Cisco Firepower Management Center 750, 1500, 2000, 3500, and 4000 Hardware Installation Guide

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About This Guide

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This guide describes how to install and maintain the Cisco Firepower Management Center appliances. Information in this guide applies to the 750, 1500, 2000, 3500, and 4000 models.

This preface includes the following sections:

Organization

This guide is organized as follows:

Chapter	Title	Description
Chapter 1	About the Firepower Management Centers	Provides an overview of the Firepower Management Center models.
Chapter 2	Hardware Specifications	Describes the hardware specifications for the Firepower Management Center models.
Chapter 3	Installing a Firepower Management Center	Describes how to install a Firepower Management Center server in a rack, how to connect the management interface, and how to power on the chassis.
Chapter 4	Deploying on a Management Network	Describes Firepower System deployment options available to accommodate the needs of unique network architectures.
Appendix A	Memory Upgrade Instructions for Firepower Management Centers	Provides instructions to replace the memory modules located internally in your Cisco Firepower Management Centers.

Document Conventions

This document uses the following conventions:

Convention	Indication
bold type	Commands and keywords and user-entered text appear in **bold** type.
italic type	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* type.
[ ]	Elements in square brackets are optional.
{x | y | z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	An unquoted set of characters. Do not use quotation marks around the string, or the string will include the quotation marks.
`monospace` type	Terminal sessions and information the system displays appear in `monospace` type.
`monospace bold` type	Commands and keywords and user-entered text appear in **`monospace courier`** type.
`monospace italic` type	Arguments for which you supply values are in *`monospace italic`* type.
< >	Non-printing characters such as passwords are presented in angle brackets.
[ ]	Default responses to system prompts are presented in square brackets.
!, #	An exclamation point (!) or a hash sign (#) at the beginning of a line of code indicates a comment line.

Note Means *reader take note*.

Tip Means *the following information will help you solve a problem.*

Caution Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Installation Warnings

Be sure to read the Regulatory Compliance and Safety Information document (http://www.cisco.com/c/en/us/td/docs/security/firesight/hw-docs/regulatory/compliance/firesight-firepower-rcsi.html) before installing the device.

This section presents these important safety warnings:

Power Supply Disconnection Warning

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.** Statement 12

Jewelry Removal Warning

Warning **Before working on equipment that is connected to a power source, remove jewelry (including rings, necklaces, and watches). Metal objects will heat when connected to power and ground, and can cause serious burns or weld the metal object to the terminals.** Statement 43

Wrist Strap Warning

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 receive a shock.** Statement 94

Work During Lightning Warning

Warning **Do not work on the system, or connect or disconnect cables during periods of lightning. Statement 1001**

Installation Instructions Warning

Warning **Read all installation instructions before connecting the system to a power source.** Statement 1004

Chassis Warning for Rack-Mounting and Servicing

Warning **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.** Statement 1006

Short-Circuit Protection Warning

Warning **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.** Statement 1045

SELV Circuit Warning

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. Statement 1021

Ground Conductor Warning

Warning **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 not certain that suitable grounding is available.** Statement 1024

Faceplates and Cover Panels Warning

Warning **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they restrict 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.** Statements 1029 and 142

Product Disposal Warning

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Compliance with Local and National Electrical Codes Warning

Warning **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

Grounded Equipment Warning

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

Safety Cover Requirement

Warning **The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.** Statement 117

Where to Find Safety and Warning Information

For safety and warning information, see the Regulatory Compliance and Safety Information document at the following URL:

http://www.cisco.com/c/en/us/td/docs/security/firesight/hw-docs/regulatory/compliance/firesight-firepower-rcsi.html

This RCSI document describes the international agency compliance and safety information for the Cisco Firepower series.

Related Documentation

For a complete list of the Cisco Firepower series documentation and where to find it, see the documentation roadmap at the following URL:

http://www.cisco.com/c/en/us/td/docs/security/firepower/roadmap/firepower-roadmap.html

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation as an RSS feed and delivers content directly to your desktop using a reader application. The RSS feeds are a free service.

About the Firepower Management Centers

A Firepower Management Center provides a centralized management point and event database for your Firepower System deployment. Firepower Management Centers aggregate and correlate intrusion, file, malware, discovery, connection, and performance data, assessing the impact of events on particular hosts and tagging hosts with indications of compromise. This allows you to monitor the information that your devices report in relation to one another, and to assess and control the overall activity that occurs on your network.

Key features of the Firepower Management Center include:

- device, license, and policy management
- display of event and contextual information using tables, graphs, and charts
- health and performance monitoring
- external notification and alerting
- correlation, indications of compromise, and remediation features for real-time threat response
- custom and template-based reporting

Warning **Only trained and qualified personnel should install, replace, or service this equipment.** Statement 49

This installation guide provides information about deploying and installing Firepower Management Centers. It also contains hardware specifications and maintenance information.

Firepower Management Center Models

All Firepower Management Centers have similar capabilities, with the primary differences being capacity and speed. Firepower Management Center models vary in terms of how many devices they can manage, how many events they can store, and how many hosts and users they can monitor.

The MC4000 introduces Cisco's Unified Computing System (UCS) platform into the Firepower System. The MC4000 does not support Cisco functionality that uses tools on the baseboard management controller (BMC), such as the UCS Manager or the Cisco Integrated Management Controller (CIMC).

The following table lists the appliances that Cisco delivers with the Firepower System.

Table 1-1 Firepower Management Centers

Models	Series/Grouping	Type
MC750 (Rev. 1 and 2) MC1500 MC2000 MC3500 MC4000	Management Centers	Management Center

Hardware Specifications

Management Centers are delivered on a variety of platforms to meet the needs of your organization.

Rack and Cabinet Mounting Options

You can mount Management Centers in racks and server cabinets. The appliance comes with a rack-mounting kit. For information on mounting the appliance in a rack, refer to the instructions delivered with the rack-mounting kit.

You can purchase rack and cabinet mounting kits for other appliances separately.

Management Centers

See the following sections for more information about your Management Center:

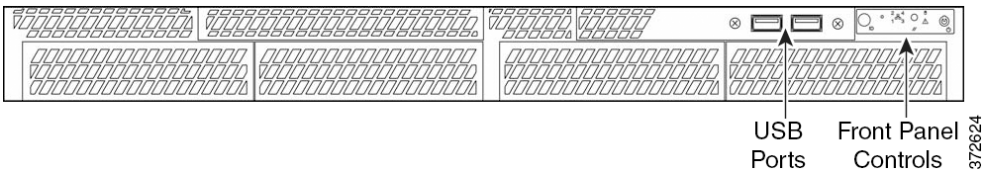
MC750

The MC750 is a 1U appliance. See the following sections for more information:

MC750 Chassis Front View

The front of the MC750 chassis contains the front panel controls.

Figure 2-1 MC750



The following diagram illustrates the front panel controls and LEDs for the MC750. The hard disk drive and system status icons, the numbers for the NIC (1, 2, 3, and 4) activity status, and the power button are also the LEDs.

Figure 2-2 MC750

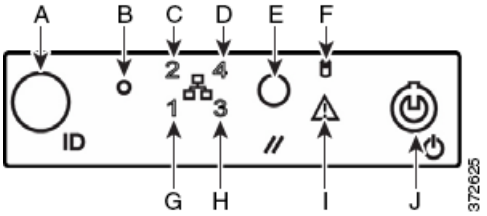


Table 2-1 Front Panel Components

A	ID button with ID LED	F	Hard disk drive status LED
B	Non-maskable interrupt button	G	NIC 1 activity status LED
C	NIC 2 activity status LED	H	NIC 3 activity status LED
D	NIC 4 activity status LED	I	System status LED
E	Reset button	J	Power button with power LED

The front panel of the chassis houses five LEDs which you can view to display the system's operating state. The following table describes the LEDs on the front panel.

Table 2-2 MC750 Front Panel LEDs

LED	Description
System status	Indicates system status: • A green light indicates the system is operating normally. • A blinking green light indicates the system is operating in a degraded condition. For more information, see Table 2-3 on page 2-3.
Power	Indicates whether the system has power or is sleeping: • A green light indicates the system is operating normally. • No light indicates the system is off. • A blinking green light indicates the system is sleeping. The sleep indication is maintained on standby by the chipset. If the system is powered down without going through BIOS, the state in effect at the time of power off will be restored when the system is powered on until the BIOS clears it. If the system is not powered down normally, it is possible that the power light will be blinking at the same time that the system status light is off due to a failure or configuration change that prevents the BIOS from running.

Table 2-2 MC750 Front Panel LEDs (continued)

LED	Description
Hard drive activity	Indicates hard drive activity: • A blinking green light indicates the fixed disk drive is active. • No light indicates no drive activity, or the system is powered off or sleeping. Drive activity is determined from the onboard hard disk controllers. The server board also provides a header giving access to this light for add-in controllers.
NIC activity	Indicates activity between the system and the network: • A blinking green light indicates there is activity. • No light indicates there is no activity.

The following table describes the conditions where the system status LED might be lit.

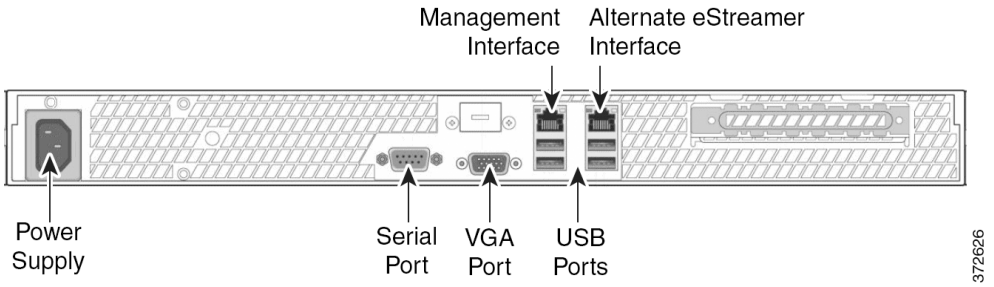
Table 2-3 MC750 System Status

Condition	Description
Critical	Any critical or non-recoverable threshold crossing associated with the following events: • temperature, voltage, or fan critical threshold crossing • power subsystem failure • the system is unable to power up due to incorrectly installed processors or processor incompatibility • critical event logging errors, including System Memory Uncorrectable ECC error and fatal/uncorrectable bus errors, such as PCI SERR and PERR
Non-critical	A non-critical condition is a threshold crossing associated with the following events: • temperature, voltage, or fan non-critical threshold crossing • chassis intrusion • Set Fault Indication command from system BIOS; the BIOS may use the command to indicate additional, non-critical status such as system memory or CPU configuration changes
Degraded	A degraded condition is associated with the following events: • one or more processors are disabled by Fault Resilient Boot (FRB) or BIOS • BIOS has disabled or mapped out some of the system memory

MC750 Chassis Rear View

The rear of the chassis contains the power supply and connection ports for the MC750.

Figure 2-3 MC750



The following table describes the features that appear on the rear of the appliance.

Table 2-4 MC750 System Components: Rear View

Feature	Description
Power supply	Provides power to the Management Center through an AC power source.
Serial port, VGA port USB ports	Allows you to attach a monitor, keyboard, and mouse to the device.
10/100/1000Mbps Ethernet management interface	Provides for an out-of-band management network connection. The management interface is used for maintenance and configuration purposes **only** and is not intended to carry service traffic.
Alternate eStreamer interface	Provides an alternate interface for the eStreamer client.

The 10/100/1000Mbps management interface is located on the rear of the appliance. The following table describes the LEDs associated with the management interface.

Table 2-5 MC750 Management Interface LEDs

LED	Description
Left (link)	Indicates whether the link is up: • If the light is on, the link is up. • No light indicates there is no link.
Right (activity)	Indicates activity on the port: • A blinking light indicates activity. • No light indicates there is no link.

MC750 Physical and Environmental Parameters

The following table describes the physical attributes and the environmental parameters for the appliance.

Table 2-6 MC750 Physical and Environmental Parameters

Parameter	MC750
Form factor	1U
Dimensions (D x W x H)	21.8 in. x 17.25 in. x 1.67 in. (55.37 cm x 43.82 cm x 4.24 cm)

Table 2-6 MC750 Physical and Environmental Parameters (continued)

Parameter	MC750
Max weight	33 lbs (15 kg)
Power supply	250 W power supply for 120 VAC 6.0 Ampere maximum at 110 volts, 50/60 Hz 3.0 Ampere maximum at 220 volts, 50/60 Hz
Operating temperature	50°F to 95°F (10°C to 35°C) with the maximum rate of change not to exceed 18°F (10°C) per hour
Non-operating temperature	-40°F to +158°F (-40°C to +70°C)
Non-operating humidity	90%, non-condensing at 95°F (35°C)
Acoustic noise	7 BA in an idle state at typical office ambient temperature (73°F +/- 4°F, 23°C +/- 2°C)
Operating shock	No errors with half a sine wave shock of 2G (with 11 ms duration)
Package shock	Operational after 24 in. (60 cm) free fall although cosmetic damage may be present; chassis weight of 40 to 80 lbs (18 to 36 kg)
ESD	+/- 12 kV for air discharge and 8 K for contact
Airflow	Front to back
System cooling requirements	1660 BTU/hour

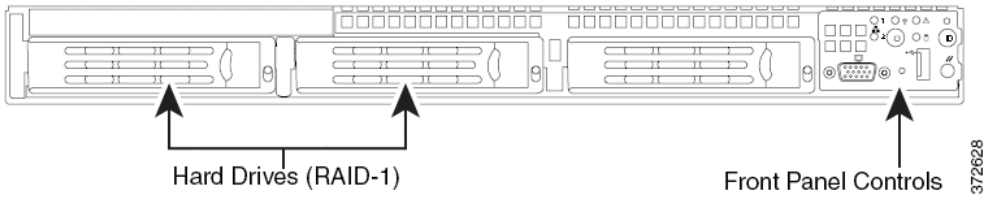
MC1500

The MC1500 is a 1U appliance. See the following sections for more information:

- MC1500 Chassis Front View, page 2-5
- MC1500 Chassis Rear View, page 2-7
- MC1500 Physical and Environmental Parameters, page 2-9

MC1500 Chassis Front View

The front of the chassis contains the hard drives and the front panel controls.



The following diagram illustrates the front panel controls and LEDs.

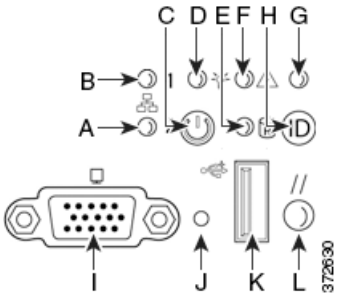


Table 2-7 Front Panel Components

A	NIC 2 activity LED	G	ID LED
B	NIC 1 activity LED	H	ID button
C	Power button	I	Video connector (not available)
D	Power/sleep LED	J	Non-maskable interrupt button
E	Fixed disk drive status	K	USB 2.0 connector
F	System status LED	L	Reset button

The front panel of the chassis houses six LEDs, which you can view with or without the front bezel to display the system's operating state. The following table describes the LEDs on the front panel.

