



## **Cisco Firepower 4110, 4120, 4140, and 4150 Hardware Installation Guide**

**First Published:** 2016-03-31

**Last Modified:** 2018-11-16

### **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 NON-INFRINGEMENT 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](http://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: [www.cisco.com go trademarks](http://www.cisco.com/go/trademarks). 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)

© 2016-2018 Cisco Systems, Inc. All rights reserved.



## CONTENTS

---

### CHAPTER 1

#### Overview 1

Features	1
Deployment Options	4
Package Contents	4
Serial Number Location	5
Front Panel	6
Front Panel LEDs	7
Rear Panel	8
Network Modules	10
10-G Network Module	10
40-G Network Module	11
Hardware Bypass Network Modules	12
1-G Network Module with Hardware Bypass	13
40-G Network Module with Hardware Bypass	14
1-G SX/10-G SR/10-G LR Network Module with Hardware Bypass	16
Power Supply Modules	18
Fan Modules	20
Supported SFP/SFP+ and QSFP Transceivers	21
Hardware Specifications	23
Product ID Numbers	25
Power Cord Specifications	28

---

### CHAPTER 2

#### Installation Preparation 35

Installation Warnings	35
Safety Recommendations	37
Maintain Safety with Electricity	38

Prevent ESD Damage 38  
 Site Environment 39  
 Power Supply Considerations 39  
 Rack Configuration Considerations 39

---

**CHAPTER 3**

**Mount and Connect 41**

Unpack and Inspect the Chassis 41  
 Rack-Mount the Chassis 42  
 Ground the Chassis 46  
 Install the FIPS Opacity Shield 48  
 Connect Cables, Turn on Power, and Verify Connectivity 53

---

**CHAPTER 4**

**Maintenance and Upgrade 55**

Remove and Replace the Network Module 55  
 Remove and Replace the Fan Module 58  
 Remove and Replace the SSD 59  
 Remove and Replace the Power Supply Module 61  
 Connect the DC Power Supply Module 64  
 Secure the Power Cord on the AC Power Supply Module 70



## CHAPTER 1

# Overview

---

- [Features, on page 1](#)
- [Deployment Options, on page 4](#)
- [Package Contents, on page 4](#)
- [Serial Number Location, on page 5](#)
- [Front Panel, on page 6](#)
- [Front Panel LEDs, on page 7](#)
- [Rear Panel, on page 8](#)
- [Network Modules, on page 10](#)
- [Hardware Bypass Network Modules, on page 12](#)
- [Power Supply Modules, on page 18](#)
- [Fan Modules, on page 20](#)
- [Supported SFP/SFP+ and QSFP Transceivers, on page 21](#)
- [Hardware Specifications, on page 23](#)
- [Product ID Numbers, on page 25](#)
- [Power Cord Specifications, on page 28](#)

## Features

The Cisco Firepower 4100 series security appliance 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 4110, 4120, 4140, and 4150. See [Product ID Numbers, on page 25](#) for a list of the product IDs (PIDs) associated with the 4100 series.

The Firepower 4100 supports the following software:

- Cisco Firepower Threat Defense



---

**Note** We recommend that you upgrade to the latest version (at least to Version 6.1.0) to take advantage of software updates that enhance SSD management performance and longevity.

---

- Cisco Firepower eXtensible Operating System (FXOS)
- Cisco ASA



**Note** The Firepower 4100 is certified for Common Criteria (CC) and Federal Information Processing Standards (FIPS). See "[Security Certifications Compliance](#)" in the [Cisco FXOS CLI Configuration Guide](#) for the procedure for enabling these modes using the CLI. See "[Security Certifications Compliance](#)" in the [Cisco FXOS Firepower Chassis Manager Configuration Guide](#) for information for enabling these modes using the Firepower Chassis Manager.

The following figure shows the Firepower 4100 series security appliance.

**Figure 1: Firepower 4100 Series**



See the [Cisco Interactive Library](#) for a video that displays the features and components of the Firepower 4100.

The following table lists the features for the Firepower 4100 series.

**Table 1: Firepower 4100 Series Features**

Feature	4110	4120	4140	4150
Form factor	1 RU Fits a standard 19-in. (48.3cm) square-hole rack			
Rack mount	Yes Slide rails, mount ears, and screws included (4-post EIA-310-D rack)			
Airflow	Front to rear Cold aisle to hot aisle			
Processor	Single 12-core		Single 18-core	Single 22-core
Memory	64-GB DDR4 DRAM	128-GB DDR4 DRAM	256-GB DDR4 DRAM	256-GB DDR4 DRAM
Maximum number of interfaces	24 With two 8-port network modules installed			
Management port	One Gigabit Ethernet Supports 1-G fiber or copper SFPs			

Feature	4110	4120	4140	4150
Serial port	One RJ-45 console			
USB port	One USB 2.0 Type A			
Network ports	Eight fixed 1-G and 10-G SFP ports (named Ethernet 1/1 through 1/8)			
SFP ports	Yes Eight fixed 1-G and 10-G SFP ports See <a href="#">Network Modules, on page 10</a> for the number of SFP/SFP+ ports for each network module.			
Pullout asset card	Yes Displays the serial number; on the front panel			
Grounding lug	Yes On rear panel			
Locator beacon	Yes On front panel			
Power switch	Yes On rear panel			
Network modules	Yes Two network module slots ( named network module 2 and network module 3)			
Supported network modules	8-port 10-Gigabit Ethernet SFP+ 4-port 40-Gigabit Ethernet QSFP+ 8-port 1-Gigabit Ethernet SFP+ fail-to-wire 2-port 40-Gigabit Ethernet SFP+ fail-to-wire 6-port 1-Gigabit Ethernet SX fiber fail-to-wire 6-port 10-Gigabit Ethernet SR fiber fail-to-wire 6-port 10-Gigabit Ethernet LR fiber fail-to-wire			
AC power supply	Two (1+1) power supply module slots Ships with one 400-W AC power supply modules Hot-swappable		Two (1+1) power supply module slots Ships with two 400-W AC power supply modules Hot-swappable	
DC power supply	No		Yes (optional)	
Redundant power	Yes 1+1			

Feature	4110	4120	4140	4150
Fan	Six fan module slots 3+1 redundancy Hot-swappable			
Storage	Two SSD slots (200 GB) Ships with one SSD installed in slot 1. <b>Note</b> RAID is not supported. Slot 2 is reserved for the Malware Storage Pack (MSP).		Two SSD slots (400 GB) Ships with one SSD installed in slot 1. <b>Note</b> RAID is not supported. Slot 2 is reserved for the MSP.	
MSP	Yes Installed in the second SSD slot only			

## Deployment Options

Here are some examples of how you can deploy the Firepower 4100:

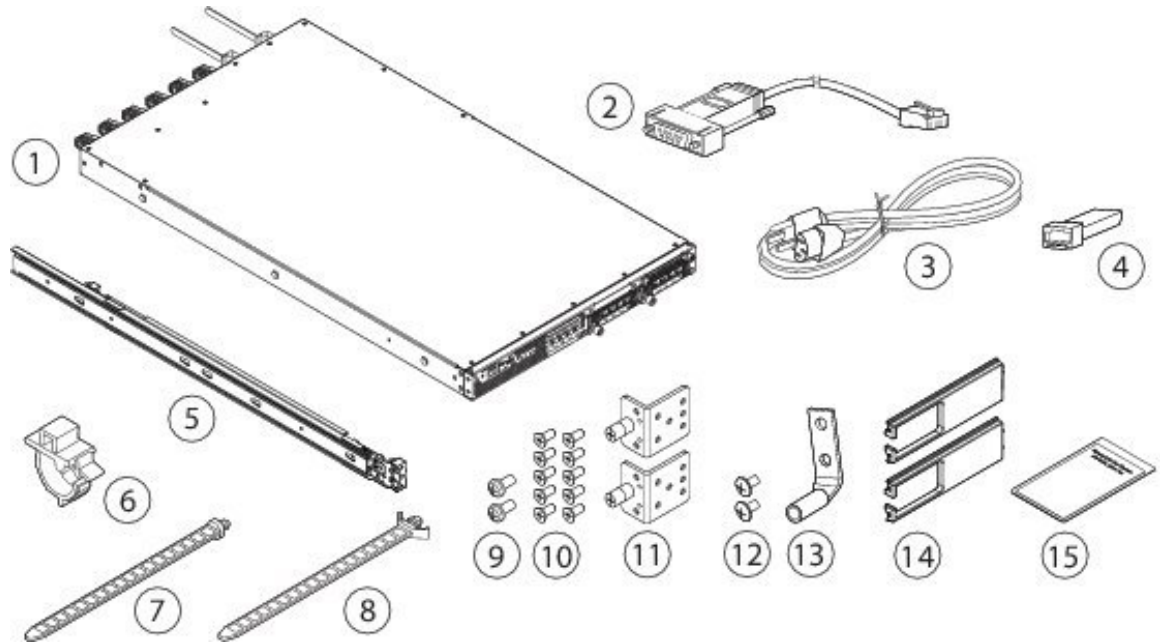
- In a data center using NGFW and ASA
- At the core/aggregation layer of a 3-tier data center in a high availability configuration
- As a dedicated multifunctional security service within converged infrastructure stacks, for example, vBlock, FlexPod, and so forth, at the access layer
- As a high-performance data center security appliance between the WAN edge and the data center core in a high availability configuration
- Inter-DC clustering deployments
- In newer spine/leaf data center designs, deployment as a leaf that exclusively offers security functions

## 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

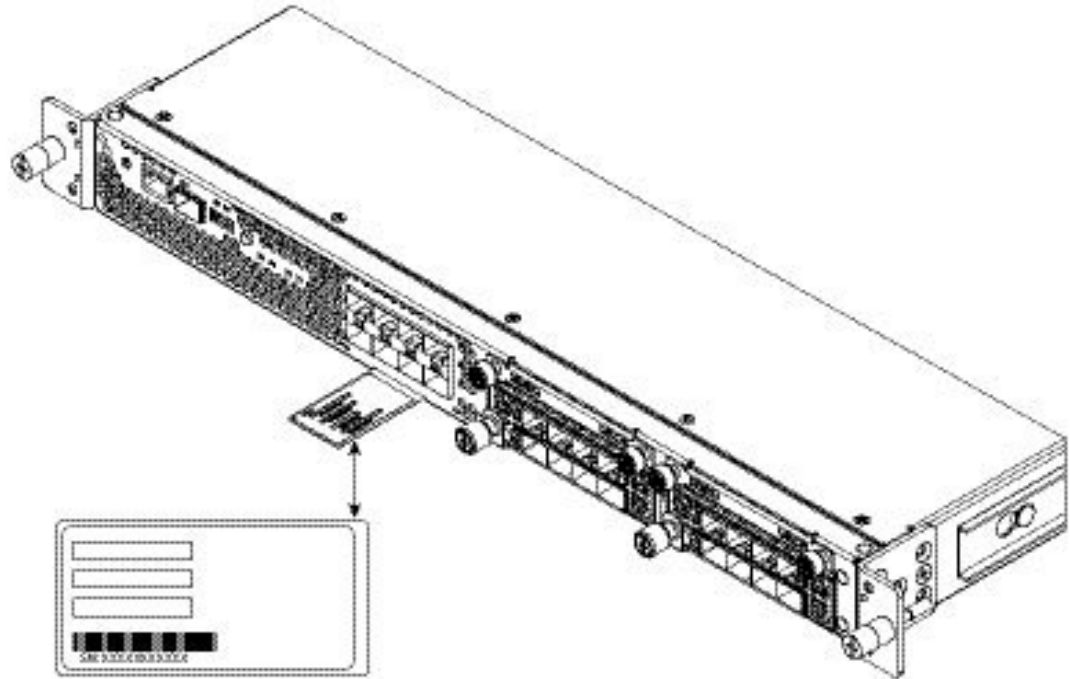


1	Firepower 4100 chassis	2	Blue console cable PC terminal adapter
3	2 power cords (country-specific)	4	10/100/1000BASE-T SFP transceiver
5	2 slide rails	6	Tie wrap clamp
7	Artesyn tie wrap	8	Flextronics tie wrap
9	2 M3X6 mm screws used to secure the inner slide rail to the chassis	10	Ten 8-32 x .375-in. countersink screws used to secure the mounting bracket to chassis (6 screws), and the cable management brackets to the mounting brackets (4 screws)
11	2 slide rail locking brackets	12	Two 10-32 x .375-in. screws used to secure the ground lug
13	1 ground lug #6 AWG, 90 degree, #10 post	14	2 cable management brackets
15	Welcome to the Cisco Firepower 4100		

## 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.

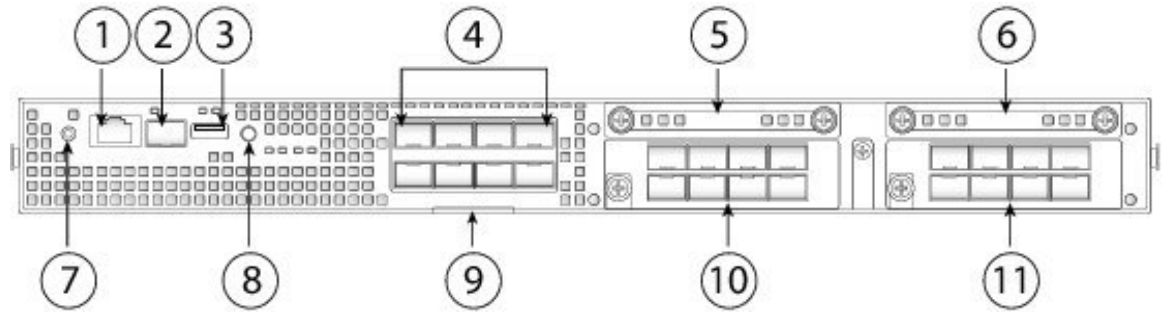
Figure 4: Compliance Label on the 4100 Chassis

	<b>Model / Modèle / 型号 / 型號 : FPR-4110</b> This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation.
	Desenvolvido por: Cisco Systems, Inc./ou suas afiliadas 170 West Tasman Drive San Jose, CA 95134, USA
<b>L160448003</b> 本标签只适用于中国大陆地区 仅适用于在海拔两千米及以下地区安全使用	
 <a href="http://cisco-returns.com">http://cisco-returns.com</a> <b>CAN ICES-3 (A)/NMB-3(A)</b>	<b>Fabricado por:</b> Flextronics International Tecnologia Ltda Av Liberdade, 6315- Predios 09,10,11 e 12 Bloco1 CEP 18.087-170- Iporanga- Sorocaba - SP CNPJ 74.404.229/0005-51 Indústria Brasileira
PID VID  FPR-2110 VXX	 68-5744-XX XX
 SN: JMXXXXXXX	Date Code 06/03/2015 墨西哥制造 <b>MADE IN MEXICO</b> 

## Front Panel

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

Figure 5: Firepower 4100 Front Panel

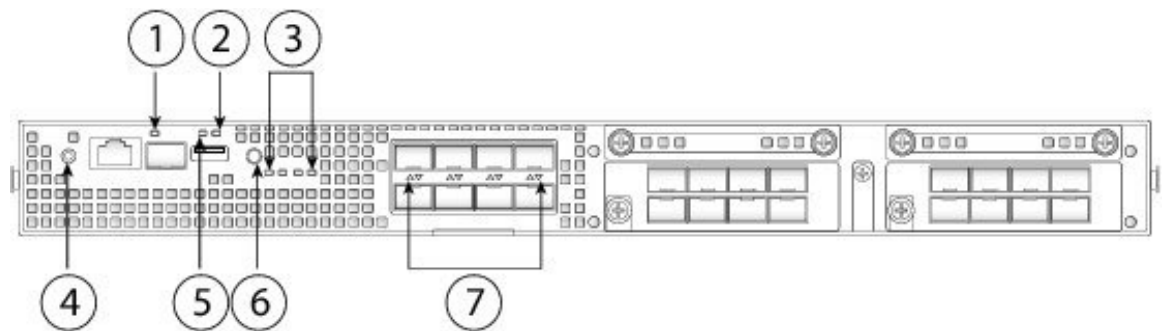


1	RJ-45 console port	2	Gigabit Ethernet management port
3	USB Type A port	4	Eight fixed SFP+ (1-G/10-G) ports (in network module slot 1) Gigabit Ethernet 1/1 through 1/8 labeled top to bottom, left to right
5	SSD 1	6	SSD 2
7	Power LED	8	Locator LED
9	Pullout asset card	10	Network module 2 <b>Note</b> The 10-G network module is shown.
11	Network module 3 <b>Note</b> The 10-G network module is shown.		

