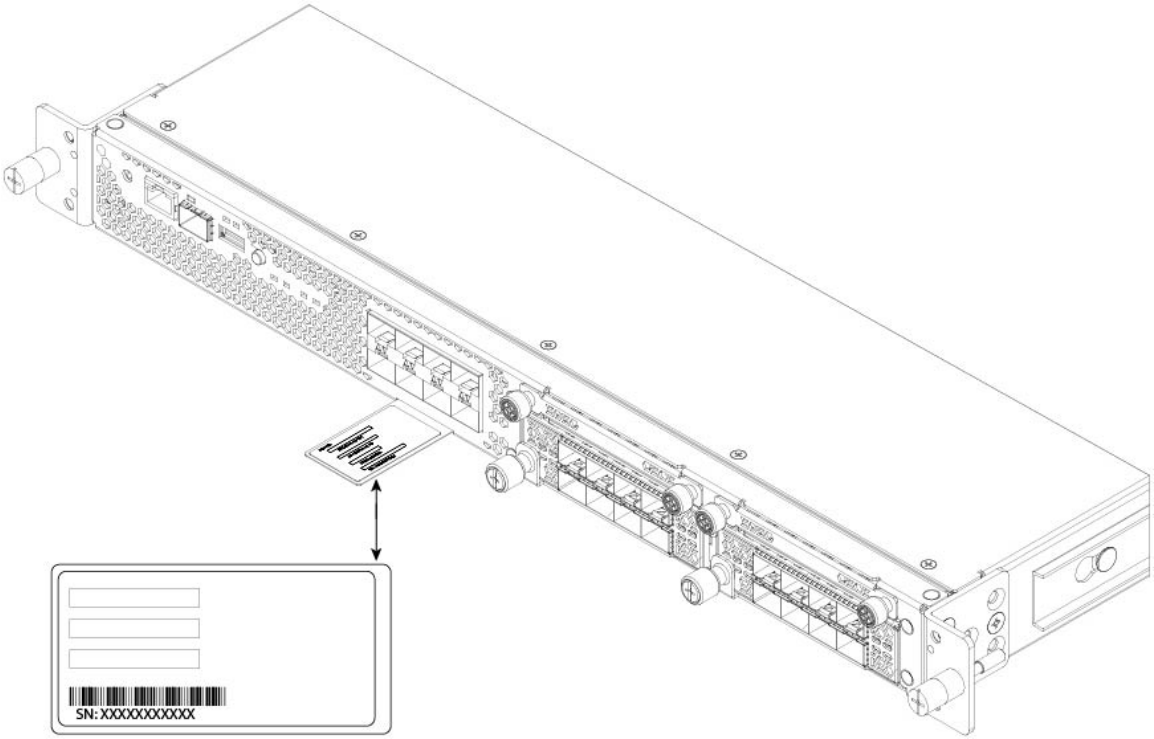
Related Topics

Power cord specifications, on page 34

Serial number location

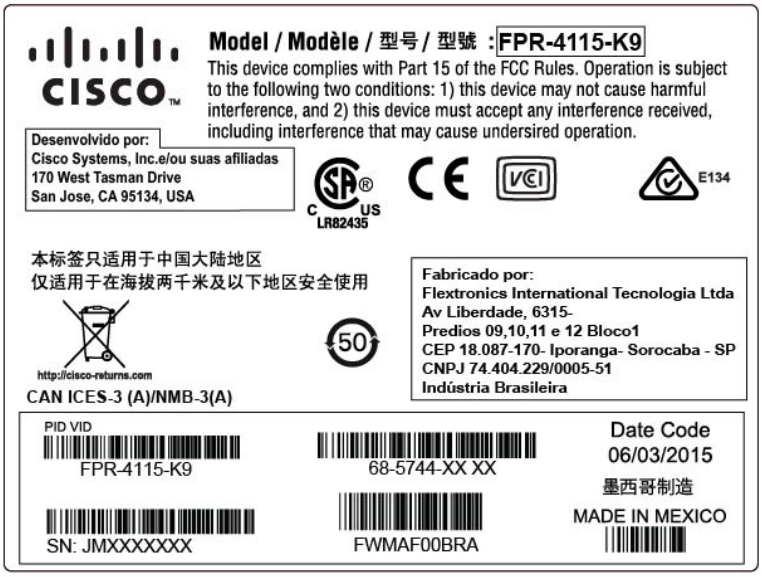
The serial number for the Firepower 4100 series chassis is located on the pullout asset card on the front panel.

Figure 3: Serial number on the 4100 chassis



You can also view additional model information on the compliance label located on the bottom of the chassis.

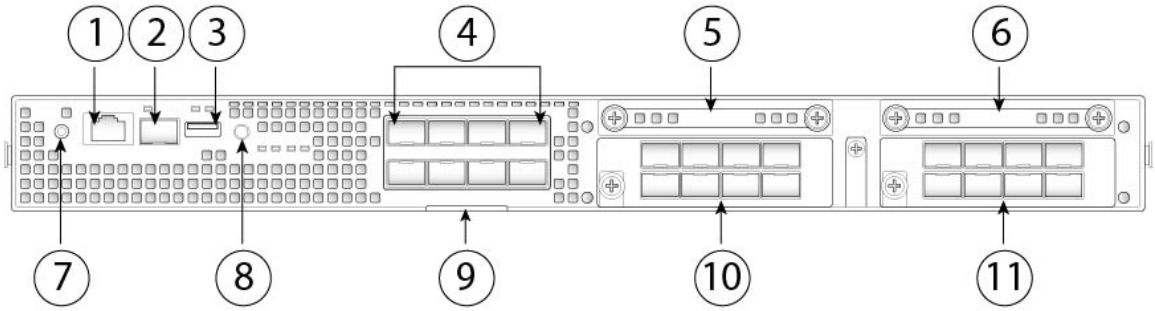
Figure 4: Compliance label on the 4100 chassis



Front panel

The following figure shows the front panel of the Firepower 4100.

Figure 5: Firepower 4100 front panel

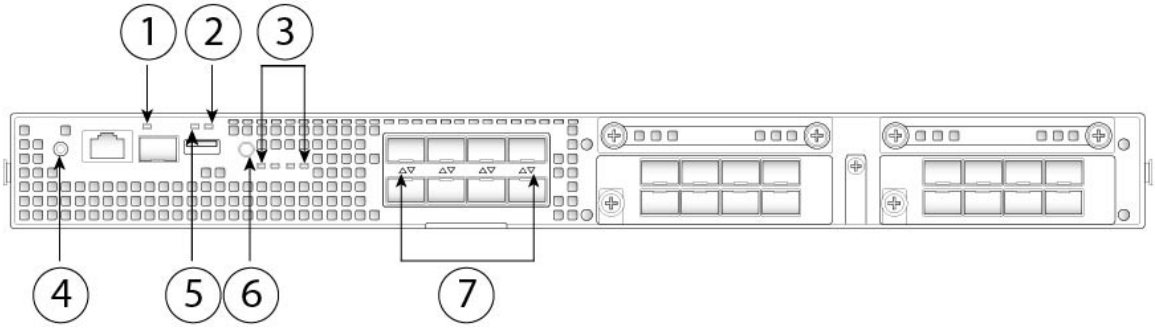


1	RJ-45 console port	**2**	Gigabit Ethernet management port
3	USB 2.0 Type A port	**4**	Eight fixed SFP+ (1-Gbps/10-Gbps) ports (in network module slot 1)
5	SSD 1 Reserved for the primary SSD; slot 1 must always be populated.	**6**	SSD 2 Reserved for the optional MSP
7	Power LED	**8**	Locator LED
9	Pullout asset card	**10**	Network module 2 **Note** The 10-Gbps network module is shown.
11	Network module 3 **Note** The 10-Gbps network module is shown.		

Front panel LEDs

The following figure and table describe the Firepower 4100 front panel LEDs.

Figure 6: Front panel LEDs



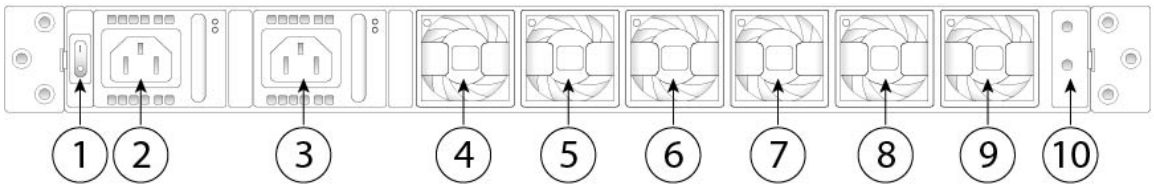
1	Management • Off—No connection or port is not in use. • Amber—No link or network failure. • Green—Link up. • Green, flashing—Network activity.	**2**	Health (SYS) • Off—System is not booting yet. • Green, flashing—Power-up diagnostics are complete and system is booting up. • Green—The system has passed power-up diagnostics. • Amber—Power-up diagnostics has failed. • Amber, flashing—Alarm; power-up diagnostics are running.
3	SSD • Off— SSD not present. • Green—SSD is present; no activity. • Green, flashing—SSD is active. • Amber—SSD failure. • Amber, flashing—Rebuilding, flashes at 1 Hz. • Amber, flashing—Predictive failure analysis (PFA) and hot spare; two fast flashes at 4 Hz, pause for 0.5 seconds.	**4**	Power • Off—Input power not detected. • Green, flashing—Appears only when you move the power switch from ON to OFF. System is shutting down and powers off once shutdown is completed. • Amber—System is powering up. • Green—System fully powered up. • Amber, flashing—Reserved.
5	Active (ACT) This LED is not supported; reserved for future use.	**6**	Locator • Off—Locate is off. • Blue—Locate is on.

7	Network activity • Off—No connection or port is not in use. • Amber—No link or network failure. • Green—Link up. • Green, flashing—Network activity.		

Rear panel

The following figure shows the rear panel of the Firepower 4100.

Figure 7: Firepower 4100 rear panel



1	Power on/off switch	**2**	Power supply module 1
3	Power supply module 2	**4**	Fan module 1
5	Fan module 2	**6**	Fan module 3
7	Fan module 4	**8**	Fan module 5
9	Fan module 6	**10**	Location for the two-post grounding lug **Note** The two-post grounding lug is included in the accessory kit.

Power switch

Power switch

The power switch is located to the left of power supply module 1 on the rear of the chassis. It is a toggle switch that controls power to the system. If the power switch is in standby position, only the 3.3-V standby power is enabled from the power supply module and the 12-V main power is OFF. When the switch is in the ON position, the 12-V main power is turned on and the system boots.

You can shut down the chassis in one of two ways:

- Perform a graceful shutdown using the **shutdown** commands. This may take several minutes to complete. Then toggle the power switch to the OFF position. The power LED changes from solid green to off immediately.

Caution If you move the power switch to the OFF position before the **shutdown** command sequence is complete or if you remove the system power cords before the graceful shutdown is complete, disk corruption can occur.

- Toggle the power switch to the OFF position. The power LED changes from solid green to off.

Note After removing power from the chassis either by moving the power switch to OFF or unplugging the power cord, wait at least 10 seconds before turning power back ON.

Related Topics

FXOS CLI Configuration Guide

Management, console, USB, and network ports

Management port

The Firepower 4100 chassis has a management port that requires a 1-Gbps fiber or copper SFP.

Console port

The Firepower 4100 has an RJ-45 console port. You can use the CLI to configure your Firepower 4100 through the RJ-45 serial console port by using a terminal server or a terminal emulation program on a computer.

The RJ-45 (8P8C) port supports RS-232 signaling to an internal UART controller. The console port does not have any hardware flow control, and does not support a remote dial-in modem. The baud rate is 9600. You can use the standard cable found in your accessory kit to convert the RJ-45 to DB-9 if necessary.

USB Type A port

The chassis contains a standard USB Type A 3.0 port for an external USB drive that you can use for the startup image, configuration, backup and other standard uses for flash storage.

- Supports EXT2/3/4 or VFAT/FAT32 format
- Identified as the following drive ID depending on the CLI:
  - FxOS local-mgmt—usbdrive:
  - FxOS—usbA:
  - ASA and Firewall Threat Defense—disk1:
  - ROMMON—usb:
- Output power of 5 volts, up to a maximum of 1 A (5 USB power units)

The Type A USB port does *not* support Cisco Secure Package (CSP) image upload support.

Network ports

The Firepower 4100 chassis has eight fixed ports that require 1-Gbps/10-Gbps SFP/SFP+ transceivers (fiber or copper). They are numbered from left to right starting with 1 and are named Ethernet 1/1 through Ethernet 1/8. The 4100 also has two network module slots that support different numbers of ports depending on the network module.

Each port has LEDs that represent link/activity status.

Related Topics

Front panel, on page 7

Network modules

The Firepower 4100 contains two network module slots that provide optical or electrical network interfaces. Network modules are optional, removable I/O modules that provide either additional ports or different interface types (1/10/40 Gbps). The Firepower network modules plug into the chassis on the front panel.

Related Topics

Install, remove, and replace the network module, on page 57

8-Port 10-Gbps network module

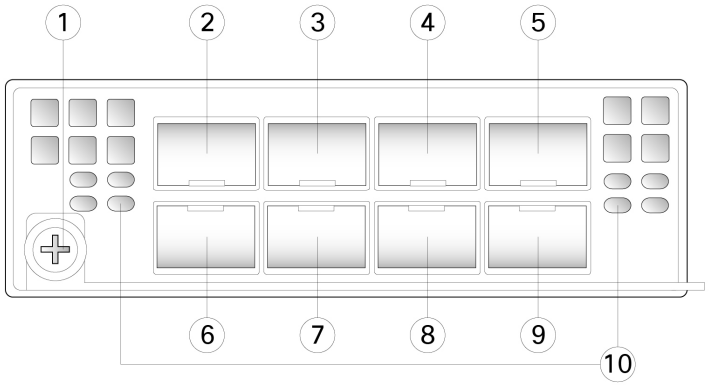
The following figure shows the front panel of the 8-port 10-Gbps single-wide network module (FPR4K-NM-8X10G). The eight ports are numbered from top to bottom, left to right.

Note Make sure you have the correct firmware package and software version installed to support this network module.

Note The FPR4K-NM-8X10G is NEBS-compliant.

Note You can fit four copper SFPs in either the top row of ports or the bottom row of ports. Both rows cannot be populated at the same time, because of the port row spacing.

Figure 8: FPR4K-NM-8X10G



1	Captive screw/handle	**2**	Ethernet *X*/1
3	Ethernet *X*/3	**4**	Ethernet *X*/5
5	Ethernet *X*/7	**6**	Ethernet *X*/2
7	Ethernet *X*/4	**8**	Ethernet *X*/6
9	Ethernet *X*/8	**10**	Network activity LEDs • Off—No connection or port is not in use. • Amber—No link or network failure. • Green—Link up. • Green, flashing—Network activity.

Related Topics

Cisco ASA Compatibility
Cisco Secure Firewall Threat Defense Compatibility Guide

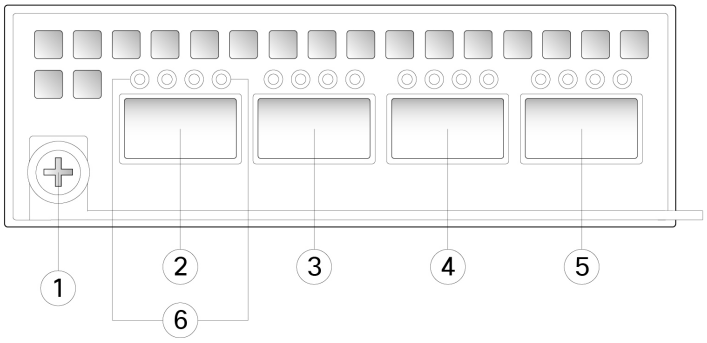
4-Port 40-Gbps network module

The following figure shows the front panel of the 40-Gbps network module (FPR4K-NM-4X40G.) The FPR4K-NM-4X40G is a single-wide module that supports hot swapping. The four ports are numbered left to right. This network module is first supported on FTD Version 6.4 and ASA Version 9.14.

Note Make sure you have the correct firmware package and software version installed to support this network module.

Note The FPR4K-NM-4X40G is NEBS-compliant.

Figure 9: FPR4K-NM-4X40G



1	Captive screw/handle	**2**	Network activity LEDs • Off—No connection or port is not in use. • Amber—No link or network failure. • Green—Link up. • Green, flashing—Network activity. • 40 Gbps—Only the leftmost LED indicates the port status. • 4x10 Gbps—Each of the port LEDS indicates the status of respective 10-Gbps channel.
3	Ethernet *X*/1	**4**	Ethernet *X*/2
5	Ethernet *X*/3	**6**	Ethernet *X*/4

Related Topics

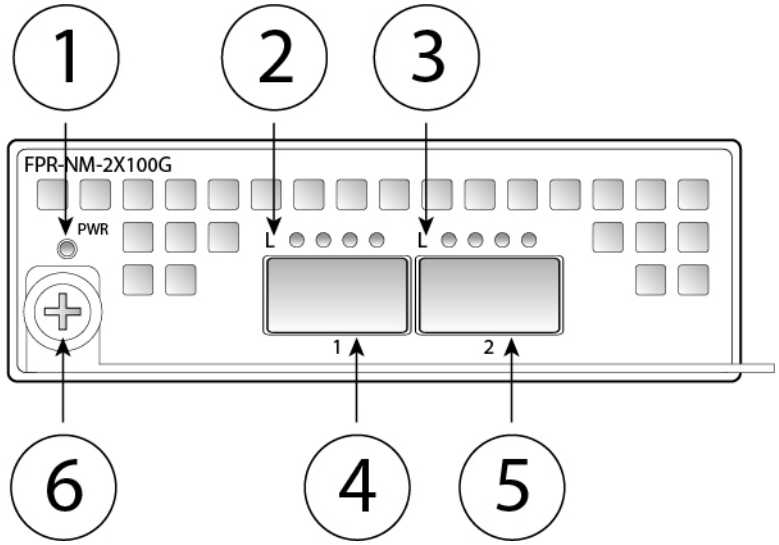
Cisco Firepower 4100/9300 FXOS Firmware Upgrade Guide
Cisco Firepower 4100/9300 FXOS Compatibility

2-Port 100-Gbps network module

The following figure shows the front panel of the 100-Gbps network module (FPR4K-NM-2X100G). The FPR4K-NM-2X100G is a two-port single-wide module that supports hot swapping. The two ports are numbered left to right.

Note Make sure you have the correct firmware package and software version installed to support this network module.

