Maintenance and Upgrades

This chapter contains procedures for maintaining and upgrading the Firepower 4100 security appliance, and contains the following sections:

Remove and Replace the Network Module

Take note of the following warnings:

警告 **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.

警告 **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.

警告 **Statement 1030**—Equipment Installation

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

警告 **Statement 1040**—Product Disposal

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

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

No user-serviceable parts inside. Do not open.

警告 **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 the network module while the system is running, the software does not currently support hot swapping. You must power up the chassis to remove and replace network modules.

After removing and replacing the network module, you must reboot the system so that the Firepower 4100 discovers the new network module. See Network Modules for more information about Firepower network modules.

步骤 **1**   Save your configuration.

步骤 **2**   Power down the Firepower 4100 by moving the power switch to the OFF position. See About the Cisco Firepower 4100 Security Appliance for more information about the power switch.

步骤 **3**   To remove a network module, loosen the captive screw on the lower right 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.

图 **1**:   *Remove the Network Module from the Firepower 4100*
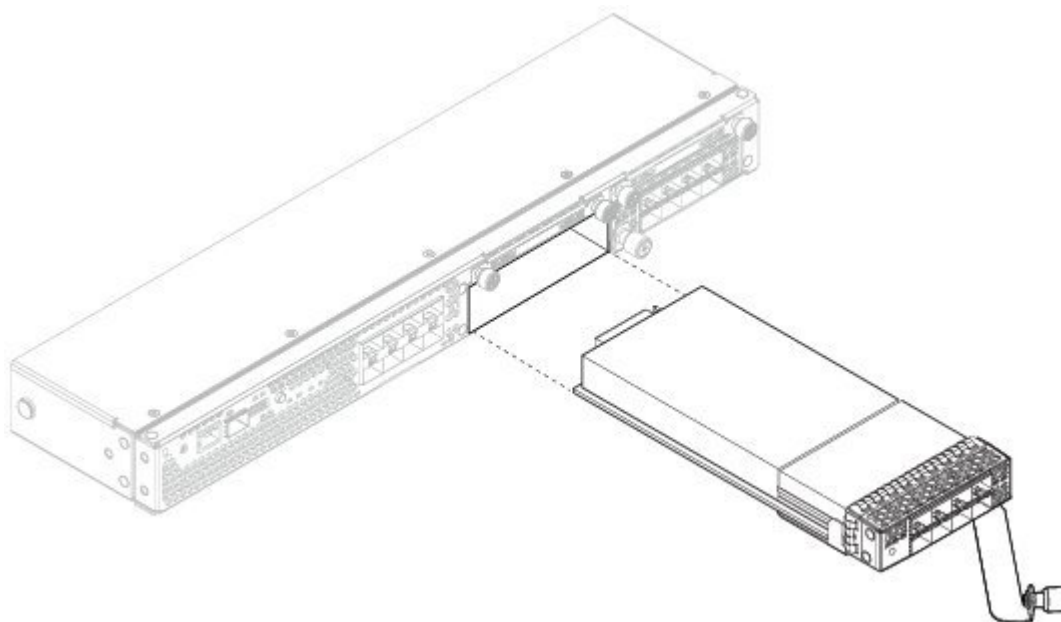
If the slot is to remain empty, install a blank faceplate to ensure proper airflow and to keep dust out of the chassis; otherwise, install another network module.

步骤 **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.

步骤 **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.

步骤 **6**   Tighten the captive screw on the lower right side of the network module.

步骤 **7**   Power up the chassis so that the new network module is recognized.

接下来的操作

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:

警告 **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.

警告 **Statement 1030**—Equipment Installation

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

警告 **Statement 1040**—Product Disposal

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

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

No user-serviceable parts inside. Do not open.

警告 **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.

> ✎
>
> 注释　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 1 fan module at a time.

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

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

步骤 **3**　Pull the fan module out of the chassis.

