



Cisco Cloud Services Platform 5000 Hardware Installation Guide

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PART I

Cisco CSP 5200 (1RU NFV Platform)

- [Overview, on page 1](#)
- [Installing the Cisco CSP 5200, on page 7](#)
- [Maintaining Cisco CSP 5200, on page 19](#)
- [Server Specifications, on page 73](#)
- [Storage Controller Considerations, on page 79](#)



CHAPTER 1

Overview

- [Overview, on page 1](#)
- [External Features, on page 1](#)
- [Serviceable Component Locations, on page 3](#)
- [Summary of Server Features, on page 5](#)

Overview

This document includes information of components that may not be included in the Cloud Services Platform (CSP) 5200 such as, DC Power supplies, and NVMe drives.

The CSP 5200 platform currently supports:

Small form-factor (SFF) drives, with 10-drive backplane. Supports up to 10 2.5 in. (6.35 cm) SAS/SATA drives. Although there are ten disk drive-bays, only eight are used. This usage is because the CSP platform uses RAID 10, which uses disks in multiple of fours.

External Features

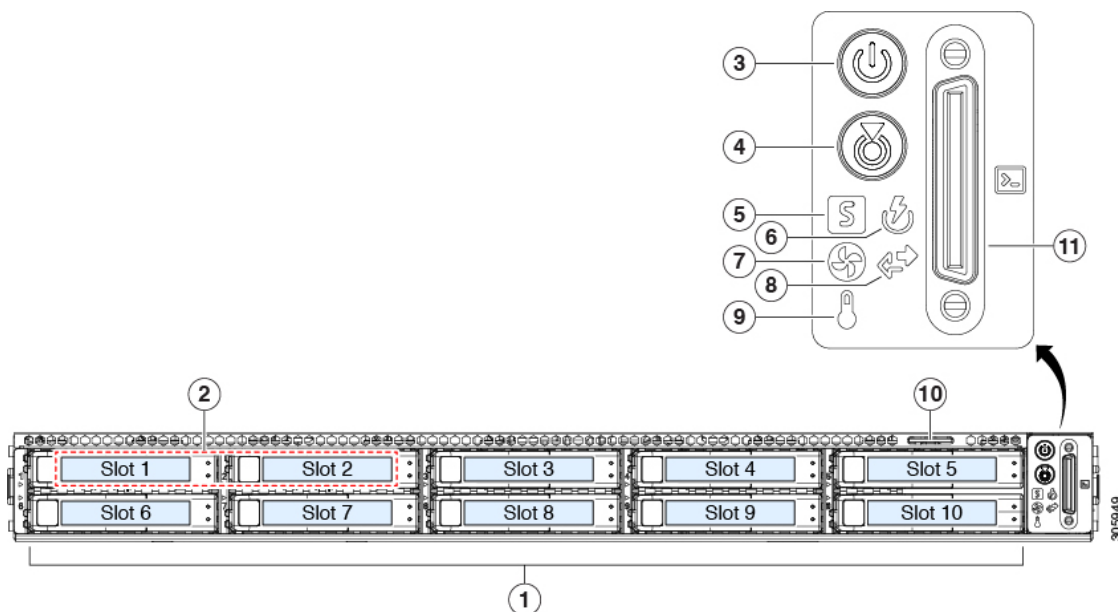
This topic shows the external features of the server versions.

Cisco CSP 5200 Server (SFF Drives) Front Panel Features

The following figure shows the front panel features of the small form-factor drive versions of the server.

For definitions of LED states, see [Front-Panel LEDs, on page 19](#).

Figure 1: Cisco CSP 5200 Server (SFF Drives) Front Panel



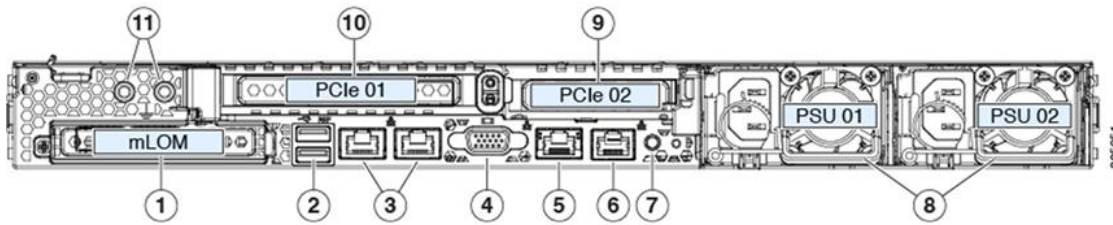
1	Drive bays 1 – 10 support SAS/SATA hard disk drives (HDDs) and solid state drives (SSDs)	7	Fan status LED
2	Disk drive bays	8	Network link activity LED
3	Power button/power status LED	9	Temperature status LED
4	Unit identification button/LED	10	Pull-out asset tag
5	System status LED	11	KVM connector (used with KVM cable that provides one DB-15 VGA, one DB-9 serial, and two USB connectors)
6	Power supply status LED	-	

Cisco CSP 5200 Server Rear Panel Features

The rear panel features are the same for all versions of the server.

For definitions of LED states, see [Rear-Panel LEDs, on page 22](#).

Figure 2: Cisco CSP 5200 Server Rear Panel

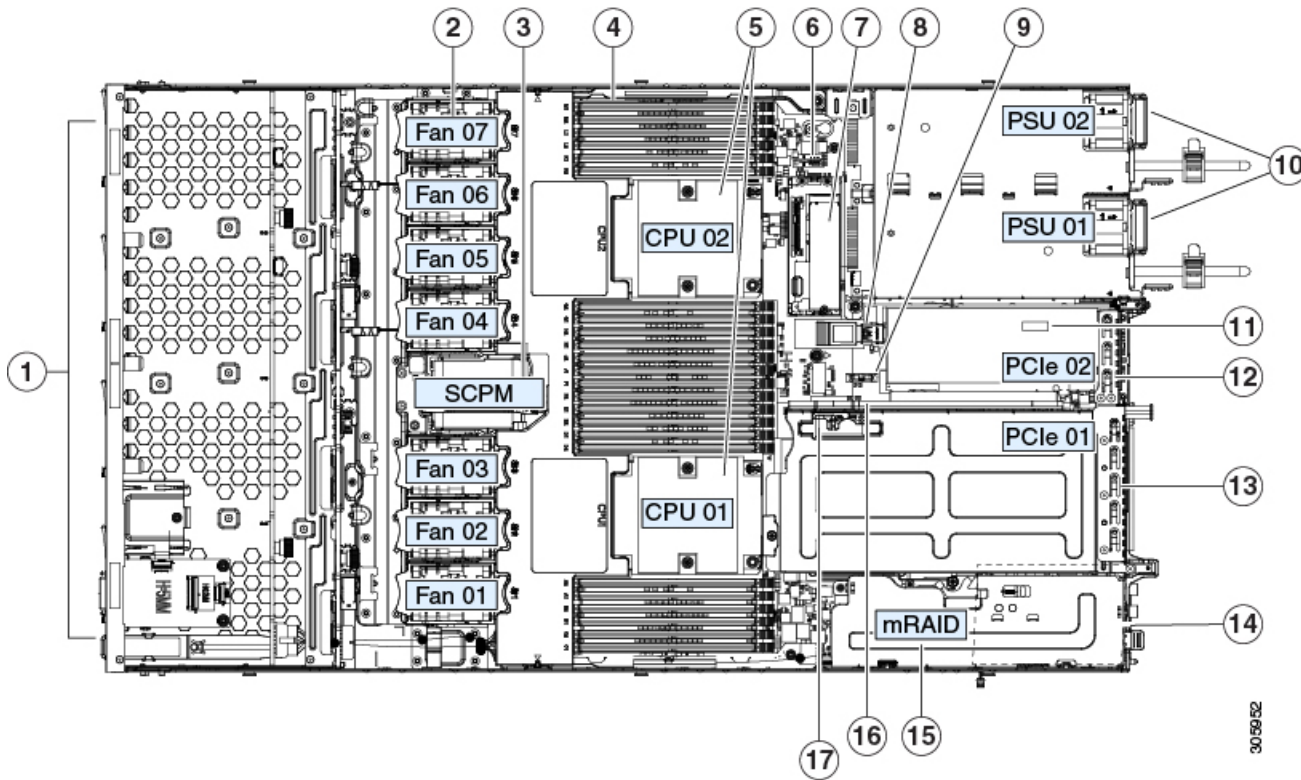


1	Modular LAN-on-motherboard (mLOM) card bay (x16 PCIe lane)	7	Rear unit identification button/LED
2	USB 3.0 ports (two)	8	Power supplies (two, redundant as 1+1)
3	Dual 1-Gb/10-Gb Ethernet ports (LAN1 and LAN2) The dual LAN ports can support 1 Gbps and 10 Gbps, depending on the link partner capability.	9	PCIe riser 2/slot 2 (x16 lane) Includes PCIe cable connectors for front-loading NVMe SSDs (x8 lane)
4	VGA video port (DB-15 connector)	10	PCIe riser 1/slot 1 (x16 lane)
5	1-Gb Ethernet dedicated management port	11	Threaded holes for dual-hole grounding lug
6	Serial port (RJ-45 connector)	-	

Serviceable Component Locations

This topic shows the locations of the field-replaceable components and service-related items. The view in the following figure shows the Cisco CSP 5200 with the top cover removed.

Figure 3: Cisco CSP 5200, Serviceable Component Locations



1	Front-loading drive bays 1–10 support SAS/SATA drives.	10	Power supplies (hot-swappable when redundant as 1+1)
2	Cooling fan modules (seven, hot-swappable)	11	Trusted platform module (TPM) socket on motherboard (not visible in this view)
3	Supercap unit mounting bracket (RAID backup)	12	PCIe riser 2/slot 2 (half-height, x16 lane)
4	DIMM sockets on motherboard (12 per CPU)	13	PCIe riser 1/slot 1 (full-height, x16 lane) Includes socket for Micro-SD card
5	CPUs and heatsinks (up to two)	14	Modular LOM (mLOM) card bay on chassis floor (x16 PCIe lane), not visible in this view
6	Mini storage module socket Supports an SD card module with two SD card slots.	15	Modular RAID (mRAID) riser supports: Hardware RAID controller card
7	Chassis intrusion switch (optional)	16	PCIe cable connectors for front-loading NVMe SSDs on PCIe riser 2
8	Internal USB 3.0 port on motherboard	17	Micro-SD card socket on PCIe riser 1
9	RTC battery, vertical socket	-	

The Technical Specifications Sheets for all versions of this server, which include supported component part numbers, are at Cisco CSP 5000 Servers Technical Specifications Sheets (scroll down to *Technical Specifications*).

Summary of Server Features

The following table lists a summary of server features.

Feature	Description
Chassis	One rack-unit (1RU) chassis
Central Processor	Up to two CPUs from the Intel Xeon Processor Scalable Family. This includes CPUs from the following series: <ul style="list-style-type: none"> • Intel Xeon Silver 4XXX Processors • Intel Xeon Gold 5XXX Processors • Intel Xeon Gold 6XXX Processors • Intel Xeon Platinum 8XXX Processors
Memory	24 DDR4 DIMM sockets on the motherboard (12 each CPU)
Multi-bit error protection	Multi-bit error protection is supported
Baseboard management	BMC, running Cisco Integrated Management Controller (Cisco IMC) firmware. Depending on your Cisco IMC settings, Cisco IMC can be accessed through the 1-Gb dedicated management port, the 1-Gb/10-Gb Ethernet LAN ports, or a Cisco virtual interface card.
Network and management I/O	Rear panel: <ul style="list-style-type: none"> • One 1-Gb Ethernet dedicated management port (RJ-45 connector) • Two 1-Gb/10-Gb BASE-T Ethernet LAN ports (RJ-45 connectors) <p>The dual LAN ports can support 1 Gbps and 10 Gbps, depending on the link partner capability.</p> <ul style="list-style-type: none"> • One RS-232 serial port (RJ-45 connector) • One VGA video connector port (DB-15 connector) • Two USB 3.0 ports Front panel: <ul style="list-style-type: none"> • One front-panel keyboard/video/mouse (KVM) connector that is used with the KVM cable, which provides two USB 2.0, one VGA, and one DB-9 serial connector.

Feature	Description
Modular LOM	One dedicated socket (x16 PCIe lane) that can be used to add an mLOM card for additional rear-panel connectivity.
WoL	The two 1-Gb/10-Gb BASE-T Ethernet LAN ports support the wake-on-LAN (WoL) standard.
Power	Two power supplies, redundant as 1+1: AC power supplies 770 W AC each
ACPI	The advanced configuration and power interface (ACPI) 4.0 standard is supported.
Cooling	Seven hot-swappable fan modules for front-to-rear cooling.
PCIe I/O	Two horizontal PCIe expansion slots on a PCIe riser assembly. See PCIe Slot Specifications, on page 57 for specifications of the slots.
Storage, front-panel	The server is orderable in the following version: Cisco CSP 5200—Small form-factor (SFF) drives, with 10-drive backplane. Supports up to 10 2.5-inch SAS/SATA drives.
Storage management	The server has a dedicated internal mRAID riser that supports the following storage-controller option: A PCIe-style Cisco modular RAID controller card (SAS/SATA). For a detailed list of storage controller options, see Supported Storage Controllers and Cables, on page 79 .
RAID backup	The server has a mounting bracket near the cooling fans for the supercap unit that is used with the Cisco modular RAID controller card.
Integrated video	Integrated VGA video.