## Front Panel LEDs

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

Figure 6: Front Panel LEDs

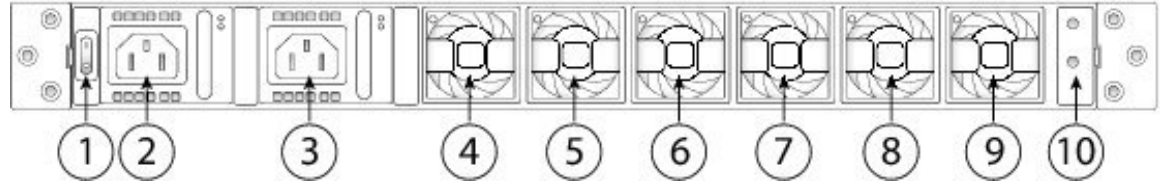


1	<b>Management</b> <ul style="list-style-type: none"> <li>• Off—No connection or port is not in use.</li> <li>• Amber—No link or network failure.</li> <li>• Green—Link up.</li> <li>• Green, flashing—Network activity.</li> </ul>	2	<b>Health (SYS)</b> <ul style="list-style-type: none"> <li>• Off—System is not booting yet.</li> <li>• Green, flashing—Power-up diagnostics are complete and system is booting up.</li> <li>• Green—The system has passed power-up diagnostics.</li> <li>• Amber—Power-up diagnostics has failed.</li> <li>• Amber, flashing—Alarm; power-up diagnostics are running.</li> </ul>
3	<b>SSD</b> <ul style="list-style-type: none"> <li>• Off— SSD not present.</li> <li>• Green—SSD is present; no activity.</li> <li>• Green, flashing—SSD is active.</li> <li>• Amber—SSD failure.</li> <li>• Amber, flashing—Rebuilding, flashes at 1 Hz.</li> <li>• Amber, flashing—Predictive failure analysis (PFA) and hot spare; two fast flashes at 4 Hz, pause for 0.5 seconds.</li> </ul>	4	<b>Power</b> <ul style="list-style-type: none"> <li>• Off—Input power not detected.</li> <li>• 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.</li> <li>• Amber—System is powering up.</li> <li>• Green—System fully powered up.</li> <li>• Amber, flashing—Reserved.</li> </ul>
5	<b>Active (ACT)</b> This LED is not supported; reserved for future use.	6	<b>Locator LED</b> <ul style="list-style-type: none"> <li>• Off—Locate is off.</li> <li>• Blue—Locate is on.</li> </ul>
7	<b>Network activity</b> <ul style="list-style-type: none"> <li>• Off—No connection or port is not in use.</li> <li>• Amber—No link or network failure.</li> <li>• Green—Link up.</li> <li>• Green, flashing—Network activity.</li> </ul>		

## 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 <b>Note</b> The two-post grounding lug is included in the accessory kit.

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.



**Note** The **shutdown** commands are first available in FXOS version 2.0.1. See the [FXOS Configuration Guide](#) for more information on using these commands.



**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.

# 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 G). The Firepower network modules plug into the chassis on the front panel.

## For More Information

- See [10-G Network Module](#), on page 10 for a description of the 10-G network module.
- See [40-G Network Module](#), on page 11 for a description of the 40-G network module.
- See [Hardware Bypass Network Modules](#), on page 12 for the location and description of the LEDs, and the port configurations for the hardware bypass network modules.
- See [Remove and Replace the Network Module](#), on page 55 for the procedure for removing and replacing network modules.

## 10-G Network Module

The following figure shows the front panel of the 10-G network module (FPR4K-NM-8X10G). The FPR4K-NM-8X10G is a single-wide module that supports hot swapping. The eight ports are numbered from top to bottom, left to right.

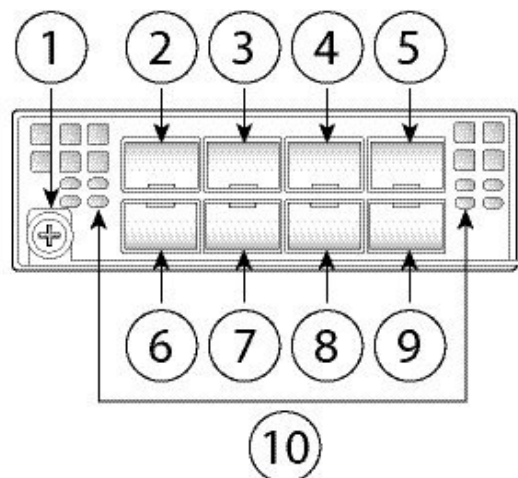


**Note** The FPR4K-NM-8X10G is NEBS-compliant.



**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 <ul style="list-style-type: none"> <li>• Off—No connection or port is not in use.</li> <li>• Amber—No link or network failure.</li> <li>• Green—Link up.</li> <li>• Green, flashing—Network activity.</li> </ul>

#### For More Information

- For a list of copper SFPs, see [Supported SFP/SFP+ and QSFP Transceivers, on page 21](#).

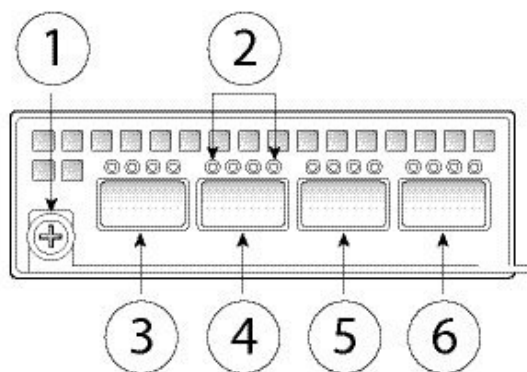
## 40-G Network Module

The following figure shows the front panel of the 40-G 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.



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

*Figure 9: FPR4K-NM-4X40G*



1	Captive screw/handle	2	Network activity LEDs <ul style="list-style-type: none"> <li>• Off—No connection or port is not in use.</li> <li>• Amber—No link or network failure.</li> <li>• Green—Link up.</li> <li>• Green, flashing—Network activity.</li> </ul>
3	Ethernet X/1	4	Ethernet X/2
5	Ethernet X/3	6	Ethernet X/4

## Hardware Bypass Network Modules

Fail-to-wire (also known as hardware bypass) 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. Fail-to-wire 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 fail-to-wire 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** Hardware bypass is only supported in inline mode. Also, hardware bypass support depends on your software application.



**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 non-fail-to-wire network modules operate.

- Inline interfaces—Connection to any two like ports (10 G to 10 G 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 fail-to-wire interfaces—Connection of a fail-to-wire 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-G network module, you connect the two ports to form a paired set. For the 1/10-G network modules, you connect the top port to the bottom port to form a fail-to-wire 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 fail-to-wire and non-fail-to-wire 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 fail-to-wire pairs.

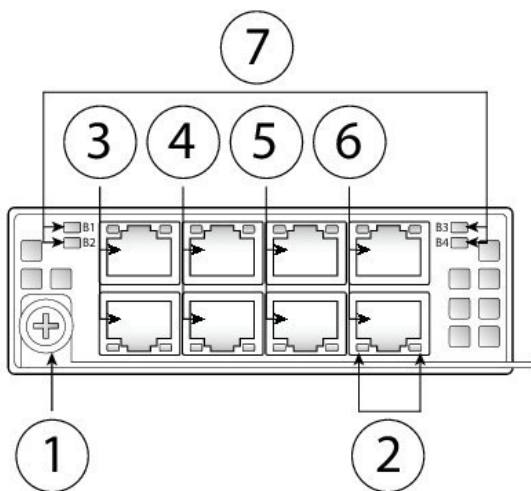
#### For More Information

- See [1-G Network Module with Hardware Bypass, on page 13](#) for a description of the 1-G network module.
- See [40-G Network Module with Hardware Bypass, on page 14](#) for a description of the 40-G network module.
- See [1-G SX/10-G SR/10-G LR Network Module with Hardware Bypass, on page 16](#) for a description of the 1-G SX, 10-G SR, and LR network modules.
- See [Remove and Replace the Network Module, on page 55](#) for the procedure for removing and replacing single-wide network modules.

## 1-G Network Module with Hardware Bypass

The following figure shows the front panel view of the 1-G fail-to-wire network module (FPR4K-NM-8X1G-F). Pair ports 1 and 2, 3 and 4, 5 and 6, and 7 and 8 to form hardware bypass paired sets.

*Figure 10: FPR-NM-8X1G-F*

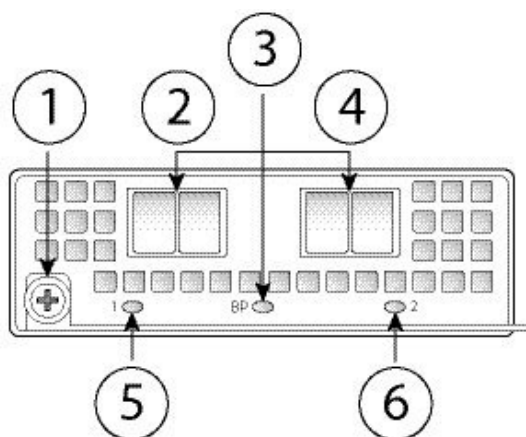


1	Captive screw/handle	2	8 network activity LEDs <ul style="list-style-type: none"> <li>• Left LED—Green indicates network activity when a 10M/100M/1G connection is made.</li> <li>• Right LED—Not in use at this time.</li> </ul>
3	Ethernet X/1 Ports 1 and 2 are paired together to form a hardware bypass 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.
	Bypass LEDs B1 through B4 <ul style="list-style-type: none"> <li>• Green—In standby mode.</li> <li>• Amber, flashing—Port is in hardware bypass mode, failure event.</li> <li>• Amber—Port is in hardware bypass mode, forced.</li> </ul>		

## 40-G Network Module with Hardware Bypass

The following figure shows the front panel of the 40-G fail-to-wire 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.

**Figure 11: FPR4K-NM-2X40G-F**



1	Captive screw/handle	2	Ethernet X/1 Ports 1 and 2 are paired together to form a hardware bypass pair.
3	Bypass LED BP: <ul style="list-style-type: none"> <li>• Green—In standby mode.</li> <li>• Amber, flashing—Port is in hardware bypass mode, failure event.</li> <li>• Amber—Port is in hardware bypass mode, forced.</li> </ul>	4	Ethernet X/2 Ports 1 and 2 are paired together to form a hardware bypass pair.
5	Network activity LEDs: <ul style="list-style-type: none"> <li>• Amber—No connection, or port is not in use, or no link or network failure.</li> <li>• Green—Link up, no network activity.</li> <li>• Green, flashing—Network activity.</li> </ul>		

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

**Table 2: 40-G 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



**Note** See the [Cisco 40GBASE QSFP Modules Data Sheet](#) for specifications of the QSFP for the 40-G BASE-SR-4.

We recommend the following Cisco OM3 MTP/MPO cables.

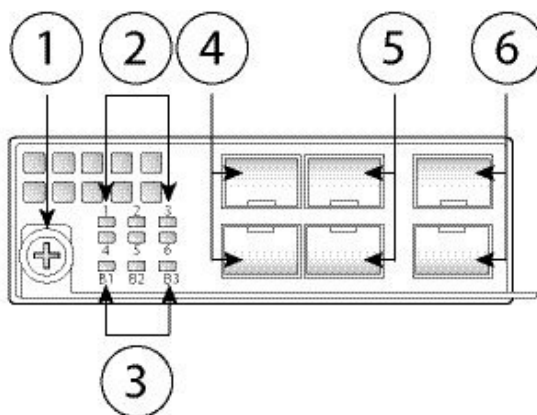
**Table 3: Cisco Cables**

Cisco Part Number	Cable Length
CAB-ETH-40G-5M	5 m
CAB-ETH-40G-10M	10 m
CAB-ETH-40G-20M	20 m

## 1-G SX/10-G SR/10-G LR Network Module with Hardware Bypass

The following figure shows the front panel of the 1-G SX, 10-G SR and 10-G LR fail-to-wire network modules (FPRK4-NM-6X1SX-F, FPRK4-NM-6X10SR-F, FPR4K-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.

**Figure 12: FPR4K-NM-6X1SX-F, FPR4K-NM-6X10SR-F, FPR4K-NM-6X10LR-F**



<b>1</b>	Captive screw/handle	<b>2</b>	6 network activity LEDs <ul style="list-style-type: none"> <li>• Amber—No connection, or port is not in use, or no link or network failure.</li> <li>• Green—Link up, no network activity.</li> <li>• Green, flashing—Network activity.</li> </ul>
<b>3</b>	Bypass LEDs B1 through B3: <ul style="list-style-type: none"> <li>• Green—In standby mode.</li> <li>• Amber, flashing—Port is in hardware bypass mode, failure event.</li> <li>• Amber—Port is in hardware bypass mode, forced.</li> </ul>	<b>4</b>	Ethernet X/1 (top port) Ethernet X/2 (bottom port) Ports 1 and 2 are paired together to form a hardware bypass pair.
<b>5</b>	Ethernet X/3 (top port) Ethernet X/4 (bottom port) Ports 3 and 4 are paired together to form a hardware bypass pair.	<b>6</b>	Ethernet X/5 (top port) Ethernet X/6 (bottom port) Ports 5 and 6 are paired together to form a hardware bypass pair.