图 *2*：*Remove the Fan Module*
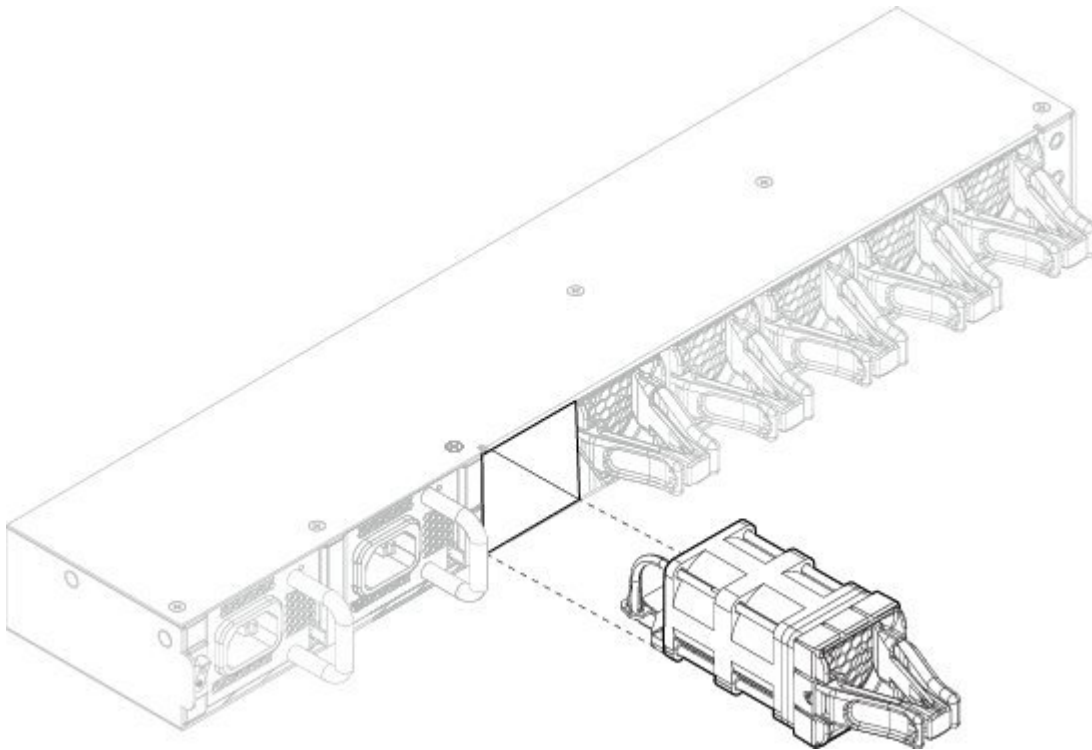
步骤 **4**　To replace a fan module, hold the fan module in front of the fan slot.

步骤 **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.

步骤 **6**　Verify that the fan is operational by checking the fan module LED. See Front Panel LEDs for a description of the fan LEDs.

Remove and Replace the SSD

Take note of the following warnings:

警告 **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.

警告 **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.

警告 **Statement 1030**—Equipment Installation

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

警告 **Statement 1040**—Product Disposal

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

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

No user-serviceable parts inside. Do not open.

警告 **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.

You can install an Malware Storage Pack (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.
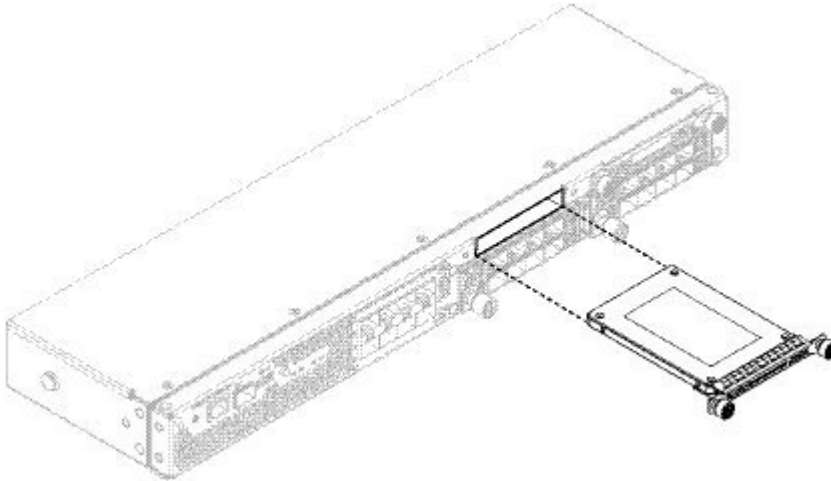
⚠️

注意　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.