CHAPTER 2

Installing the Cisco CSP 5200

- [Preparing for Installation](#), on page 7
- [Installing the Cisco CSP 5200 in a Rack](#), on page 9
- [Initial Cisco CSP 5200 Setup](#), on page 12
- [Updating the BIOS and Cisco IMC Firmware](#), on page 16
- [Older NAND Flash Not Detectable By Latest Cisco IMC](#), on page 17
- [Accessing the System BIOS](#), on page 17
- [Smart Access Serial](#), on page 17
- [Smart Access USB](#), on page 18

Preparing for Installation

This section contains the following topics:

Installation Warnings and Guidelines



Note Before you install, operate, or service a server, review the [Regulatory Compliance and Safety Information for Cisco Cloud Services Platforms](#) for important safety information.



Warning **IMPORTANT SAFETY INSTRUCTIONS**

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

Statement 1071



Warning To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 35° C (95° F).

Statement 1047



Warning The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.

Statement 1019



Warning This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 15 A.

Statement 1005



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

Statement 1074



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

Statement 1017



Caution To ensure proper airflow it is necessary to rack the servers using rail kits. Physically placing the units on top of one another or “stacking” without the use of the rail kits blocks the air vents on top of the servers, which could result in overheating, higher fan speeds, and higher power consumption. We recommend that you mount your servers on rail kits when you are installing them into the rack because these rails provide the minimal spacing required between the servers. No additional spacing between the servers is required when you mount the units using rail kits.



Caution Avoid uninterruptible power supply (UPS) types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS, which can have substantial current draw fluctuations from fluctuating data traffic patterns.

When you are installing a server, use the following guidelines:

- Plan your site configuration and prepare the site before installing the server.

- Ensure that there is adequate space around the server to allow for accessing the server and for adequate airflow. The airflow in this server is from front to back.
- Ensure that the air-conditioning meets the thermal requirements listed in the [Environmental Specifications, on page 73](#).
- Ensure that the cabinet or rack meets the requirements listed in the [Rack Requirements, on page 9](#).
- Ensure that the site power meets the power requirements listed in the [Power Specifications, on page 74](#). If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

Rack Requirements

The rack must be of the following type:

- A standard 19-in. (48.3-cm) wide, four-post EIA rack, with mounting posts that conform to English universal hole spacing, per section 1 of ANSI/EIA-310-D-1992.
- The rack-post holes can be square 0.38-inch (9.6 mm), round 0.28-inch (7.1 mm), #12-24 UNC, or #10-32 UNC when you use the Cisco-supplied slide rails.
- The minimum vertical rack space per server must be one rack unit (RU), equal to 1.75 in. (44.45 mm).

Supported Cisco Slide Rail Kits

The server supports the following rail kit:

Cisco part UCSC-RAILB-M4= (ball-bearing rail kit is included with the server)

Rack Installation Tools Required

The slide rails shipped with this server do not require tools for installation.

Installing the Cisco CSP 5200 in a Rack



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

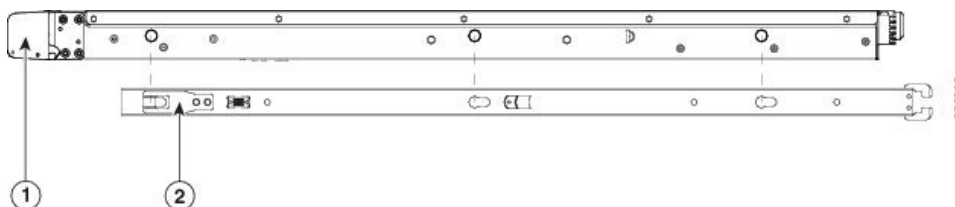
Procedure

Step 1

Attach the inner rails to the sides of the Cisco CSP 5200:

- Align an inner rail with one side of the server so that the three keyed slots in the rail align with the three pegs on the side of the Cisco CSP 5200.
- Set the keyed slots over the pegs, and then slide the rail toward the front to lock it in place on the pegs. The front slot has a metal clip that locks over the front peg.
- Install the second inner rail to the opposite side of the Cisco CSP 5200.

Figure 4: Attaching the Inner Rail to the Side of the Cisco CSP 5200



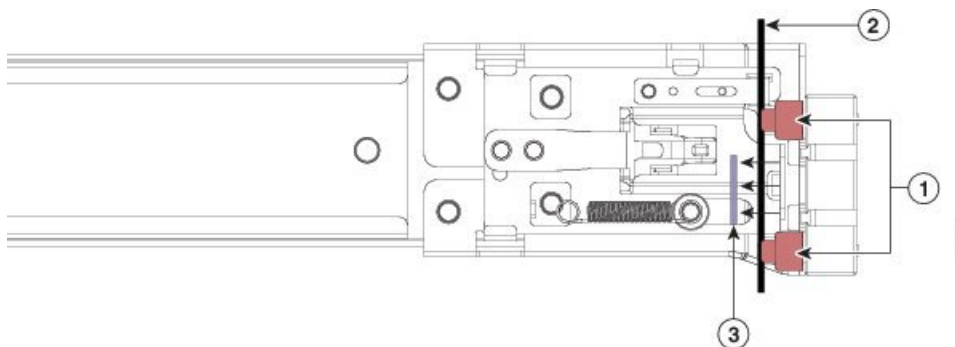
1	Front of Cisco CSP 5200	2	Locking clip on front of inner rail
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Step 2

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

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

Figure 5: Front Securing Mechanism, Inside of Front End



1	Front mounting pegs	3	Securing plate shown pulled back to the open position
2	Rack post between mounting pegs and opened securing plate	-	

Step 3

Install the outer slide rails into the rack:

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

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

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

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

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

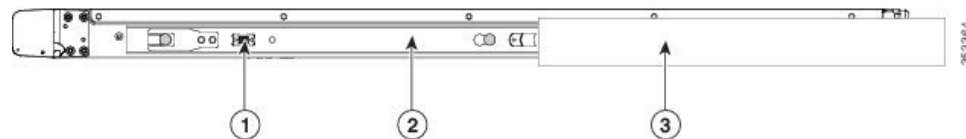
- e) Attach the second slide-rail assembly to the opposite side of the rack. Ensure that the two slide-rail assemblies are at the same height and are level front-to-back.
- f) Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

Step 4 Insert the server into the slide rails:

Caution This server can weigh up to 60 pounds (27 kilograms) when fully loaded with components. We recommend that you use a minimum of two people or a mechanical lift when lifting the server. Attempting this procedure alone could result in personal injury or equipment damage.

- a) Align the rear ends of the inner rails that are attached to the server sides with the front ends of the empty slide rails on the rack.
- b) Push the inner rails into the slide rails on the rack until they stop at the internal stops.
- c) Slide the inner-rail release clip toward the rear on both inner rails, and then continue pushing the server into the rack until its front slam-latches engage with the rack posts.

Figure 6: Inner-Rail Release Clip



1	Inner-rail release clip	3	Outer slide rail attached to rack post
2	Inner rail attached to server and inserted into outer slide rail	-	

Step 5 (Optional) Secure the server in the rack more permanently by using the two screws that are provided with the slide rails. Perform this step if you plan to move the rack with Cisco CSP 5200 installed.

With the Cisco CSP 5200 fully pushed into the slide rails, open a hinged slam latch lever on the front of the Cisco CSP 5200 and insert a screw through the hole that is under the lever. The screw threads into the static part of the rail on the rack post and prevents the Cisco CSP 5200 from being pulled out. Repeat for the opposite slam latch.

Initial Cisco CSP 5200 Setup



Note This section describes how to power on the Cisco CSP 5200, assign an IP address, and connect to server management when using the Cisco CSP 5200 in standalone mode.

Cisco CSP 5200 Default Settings

The Cisco CSP 5200 is shipped with these default settings:

- The NIC mode is *Dedicated*.
- The NIC redundancy is *None*.
- DHCP is enabled.
- IPv4 is enabled.

Connection Methods

There are two methods for connecting to the system for initial setup:

- Local setup—Use this procedure if you want to connect a keyboard and monitor directly to the system for setup. This procedure can use the included KVM cable or the ports on the rear of the server.
- Remote setup—Use this procedure if you want to perform setup through your dedicated management LAN.



Note To configure the system remotely, you must have a DHCP server on the same network as the system. Your DHCP server must be preconfigured with the range of MAC addresses for this server node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This server node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

This section contains the following topics:

Connecting to the Server Locally For Setup

This procedure requires the following equipment:

- VGA monitor
- USB keyboard
- Either the supported Cisco KVM cable; or a USB cable and VGA DB-15 cable

Procedure

- Step 1** Attach a power cord to each power supply in your server, and then attach each power cord to a grounded power outlet.
- Wait for approximately two minutes to let the server boot to standby power during the first bootup. You can verify system power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.
- Step 2** Connect a USB keyboard and VGA monitor to the server using one of the following methods:
- Connect the included KVM cable to the KVM connector on the front panel. Connect your USB keyboard and VGA monitor to the KVM cable.
 - Connect a USB keyboard and VGA monitor to the corresponding connectors on the rear panel.
- Step 3** Open the Cisco IMC Configuration Utility:
- a) Press and hold the front panel power button for four seconds to boot the server.
 - b) During bootup, press **F8** when prompted to open the Cisco IMC Configuration Utility.
- Note** The first time that you enter the Cisco IMC Configuration Utility, you are prompted to change the default password. The default password is *password*. The Strong Password feature is enabled.
- The following are the requirements for Strong Password:
- The password can have minimum 8 characters; maximum 14 characters.
 - The password must not contain the user's name.
 - The password must contain characters from three of the following four categories:
 - English uppercase letters (A through Z)
 - English lowercase letters (a through z)
 - Base 10 digits (0 through 9)
 - Non-alphabetic characters !, @, #, \$, %, ^, &, *, -, _, =, “
- Step 4** Continue with [Setting Up the System With the Cisco IMC Configuration Utility, on page 15](#).
-

Connecting to the Server Remotely For Setup

This procedure requires the following equipment:

- One RJ-45 Ethernet cable that is connected to your management LAN.

Before you begin



Note To configure the system remotely, you must have a DHCP server on the same network as the system. Your DHCP server must be preconfigured with the range of MAC addresses for this server node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This server node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

Procedure

- Step 1** Attach a power cord to each power supply in your server, and then attach each power cord to a grounded power outlet.
- Wait for approximately two minutes to let the server boot to standby power during the first bootup. You can verify system power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.
- Step 2** Plug your management Ethernet cable into the dedicated management port on the rear panel.
- Step 3** Allow your preconfigured DHCP server to assign an IP address to the server node.
- Step 4** Use the assigned IP address to access and log in to the Cisco IMC for the server node. Consult with your DHCP server administrator to determine the IP address.
- Note** The default user name for the server is *admin*. The default password is *password*.
- Step 5** From the Cisco IMC Server Summary page, click **Launch KVM Console**. A separate KVM console window opens.
- Step 6** From the Cisco IMC Summary page, click **Power Cycle Server**. The system reboots.
- Step 7** Select the KVM console window.
- Note** The KVM console window must be the active window for the following keyboard actions to work.
- Step 8** When prompted, press **F8** to enter the Cisco IMC Configuration Utility. This utility opens in the KVM console window.
- Note** The first time that you enter the Cisco IMC Configuration Utility, you are prompted to change the default password. The default password is *password*. The Strong Password feature is enabled.

The following are the requirements for Strong Password:

- The password can have minimum 8 characters; maximum 14 characters.
- The password must not contain the user's name.
- The password must contain characters from three of the following four categories:
 - English uppercase letters (A through Z)
 - English lowercase letters (a through z)
 - Base 10 digits (0 through 9)
 - Non-alphabetic characters !, @, #, \$, %, ^, &, *, -, _, =, “

Step 9 Continue with [Setting Up the System With the Cisco IMC Configuration Utility, on page 15](#).

Setting Up the System With the Cisco IMC Configuration Utility

Before you begin

The following procedure is performed after you connect to the system and open the Cisco IMC Configuration Utility.

Procedure

Step 1 Choose whether to enable DHCP for dynamic network settings, or to enter static network settings.

Note Before you enable DHCP, you must preconfigure your DHCP server with the range of MAC addresses for this server. The MAC address is printed on a label on the rear of the server. This server has a range of six MAC addresses assigned to Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

The *static* IPv4 and IPv6 settings include the following:

- The Cisco IMC IP address.
For IPv6, valid values are 1 - 127.
- The gateway.
For IPv6, if you do not know the gateway, you can set it as none by entering :: (two colons).
- The preferred DNS server address.
For IPv6, you can set this as none by entering :: (two colons).

Step 2 (Optional) Make VLAN settings.

Step 3 Press **F1** to go to the second settings window, then continue with the next step.
From the second window, you can press **F2** to switch back to the first window.

Step 4 (Optional) Set a hostname for the server.

Step 5 (Optional) Enable dynamic DNS and set a dynamic DNS (DDNS) domain.

Step 6 (Optional) If you check the Factory Default check box, the server reverts to the factory defaults.

Step 7 (Optional) Set a default user password.

Note The factory default username for the server is *admin*. The default password is *password*.

Step 8 (Optional) Enable auto-negotiation of port settings or set the port speed and duplex mode manually.

Note Auto-negotiation is applicable only when you use the Dedicated NIC mode. Auto-negotiation sets the port speed and duplex mode automatically based on the switch port to which the server is connected. If you disable auto-negotiation, you must set the port speed and duplex mode manually.

Step 9 (Optional) Reset port profiles and the port name.

Step 10 Press **F5** to refresh the settings that you made. You might have to wait about 45 seconds until the new settings appear and the message, “Network settings configured” is displayed before you reboot the server in the next step.

Step 11 Press **F10** to save your settings and reboot the server.

Note If you chose to enable DHCP, the dynamically assigned IP and MAC addresses are displayed on the console screen during bootup.