The 1-G SX /10-G SR/10-G 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: 1-G SX Network Module (FPR4K-NM-6X1SX-F)**

	Operating Mode	Typical	Maximum

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

Table 5: 10-G SR Network Module (FPR4K-NM-6X10SR-F)

	Operating Mode	Typical	Maximum
Insertion loss	Normal	0.9 dB	1.4 dB
	Hardware bypass	1.2 dB	1.7 dB
	Core diameter (microns)	Modal bandwidth (MHz/km)	Cable distance <b>Note</b> Half the distance specified by the IEEE standard.
Cable and operating distance	62.5	160 (FDDI)	13 m
	62.5	200 (OM1)	16.5 m
	50	400	33 m
	50	500 (OM2)	41 m
	50	2000 (OM3)	150 m
	50	4700 (OM4)	200 m

Table 6: 10-G LR Network Module (FPR4K-NM-6X10LR-F)

	Operating Mode	Typical	Maximum
Insertion loss	Normal	1.2 dB	1.6 dB
	Hardware bypass	1.5 dB	1.9 dB

	Core diameter (microns)	Modal bandwidth (MHz/km)	Cable distance <b>Note</b> Half the distance specified by the IEEE standard.
Cable and operating distance	G.652	Single mode	5 km

## 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** Do not mix AC and DC power supply modules in one chassis.



**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.

See [Remove and Replace the Power Supply Module, on page 61](#) for the procedure for removing and replacing the power supply module.

### 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.

**Table 7: AC Power Supply Module Hardware Specifications**

Input voltage	100 to 240 V AC
Maximum current	13 A (at 100 V AC) <b>Note</b> The system power requirements are lower than the power supply module capabilities. See <a href="#">Hardware Specifications, on page 23</a> for the system power requirements.
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.

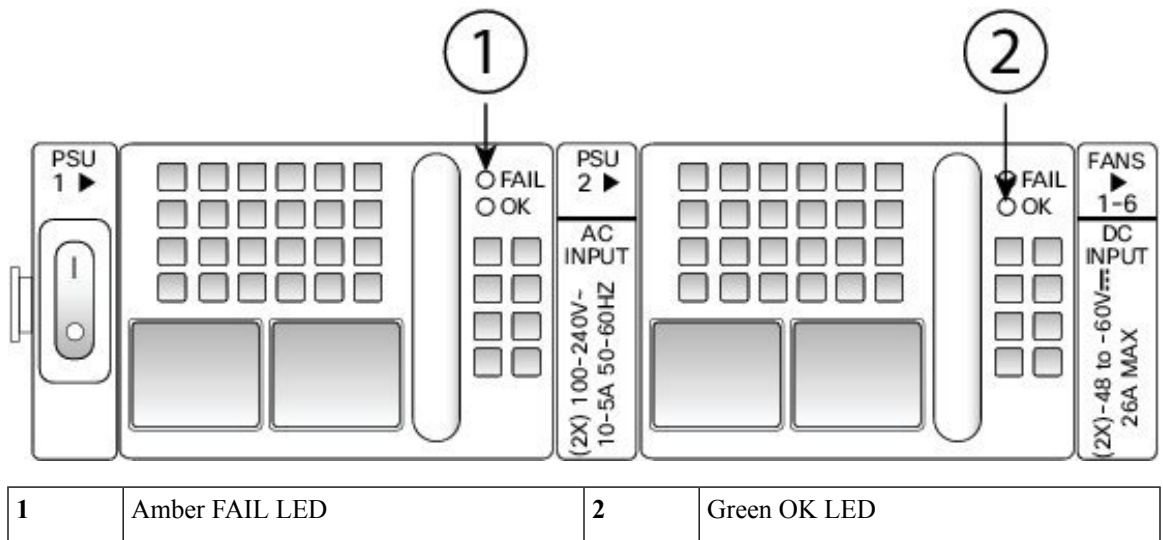
**Table 8: DC Power Supply Module Hardware Specifications**

Input voltage	-40 to -60 V DC
Maximum current	26A (at 40 V DC)  <b>Note</b> The system power requirements are lower than the power supply module capabilities. See <a href="#">Hardware Specifications, on page 23</a> for the system power requirements.
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 13: Power Supply Module LEDs**



The following table describes the power module supply LEDs.

**Table 9: Power Supply Module LEDs**

	<b>Amber LED (Fail Status)</b>	<b>Green LED (OK Status)</b>
No power to all power supplies	Off	Off
Power supply module failure Includes over voltage, over current, over temperature, and fan failure	On	Off
Power supply module warning events Power supply continues to operate (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

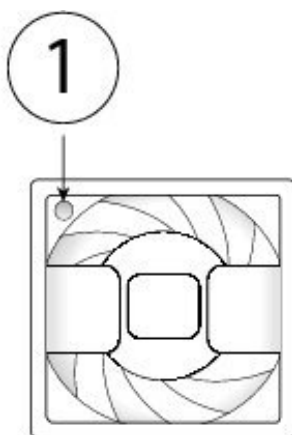
## Fan Modules

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 3 minutes. Remove and replace one fan module at a time.

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

The fan modules are numbered left to right, for example, FAN1, FAN2, FAN3, FAN4, FAN5, and FAN6. See [Remove and Replace the Fan Module, on page 58](#) for the procedure for removing and replacing the fan module.

The following figure shows the location of the fan LED.

**Figure 14: 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 1 minute for the LED status to turn green after power is on.

## Supported SFP/SFP+ and QSFP Transceivers

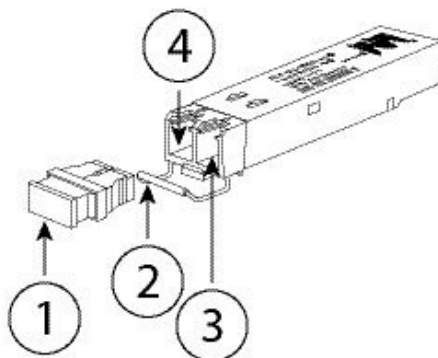
The SFP/SFP+ transceivers are bidirectional devices with a transmitter and receiver in the same physical package. It is a hot-swappable optical or electrical (copper) interface that plugs into the SFP/SFP+ ports on the fixed ports and the network module ports, and provides Ethernet connectivity.



**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. The following figure shows a sample SFP transceiver.

*Figure 15: SFP*



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



**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.



**Caution**

For some earlier production Firepower 4100 series chassis, you may experience difficulty using the GLC-TE SFP on the management port or fixed ports. Contact Cisco TAC for support if you encounter problems with the GLC-TE SFP.

The following table lists the Cisco supported transceivers.

**Table 10: Supported Cisco SFP/SFP+ Transceivers**

Optics Type	PID
<b>1 G</b>	
1G-SX	GLC-SX-MMD
1G-LH/LX	GLC-LH-SMD
1G-EX	GLC-EX-SMD
1G-ZX	GLC-ZX-SMD
1G 1000Base-T	GLC-T
1G 1000Base-T	GLC-TE
<b>10 G</b>	
10G-SR	SFP-10G-SR
10G-SR-S	SFP-10G-SR-S
10G-LR	SFP-10G-LR
10G-LR-S	SFP-10G-LR-S
10G-LRM	SFP-10G-LRM
10G-ER	SFP-10G-ER
10G-ER-S	SFP-10G-ER-S
10G-ZR-S	SFP-10G-ZR-S
10G Cu, 1m	SFP-H10GB-CU1M
10G Cu, 1.5m	SFP-H10GB-CU1-5M
10G Cu, 2m	SFP-H10GB-CU2M
10G Cu, 2.5m	SFP-H10GB-CU2-5M
10G Cu, 3m	SFP-H10GB-CU3M
10G Cu, 5m	SFP-H10GB-CU5M
10G Cu, 7m	SFP-H10GB-ACU7M
10G Cu, 10m	SFP-H10GB-ACU10M
10G AOC, 1m	SFP-10G-AOC1M
10G AOC, 2m	SFP-10G-AOC2M

10G AOC, 3m	SFP-10G-AOC3M
10G AOC, 5m	SFP-10G-AOC5M
10G AOC, 7m	SFP-10G-AOC7M
10G AOC, 10m	SFP-10GAOC10M
<b>40 G</b>	
40G-SR4	QSFP-40G-SR4
40G-SR4-S	QSFP-40G-SR4-S
40G-CSR4	QSFP-40G-CSR4
40G-SR-BD	QSFP-40G-SR-BD
40GE-LR4	QSFP-40GE-LR4
40GE-LR4-S	QSFP-40GE-LR4-S
40G-LR4L	WSP-Q40GLR4L
40G-CU, 1M, 3M, 5M	QSFP-H40G-CU
40G-4X10G-CU, 1M, 3M, 5M	QSFP-4SFP10G-CU
40G-CU-A, 7M, 10M	QSFP-H40G-ACU
40G-4X10G-CU-A, 7M, 10M	QSFP-4X10G-AC
40G-AOC, 1M, 2M, 3M, 5M, 7M, 10M, 15M	QSFP-H40G-AOC

## Hardware Specifications

The following table contains hardware specifications for the Firepower 4100.

**Table 11: Firepower 4100 Hardware Specifications**

Specification	4110	4120	4140	4150
<b>Physical</b>				
Form factor	1 RU Fits standard 19-in. (48.3-cm) square-hole rack			
Rack mount	Yes, mount rails included 4-post EIA-310-D rack			
Dimensions (H x W x D)	1.75 x 16.89 x 29.7 in. (4.44 x 42.90 x 75.43 cm)			

Specification	4110	4120	4140	4150
Weight	36 lb (16kg) 2 power supply modules, 2 network modules, 6 fans 30 lb (13.6 kg) no power supply modules, no network modules, no fans			
<b>Storage</b>				
SSD	100 GB <b>Note</b> The storage SSD must be installed in slot 1. Slot 2 is reserved for the MSP SSD. <b>Note</b> If you are running Firepower Threat Defense software, we recommend that you upgrade to the latest version (at least to Version 6.1.0) to take advantage of software updates that enhance SSD management performance and longevity.	200 GB <b>Note</b> The storage SSD must be installed in slot 1. Slot 2 is reserved for the MSP SSD. <b>Note</b> If you are running Firepower Threat Defense software, we recommend that you upgrade to the latest version (at least to Version 6.1.0) to take advantage of software updates that enhance SSD management performance and longevity.		
MSP	800 GB <b>Note</b> The MSP SSD must be installed in slot 2,			
<b>Memory</b>				
DDR4 DIMM	64 GB	128 GB	256 GB	
<b>Power</b>				
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)			
Power supply module	AC or DC			
Redundant power	Yes			
<b>Environment</b>				
Temperature	Operating: 32° to 104° F (0° to 40° C) Nonoperating: -40° to 149°F (-40° to 65° C)		Operating: 32° to 95° F (0° to 35° 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)	
Humidity	Operating and nonoperating: 5 to 95 % noncondensing			

Specification	4110	4120	4140	4150
Altitude	Operating: 10,000 ft maximum (3048 m) Nonoperating: 40,000 ft maximum (12,192 m)			
Acoustic noise	Sound pressure: <ul style="list-style-type: none"> <li>• 61 dBA (typical)</li> <li>• 78 dBA (maximum)</li> </ul> Sound power: <ul style="list-style-type: none"> <li>• 72 dBA (typical)</li> <li>• 88 dBA (maximum)</li> </ul>			
Air flow	Front to back			
NEBS operation	—			Operating temperature: <ul style="list-style-type: none"> <li>• Long term: 0° to 45° C up to 6000 ft (1829 m)</li> <li>• Long term: 0° to 35° C up to 6000-13,000 ft (1829-3964 m)</li> <li>• Short term: -5° to 55° C up to 6000 ft (1829 m)</li> </ul> Operating altitude: 0 to 13,000 ft (3962 m)

## Product ID Numbers

The following table lists all of the PIDs associated with the Firepower 4100 series.

**Table 12: Firepower 4100 Series PIDs**

PID	Description
FPR4110-AMP-K9	Cisco Firepower 4110 AMP appliance, 1 RU, two network module bays

<b>PID</b>	<b>Description</b>
FPR4110-ASA-K9	Cisco Firepower 4110 ASA appliance, 1 RU, two network module bays
FPR4110-NGFW-K9	Cisco Firepower 4110 NGFW appliance, 1 RU, two network module bays
FPR4110-NGIPS-K9	Cisco Firepower 4110 NGIPS appliance, 1 RU, two network module bays
FPR4120-AMP-K9	Cisco Firepower 4120 AMP appliance, 1 RU, two network module bays
FPR4120-ASA-K9	Cisco Firepower 4120 ASA appliance, 1 RU, two network module bays
FPR4120-NGFW-K9	Cisco Firepower 4120 NGFW appliance, 1 RU, two network module bays
FPR4120-NGIPS-K9	Cisco Firepower 4120 NGIPS appliance, 1 RU, two network module bays
FPR4140-AMP-K9	Cisco Firepower 4140 AMP appliance, 1 RU, two network module bays
FPR4140-ASA-K9	Cisco Firepower 4140 ASA appliance, 1 RU, two network module bays
FPR4140-NGFW-K9	Cisco Firepower 4140 NGFW appliance, 1 RU, two network module bays
FPR4140-NGIPS-K9	Cisco Firepower 4140 NGIPS appliance, 1 RU, two network module bays
FPR4150-AMP-K9	Cisco Firepower 4150 AMP appliance, 1 RU, two network module bays
FPR4150-ASA-K9	Cisco Firepower 4150 ASA appliance, 1 RU, two network module bays
FPR4150-NGFW-K9	Cisco Firepower 4150 NGFW appliance, 1 RU, two network module bays
FPR4150-NGIPS-K9	Cisco Firepower 4150 NGIPS appliance, 1 RU, two network module bays
FPR4K-ACC-KIT	Firepower hardware accessory kit containing rack mounts and cables
FPR4K-ACC-KIT=	Firepower hardware accessory kit containing rack mounts and cables (spare)
FPR4K-ASA-CAR	License to add carrier security to ASA on the Firepower 4100