Figure 10: FPR4K-NM-2X100G



1	Power LED	**2**	Network activity LEDs • Off—No connection or port is not in use. • Amber—No link or network failure. • Green—Link up. • Green, flashing—Network activity.
3	Network activity LEDs • Off—No connection or port is not in use. • Amber—No link or network failure. • Green—Link up. • Green, flashing—Network activity.	**4**	Ethernet *X*/1
5	Ethernet *X*/2	**6**	Captive screw/handle

Note When deploying the FPR-NM-2X100G network module, it is recommended to configure the MTU to 9182 bytes or less. This setting helps prevent packet drops caused by MTU-related issues.

Related Topics

Cisco Firepower 4100/9300 FXOS Firmware Upgrade Guide
Cisco Firepower 4100/9300 FXOS Compatibility

Hardware bypass network modules

Hardware bypass (also known as fail-to-wire) is a physical layer (Layer 1) bypass that allows paired interfaces to go into bypass mode so that the hardware forwards packets between these port pairs without software intervention. Hardware bypass provides network connectivity when there are software or hardware failures. Hardware bypass is useful on ports where the Firepower security appliance is only monitoring or logging traffic. The hardware bypass network modules have an optical switch that is capable of connecting the two ports when needed. The hardware bypass network modules have built-in SFPs.

Hardware bypass is supported only on a fixed set of ports. You can pair Port 1 with Port 2, Port 3 with Port 4, but you cannot pair Port 1 with Port 4 for example.

Note When the appliance switches from normal operation to hardware bypass or from hardware bypass back to normal operation, traffic may be interrupted for several seconds. A number of factors can affect the length of the interruption; for example, behavior of the optical link partner such as how it handles link faults and debounce timing; spanning tree protocol convergence; dynamic routing protocol convergence; and so on. During this time, you may experience dropped connections.

There are three configuration options for hardware bypass network modules:

- Passive interfaces—Connection to a single port.

  For each network segment you want to monitor passively, connect the cables to one interface. This is how the nonhardware bypass network modules operate.

- Inline interfaces—Connection to any two like ports (10 Gb to 10 Gb for example) on one network module, across network modules, or fixed ports.

  For each network segment you want to monitor inline, connect the cables to pairs of interfaces.

- Inline with hardware bypass interfaces—Connection of a hardware bypass paired set.

  For each network segment that you want to configure inline with fail-open, connect the cables to the paired interface set.

  For the 40-Gb network module, you connect the two ports to form a paired set. For the 1/10-Gb network modules, you connect the top port to the bottom port to form a hardware bypass paired set. This allows traffic to flow even if the security appliance fails or loses power.

Note If you have an inline interface set with a mix of hardware bypass and nonhardware bypass interfaces, you cannot enable hardware bypass on this inline interface set. You can only enable hardware bypass on an inline interface set if all the pairs in the inline set are valid hardware bypass pairs.

Related Topics

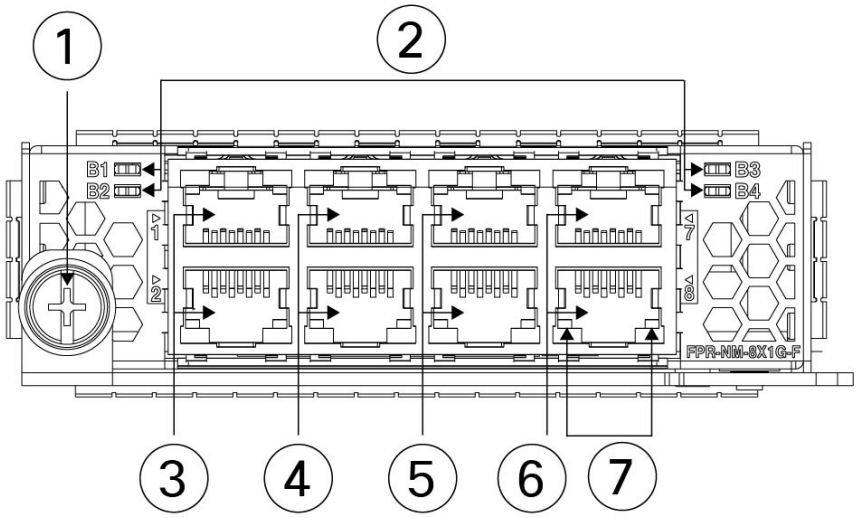
Install, remove, and replace the network module, on page 57

8-Port 1-Gbps network module with hardware bypass

The following figure shows the front panel view of the 1-Gbps network module with hardware bypass (FPR-NM-8X1G-F). Pair ports 1 and 2, 3 and 4, 5 and 6, and 7 and 8 to form hardware bypass paired sets.

Note Make sure you have the correct firmware package and software version installed to support this network module.

Figure 11: FPR4K-NM-8X1G-F



1	Captive screw/handle	**2**	Bypass LEDs B1 through B4 • Green—In standby mode. • Amber, flashing—Port is in hardware bypass mode, failure event.
3	Ethernet *X*/1 Ports 1 and 2 are paired together to form a hardware bypass pair. LED B1 applies to this paired port.	**4**	Ethernet *X*/2 Ports 3 and 4 are paired together to form a hardware bypass pair. LED B2 applies to this paired port.
5	Ethernet *X*/2 Ports 5 and 6 are paired together to form a hardware bypass pair. LED B3 applies to this paired port.	**6**	Ethernet *X*/2 Ports 7 and 8 are paired together to form a hardware bypass pair. LED B4 applies to this paired port.

7	Network activity LEDs • Left LED—Green indicates network activity when a 10 Mbps/100 Mbps/1 Gbps connection is made. • Right LED—Not in use at this time.		—

Related Topics

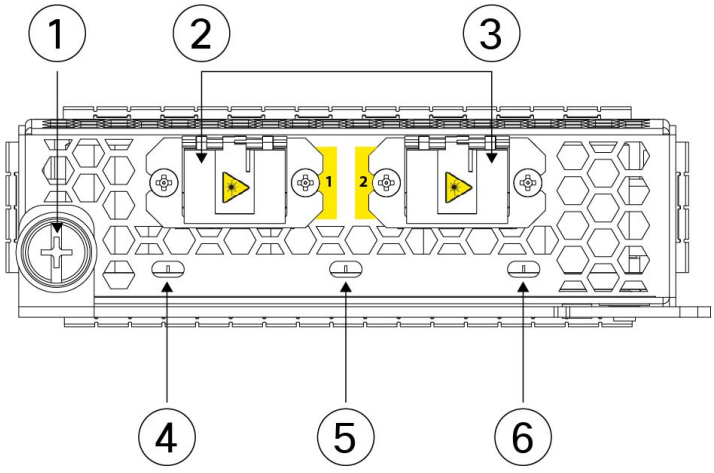
Cisco Secure Firewall ASA Compatibility
Cisco Secure Firewall Threat Defense Compatibility Guide
Cisco FXOS Troubleshooting Guide for the Firewall Threat Defense
Cisco Firepower 4100/9300 FXOS Firmware Upgrade Guide
Cisco Firepower 4100/9300 FXOS Compatibility

2-Port 40-Gbps network module with hardware bypass

The following figure shows the front panel of the 2-port 40-Gbps hardware bypass network module (FPR4K-NM-2X40G-F). The FPR4K-NM-2X40G-F is a single-wide module that does *not* support hot swapping. The two ports are numbered left to right. Pair the two ports to create a hardware bypass paired set.

Note Make sure you have the correct firmware package and software version installed to support this network module.

Figure 12: FPR4K-NM-2X40G-F



1	Captive screw/handle	**2**	Port 1 Ethernet *X*/1 Ports 1 and 2 are paired together to form a hardware bypass pair.

3	Port 2 Ethernet *X*/2 Ports 1 and 2 are paired together to form a hardware bypass pair.	**4**	Port 1 network activity LEDs: • Amber—No connection, or port is not in use, or no link or network failure. • Green—Link up, no network activity. • Green, flashing—Network activity.
5	BP (bypass LED): • Green—In standby mode. • Amber, flashing—Port is in hardware bypass mode, failure event.	**6**	Port 2 network activity LEDs: • Amber—No connection, or port is not in use, or no link or network failure. • Green—Link up, no network activity. • Green, flashing—Network activity.

The following table describes the cable specifications needed to keep the insertion loss as low as possible.

Table 2: 40-Gbps BASE-SR cable specifications

Interface	Supported cable
Ethernet 40-G BASE-SR4	50 microns core diameter
850 nm wavelength	2000/4700 (OM3/4) modal bandwidth (MHz*km)
MPO-12 port adapter	50 m cable distance

We recommend the following Cisco OM3 MTP/MPO cables.

Table 3: Cisco cables

Cisco part number	Cable length
CAB-ETH-40G-5M	5 m
CAB-ETH-40G-10M	10 m
CAB-ETH-40G-20M	20 m

Related Topics

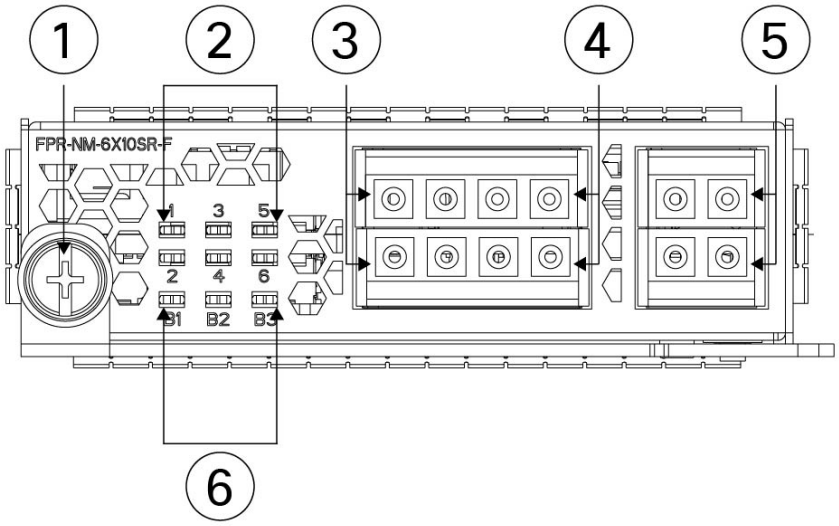
Cisco Firepower 4100/9300 FXOS Firmware Upgrade Guide
Cisco Firepower 4100/9300 FXOS Compatibility
Cisco 40GBASE QSFP Modules Data Sheet

6-Port 1-Gbps SX/6-port 10-Gbps SR/10-Gbps LR network module with hardware bypass

The following figure shows the front panel of the 1-Gbps SX, 10-Gbps SR and 10-Gbps LR hardware bypass network modules (FPR4K-NM-6X1SX-F, (FPR4K-NM-6X1SX-F, FPR4K-NM-6X10SR-F, FPR4K-NM-6X10SR-F, FPR4K-NM-6X10LR-FFPR4K-NM-6X10LR-F). This is a single-wide module that does *not* support hot swapping. The six ports are numbered from top to bottom, left to right. Pair ports 1 and 2, 3 and 4, and 5 and 6 to form hardware bypass paired sets.

Note Make sure you have the correct firmware package and software version installed to support this network module.

Figure 13: FPR4K-NM-6X1SX-F, FPR4K-NM-6X10SR-F, FPR4K-NM-6X10LR-F



1	Captive screw/handle	**2**	Six network activity LEDs: • Amber—No connection, or port is not in use, or no link or network failure. • Green—Link up, no network activity. • Green, flashing—Network activity.
3	Ethernet *X*/1 (top port) Ethernet *X*/2 (bottom port) Ports 1 and 2 are paired together to form a hardware bypass pair.	**4**	Ethernet *X*/3 (top port) Ethernet *X*/4 (bottom port) Ports 3 and 4 are paired together to form a hardware bypass pair.

5	Ethernet *X*/5 (top port) Ethernet *X*/6 (bottom port) Ports 5 and 6 are paired together to form a hardware bypass pair.	**6**	Bypass LEDs B1 through B3: • Green—In standby mode. • Amber, flashing—Port is in hardware bypass mode, failure event.

The 1-Gbps SX /10-Gbps SR/10-Gbps LR network modules have the following insertion loss measurements. Insertion loss measurements help you to troubleshoot the network by verifying cable installation and performance.

Table 4: FPR4K-NM-6X1SX-F

	Operating mode	**Typical**	**Maximum**
Insertion loss	Normal Hardware bypass	0.9 dB 1.2 dB	1.4 dB 1.7 dB
	Core diameter (microns)	Modal bandwidth (MHz/km)	Cable distance **Note** Half the distance specified by the IEEE standard.
Cable and operating distance	62.5 62.5 50 50 50	160 (FDDI) 200 (OM1) 400 500 (OM2) 2000 (OM3)	110 m 137 m 250 m 275 m 500 m

Table 5: FPR4K-NM-6X10SR-F

	Operating mode	**Typical**	**Maximum**
Insertion loss	Normal Hardware bypass	0.9 dB 1.2 dB	1.4 dB 1.7 dB
	Core diameter (microns)	Modal bandwidth (MHz/km)	Cable distance **Note** Half the distance specified by the IEEE standard.

Cable and operating distance	62.5 62.5 50 50 50 50	160 (FDDI) 200 (OM1) 400 500 (OM2) 2000 (OM3) 4700 (OM4)	13 m 16.5 m 33 m 41 m 150 m 200 m

Table 6: FPR4K-NM-6X10LR-F

	Operating mode	**Typical**	**Maximum**
Insertion loss	Normal Hardware bypass	1.2 dB 1.5 dB	1.6 dB 1.9 dB
	Core diameter (microns)	Modal bandwidth (MHz/km)	Cable distance **Note** Half the distance specified by the IEEE standard.
Cable and operating distance	G.652	Single mode	5 km

Related Topics

Cisco Secure Firewall ASA Compatibility
Cisco Secure Firewall Threat Defense Compatibility Guide
Cisco FXOS Troubleshooting Guide for the Firewall Threat Defense

Power supply modules

The Firepower 4100 supports two AC or DC power supply modules so that dual power supply redundancy protection is available. Facing the back of the chassis, the power supply modules are numbered left to right, for example, PSU1 and PSU2.

Note The system power requirements are lower than the power supply module capabilities.

Note After removing power from the chassis either by moving the power switch to OFF or unplugging the power cord, wait at least 10 seconds before turning power back ON.

Attention Make sure that one power supply module is always active.

AC power supply

The power supplies can supply up to 1100-W power across the input voltage range. The load is shared when both power supply modules are plugged in and running at the same time. The power supply modules are hot-swappable.

During a Power Distribution Unit (PDU) restoration, the power supply module on the Firepower 4100 does not automatically power back on. Recovery requires you to manually reseat the power supply module or to reconnect the AC power cable.

Table 7: AC power supply module hardware specifications

Description	Specification
Input voltage	100 to 240 V AC
Maximum current	13 A (at 100 V AC) **Note** The system power requirements are lower than the power supply module capabilities.
Maximum output power	1100 W
Frequency	50 to 60 Hz
Redundancy	1+1 redundant
Efficiency at 50% load	92%

DC power supply

The power supplies can supply up to 950 W of power across the input voltage range. The load is shared when both power supply modules are plugged in and running at the same time. The power supply modules are hot-swappable.

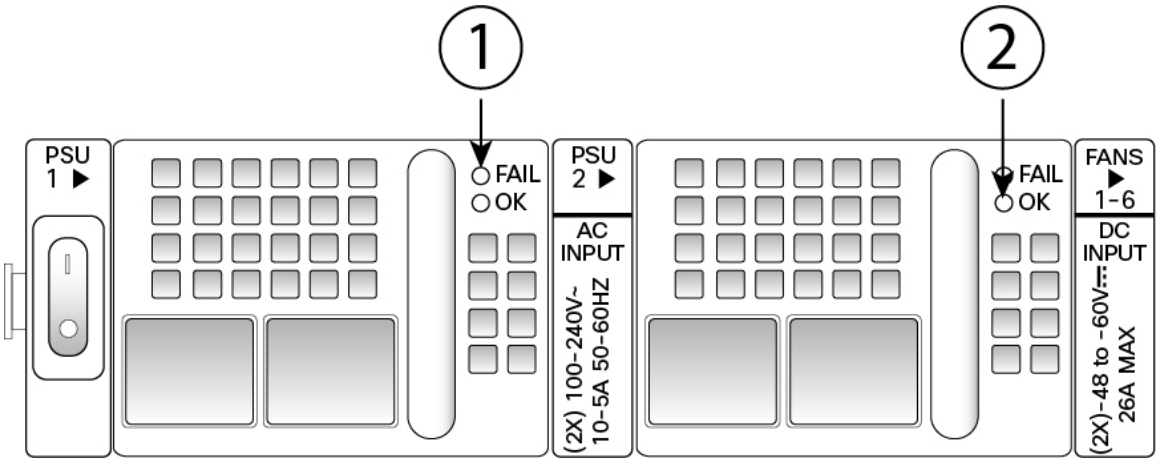
Table 8: DC power supply module hardware specifications

Description	Specification
Input voltage	-40 to -60 V DC
Maximum current	26 A (at 40 V DC)
Maximum output power	950 W
Redundancy	1+1 redundant
Efficiency at 50% load	92%

Power supply module LEDs

The following figure shows the two-color power supply LEDs. The LEDs are located on the upper right side.

Figure 14: Power supply module LEDs



1	Amber FAIL LED	**2**	Green OK LED

The following table describes the power module supply LEDs and their states.

Table 9: Power supply module LEDs and their states

	Amber LED (fail status)	**Green LED (OK status)**
No power to all power supplies	Off	Off
Power supply module failure Includes overvoltage, overcurrent, overtemperature, and fan failure	On	Off
Power supply module warning events Power supply continues to operate. With high temperature, high power, and slow fan	1 Hz flashing	Off
Power is present. 3.3 VSB on (power supply module off)	Off	1 Hz flashing
Power supply module is OK and on.	Off	On

Related Topics

Hardware specifications, on page 30
Remove and replace the power supply module, on page 65

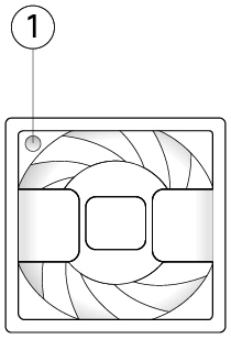
Fan modules

The Firepower 4100 requires six fan modules, which are hot-swappable. They are installed in the rear of the chassis. The system supports operation with a single fan failure (N+1 fan redundancy), but do not run the system for an extended amount of time without all fan modules installed. Keep removal and replacement time at three minutes. Remove and replace one fan module at a time. The fan modules are numbered left to right, for example, FAN1, FAN2, FAN3, FAN4, FAN5, and FAN6.

If you remove a fan or a fan fails, the other fans operate at full speed, which can be noisy.

The following figure shows the location of the fan LED.