Table 2-8 MC1500 Front Panel LEDs

LED	Description
NIC 1 activity NIC 2 activity	Indicates activity between the system and the network: • A blinking green light indicates activity. • No light indicates no activity.
Power/sleep	Indicates whether the system has power or is sleeping: • A green light indicates the system is operating normally. • A blinking green light indicates the system is sleeping. • No light indicates the system does not have power. The sleep indication is maintained on standby by the chipset. If the system is powered down without going through BIOS, the state in effect at the time of power off will be restored when the system is powered on until the BIOS clears it. If the system is not powered down normally, it is possible that the power light will be blinking at the same time that the system status light is off due to a failure or configuration change that prevents the BIOS from running.
Hard drive activity	Indicates hard drive activity: • A blinking green light indicates the fixed disk drive is active. • An amber light indicates there is a fixed disk drive fault. • No light indicates there is no drive activity, or the system is powered off or sleeping. Drive activity is determined from the onboard hard disk controllers. The server board also provides a header giving access to this light for add-in controllers.

Table 2-8 MC1500 Front Panel LEDs (continued)

LED	Description
System status	Indicates system status: • A green light indicates the system is operating normally. • A blinking green light indicates the system is operating in a degraded condition. • An amber light indicates the system is in a critical or non-recoverable condition. • A blinking amber light indicates the system is in a non-critical condition. • No light indicates the Power On Self Tests (POST) is underway or the system has stopped. **Note** The amber status light takes precedence over the green status light. When the amber light is on or blinking, the green light is off. For more information, see Table 2-3 on page 2-3.
System ID	Helps identify a system installed in a high-density rack with other similar systems: • A blue light indicates the ID button is pressed and a blue light is on at the rear of the appliance. • No light indicates the ID button is not pressed.

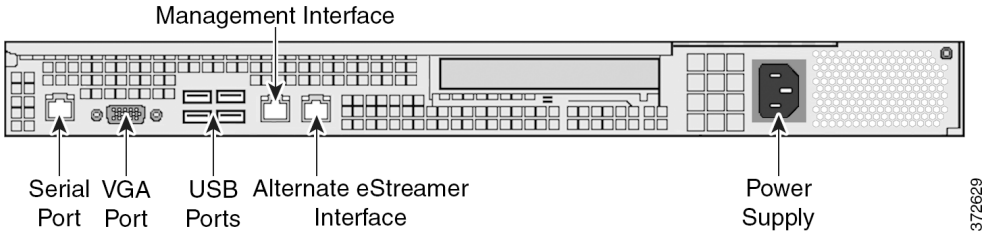
The following table describes the conditions under which the system status LED might be lit.

Table 2-9 MC1500 System Status

Condition	Description
Critical	Any critical or non-recoverable threshold crossing associated with the following events: • temperature, voltage, or fan critical threshold crossing • power subsystem failure • the system is unable to power up due to incorrectly installed processors or processor incompatibility • critical event logging errors, including System Memory Uncorrectable ECC error and fatal/uncorrectable bus errors, such as PCI SERR and PERR
Non-critical	A non-critical condition is a threshold crossing associated with the following events: • temperature, voltage, or fan non-critical threshold crossing • chassis intrusion • Set Fault Indication command from system BIOS; the BIOS may use the command to indicate additional, non-critical status such as system memory or CPU configuration changes
Degraded	A degraded condition is associated with the following events: • one or more processors are disabled by Fault Resilient Boot (FRB) or BIOS • BIOS has disabled or mapped out some of the system memory

MC1500 Chassis Rear View

The rear of the chassis contains the connection ports and power supply.



The following table describes the features that appear on the rear of the appliance.

Table 2-10 MC1500 System Components: Rear View

Feature	Description
Power supply	Provides power to the Management Center through an AC power source.
VGA port USB ports	Allows you to attach a monitor, keyboard, and mouse to the Management Center.
10/100/1000Mbps Ethernet management interface	Provides for an out-of-band management network connection. The management interface is used for maintenance and configuration purposes **only** and is not intended to carry service traffic.
Alternate eStreamer interface	Provides an alternate interface for the eStreamer client.
RJ45 serial port	Allows you to establish a direct workstation-to-appliance connection (using an RJ45 to DB-9 adapter) for direct access to all of the management services on the appliance. The RJ45 serial port is used for maintenance and configuration purposes **only** and is not intended to carry service traffic. **Note** You cannot use the front and the rear panel serial ports at the same time.

The 10/100/1000Mbps management interface is located on the rear of the appliance. The following table describes the LEDs associated with the management interface.

Table 2-11 MC1500 Management Interface LEDs

LED	Description
Left (link)	Indicates whether the link is up: • If the light is on, the link is up. • No light indicates there is no link.
Right (activity)	Indicates activity on the port: • A blinking light indicates activity. • No light indicates there is no activity.

The serial port is located on the rear of the appliance. The following table describes the signal present on the DB-9 connector.

Table 2-12 MC1500 Serial Port Pin Assignments

Pin	Signal	Description
1	DCD	Carrier detect
2	RD	Received data
3	TD	Transmitted data
4	DTR	Data terminal ready
5	GND	Ground
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Clear to send
9	RI	Ring indicator

MC1500 Physical and Environmental Parameters

The following table describes the physical attributes and the environmental parameters for the appliance.

Table 2-13 MC1500 Physical and Environmental Parameters

Parameter	Description
Form factor	1U
Dimensions (D x W x H)	27.2 in.x 16.93 in. x 1.7 in. (69.1 cm x 43.0 cm x 4.3 cm)
Max weight	34 lbs (15.4 kg)
Power supply	600 W power supply for 120 VAC 9.5 Ampere maximum at 110 volts, 50/60 Hz 4.75 Ampere maximum at 220 volts, 50/60 Hz
Operating temperature	50°F to 95°F (10°C to 35°C)
Non-operating temperature	-40°F to +158°F (-40°C to +70°C)
Non-operating humidity	90%, non-condensing at 82.4°F (28°C)
Acoustic noise	7 BA (rack mount) in an idle state at typical office ambient temperature (73°F +/- 4°F, 23°C +/- 2°C)
Operating shock	No errors with half a sine wave shock of 2G (with 11 ms duration)
Package shock	Operational after 24 in. (60 cm) free fall although cosmetic damage may be present; chassis weight of 40 to 80 lbs (18 to 36 kg)
ESD	+/- 15 kV (I/O port +/-8 KV) per Intel environment test specification
Airflow	Front to back
System cooling requirements	2550 BTU/hour

MC3500

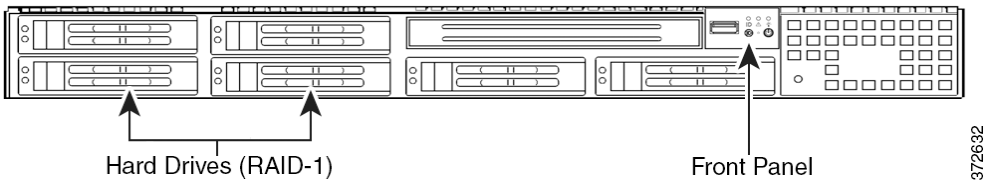
The MC3500 is a 1U appliance. See the following sections for more information:

- MC3500 Chassis Front View, page 2-10

- MC3500 Chassis Rear View, page 2-12
- MC3500 Physical and Environmental Parameters, page 2-14

MC3500 Chassis Front View

The front of the chassis contains the hard drives and the front panel.



The front of the appliance includes controls and LED displays for the front panel.

The following diagram illustrates the front panel controls and LEDs.

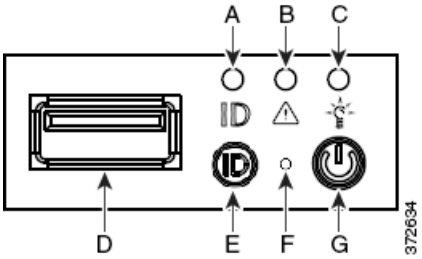


Table 2-14 Front Panel Components

A	ID LED	E	ID button
B	System status LED	F	Reset button
C	Power LED	G	Power button
D	USB port		

The front panel of the chassis houses three LEDs, which display the system's operating state. The following table describes the LEDs on the front panel.

Table 2-15 MC3500 Front Panel LEDs

LED	Description
Power	Indicates whether the system has power: • A green light indicates that the system has power. • No light indicates the system does not have power.
System status	Indicates the system status: • A green light indicates the system is operating normally. • A blinking green light indicates the system is operating in a degraded condition. • A blinking amber light indicates the system is in a non-critical condition. • An amber light indicates the system is in a critical or non-recoverable condition. • No light indicates the system is starting up or off. **Note** The amber status light takes precedence over the green status light. When the amber light is on or blinking, the green light is off. See Table 2-16 on page 2-12 for more information.
Hard drive activity	Indicates the hard drive status: • A blinking green light indicates the fixed disk drive is active. • An amber light indicates a fixed disk drive fault. • No light indicates there is no drive activity or the system is powered off.
NIC activity	Indicates whether there is any network activity: • A green light indicates there is network activity. • No light indicates there is no network activity.
System ID	Helps identify a system installed in a high-density rack with other similar systems: • A blue light indicates the ID button is pressed and a blue light is on at the rear of the appliance. • No light indicates the ID button is not pressed.

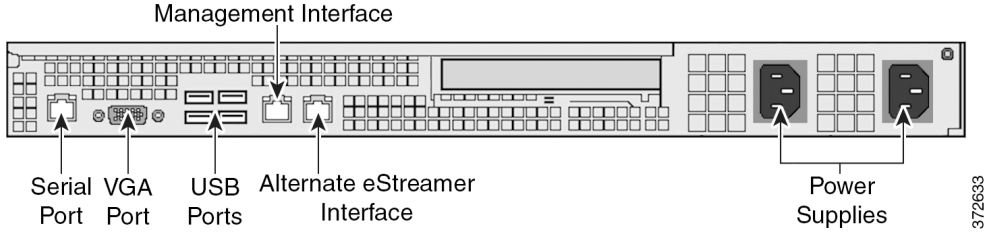
The following table describes the conditions under which the system status LED might be lit.

Table 2-16 MC3500 System Status

Condition	Description
Critical	Any critical or non-recoverable threshold crossing associated with the following events: • temperature, voltage, or fan critical threshold crossing • power subsystem failure • system inability to power up due to incorrectly installed processors or processor incompatibility • critical event logging errors, including System Memory Uncorrectable ECC error and fatal/uncorrectable bus errors, such as PCI SERR and PERR
Non-critical	A non-critical condition is a threshold crossing associated with the following events: • temperature, voltage, or fan non-critical threshold crossing • chassis intrusion • Set Fault Indication command from system BIOS; the BIOS may use the command to indicate additional, non-critical status such as system memory or CPU configuration changes
Degraded	A degraded condition is associated with the following events: • one or more processors are disabled by Fault Resilient Boot (FRB) or BIOS • some system memory disabled or mapped out by BIOS • one of the power supplies unplugged or not functional **Tip** If you observe a degraded condition indication, check your power supply connections first. Power down the appliance, disconnect both power cords, reconnect the power cords to re-seat them, and then restart the appliance. **Caution** To power down safely, use the procedure in the Managing Devices chapter in the *Firepower Management Center Configuration Guide*, or the `shutdown -h now` command from the Management Center's shell.

MC3500 Chassis Rear View

The rear of the chassis contains the connection ports and power supplies.



The following table describes the features that appear on the rear of the appliance.

Table 2-17 MC3500 System Components: Rear View

Feature	Description
PS/2 mouse connector PS/2 keyboard connector VGA port USB ports	Allows you to attach a monitor, keyboard, and mouse to the appliance, as an alternative to using the RJ45 serial port, to establish a direct workstation-to-appliance connection. You also must use a USB port to restore the appliance to its original factory-delivered state, using the thumb drive delivered with the appliance.
RJ45 serial port	Allows you to establish a direct workstation-to-appliance connection (using an RJ45 to DB-9 adapter) for direct access to all of the management services on the appliance. The RJ45 serial port is used for maintenance and configuration purposes **only** and is not intended to carry service traffic. **Note** You cannot use the front and the rear panel serial ports at the same time.
10/100/1000Mbps Ethernet management interface	Provides for an out-of-band management network connection. The management interface is used for maintenance and configuration purposes **only** and is not intended to carry service traffic.
Alternate eStreamer interface	Provides an alternate interface for the eStreamer client.
Redundant power supplies	Provides power to the appliance through an AC power source.

The 10/100/1000Mbps management interface is located on the rear of the appliance. The following table describes the LEDs associated with the management interface.

Table 2-18 MC3500 Management Interface LEDs

LED	Description
Left (activity)	Indicates activity on the port: • A blinking light indicates activity. • No light indicates there is no activity.
Right (link)	Indicates whether the link is up: • A light indicates the link is up. • No light indicates there is no link.

The power supply modules are located on the rear of the appliance. The following table describes the LEDs associated with the dual power supplies.

Table 2-19 MC3500 Power Supply LEDs

LED	Description
Off	The power supply is not plugged in.
Amber	No power supplied to this module. or A power supply critical event such as module failure, a blown fuse, or a fan failure; the power supply shuts down.
Blinking amber	A power supply warning event, such as high temperature or a slow fan; the power supply continues to operate.

Table 2-19 MC3500 Power Supply LEDs (continued)

LED	Description
Blinking green	AC input is present; volts on standby, the power supply is switched off.
Green	The power supply is plugged in and on.

The serial port is located on the rear of the appliance. The following table describes the signal present on the DB-9 connector.

Table 2-20 MC3500 Serial Port Pin Assignments

Pin	Signal	Description
1	DCD	Carrier detect
2	RD	Received data
3	TD	Transmitted data
4	DTR	Data terminal ready
5	GND	Ground
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Clear to send
9	RI	Ring indicator

The USB ports are located on the rear of the appliance. The following table describes the signal present on the USB connector.

Table 2-21 MC3500 Internal USB Connector Pin-Out

Pin	Signal Name	Description
1	USB2_VBUS4	USB power (port 4)
2	USB2_VBUS5	USB power (port 5)
3	USB_ICH_P4N_CONN	USB port 4 negative signal
4	USB_ICH_P5N_CONN	USB port 5 negative signal
5	USB_ICH_P4P_CONN	USB port 4 positive signal
6	USB_ICH_P5P_CONN	USB port 5 positive signal
7	Ground	
8	Ground	
9	Key	No pin
10	TP_ISB_ICH_NC	Test point

MC3500 Physical and Environmental Parameters

The following table describes the physical attributes and the environmental parameters for the appliance.