What to do next

Use a browser and the IP address of the Cisco IMC to connect to the Cisco IMC management interface. The IP address is based upon the settings that you made (either a static address or the address assigned by your DHCP server).



Note The factory default username for the server is *admin*. The default password is *password*.

To manage the server, see the *Cisco UCS C-Series Rack-Mount Server Configuration Guide* or the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide* for instructions on using those interfaces for your Cisco IMC release. The links to the configuration guides are in the [Cisco UCS C-Series Documentation Roadmap](#).

Updating the BIOS and Cisco IMC Firmware



Caution When you upgrade the BIOS firmware, you must also upgrade the Cisco IMC firmware to the same version or the server does not boot. Do not power off the server until the BIOS and Cisco IMC firmware are matching or the server does not boot.

Cisco provides the *Cisco UCS Host Upgrade Utility* to assist with simultaneously upgrading the BIOS, Cisco IMC, and other firmware to compatible levels.

The server uses firmware obtained from and certified by Cisco. Cisco provides release notes with each firmware image. There are several possible methods for updating the firmware:

- **Recommended method for firmware update:** Use the Cisco UCS Host Upgrade Utility to simultaneously upgrade the Cisco IMC, BIOS, and component firmware to compatible levels.

See the *Cisco UCS Host Upgrade Utility Quick Reference Guide* for your firmware release at the documentation roadmap link below.

- You can upgrade the Cisco IMC and BIOS firmware by using the Cisco IMC GUI interface.

See the *Cisco UCS C-Series Rack-Mount Server Configuration Guide*.

- You can upgrade the Cisco IMC and BIOS firmware by using the Cisco IMC CLI interface.

See the *Cisco UCS C-Series Rack-Mount Server CLI Configuration Guide*.

For links to the documents listed above, see the [Cisco UCS C-Series Documentation Roadmap](#).

Older NAND Flash Not Detectable By Latest Cisco IMC



Caution If your system is running Cisco IMC 4.0(1b) or later, and you have the latest NAND flash chip MT29F4G08ABAFWP-IT:F (M70A), do not downgrade the Cisco IMC to an earlier version. Earlier versions of the BMC cannot detect this latest NAND Flash chip.

Accessing the System BIOS

Procedure

-
- Step 1** Enter the BIOS Setup Utility by pressing the **F2** key when prompted during bootup.
- Note** The version and build of the current BIOS are displayed on the Main page of the utility.
- Step 2** Use the arrow keys to select the BIOS menu page.
- Step 3** Highlight the field to be modified by using the arrow keys.
- Step 4** Press **Enter** to select the field that you want to change, and then modify the value in the field.
- Step 5** Press the right arrow key until the Exit menu screen is displayed.
- Step 6** Follow the instructions on the Exit menu screen to save your changes and exit the setup utility (or press **F10**). You can exit without saving changes by pressing **Esc**.
-

Smart Access Serial

This server supports the Smart Access Serial feature. This feature allows you to switch between host serial and Cisco IMC CLI.

- This feature has the following requirements:
 - A serial cable connection, which can use either the RJ-45 serial connector on the server rear panel, or a DB-9 connection when using the supplied KVM cable on the front-panel KVM console connector.
 - Console redirection must be enabled in the server BIOS.
 - Terminal type must be set to VT100+ or VTUFT8.
 - Serial-over-LAN (SOL) must be disabled (SOL is disabled by default).
- To switch from host serial to Cisco IMC CLI, press **Esc+9**.
You must enter your Cisco IMC credentials to authenticate the connection.
- To switch from Cisco IMC CLI to host serial, press **Esc+8**.



Note You cannot switch to Cisco IMC CLI if the serial-over-LAN (SOL) feature is enabled.

- After a session is created, it is shown in the CLI or web GUI by the name `serial`.

Smart Access USB

This server supports the Smart Access USB feature. The board management controller (BMC) in this server can accept a USB mass storage device and access the data on it. This feature allows you to use the front-panel USB device as a medium to transfer data between the BMC and the user without need for network connectivity. This can be useful, for example, when remote BMC interfaces are not yet available, or are not accessible due to network misconfiguration.

- This feature has the following requirements:
 - The included KVM cable connected to the front panel KVM console connector.
 - A USB storage device connected to one of the USB 2.0 connectors on the KVM cable. The USB device must draw less than 500 mA to avoid disconnect by the current-protection circuit.



Note Any mouse or keyboard that is connected to the KVM cable is disconnected when you enable Smart Access USB.

- You can use USB 3.0-based devices, but they will operate at USB 2.0 speed.
- We recommend that the USB device have only one partition.
- The file system formats supported are: FAT16, FAT32, MSDOS, EXT2, EXT3, and EXT4. NTFS is not supported.
- The front-panel KVM connector has been designed to switch the USB port between Host OS and BMC.
- Smart Access USB can be enabled or disabled using any of the BMC user interfaces. For example, you can use the Cisco IMC Configuration Utility that is accessed by pressing **F8** when prompted during bootup.
 - Enabled: the front-panel USB device is connected to the BMC.
 - Disabled: the front-panel USB device is connected to the host.
- In a case where no management network is available to connect remotely to Cisco IMC, a Device Firmware Update (DFU) shell over serial cable can be used to generate and download technical support files to the USB device that is attached to front panel USB port.



CHAPTER 3

Maintaining Cisco CSP 5200

- [Status LEDs and Buttons, on page 19](#)
- [Preparing For Component Installation, on page 24](#)
- [Removing and Replacing Components, on page 29](#)
- [Service Headers and Jumpers, on page 64](#)

Status LEDs and Buttons

This section contains information for interpreting front, rear, and internal LED states.

Front-Panel LEDs

Figure 7: Front Panel LEDs

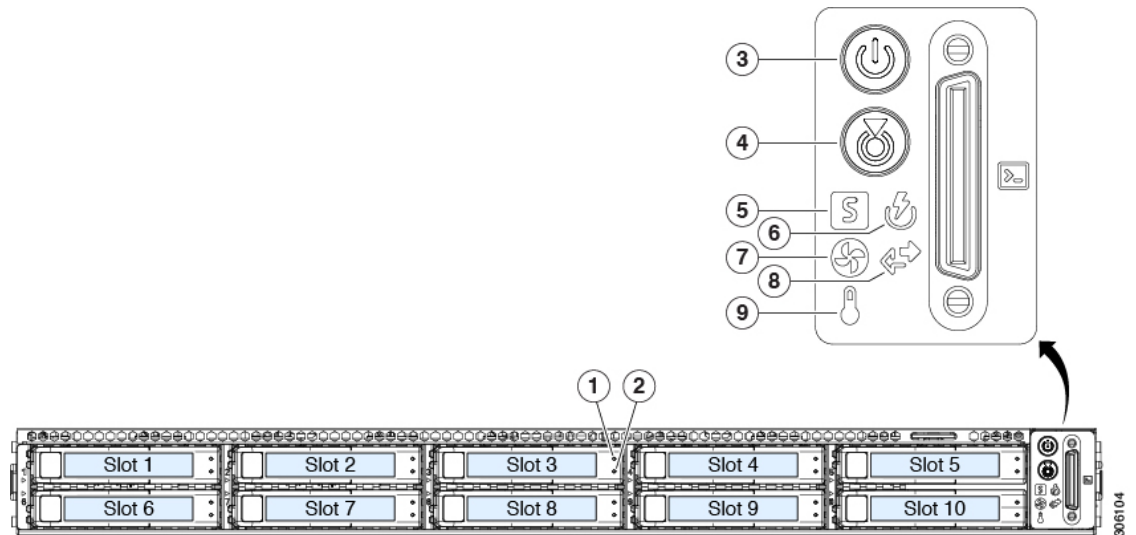


Table 1: Front Panel LEDs, Definition of States

LED Name	States
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1 SAS	SAS/SATA drive fault	<ul style="list-style-type: none"> • Off—The hard drive is operating properly. • Amber—Drive fault detected. • Amber, blinking—The device is rebuilding. • Amber, blinking with one-second interval—Drive locate function activated in the software.
2 SAS	SAS/SATA drive activity LED	<ul style="list-style-type: none"> • Off—There is no hard drive in the hard drive tray (no access, no fault). • Green—The hard drive is ready. • Green, blinking—The hard drive is reading or writing data.
3	Power button/LED	<ul style="list-style-type: none"> • Off—There is no AC power to the server. • Amber—The server is in standby power mode. Power is supplied only to the Cisco IMC and some motherboard functions. • Green—The server is in main power mode. Power is supplied to all server components.
4	Unit identification	<ul style="list-style-type: none"> • Off—The unit identification function is not in use. • Blue, blinking—The unit identification function is activated.

5	System health	<ul style="list-style-type: none"> • 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 (minor fault). For example: <ul style="list-style-type: none"> • 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, 2 blinks—There is a major fault with the system board. • Amber, 3 blinks—There is a major fault with the memory DIMMs. • Amber, 4 blinks—There is a major fault with the CPUs.
6	Power supply status	<ul style="list-style-type: none"> • 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.
7	Fan status	<ul style="list-style-type: none"> • Green—All fan modules are operating properly. • Amber, blinking—One or more fan modules breached the non-recoverable threshold.
8	Network link activity	<ul style="list-style-type: none"> • Off—The Ethernet LOM port 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.
9	Temperature status	<ul style="list-style-type: none"> • Green—The server is operating at normal temperature. • Amber, steady—One or more temperature sensors breached the critical threshold. • Amber, blinking—One or more temperature sensors breached the non-recoverable threshold.

Rear-Panel LEDs

Figure 8: Rear Panel LEDs

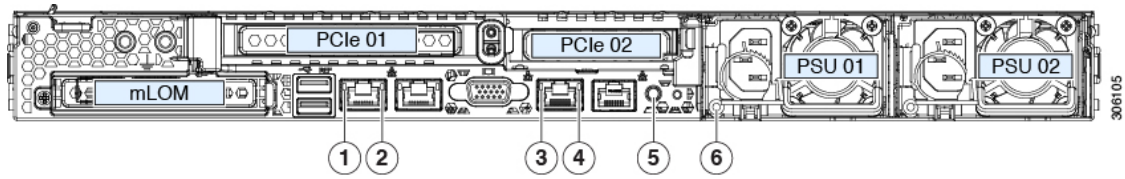


Table 2: Rear Panel LEDs, Definition of States

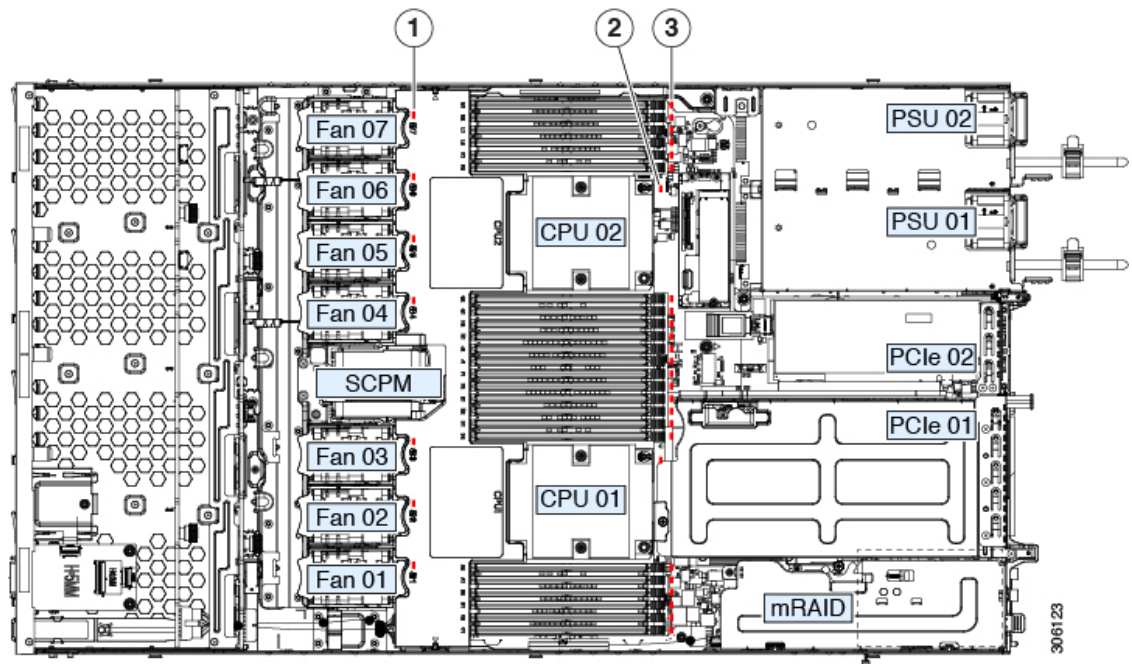
	LED Name	States
1	1-Gb/10-Gb Ethernet link speed (on both LAN1 and LAN2)	<ul style="list-style-type: none"> • Off—Link speed is 100 Mbps. • Amber—Link speed is 1 Gbps. • Green—Link speed is 10 Gbps.
2	1-Gb/10-Gb Ethernet link status (on both LAN1 and LAN2)	<ul style="list-style-type: none"> • Off—No link is present. • Green—Link is active. • Green, blinking—Traffic is present on the active link.
3	1-Gb Ethernet dedicated management link speed	<ul style="list-style-type: none"> • Off—Link speed is 10 Mbps. • Amber—Link speed is 100 Mbps. • Green—Link speed is 1 Gbps.
4	1-Gb Ethernet dedicated management link status	<ul style="list-style-type: none"> • Off—No link is present. • Green—Link is active. • Green, blinking—Traffic is present on the active link.
5	Rear unit identification	<ul style="list-style-type: none"> • Off—The unit identification function is not in use. • Blue, blinking—The unit identification function is activated.