Figure 15: Fan LED



1	Two-color LED

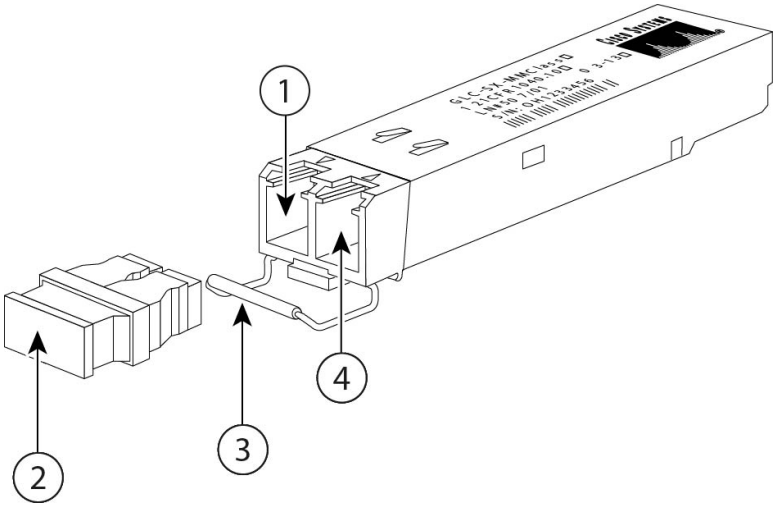
The fan module has one two-color LED, which is located on the upper left corner of the fan.

- Amber—Fan failure.
- Green—Fan running normally. It may take up to one minute for the LED status to turn green after power is on.

Supported transceivers

The SFP/SFP+/QSFP+ transceiver is a bidirectional device with a transmitter and receiver in the same physical package. It is a hot-swappable optical or electrical (copper) interface that plugs into the SFP/SFP+/QSFP+ ports on the fixed ports and the network module ports, and provides Ethernet connectivity.

Figure 16: SFP transceiver



1	Dust plug	**2**	Bail clasp
3	Receive optical bore	**4**	Transmit optical bore

Safety warnings

Take note of the following warnings:

Warning **Statement 1055—**Class 1/1M Laser

Invisible laser radiation is present. Do not expose to users of telescopic optics. This applies to Class 1/1M laser products.



Warning **Statement 1056—**Unterminated Fiber Cable

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments, for example, eye loupes, magnifiers, and microscopes, within a distance of 100 mm, may pose an eye hazard.

Warning **Statement 1057—**Hazardous Radiation Exposure

Use of controls, adjustments, or performance of procedures other than those specified may result in hazardous radiation exposure.

Warning Use appropriate ESD procedures when inserting the transceiver. Avoid touching the contacts at the rear, and keep the contacts and ports free of dust and dirt. Keep unused transceivers in the ESD packing that they were shipped in.

Caution Although non-Cisco SFPs are allowed, we do not recommend using them because they have not been tested and validated by Cisco. Cisco TAC may refuse support for any interoperability problems that result from using an untested third-party SFP transceiver.

The following table lists the transceivers that are supported on the Secure Firewall 4100 fixed ports.

Table 10: FPR4112, FPR4115, FPR4125, and FPR4145 fixed ports

Port type	Transceiver PID	First supported release
Fixed SFP/SFP+ ports	• GLC-TE • GLC-SX-MMD • GLC-LH-SMD • GLC-EX-SMD • GLC-ZX-SMD • SFP-10G-SR • SFP-10G-SR-S • SFP-10G-LR • SFP-10G-LR-S • SFP-10G-ER • SFP-10G-ER-S • SFP-10G-LRM • SFP-H10GB-CUxM • SFP-H10GB-ACUxM • SFP-10G-AOCxM	Threat Defense 6.4/ASA 9.14

The following table lists the transceivers that are supported on the Secure Firewall 4100 management ports.

Table 11: FPR4112, FPR4115, FPR4125, and FPR4145 management ports

Port type	Transceiver PID	First supported release
Fixed SFP/SFP+ ports	• GLC-TE • GLC-SX-MMD • GLC-LH-SMD • GLC-EX-SMD • GLC-ZX-SMD • SFP-10G-SR • SFP-10G-SR-S • SFP-10G-LR • SFP-10G-LR-S • SFP-10G-ER • SFP-10G-ER-S • SFP-10G-LRM • SFP-H10GB-CUxM • SFP-H10GB-ACUxM • SFP-10G-AOCxM	Threat Defense 6.4/ASA 9.14

The following table lists the transceivers that are supported on the 8-port 10-Gbps network module.

Table 12: FPR4112, FPR4115, FPR4125, and FPR4145 8-port 10-Gbps network module

Port type	Transceiver PID	First supported release
FPR4K-NM-8X10G	• GLC-TE • GLC-SX-MMD • GLC-LH-SMD • GLC-EX-SMD • GLC-ZX-SMD • SFP-10G-SR • SFP-10G-SR-S • SFP-10G-LR • SFP-10G-LR-S • SFP-10G-ER • SFP-10G-ER-S • SFP-H10GB-CUxM • SFP-H10GB-ACUxM • SFP-10G-AOCxM	Threat Defense 6.4/ASA 9.14
	• SFP-10G-T-X	Threat Defense 7.6/ASA 9.22

The following table lists the tranceivers that are supported on the 4-port 40-Gbps network module.

Table 13: FPR4112, FPR4115, FPR4125, and FPR4145 4-port 40-Gbps network module

Port type	Transceiver PID	First supported release
FPR4K-NM-4X40G	• QSFP-40G-SR4 • QSFP-40G-SR4-S • QSFP-40G-CSR4 • QSFP-40G-SR-BD • QSFP-40G-LR4-S • QSFP-40G-LR4 • WSP-Q40GLR4L • QSFP-H40G-CUxM • QSFP-4SFP10G-CUxM • QSFP-H40G-ACUxM • QSFP-4X10G-ACUxM • QSFP-H40G-AOCxM • QSFP-4X10G-AOCxM	Threat Defense 6.4/ASA 9.14

The following table lists the transceivers that are supported on the 2-port 100-Gbps network module.

Table 14: FPR4112, FPR4115, FPR4125, and FPR4145 2-port 100-Gbps network module

Port type	Transceiver PID	First supported release
FPR4K-NM-2X100G	• QSFP-100G-SR4-S • QSFP-100G-LR4-S • QSFP-40/100G-SRBD • QSFP-100G-AOCxM • QSFP-100G-CUxM • QSFP-4SFP25G-CUxM • QSFP-100G-FR-S	Threat Defense 7.2/ASA 9.18
	• QSFP-100G-SM-SR • QSFP-100G-SR1.2 • QSFP-40/100-SRBD	Threat Defense 7.4/ASA 9.20
	• QSFP-100G-DR-S	Threat Defense 7.6/ASA 9.22

Related Topics

Cisco 10GBASE SFP+ Modules Data Sheet

Hardware specifications

The following table contains hardware specifications for the Firepower 4100.

Table 15: Firepower 4100 hardware specifications

Specification	4112	4115	4125	4145
Dimensions (H x W x D)	1.75 x 16.89 x 29.7 inches (4.44 x 42.90 x 75.43 cm) 1.75 x 16.89 x 31.52 inches (4.44 x 42.90 x 80.06 cm) with fans			
Weight	39.4 lb (17.87 kg) two power supply modules, two network modules, six fans 31.4 lb (14.24 kg) no power supply modules, no network modules, no fans			
System power	AC: 100/240 V AC 10 A (at 100 V), 50 to 60 Hz DC: -40 V DC to -60 V DC, 26 A (at -40 V)			
Temperature	Operating: 32 to 104° F (0 to 40° C) at sea level 1° C reduction of maximum for every 1000 ft (305 m) above sea level Nonoperating: -40 to 149°F (-40 to 65° C)			
NEBS operating temperature Firepower 4125 only	—	—	Long term: 32 to 113° F (0 to 45° C) up to 6000 ft (1829 m) Long term: 32 to 95° F (0 to 35° C) up to 6000-13,000 ft (1829-3964 m) Short term: 23 to 131°F (-5 to 55° C) up to 6000 ft (1829 m)	—
Humidity	Operating and nonoperating: 5 to 95% noncondensing			
Altitude	Operating: 10,000 ft maximum (3048 m) Nonoperating: 15,000 ft maximum (4570 m)			
NEBS operating altitude Firepower 4125 only	—	—	0 to 13,000 ft (3962 m)	—

Specification	4112	4115	4125	4145
Sound pressure	63 dBa (typical) 74 dBa (maximum)			
Declared sound power	76 dB (typical) 87 dB (maximum)			

Product ID numbers

The following table lists the PIDs associated with the Firepower 4100. All of the PIDs in the table are field-replaceable. You need a return material authorization (RMA) to return components.



Note Use the **show inventory** command in the , in the , or in the for the procedure to display a list of the PIDs for your Firepower 4100.

Table 16: Firepower 4100 PIDs

PID	Description
Chassis	
FPR4112-ASA-K9	Cisco Firepower 4112 ASA appliance, 1 RU, two network module bays
FPR4112-NGFW-K9	Cisco Firepower 4112 NGFW appliance, 1 RU, two network module bays
FPR4112-NGFW-K9	Cisco Firepower 4112 NGIPS appliance, 1 RU, two network module bays
FPR4115-ASA-K9	Cisco Firepower 4115 ASA appliance, 1 RU, two network module bays
FPR4115-NGFW-K9	Cisco Firepower 4115 NGFW appliance, 1 RU, two network module bays
FPR4115-NGIPS-K9	Cisco Firepower 4115 NGIPS appliance, 1 RU, two network module bays
FPR4125-ASA-K9	Cisco Firepower 4125 ASA appliance, 1 RU, two network module bays
FPR4125-NGFW-K9	Cisco Firepower 4125 NGFW appliance, 1 RU, two network module bays
FPR4125-NGIPS-K9	Cisco Firepower 4125 NGIPS appliance, 1 RU, two network module bays

PID	Description
FPR4145-ASA-K9	Cisco Firepower 4145 ASA appliance, 1 RU, two network module bays
FPR4145-NGFW-K9	Cisco Firepower 4145 NGFW appliance, 1 RU, two network module bays
FPR4145-NGIPS-K9	Cisco Firepower 4145 NGIPS appliance, 1 RU, two network module bays
Accessories	
FPR4K-ACC-KIT2	Firepower hardware accessory kit containing rack mounts and cables
FPR4K-ACC-KIT2=	Firepower hardware accessory kit containing rack mounts and cables (spare)
Fans	
FPR4K-S-FAN	Fan
FPR4K-S-FAN=	Fan (spare)
Network modules	
FPR4K-NM-2X40G-F	2-port 40-Gbps SR hardware bypass network module
FPR4K-NM-2X40G-F=	2-port 40-Gbps SR hardware bypass network module (spare)
FPR4K-NM-4X40G	4-port 40-Gbps QSFP+ network module
FPR4K-NM-4X40G=	4-port 40-Gbps QSFP+ network module (spare)
FPR4K-NM-6X10LR-F	6-port 10-Gbps LR hardware bypass network module
FPR4K-NM-6X10LR-F=	6-port 10-Gbps LR hardware bypass network module (spare)
FPR4K-NM-6X10SR-F	6-port 10-Gbps SR hardware bypass network module
FPR4K-NM-6X10SR-F=	6-port 10-Gbps SR hardware bypass network module (spare)
FPR4K-NM-6X1SX-F	6-port 1-Gbps SX fiber hardware bypass network module
FPR4K-NM-6X1SX-F=	6-port 1-Gbps SX fiber hardware bypass network module (spare)
FPR4K-NM-8X10G	8-port 10-Gbps SFP+ network module
FPR4K-NM-8X10G=	8-port 10-Gbps SFP+ network module (spare)

PID	Description
FPR4K-NM-8X1G-F	8-port 1-Gbps copper hardware bypass network module
FPR4K-NM-8X1G-F=	8-port 1-Gbps copper hardware bypass network module (spare)
FPR4K-NM-2X100G	2-port 100-Gbps single-wide network module
FPR4K-NM-2X100G=	2-port 100-Gbps single-wide network module (spare)
FPR4K-NM-BLANK	Network module blank slot cover
FPR4K-NM-BLANK=	Network module blank slot cover (spare)
Power supply modules	
FPR4K-PWR-AC-1100	1100-W AC power supply module
FPR4K-PWR-AC-1100-	1100-W AC power supply module (spare)
FPR4K-PWR-DC-950	950-W DC power supply module
FPR4K-PWR-DC-950=	950-W DC power supply module (spare)
FPR4K-PSU-BLANK	Chassis power supply module blank slot cover
FPR4K-PSU-BLANK=	Chassis power supply module blank slot cover (spare)
SSDs	
FPR4K-SSD-BBLKD	SSD slot carrier
FPR4K-SSD-BBLKD=	SSD slot carrier (spare)
FPR4K-SSD400	400-GB SSD for Firepower 4112 and 4115
FPR4K-SSD400=	400-GB SSD for Firepower 4112 and 4115 (spare)
FPR4K-SSD800	800-GB SSD for Firepower 4125 and 4145
FPR4K-SSD800=	800-GB SSD for Firepower 4125 and 4145 (spare)
Rack mount	
FPR4K-RACK-MNT	Rack-mount kit
FPR4K-RACK-MNT=	Rack-mount kit (spare)
FPR4K-CBL-MGMT	Cable management brackets
FPR4K-CBL-MGMT=	Cable management brackets (spare)

Related Topics

Cisco Returns Portal

Cisco Firepower 4100/9300 FXOS Command Reference
Cisco Secure Firewall Threat Defense Command Reference
Cisco Secure Firewall ASA Series Command Reference

Power cord specifications

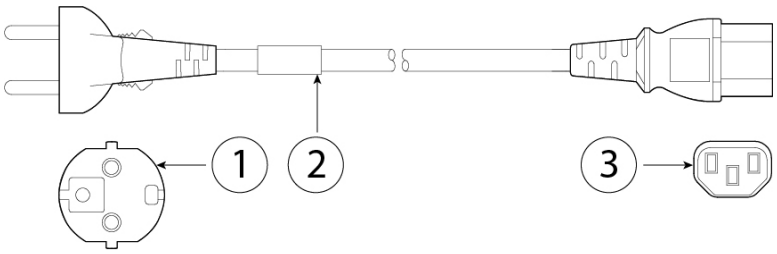
Each power supply has a separate power cord. Standard power cords are available for connection to the security appliance.

If you do not order the optional power cord with the system, you are responsible for selecting the appropriate power cord for the product. Using a incompatible power cord with this product may result in electrical safety hazard. Orders delivered to Argentina, Brazil, and Japan must have the appropriate power cord ordered with the system.

Note Only the approved power cords or jumper power cords provided with the security appliance are supported.

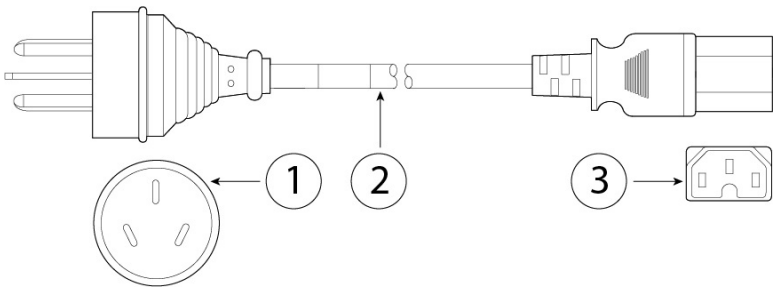
The following power cords are supported.

Figure 17: Argentina CAB-9K10A-AR



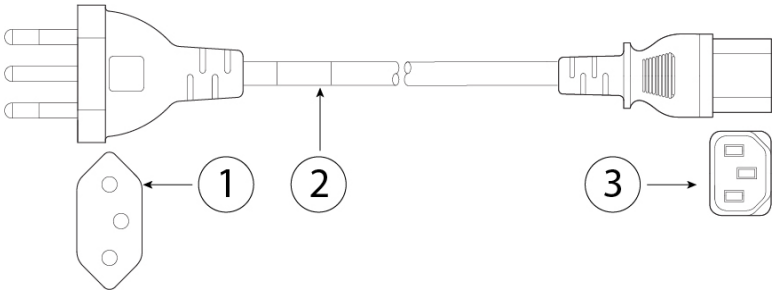
1	Plug: IRAM 2073	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		—

Figure 18: Australia CAB-9K10A-AU



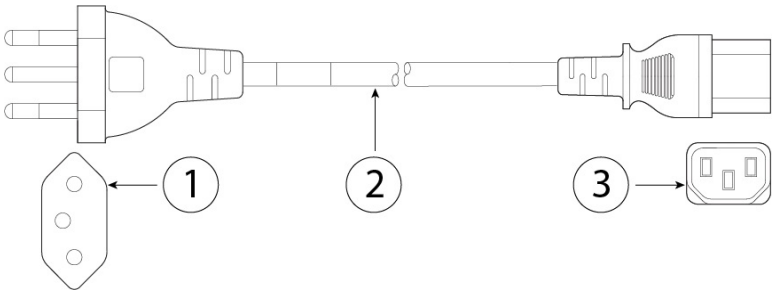
1	Plug: A.S. 3112-2000	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		—

Figure 19: Brazil CAB-250V-10A-BR



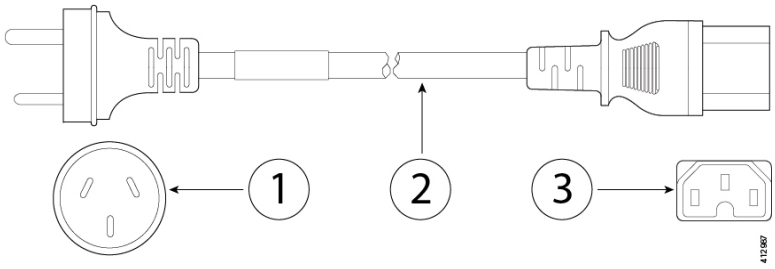
1	Plug: EL223 (NBR 14136)	**2**	Cord set rating: 10 A, 250 V
3	Connector: EL 701B (EN 60320/C13)		—

Figure 20: Brazil PWR-CORD-G2A-BZ



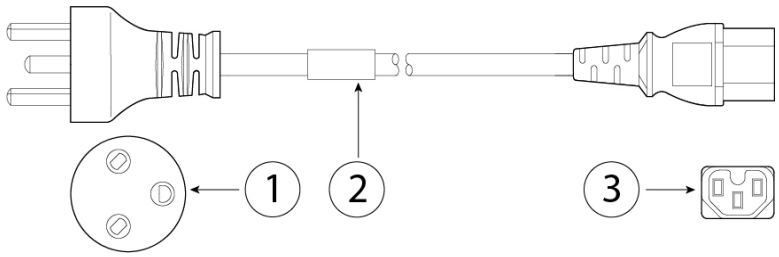
1	Plug: NBR 14136	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		—