Table 2-22 MC3500 Physical and Environmental Parameters

Parameter	Description
Form factor	1U
Dimensions (D x W x H)	26.2 in. x 16.93 in. x 1.7 in. (66.5 cm x 43.0 cm x 4.3 cm)
Weight	38 lbs (17.2 kg)
Power supply	Dual 650 W redundant power supplies for 120 VAC 8.5 Amp max at 110 volts, 50/60 Hz 4.2 Amp max at 220 volts, 50/60 Hz
Operating temperature	50°F to 95°F (10°C to 35°C)
Non-operating temperature	-40°F to 158°F (-40°C to 70°C)
Operating humidity	5% to 85%
Non-operating humidity	90%, non-condensing at 95°F (35°C)
Acoustic noise	7 BA (rack mount) in an idle state at typical office ambient temperature (73°F +/- 4°F, 23°C +/- 2°C)
Operating shock	No errors with half a sine wave shock of 2G (with 11 ms duration)
Packaged shock	Operational after 24 in. (60 cm) free fall although cosmetic damage may be present; chassis weight of 40 to 80 lbs (18 to 36 kg)
ESD	+/- 15KV (I/O port +/-8KV) per Intel environment test specification
Airflow	Front to back
System cooling requirements	2550 BTU/hr
RoHS	Complies with RoHS Directive 2002/95/EC

MC2000 and MC4000

The MC2000 and MC4000 are 1U appliances. See the following sections for more information about the appliances:

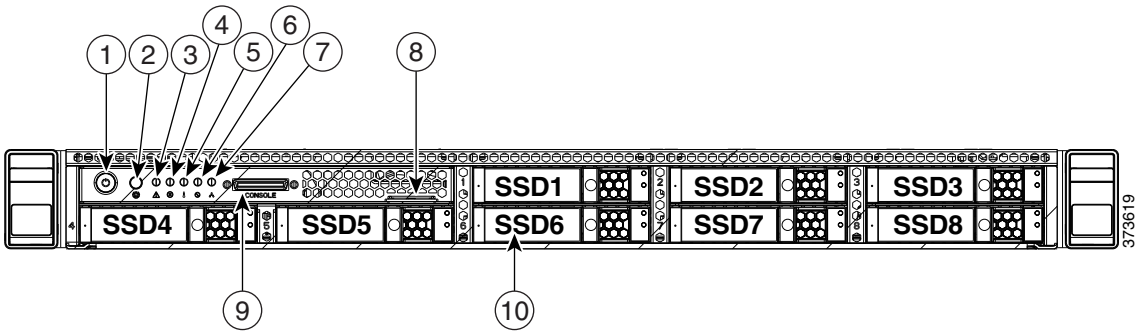
- MC2000 and MC4000 Chassis Front View, page 2-15
- MC2000 and MC4000 Chassis Rear View, page 2-18
- MC2000 and MC4000 Physical and Environmental Parameters, page 2-20

MC2000 and MC4000 Chassis Front View

The front of the chassis contains the storage drives, the front panel, and the KVM connector. The chassis holds up to eight small form-factor (SFF) 2.5-inch storage drives.

- The MC2000 chassis ships with four serial attached SCSI (SAS) drives.
- The MC4000 chassis ships with six solid state drives (SSDs).

The following figure shows the front panel features of the appliance, including the front panel controls, LEDs, and storage drive layout. For both the MC2000 and MC4000, the storage drive bays are numbered left to right, starting on the top row and continuing left to right on the bottom row.



1	Power button/Power status LED	6	Power supply status LED
2	Identification button/LED	7	Network link activity LED
3	System status LED	8	Pull-out asset tag
4	Fan status LED	9	KVM connector (used with KVM cable that provides two USB, one VGA, and one serial connector)
5	Temperature status LED	10	Drives, hot-swappable (up to eight 2.5-inch drives)

The front panel of the chassis houses seven LEDs, which display the system's operating state. The MC2000 and MC4000 Front Panel LEDs, Definitions of States table describes the LEDs on the front panel.

Table 2-23 MC2000 and MC4000 Front Panel LEDs, Definitions of States

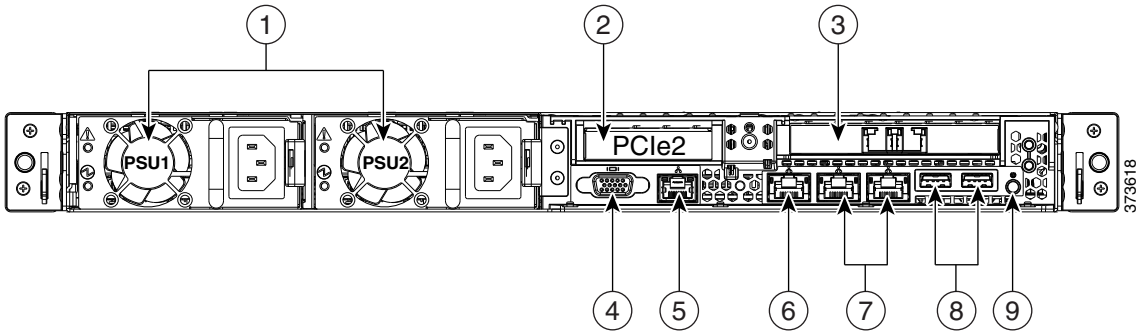
LED Name	State
Power button/Power status LED	• Off—There is no AC power to the server. • Amber—The server is in standby power mode. Power is supplied only to the CIMC and some motherboard functions. • Green—The server is in main power mode. Power is supplied to all server components.
Identification	• Off—The Identification LED is not in use. • Blue—The Identification LED is activated.

Table 2-23 MC2000 and MC4000 Front Panel LEDs, Definitions of States (continued)

LED Name	State
System status	• Green—The server is running in normal operating condition. • Green, blinking—The server is performing system initialization and memory check. • Amber, steady—The server is in a degraded operational state. For example: – Power supply redundancy is lost. – CPUs are mismatched. – At least one CPU is faulty. – At least one DIMM is faulty. – At least one drive in a RAID configuration failed. • Amber, blinking—The server is in a critical fault state. For example: – Boot failed. – Fatal CPU and/or bus error is detected. – Server is in over-temperature condition.
Fan status	• Green—All fan modules are operating properly. • Amber, steady—One fan module has failed. • Amber, blinking—Critical fault, two or more fan modules have failed.
Temperature status	• Green—The server is operating at normal temperature. • Amber, steady—One or more temperature sensors have exceeded a warning threshold. • Amber, blinking—One or more temperature sensors have exceeded a critical threshold.
Power supply status	• Green—All power supplies are operating normally. • Amber, steady—One or more power supplies are in a degraded operational state. • Amber, blinking—One or more power supplies are in a critical fault state.
Network link activity	• Off—The Ethernet link is idle. • Green—One or more Ethernet LOM ports are link-active, but there is no activity. • Green, blinking—One or more Ethernet LOM ports are link-active, with activity.
Hard drive fault	• Off—The hard drive is operating properly. • Amber—This hard drive has failed. • Amber, blinking—The device is rebuilding.
Hard drive activity	• Off—There is no hard drive in the hard drive sled (no access, no fault). • Green—The hard drive is ready. • Green, blinking—The hard drive is reading or writing data.

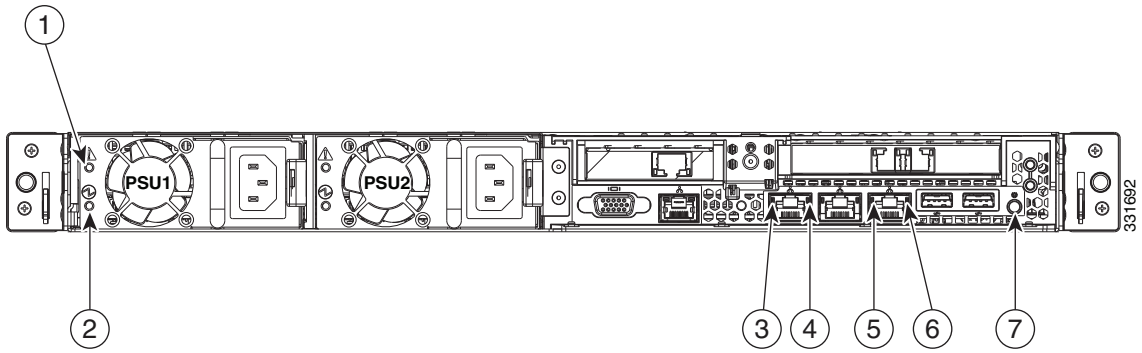
MC2000 and MC4000 Chassis Rear View

The rear of the chassis contains the connection ports and power supplies. The appliance provides one 1Gb Ethernet default management interface (LAN1), two 1Gb Base-T Ethernet ports, one RS-232 serial port (RJ-45 connector), one 15-pin VGA connector, and two USB 2.0 connectors. The following diagram illustrates the rear of the appliance.



1	Power supplies (two)	6	1Gb Ethernet port
2	Low-profile PCIe slot 2 on riser (half-height, half-length, x8 lane)	7	Dual 1-Gb Ethernet interfaces, LAN1 and LAN2 **Note** LAN1 is the default management interface for the Firepower Management Center.
3	Dual 10-Gb SFP+ Ethernet interfaces **Note** Use only the SFP+ transceiver modules offered by the Cisco ordering tool with these interfaces. (FS2K-NIC-SFP/FS4K-NIC-SFP)	8	USB ports
4	VGA video connector	9	Rear Identification button/LED
5	Serial port (RJ-45 connector)		–

The following diagram identifies the LEDs associated with the connection ports and power supplies on the rear of the appliance as well as the system identification button.



1	Power supply fault LED	5	1Gb Ethernet link speed LED
2	Power supply status LED	6	1Gb Ethernet link status LED
3	1Gb Ethernet link status LED	7	Rear Identification button/LED
4	1Gb Ethernet link speed LED		–

The MC2000 and MC4000 Rear Panel LEDs, Definitions of States table describes the LEDs on the rear of the chassis associated with the connection ports as well as default management interface, power supplies, and system identification button located on the rear of the appliance.

Note LAN1 is the default management interface for the Firepower Management Center.

Table 2-24 MC2000 and MC4000 Rear Panel LEDs, Definitions of States

LED Name	State
Power supply fault	• Off—The power supply is operating normally. • Amber, blinking—An event warning threshold has been reached, but the power supply continues to operate. • Amber, solid—A critical fault threshold has been reached, causing the power supply to shut down (for example, a fan failure or an over-temperature condition).
Power supply status	AC power supplies: • Off—There is no AC power to the power supply. • Green, blinking—AC power OK, DC output not enabled. • Green, solid—AC power OK, DC outputs OK. DC power supplies: • Off—There is no DC power to the power supply. • Green, blinking—DC power OK, DC output not enabled. • Green, solid—DC power OK, DC outputs OK.
1Gb Ethernet link speed	• Off—link speed is 10Mbps. • Amber—link speed is 100Mbps. • Green—link speed is 1Gbps.
1Gb Ethernet link status	• Off—No link is present. • Green—Link is active. • Green, blinking—Traffic is present on the active link.
1Gb Ethernet link speed	• Off—link speed is 10Mbps. • Amber—link speed is 100Mbps. • Green—link speed is 1Gbps.

Table 2-24 MC2000 and MC4000 Rear Panel LEDs, Definitions of States (continued)

LED Name	State
1Gb Ethernet link status	• Off—No link is present. • Green—Link is active. • Green, blinking—Traffic is present on the active link.
Identification	• Off—The Identification LED is not in use. • Blue—The Identification LED is activated.

MC2000 and MC4000 Physical and Environmental Parameters

The following table describes the physical attributes and the environmental parameters for the appliance.

Table 2-25 MC2000 and MC4000 Physical and Environmental Parameters

Parameter	Description
Form factor	1U
Dimensions (D x W x H)	28.5 in. x 16.9 in. x 1.7 in. (72.4 cm x 42.9 cm x 4.3 cm)
Weight	35.6 lbs (16.1 kg) maximum (8 SSDs, 2 CPUs, 16 DIMMs, 2 power supplies) 22 lbs (10 kg) bare (0 SSDs, 0 CPUs, 0 DIMMs, 1 power supply)
Power supply	Dual 650 W redundant power supplies AC input voltage: 90 to 264 VAC self-ranging 100 to 120 VAC nominal 200 to 240 VAC nominal AC input frequency: 47 to 63 Hz (single phase, 50 to 60 Hz nominal) Maximum AC input current: 7.6 Amp max at 100 volts 3.65 Amp max at 208 volts Maximum AC inrush current: 11A Maximum output power: 650 W Power Supply output voltage: Main power: 12 VDC Standby power: 12 VDC
Operating temperature	41°F to 104°F (5°C to 40°C) Derate the maximum temperature by 33.8° F (1°C) per every 305 meters of altitude above sea level.
Non-operating temperature	-40°F to 149°F (-40°C to 65°C)
Humidity (RH) non-operating, non-condensing	10% to 90%
Operating altitude	0 to 10,000 ft (0 to 3,000 m)

Table 2-25 MC2000 and MC4000 Physical and Environmental Parameters (continued)

Parameter	Description
Non-operating altitude	0 to 40,000 ft (0 to 12,192 m)
Sound power level Measure A-weighted per ISO7779 LwAd (Bels) Operation at 73°F (23°C)	5.4
Sound pressure level Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C)	37
Airflow	Front to rear

Installing a Firepower Management Center

Firepower Management Centers and Firepower managed devices are easily installed on your network as part of a larger Firepower System deployment. You install devices on network segments to inspect traffic and generate intrusion events based on the intrusion policy applied to it. This data is transmitted to a Firepower Management Center, which manages one or more devices to correlate data across your full deployment, and coordinate and respond to threats to your security.

Tip You can use multiple management interfaces to improve performance or to isolate and manage traffic from two different networks. You configure the default management interface (`eth0`) during the initial installation. You can configure additional management interfaces after installation from the user interface. For more information, see *Firepower Management Center Configuration Guide*.

Unpacking and Inspecting the Appliance

Tip Keep the shipping container in case the server 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.

To inspect the shipment, follow these steps:

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

Step 2 Compare the shipment to the following list of components that ship with Management Centers. As you unpack the system and the associated accessories, check that your package contents are complete as follows:

- one appliance
- power cord (two power cords are included with appliances that include redundant power supplies)
- Category 5e Ethernet straight-through cable
- one rack-mounting kit

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

Security Considerations

Before you install your appliance, Cisco recommends that you consider the following:

- Locate your appliance in a lockable rack within a secure location that prevents access by unauthorized personnel.
- Allow only trained and qualified personnel to install, replace, administer, or service the appliance.
- Always connect the management interface to a secure internal management network that is protected from unauthorized access.
- Identify the specific workstation IP addresses that can be allowed to access appliances. Restrict access to the appliance to only those specific hosts using Access Lists within the appliance's system policy. For more information, see the *Firepower Management Center Configuration Guide*.

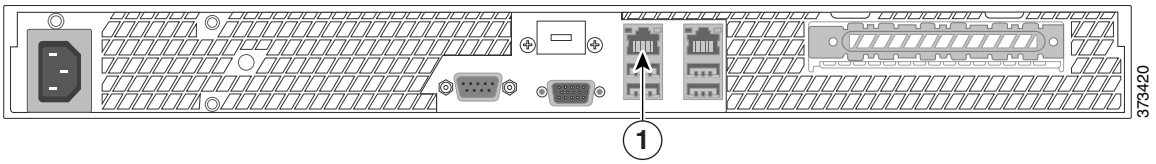
Identifying the Management Interfaces

You connect each appliance in your deployment to the network using the management interface. This allows the Firepower Management Center to communicate with and administer the devices it manages. Refer to the correct illustration for your appliance as you follow the installation procedure.

Firepower Management Center 750

The MC750 is available as a 1U appliance. The following illustration of the rear of the chassis indicates the location of the default management interface on a MC750.