<b>PID</b>	<b>Description</b>
FPR4K-FAN	Fan
FPR4K-FAN=	Fan (spare)
FPR4K-NM-2X40G-F	2-port 40-G SR fail-to-wire network module
FPR4K-NM-2X40G-F=	2-port 40-G SR fail-to-wire network module (spare)
FPR4K-NM-4X40G	4-port QSFP+ network module
FPR4K-NM-4X40G=	4-port QSFP+ network module (spare)
FPR4K-NM-6X10LR-F	6-port 10-G LR fail-to-wire network module
FPR4K-NM-6X10LR-F=	6-port 10-G LR fail-to-wire network module (spare)
FPR4K-NM-6X10SR-F	6-port 10-G SR fail-to-wire network module
FPR4K-NM-6X10SR-F=	6-port 10-G SR fail-to-wire network module (spare)
FPR4K-NM-6X1SX-F	6-port 1-G SX fiber fail-to-wire network module
FPR4K-NM-6X1SX-F=	6-port 1-G SX fiber fail-to-wire network module (spare)
FPR4K-NM-8X10G	8-port SFP+ network module
FPR4K-NM-8X10G=	8-port SFP+ network module (spare)
FPR4K-NM-8X1G-F	8-port 1-G copper fail-to-wire network module
FPR4K-NM-8X1G-F=	8-port 1-G copper fail-to-wire network module (spare)
FPR4K-NM-BLANK	Network module blank slot cover
FPR4K-NM-BLANK=	Network module blank slot cover (spare)
FPR4K-PSU-BLANK	Chassis power supply module blank slot cover
FPR4K-PSU-BLANK=	Chassis power supply module blank slot cover (spare)
FPR4K-PWR-AC-1100	1100W AC power supply module
FPR4K-PWR-AC-1100-	1100W AC power supply module (spare)
FPR4K-PWR-DC-950	950W DC power supply module
FPR4K-PWR-DC-950=	950W DC power supply module (spare)
FPR4K-RACK-MNT	Rack mount kit
FPR4K-RACK-MNT=	Rack mount kit (spare)
FPR4K-SSD-BBLKD	SSD slot carrier

PID	Description
FPR4K-SSD-BBLKD=	SSD slot carrier (spare)
FPR4K-SSD200	200-GB SSD for Firepower 4110 and 4120
FPR4K-SSD200=	200-GB SSD for Firepower 4110 and 4120 (spare)
FPR4K-SSD400	400-GB SSD for Firepower 4140 and 4150
FPR4K-SSD400=	400-GB SSD for Firepower 4140 and 4150 (spare)

## Power Cord Specifications

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

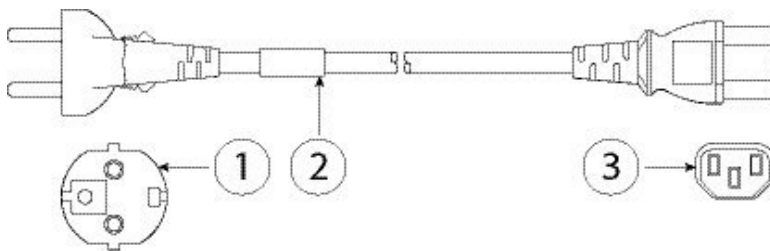
If you do not order the optional power cord with the system, you are responsible for selecting the appropriate power cord for the product. Using an incompatible power cord with this product may result in electrical safety hazard. Orders delivered to Argentina, Brazil, and Japan must have the appropriate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

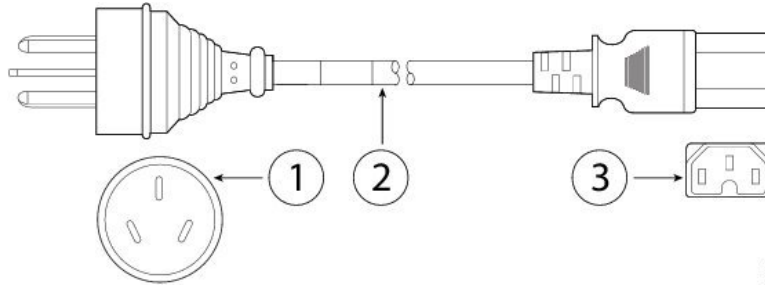
**Figure 16: Argentina CAB-9K10A-AR**



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

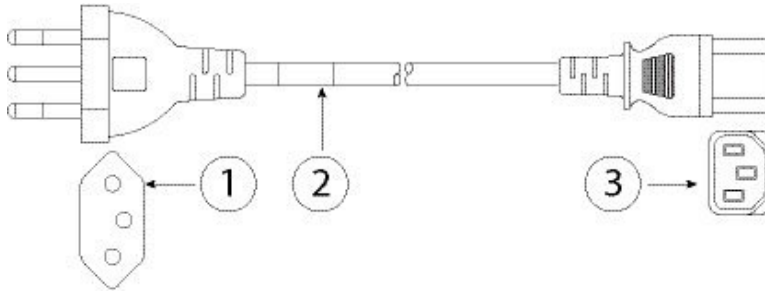


**Figure 17: Australia CAB-9K10A-AU**



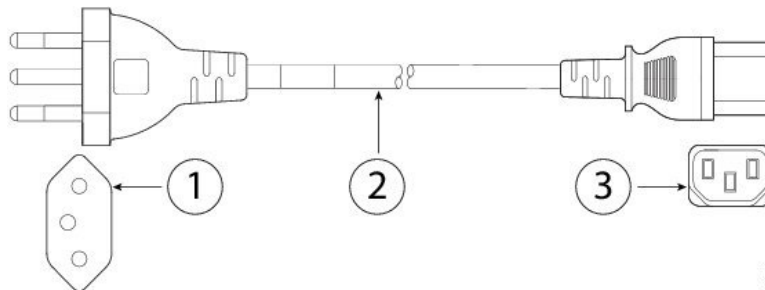
<b>1</b>	Plug: A.S. 3112-2000	<b>2</b>	Cord set rating: 10 A, 250 V
<b>3</b>	Connector: IEC 60320-C15		

**Figure 18: Brazil CAB-250V-10A-BR**



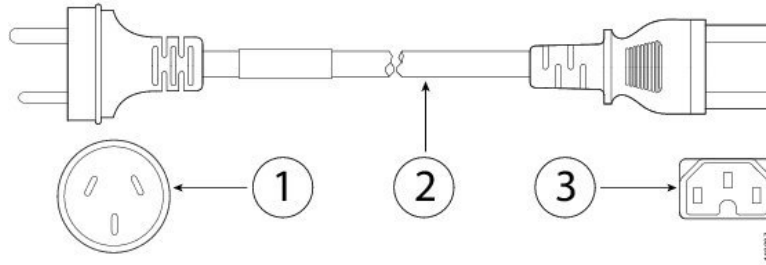
<b>1</b>	Plug: EL223 (NBR 14136)	<b>2</b>	Cord set rating: 10 A, 250 V
<b>3</b>	Connector: EL 701B (EN 60320/C13)		

**Figure 19: Brazil PWR-CORD-G2A-BZ**



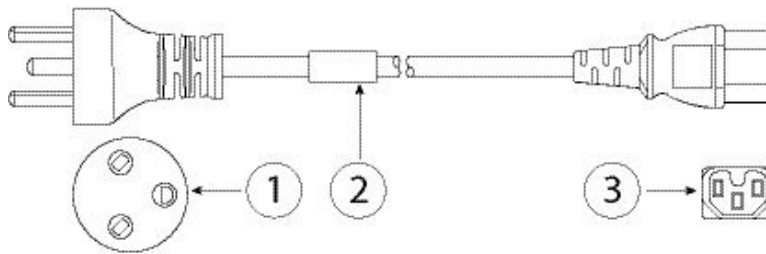
<b>1</b>	Plug: NBR 14136	<b>2</b>	Cord set rating: 10 A, 250 V
<b>3</b>	Connector: IEC 60320-C13		

Figure 20: China CAB-9K10A-CH



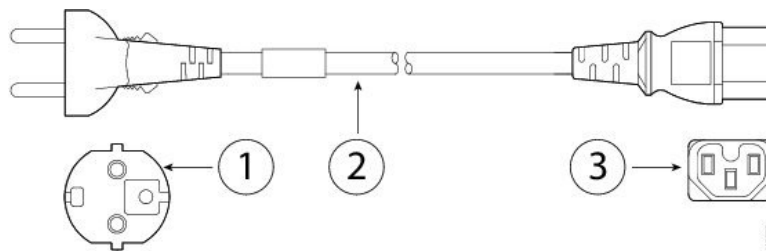
1	Plug: CCC GB2099.1, GB1002	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		

Figure 21: Denmark CAB-TA-DN



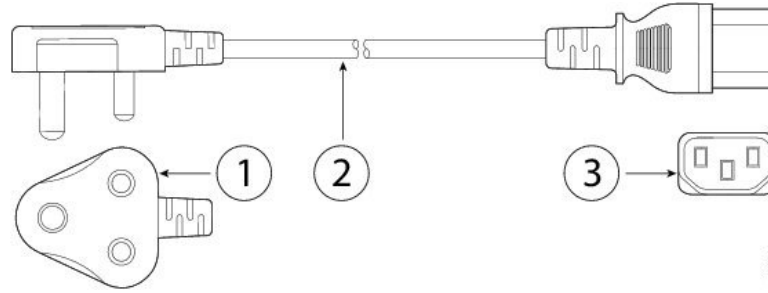
1	Plug: DK3	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		

Figure 22: Europe CAB-AC-EUR



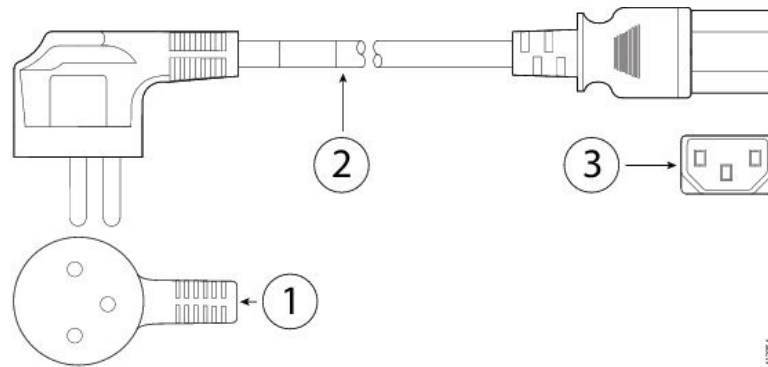
1	Plug: CEE 7/7	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		

Figure 23: India CAB-250V-10A-ID



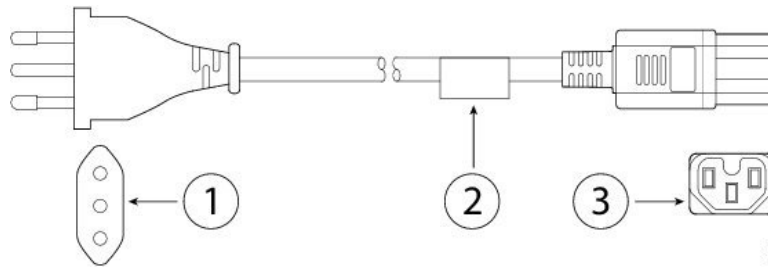
1	Plug: IS 6538-1971	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		

Figure 24: Israel CAB-250V-10A-IS



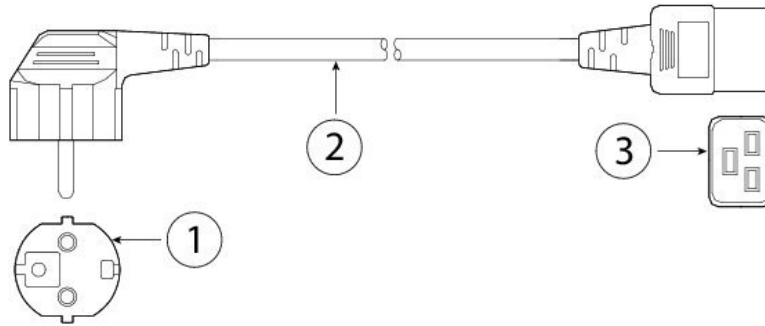
1	Plug: SI-32	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C13		

Figure 25: Italy CAB-9K10A-IT



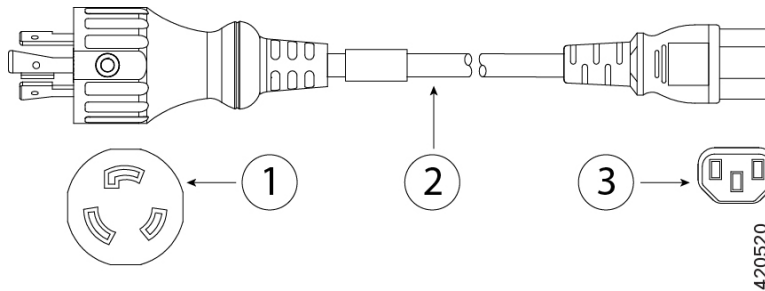
1	Plug: CEI 23-16/VII	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		

Figure 26: Korea CAB-9K10A-KOR



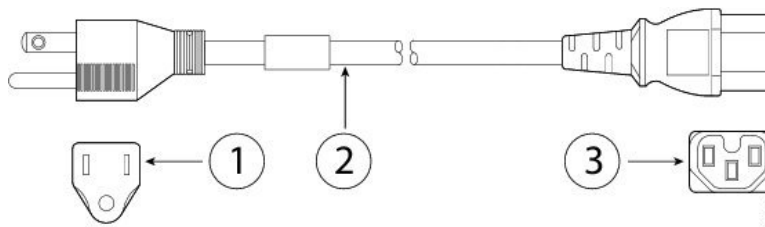
1	Plug: CEE 7/7	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C19		

Figure 27: Japan CAB-L620P-C13-JPN



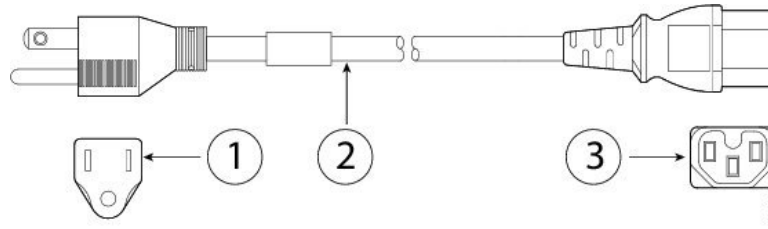
1	Plug: NEMA L6-20P	2	Cord set rating: 15 A, 250 V
3	Connector: IEC 60320-C13		