Figure 21: China CAB-9K10A-CH



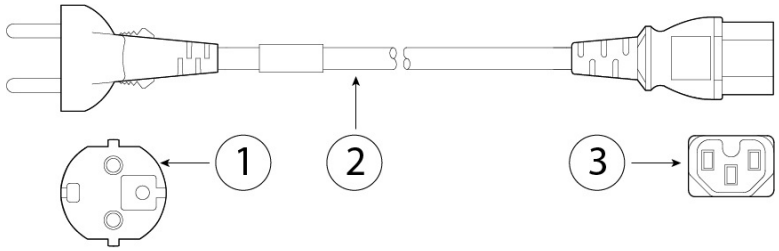
1	Plug: CCC GB2099.1, GB1002	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		—

Figure 22: Denmark CAB-TA-DN



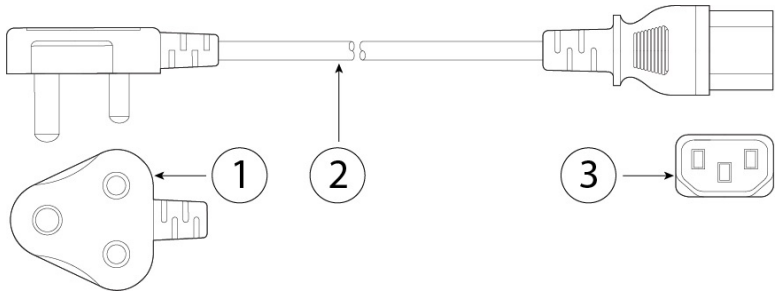
1	Plug: DK3	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		—

Figure 23: Europe CAB-AC-EUR



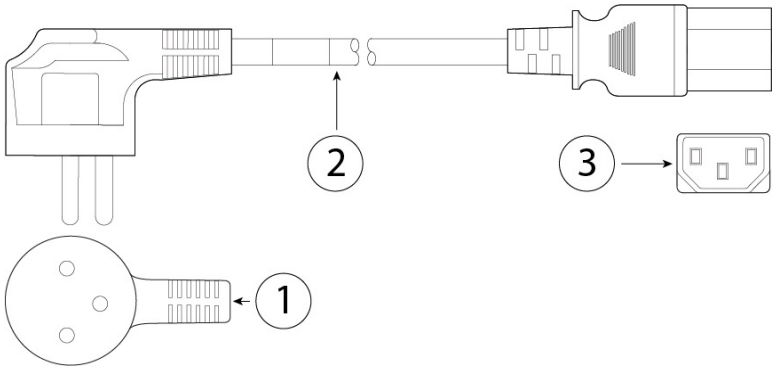
1	Plug: CEE 7/7	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		—

Figure 24: India CAB-250V-10A-ID



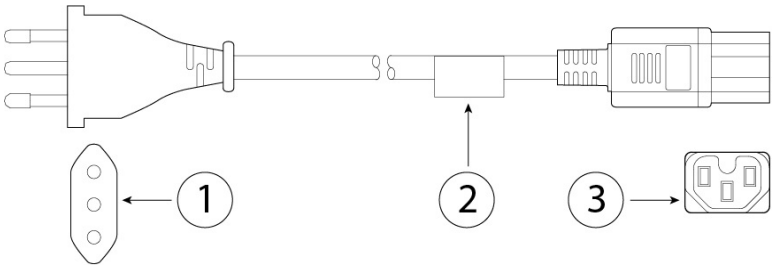
1	Plug: IS 6538-1971	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		—

Figure 25: Israel CAB-250V-10A-IS



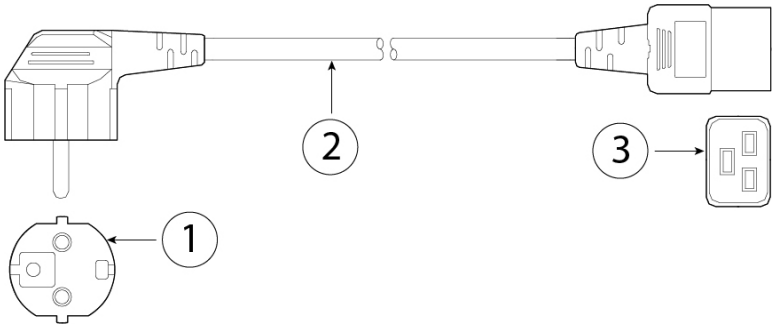
1	Plug: SI-32	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		—

Figure 26: Italy CAB-9K10A-IT



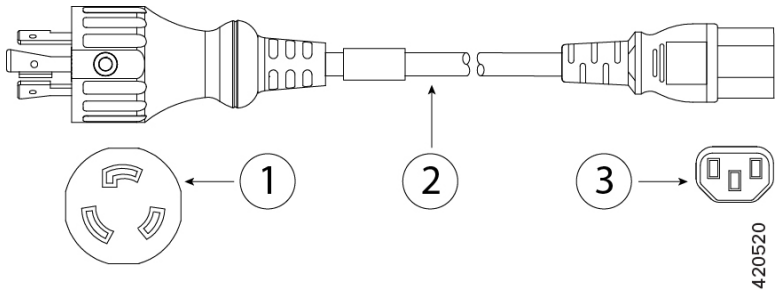
1	Plug: CEI 23-16/VII	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		—

Figure 27: Korea CAB-9K10A-KOR



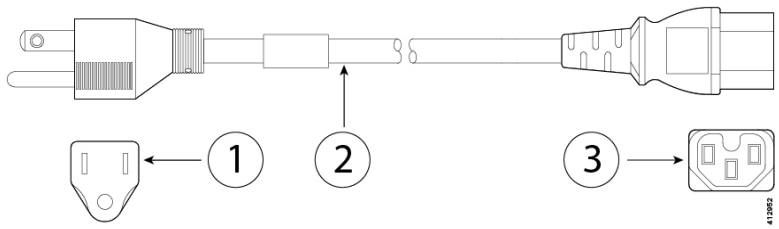
1	Plug: CEE 7/7	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C19		—

Figure 28: Japan CAB-L620P-C13-JPN



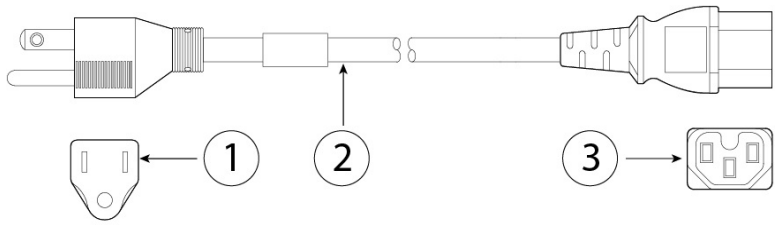
1	Plug: NEMA L6-20P	**2**	Cord set rating: 15 A, 250 V
3	Connector: IEC 60320-C13		—

Figure 29: Japan CAB-TA-JP



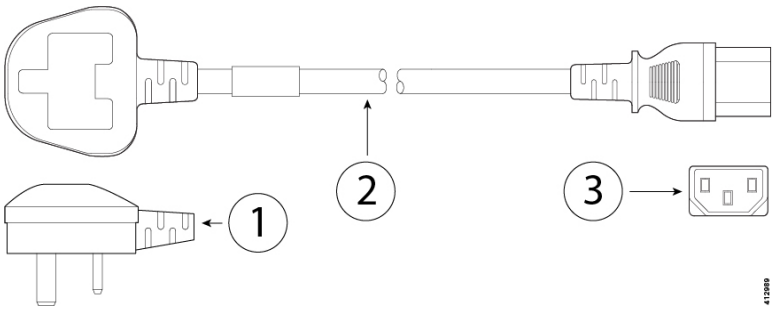
1	Plug: NEMA5-15P/JIS 8303	**2**	Cord set rating: 12 A, 125 V
3	Connector: IEC 60320-C15		—

Figure 30: North America CAB-TA-NA



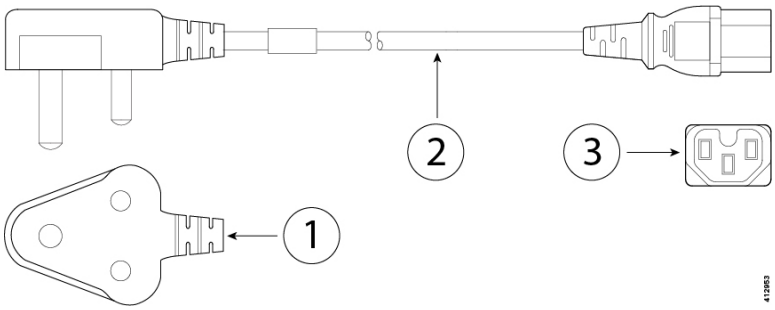
1	Plug: NEMA5-15P	**2**	Cord set rating: 12 A, 125 V
3	Connector: IEC 60320-C15		—

Figure 31: Saudi Arabia ATA187PWRCORD-SAUD



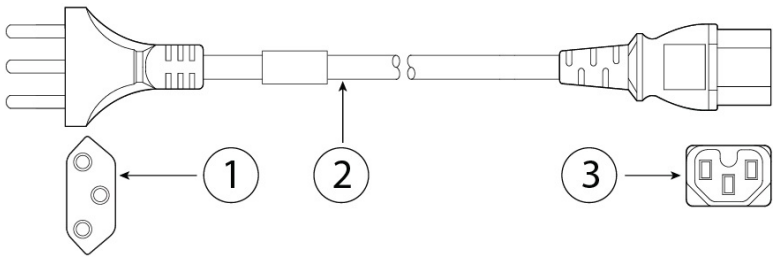
1	Plug: BS1363A/SS145	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		—

Figure 32: South Africa CAB-9K10A-SA



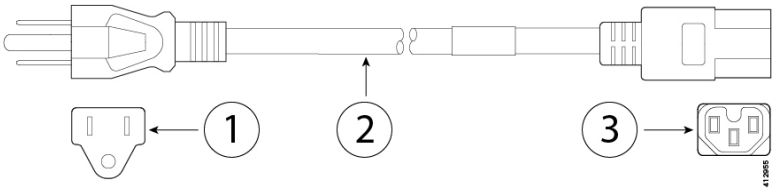
1	Plug: SABS 164	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		—

Figure 33: Switzerland CAB-9K10A-SW



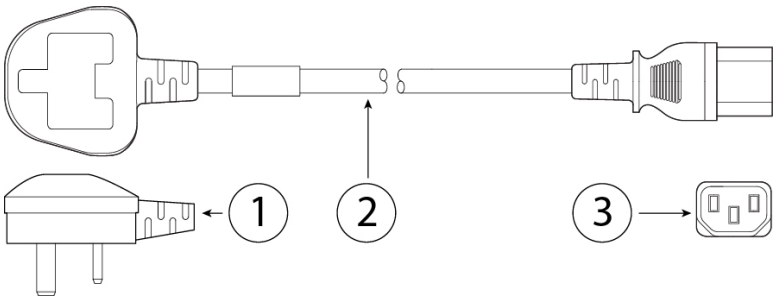
1	Plug: SEV 1011	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		—

Figure 34: Taiwan CAB-9K10A-TWN

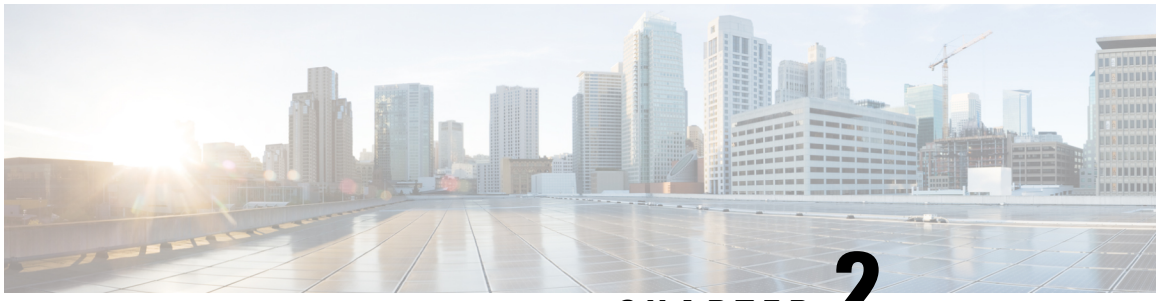


1	Plug: CNS10917-2	**2**	Cord set rating: 10 A, 125 V
3	Connector: IEC 60320-C15		—

Figure 35: United Kingdom CP-PWR-CORD-UK



1	Plug: BS1363A/SS145	**2**	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		—



CHAPTER 2

Installation Preparation

- Installation warnings, on page 41
- Network Equipment-Building System (NEBS) statements, on page 43
- Safety recommendations, on page 45
- Maintain safety with electricity, on page 46
- Prevent ESD damage, on page 46
- Site environment, on page 46
- Site considerations, on page 47
- Power supply considerations, on page 47
- Rack configuration considerations, on page 47

Installation warnings

Read the regulatory compliance and safety document before installing the chassis.

Take note of the following general safety warnings:



Warning **Statement 1071—**Warning Definition

IMPORTANT SAFETY INSTRUCTIONS

Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Read the installation instructions before using, installing, or connecting the system to the power source. Use the statement number at the beginning of each warning statement to locate its translation in the translated safety warnings for this device.

SAVE THESE INSTRUCTIONS



Note **Statement 407—**Japanese Safety Instruction

You are strongly advised to read the safety instruction before using the product.

https://www.cisco.com/web/JP/techdoc/pldoc/pldoc.html

When installing the product, use the provided or designated connection cables/power cables/AC adapters.

〈製品使用における安全上の注意〉

www.cisco.com/web/JP/techdoc/index.html

接続ケーブル、電源コードセット、**AC**アダプタ、バッテリなどの部品は、必ず添付品または指定品をご使用ください。添付品・指定品以外をご使用になると故障や動作不良、火災の原因となります。また、電源コードセットは弊社が指定する製品以外の電気機器には使用できないためご注意ください。

Warning **Statement 1015**—Battery Handling

To reduce risk of fire, explosion or leakage of flammable liquid or gas:

- Replace the battery only with the same or equivalent type recommended by the manufacturer.
- Do not dismantle, crush, puncture, use sharp tool to remove, short external contacts, or dispose of in fire.
- Do not use if battery is warped or swollen.
- Do not store or use battery in a temperature > 60° C.
- Do not store or use battery in low air pressure environment < 69.7 kPa.

Warning **Statement 1029—**Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, they contain electromagnetic interference (EMI) that might disrupt other equipment, and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Warning **Statement 1074—**Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

Warning **Statement 9001—**Product Disposal

Ultimate disposal of this product should be handled according to all national laws and regulations.

Related Topics

Regulatory Compliance and Safety Information

Network Equipment-Building System (NEBS) statements

NEBS describes the environment of a typical United States Regional Bell Operating Company (RBOC) central office. NEBS is the most common set of safety, spatial, and environmental design standards applied to telecommunications equipment in the United States. It is not a legal or regulatory requirement, but rather an industry requirement.

The following NEBS statements apply to the Firepower 4125.

Note **Statement 7001—**ESD Mitigation

This equipment may be ESD sensitive. Always use an ESD ankle or wrist strap before handling equipment. Connect the equipment end of the ESD strap to an unfinished surface of the equipment chassis or to the ESD jack on the equipment if provided.

Warning **Statement 7003**—Shielded Cable Shielded Cable Requirements for Intrabuilding Lightning Surge

The intrabuilding port(s) of the equipment or subassembly must use shielded intrabuilding cabling/wiring that is grounded at both ends.

The following port(s) are considered intrabuilding ports on this equipment:

Gigabit Ethernet management port

RJ-45 1 G/100 M/10 M auto duplex/auto MDI-X Base-T ports

Note **Statement 7004**—Special Accessories Required to Comply with GR-1089 Emission and Immunity Requirements

To comply with the emission and immunity requirements of GR-1089, shielded cables are required for the following ports:

Gigabit Ethernet management port

RJ-45 1 G/100 M/10 M auto duplex/auto MDI-X Base-T ports

Warning **Statement 7005**—Intrabuilding Lightning Surge and AC Power Fault

The intrabuilding port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the outside plant (OSP) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

This statement applies to the intrabuilding ports listed below:

Gigabit Ethernet management port

RJ-45 1 G/100 M/10 M auto duplex/auto MDI-X Base-T ports

Warning **Statement 7012—**Equipment Interfacing with AC Power Ports

Connect this equipment to AC mains that are provided with a surge protective device (SPD) at the service equipment that complies with NFPA 70, the National Electrical Code (NEC).

Note **Statement 7013—**Equipment Grounding Systems—Common Bonding Network (CBN)

This equipment is suitable for installations using the CBN.

Note **Statement 7016**—Battery Return Conductor

Treat the battery return conductor of this equipment as DC-I.

Note **Statement 7018—**System Recover Time

The equipment is designed to boot up in less than 30 minutes provided the neighboring devices are fully operational.

Note **Statement 8015—**Installation Location Network Telecommunications Facilities

This equipment is suitable for installation in network telecommunications facilities.

Note **Statement 8016—**Installation Location Where the National Electric Code (NEC) Applies

This equipment is suitable for installation in locations where the NEC applies.

Safety recommendations

Observe these safety guidelines:

- Keep the area clear and dust free before, during, and after installation.
- Keep tools away from walkways, where you and others might trip over them.
- Do not wear loose clothing or jewelry, such as earrings, bracelets, or chains that could get caught in the chassis.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Never attempt to lift an object that is too heavy for one person.

Maintain safety with electricity



Warning Before working on a chassis, be sure the power cord is unplugged.

Read the regulatory compliance and safety document before installing the chassis.

Follow these guidelines when working on equipment powered by electricity:

- Before beginning procedures that require access to the interior of the chassis, locate the emergency power-off switch for the room in which you are working. Then, if an electrical accident occurs, you can act quickly to turn off the power.
- Do not work alone if potentially hazardous conditions exist anywhere in your work space.
- Never assume that power is disconnected; always check.
- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.
- Use the chassis within its marked electrical ratings and product usage instructions.
- The chassis is equipped with an AC-input power supply, which is shipped with a three-wire electrical cord with a grounding-type plug that fits into a grounding-type power outlet only. Do not circumvent this safety feature. Equipment grounding should comply with local and national electrical codes.

Related Topics

Regulatory and Compliance Safety Information

Prevent ESD damage

ESD occurs when electronic components are improperly handled, and it can damage equipment and impair electrical circuitry, which can result in intermittent or complete failure of your equipment.

Always follow ESD-prevention procedures when removing and replacing components. Ensure that the chassis is electrically connected to an earth ground. Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the grounding clip to an unpainted surface of the chassis frame to safely ground ESD voltages. To properly guard against ESD damage and shocks, the wrist strap and cord must operate effectively. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

For safety, periodically check the resistance value of the antistatic strap, which should be between one and 10 megohms.

Site environment

To avoid equipment failures and reduce the possibility of environmentally caused shutdowns, plan the site layout and equipment locations carefully. If you are currently experiencing shutdowns or unusually high error rates with your existing equipment, these considerations may help you isolate the cause of failures and prevent future problems.