Figure 3-1 MC750

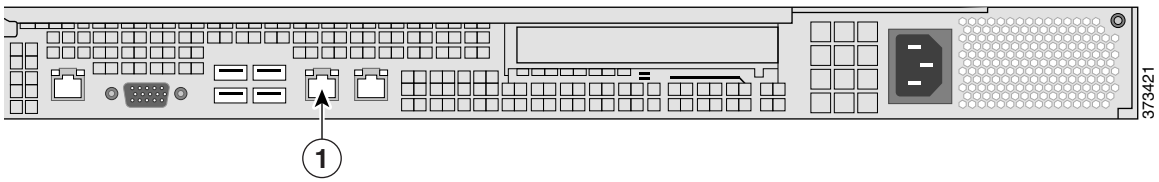


1	Management interface		

Firepower Management Center 1500

The MC1500 is available as a 1U appliance. The following illustration of the rear of the chassis indicates the location of the default management interface.

Figure 3-2 MC1500

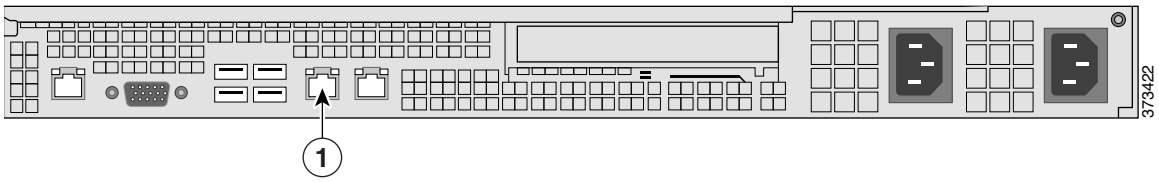


1	Management interface		

Firepower Management Center 3500

The MC3500 is available as a 1U appliance. The following illustration of the rear of the chassis indicates the location of the default management interface.

Figure 3-3 MC3500

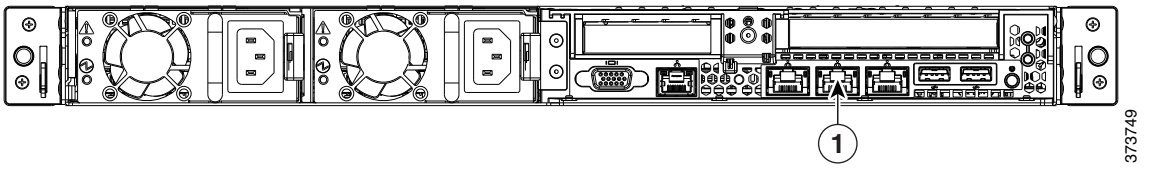


1	Management interface		

Firepower Management Center 2000 and 4000

The MC2000 and MC4000 are available as a 1U appliances. The following illustration of the rear of the chassis indicates the location of the default management interface on a MC2000 and MC4000.

Figure 3-4 MC2000 and MC4000



1	Management interface		

Installing the Management Center in a Rack

You can rack-mount all Management Centers. When you install an appliance, you must also make sure that you can access its console. To access the console for initial setup, connect to the appliance in one of the following ways:

Keyboard and Monitor/KVM

You can connect a USB keyboard and VGA monitor to a Management Center, which is useful for rack-mounted appliances connected to a keyboard, video, and mouse (KVM) switch.

Caution Do **not** use a KVM console with USB mass storage to access the appliance for the initial setup because the appliance may attempt to use the mass storage device as a boot device.

Ethernet Connection to Management Interface

Configure a local computer, which must not be connected to the Internet, with the following network settings:

- IP address: `192.168.45.2`
- netmask: `255.255.255.0`
- default gateway: `192.168.45.1`

Using an Ethernet cable, connect the network interface on the local computer to the management interface on the appliance. Note that the management interface is preconfigured with a default IPv4 address. However, you can reconfigure the management interface with an IPv6 address as part of the setup process.

After initial setup, you can access the console in the following additional ways:

Serial Connection/Laptop

You can connect a computer to any Firepower Management Center using the physical serial port. Connect the appropriate rollover serial cable (also known as a NULL modem cable or Cisco console cable) at any time, then configure the remote management console to redirect the default VGA output to the serial port. To interact with the appliance, use terminal emulation software such as HyperTerminal or XModem. The settings for this software are 9600 baud, 8 data bits, no parity checking, 1 stop bit, and no flow control.

The serial port on a Firepower Management Center uses an RJ-45 connection.

After you connect the appropriate rollover cable to your device, redirect the console output as described in the *Firepower Management Center Getting Started Guide*. To locate the serial port for each appliance model, use the diagrams in Hardware Specifications, page 2-1.

Lights-Out Management Using Serial over LAN

The LOM feature allows you to perform a limited set of actions on a Firepower Management Center using a SOL connection. If you need to restore a LOM-capable appliance to factory defaults and do not have physical access to the appliance, you can use LOM to perform the restore process. After you connect to an appliance using LOM, you issue commands to the restore utility as if you were using a physical serial connection. For more information, see the *Firepower Management Center Getting Started Guide*.

Note You can use Lights-Out Management on the default (`eth0`) management interface only.

To use LOM to restore the appliance to factory settings, do **not** delete network settings. Deleting the network settings also drops the LOM connection. For more information, see the *Firepower Management Center Getting Started Guide*.

To install the appliance:

Step 1 Mount the appliance in your rack using the mounting kit and its supplied instructions.

Step 2 Connect to the appliance using either a keyboard and monitor or Ethernet connection.

Step 3 If you are using a keyboard and monitor to set up the appliance, use an Ethernet cable now to connect the management interface to a protected network segment.

If you plan to perform the initial setup process by connecting a computer directly to the appliance's management interface, you will connect the management interface to the protected network when you finish setup.

Step 4 Attach the power cord to the appliance and plug into a power source.

If your appliance has redundant power supplies, attach power cords to both power supplies and plug them into separate power sources.

Step 5 Turn on the appliance.

If you are using a direct Ethernet connection to set up the appliance, confirm that the link LED is on for both the network interface on the local computer and the management interface on the appliance. If the management interface and network interface LEDs are not lit, try using a crossover cable.

What To Do Next

- Complete the setup process that allows the new appliance to communicate on your trusted management network. See the *Firepower Management Center Getting Started Guide*.

Deploying on a Management Network

The Firepower System can be deployed to accommodate the needs of each unique network architecture. The Management Center provides a centralized management console and database repository for the Firepower System. Devices are installed on network segments to collect traffic connections for analysis.

Management Centers use a management interface to connect to a *trusted management network* (that is, a secure internal network not exposed external traffic). Devices connect to a Management Center using a management interface.

Devices then connect to an external network using sensing interfaces to monitor traffic. For more information on how to use sensing interfaces in your deployment, see Deploying Firepower Managed Devices in the *Firepower 7000 and 8000 Series Installation Guide*.

Note See the ASA documentation for more information on deployment scenarios for ASA FirePOWER devices.

Management Deployment Considerations

Your management deployment decisions are based on a variety of factors. Answering these questions can help you understand your deployment options to configure the most efficient and effective system:

- Will you use the default single management interface to connect your device to your Management Center? Will you enable additional management interfaces to improve performance, or to isolate traffic received on the Management Center from different networks? See Understanding Management Interfaces, page 4-2 for more information.
- Do you want to enable traffic channels to create two connections between the Management Center and the managed device to improve performance? Do you want to use multiple management interfaces to further increase throughput capacity between the Management Center and the managed device? See Deploying with Traffic Channels, page 4-3 for more information.
- Do you want to use one Management Center to manage and isolate traffic from devices on different networks? See Deploying with Network Routes, page 4-4 for more information.
- Are you deploying your management interfaces in a protected environment? Is appliance access restricted to specific workstation IP addresses? Security Considerations, page 4-5 describes considerations for deploying your management interfaces securely.
- Are you deploying 8000 Series devices? See Special Case: Connecting 8000 Series Devices, page 4-5 for more information.

Understanding Management Interfaces

Management interfaces provide the means of communication between the Management Center and all devices it manages. Maintaining good traffic control between the appliances is essential to the success of your deployment.

On Management Centers and Firepower devices, you can enable the management interface on the Management Center, device, or both, to sort traffic between the appliances into two separate traffic channels. The *management traffic channel* carries all internal traffic (that is, inter-device traffic specific to the management of the appliance and the system), and the *event traffic channel* carries all event traffic (that is, high volume event traffic, such as intrusion and malware events). Splitting traffic into two channels creates two connection points between the appliances which increases throughput, thus improving performance. You can also enable *multiple management interfaces* to provide still greater throughput between appliances, or to manage and isolate traffic between devices on different networks.

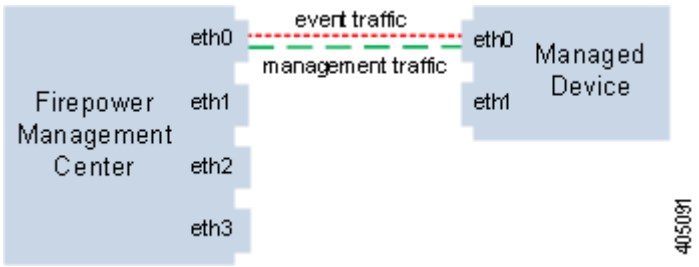
After you register the device to the Management Center, you can change the default configuration to enable traffic channels and multiple management interfaces using the web interface on each appliance. For configuration information, see Configuring Appliance Settings in the *Firepower Management Center Configuration Guide*.

Management interfaces are often located on the back of the appliance. See Identifying the Management Interfaces, page 3-2 for more information.

Single Management Interface

When you register your device to a Management Center, you establish a single communication channel that carries all traffic between the management interface on the Management Center and the management interface on the device.

The following graphic shows the default single communication channel. One interface carries one communication channel that contains both management and event traffic.



Multiple Management Interfaces

You can enable and configure multiple management interfaces, each with a specific IPv4 or IPv6 address and, optionally, a hostname, to provide greater traffic throughput by sending each traffic channel to a different management interface. Configure a smaller interface to carry the lighter management traffic load, and a larger interface to carry the heavier event traffic load. You can register devices to separate management interfaces and configure both traffic channels for the same interface, or use a dedicated management interface to carry the event traffic channels for all devices managed by the Management Center.

You can also create a route from a specific management interface on your Management Center to a different network, allowing your Management Center to isolate and manage device traffic on one network separately from device traffic on another network.

Additional management interfaces function the same as the default management interface with the following exceptions:

- You can configure DHCP on the default (`eth0`) management interface only. Additional (`eth1` and so on) interfaces require unique static IP addresses and hostnames. Cisco recommends that you do not set up DNS entries for additional management interfaces but instead register Management Centers and devices by IP addresses only for these interfaces.
- You must configure both traffic channels to use the same management interface when you use a non-default management interface to connect your Management Center and managed device and those appliances are separated by a NAT device.
- You can use Lights-Out Management on the default management interface only.
- On the 70xx Family, you can separate traffic into two channels and configure those channels to send traffic to one or more management interfaces on the Management Center. However, because the 70xx Family contains only one management interface, the device receives traffic sent from the Management Center on only one management interface.

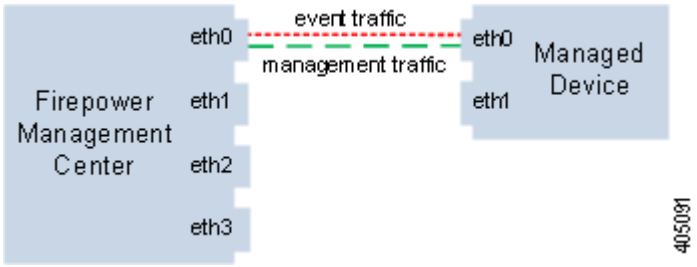
Deployment Options

You can manage traffic flow using traffic channels to improve performance on your system using one or more management interfaces. In addition, you can create a route to a different network using a specific management interface on the Management Center and its managed device, allowing you to isolate traffic between devices on different networks. For more information, see the following sections:

Deploying with Traffic Channels

When you use two traffic channels on one management interface, you create two connections between the Management Center and the managed device. One channel carries management traffic and one carries event traffic, separately and on the same interface.

The following example shows the communication channel with two separate traffic channels on the same interface.

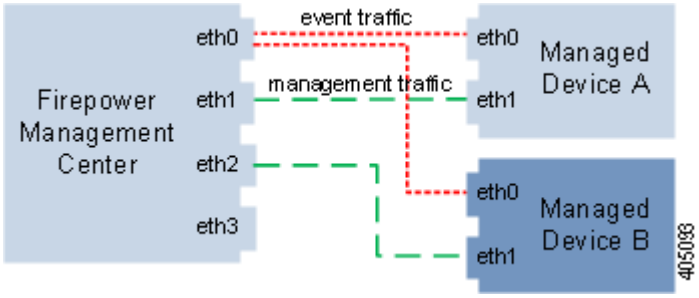


When you use multiple management interfaces, you can improve your performance by dividing the traffic channels over two management interfaces, thus increasing the traffic flow by adding the capacity of both interfaces. One interface carries the management traffic channel and the other carries the event traffic channel. If the event network goes down, then event traffic reverts to the regular management interface. The device uses a separate event interface when possible, but the management interface is always the backup.

The following graphic shows the management traffic channel and the event traffic channel over two management interfaces.

You can use a dedicated management interface to carry only event traffic from multiple devices. In this configuration, each device is registered to a different management interface to carry the management traffic channel, and one management interface on the Management Center carries all event traffic channels from all devices. If the event network goes down, then event traffic reverts to the regular management interface. Note that because event traffic for all devices is carried on the same interface, traffic is not isolated between networks.

The following graphic shows two devices using different management channel traffic interfaces sharing the same dedicated interface for event traffic channels.



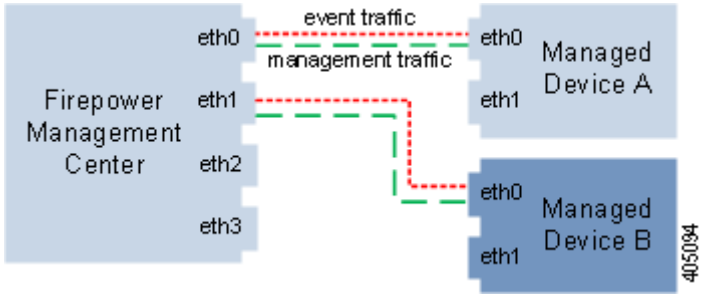
Deploying with Network Routes

You can create a route from a specific management interface on your Management Center to a different network. When you register a device from that network to the specified management interface on the Management Center, you provide an isolated connection between the Management Center and the device on a different network. Configure both traffic channels to use the same management interface to ensure that traffic from that device remains isolated from device traffic on other networks. Because the routed interface is isolated from all other interfaces on the Management Center, if the routed management interface fails, the connection is lost.

Tip You must register a device to the static IP address of any management interface other than the default (`eth0`) management interface. DHCP is supported only on the default management interface.

After you install your Management Center, you configure multiple management interfaces using the web interface. See Configuring Appliance Settings in the *Firepower Management Center Configuration Guide* for more information.

The following graphic shows two devices isolating network traffic by using separate management interfaces for all traffic. You can add more management interfaces to configure separate management and event traffic channel interfaces for each device.



Security Considerations

To deploy your management interfaces in a secure environment, Cisco recommends that you consider the following:

- Always connect the management interface to a trusted internal management network that is protected from unauthorized access.
- Identify the specific workstation IP addresses that can be allowed to access appliances. Restrict access to the appliance to only those specific hosts using Access Lists within the appliance's system policy. For more information, see the *Firepower Management Center Configuration Guide*.