步骤 **1**　Save your configuration.

步骤 **2**　Power down the chassis by moving the power switch to the OFF position. See About the Cisco Firepower 4100 Security Appliance for more information about the power switch.

步骤 **3**　To remove an SSD, face the front of the chassis, loosen the 2 captive screws on the SSD, and gently pull it out of slot 1 of the chassis.

图 *3*:　*Remove the SSD*

步骤 **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.

步骤 **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.

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

　　　注意　　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.

步骤 **7**　Tighten the captive screws on either side of the SSD.

步骤 **8**　Verify that the SSD is operational by checking the SSD LED. See Front Panel LEDs for a description of the fan LEDs.

Remove and Replace the Power Supply Module

Take note of the following warnings:

警告 **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.

警告 **Statement 1003**—DC Power Disconnection

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

警告 **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.

警告 **Statement 1022**—Disconnect Device

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

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

Use copper conductors only.

警告 **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.

警告 **Statement 1030**—Equipment Installation

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

警告 **Statement 1040**—Product Disposal

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

警告　**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.

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

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

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

No user-serviceable parts inside. Do not open.

警告　**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.

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

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

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

图 *4*: ***Remove the Power Supply Module***
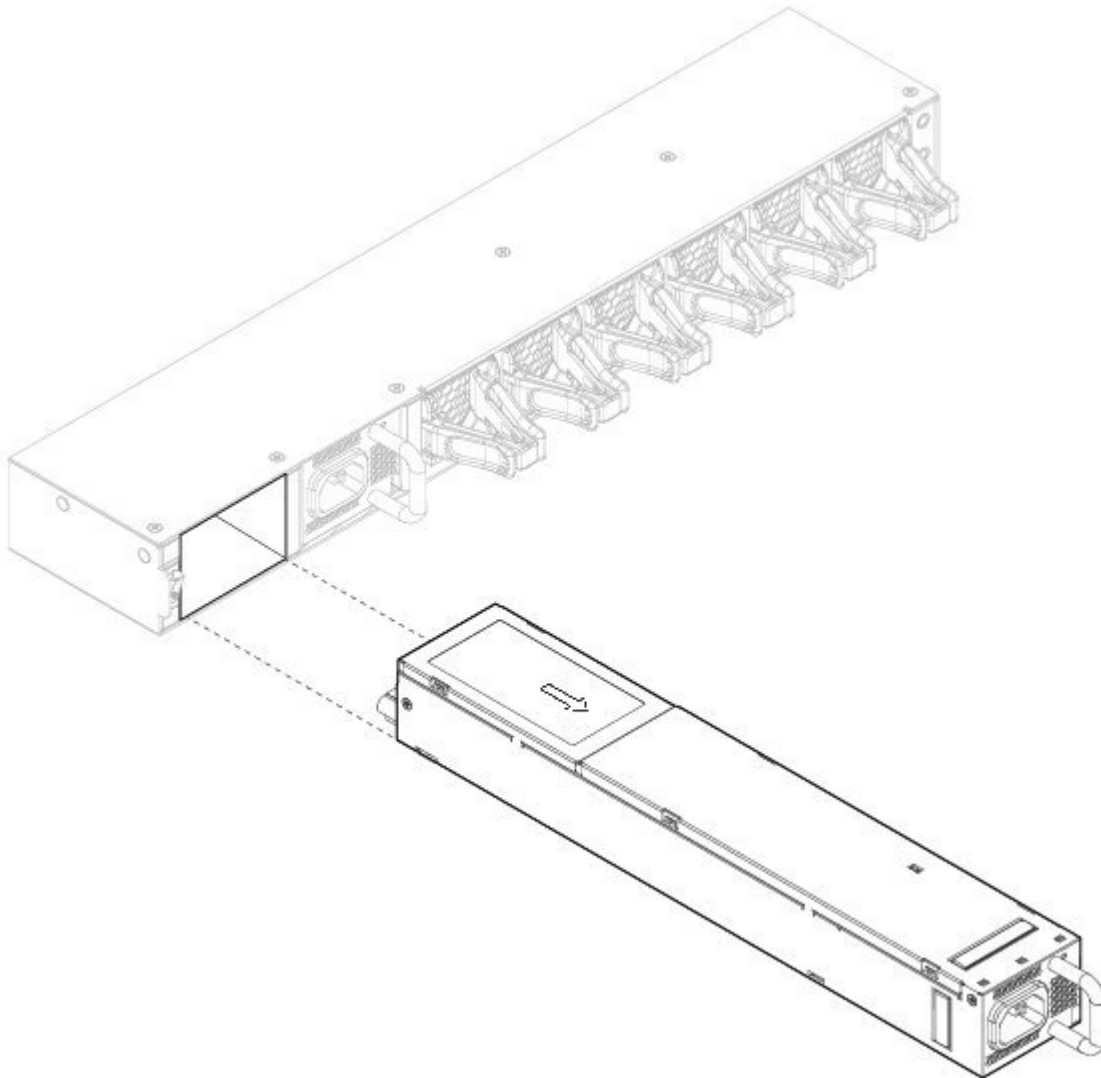
If the slot is to remain empty, install a blank faceplate to ensure proper airflow and to keep dust out of the chassis; otherwise, install another power supply module.