Site considerations

Considering the following helps you plan an acceptable operating environment for the chassis, and avoid environmentally-caused equipment failures.

- Electrical equipment generates heat. Ambient air temperature might not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Make sure that the room in which you operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis is designed to allow cooling air to flow effectively within it. An open chassis allows air leaks, which may interrupt and redirect the flow of cooling air from the internal components.
- Always follow ESD prevention procedures to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.

Power supply considerations

When installing the chassis, consider the following:

- Check the power at the site before installing the chassis to ensure that it is free of spikes and noise. Install a power conditioner, if necessary, to ensure proper voltages and power levels in the appliance-input voltage.
- Install proper grounding for the site to avoid damage from lightning and power surges.
- The chassis does not have a user-selectable operating range. Refer to the label on the chassis for the correct appliance input-power requirement.
- Several styles of AC-input power supply cords are available for the chassis; make sure that you have the correct style for your site.
- For dual redundant (1+1) power supplies, we recommend that you use independent electrical circuits for each power supply.
- Install an uninterruptible power source for your site, if possible.

Related Topics

Power supply modules, on page 21

Rack configuration considerations

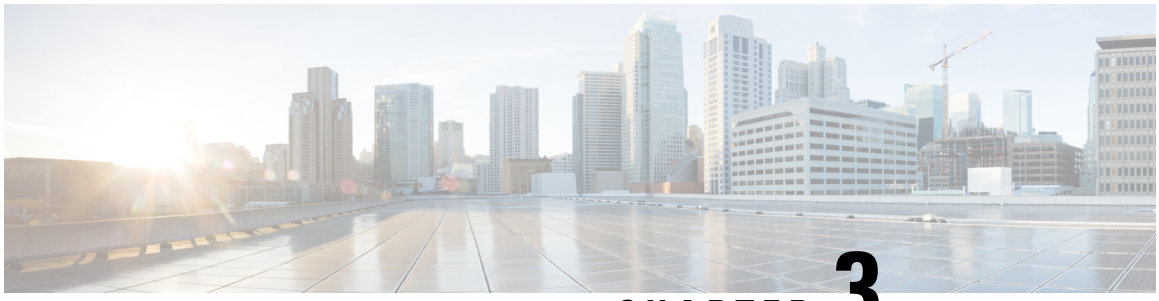
Consider the following when planning a rack configuration:

- Standard 19-in. (48.3 cm) 4-post EIA rack with mounting rails that conform to English universal hole spacing according to section 1 of ANSI/EIA-310-D-1992.
- The rack-mounting posts need to be 2 to 3.5 mm thick to work with the slide rail rack mounting.
- If you are mounting a chassis in an open rack, make sure that the rack frame does not block the intake or exhaust ports.

- If your rack includes closing front and rear doors, the doors must have 65 percent open perforated area evenly distributed from top to bottom to permit adequate airflow.
- Be sure enclosed racks have adequate ventilation. Make sure that the rack is not overly congested as each chassis generates heat. An enclosed rack should have louvered sides and a fan to provide cooling air.
- In an enclosed rack with a ventilation fan in the top, heat generated by equipment near the bottom of the rack can be drawn upward and into the intake ports of the equipment above it in the rack. Ensure that you provide adequate ventilation for equipment at the bottom of the rack.
- Baffles can help to isolate exhaust air from intake air, which also helps to draw cooling air through the chassis. The best placement of the baffles depends on the airflow patterns in the rack. Experiment with different arrangements to position the baffles effectively.

Related Topics

Rack-mount the chassis, on page 50



CHAPTER 3

Rack-Mount and Ground the Chassis

- Unpack and inspect the chassis, on page 49
- Rack-mount the chassis, on page 50
- Ground the chassis, on page 54

Unpack and inspect the chassis

Note The chassis is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, contact your customer service representative immediately. Keep the shipping container in case you need to send the chassis back due to damage.

Procedure

Step 1 Remove the chassis from its cardboard container and save all packaging material.

Step 2 Compare the shipment to the equipment list provided by your customer service representative. Verify that you have all items.

Step 3 Check for damage and report any discrepancies or damage to your customer service representative. Have the following information ready:

- Invoice number of shipper (see the packing slip)
- Model and serial number of the damaged unit
- Description of damage
- Effect of damage on the installation

Related Topics

Package contents, on page 4

Rack-mount the chassis

This procedure describes how to install the Firepower 4100 in a rack using the rack kit that shipped with the chassis.

The rack is a standard Electronic Industries Association (EIA) rack. It is a 4-post-EIA-310-D, which is the current revision as specified by EIA. The vertical hole spacing alternates at .50 inches (12.70 mm) to .625 inches (15.90 mm) to .625 inches (15.90 mm) and repeats. The start and stop space is in the middle of the .50-inch holes. The horizontal spacing is 18.312 inches (465.1 mm), and the rack opening is specified as a minimum of 17.75 inches (450 mm).

You need the following to install the chassis in a rack (4-post EIA-310-D rack):

- #1 Phillips screwdriver
- Firepower 4100 rack-mount kit that contains the slide rails, mounting ears, and screws

Slide rail assemblies work with 4-post racks and cabinets with square slots, round 7.1-mm holes and 10-32-inch threaded holes on the rack post front. The slide rail works with front to back spacing of rack posts from 24 to 36 inches. The rack-mounting posts need to be 2 to 3.5 mm thick to work with the slide rail rack mounting.

Note Internal obstructions between rails can make slide rail installation more complicated. Use racks that do not have internal obstructions between rails for unhindered slide rail installation.

Safety warnings

Take note of the following rack-mount safety warnings:

Warning **Statement 1006—**Chassis Warning for Rack-Mounting and Servicing

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Warning **Statement 1032—**Lifting the Chassis

To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules, such as power supplies, fans, or cards. These types of handles are not designed to support the weight of the unit.

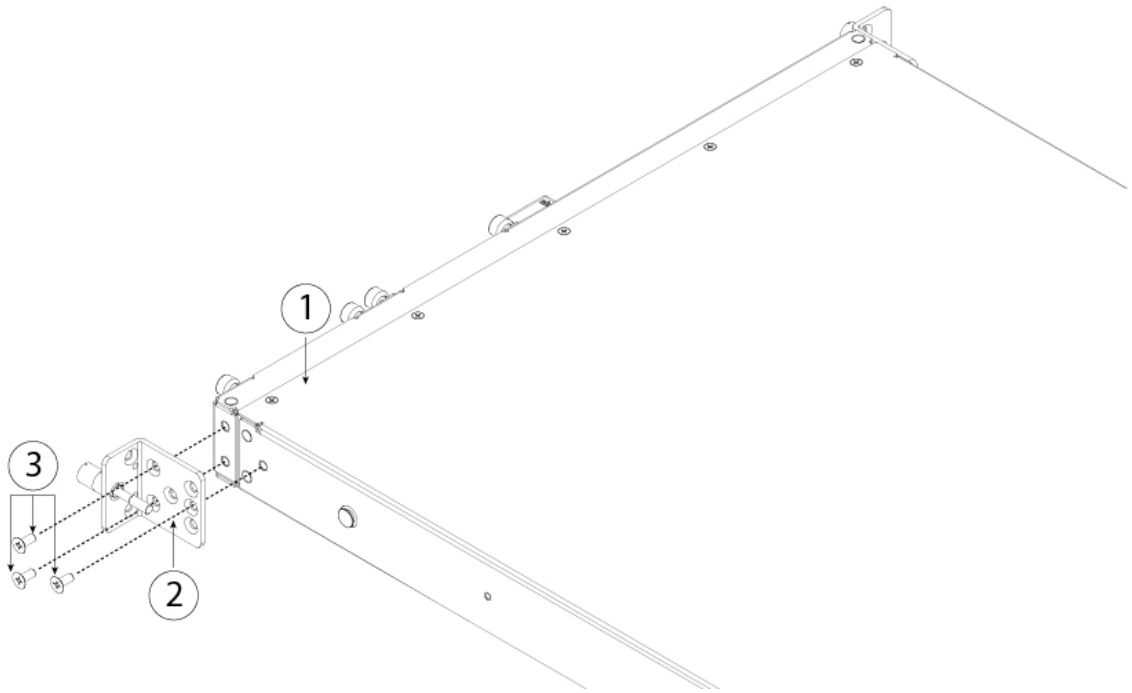
Warning **Statement 1098** —Lifting Requirement

Two people are required to lift the heavy parts of the product. To prevent injury, keep your back straight and lift with your legs, not your back.

Procedure

Step 1 Attach a rack mount bracket to each side of the chassis using the six 8-32 x .375-inch Phillips screws provided in the accessory kit.

Figure 36: Attach the rack mount bracket to the side of the chassis

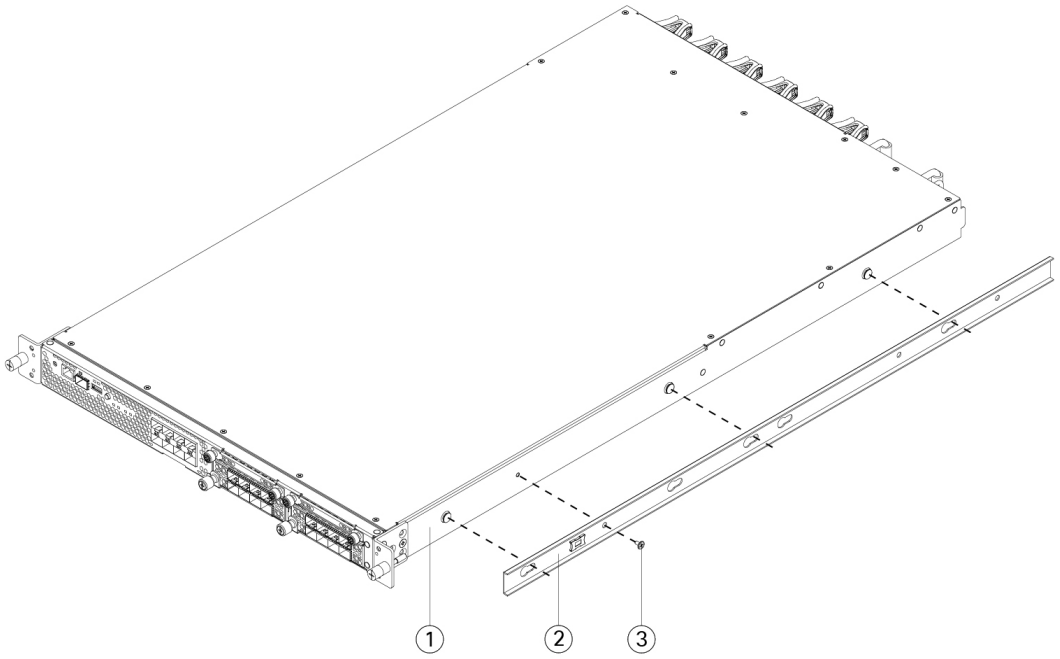


1	Chassis	**2**	Rack-mount bracket
3	8-32 x .375-inch Phillips screws (three per side)		

Step 2 Attach the inner rails to the sides of the chassis:

a) Remove the inner rails from the slide rail assemblies.
b) Align an inner rail with one side of the chassis so that the three keyed slots in the rail align with the three pegs on the side of the chassis.
c) Set the keyed slots over the pegs, and then slide the rail toward the front to lock it in place on the pegs. The rear key slot has a metal clip that locks over the peg.
d) Secure the inner rail to the side of the chassis using one M3 x 6 mm screw.
e) Install the second inner rail to the opposite side of the chassis and secure with the other M3 x 6 mm screw.

Figure 37: Attach the inner rail to the side of the chassis

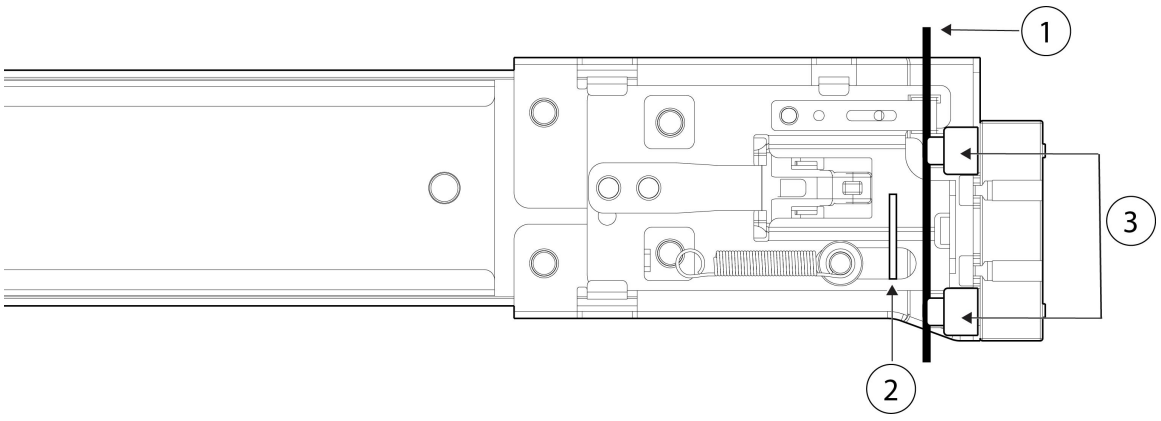


1	Chassis side by front panel	**2**	Inner rail
3	M3 x 6-mm screw (one per side)		

Step 3 Open the front securing plate on both slide-rail assemblies. The front end of the slide-rail assembly has a spring-loaded securing plate that must be open before you can insert the mounting pegs into the rack-post holes.

On the outside of the assembly, push the green arrow button toward the rear to open the securing plate.

Figure 38: Front securing mechanism inside the front end



1	Rack post	**2**	Securing plate shown pulled back to open position

3	Front mounting pegs **Note** Works with square slots, 7.1-mm holes, and 10-32-threaded holes		—

Step 4 Install the slide rails into the rack:

a) Align one slide-rail assembly front end with the front rack-post holes that you want to use.

The slide rail front end wraps around the outside of the rack post and the mounting pegs enter the rack-post holes from the outside front.

Note
The rack post must be between the mounting pegs and the open securing plate.

b) Push the mounting pegs into the rack-post holes from the outside front.
c) Press the securing plate release button marked *PUSH*. The spring-loaded securing plate closes to lock the pegs in place.
d) Adjust the slide-rail length, and then push the rear mounting pegs into the corresponding rear rack-post holes. The slide rail must be level front-to-rear.

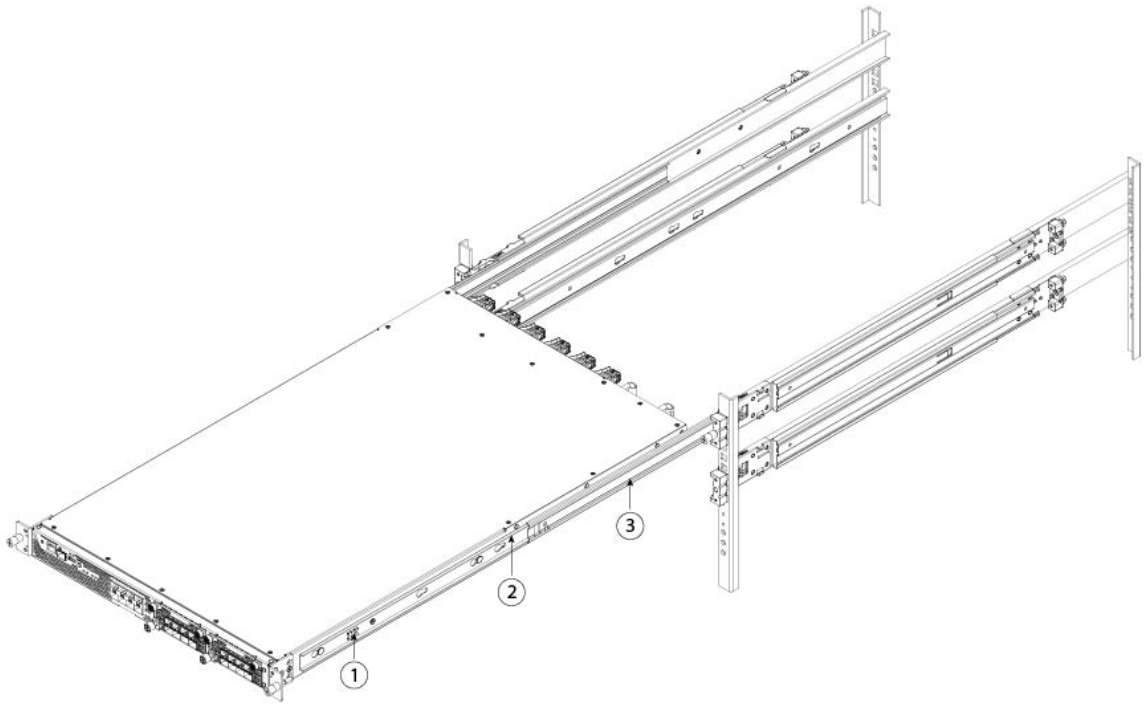
The rear mounting pegs enter the rear rack-post holes from the inside of the rack post.

e) Attach the second slide-rail assembly to the opposite side of the rack. Make sure that the two slide-rail assemblies are at the same height with each other and are level front-to-back.
f) Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

Step 5 Insert the chassis into the slide rails.

a) Align the rear of the inner rails that are attached to the chassis sides with the front ends of the empty slide rails on the rack.
b) Push the inner rails into the slide rails on the rack until they stop at the internal stops.
c) Slide the release clip toward the rear on both inner rails, and then continue pushing the chassis into the rack until the mounting brackets meet the front of the slide rail.

Figure 39: Inner rail release clip



1	Inner rail release clip	**2**	Inner rail attached to chassis
3	Outer rail attached to rack post		

Step 6 Use the captive screws on the front of the mounting brackets to fully secure the chassis to the rack.

What to do next

Ground the chassis. See Ground the chassis, on page 54 for the procedure.

Install the FIPS opacity shield if necessary. See Install the FIPS opacity shield, on page 79 for the procedure.

Install the cables according to your software configuration as described in the Cisco Firepower 4100 Getting Started Guide.

Ground the chassis

Note Grounding the chassis is required, even if the rack is already grounded. A grounding pad with two threaded M4 holes is provided on the chassis for attaching a grounding lug. The grounding lug must be Nationally Recognized Testing Laboratory (NRTL)-listed. In addition, a copper conductor (wires) must be used and the copper conductor must comply with National Electrical Code (NEC) code for ampacity.