Special Case: Connecting 8000 Series Devices

Supported Devices: 8000 Series

When you register an 8000 Series device to your Management Center, you must either auto-negotiate on both sides of the connection, or set both sides to the same static speed to ensure a stable network link. 8000 Series devices do not support half duplex network links; they also do not support differences in speed or duplex configurations at opposite ends of a connection.

Replacing a RAID Battery Backup Unit Assembly on the Firepower Management Center 3500

Use these instructions to replace the RAID battery backup unit (BBU) assembly on Firepower Management Center 3500. You should power down the device before you replace the BBU assembly during a maintenance window. See the following sections for more information:

BBU Overview

The Firepower Management Center 3500 contains a battery backup unit (BBU) that protects the integrity of cached data on the RAID controllers by providing backup power if there is a complete loss of AC power or a brief power interruption. Cisco recommends that you replace this BBU once a year.

A new BBU replacement assembly is available from Cisco. The assembly includes a new BBU model (BBU8) with a five year lifespan and a new plastic battery tray. The BBU is held in place in the plastic battery tray (see in Figure A-1) that securely locks into the base of the Firepower MC3500 chassis. You remove the installed BBU and tray and replace them with the new BBU assembly.

Working in an ESD Environment

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Always follow ESD-prevention procedures when you remove and replace components. Ensure that the chassis is electrically connected to 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 unwanted ESD voltages. To guard against ESD damage and shocks, the wrist strap and cord must operate properly. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

Caution For the safety of your equipment, periodically check the resistance value of the anti-static strap. It should be between 1 and 10 megohms (Mohm).

Safety Warnings

This section contains important safety warnings for the installation and use of the appliance.

Warning **Before working on a system that has an On/Off switch, turn OFF the power and unplug the power cord. Statement 1**

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030**

Warning **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. Statement 1024**

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity. Statement 1001**

Warning **Read the installation instructions before connecting the system to the power source. Statement 1004**

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040**

Preparing to Replace the BBU

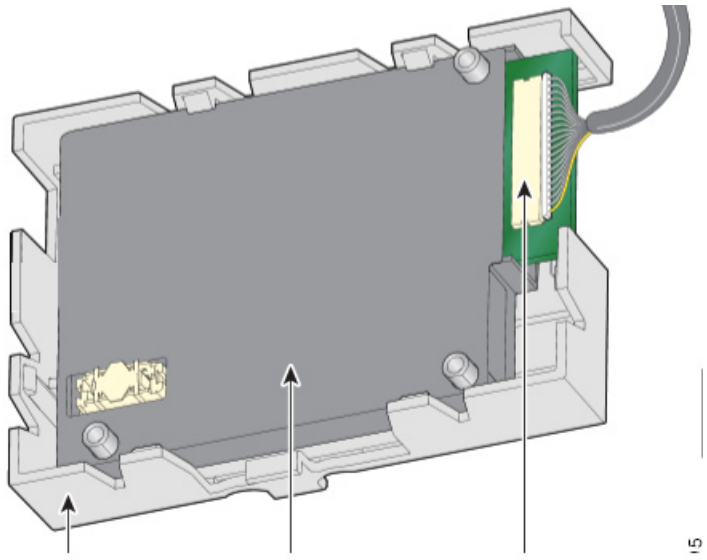
Tools You Supply

You must provide a #2 Phillips screwdriver and a razor knife to replace the BBU.

BBU Components

The following illustration shows the BBU assembly components you should be familiar with when replacing the BBU.

Figure A-1 BBU Assembly Components

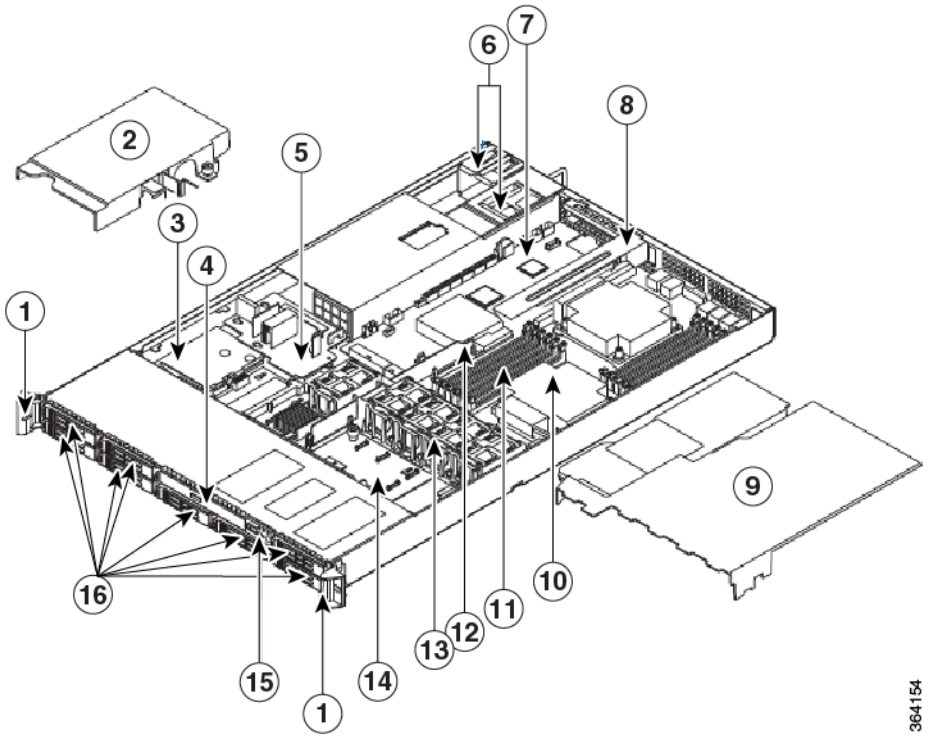


1	BBU tray	**2**	BBU
3	BBU wire connector and cable	**—**	—

Firepower Management Center 3500 Components

This section helps you identify the components of your Firepower MC3500 system. If you are near the system, you can also use the Quick Reference Label provided on the inside of the chassis cover to assist in identifying components.

Figure A-2 MC3500 Chassis Components



1	Rack handles	**9**	Processor air duct
2	Power supply air duct	**10**	Processor and heatsink
3	Battery backup unit (BBU) assembly	**11**	System memory
4	Drive bay	**12**	Bridge board
5	Power distribution board	**13**	Fan assembly
6	Power supply modules	**14**	Midplane board
7	Server board	**15**	Mini control panel
8	PCI riser assembly	**16**	Disk drive bays

BBU Replacement Instructions

The following sections explain how to replace the RAID BBU in your Firepower MC3500. Follow the instructions in the order presented:

Removing the Cover

The Firepower MC3500 must be operated with the chassis cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside of the device.

Note A nonskid surface or a stop behind the MC3500 may be needed to prevent the device from sliding on your work surface.

To remove the Firepower MC3500 cover:

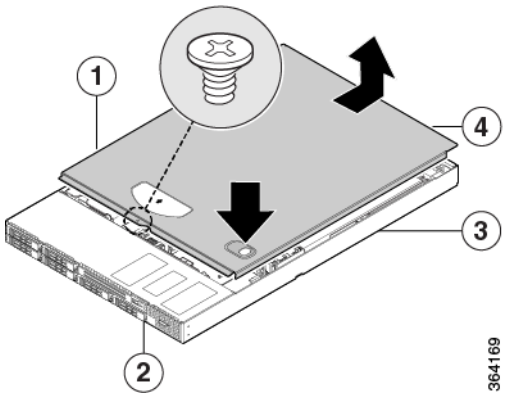
Step 1 Remove the security screw if it is installed (see "1" in Figure A-3).

Step 2 Cut the warranty label on the unit if it is intact.

Step 3 While holding in the blue button on the top of the FireSIGHT 3500 in (see "3" in Figure A-3), slide the top cover back until it stops (see "4" in Figure A-3).

Step 4 Insert your finger in the notch (see "2" in Figure A-3) and lift the cover upward to remove it.

Figure A-3 Removing the MC3500 Cover



1	Security screw	3	Top cover
2	Button	4	Notch

Removing the Power Supply Air Duct

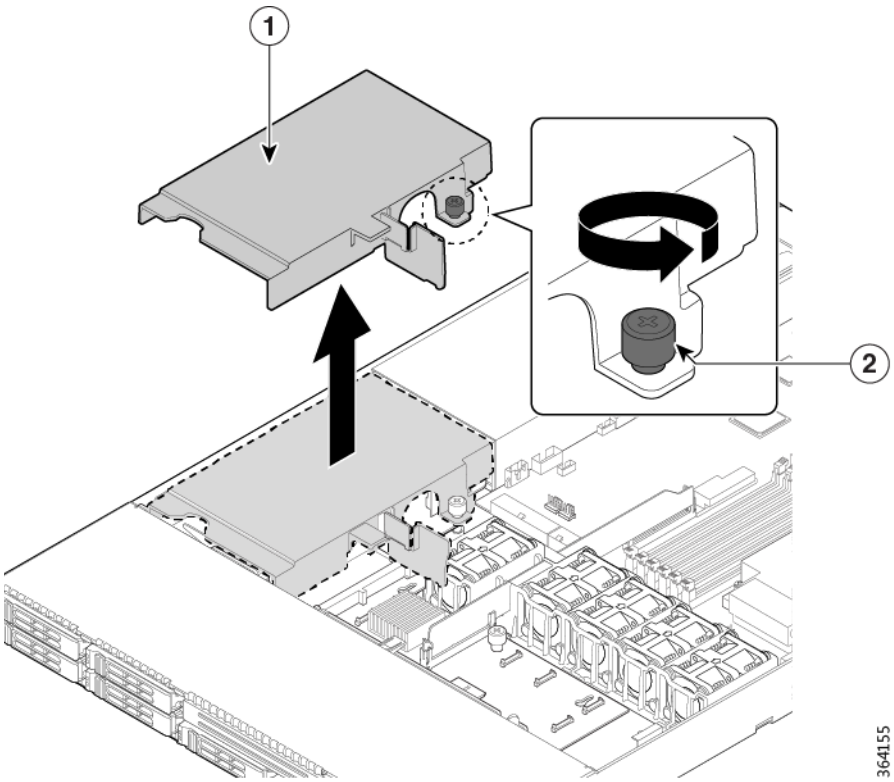
The RAID BBU is located under the power supply air duct (see Figure A-2). To remove the air duct, follow these steps:

Step 1 Locate the power supply air duct (see "1" in Figure A-4).

Step 2 Unscrew the thumbscrew (see "2" in Figure A-4) using your fingers or a Phillips head screwdriver. Be careful to retain the thumbscrew.

Step 3 Carefully lift the air duct upward and set aside.

Figure A-4 Removing the Power Supply Air Duct



1	Power supply air duct	2	Thumbscrew

Removing the Old BBU Assembly

The RAID BBU is held in place in a plastic battery tray (see in Figure A-1) that securely locks into the base of the chassis via two tabs on the underside of the battery holder. These tabs securely slide into two notches located on the bottom of the chassis. Cisco recommends that you remove the BBU assembly as described in the following procedure.

Note The plastic tray that comes with your replacement BBU assembly is different from the one currently installed. You can discard the old plastic tray after you install your replacement BBU assembly.

To remove the BBU:

Step 1 Carefully remove the cable from the rear of the BBU unit by gently pulling the connector (not the cable) uniformly out of the BBU connector. Note the cable polarity as you remove the connector. This is important when reattaching the cable.

Step 2 Locate the side tab of the BBU assembly tray (see "2" in Figure A-5). This tab secures the BBU assembly by locking the battery tray into place.

Step 3 Push the side tab inward towards the battery, apply downward pressure on the BBU assembly, and slide the assembly towards the front of the chassis, away from the power supply.

Step 4 Remove the BBU assembly from the chassis.

Installing the New BBU Assembly

Once the old BBU assembly is removed from the chassis, you can install the replacement BBU assembly which comes pre-assembled for ease of installation. Cisco recommends that you install the replacement BBU assembly as described in the following procedure.

To install the replacement BBU assembly:

Step 1 Locate the tabs that secure the BBU assembly to the chassis. They are located on the inside floor of the chassis, on the left side, near the front of the chassis by the power supply (see Figure A-6).

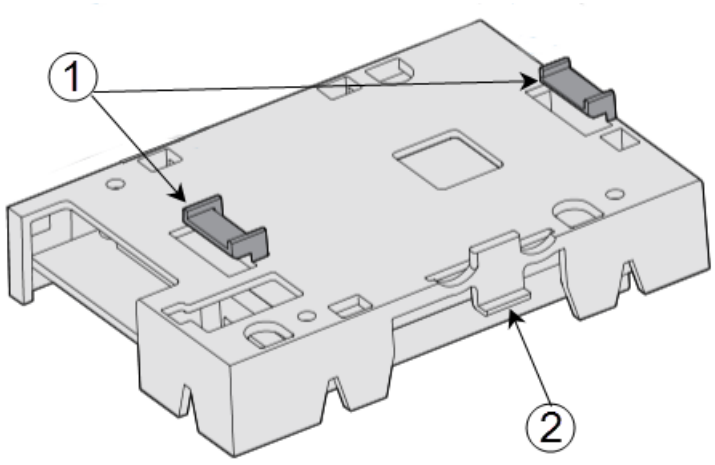
Step 2 Align the clips on the bottom of the plastic battery tray (see "1" in Figure A-5) with the tabs on the chassis.

Step 3 Slide the BBU assembly unit toward the power supply until the tabs engage with the notches in the chassis.

Caution Make sure the side clip (see "2" in Figure A-5) has fully engaged with the chassis to lock the tray into place. Failure to properly secure the battery tray may allow the BBU assembly to move freely inside the chassis. This could cause a malfunction, such as loosening of the BBU cable, which would jeopardize the battery protection.

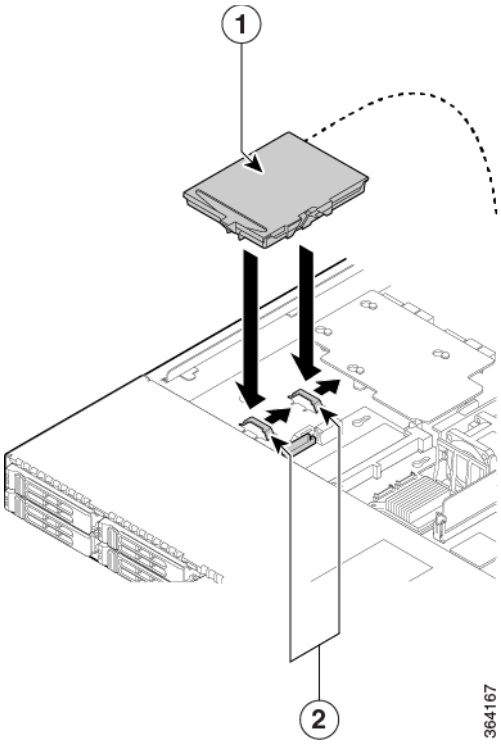
Step 4 Carefully connect the cable to the new BBU. Make sure you observe cable polarity and uniformly insert the connector into the BBU connector.