6	Power supply status (one LED each power supply unit)	<p>AC power supplies:</p> <ul style="list-style-type: none"> • Off—No AC input (12 V main power off, 12 V standby power off). • Green, blinking—12 V main power off; 12 V standby power on. • Green, solid—12 V main power on; 12 V standby power on. • Amber, blinking—Warning threshold detected but 12 V main power on. • Amber, solid—Critical error detected; 12 V main power off (for example, over-current, over-voltage, or over-temperature failure).
---	--	--

Internal Diagnostic LEDs

The server has internal fault LEDs for CPUs, DIMMs, and fan modules.

Figure 9: Internal Diagnostic LED Locations



1	<p>Fan module fault LEDs (one behind each fan connector on the motherboard)</p> <ul style="list-style-type: none"> • Amber—Fan has a fault or is not fully seated. • Green—Fan is OK. 	3	<p>DIMM fault LEDs (one behind each DIMM socket on the motherboard)</p> <p>These LEDs operate only when the server is in standby power mode.</p> <ul style="list-style-type: none"> • Amber—DIMM has a fault. • Off—DIMM is OK.
2	<p>CPU fault LEDs (one behind each CPU socket on the motherboard).</p> <p>These LEDs operate only when the server is in standby power mode.</p> <ul style="list-style-type: none"> • Amber—CPU has a fault. • Off—CPU is OK. 	-	

Preparing For Component Installation

This section includes information and tasks that help prepare the Cisco CSP 5200 for component installation.

Required Equipment For Service Procedures

The following tools and equipment are used to perform the procedures in this chapter:

- T-30 Torx driver (supplied with replacement CPUs for heatsink removal)
- #1 flat-head screwdriver (supplied with replacement CPUs for heatsink removal)
- #1 Phillips-head screwdriver (for M.2 SSD and intrusion switch replacement)
- Electrostatic discharge (ESD) strap or other grounding equipment such as a grounded mat

Shutting Down and Removing Power From the Cisco CSP 5200

The Cisco CSP 5200 can run in either of two power modes:

- Main power mode—Power is supplied to all Cisco CSP 5200 components and any operating system on your drives can run.
- Standby power mode—Power is supplied only to the service processor and certain components. It is safe for the operating system and data to remove power cords from the Cisco CSP 5200 in this mode.



Caution

After a server is shut down to standby power, electric current is still present in the Cisco CSP 5200. To completely remove power as directed in some service procedures, you must disconnect all power cords from all power supplies in the Cisco CSP 5200.

You can shut down the server by using the front-panel power button or the software management interfaces.

Shutting Down Using the Power Button

Procedure

- Step 1** Check the color of the Power button/LED:
- Amber—The server is already in standby mode and you can safely remove power.
 - Green—The server is in main power mode and must be shut down before you can safely remove power.
- Step 2** Invoke either a graceful shutdown or a hard shutdown:
- Caution** To avoid data loss or damage to your operating system, you should always invoke a graceful shutdown of the operating system.
- Graceful shutdown—Press and release the **Power** button. The operating system performs a graceful shutdown and the server goes to standby mode, which is indicated by an amber Power button/LED.
 - Emergency shutdown—Press and hold the **Power** button for 4 seconds to force the main power off and immediately enter standby mode.
- Step 3** If a service procedure instructs you to completely remove power from the Cisco CSP 5200, disconnect all power cords from the power supplies in the Cisco CSP 5200.
-

Shutting Down Using The Cisco IMC GUI

You must log in with user or admin privileges to perform this task.

Procedure

- Step 1** In the Navigation pane, click the **Server** tab.
- Step 2** On the Server tab, click **Summary**.
- Step 3** In the Actions area, click **Power Off Server**.
- Step 4** Click **OK**.
- The operating system performs a graceful shutdown and the server goes to standby mode, which is indicated by an amber Power button/LED.
- Step 5** If a service procedure instructs you to completely remove power from the server, disconnect all power cords from the power supplies in the Cisco CSP 5200.
-

Shutting Down Using The Cisco IMC CLI

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 At the server prompt, enter:

Example:

```
server# scope chassis
```

Step 2 At the chassis prompt, enter:

Example:

```
server/chassis# power shutdown
```

The operating system performs a graceful shutdown and the server goes to standby mode, which is indicated by an amber Power button/LED.

Step 3 If a service procedure instructs you to completely remove power from the server, disconnect all power cords from the power supplies in the Cisco CSP 5200.

Shutting Down Using the Cisco CSP 5200 Manager Equipment Tab

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 In the Navigation pane, click **Equipment**.

Step 2 Expand **Equipment > Rack Mounts > Cisco CSP 5200**.

Step 3 Choose the server that you want to shut down.

Step 4 In the Work pane, click the **General** tab.

Step 5 In the Actions area, click **Shutdown Cisco CSP 5200**.

Step 6 If a confirmation dialog displays, click **Yes**.

The operating system performs a graceful shutdown and the server goes to standby mode, which is indicated by an amber Power button/LED.

Step 7 If a service procedure instructs you to completely remove power from the server, disconnect all power cords from the power supplies in the Cisco CSP 5200.

Shutting Down Using the Cisco CSP 5200 Manager Service Profile

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 In the Navigation pane, click **Cisco CSP 5200**.

Step 2 Expand **Cisco CSP 5200 > Service Profiles**.

Step 3 Expand the node for the organization that contains the service profile of the server that you are shutting down.

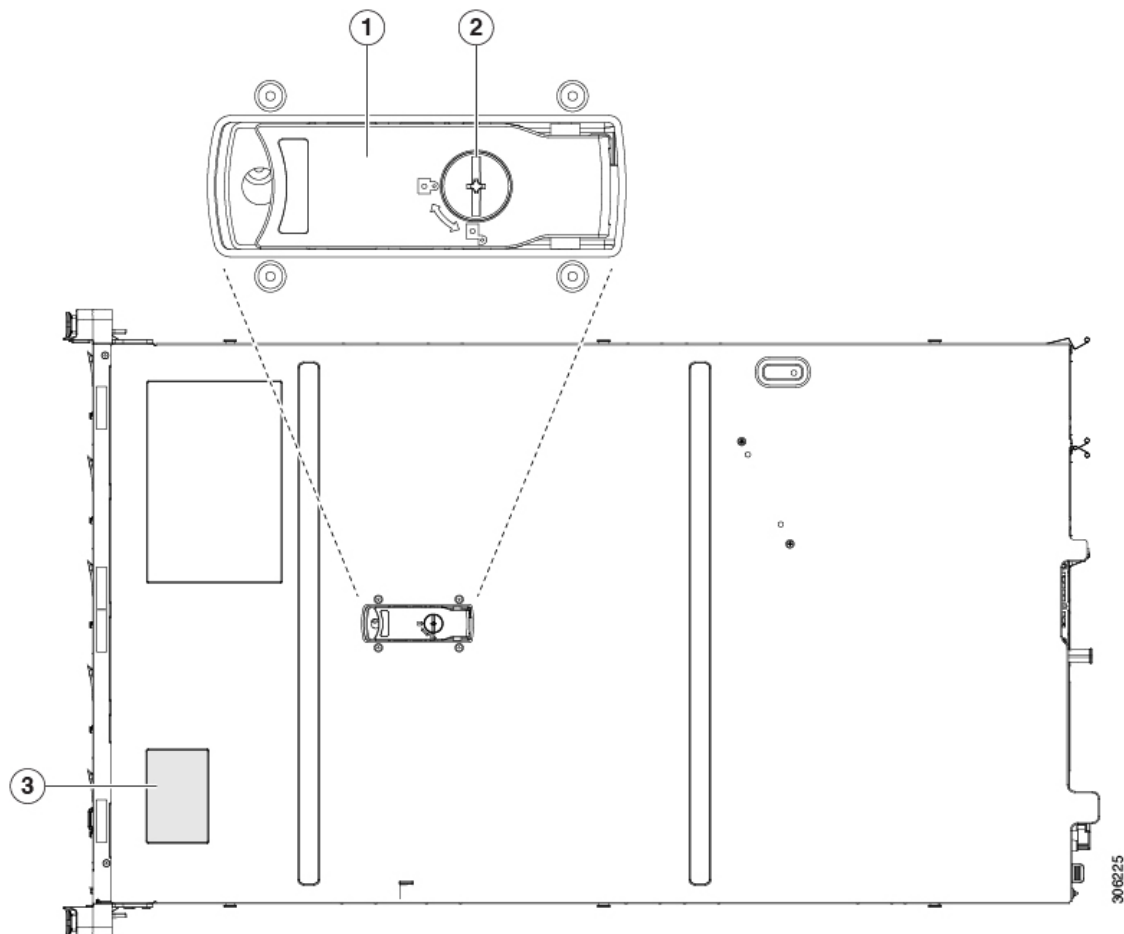
- Step 4** Choose the service profile of the server that you are shutting down.
- Step 5** In the **Work** pane, click the **General** tab.
- Step 6** In the **Actions** area, click **Shutdown Server**.
- Step 7** If a confirmation dialog displays, click **Yes**.
- The operating system performs a graceful shutdown and the server goes to standby mode, which is indicated by an amber Power button/LED.
- Step 8** If a service procedure instructs you to completely remove power from the server, disconnect all power cords from the power supplies in the Cisco CSP 5200.
-

Removing the Cisco CSP 5200 Top Cover

Procedure

- Step 1** Remove the top cover:
- If the cover latch is locked, use a screwdriver to turn the lock 90-degrees counterclockwise to unlock it.
 - Lift on the end of the latch that has the green finger grip. The cover is pushed back to the open position as you lift the latch.
 - Lift the top cover straight up from the Cisco CSP 5200 and set it aside.
- Step 2** Replace the top cover:
- With the latch in the fully open position, place the cover on top of the Cisco CSP 5200 about one-half inch (1.27 cm) behind the lip of the front cover panel. The opening in the latch should fit over the peg that sticks up from the fan tray.
 - Press the cover latch down to the closed position. The cover is pushed forward to the closed position as you push down the latch.
 - If desired, lock the latch by using a screwdriver to turn the lock 90-degrees clockwise.

Figure 10: Removing the Top Cover



1	Top cover	2	Locking cover latch
		3	Serial number label location

Serial Number Location

The serial number for the server is printed on a label on the top of the server, near the front. See [Removing the Cisco CSP 5200 Top Cover, on page 27](#).

Hot Swap

Some components can be removed and replaced without shutting down and removing power from the Cisco CSP 5200.

- Hot-swap replacement—You do not have to shut down the component in the software or operating system. This applies to the following components:

- SAS/SATA hard drives
- SAS/SATA solid state drives
- Cooling fan modules
- Power supplies (when redundant as 1+1)

Removing and Replacing Components



Warning Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Statement 1029



Caution When handling server components, handle them only by carrier edges and use an electrostatic discharge (ESD) wrist-strap or other grounding device to avoid damage.



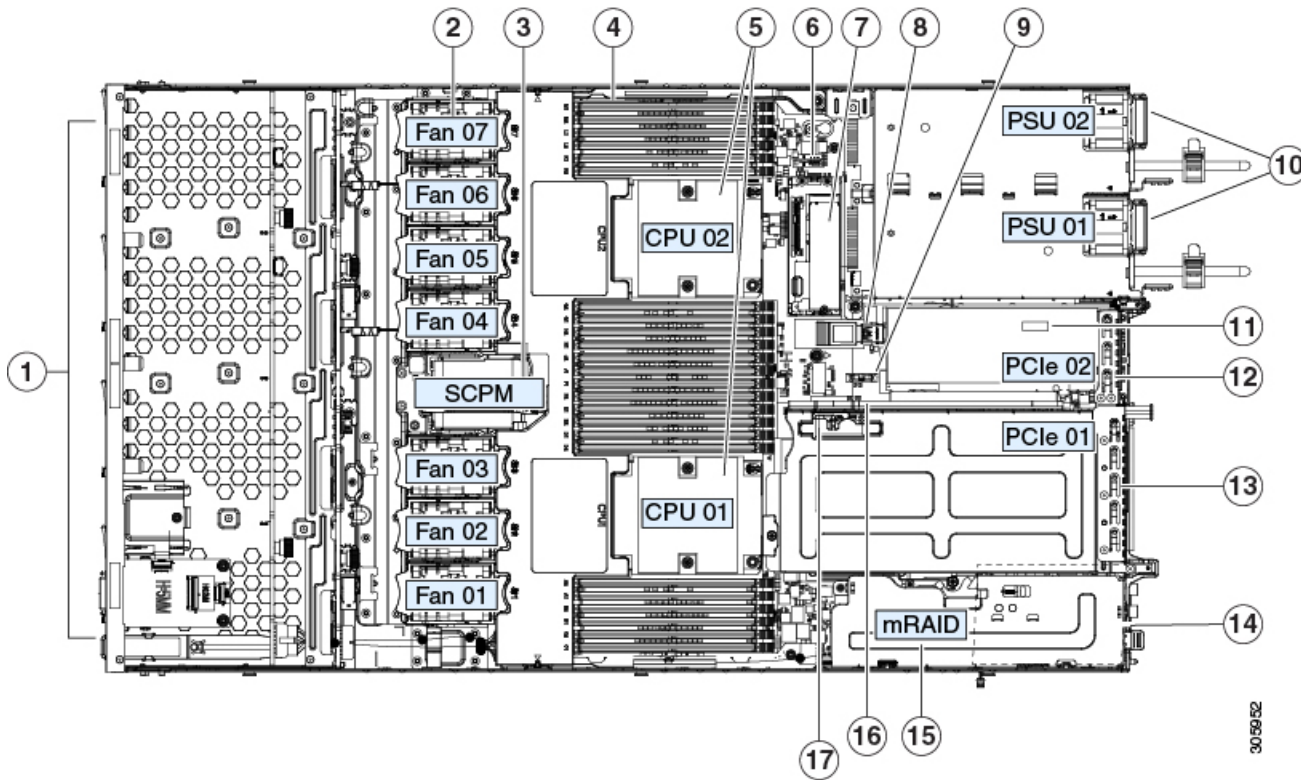
Tip You can press the unit identification button on the front panel or rear panel to turn on a flashing, blue unit identification LED on both the front and rear panels of the server. This button allows you to locate the specific server that you are servicing when you go to the opposite side of the rack. You can also activate these LEDs remotely by using the Cisco IMC interface.