You need the following items that you provide:

- Wire-striping tool
- Crimping tool
- Grounding cable
- Two star lock washers for the 10-32 x 0.375-inch screws used to secure the ground lug
- You need the following items from the accessory kit:
  - Grounding lug #6 AWG, 90 degree, #10 post
  - Two 10-32 x 0.375-inch screws used to secure the grounding lug

Safety warnings

Take note of the following ground connection warnings:

Warning **Statement 1024—**Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Warning **Statement 1046—**Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

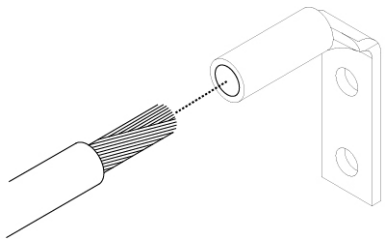
If your unit has modules, secure them with the provided screws.

Procedure

Step 1 Use a wire-stripping tool to remove approximately 0.75 inches (19 mm) of the covering from the end of the grounding cable.

Step 2 Insert the stripped end of the grounding cable into the open end of the grounding lug.

Figure 40: Insert the cable into the grounding lug

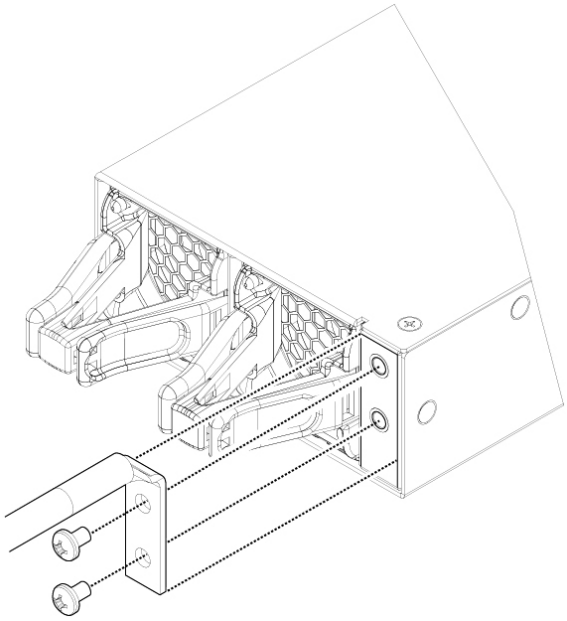


Step 3 Use the crimping tool to secure the grounding cable in the grounding lug.

Step 4 Remove the adhesive label from the grounding pad on the chassis.

Step 5 Place the grounding lug against the grounding pad so that there is solid metal-to-metal contact, and insert the two screws with washers through the holes in the grounding lug and into the grounding pad.

Figure 41: Attach the grounding lug



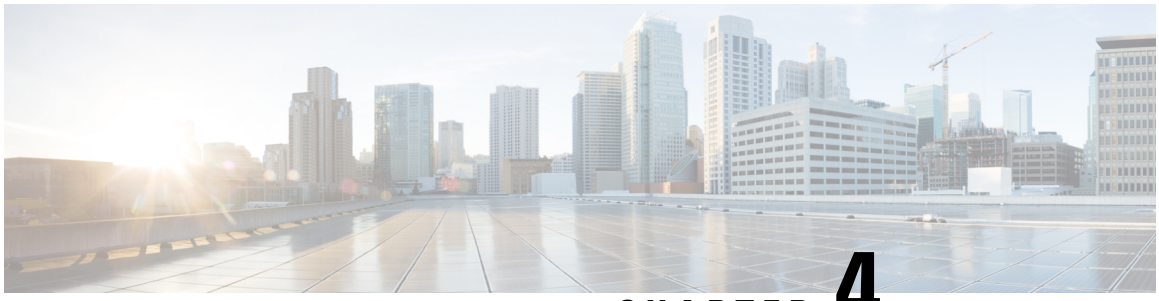
Step 6 Make sure that the lug and cable do not interfere with other equipment.

Step 7 Prepare the other end of the grounding cable and connect it to an appropriate grounding point in your site to ensure adequate earth ground.

What to do next

Install the FIPS opacity shield if necessary. See Install the FIPS opacity shield, on page 79 for the procedure.

Install the cables according to your default software configuration as described in the Cisco Firepower 4100 Getting Started Guide.



CHAPTER 4

Installation, Maintenance, and Upgrade

- Install, remove, and replace the network module, on page 57
- Remove and replace the fan module, on page 60
- Remove and replace the SSD, on page 62
- Remove and replace the power supply module, on page 65
- Connect the DC power supply module, on page 69
- Secure the power cord on the AC power supply module, on page 75
- Install the FIPS opacity shield, on page 79

Install, remove, and replace the network module

Hot swapping

Starting with FXOS 2.3.1, the Firepower 10-Gb and 40-Gb network modules (without hardware bypass support) support hot swapping, but you must hot swap with an identical network module, that is, a network module with the same PID. You must bring the network module offline using the appropriate CLI commands before removing the network module from the chassis so that all network module configuration is saved. See the configuration guide for the procedure.

Caution We do not recommend that you remove the network module without bringing it properly offline using the appropriate CLI commands.

Note You must have ROMMON 1.0.10 or later on the Supervisor to support hot swapping. See the configuration guide for the ROMMON upgrade procedure.

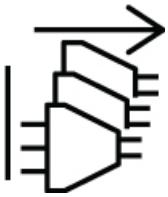
To remove and replace the network modules that do *not* currently support hot swapping, power off the chassis, replace the network module, and then power the chassis back on. Acknowledgment is necessary if you decommission and physically remove a network module and do not replace it, or if you replace it with another PID. See the configuration guide for the procedure.

Safety warnings

Take note of the following component replacement safety warnings:

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

This procedure describes how to install a network module into an empty slot that has never contained a network module, and how to remove an installed network module and replace it with another network module.

Procedure

Step 1 To install a new network module for the first time into an empty slot, do the following:

a) Power down the chassis by moving the power switch to the OFF position.
b) Follow Steps 4 through 7 to install the new network module.
c) Power on the chassis by moving the power switch to the ON position.

   The state for the new network module is `OIR Failed`.

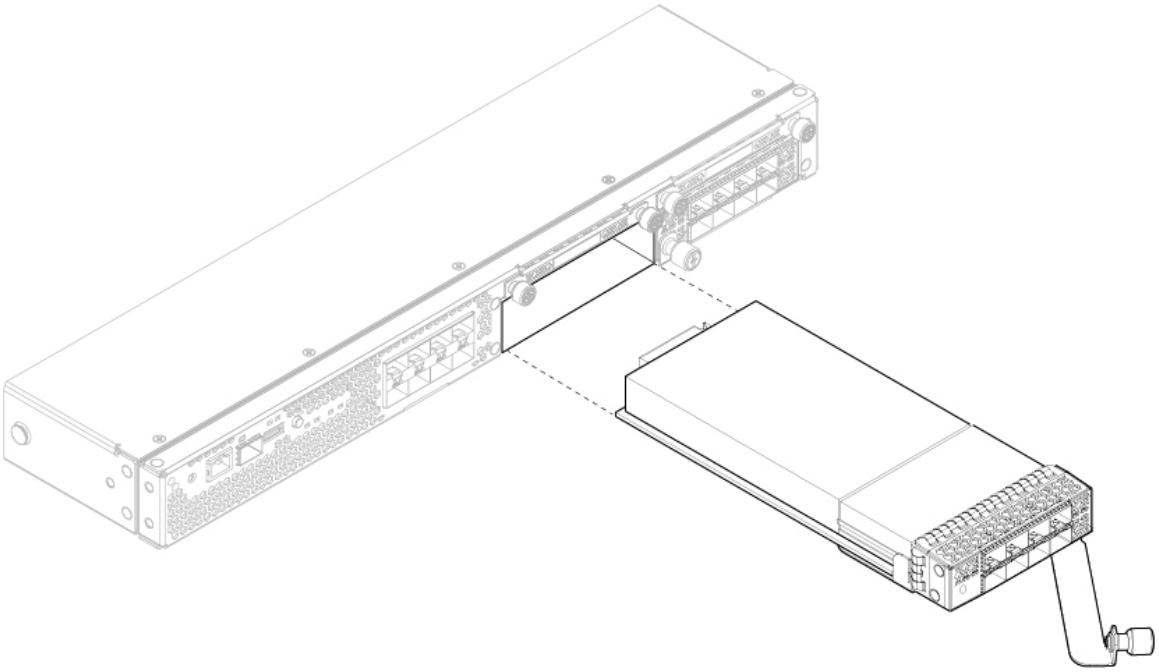
d) To change the status of the network module to `Online`, reboot the chassis.

Step 2 To remove and replace an existing network module, do one of the following:

a) Save your configuration.
b) Power down the chassis by moving the power switch to the OFF position (if removing a network module that does *not* support hot swapping).
c) Bring the network module offline using the appropriate CLI command (if removing a network module that *supports* hot swapping). All network module configuration is saved.
d) Continue with Step 3.

Step 3 To remove a network module from the chassis, loosen the captive screw on the lower left side of the network module and pull out the handle that is connected to the screw. This mechanically ejects the network module from the slot.

Figure 42: Remove the network module



If the slot is to remain empty, install a blank faceplate to ensure proper airflow and to keep dust out of the chassis; otherwise, install another network module.

Step 4 To replace a network module, hold the network module in front of the network module slot on the right of the chassis and pull the network module handle out.

Step 5 Slide the network module into the slot and push it firmly into place until the handle is flush with the front of the network module.

Step 6 Tighten the captive screw on the lower left side of the network module.

Step 7 Do one of the following:

a) Power up the chassis so that the new network module is recognized (if the new network module does *not* support hot swapping).
b) Bring the new network module online using the appropriate CLI command (if the new network module *supports* hot swapping). The saved network module configuration is automatically reapplied when the network module is back online.

Note
If you install a network module that is a different PID than the original network module, the saved configuration is deleted and the default configuration is applied. You must enter the **acknowledge** command to confirm the network module PID change:

What to do next

Follow the procedures in the FXOS Configuration Guide to connect to the network module and make sure that it has been discovered correctly by the Firepower 4100.

Related Topics

Rear panel, on page 9
Product ID numbers, on page 31
Cisco FXOS Firepower Chassis Manager Configuration Guide

Remove and replace the fan module

You can remove and replace fan modules while the system is running. The air flow moves from front to back. If you remove a fan or a fan fails, the other fans operate at full speed, which can be noisy.

The system supports operation with a single fan failure (N+1 fan redundancy), but do not run the system for an extended amount of time without all fan modules installed. Keep removal and replacement at three minutes. Remove and replace one fan module at a time



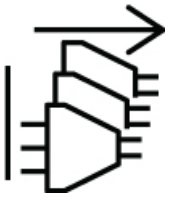
Caution Once you have aligned the fan with the fan slot, insert the new fan within five seconds. Do not partially engage the fan module and let the fan spin in the wrong direction before fully seating it.

Safety warnings

Take note of the following component replacement safety warnings:

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

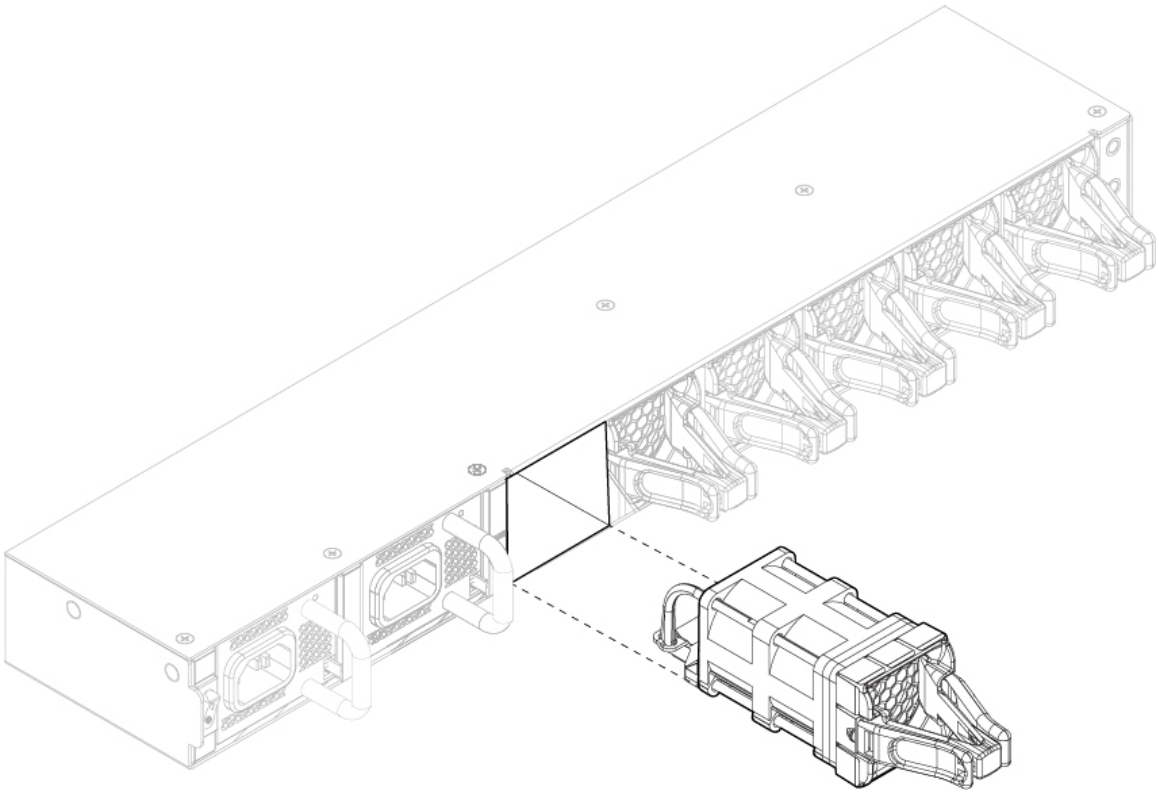
Procedure

Step 1 To remove a fan module, face the rear of the chassis, and grasp the handle of the fan module.

Step 2 Squeeze the handle to disengage the latches on the left and right of the fan module.

Step 3 Pull the fan module out of the chassis.

Figure 43: Remove the fan module



Step 4 To replace a fan module, hold the fan module in front of the fan slot.

Step 5 Push the fan module into the chassis until it is properly seated and the latches snap into place.
If the system is powered on, listen for the fans. You should immediately hear the fans operating. If you do not hear the fans, make sure the fan module is inserted completely into the chassis and the faceplate is flush with the outside surface of the chassis.

Step 6 Verify that the fan is operational by checking the fan module LED.

Related Topics

Front panel LEDs, on page 7

Remove and replace the SSD

Although the hardware supports removing and replacing SSDs while the system is running, the software does not currently support hot swapping. You must power down the chassis to remove and replace SSDs.

Note If your Firepower 4100 is running Firepower Threat Defense software, we recommend that you upgrade to the latest version to take advantage of software updates that enhance SSD management performance and longevity.

You storage SSD must be installed in slot 1 and must be present. Slot 1 is reserved for the logical device application instance (threat defense or ASA). Only an optional MSP can be installed in the second SSD slot (SSD slot 2). The MSP stores threat detection results for use in future analysis. It supports the Advanced Malware Protection software feature. The MSP is supported beginning in FXOS 2.0.1. It is used as both storage and as the Malware application repository. RAID is not supported.

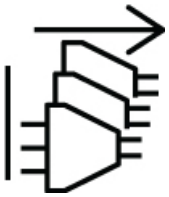
Caution Do not switch the two SSDs. The storage SSD must be installed in slot 1. The optional MSP SSD must be installed in slot 2. If you remove it and install it in slot 1, all stored file capture data is lost.

Safety warnings

Take note of the following component replacement safety warnings:

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

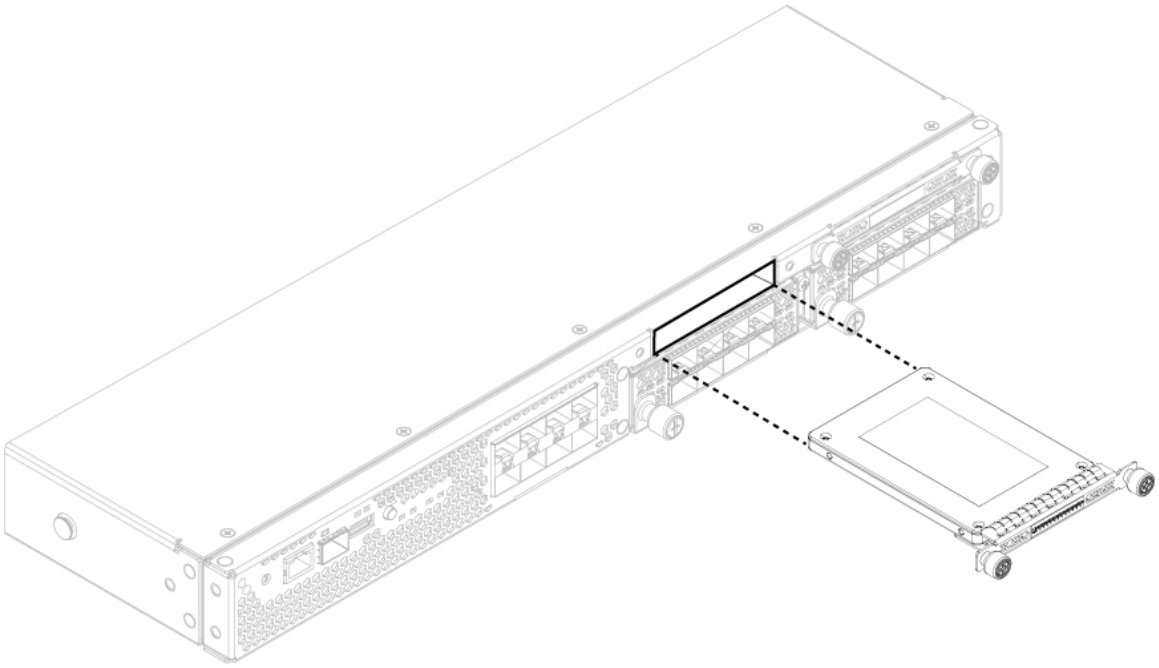
Procedure

Step 1 Save your configuration.

Step 2 Power down the chassis by moving the power switch to the OFF position. See Features, on page 1 for more information about the power switch.

Step 3 To remove an SSD, face the front of the chassis, loosen the two captive screws on the SSD, and gently pull it out of slot 1 of the chassis.

Figure 44: Remove the SSD



Step 4 To replace the SSD, make sure the power switch is still in the OFF position, and then hold the SSD in front of slot 1 and push it in gently until it is seated.

Step 5 To install the MSP SSD, make sure the power switch is still in the OFF position and then remove the blank faceplate in slot 2 by loosening the captive screws on either side of the faceplate.

Step 6 Hold the MSP SSD in front of slot 2 and push it in gently until it is seated.

Caution
Do not switch the two SSDs. Only the optional MSP SSD can be installed in slot 2. If you remove it and install it in slot 1, all stored file capture data is lost.