Figure A-5 Underside of BBU Battery Tray



1	Tray clips	2	Side clip

Figure A-6 Installing the Replacement BBU Assembly



1	BBU and tray assembly	**2**	Chassis tabs

Replacing the Power Supply Air Duct

Replace the power supply air duct once the replacement BBU assembly is in place and connected (see Figure A-7).

To replace the air duct:

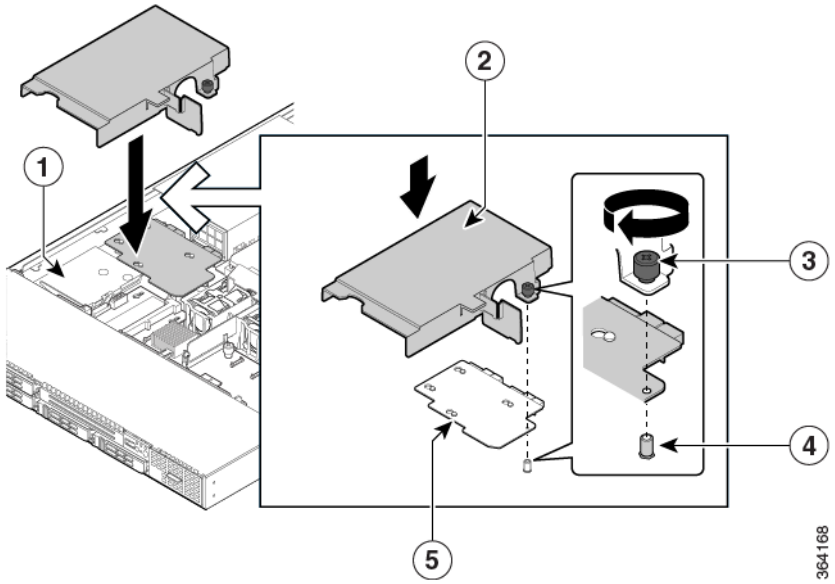
Step 1 Locate the power supply air duct and the thumbscrew that you removed previously.

Step 2 Align the power supply air duct over the BBU assembly, the power distribution board, and the matching thumbscrew hole. Note that the thumbscrew attaches to a chassis standoff underneath the power distribution board (see “4” in Figure A-7).

Make sure that no cables are pinched by any part of the power supply air duct before securing the duct.

Step 3 Tighten the thumbscrew using your fingers or a Phillips head screwdriver.

Figure A-7 Replacing the Power Supply Air Duct



1	Installed BBU assembly	**4**	Chassis standoff
2	Power supply air duct	**5**	Power distribution unit
3	Thumbscrew	—	—

Replacing the Cover

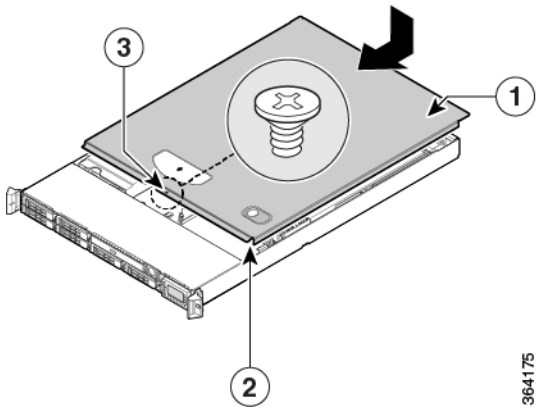
To replace the Firepower MC3500 cover:

Step 1 Place the cover over the device as shown in Figure A-8 so that the side edges of the cover sit just inside the chassis sidewalls.

Step 2 Slide the cover forward to engage the recessed edge of the cover with the front of the chassis (see “2” in Figure A-8). Make sure the cover latch clicks into place.

Step 3 Insert the security screw at the center of the top cover (see “3” in Figure A-8).

Figure A-8 Replacing the MC3500 Cover



1	Top cover	**3**	Security screw
2	Recessed edge	**—**	—

Disposing the Old BBU

Warning **Do not damage the battery pack in any way. Toxic chemicals can be released if it is damaged.**

The material in the battery pack contains heavy metals that can contaminate the environment. Federal, state, and local regulations prohibit the disposal of rechargeable batteries in public landfills. Be sure to recycle old battery packs properly. Cisco would like to remind you that you must comply with all applicable battery disposal and hazardous material handling laws and regulations in the country or other jurisdiction where you are using the BBU.

Monitoring the BBU

After you install a new BBU, use the Intel® RAID BIOS Console Battery Module configuration utility to reset the battery recharge cycle counter to zero. The utility is independent of the operating system and can be accessed at device start up by pressing **<Ctrl><G>**.

To view the BBU information:

Step 1 At boot, press **<Ctrl><G>** when prompted.

Step 2 From the main menu of the Intel® RAID BIOS Console, choose **Adapter Properties**.

Step 3 Click **Next** to view the second **Adapter Properties** screen.

Step 4 In the Battery Backup field at the top left of the Adapter Properties screen, click **Present**.

Step 5 The Battery Module screen appears. This screen contains the following information:

— Battery information

— Design information

— Capacity information

— Properties and settings

Step 6 Verify that BBU8 is installed in the **Battery Type** field.

Step 7 Set the **Bbu Mode** option to **1**.

This sets the BBU charging mode to provide 12 hours of data retention in a power loss while providing 5 years of BBU life, assuming the BBU is kept below 45 degrees Celsius.

Step 8 Click **Go** to save the settings.

Step 9 Click **Home** to return to the main RAID BIOS screen, then exit.

Memory Upgrade Instructions for Firepower Management Centers

This section describes how to replace the memory modules that are located internally within your Cisco Firepower Management Center. You need to remove the cover from the appliance to replace these items. The document contains the following sections:

Memory Upgrade Overview

As additional software feature enhancements are introduced the minimum memory requirements are changing for the Firepower Management Centers MC750 (Rev. 1 or Rev. 2), MC1500, and MC3500 models. Appliances that do not meet the minimum memory requirement are not supported.

Table B-1 outlines the RAM upgrade requirements.

Table B-1 Overview of RAM Upgrade Requirements

Management Center Model	Default Shipping RAM (prior to December 2014)	DIMM Locations	New RAM Requirements (after December 2014)
MC750 (Rev. 1)	4GB (1 4GB module)	A1	8GB (2 4GB modules)
MC750 (Rev. 2)	4GB (1 4GB module)	A1	8GB (2 4GB modules)
MC1500	12 GB (3 x 4GB modules)	A1, B1, and C1	48 GB (3 x 16GB modules)
MC3500	12 GB (3 x 4GB modules)	A1, B1, and C1	48 GB (3 x 16GB modules)

Upgraded Default RAM in Shipping Firepower 7000 and 8000 Series Management Centers

All Firepower MC750, MC1500, and MC3500 Management Centers will ship with additional default memory to meet the memory requirements beginning in December 2014.

Note Firepower MC1500 and MC3500 Management Centers already deployed prior to December 2014 should function as intended with the default 12 GB of installed RAM. Contact Cisco regarding RAM upgrade options for your particular deployment if you encounter performance issues.

Upgrade Paths for Existing Firepower Management Centers

Table B-2 lists the memory upgrade kits that will enable customers to upgrade their existing Firepower Management Centers in order to deploy the latest software release.

Caution You **must** remove all installed DIMMs and replace them with the modules from the upgrade kit.

Table B-2 Memory Upgrade Kits for Firepower Management Centers

Memory Kits	Applicable Management Center Models
FS750-MEM-KIT=	MC750 (Rev. 1)
	MC750 (Rev. 2)
FS3500-MEM-KIT=	MC1500
FS3500-MEM-U=	MC3500

Working in an ESD Environment

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Always follow ESD-prevention procedures when you remove and replace components. Ensure that the chassis is electrically connected to 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 unwanted ESD voltages. To guard against ESD damage and shocks, the wrist strap and cord must operate properly. If no wrist strap is available, ground yourself by touching the metal part of the chassis.

Caution For the safety of your equipment, periodically check the resistance value of the anti-static strap. It should be between 1 and 10 megohms (Mohm).

Safety Warnings

This section contains important safety warnings for the installation and use of the appliance.

Warning **Before working on a system that has an On/Off switch, turn OFF the power and unplug the power cord. Statement 1**

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030**

Warning **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. Statement 1024**

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity. Statement 1001**

Warning **Read the installation instructions before connecting the system to the power source. Statement 1004**

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations. Statement 1040**

Removing the Chassis Cover

Firepower Management Centers have covers that slide off the rear of the chassis. There are slight differences between chassis models which are described in the following sections:

- Removing the Cover from Firepower Management Center 750, page B-3
- Removing the Cover from Firepower Management Center 1500 and 3500, page B-5

Removing the Cover from Firepower Management Center 750

The procedure for removing the cover from a Firepower Management Center 750 differs depending on the revision of the appliance (Rev. 1 or Rev. 2). See Figure B-1 for an illustration of the MC750 Rev. 1 chassis. See Figure B-2 for an illustration of the MC750 Rev. 2 chassis.

To remove the cover from a Firepower MC750:

Note A nonskid surface or a stop behind the MC750 (Rev. 1 or Rev. 2) may be needed to prevent the device from sliding on your work surface.

Step 1 Observe the ESD precautions described in Working in an ESD Environment, page B-2 and the safety precautions described in Safety Warnings, page B-2.

Step 2 Remove the security screws from the front of the chassis:

- For Rev. 1, there are two (2) screws (see “1” in Figure B-1).
- For Rev. 2, there are three (3) screws (see “1” in Figure B-2).

Step 3 Remove the security screw from the rear of the chassis. See “2” in Figure B-1 and Figure B-2.

Step 4 Slide the cover towards the rear by pushing on the blue grip points on the chassis cover:

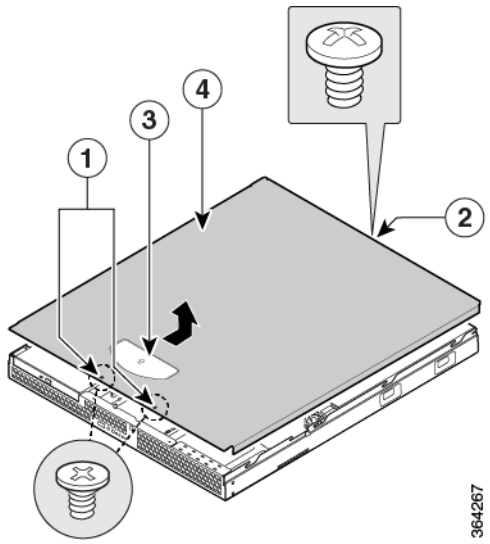
- For Rev. 1, there is one (1) grip point (see “3” in Figure B-1).
- For Rev. 2, there are two (2) grip points (see “3” in Figure B-2).

Step 5 Lift the over off and set aside.

What to Do Next:

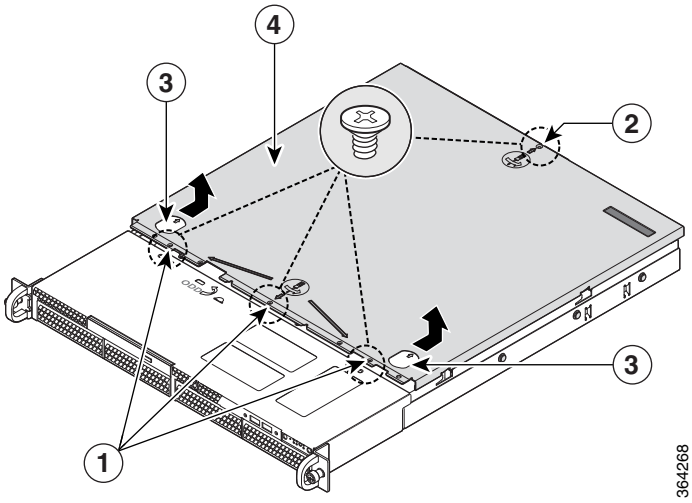
- Remove the processor air duct as described in the “Removing the Processor Air Duct from Firepower Management Center 750” section on page B-6.

Figure B-1 Removing the Cover from a MC750 Rev. 1



1	Front security screws	**3**	Rubber grip point
2	Rear security screw	**4**	Top cover

Figure B-2 Removing the Cover from a MC750 Rev. 2



1	Front security screws	**3**	Rubber grip points
2	Rear security screw	**4**	Top cover

Removing the Cover from Firepower Management Center 1500 and 3500

The MC1500 and MC3500 Management Centers share some of the same form factors. The following procedure can apply to either device.

To remove the cover from a Firepower MC1500 or MC3500:

Note A nonskid surface or a stop behind the MC1500 or MC3500 may be needed to prevent the device from sliding on your work surface.

Step 1 Observe the ESD precautions described in Working in an ESD Environment, page B-2 and the safety precautions described in <Blue>Safety Warnings on page 2.

Step 2 Remove the security screw if it is installed (see “1” in Figure B-3).

Step 3 Cut the warranty label on the unit if it is intact.

Step 4 While holding in the blue button on the top of the chassis (see “3” in Figure B-3), slide the top cover back until it stops (see “4” in Figure B-3).

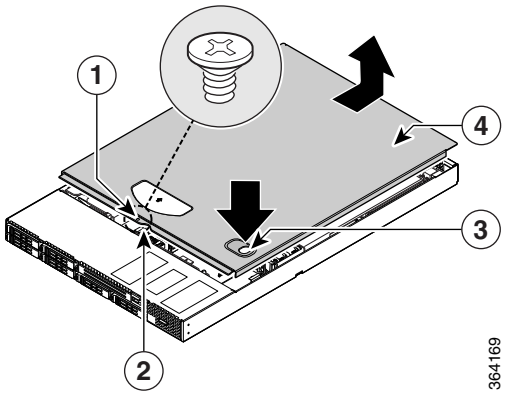
- On the MC1500, the button is on the left.
- On the MC3500, the button is on the right as shown in Figure B-3.

Step 5 Insert your finger in the notch (see “2” in Figure B-3) and lift the cover upward to remove it.

What to Do Next:

- Remove the processor air duct as described in the “Removing the Processor Air Duct from Firepower Management Center 1500 and 3500” section on page B-7.

Figure B-3 Removing the Cover from a MC1500 or MC3500



1	Security screw	**3**	Top cover
2	Button	**4**	Notch

Removing the Processor Air Duct

Firepower Management Centers operate with processor air ducts in place. The air ducts are required for proper airflow within the chassis. It is necessary to remove the air ducts to gain full access to the DIMM sockets on the chassis. There are some differences between chassis models which are described in the following sections:

- Removing the Processor Air Duct from Firepower Management Center 750, page B-6
- Removing the Processor Air Duct from Firepower Management Center 1500 and 3500, page B-7

Removing the Processor Air Duct from Firepower Management Center 750

The procedure for removing the air duct from a Firepower MC750 differs depending on the revision of the appliance (Rev. 1 or Rev. 2). See Figure B-4 for an illustration of the MC750 Rev. 1 chassis. See Figure B-5 for an illustration of the MC750 Rev. 2 chassis.

To remove the processor air duct from a Firepower MC750:

Step 1 Observe the ESD precautions described in Working in an ESD Environment, page B-2 and the safety precautions described in Safety Warnings, page B-2.