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

步骤 **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 for a description of the power supply module LEDs.

Connect the DC Power Supply Module

Take note of the following warnings:

警告 **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.

警告 **Statement 1003**—DC Power Disconnection

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

警告 **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.

警告 **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.

警告 **Statement 1022**—Disconnect Device

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

⚠️

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

Use copper conductors only.

⚠️

警告 **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.

⚠️

警告 **Statement 1030**—Equipment Installation

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

⚠️

警告 **Statement 1040**—Product Disposal

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

⚠️

警告 **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.

⚠️

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

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

⚠️

警告 **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.

⚠️

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

No user-serviceable parts inside. Do not open.

⚠️

警告 **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.

注释　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.

图 *5*:　*DC Input Power Cable Lug*
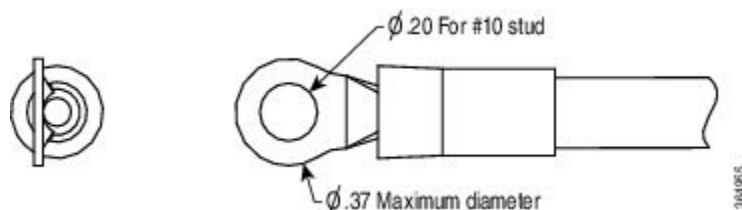
注释　To avoid hazardous conditions, all components in the area where DC input power is accessible must be properly insulated. Therefore, before installing the DC cable lugs, be sure to insulate the lugs according to the manufacturer's instructions

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.

开始之前

- 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

|	
步骤 **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 ，第 7 页 for the procedure.
步骤 **2**	Verify that the power is off to the DC circuit on the power supply module that you are installing.
步骤 **3**	Make sure that all site power and grounding requirements have been met.
步骤 **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.

图 *6*: *Remove the Plastic Cover*
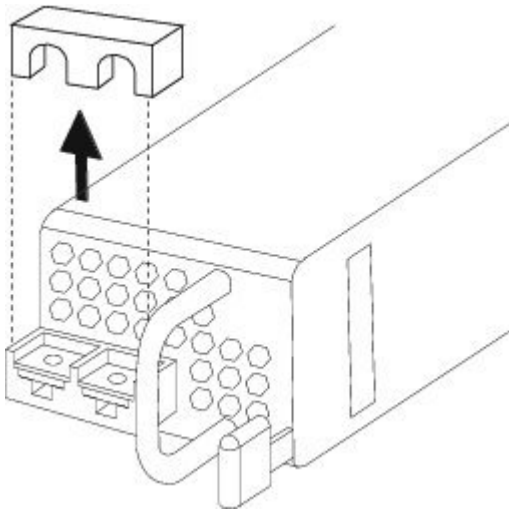
步骤 **5**　To prevent any contact with metal lead on the ground wire and the plastic cover, you must wrap the positive and negative lead cables with sleeving. Insulate the lug with shrink sleeving for each lead wire if using noninsulated crimp terminals. Sleeving is not required for insulated terminals.