This section describes how to install and replace Cisco CSP 5200 components.

Serviceable Component Locations

This topic shows the locations of the field-replaceable components and service-related items. The view in the following figure shows the Cisco CSP 5200 with the top cover removed.

Figure 11: Cisco CSP 5200, Serviceable Component Locations



1	Front-loading drive bays 1–10 support SAS/SATA drives.	10	Power supplies (hot-swappable when redundant as 1+1)
2	Cooling fan modules (seven, hot-swappable)	11	Trusted platform module (TPM) socket on motherboard (not visible in this view)
3	Supercap unit mounting bracket (RAID backup)	12	PCIe riser 2/slot 2 (half-height, x16 lane)
4	DIMM sockets on motherboard (12 per CPU)	13	PCIe riser 1/slot 1 (full-height, x16 lane) Includes socket for Micro-SD card
5	CPUs and heatsinks (up to two)	14	Modular LOM (mLOM) card bay on chassis floor (x16 PCIe lane), not visible in this view
6	Mini storage module socket Supports an SD card module with two SD card slots.	15	Modular RAID (mRAID) riser supports: Hardware RAID controller card
7	Chassis intrusion switch (optional)	16	PCIe cable connectors for front-loading NVMe SSDs on PCIe riser 2
8	Internal USB 3.0 port on motherboard	17	Micro-SD card socket on PCIe riser 1
9	RTC battery, vertical socket	-	

The Technical Specifications Sheets for all versions of this server, which include supported component part numbers, are at Cisco CSP 5000 Servers Technical Specifications Sheets (scroll down to *Technical Specifications*).

Replacing SAS/SATA Hard Drives or Solid State Drives



Note You do not have to shut down the server or drive to replace SAS/SATA hard drives or SSDs because they are hot-swappable. To replace an NVMe PCIe SSD drive, which must be shut down before removal, see the "Replacing a Front-Loading NVMe SSD" topic.

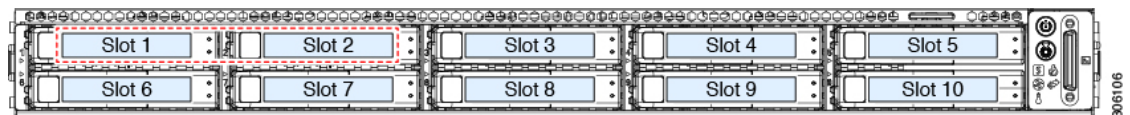
SAS/SATA Drive Population Guidelines

The server is orderable in the following version:

Cisco CSP 5200—Small form-factor (SFF) drives, with 10-drive backplane. Supports up to 10 2.5-inch SAS/SATA drives.

Drive bay numbering is shown in the following figures.

Figure 12: Small Form-Factor Drive Versions, Drive Bay Numbering



Observe these drive population guidelines for optimum performance:

- When populating drives, add drives to the lowest-numbered bays first.
- Keep an empty drive blanking tray in any unused bays to ensure proper airflow.

Setting Up UEFI Mode Booting in the BIOS Setup Utility

UEFI mode is the system default. Use this procedure if the mode has been changed and must be set back to UEFI mode.

Procedure

- Step 1** Enter the BIOS setup utility by pressing the **F2** key when prompted during bootup.
- Step 2** Go to the **Boot Options** tab.
- Step 3** Set **Boot Mode** to **UEFI Mode**.
- Step 4** Under **Boot Option Priorities**, set your OS installation media (such as a virtual DVD) as your **Boot Option #1**.
- Step 5** Press **F10** to save changes and exit the BIOS setup utility. Allow the CSP-5200 to reboot.
- Step 6** After the OS installs, verify the installation:
 - a) Enter the BIOS setup utility by pressing the **F2** key when prompted during bootup.
 - b) Go to the Boot Options tab.

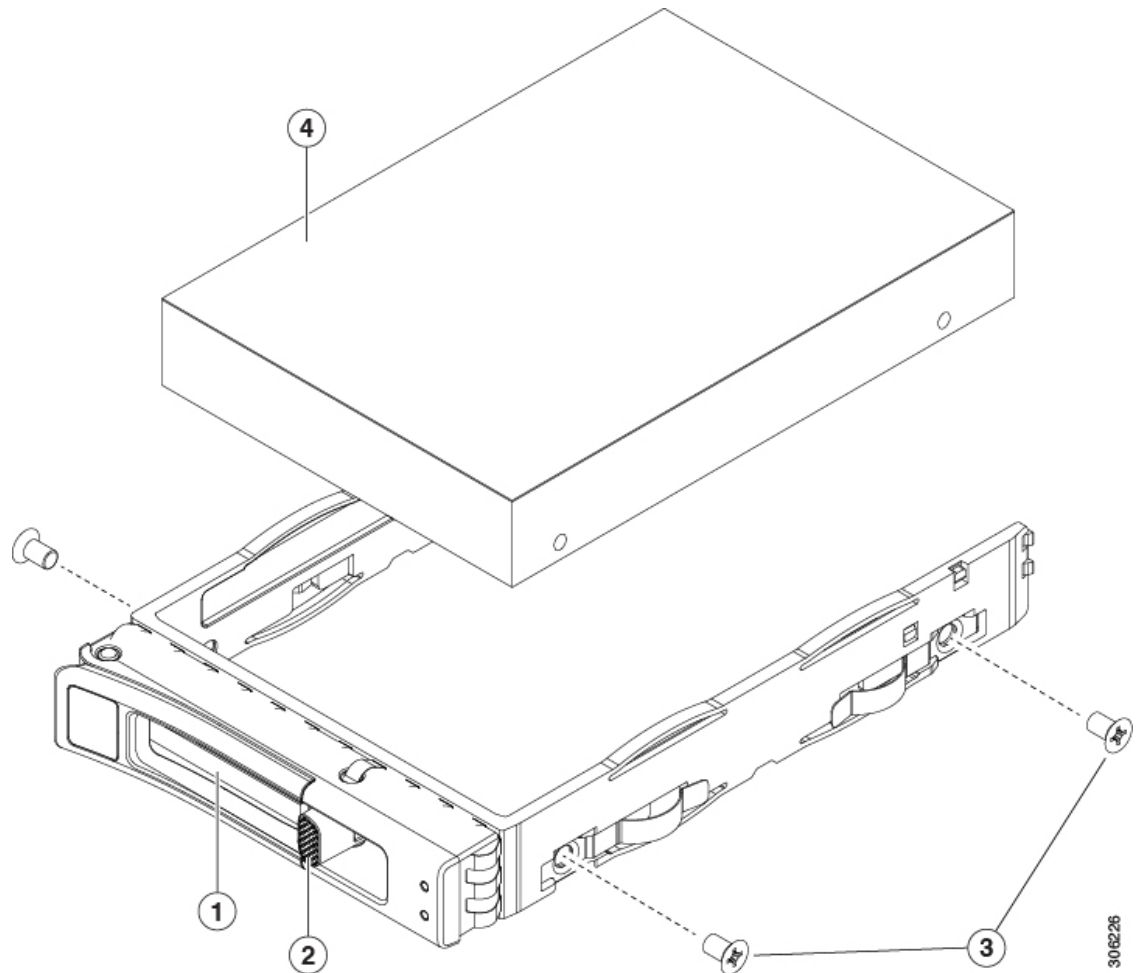
- c) Under **Boot Option Priorities**, verify that the OS you installed is listed as your **Boot Option #1**.
-

Replacing a SAS/SATA Drive

Procedure

- Step 1** Remove the drive that you are replacing or remove a blank drive tray from the bay:
 - a) Press the release button on the face of the drive tray.
 - b) Grasp and open the ejector lever and then pull the drive tray out of the slot.
 - c) If you are replacing an existing drive, remove the four drive-tray screws that secure the drive to the tray and then lift the drive out of the tray.
- Step 2** Install a new drive:
 - a) Place a new drive in the empty drive tray and install the four drive-tray screws.
 - b) With the ejector lever on the drive tray open, insert the drive tray into the empty drive bay.
 - c) Push the tray into the slot until it touches the backplane, and then close the ejector lever to lock the drive in place.

Figure 13: Replacing a Drive in a Drive Tray



1	Ejector lever	3	Drive tray screws (two on each side)
2	Release button	4	Drive removed from drive tray

Replacing Fan Modules

The seven fan modules in the CSP-5200 are numbered as shown in [Figure 3: Cisco CSP 5200, Serviceable Component Locations, on page 4](#).



Tip Each fan module has a fault LED next to the fan connector on the motherboard. This LED lights green when the fan is correctly seated and is operating OK. The LED lights amber when the fan has a fault or is not correctly seated.



Caution You do not have to shut down or remove power from the CSP-5200 to replace fan modules because they are hot-swappable. However, to maintain proper cooling, do not operate the CSP-5200 for more than one minute with any fan module removed.

Procedure

- Step 1** Remove an existing fan module:
- Slide the CSP-5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the server from the rack.
 - Remove the top cover from the CSP-5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
 - Grasp the fan module at its front and rear finger-grips. Lift straight up to disengage its connector from the motherboard.
- Step 2** Install a new fan module:
- Set the new fan module in place. The arrow printed on the top of the fan module should point toward the rear of the CSP-5200.
 - Press down gently on the fan module to fully engage it with the connector on the motherboard.
 - Replace the top cover to the CSP-5200.
 - Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.
-

Replacing Memory DIMMs



Caution DIMMs and their sockets are fragile and must be handled with care to avoid damage during installation.



Caution Cisco does not support third-party DIMMs. Using non-Cisco DIMMs in the Cisco CSP 5200 might result in system problems or damage to the motherboard.



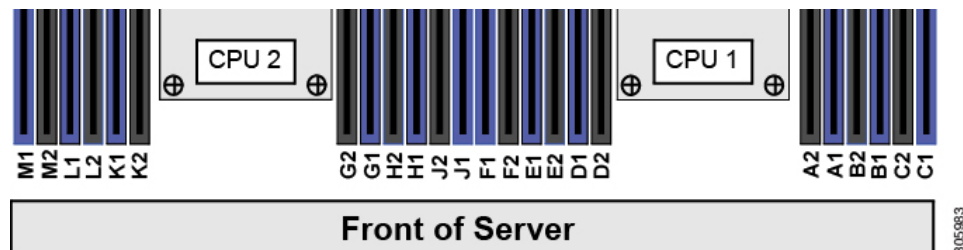
Note To ensure the best Cisco CSP 5200 performance, it is important that you are familiar with memory performance guidelines and population rules before you install or replace DIMMs.

DIMM Population Rules and Memory Performance Guidelines

DIMM Slot Numbering

The following figure shows the numbering of the DIMM slots on the motherboard.

Figure 14: DIMM Slot Numbering



DIMM Population Rules

Observe the following guidelines when installing or replacing DIMMs for maximum performance:

- Each CPU supports six memory channels.
 - CPU 1 supports channels A, B, C, D, E, F.
 - CPU 2 supports channels G, H, J, K, L, M.
- Each channel has two DIMM sockets (for example, channel A = slots A1, A2).
- In a single-CPU configuration, populate the channels for CPU1 only (A, B, C, D, E, F).
- For optimal performance, populate DIMMs in the order shown in the following table, depending on the number of CPUs and the number of DIMMs per CPU. If your server has two CPUs, balance DIMMs evenly across the two CPUs as shown in the table.



Note The table below lists recommended configurations. Using 5, 7, 9, 10, or 11 DIMMs per CPU is not recommended.

Table 3: DIMM Population Order

Number of DIMMs per CPU (Recommended Configurations)	Populate CPU 1 Slot		Populate CPU2 Slots	
	Blue #1 Slots	Black #2 Slots	Blue #1 Slots	Black #2 Slots
1	(A1)	-	(G1)	-
2	(A1, B1)	-	(G1, H1)	-
3	(A1, B1, C1)	-	(G1, H1, J1)	-
4	(A1, B1); (D1, E1)	-	(G1, H1); (K1, L1)	-

6	(A1, B1); (C1, D1); (E1, F1)	-	(G1, H1); (J1, K1); (L1, M1)	-
8	(A1, B1); (D1, E1)	(A2, B2); (D2, E2)	(G1, H1); (K1, L1)	(G2, H2); (K2, L2)
12	(A1, B1); (C1, D1); (E1, F1)	(A2, B2); (C2, D2); (E2, F2)	(G1, H1); (J1, K1); (L1, M1)	(G2, H2); (J2, K2); (L2, M2)

Replacing DIMMs

Identifying a Faulty DIMM

Each DIMM socket has a corresponding DIMM fault LED, directly in front of the DIMM socket. See [Internal Diagnostic LEDs, on page 23](#) for the locations of these LEDs. When the server is in standby power mode, these LEDs light amber to indicate a faulty DIMM.

Procedure

Step 1

Remove an existing DIMM:

- Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
- Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the server from the rack.