Step 7 Tighten the captive screws on either side of the SSD.

Step 8 Verify that the SSD is operational by checking the SSD LED.

Related Topics

Front panel LEDs, on page 7

Remove and replace the power supply module

You can remove and replace power supply modules while the system is running.

During a Power Distribution Unit (PDU) restoration, the power supply module on the Firepower 4100 does not automatically power back on. Recovery requires you to manually reseat the power supply module or to reconnect the AC power cable.

Safety warnings

Take note of the following power and component removal safety warnings:



Warning **Statement 1003—**DC Power Disconnection

To reduce risk of electric shock or personal injury, disconnect DC power before removing or replacing components or performing upgrades.



Warning **Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

AC: 20A

DC: 40A



Warning **Statement 1017—**Restricted Area

This unit is intended for installation in restricted access areas. Only skilled, instructed, or qualified personnel can access a restricted access area.

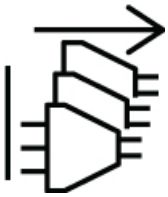


Warning **Statement 1022—**Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



Warning **Statement 1029—**Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, they contain electromagnetic interference (EMI) that might disrupt other equipment, and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Warning **Statement 1046—**Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.



Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.



Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

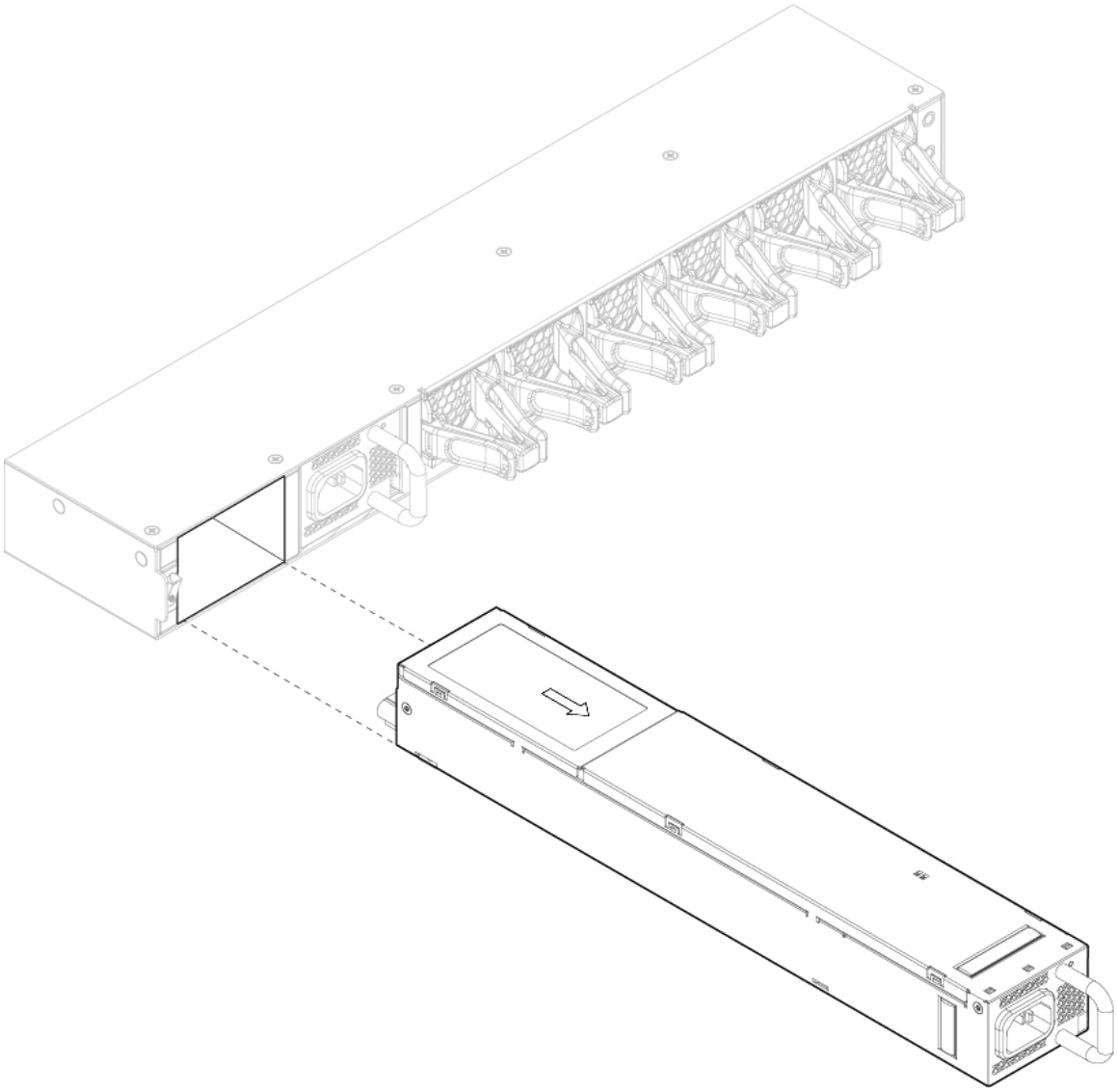
Procedure

Step 1 To remove a power supply module, face the back of the chassis and grasp the handle.

Step 2 Press the latch found on the lower right of the power supply to disengage the power supply.

Step 3 Place your other hand under the power supply module to support it while you slide it out of the chassis.

Figure 45: Remove the power supply module



If the slot is to remain empty, install a blank faceplate to ensure proper airflow and to keep dust out of the chassis; otherwise, install another power supply module.

Step 4 To replace a power supply module, hold the power supply module with both hands and slide it into the power supply module bay.

Step 5 Push in the power supply module gently until you hear the latch engage and it is seated. Verify the power supply module is operating correctly by checking the power supply module LED.

Related Topics

Power supply modules, on page 21

Connect the DC power supply module

This procedure describes how to install the DC power supply input power leads to the Firepower 4100 DC input power supply on the rear PDU of the chassis.

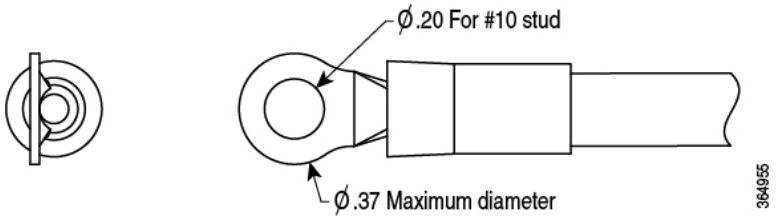
Before you begin

- The color coding of the DC input power supply leads depends on the color coding of the DC power source at your site. Make sure that the lead color coding you choose for the DC input power supply matches the lead color coding used at the DC power source and verify that the power source is connected to the negative (–) terminal and to the positive (+) terminal on the power supply.
- For DC input power cables, the wire gauge is based on the National Electrical Code (NEC) and local codes for 26 amp service at nominal DC input voltage (–40/–72 VDC). One pair of cable leads, source DC (–) and source DC return (+), are required for each power distribution unit (PDU). These cables are available from any commercial cable vendor. All DC input power cables for the chassis should be 10 gauge wire and cable lengths should match within 10 percent of deviation.
- Tools needed:
  - Phillips head screwdriver
  - 10-mm wrench or socket
  - Connectors and wire for the DC circuit or circuits

Each DC input power cable is terminated at the PDU by a cable lug, as shown in the following figure.

Note DC input power cables must be connected to the PDU terminal studs in the proper positive (+) and negative (–) polarity. In some cases, the DC cable leads are labeled, which is a relatively safe indication of the polarity. However, you must verify the polarity by measuring the voltage between the DC cable leads. When making the measurement, the positive (+) lead and the negative (–) lead must always match the (+) and (–) labels on the power distribution unit.

Figure 46: DC input power cable lug



Note To avoid hazardous conditions, all components in the area where DC input power is accessible must be properly insulated. Therefore, before installing the DC cable lugs, be sure to insulate the lugs according to the manufacturer's instructions

Safety warnings

Take note of the following power and component removal safety warnings:

Warning **Statement 1003—**DC Power Disconnection

To reduce risk of electric shock or personal injury, disconnect DC power before removing or replacing components or performing upgrades.

Warning **Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than:

AC: 20A

DC: 40A

Warning **Statement 1017—**Restricted Area

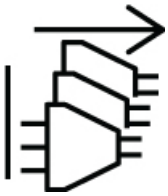
This unit is intended for installation in restricted access areas. Only skilled, instructed, or qualified personnel can access a restricted access area.

Warning **Statement 1022—**Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.

Warning **Statement 1028—**More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.





Warning **Statement 1029—**Blank Faceplates and Cover Panels

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, they contain electromagnetic interference (EMI) that might disrupt other equipment, and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.



Warning **Statement 1073—**No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.



Warning **Statement 1046—**Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.



Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.



Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.



Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

Procedure

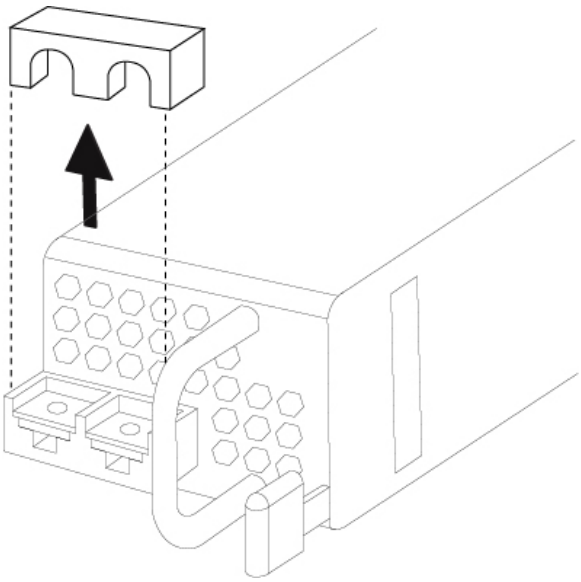
Step 1 Install the DC power supply module in the chassis and make note of the bay number so you can connect the wiring to the correct terminals on the DC power supply module at the rear of the chassis.

Step 2 Verify that the power is off to the DC circuit on the power supply module that you are installing.

Step 3 Make sure that all site power and grounding requirements have been met.

Step 4 To remove the plastic cover from the terminal block, insert a flat screw driver on the side of the plastic cover and pry it off.

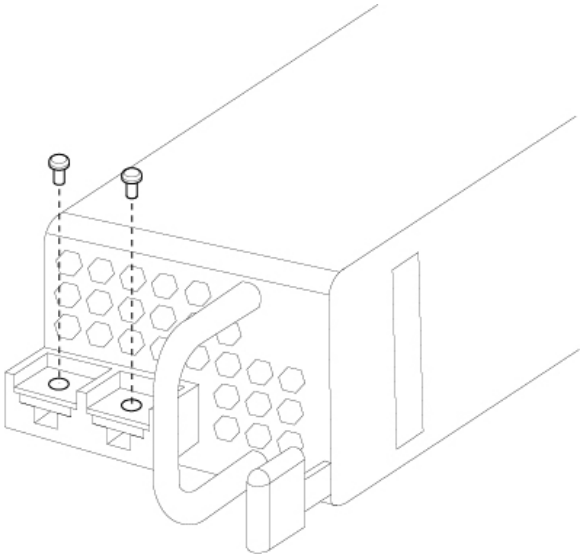
Figure 47: Remove the plastic cover



Step 5 To prevent any contact with metal lead on the ground wire and the plastic cover, you must wrap the positive and negative lead cables with sleeving. Insulate the lug with shrink sleeving for each lead wire if using noninsulated crimp terminals. Sleeving is not required for insulated terminals.

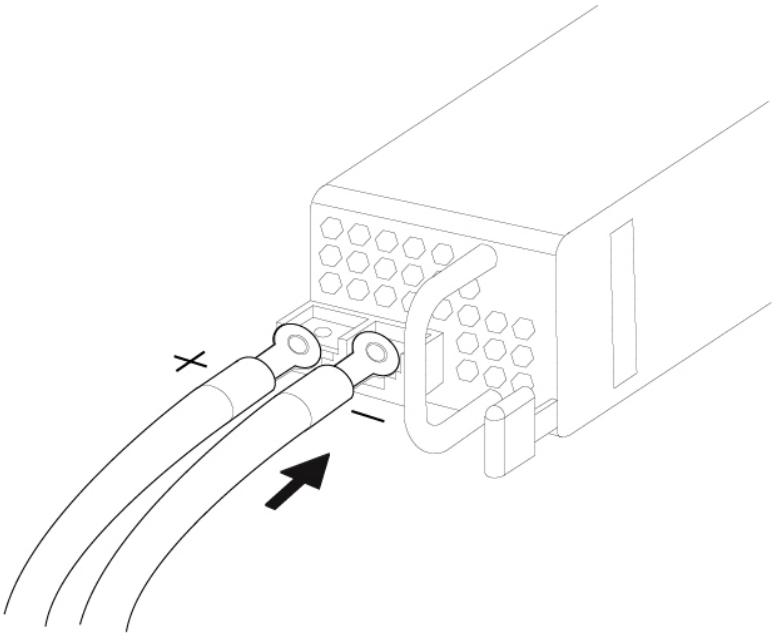
Step 6 Remove the two M5 screws.

Figure 48: Remove the M5 screws



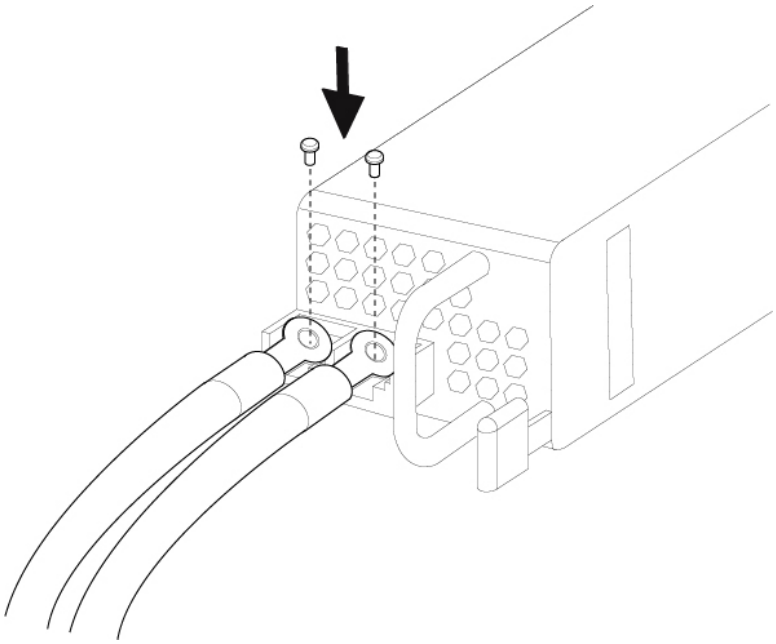
Step 7 For easier cable management, insert the negative lead cable first. Replace the grounding lug with the cable in the following order—wire terminal, then the screw with the captive washer.

Figure 49: Insert the cables



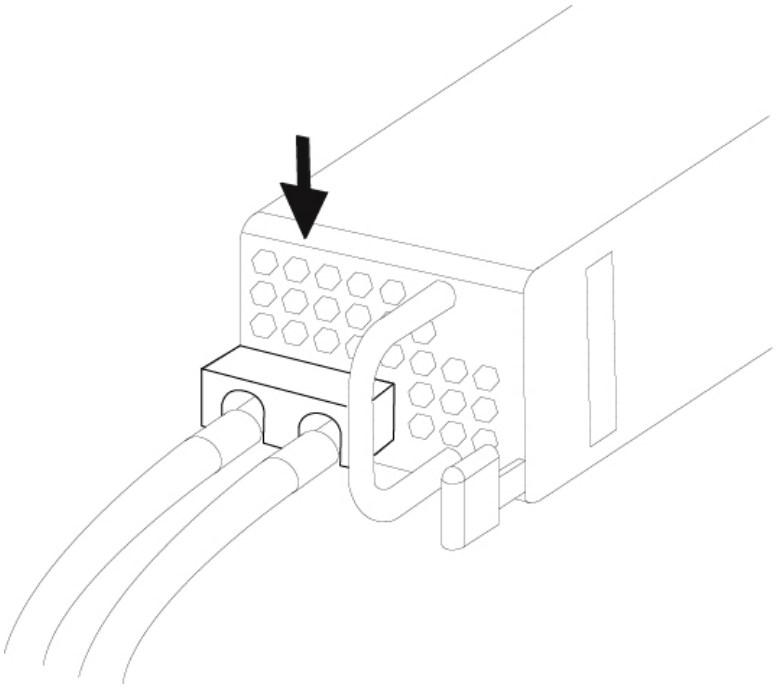
Step 8 Tighten the M5 screw with the captive washer to the recommended torque of 5 in-lbs for the positive stud and wire. Secure the wires coming in from the terminal block so that they cannot be disturbed by casual contact.

Figure 50: Tighten the M5 screws



Step 9 Replace the terminal block plastic cover. The plastic cover is slotted and keyed to fit correctly over the terminal block. This cover should always be in place when power is applied to the terminals.

Figure 51: Replace the plastic cover



Step 10 Set the DC disconnect switch in the circuit to ON. In a system with multiple power supplies, connect each power supply to a separate DC power source. In the event of a power source failure, if the second source is still available, it can maintain system operation.

Step 11 Verify power supply operation by checking the power supply LED on the front of the chassis.

Related Topics

Front panel LEDs, on page 7
Remove and replace the power supply module, on page 65

Secure the power cord on the AC power supply module

Tie wrap and clamp

To secure the power supply module against accidental removal and thus prevent disrupting system performance, use the tie wrap and clamp provided in the accessories kit that ships with your Firepower 4100. There are two different tie wrap and clamp combinations to be used with either the Flextronics or Artesyn power supply module.

To verify which power supply module you have, look at the vendor name on the top of the power supply module. If you cannot remove the power supply module, you can count the number of full hexagonal vent holes on the front of the power supply module in the row directly next to the word 'FAIL.' Flextronics has five holes and Artesyn has four holes.

The black tie wrap is used with the Flextronics power supply module and the off-white tie wrap is used with the Artesyn power supply module. The black clamp works with both. See the figures below.

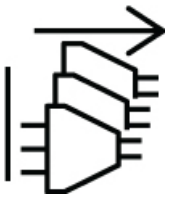
Safety warnings

Take note of the following component replacement safety warnings:



Warning **Statement 1028**—More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.





Warning **Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Note **Statement 1089—**Instructed and Skilled Person Definitions

An instructed person is someone who has been instructed and trained by a skilled person and takes the necessary precautions when working with equipment.

A skilled person or qualified personnel is someone who has training or experience in the equipment technology and understands potential hazards when working with equipment.

Warning **Statement 1090—**Installation by a Skilled Person

Only a skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of a skilled person.