步骤 **6**　Remove the two M5 screws.

图 *7*: ***Remove the M5 Screws***
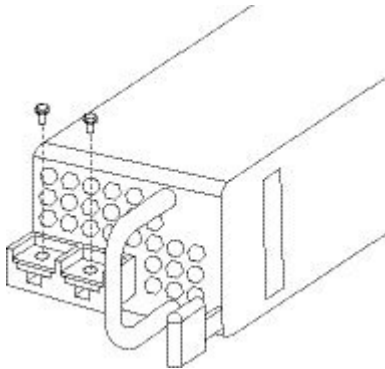
步骤 **7**　For easier cable management, insert the negative lead cable first. Replace the grounding lug with the cable in the following order—wire terminal, then the screw with the captive washer.

图 *8*: ***Insert the Cables***
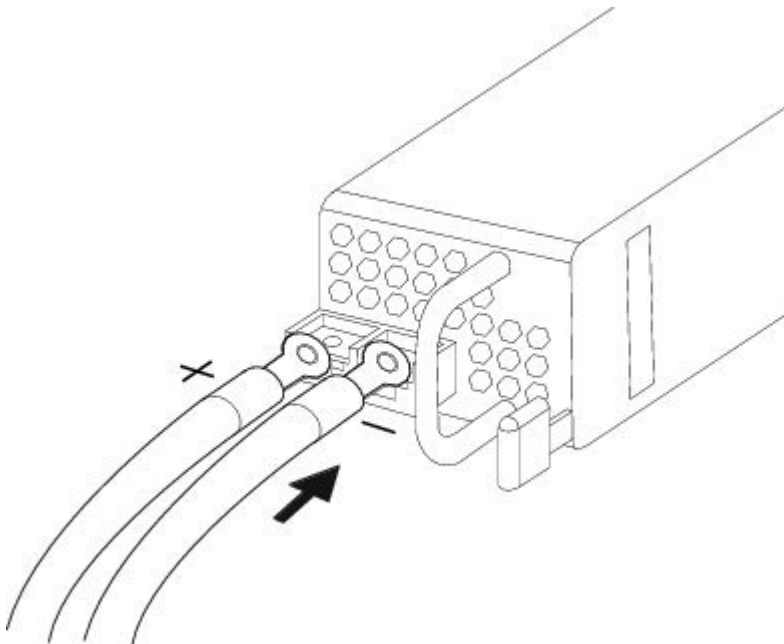
步骤 **8**   Tighten the M5 screw with the captive washer to the recommended torque of 5 in-lbs for the positive stud and wire. Secure the wires coming in from the terminal block so that they cannot be disturbed by casual contact.
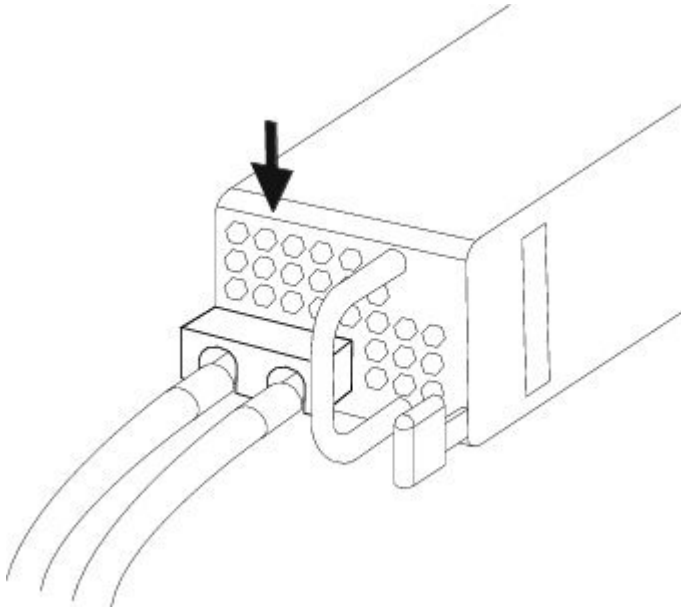
图 *9*:   *Tighten the M5 Screws*
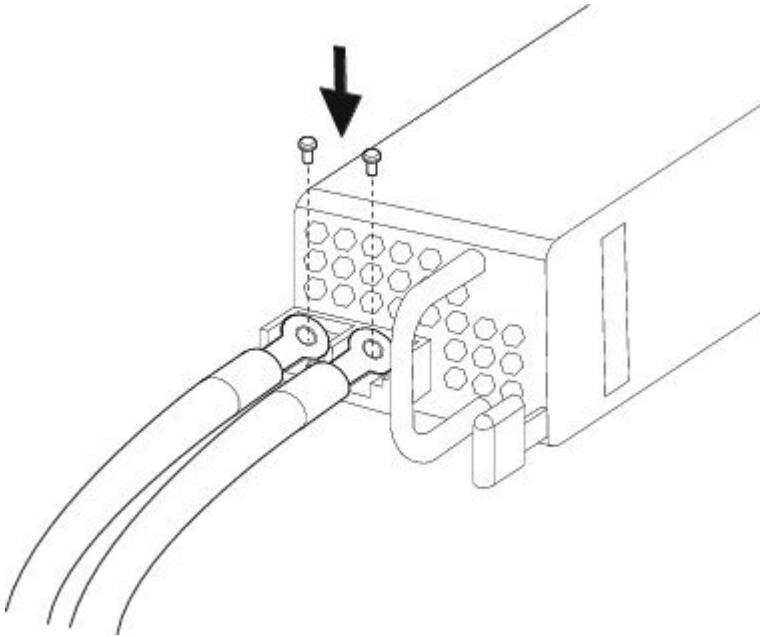
步骤 **9**　Replace the terminal block plastic cover. The plastic cover is slotted and keyed to fit correctly over the terminal block. This cover should always be in place when power is applied to the terminals.