- Remove the top cover from the server as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- Remove the air baffle that covers the front ends of the DIMM slots to provide clearance.
- Locate the DIMM that you are removing, and then open the ejector levers at each end of its DIMM slot.

Step 2

Install a new DIMM:

Note Before installing DIMMs, see the memory population rules for this server: [DIMM Population Rules and Memory Performance Guidelines, on page 35](#).

- Align the new DIMM with the empty slot on the motherboard. Use the alignment feature in the DIMM slot to correctly orient the DIMM.
- Push down evenly on the top corners of the DIMM until it is fully seated and the ejector levers on both ends lock into place.
- Replace the top cover to the Cisco CSP 5200.
- Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

Replacing CPUs and Heatsinks

This section contains CPU configuration rules and the procedure for replacing CPUs and heatsinks:

CPU Configuration Rules

This server has two CPU sockets on the motherboard. Each CPU supports six DIM channels (12 DIMM slots). See [DIMM Population Rules and Memory Performance Guidelines, on page 35](#).

- The server can operate with one CPU or two identical CPUs installed.
- The minimum configuration is that the server must have at least CPU 1 installed. Install CPU 1 first, and then CPU 2.
- The maximum combined memory allowed in the 12 DIMM slots controlled by any one CPU is 768 GB. To populate the 12 DIMM slots with more than 768 GB of combined memory, you must use a high-memory CPU that has a PID that ends with an "M", for example, UCS-CPU-6134M.
- The following restrictions apply when using a single-CPU configuration:
 - Any unused CPU socket must have the protective dust cover from the factory in place.
 - The maximum number of DIMMs is 12 (only CPU 1 channels A, B, C, D, E, F).
 - PCIe riser 2 (slot 2) is unavailable.
 - Front-loading NVME drives are unavailable (they require PCIe riser 2).

Tools Required For CPU Replacement

You need the following tools and equipment for this procedure:

- T-30 Torx driver—Supplied with replacement CPU.
- #1 flat-head screwdriver—Supplied with replacement CPU.
- CPU assembly tool—Supplied with replacement CPU. Orderable separately as Cisco PID UCS-CPUAT=.
- Heatsink cleaning kit—Supplied with replacement CPU. Orderable separately as Cisco PID UCSX-HSCK=.
- Thermal interface material (TIM)—Syringe supplied with replacement CPU. Use only if you are reusing your existing heatsink (new heatsinks have a pre-applied pad of TIM). Orderable separately as Cisco PID UCS-CPU-TIM=.

See also [Additional CPU-Related Parts to Order with RMA Replacement CPUs, on page 44](#).

Replacing a CPU and Heatsink

**Caution**

CPUs and their sockets are fragile and must be handled with extreme care to avoid damaging pins. The CPUs must be installed with heatsinks and thermal interface material to ensure cooling. Failure to install a CPU correctly might result in damage to the Cisco CSP 5200.

Procedure

- Step 1** Remove the existing CPU/heatsink assembly from the server:

- a) Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
- b) Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

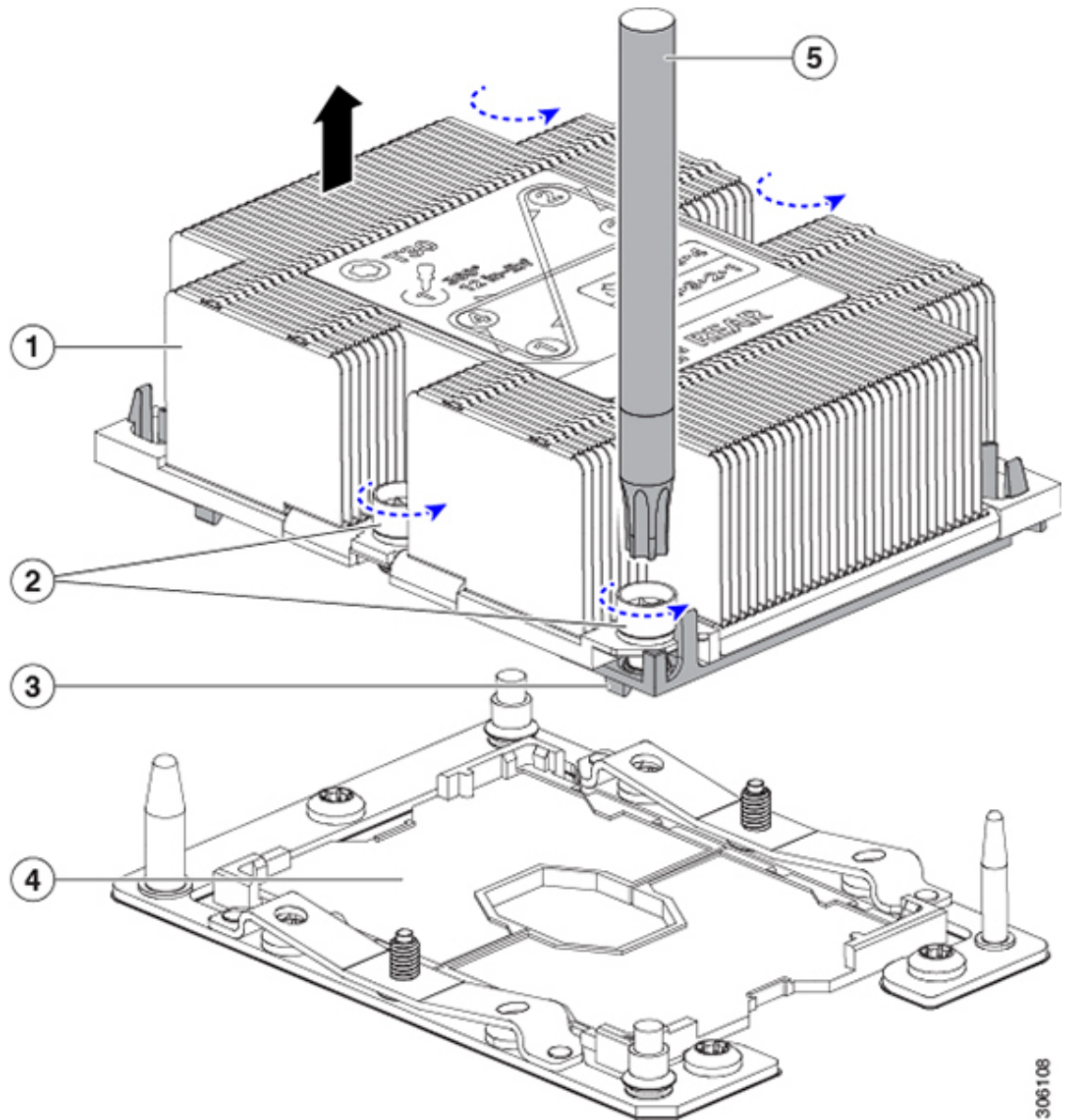
Caution If you cannot safely view and access the component, remove the server from the rack.

- c) Remove the top cover from the server as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- d) Use the T-30 Torx driver that is supplied with the replacement CPU to loosen the four captive nuts that secure the assembly to the motherboard standoffs.

Note Alternate loosening the heatsink nuts evenly so that the heatsink remains level as it is raised. Loosen the heatsink nuts in the order shown on the heatsink label: 4, 3, 2, 1.

- e) Lift straight up on the CPU/heatsink assembly and set it heatsink-down on an antistatic surface.

Figure 15: Removing the CPU/Heatsink Assembly

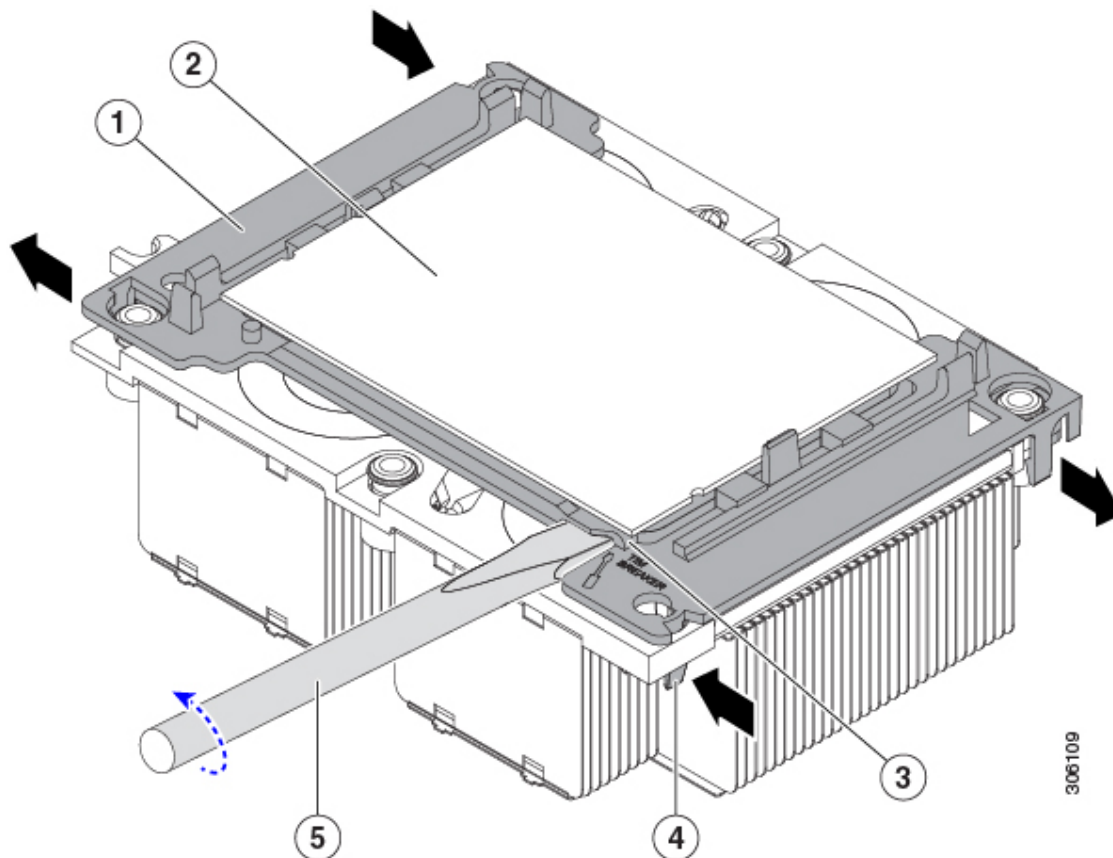


1	Heatsink	4	CPU socket on motherboard
2	Heatsink captive nuts (two on each side)	5	T-30 Torx driver
3	CPU carrier (below heatsink in this view)	-	

- Step 2** Separate the heatsink from the CPU assembly (the CPU assembly includes the CPU and the CPU carrier):
- Place the heatsink with CPU assembly so that it is oriented upside-down as shown below.

Note the thermal-interface material (TIM) breaker location. TIM BREAKER is stamped on the CPU carrier next to a small slot.

Figure 16: For testing



1	CPU carrier	4	CPU-carrier inner-latch nearest to the TIM breaker slot
2	CPU	5	#1 flat-head screwdriver inserted into TIM breaker slot
3	TIM BREAKER slot in CPU carrier	-	

- b) Pinch inward on the CPU-carrier inner-latch that is nearest the TIM breaker slot and then push up to disengage the clip from its slot in the heatsink corner.
- c) Insert the blade of a #1 flat-head screwdriver into the slot marked TIM BREAKER.

Caution In the following step, do not pry on the CPU surface. Use gentle rotation to lift on the plastic surface of the CPU carrier at the TIM breaker slot. Use caution to avoid damaging the heatsink surface.
- d) Gently rotate the screwdriver to lift up on the CPU until the TIM on the heatsink separates from the CPU.

Note Do not allow the screwdriver tip to touch or damage the green CPU substrate.
- e) Pinch the CPU-carrier inner-latch at the corner opposite the TIM breaker and push up to disengage the clip from its slot in the heatsink corner.

- f) On the remaining two corners of the CPU carrier, gently pry outward on the outer-latches and then lift the CPU-assembly from the heatsink.