Step 2 Lift the processor air duct from its location behind the system cooling fans:

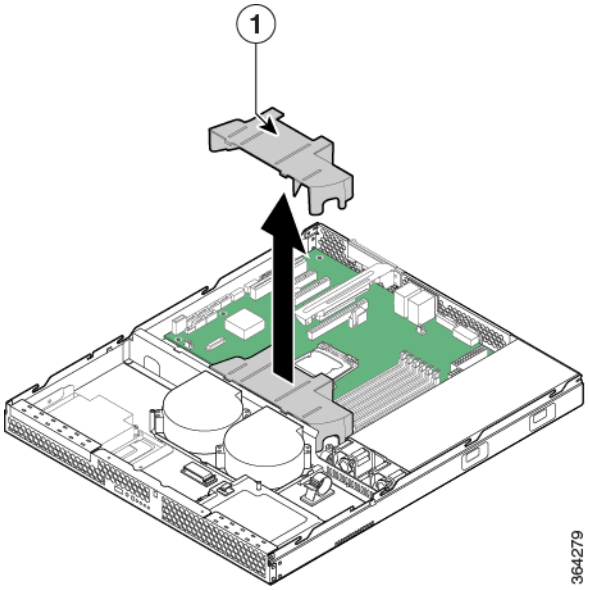
- For Rev. 1 chassis see “1” in Figure B-4)
- For Rev. 2 chassis see “1” in Figure B-5).

Step 3 Set the air duct aside.

What to Do Next:

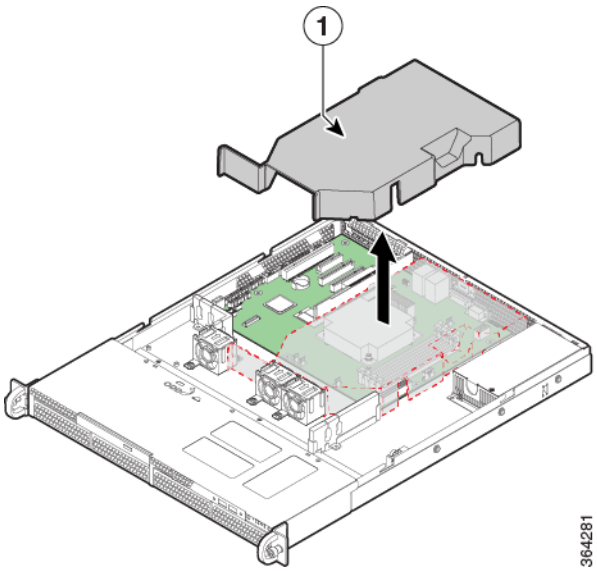
- Remove the Firepower MC750 DIMMs as described in the “Replacing the DIMMs” section on page B-9.

Figure B-4 Removing the Processor Air Duct from a MC750 Rev. 1



1	Processor air duct	—	—

Figure B-5 Removing the Processor Air Duct from a MC750 Rev. 2



1	Processor air duct	—	—

Removing the Processor Air Duct from Firepower Management Center 1500 and 3500

The Firepower MC1500 and MC3500 share some of the same form factors. The following procedure can apply to either device.

Note Before the processor air duct can be removed from a MC1500 and MC3500, the adjacent PCI Riser Assembly must first be removed.

To remove the processor air duct from a Firepower MC1500 or MC3500:

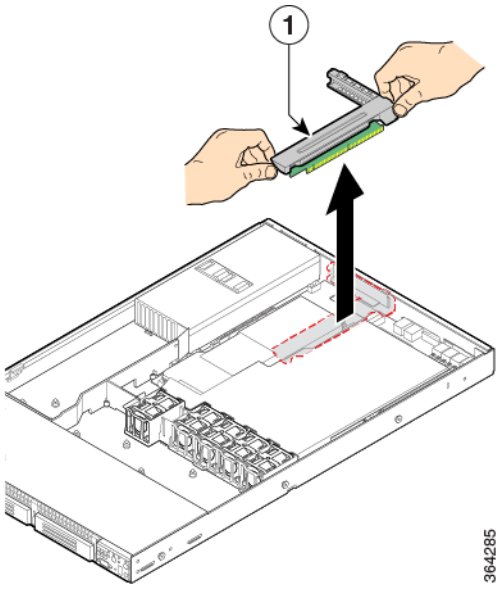
Step 1 Observe the ESD precautions described in Working in an ESD Environment, page B-2 and the safety precautions described in Safety Warnings, page B-2.

Step 2 Disconnect any cables attached to any add-in cards.

Step 3 Grasp both riser latches with thumb and forefinger and pull up to release the riser assembly.

Step 4 Lift riser assembly straight up (see "1" in Figure B-6).

Figure B-6 Removing the PCI Riser Assembly from a MC1500 or MC3500

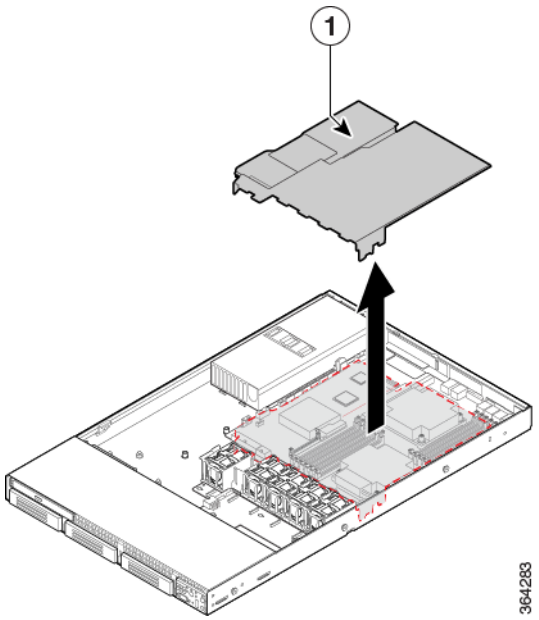


1	PCI riser assembly	—	—

Step 5 Set the riser assembly upside down to avoid damage to the riser card connector.

Step 6 Lift the processor air duct from its location over the two processor sockets (see "1" in Figure B-7).

Figure B-7 Removing the Processor Air Duct from a MC1500 or MC3500



1	Processor air duct	—	—

What to Do Next:

- Remove the MC1500 or MC3500 DIMMs as described in the "Replacing the DIMMs" section on page B-9.

Replacing the DIMMs

To ensure the best appliance performance, it is important that you are familiar with memory requirement guidelines and population rules before you install or replace memory modules. See Table B-1 in Memory Upgrade Overview, page B-1 for a reminder of the default memory configurations that shipped with Firepower Management Centers prior to the release of Firepower System 5.4.

Table B-3 below outlines the new memory requirements to run Firepower System 5.4 and greater. Appliances that do not meet the minimum memory requirement are not supported.

Table B-3 Overview of Upgrade RAM Requirements

Management Center Model	RAM Required for Firepower Version 5.4 and greater	DIMM Location
MC750 (Rev. 1)	8 GB(2 x 4GB modules)	A1 and B1
MC750 (Rev. 2)	8 GB(2 x 4GB modules)	A1 and B1
MC1500	48 GB (3 x 16GB modules)	A1, B1, and C1
MC3500	48 GB (3 x 16GB modules)	A1, B1, and C1

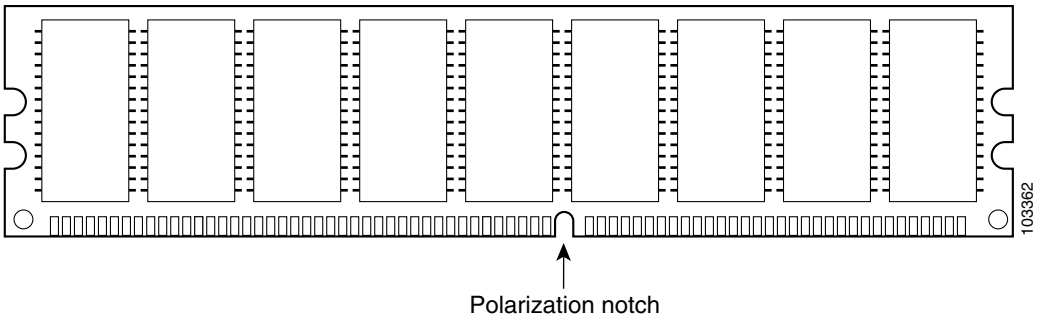
DIMM Location and Orientation

On the Firepower MC750 (Rev. 1 or Rev. 2), MC1500, and MC3500, the DIMM connectors are located on the system board and are identified by silkscreen labels. You can also refer to the Quick Reference Label on the inside of the chassis cover to assist in locating components.

Tip Please note that only blue DIMM connectors are populated with modules.

DIMMs have a polarization notch on the mating edge to prevent incorrect insertion. Figure B-8 shows the polarization notch on a DIMM.

Figure B-8 DIMM Showing Polarization Notch



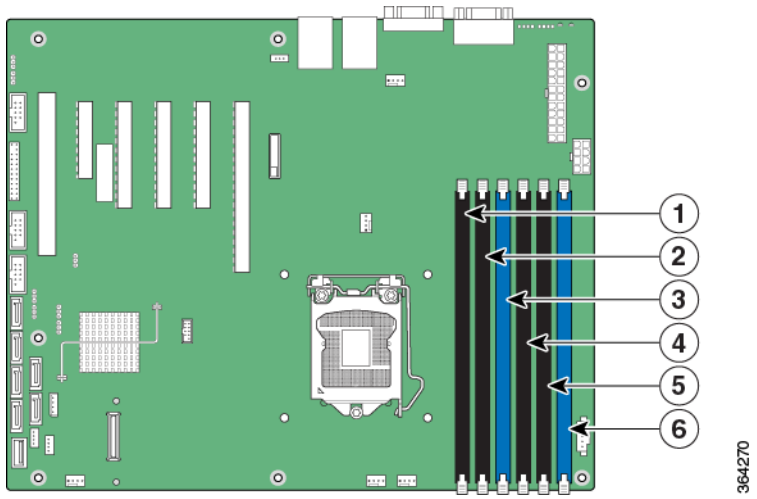
1	Polarization notch	—	—

Locating DIMMs in Firepower Management Centers

Use the following figures to identify the correct DIMM connectors for your memory upgrade requirements identified in Table B-3. The silkscreen on the system board also displays the DIMM labels starting from the center of the board.

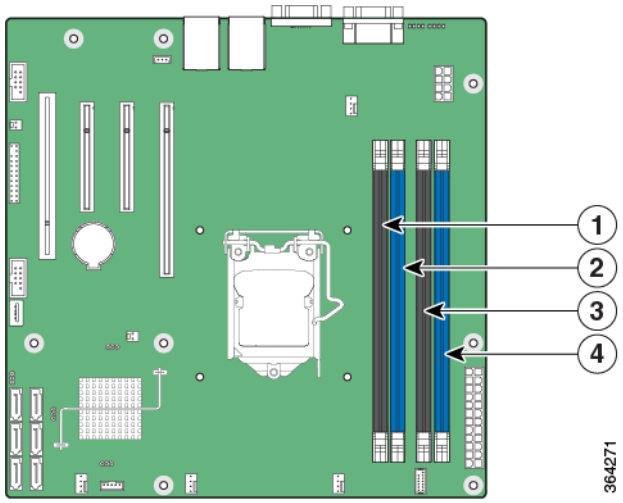
- Refer to Figure B-9 for the location of the DIMM connectors on the MC750 (Rev. 1).
- Refer to Figure B-10 for the location of the DIMM connectors on the MC750 (Rev. 2).
- Refer to Figure B-11 for the location of the DIMM connectors on the MC1500 and MC3500.

Figure B-9 Memory Configuration and Population Order for the MC750 Rev. 1



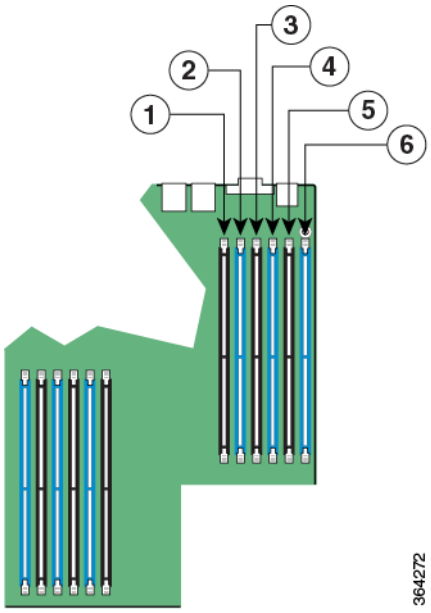
1	DIMM A3	**4**	DIMM B3
2	DIMM A2	**5**	DIMM B2
3	DIMM A1	**6**	DIMM B1

Figure B-10 Memory Configuration and Population Order for the MC750 Rev. 2



1	DIMM A2	**3**	DIMM B2
2	DIMM A1	**4**	DIMM B1

Figure B-11 Memory Configuration and Population Order for the MC1500 and MC3500



1	DIMM A2	**4**	DIMM B1
2	DIMM A1	**5**	DIMM C2
3	DIMM B2	**6**	DIMM C1

Removing DIMMs from Firepower Management Centers

Firepower MC750 (Rev. 1 and Rev. 2) Management Centers have 4GB of system memory installed on the system board. You must remove all installed DIMMs and replace them with the modules in your upgrade kit to complete the system upgrade to 8GB of RAM.

Firepower MC1500 and MC3500 Management Centers have 12GB of system memory installed on the system board. You must remove all installed DIMMs and replace them with the modules in your upgrade kit to complete the system upgrade to 48GB of RAM.

Caution When you remove or install DIMMs, always wear an ESD-preventive wrist strap, and ensure that it makes good contact with your skin. Connect the equipment end of the wrist strap to the metal part of the chassis.

Caution Handle DIMMs by the edges only. DIMMs are ESD-sensitive components and can be damaged by mishandling.

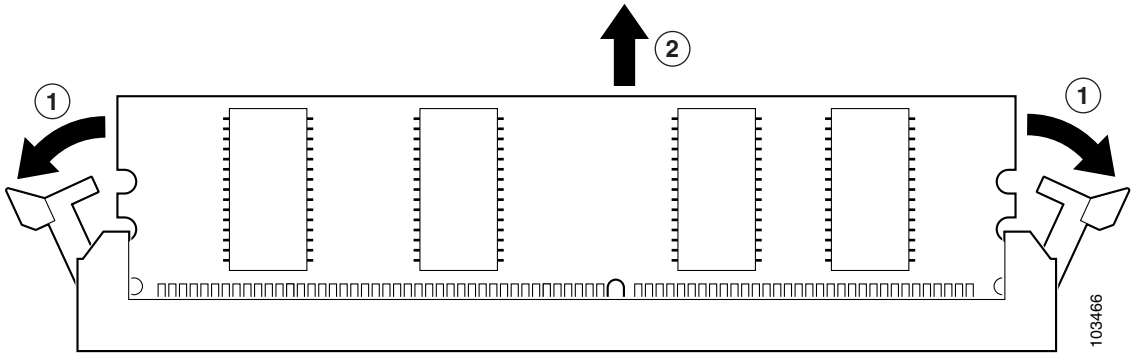
To remove DIMMs from the system board:

Step 1 Observe the ESD precautions described in Working in an ESD Environment, page B-2 and the safety precautions described in Safety Warnings, page B-2.

Step 2 Locate the DIMMs on the system board. See Figure B-9, Figure B-10, or Figure B-11 depending on your FireSIGHT Management Center model, for the location of the DIMM connectors.