图 *10*: *Replace the Plastic Cover*

步骤 **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.

步骤 **11**　Verify power supply operation by checking the power supply LED on the front of the chassis. See Front Panel LEDs for a description of the 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:

⚠️

警告　**Statement 1030**—Equipment Installation

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

⚠️

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

No user-serviceable parts inside. Do not open.

步骤 **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.

图 **11**：　*Tie Wrap Through the Box Channel of the Clamp*
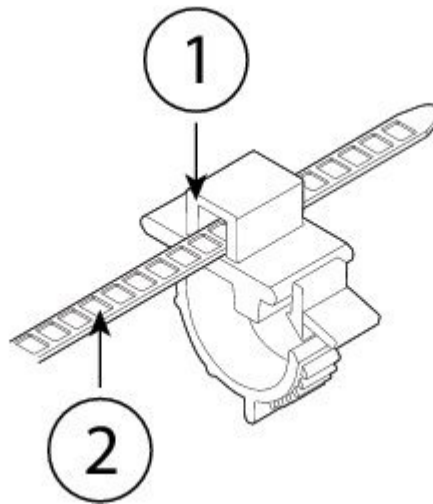

1	Box channel	2	Tie wrap

步骤 **2**　Attach the clamp to the power supply module:

a) Locate the hexagonal ventilation hole on the power supply module at the center of the plug just below the power connector body (see the following figures).
b) Plug the snapping portion of the tie wrap into the hexagonal hole.
c) With the clamp side facing up, push the tie wrap in until it is fully engaged.
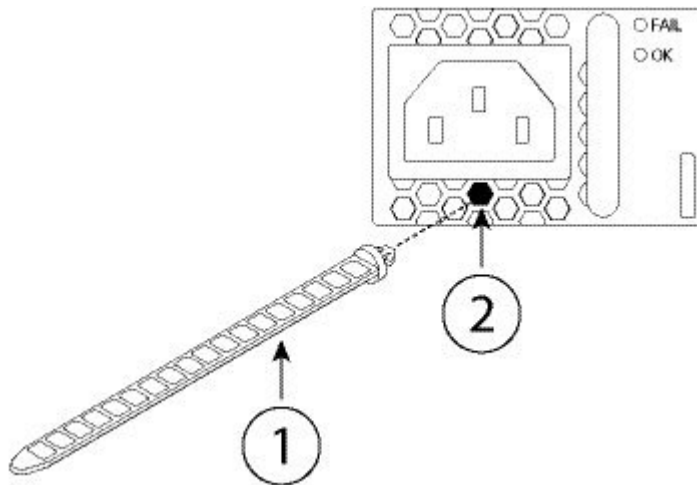
注意　Make sure you have the correct location because you cannot remove the tie wrap from the power supply module once you have installed it without damaging the tie wrap.