Figure 28: Japan CAB-TA-JP



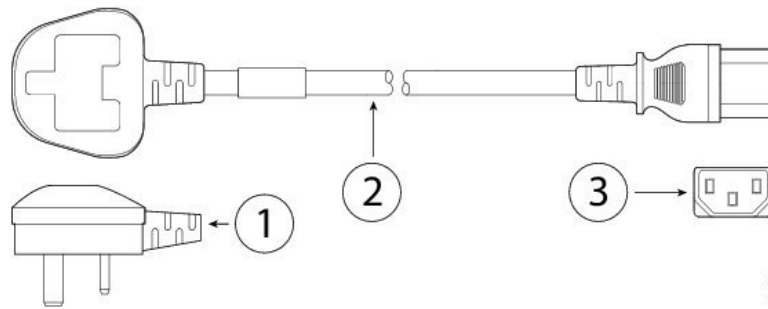
1	Plug: NEMA5-15P/JIS 8303	2	Cord set rating: 12 A, 125 V
3	Connector: IEC 60320-C15		

**Figure 29: North America CAB-TA-NA**



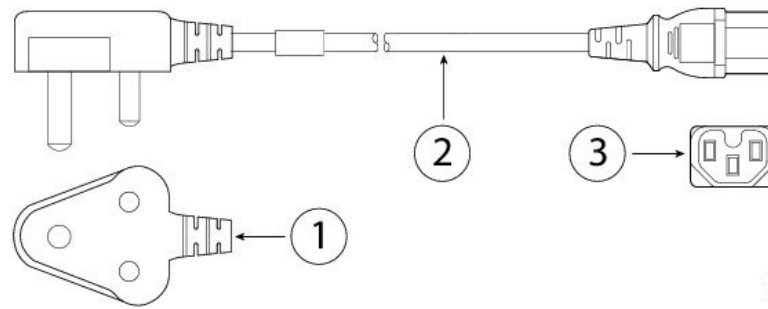
<b>1</b>	Plug: NEMA5-15P	<b>2</b>	Cord set rating: 12 A, 125 V
<b>3</b>	Connector: IEC 60320-C15		

**Figure 30: Saudi Arabia ATA187PWRCORD-SAUD**



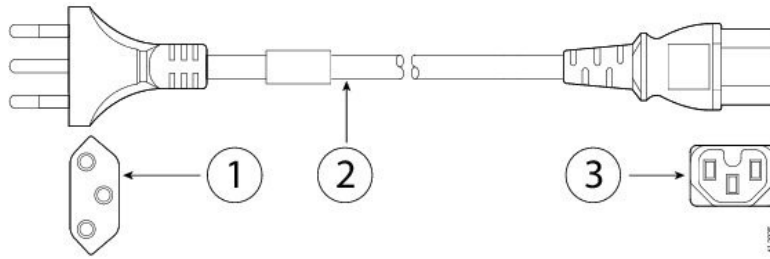
<b>1</b>	Plug: BS1363A/SS145	<b>2</b>	Cord set rating: 10 A, 250 V
<b>3</b>	Connector: IEC 60320-C13		

**Figure 31: South Africa CAB-9K10A-SA**



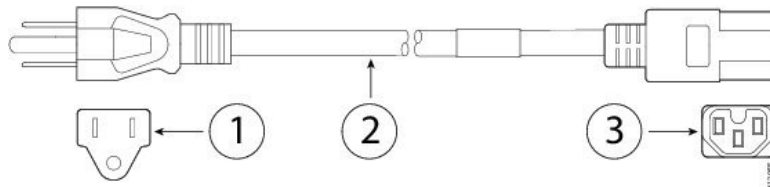
<b>1</b>	Plug: SABS 164	<b>2</b>	Cord set rating: 10 A, 250 V
<b>3</b>	Connector: IEC 60320-C15		

Figure 32: Switzerland CAB-9K10A-SW



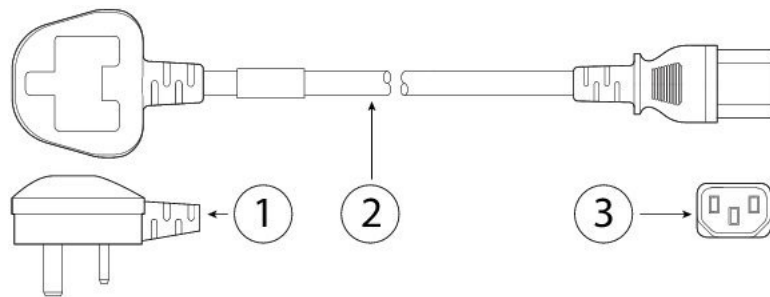
1	Plug: SEV 1011	2	Cord set rating: 10 A, 250 V
3	Connector: IEC 60320-C15		

Figure 33: Taiwan CAB-9K10A-TWN



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

Figure 34: 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 35
- [Safety Recommendations](#), on page 37
- [Maintain Safety with Electricity](#), on page 38
- [Prevent ESD Damage](#), on page 38
- [Site Environment](#), on page 39
- [Power Supply Considerations](#), on page 39
- [Rack Configuration Considerations](#), on page 39

## Installation Warnings

Be sure to read the [Regulatory and Compliance Safety Information](#) document before installing the security appliance.

Take note of the following warnings:



---

**Warning** **Statement 1071**—Warning Definition

**IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

---



---

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

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

---



---

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

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; 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 1017**—Restricted Area

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.

---



---

**Warning Statement 1030**—Equipment Installation

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

---



---

**Warning Statement 1004**—Installation Instructions

Read the installation instructions before using, installing or connecting the system to the power source.

---



---

**Warning Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 20 A, 120 V, and 16 A, 250 V

---



---

**Warning Statement 12**—Power Supply Disconnection Warning

Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.

---



---

**Warning Statement 43**—Jewelry Removal Warning

Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.

---





---

**Warning** **Statement 94—Wrist Strap Warning**

During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

---



---

**Warning** **Statement 1045—Short-Circuit Protection**

This product requires short-circuit (overcurrent) protection to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.

---



---

**Warning** **Statement 1021—SELV Circuit**

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

---



---

**Warning** **Statement 1024—Ground Conductor**

This equipment must be grounded. 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 1040—Product Disposal**

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

---



---

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

Installation of the equipment must comply with local and national electrical codes.

---



---

**Warning** **Statement 19—TN Power Warning**

The device is designed to work with TN power systems.

---

## 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.

Be sure to read the [Regulatory and Compliance Safety Information](#) document before installing the security appliance.

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.
- If an electrical accident occurs:
  - Use caution; do not become a victim yourself.
  - Disconnect power from the system.
  - If possible, send another person to get medical aid. Otherwise, assess the condition of the victim, and then call for help.
  - Determine whether the person needs rescue breathing or external cardiac compressions; then take appropriate action.
- Use the chassis within its marked electrical ratings and product usage instructions.

## Prevent ESD Damage

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

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

When planning the site layout and equipment locations, consider the information in the next section to help avoid equipment failures and reduce the possibility of environmentally caused shutdowns. 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.

## Power Supply Considerations

See [Power Supply Modules](#), on page 18 for more detailed information about the power supply modules in the security appliance.

When installing the chassis, consider the following:

- Check the power at the site before installing the chassis to ensure that it is “clean” (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.
- Install an uninterruptible power source for your site, if possible.
- If you are using dual redundant (1+1) power supplies, we recommend that you use independent electrical circuits for each power supply.

## Rack Configuration Considerations

Consider the following when planning an equipment-rack configuration:

- If you are mounting a chassis in an open rack, make sure that the rack frame does not block the intake or exhaust ports.
- Standard 19-in. (48.3 cm) 4-post EIA rack with mounting rails that conform to English universal hole spacing per section 1 of ANSI/EIA-310-D-1992.
- Front and rear doors—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.



## CHAPTER 3

# Mount and Connect

---

- [Unpack and Inspect the Chassis, on page 41](#)
- [Rack-Mount the Chassis, on page 42](#)
- [Ground the Chassis, on page 46](#)
- [Install the FIPS Opacity Shield, on page 48](#)
- [Connect Cables, Turn on Power, and Verify Connectivity, on page 53](#)

## Unpack and Inspect the Chassis



---

**Tip** Keep the shipping container in case the chassis requires shipping in the future.

---



---

**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.

---

See [Package Contents, on page 4](#) for a list of what shipped with the chassis.

---

- 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
-

# Rack-Mount the Chassis

Take note of the following 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 1018**—Supply Circuit

Take care when connecting units to the supply circuit so that wiring is not overloaded.

---



---

**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.

---

This procedure describes how to install the Firepower 4100 series security appliance in a rack using the rack kit from the accessory kit that shipped with the chassis.

---

**Before you begin**

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

- #1 Phillips head screwdriver
- Firepower 4100 accessory 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-in. threaded holes on the rack post front. The slide rail works with front to back spacing of rack posts from 24 to 36 in.

---



---

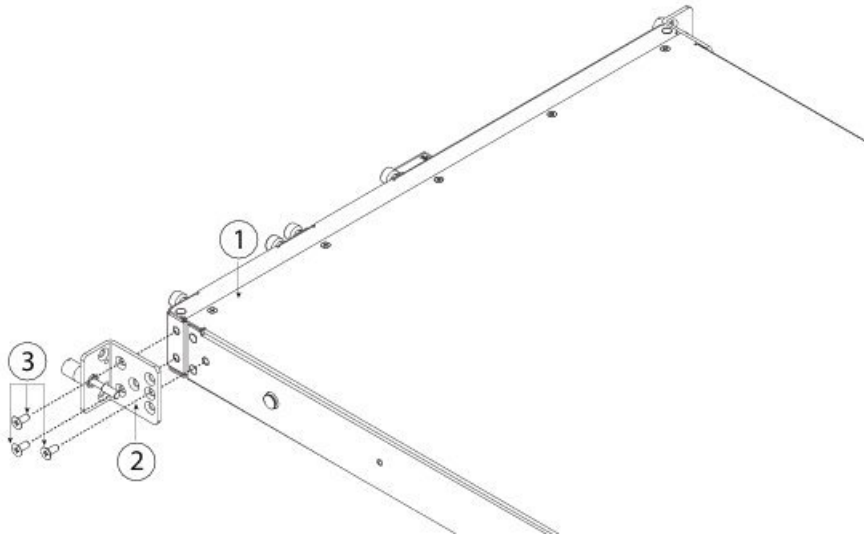
**Note** Internal obstructions between rails can make slide rail installation more complicated. Use racks that do not have internal obstructions between rails for unhindered slide rail installation.

---

**Step 1**

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

**Figure 35: Attach the Rack Mount Bracket to the Side of the Chassis**



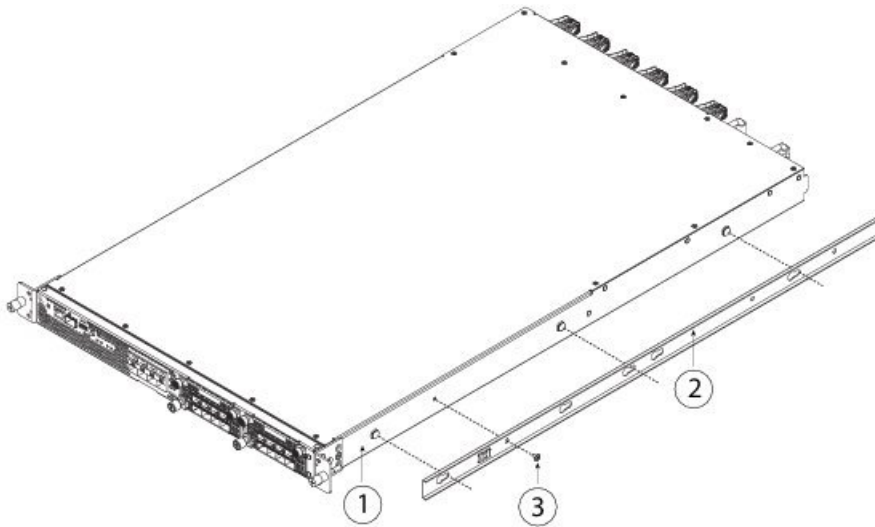
<b>1</b>	Chassis	<b>2</b>	Rack-mount bracket
<b>3</b>	8-32 x .375-in. countersink Phillips head screws (3 per side)		

**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 1 side of the chassis so that the 3 keyed slots in the rail align with the 3 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 1 M3X6mm screw.
- e) Install the second inner rail to the opposite side of the chassis and secure with the other M3X6mm screw.

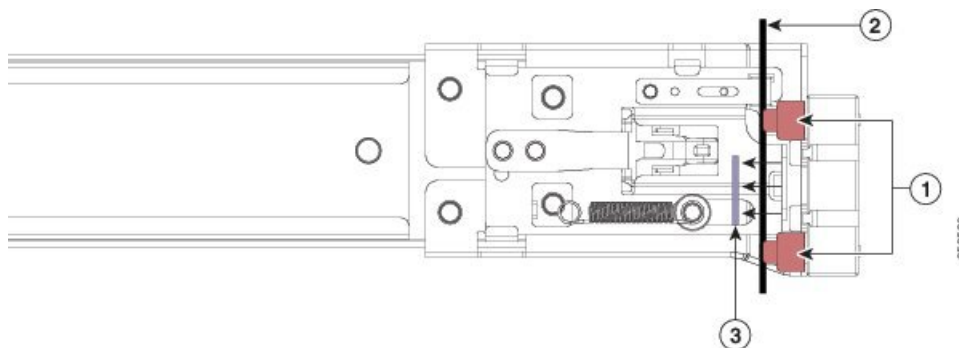
Figure 36: Attach the Inner Rail to the Side of the Chassis



1	Front of chassis	2	Inner rail
3	M3X6mm screw (1 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 37: Front Securing Mechanism Inside the Front End



1	Front mounting pegs <b>Note</b> Works with square slots, 7.1 mm holes, and 10-32 threaded holes	2	Securing plate shown pulled back to open position
3	Rack post		

**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.

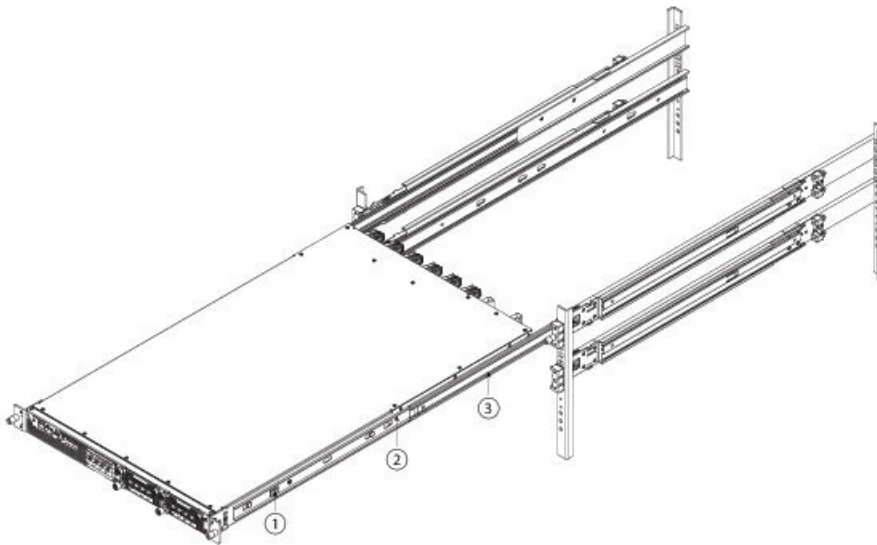
- e) Attach the second slide-rail assembly to the opposite side of the rack. Make sure that the two slide-rail assemblies are at the same height with each other and are level front-to-back.  
 f) Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and 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 38: 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 46](#) for the procedure.