Step 3 Pull the latches away from the DIMM at both ends; this lifts the DIMM slightly. Then lift the DIMM out of the connector. See Figure B-12.

Figure B-12 Removing a DIMM



1	Open the latches	**2**	Lift DIMM out

What to Do Next:

- Place any removed DIMMs in anti-static bags to protect them from ESD damage. Observe applicable Federal, state, and local regulations regarding the disposal of these components.
- Install the new DIMMs from your memory upgrade kit in your FireSIGHT Management Center as described in the "Installing DIMMs in Firepower Management Centers" section on page B-13.

Installing DIMMs in Firepower Management Centers

To install a DIMM in a Firepower MC750 (Rev. 1 and 2), MC1500, and MC3500:

Step 1 Locate the DIMMs on the system board:

- Refer to Figure B-9 for the location of the DIMM connectors on the MC750 (Rev. 1).
- Refer to Figure B-10 for the location of the DIMM connectors on the MC750 (Rev. 2).
- Refer to Figure B-11 for the location of the DIMM connectors on the MC1500 and MC3500.
- Refer to Table B-3 for memory upgrade configurations for each Management Center model.

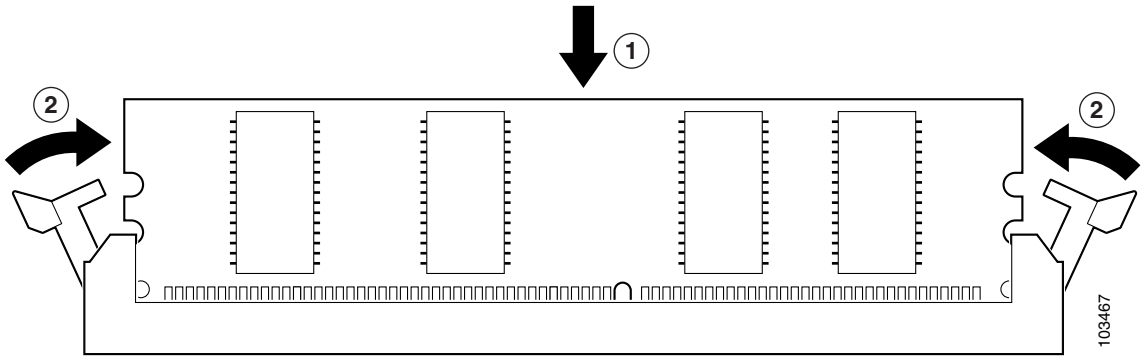
Step 2 Make sure that both latches on the DIMM connector are in the open position.

Step 3 Orient the DIMM so that the polarization notch lines up with the polarization key on the connector. See Figure B-8.

Step 4 Align the DIMM carefully into the connector.

Step 5 Carefully and firmly press the DIMM into the connector until the latches close onto the DIMM. Make sure that both latches rotate to the closed position against the DIMM. See Figure B-13.

Figure B-13 Installing a DIMM



1	Insert the DIMM	2	Close the latches

What to Do Next:

- Replace the processor air duct in your Firepower Management Center as described in the "Installing the Processor Air Duct" section on page B-14.

Installing the Processor Air Duct

Firepower Management Centers must operate with processor air ducts in place. The air ducts are required for proper airflow within the chassis. It is necessary to reinstall the air ducts after any maintenance procedures. There are some differences between chassis models which are described in the following sections:

- Installing the Processor Air Duct on Firepower Management Center 750, page B-14
- Installing the Processor Air Duct on Firepower Management Center 1500 and 3500, page B-16

Installing the Processor Air Duct on Firepower Management Center 750

The procedure for installing the processor air duct on a Firepower MC750 differs depending on the revision of the appliance (Rev. 1 or Rev. 2). See Figure B-14 for an illustration of the Firepower MC750 Rev. 1 chassis. See Figure B-15 for an illustration of the Firepower MC750 Rev. 2 chassis.

To install the air duct on a Firepower MC750:

Step 1 Observe the ESD precautions described in Working in an ESD Environment, page B-2 and the safety precautions described in Safety Warnings, page B-2.

Step 2 Lower the processor air duct into place.

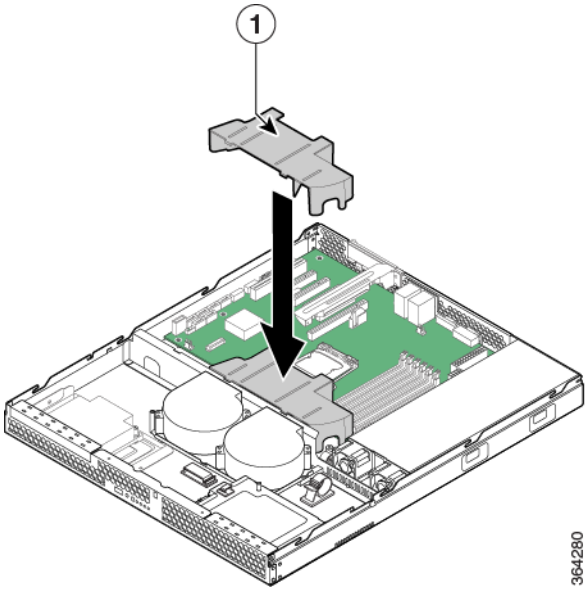
- For Rev. 1 chassis, insert the two hooks at the front of the processor air duct into the corresponding slots on the bracket behind the two system cooling fans (see "1" in Figure B-14).

- For Rev. 2 chassis, insert the two hooks at the front of the processor air duct into the corresponding slots on the bracket behind the two system cooling fans. Use caution not to pinch or disengage cables that may be near or under the air duct (see "1" in Figure B-15).

What to Do Next:

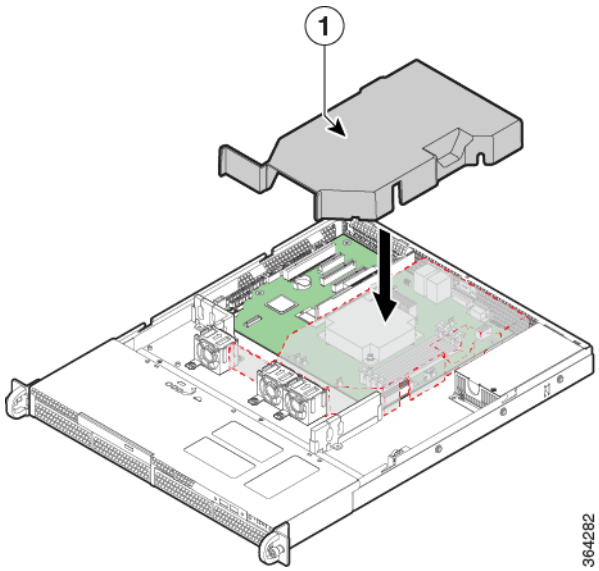
- Install the chassis cover as described in the "Installing the Cover on Firepower Management Center 750" section on page B-18.

Figure B-14 Installing the Processor Air Duct on a MC750 Rev. 1



1	Processor air duct	—	—

Figure B-15 Installing the Processor Air Duct on a MC750 Rev. 2



1	Processor air duct	—	—

Installing the Processor Air Duct on Firepower Management Center 1500 and 3500

The Firepower MC1500 and MC3500 Management Centers share some of the same form factors. The following procedure can apply to either device.

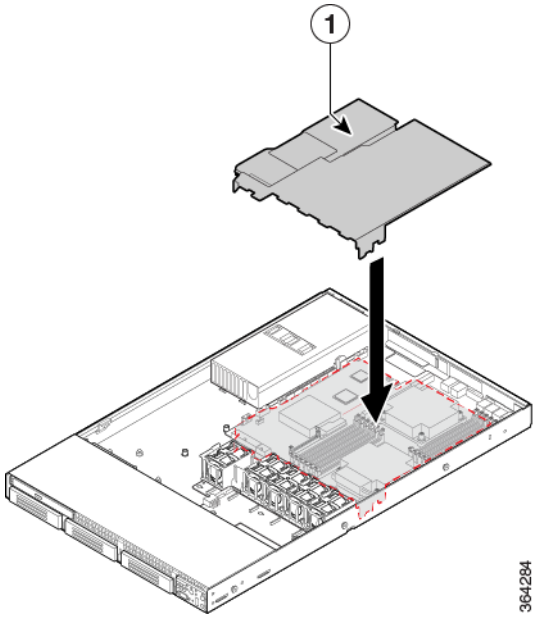
Note After the processor air duct is installed from a Firepower MC1500 and MC3500, the adjacent PCI Riser Assembly must be installed.

To install the processor air duct on a Firepower MC1500 or MC3500:

Step 1 Observe the ESD precautions described in Working in an ESD Environment, page B-2 and the safety precautions described in Safety Warnings, page B-2.

Step 2 Place the processor air duct over the processor socket. The front edge of the air duct should align correctly with the notches on the fan module. Use caution not to pinch or disengage cables that may be near or under the air duct. See “1” in Figure B-16.

Figure B-16 Installing the Processor Air Duct on a MC1500 or MC3500

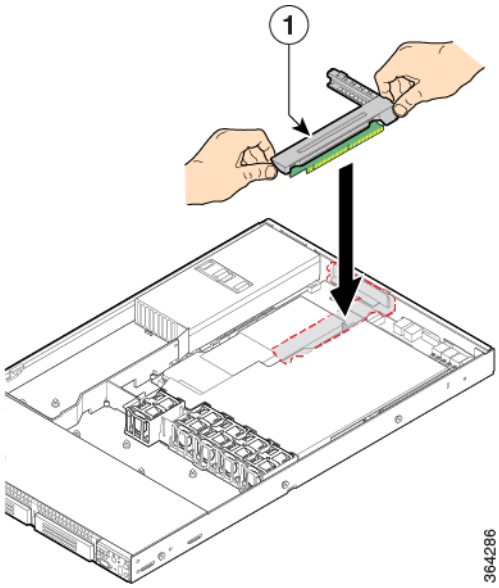


1	Processor air duct	—	—

Step 3 Lower the PCI riser assembly into place. Align the two hooks in the riser assembly with the matching slots at the back of chassis (see "1" in Figure B-17).

Step 4 Press down uniformly until the two hooks on the rear of the PCI riser assembly engage the chassis back panel slots. The riser cards will seat into the matching sockets on the system board.

Figure B-17 Installing the PCI Riser Assembly on a MC1500 or MC3500



1	PCI riser assembly	—	—

What to Do Next:

- Reconnect any cables attached to any add-in cards.
- Install the chassis cover as described in the "Installing the Cover on Firepower Management Center 1500 and 3500" section on page B-20.

Installing the Chassis Cover

FireSIGHT Management Centers have covers that slide on from the rear of the chassis. There are slight differences between chassis models which are described in the following sections:

- Installing the Cover on Firepower Management Center 750, page B-18
- Installing the Cover on Firepower Management Center 1500 and 3500, page B-20

Installing the Cover on Firepower Management Center 750

To install the cover on a Firepower MC750:

Note A nonskid surface or a stop behind the MC750 may be needed to prevent the device from sliding on your work surface.

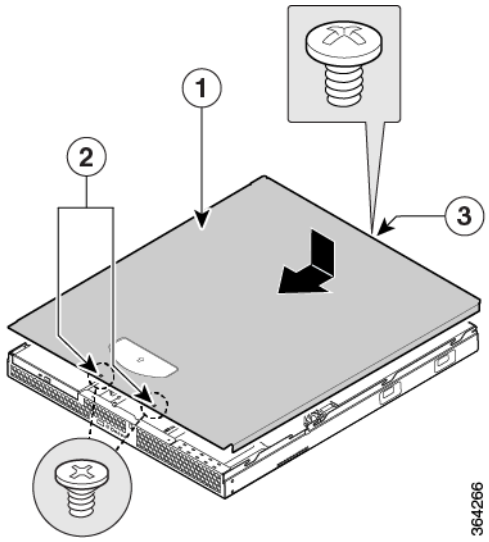
Step 1 Place the cover onto the chassis and slide forward (see "1" in Figure B-18 and Figure B-19).

Step 2 Install the security screws on the front of the chassis:

- For Rev. 1, there are two (2) screws (see “1” in Figure B-18).
- For Rev. 2, there are three (3) screws (see “1” in Figure B-19).

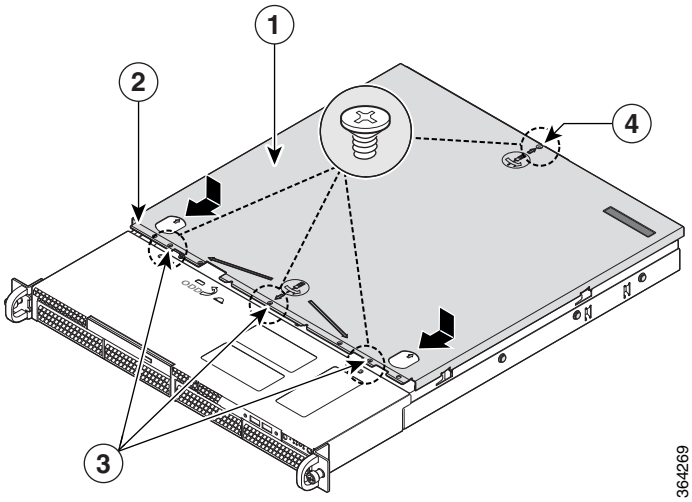
Step 3 Install the security screw on the rear of the chassis. See “3” in Figure B-18 and “4” in Figure B-19.

Figure B-18 Installing the Cover on a MC750 Rev. 1



1	Top cover	**3**	Rear security screw
2	Front security screws	**—**	—

Figure B-19 Installing the Cover on a MC750 Rev. 2



1	Top cover	**3**	Front security screws
2	Recessed edge	**4**	Rear security screw

Installing the Cover on Firepower Management Center 1500 and 3500

To install the cover on a Firepower MC1500 or MC3500:

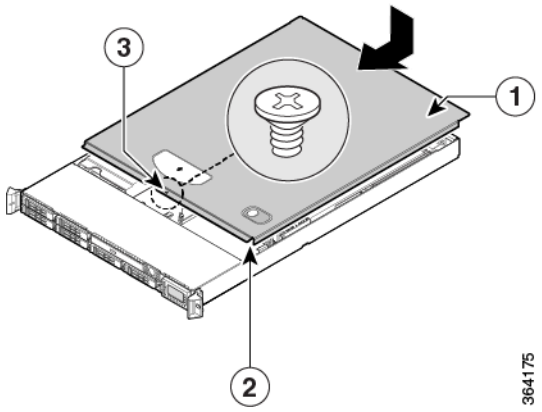
Note A nonskid surface or a stop behind the MC1500 or MC3500 may be needed to prevent the device from sliding on your work surface.

Step 1 Place the cover over the device as shown in Figure B-20 so that the side edges of the cover sit just inside the chassis sidewalls.

Step 2 Slide the cover forward to engage the recessed edge of the cover with the front of the chassis (see "2" in Figure B-20). Make sure the cover latch clicks into place.

Step 3 Insert the security screw at the center of the top cover (see "3" in Figure B-20).

Figure B-20 Installing the Cover on a MC1500 and MC3500



1	Top cover	**3**	Security screw
2	Recessed edge	—	—