图 12: *Flextronics Power Supply Module*
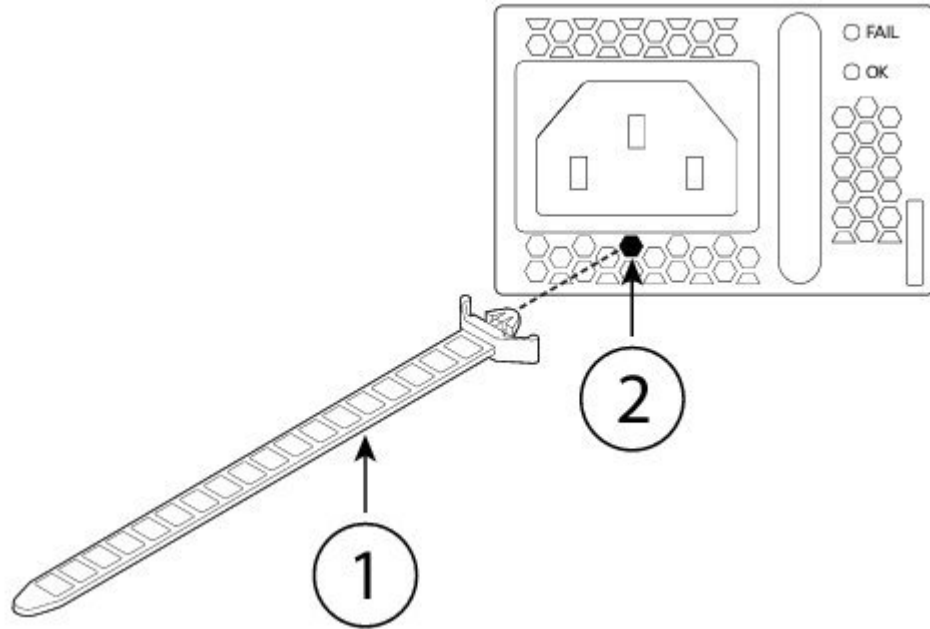
1	Flextronics tie wrap	2	Hexagonal hole

图 13: *Artesyn Power Supply Module*

1	Artesyn tie wrap	2	Hexagonal hole

步骤 **3**   Secure the clamp:

   a) Plug in the power supply power cord and wrap the clamp around the over mold portion of the power cord.

   b) Squeeze the clamp ends together to the power supply so that the annular teeth engage with the mate on the clamp.

   c) Make sure the clamp fits snugly into the over mold.

   d) Adjust the clamp position on the tie wrap so that the clamp is tight against the front of the over mold and the power cord cannot be removed by lightly pulling on it.

图 *14*:   ***Clamp on Over Mold of Power Cord***
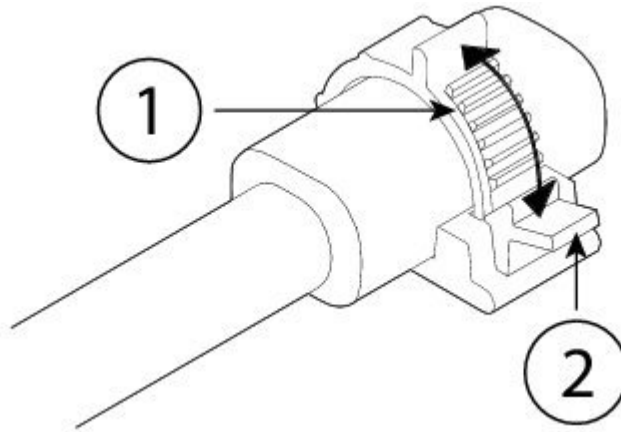
步骤 **4**   If you need to remove the power cord, push the release tab on the clamp to force the annular clamp teeth to disengage and the clamp opens up. You can then remove the clamp from the power cord.