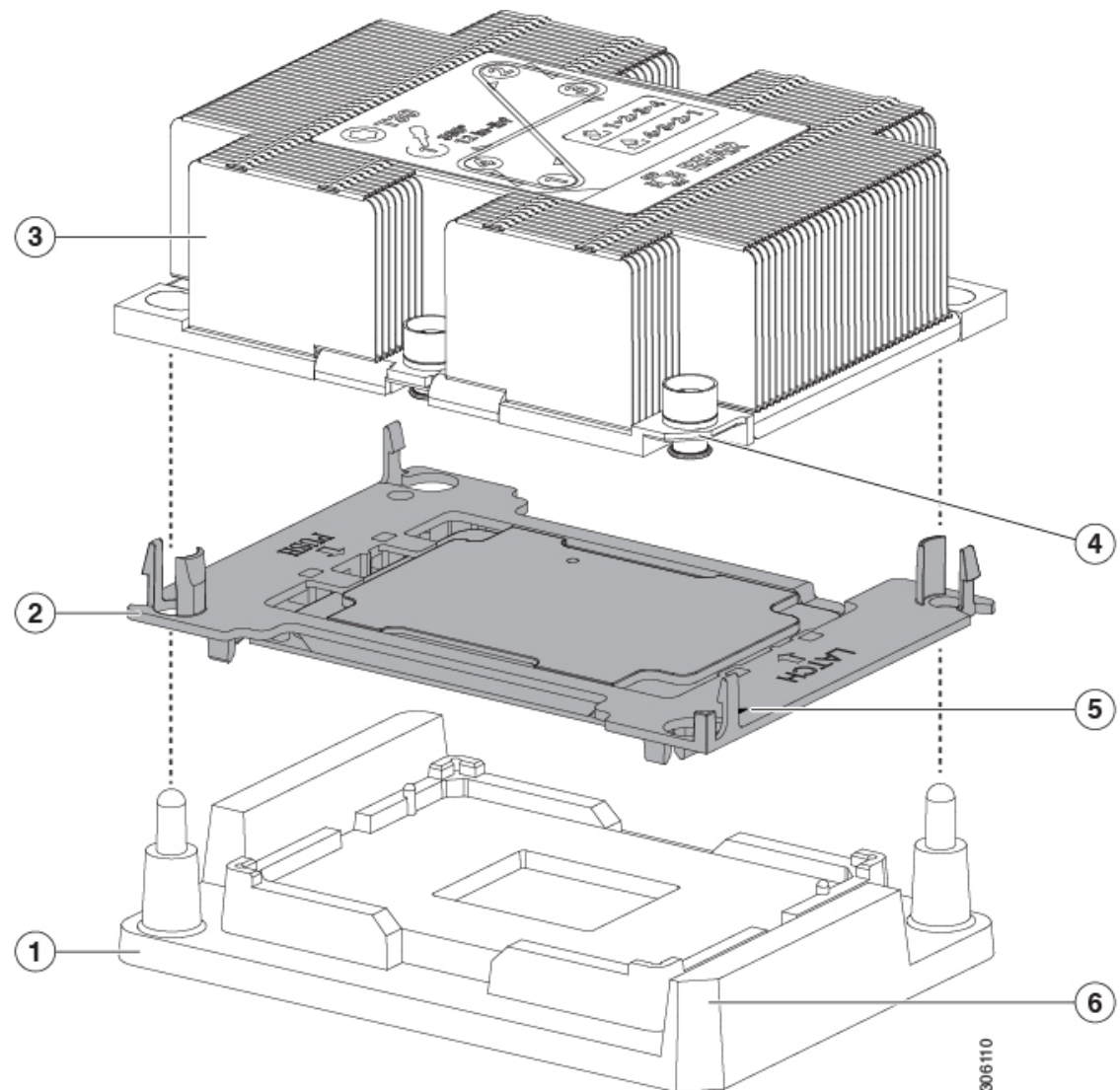
Note Handle the CPU-assembly by the plastic carrier only. Do not touch the CPU surface. Do not separate the CPU from the carrier.

Step 3 The new CPU assembly is shipped on a CPU assembly tool. Take the new CPU assembly and CPU assembly tool out of the carton.

If the CPU assembly and CPU assembly tool become separated, note the alignment features shown below for correct orientation. The pin 1 triangle on the CPU carrier must be aligned with the angled corner on the CPU assembly tool.

Caution CPUs and their sockets are fragile and must be handled with extreme care to avoid damaging pins.

Figure 17: CPU Assembly Tool, CPU Assembly, and Heatsink Alignment Features



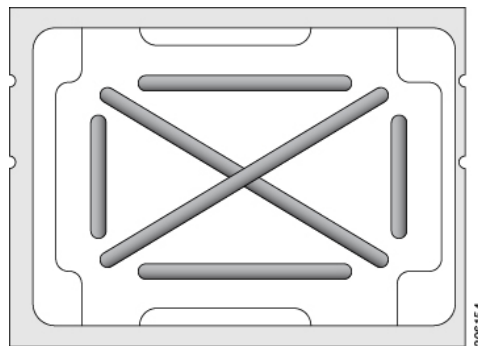
1	CPU assembly tool	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU assembly (CPU in plastic carrier)	5	Triangle cut into carrier (pin 1 alignment feature)
3	Heatsink	6	Angled corner on CPU assembly tool (pin 1 alignment feature)

Step 4 Apply new TIM to the heatsink:

Note The heatsink must have new TIM on the heatsink-to-CPU surface to ensure proper cooling and performance.

- If you are installing a new heatsink, it is shipped with a pre-applied pad of TIM. Go to step 5.
- If you are reusing a heatsink, you must remove the old TIM from the heatsink and then apply new TIM to the CPU surface from the supplied syringe. Continue with step a below.
 - a) Apply the cleaning solution that is included with the heatsink cleaning kit (UCSX-HSCK=) to the old TIM on the heatsink and let it soak for a least 15 seconds.
 - b) Wipe all of the TIM off the heatsink using the soft cloth that is included with the heatsink cleaning kit. Be careful to avoid scratching the heatsink surface.
 - c) Using the syringe of TIM provided with the new CPU (UCS-CPU-TIM=), apply 4 cubic centimeters of thermal interface material to the top of the CPU. Use the pattern shown below to ensure even coverage.

Figure 18: Thermal Interface Material Application Pattern



Caution Use only the correct heatsink for your CPUs to ensure proper cooling. There are two different heatsinks: UCSC-HS-C220M5= for standard-performance CPUs 150 W and less; UCSC-HS2-C220M5= for high-performance CPUs above 150 W. Note the wattage described on the heatsink label.

Step 5 With the CPU assembly on the CPU assembly tool, set the heatsink onto the CPU assembly. Note the pin 1 alignment features for correct orientation. Push down gently until you hear the corner clips of the CPU carrier click onto the heatsink corners.

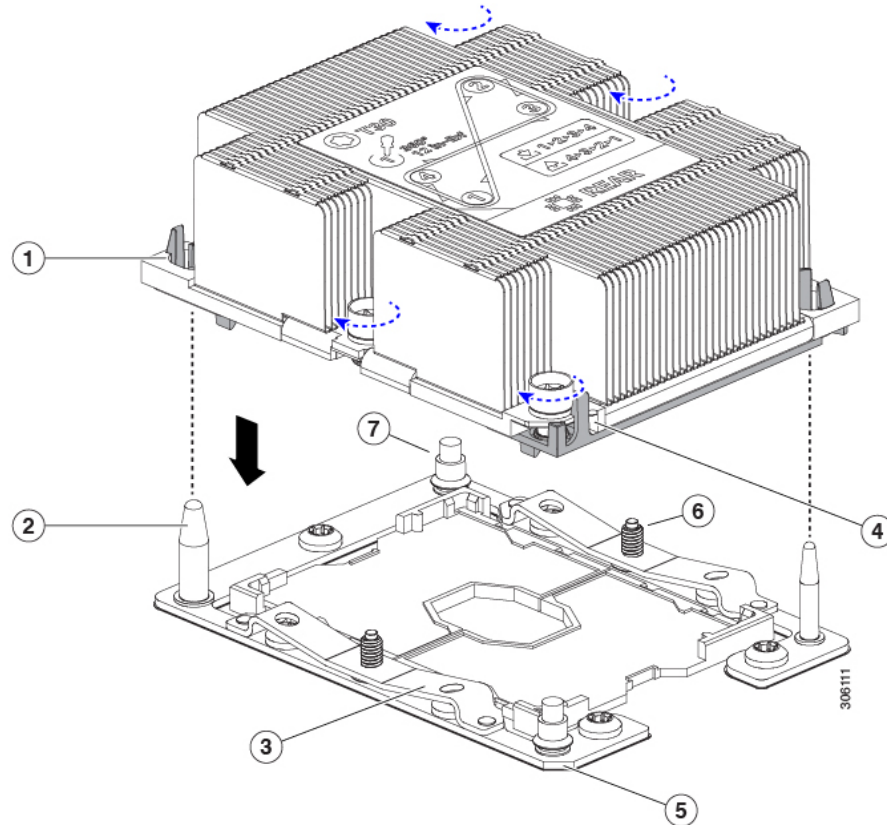
Caution In the following step, use extreme care to avoid touching or damaging the CPU contacts or the CPU socket pins.

Step 6 Install the CPU/heatsink assembly to the server:

- a) Lift the heatsink with attached CPU assembly from the CPU assembly tool.
- b) Align the CPU with heatsink over the CPU socket on the motherboard, as shown below.

Note the alignment features. The pin 1 angled corner on the heatsink must align with the pin 1 angled corner on the CPU socket. The CPU-socket posts must align with the guide-holes in the assembly.

Figure 19: Installing the Heatsink/CPU Assembly to the CPU Socket



1	Guide hole in assembly (two)	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU socket alignment post (two)	5	Angled corner on socket (pin 1 alignment feature)
3	CPU socket leaf spring	-	

- c) Set the heatsink with CPU assembly down onto the CPU socket.
- d) Use the T-30 Torx driver that is supplied with the replacement CPU to tighten the four captive nuts that secure the heatsink to the motherboard standoffs.

Caution Alternate tightening the heatsink nuts evenly so that the heatsink remains level while it is lowered. Tighten the heatsink nuts in the order shown on the heatsink label: 1, 2, 3, 4. The captive nuts must be fully tightened so that the leaf springs on the CPU socket lie flat.

- e) Replace the top cover to the server.

- f) Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

Additional CPU-Related Parts to Order with RMA Replacement CPUs

When a return material authorization (RMA) of the CPU is done on a Cisco Cisco CSP 5200, additional parts might not be included with the CPU spare. The TAC engineer might need to add the additional parts to the RMA to help ensure a successful replacement.



Note The following items apply to CPU *replacement* scenarios. If you are replacing a system chassis and *moving* existing CPUs to the new motherboard, you do not have to separate the heatsink from the CPU. See [Additional CPU-Related Parts to Order with RMA Replacement System Chassis, on page 45](#).

- Scenario 1—You are reusing the existing heatsinks:
 - Heatsink cleaning kit (UCSX-HSCK=)
 - Thermal interface material (TIM) kit for M5 servers (UCS-CPU-TIM=)
- Scenario 2—You are replacing the existing heatsinks:



Caution Use only the correct heatsink for your CPUs to ensure proper cooling. There are two different heatsinks: UCSC-HS-C220M5= for CPUs 150 W and less; UCSC-HS2-C220M5= for CPUs above 150 W.

- Heatsink: UCSC-HS-C220M5= for CPUs 150 W and less; UCSC-HS2-C220M5= for CPUs above 150 W
- Heatsink cleaning kit (UCSX-HSCK=)
- Scenario 3—You have a damaged CPU carrier (the plastic frame around the CPU):
 - CPU Carrier: UCS-M5-CPU-CAR=
 - #1 flat-head screwdriver (for separating the CPU from the heatsink)
 - Heatsink cleaning kit (UCSX-HSCK=)
 - Thermal interface material (TIM) kit for M5 servers (UCS-CPU-TIM=)

A CPU heatsink cleaning kit is good for up to four CPU and heatsink cleanings. The cleaning kit contains two bottles of solution, one to clean the CPU and heatsink of old TIM and the other to prepare the surface of the heatsink.

New heatsink spares come with a pre-applied pad of TIM. It is important to clean any old TIM off of the CPU surface prior to installing the heatsinks. Therefore, even when you are ordering new heatsinks, you must order the heatsink cleaning kit.

Additional CPU-Related Parts to Order with RMA Replacement System Chassis

When a return material authorization (RMA) of the system chassis is done on a Cisco CSP 5200, you move existing CPUs to the new chassis.



Note Unlike previous generation CPUs, the M5 server CPUs do not require you to separate the heatsink from the CPU when you *move* the CPU-heatsink assembly. Therefore, no additional heatsink cleaning kit or thermal-interface material items are required.

- The only tool required for moving a CPU/heatsink assembly is a T-30 Torx driver.

To move a CPU to a new chassis, use the procedure in [Moving an M5 Generation CPU](#), on page 45.

Moving an M5 Generation CPU

Tool required for this procedure: T-30 Torx driver



Caution When you receive a replacement server for an RMA, it includes dust covers on all CPU sockets. These covers protect the socket pins from damage during shipping. You must transfer these covers to the system that you are returning, as described in this procedure.