Install the FIPS opacity shield if necessary. See [Install the FIPS Opacity Shield, on page 48](#) for the procedure.

Install the cables according to your default software configuration as described in the QUICK START GUIDE for your version.

## Ground the Chassis

Take note of the following warnings:



---

**Warning Statement 1024—Ground Conductor**

This equipment must be grounded. 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**

When installing or replacing the unit, the ground connection must always be made first and disconnected last.

---



---

**Warning Statement 1025—Use Copper Conductors Only**

Use copper conductors only.

---



---

**Caution** Grounding the chassis is required, even if the rack is already grounded. A grounding pad with 2 threaded M4 holes is provided on the chassis for attaching a grounding lug. The ground lug must be NRTL-listed. In addition, a copper conductor (wires) must be used and the copper conductor must comply with NEC code for ampacity.

---

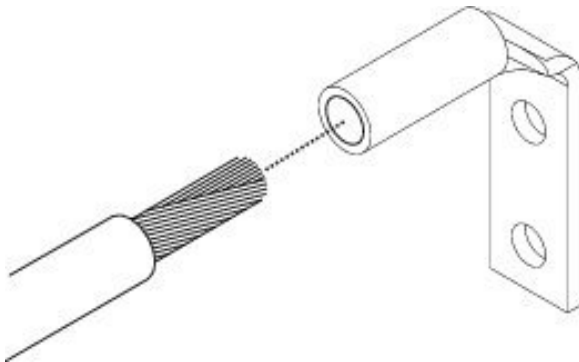
**Before you begin**

- You need the following items that you provide:
  - Wire-stripping tool
  - Crimping tool
  - Grounding cable
  - Two star lock washers for the 10-32 x .375-in. screws used to secure the ground lug
  
- You need the following items from the accessory kit:
  - Ground lug #6 AWG, 90 degree, #10 post

- Two 10-32 x .375-in. screws used to secure the ground lug

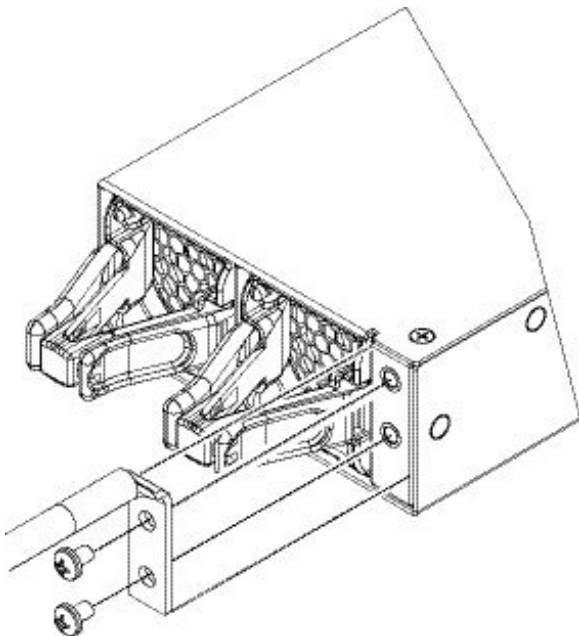
- Step 1** Use a wire-stripping tool to remove approximately 0.75 in. (19 mm) of the covering from the end of the grounding cable.
- Step 2** Insert the stripped end of the grounding cable into the open end of the grounding lug.

**Figure 39: 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 2 screws with washers through the holes in the grounding lug and into the grounding pad.

**Figure 40: 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 48](#) for the procedure.

Continue with [Connect Cables, Turn on Power, and Verify Connectivity, on page 53](#).

## 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 head screwdriver
- The following items from the FIPS kit:
  - One FIPS opacity shield
  - Four 8-32 x .375-in. countersink screws used to attach the FIPS opacity shield to the cable management brackets
  - 15 tamper-evident labels (TEs)
- The following items from the Firepower 4100 series accessory kit:
  - Two cable management brackets
  - Four 8-32 x .375-in. countersink screws used to attach the cable management brackets to the slide rail locking brackets

---

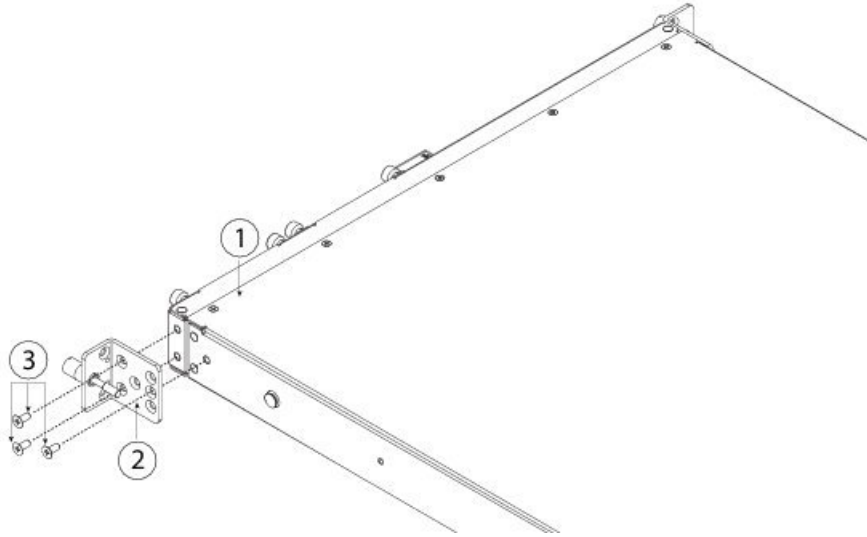
**Step 1** Copy the serial number on a label and attach it to the chassis where it can be retrieved easily for future use if needed. To find the serial number, see [Serial Number Location, on page 5](#).

**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 .375-in. countersink Phillips head screws provided in the accessory kit.

**Note** You should have completed this step while performing the procedure described in [Rack-Mount the Chassis](#), on page 42.

**Figure 41: Attach the Slide Rail Locking Bracket to the Side of the Chassis**

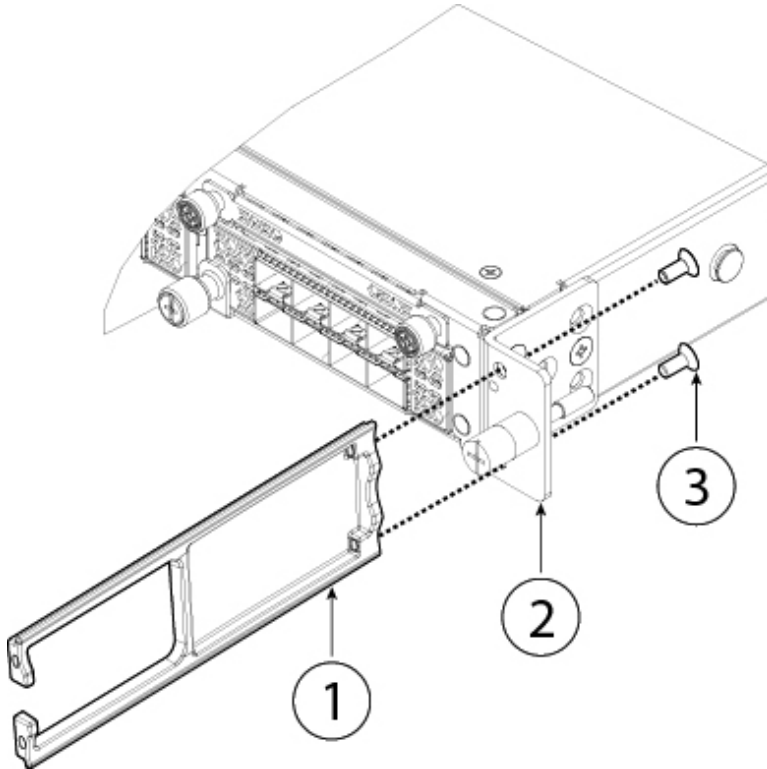


<b>1</b>	Chassis	<b>2</b>	Slide rail locking bracket
<b>3</b>	8-32 x .375-in. countersink Phillips head screws (3 per side)		

**Step 4**

Attach a cable management bracket to each slide rail locking bracket using the four 8-32 x .375-in. countersink Phillips head screws provided in the accessory kit.

Figure 42: Attach the Cable Management Bracket to the Slide Rail Locking Bracket



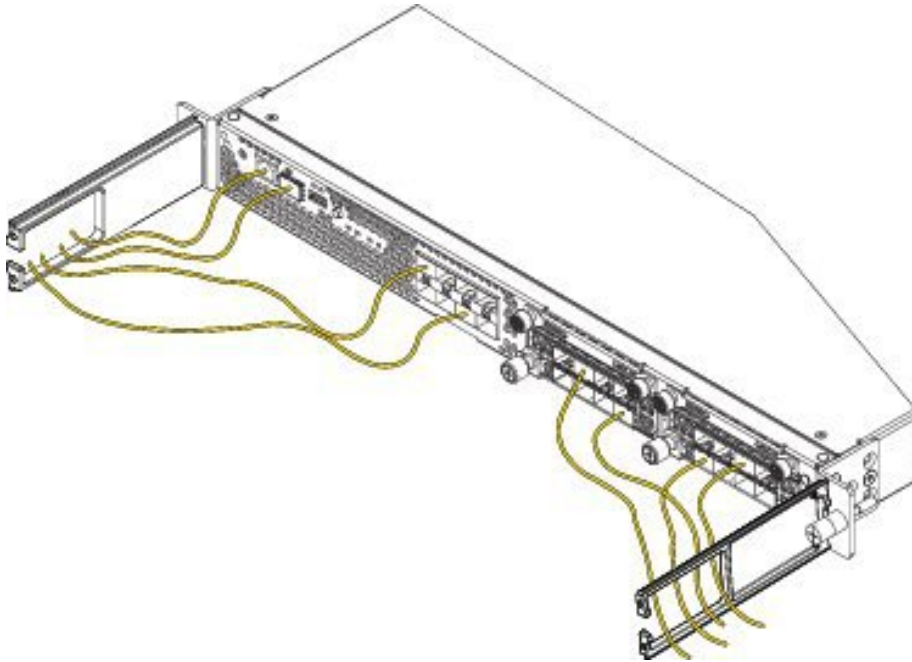
1	Cable management bracket	2	Slide rail locking bracket
3	8-32 x .375-in. countersink Phillips head screws (2 per side)		

**Step 5** Connect the cables to the ports. See [Connect Cables, Turn on Power, and Verify Connectivity, on page 53](#) for the procedure. 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.

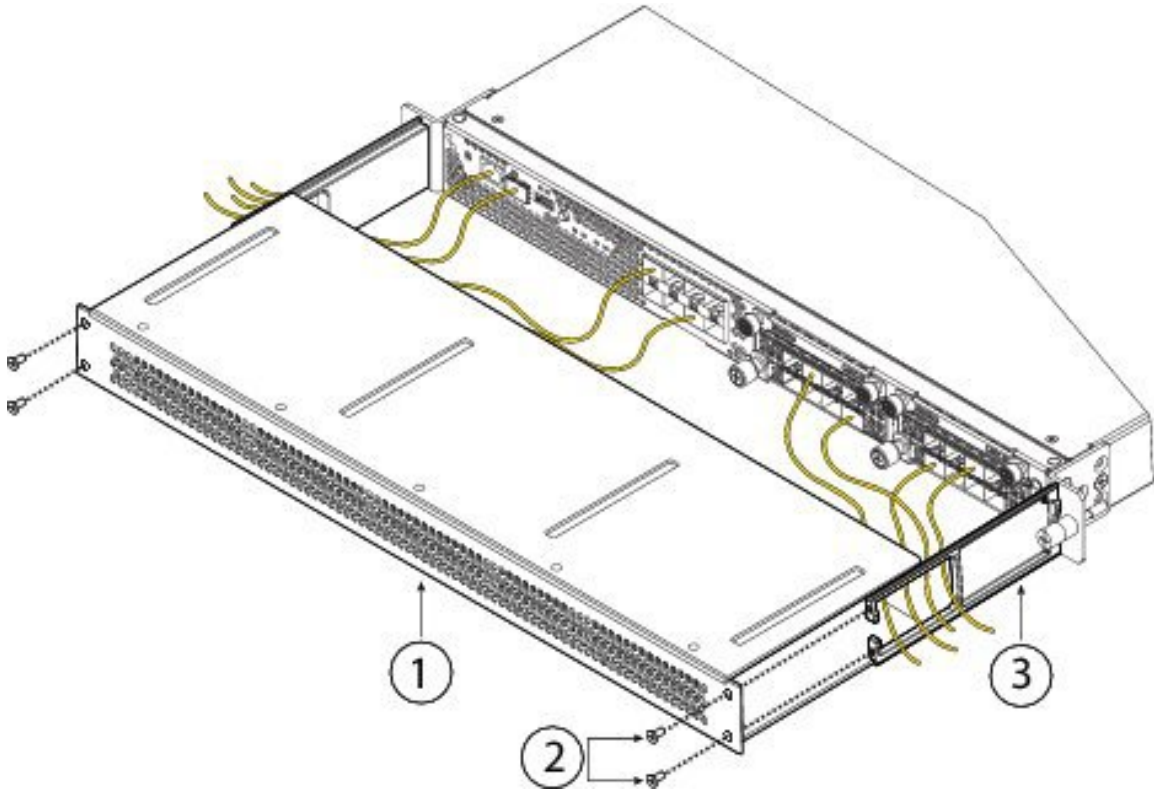
**Step 6** Route the cables through the openings in the cable management brackets.

*Figure 43: 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 .375-in. countersink Phillips head screws provided in the FIPS kit.