Warning **Statement 1091—**Installation by an Instructed Person or Skilled Person

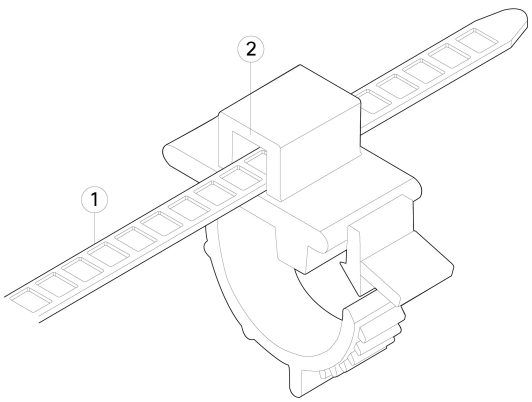
Only an instructed person or skilled person should be allowed to install, replace, or service this equipment. See statement 1089 for the definition of an instructed person or skilled person.

Procedure

Step 1 Attach the clamp to the tie wrap by holding the clamp with the loop side on the bottom and sliding the tie wrap through the box-shaped channel above the clamp (see the following figure).

One side of the tie wrap has evenly spaced ridges and the other is smooth. Be sure the ridged side is face up and that you slide it through the open side of the channel. You will hear a click as the tie slides through—it moves in one direction only. To remove the tie wrap from the clamp, push the lever on the closed side of the box-shaped channel and slide out the tie wrap.

Figure 52: Tie wrap through the box channel of the clamp



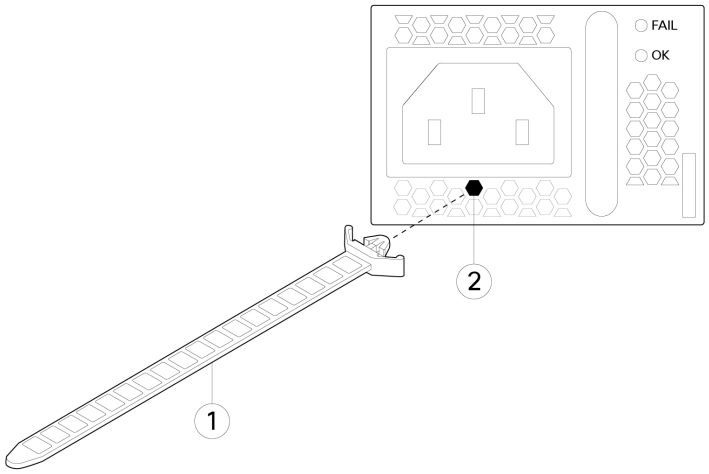
1	Tie wrap	**2**	Box channel

Step 2 Attach the clamp to the power supply module:

a) Locate the hexagonal ventilation hole on the power supply module at the center of the plug just below the power connector body (see the following figures).
b) Plug the snapping portion of the tie wrap into the hexagonal hole.
c) With the clamp side facing up, push the tie wrap in until it is fully engaged.

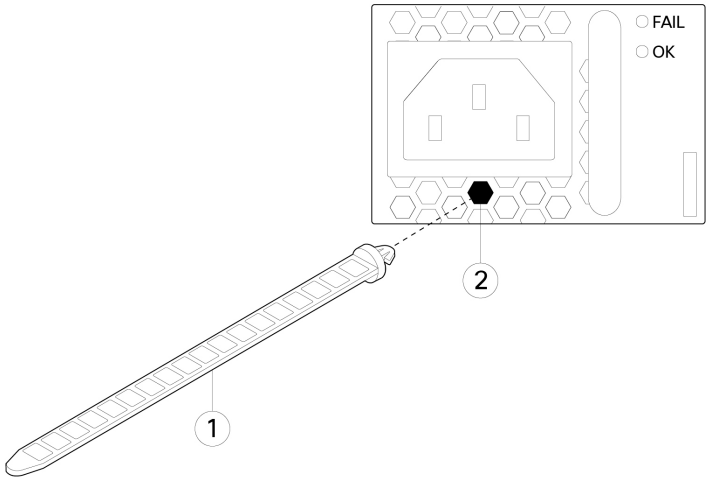
Caution
Make sure you have the correct location because you cannot remove the tie wrap from the power supply module once you have installed it without damaging the tie wrap.

Figure 53: Flextronics power supply module



1	Flextronics tie wrap	**2**	Hexagonal hole

Figure 54: Artesyn power supply module

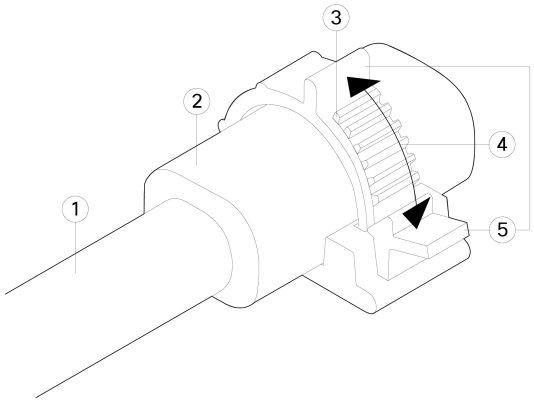


1	Artesyn tie wrap	**2**	Hexagonal hole

Step 3 Secure the clamp:

a) Plug in the power supply power cord and wrap the clamp around the over mold portion of the power cord.
b) Squeeze the clamp ends together to the power supply so that the annular teeth engage with the mate on the clamp.
c) Make sure the clamp fits snugly into the over mold.
d) Adjust the clamp position on the tie wrap so that the clamp is tight against the front of the over mold and the power cord cannot be removed by lightly pulling on it.

Figure 55: Clamp on over mold of power cord



1	Power cord	**2**	Power cord over mold
3	Tie clamp annular teeth	**4**	Direction to squeeze the clamp tabs

5	Clamp release tabs		—

Step 4 If you need to remove the power cord, push the release tab on the clamp to force the annular clamp teeth to disengage and the clamp opens up. You can then remove the clamp from the power cord.

Install the FIPS opacity shield

Caution This procedure should be performed only by the Crypto Officer.

Note Because the FIPS opacity shield covers the serial number on the chassis, you need to copy the serial number on a label and attach it to the chassis where it can be retrieved or viewed easily before you install the FIPS opacity shield. You need the serial number when you call Cisco TAC.

Before you begin

You need the following to install the FIPS opacity shield:

- #1 Phillips screwdriver
- The following items from the FIPS kit:
  - One FIPS opacity shield
  - Four 8-32 x 0.375-inch screws used to attach the FIPS opacity shield to the cable management brackets
  - 15 tamper-evident labels (TELs)
- The following items from the Firepower 4100 accessory kit:
  - Two cable management brackets
  - Four 8-32 x 0.375-inch screws used to attach the cable management brackets to the slide rail locking brackets

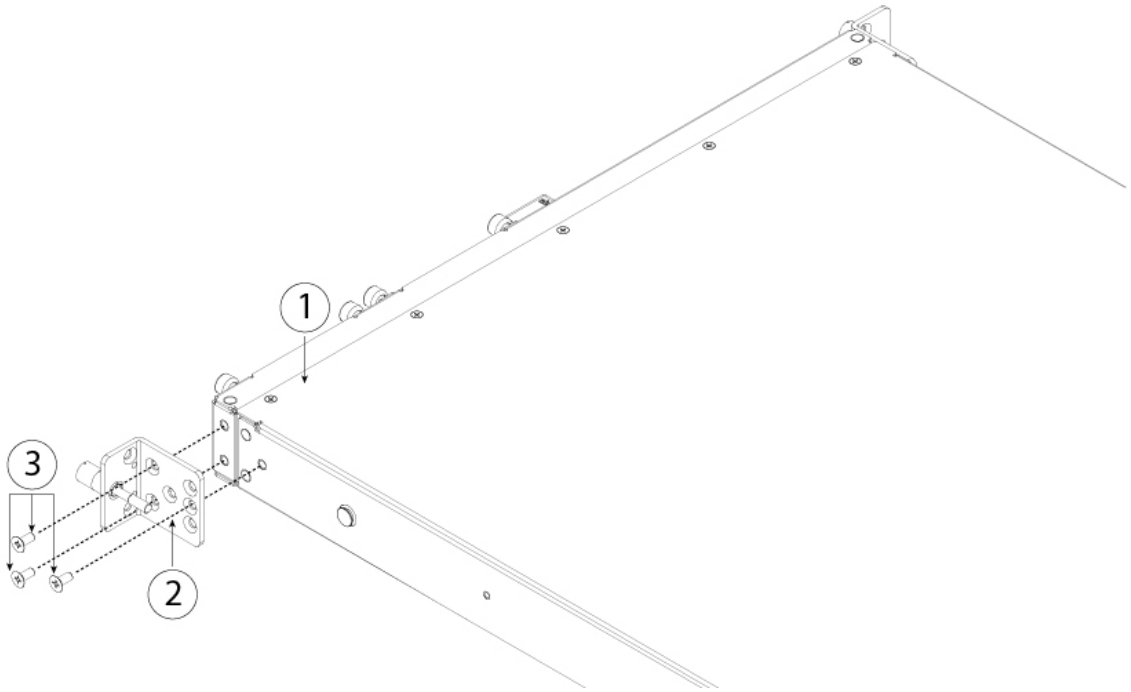
Procedure

Step 1 Copy the serial number on a label and attach it to the chassis where it can be retrieved easily for future use if needed. To find the serial number, see .

Step 2 Pull the chassis out of the rack until the release latches catch.

Step 3 If you have not already done so, attach a slide rail locking bracket to each side of the chassis using the six 8-32 x 0.375-inch Phillips screws provided in the accessory kit.

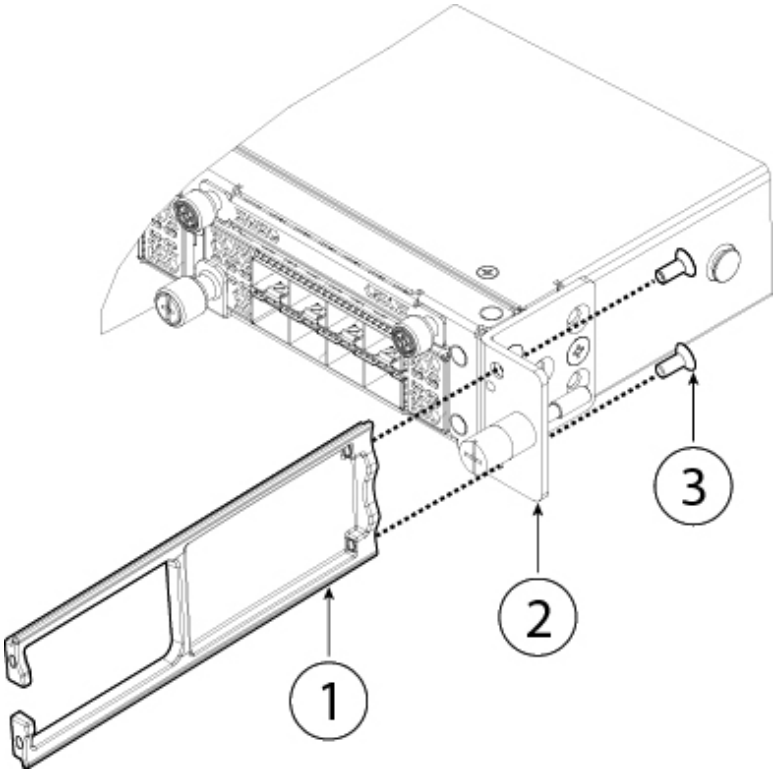
Figure 56: Attach the slide rail locking bracket to the side of the chassis



1	Chassis	**2**	Slide rail locking bracket
3	8-32 x 0.375-inch Phillips screws (three per side)		

Step 4 Attach a cable management bracket to each slide rail locking bracket using the four 8-32 x 0.375-inch Phillips screws provided in the accessory kit.

Figure 57: Attach the cable management bracket to the slide rail locking bracket



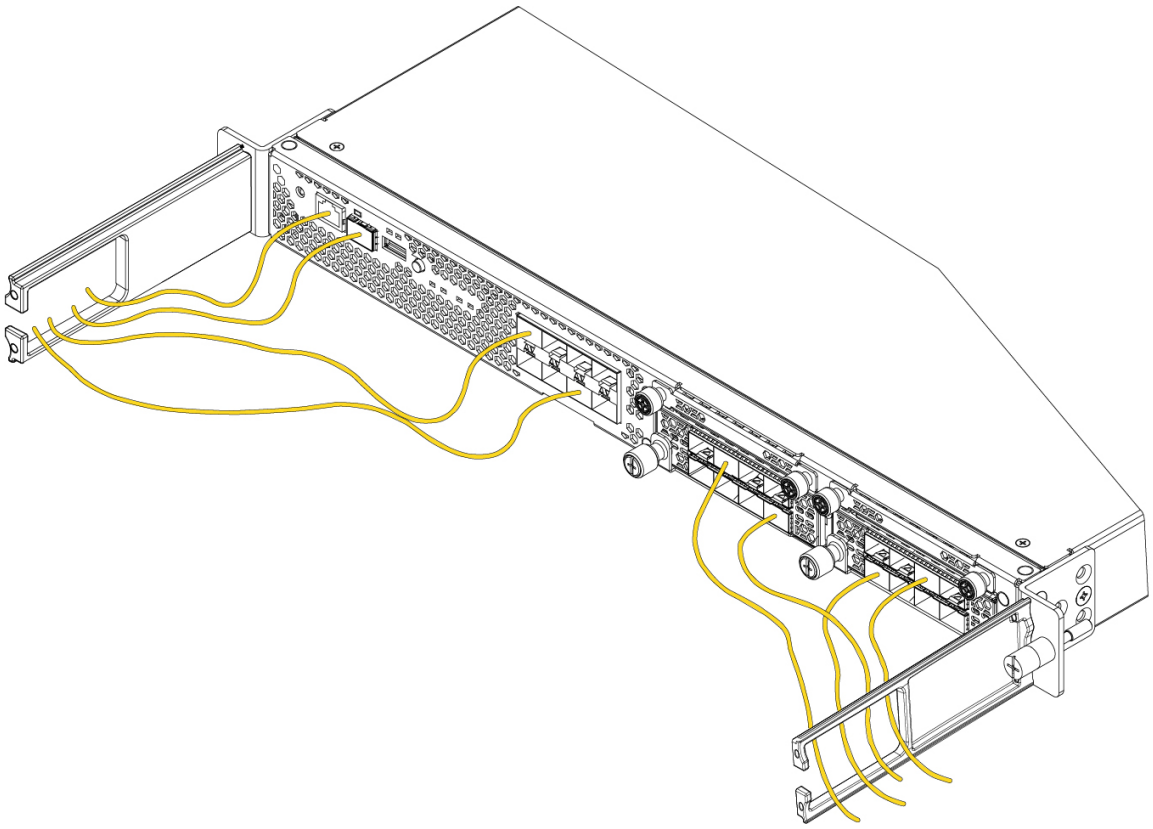
1	Cable management bracket	**2**	Slide rail locking bracket
3	8-32 x 0.375 inch Phillips screws (two per side)		

Step 5 Connect the cables to the ports. Install the cables according to your default software configuration. Make sure that the cables have enough slack to route them through the cable mounting brackets (as shown in Step 6 below).

Note
If you are installing the FIPS opacity shield after the initial product installation, the cables are connected. If the attached cables do not have enough slack to route them through the cable mounting brackets (as shown below), you will have to turn the power off on the appliance, remove the cables, route the cables through the cable mounting brackets, reattach the cables, and continue with Step 7 below.

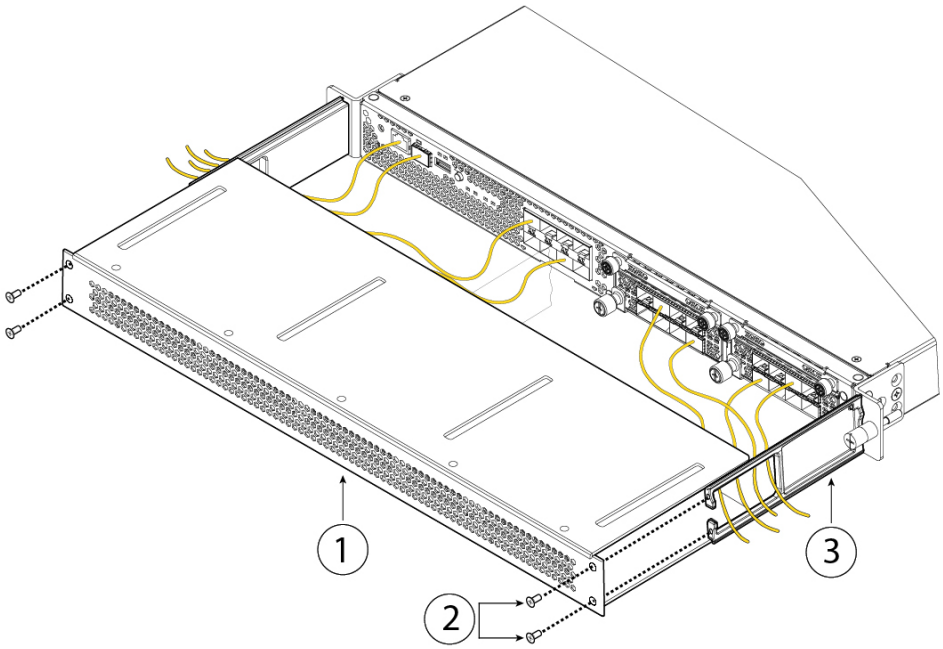
Step 6 Route the cables through the openings in the cable management brackets.

Figure 58: Route the cables through the cable management brackets



Step 7 Attach the FIPS opacity shield to the cable management brackets using the four 8-32 x 0.375-inch Phillips screws provided in the FIPS kit.

Figure 59: Attach the FIPS opacity shield to the cable management brackets



1	FIPS opacity shield	**2**	8-32 x 0.375-inch Phillips screws (two per side)
3	Cable management bracket		

Step 8 Attach the 15 TELs. For information on the procedure and correct placement of the TELs, see the Tamper Evidence Label (TEL) Placement section (section 2.13).

Step 9 Attach the power cable to the chassis and connect it to an electrical outlet.

Step 10 Press the power switch on the rear panel.

Step 11 Check the power LED on the front panel. Solid green indicates that the chassis is powered on.

Note
When you toggle the power switch from ON to OFF, it takes several seconds for the system to power down. Do not remove the power cable until the power LED is off. After removing power from the chassis either by moving the power switch to OFF or unplugging the power cord, wait at least 10 seconds before turning power back ON.

What to do next

See the Cisco Firepower 4100 Getting Started Guide for further configuration information.

Related Topics

Serial number location, on page 5
Front panel LEDs, on page 7
FIPS 140-2 Non Proprietary Security Policy Level 2 Validation
Rack-mount the chassis, on page 50