Figure 44: Attach the FIPS Opacity Shield to the Cable Management Brackets



1	FIPS opacity shield	2	8-32 x .375-in. countersink Phillips head screws (2 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 ) in the [FIPS 140-2 Non Proprietary Security Policy Level 2 Validation](#) document.

**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. See [Front Panel LEDs, on page 7](#) for a description of the power LED. 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.

**Step 12** See the quick start guide for your operating software for further configuration information:

- [Cisco ASA for Firepower 4100 Quick Start Guide](#)



- [Cisco Firepower Threat Defense for Firepower 4100 Quick Start Guide](#)

---

## Connect Cables, Turn on Power, and Verify Connectivity

Take note of the following warnings:



---

**Warning** **Statement 1021**—SELV Circuit

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

---



---

**Warning** **Statement 1051**—Laser Radiation

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

---



---

**Warning** **Statement 1053**—Class 1M Laser Radiation

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

---



---

**Warning** **Statement 1055**—Class I and Class 1M Laser

Class I (CDRH) and Class 1M (IEC) laser products.

---

After rack mounting the chassis, follow these steps to connect cables, turn on power, and verify connectivity.

---

**Step 1** Connect to the console port.

Using a serial console cable, connect a computer or terminal server to the RJ-45 serial console port (baud rate is 9600) so that you can use the CLI for initial setup.

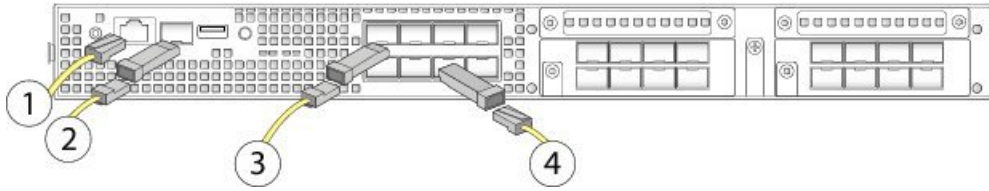
**Step 2** Connect to the management interface.

Install the 1-Gigabit Ethernet SFP transceiver that was provided in the accessory kit in the Management port, and then using an Ethernet cable, connect a management computer directly to the SFP.

**Note** Use appropriate ESD procedures when inserting the SFP transceiver. Avoid touching the contacts at the rear, and keep the contacts and ports free of dust and dirt. Store unused SPF transceivers in their ESD packaging.

**Warning** Do not force an SFP transceiver into a socket. This can jam the transceiver and can cause permanent damage to the transceiver, the chassis, or both.

Figure 45: Connect the Cables to the Firepower 4100



1	Console port (RJ-45)	2	1-Gigabit Ethernet Management interface
3	8 fixed-port Gigabit Ethernet data interfaces for SFP+ transceivers Flip the SFP+ over to connect in the upper ports.	4	8 fixed-port Gigabit Ethernet data interfaces for SFP+ transceivers

**Step 3** Install the SFP/SFP+ transceivers.

Install SFP/SFP+ transceivers in the Ethernet network interfaces in the fixed ports or in the network modules you have installed taking care not to touch the contacts in the rear. Flip the SFP+ over to connect in the upper ports. The SFP+ transceiver connects in the normal way in the lower ports. The sockets on the upper row face up and the sockets on the lower row face down.

**Note** Although non-Cisco SFP transceivers 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. See [Supported SFP/SFP+ and QSFP Transceivers, on page 21](#) for a list of supported Cisco transceivers.

**Step 4** Connect to the Ethernet interfaces.

Use the proper cable to connect the SFP/SFP+ transceivers in the fixed ports or in the network modules you have installed.

**Step 5** (Optional) If you are installing the FIPS opacity shield, continue with step 6 in [Install the FIPS Opacity Shield, on page 48](#).**Step 6** Attach the power cable to the chassis and connect it to an electrical outlet.**Step 7** Press the power switch on the rear panel.**Step 8** 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 off. 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.

**Step 9** See the quick start guide for your operating software for further configuration information:

- [Cisco ASA for Firepower 4100 Quick Start Guide](#)
- [Cisco Firepower Threat Defense for Firepower 4100 Quick Start Guide](#)



## CHAPTER 4

# Maintenance and Upgrade

- [Remove and Replace the Network Module, on page 55](#)
- [Remove and Replace the Fan Module, on page 58](#)
- [Remove and Replace the SSD, on page 59](#)
- [Remove and Replace the Power Supply Module, on page 61](#)
- [Connect the DC Power Supply Module, on page 64](#)
- [Secure the Power Cord on the AC Power Supply Module, on page 70](#)

## Remove and Replace the Network Module

Take note of the following warnings:



---

**Warning** **Statement 60**—UL- and CSA-Certified Equipment Warning

This card is intended to be installed in UL- and CSA-certified equipment in the field by the user in the manufacturer's defined operator access area. Check the equipment manufacturer to verify/confirm that your equipment is suitable for user-installed application cards.

---



---

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

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; 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 1030**—Equipment Installation

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

---

**Warning** **Statement 1040**—Product Disposal

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

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

No user-serviceable parts inside. Do not open.

**Warning** **Statement 1077**—Do Not Operate Unit Without Covers

The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed.

**Hot Swapping**

Starting with FXOS 2.3.1, the Firepower 10-G and 40-G non-fail-to-wire network modules support hot swapping, but you must hot swap with an identical network module, that is, a network module with the same PID. See [Product ID Numbers, on page 25](#) for the network module PIDs. 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 “Taking a Network Module Offline or Online” topic in the Security Module/Engine Management chapter in the [Cisco FXOS Firepower Chassis Manager Configuration Guide](#).



**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. For the ROMMON upgrade procedure, see the "Firmware Upgrade" topic in the Image Management chapter in the [Cisco FXOS Firepower Chassis Manager Configuration Guide](#) for your software version.

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 "Acknowledging a Security Module/Engine" topic in the Security Module/Engine Management chapter in the [Cisco FXOS Firepower Chassis Manager Configuration Guide](#).

**Step 1** Save your configuration (if removing a network module that does *not* support hot swapping).

**Step 2** Do one of the following:

- a) Power down the chassis by moving the power switch to the OFF position (if removing a network module that does *not* support hot swapping).

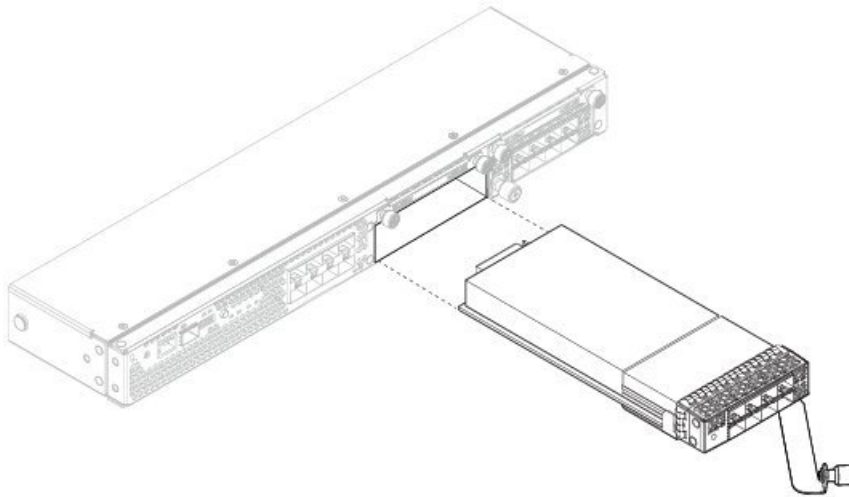
See [Features, on page 1](#) for more information about the power switch.

- b) Bring the network module off line using the appropriate CLI command (if removing a network module that *supports* hot swapping). All network module configuration is saved.

### 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 46: 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.

# Remove and Replace the Fan Module

Take note of the following warnings:




---

**Warning** **Statement 60**—UL- and CSA-Certified Equipment Warning

This card is intended to be installed in UL- and CSA-certified equipment in the field by the user in the manufacturer's defined operator access area. Check the equipment manufacturer to verify/confirm that your equipment is suitable for user-installed application cards.

---




---

**Warning** **Statement 1030**—Equipment Installation

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

---




---

**Warning** **Statement 1040**—Product Disposal

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

---




---

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

No user-serviceable parts inside. Do not open.

---




---

**Warning** **Statement 1077**—Do Not Operate Unit Without Covers

The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed.

---

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.

---




---

**Note** 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 3 minutes. Remove and replace one fan module at a time.

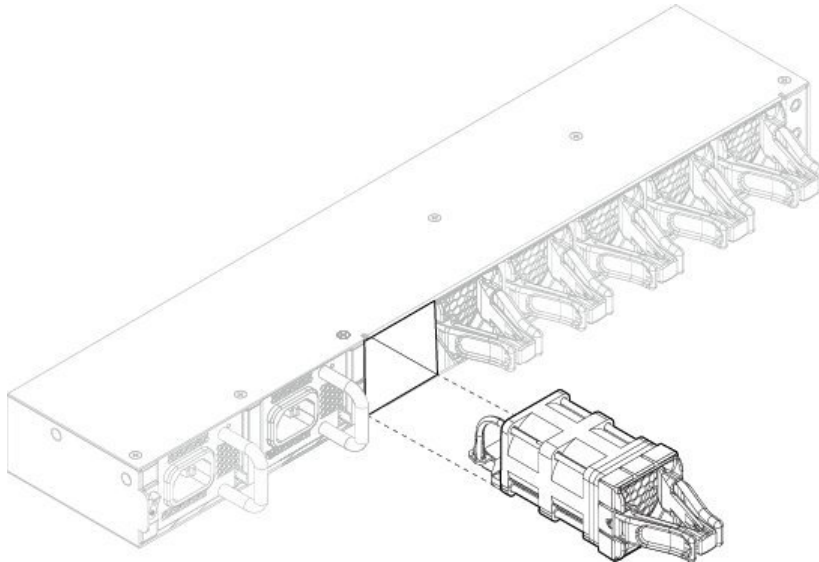
---

**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 47: 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. See [Front Panel LEDs, on page 7](#) for a description of the fan LEDs.

## Remove and Replace the SSD

Take note of the following warnings:




---

**Warning** **Statement 60**—UL- and CSA-Certified Equipment Warning

This card is intended to be installed in UL- and CSA-certified equipment in the field by the user in the manufacturer's defined operator access area. Check the equipment manufacturer to verify/confirm that your equipment is suitable for user-installed application cards.

---




---

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

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; 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 1030**—Equipment Installation

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

**Warning** **Statement 1040**—Product Disposal

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

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

No user-serviceable parts inside. Do not open.

**Warning** **Statement 1077**—Do Not Operate Unit Without Covers

The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed.

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 (at least to Version 6.1.0) to take advantage of software updates that enhance SSD management performance and longevity.

You can install an MSP 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.

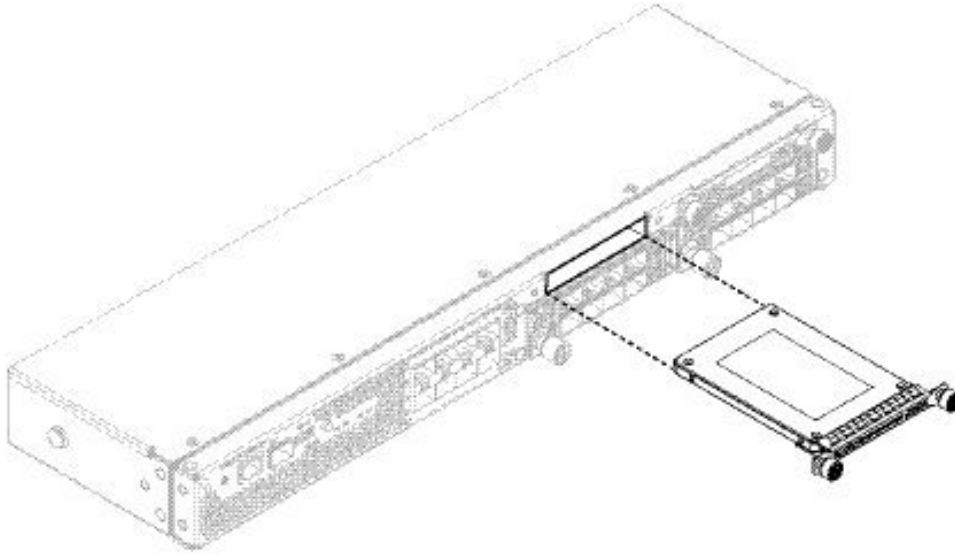


**Caution** Do not switch the 2 SSDs. The MSP **MUST** be installed in slot 2. If you remove it and install it in slot 1, all stored file capture data is lost.

- 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 48: 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 2 SSDs. The MSP MUST 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. See [Front Panel LEDs, on page 7](#) for a description of the fan LEDs.

---

## Remove and Replace the Power Supply Module

Take note of the following warnings:



---

**Warning** **Statement 1002**—DC Power Supply

When stranded wiring is required, use approved wiring terminations, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and conductor.

---



---

**Warning Statement 1003—DC Power Disconnection**

Before performing any of the following procedures, ensure that power is removed from the DC circuit.

---



---

**Warning Statement 1005—Circuit Breaker**

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not great than: AC power 120VAC, 20A (US), 240VAC, 16A (EU), DC power 60V, 35A.

---



---

**Warning Statement 1022—Disconnect Device**

A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.

---



---

**Warning Statement 1025—Use Copper Conductors Only**

Use copper conductors only.

---



---

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

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

---



---

**Warning Statement 1030—Equipment Installation**

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

---



---

**Warning Statement 1040—Product Disposal**

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

---



---

**Warning Statement 1045—Short-Circuit Protection**

This product requires short-circuit (overcurrent) protection to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.

---



---

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

When installing or replacing the unit, the ground connection must always be made first and disconnected last.

---



---

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

No user-serviceable parts inside. Do not open.

---



---

**Warning Statement 1077**—Do Not Operate Unit Without Covers

The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed.

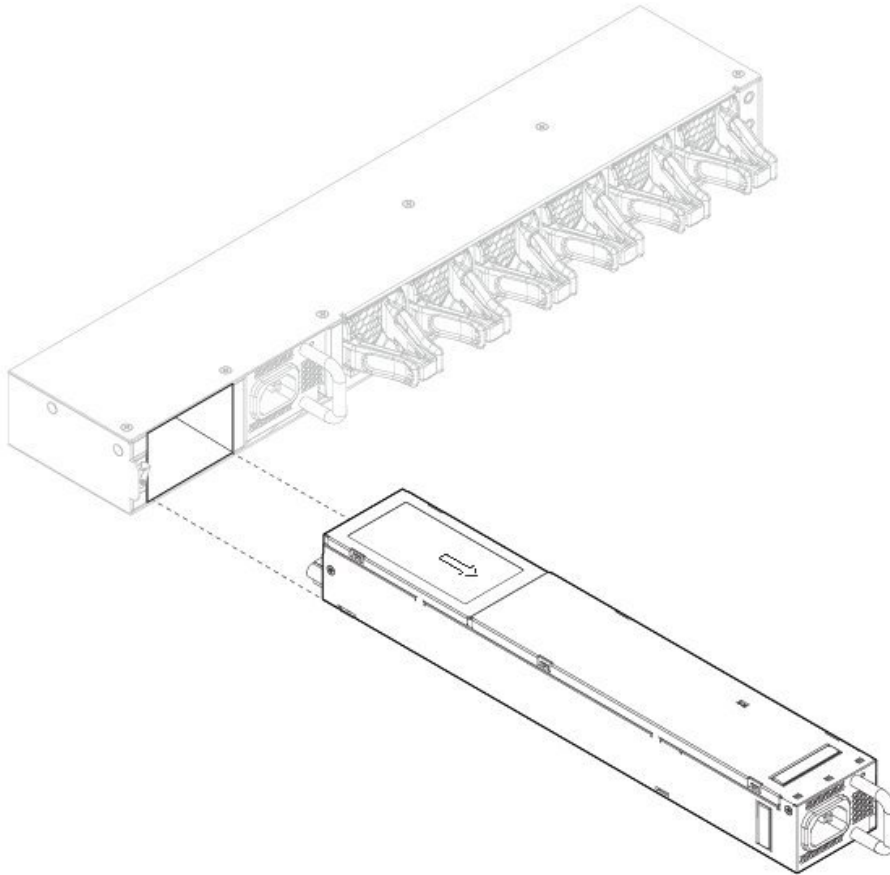
---

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

---

- 
- 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 49: 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. See [Power Supply Modules, on page 18](#) for a description of the power supply module LEDs.

## Connect the DC Power Supply Module

Take note of the following warnings:



### Warning Statement 1002—DC Power Supply

When stranded wiring is required, use approved wiring terminations, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and conductor.



---

**Warning Statement 1003**—DC Power Disconnection

Before performing any of the following procedures, ensure that power is removed from the DC circuit.

---



---

**Warning Statement 1005**—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not great than: AC power 120VAC, 20A (US), 240VAC, 16A (EU), DC power 60V, 35A.

---



---

**Warning Statement 1017**—Restricted Area

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.

---



---

**Warning Statement 1022**—Disconnect Device

A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.

---



---

**Warning Statement 1025**—Use Copper Conductors Only

Use copper conductors only.

---



---

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

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

---



---

**Warning Statement 1030**—Equipment Installation

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

---



---

**Warning Statement 1040**—Product Disposal

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

---

**Warning Statement 1045—Short-Circuit Protection**

This product requires short-circuit (overcurrent) protection to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.

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

When installing or replacing the unit, the ground connection must always be made first and disconnected last.

**Warning Statement 1077—Do Not Operate Unit Without Covers**

The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed.

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

No user-serviceable parts inside. Do not open.

**Warning Statement 1086—Power Terminals, Replace Cover**

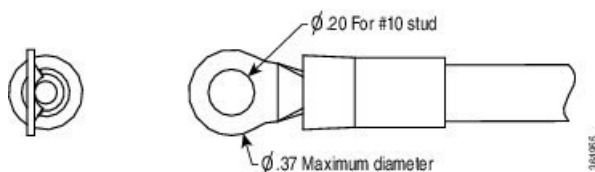
Hazardous voltage or energy may be present on power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place.

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 50: 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

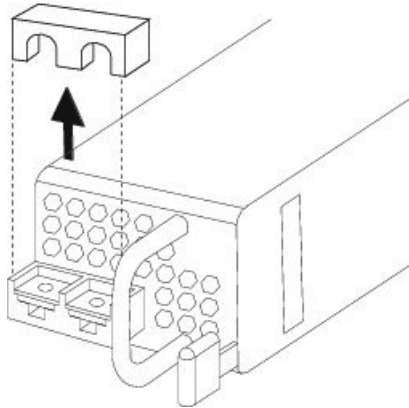
---

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

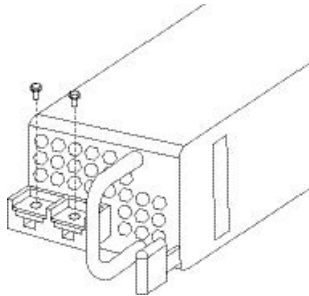
- The color coding of the DC input power supply leads depends on the color coding of the DC power source at your site. Make sure that the lead color coding you choose for the DC input power supply matches the lead color coding used at the DC power source and verify that the power source is connected 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 10gauge 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

- 
- 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. See [Remove and Replace the Power Supply Module, on page 61](#) for the procedure.
- 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 51: 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.

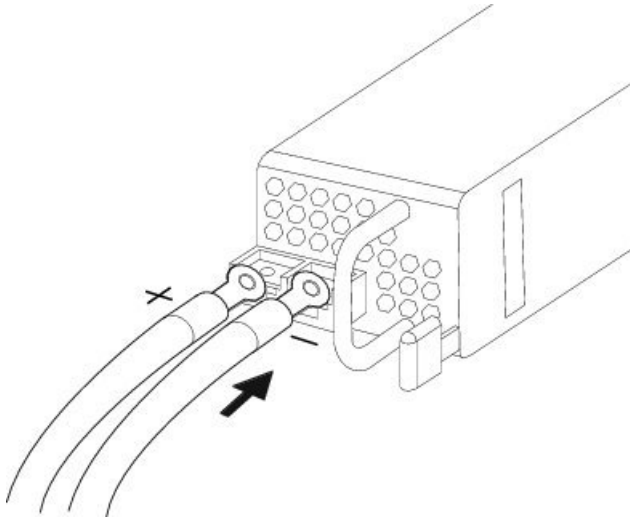
**Step 6** Remove the two M5 screws.

**Figure 52: 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.



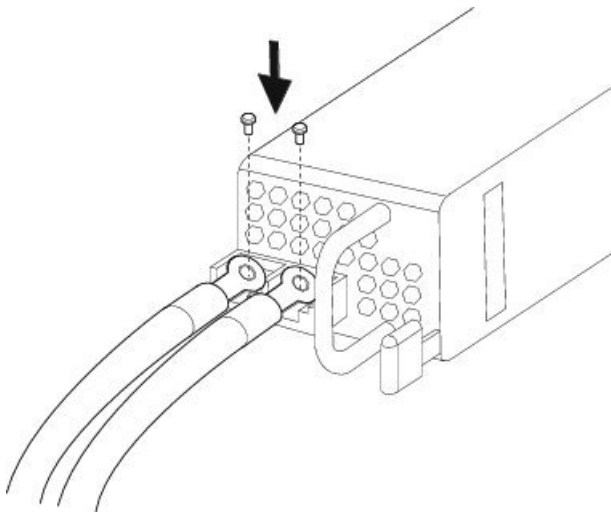
**Figure 53: Insert the Cables**



**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.

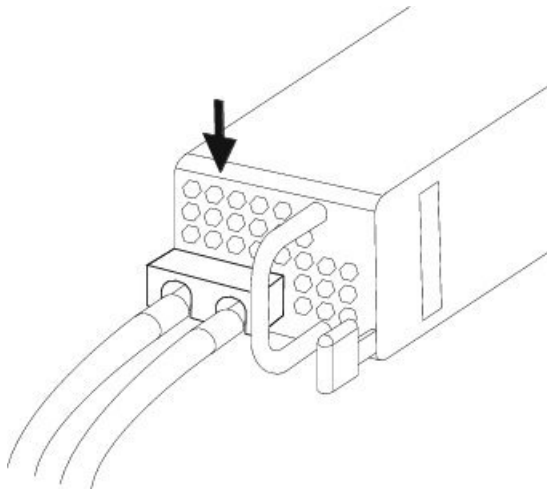
**Figure 54: Tighten the M5 Screws**



**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 55: 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. See [Front Panel LEDs, on page 7](#) for a description of the LEDs.

## Secure the Power Cord on the AC Power Supply Module

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.

Take note of the following warnings:




---

**Warning** **Statement 1030**—Equipment Installation

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

---



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

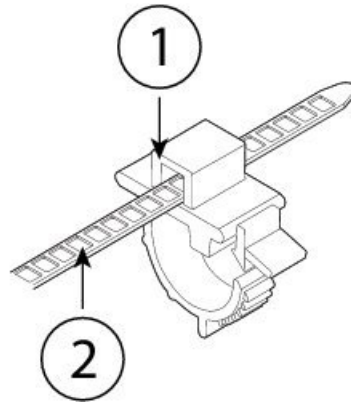
No user-serviceable parts inside. Do not open.

**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 56: Tie Wrap Through the Box Channel of the Clamp**



1	Box channel	2	Tie wrap
---	-------------	---	----------

**Step 2**

Attach the clamp to the power supply module:

- 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).
- Plug the snapping portion of the tie wrap into the hexagonal hole.
- 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 57: Flextronics Power Supply Module

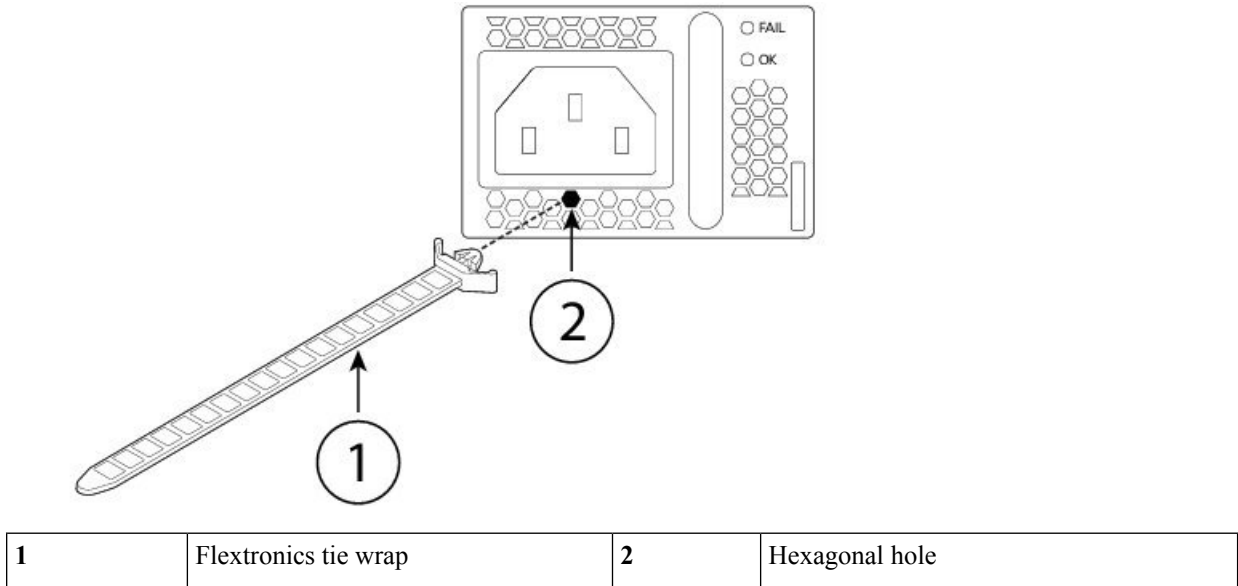
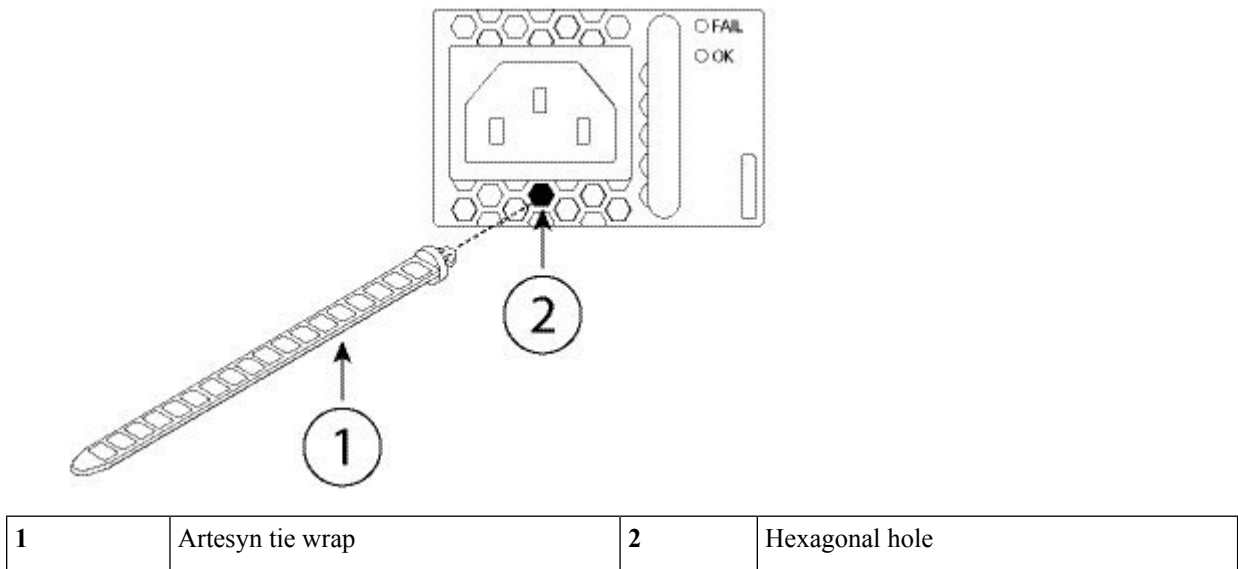
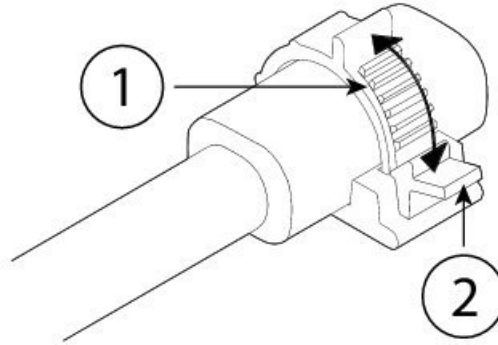


Figure 58: Artesyn Power Supply Module

**Step 3** Secure the clamp:

- Plug in the power supply power cord and wrap the clamp around the over mold portion of the power cord.
- Squeeze the clamp ends together to the power supply so that the annular teeth engage with the mate on the clamp.
- Make sure the clamp fits snugly into the over mold.
- 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 59: Clamp on Over Mold of Power Cord*



- 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.
-