Procedure

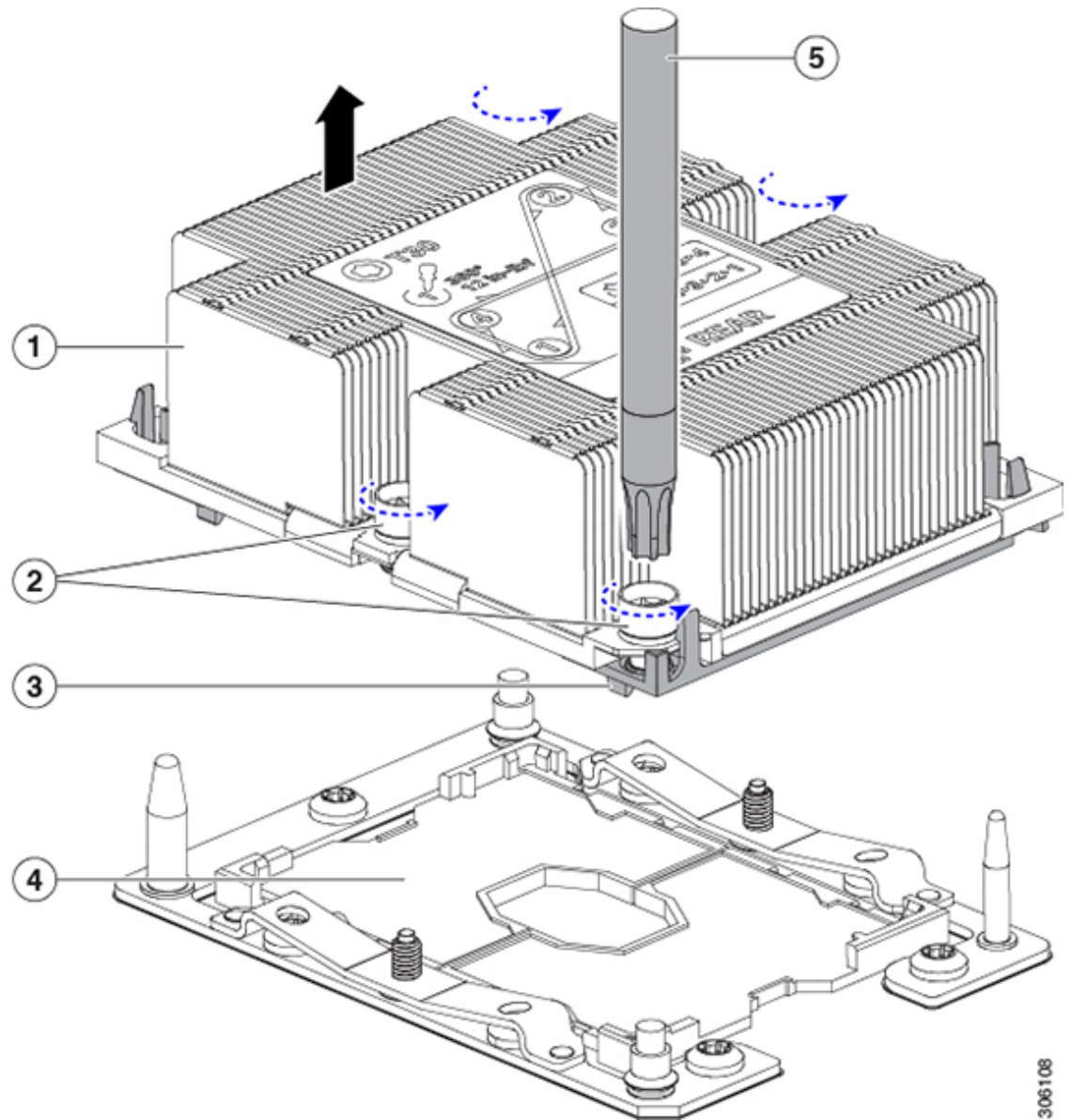
Step 1 When moving an M5 CPU to a new server, you do not have to separate the heatsink from the CPU. Perform the following steps:

- a) Use a T-30 Torx driver to loosen the four captive nuts that secure the assembly to the board standoffs.

Note Alternate loosening the heatsink nuts evenly so that the heatsink remains level as it is raised. Loosen the heatsink nuts in the order shown on the heatsink label: 4, 3, 2, 1.

- b) Lift straight up on the CPU/heatsink assembly to remove it from the board.
- c) Set the CPUs with heatsinks aside on an anti-static surface.

Figure 20: Removing the CPU/Heatsink Assembly



1	Heatsink	4	CPU socket on motherboard
2	Heatsink captive nuts (two on each side)	5	T-30 Torx driver
3	CPU carrier (below heatsink in this view)	-	

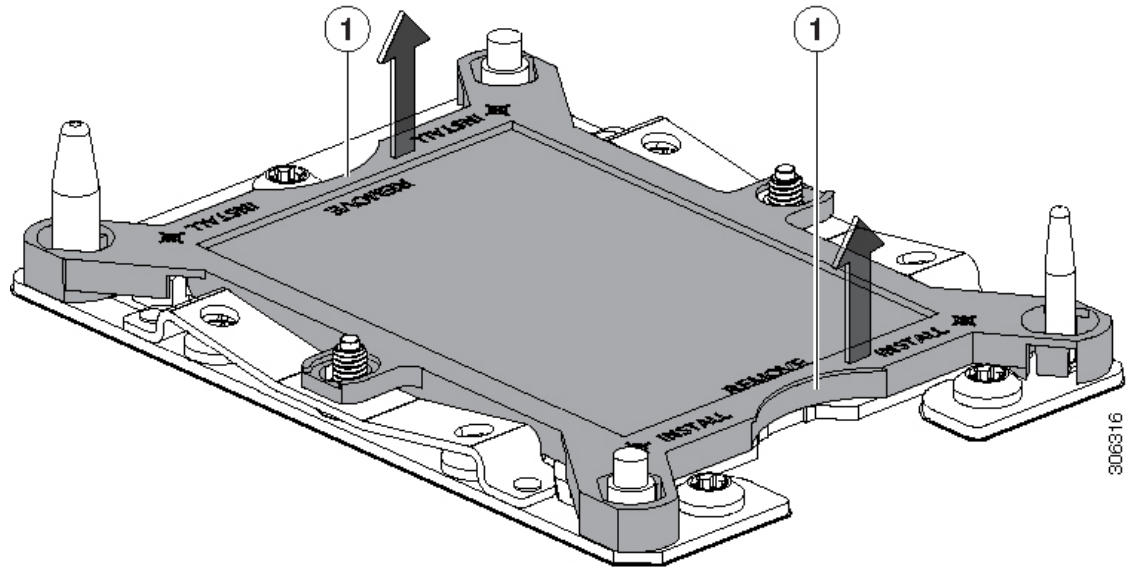
Step 2

Transfer the CPU socket covers from the new system to the system that you are returning:

- a) Remove the socket covers from the replacement system. Grasp the two recessed finger-grip areas marked "REMOVE" and lift straight up.

Note Keep a firm grasp on the finger-grip areas at both ends of the cover. Do not make contact with the CPU socket pins.

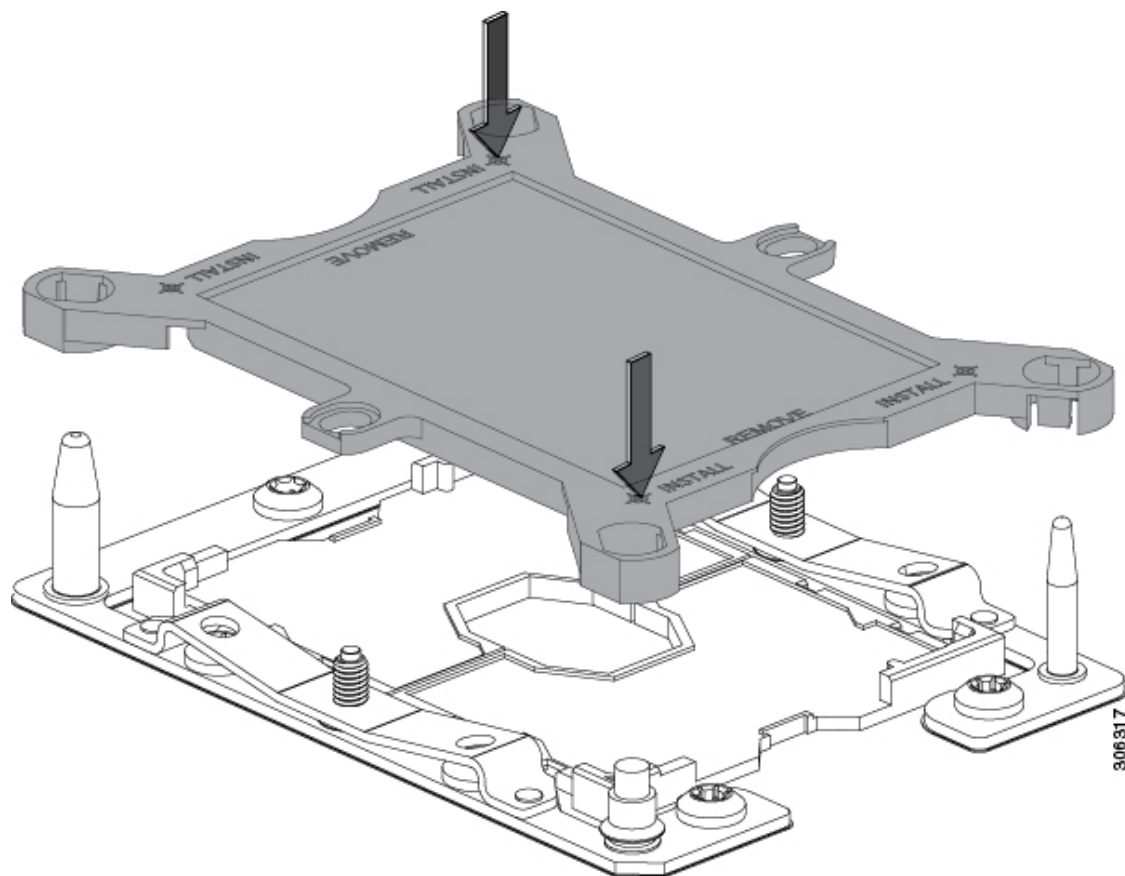
Figure 21: Removing a CPU Socket Dust Cover



1	Finger-grip areas marked "REMOVE" -	
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- b) With the wording on the dust cover facing up, set it in place over the CPU socket. Make sure that all alignment posts on the socket plate align with the cutouts on the cover.
- Caution** In the next step, do not press down anywhere on the cover except the two points described. Pressing elsewhere might damage the socket pins.
- c) Press down on the two circular markings next to the word "INSTALL" that are closest to the two threaded posts (see the following figure). Press until you feel and hear a click.
- Note** You must press until you feel and hear a click to ensure that the dust covers do not come loose during shipping.

Figure 22: Installing a CPU Socket Dust Cover



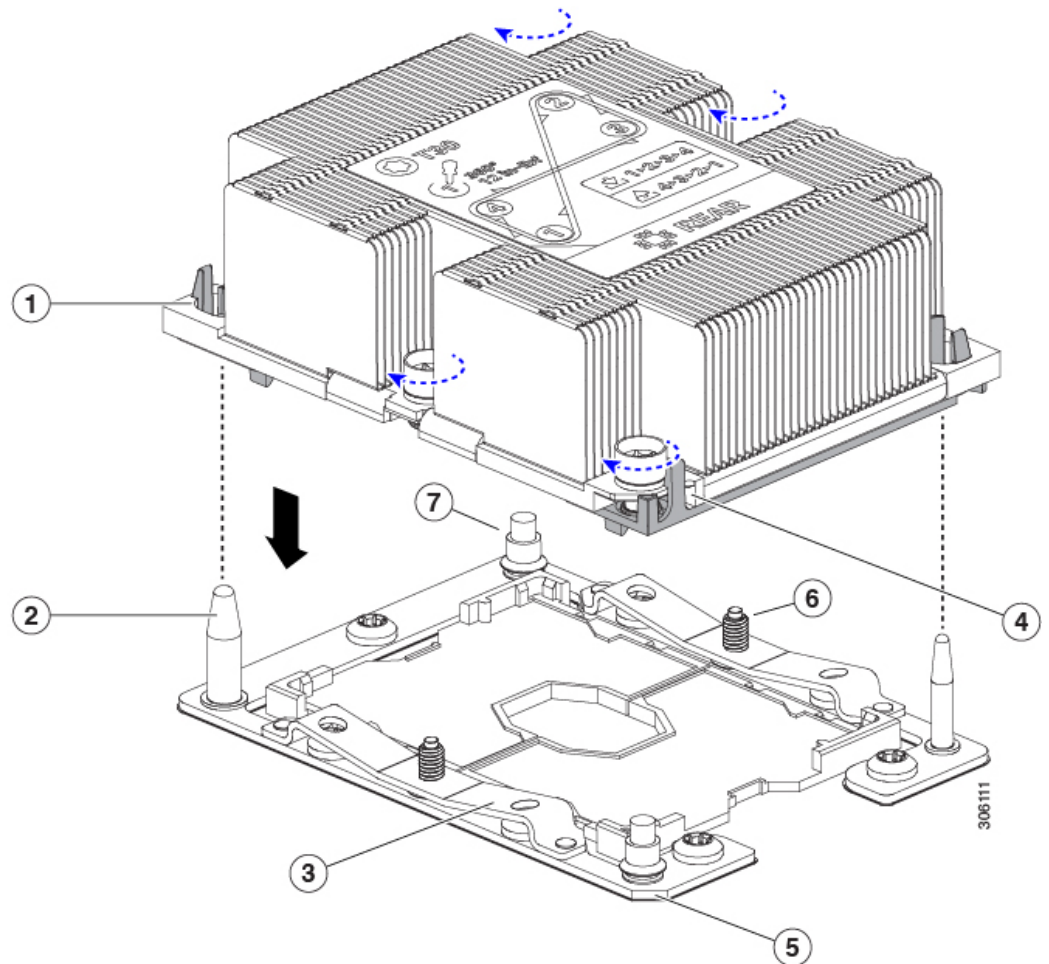
-	Press down on the two circular marks next to the word INSTALL.	-	
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Step 3 Install the CPUs to the new system:

- a) On the new board, align the assembly over the CPU socket, as shown below.

Note the alignment features. The pin 1 angled corner on the heatsink must align with the pin 1 angled corner on the CPU socket. The CPU-socket posts must align with the guide-holes in the assembly.

Figure 23: Installing the Heatsink/CPU Assembly to the CPU Socket



1	Guide hole in assembly (two)	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU socket alignment post (two)	5	Angled corner on socket (pin 1 alignment feature)
3	CPU socket leaf spring	-	

- b) On the new board, set the heatsink with CPU assembly down onto the CPU socket.
- c) Use a T-30 Torx driver to tighten the four captive nuts that secure the heatsink to the board standoffs.

Note Alternate tightening the heatsink nuts evenly so that the heatsink remains level while it is lowered. Tighten the heatsink nuts in the order shown on the heatsink label: 1, 2, 3, 4. The captive nuts must be fully tightened so that the leaf springs on the CPU socket lie flat.

Replacing a Mini-Storage Module

The mini-storage module plugs into a motherboard socket to provide additional internal storage. The module is available in two different versions:

- SD card carrier—provides two SD card sockets.
- M.2 SSD Carrier—provides two M.2 form-factor SSD sockets. These M.2 SSDs can be either two SATA SSDs or two NVMe SSDs (no mixing).

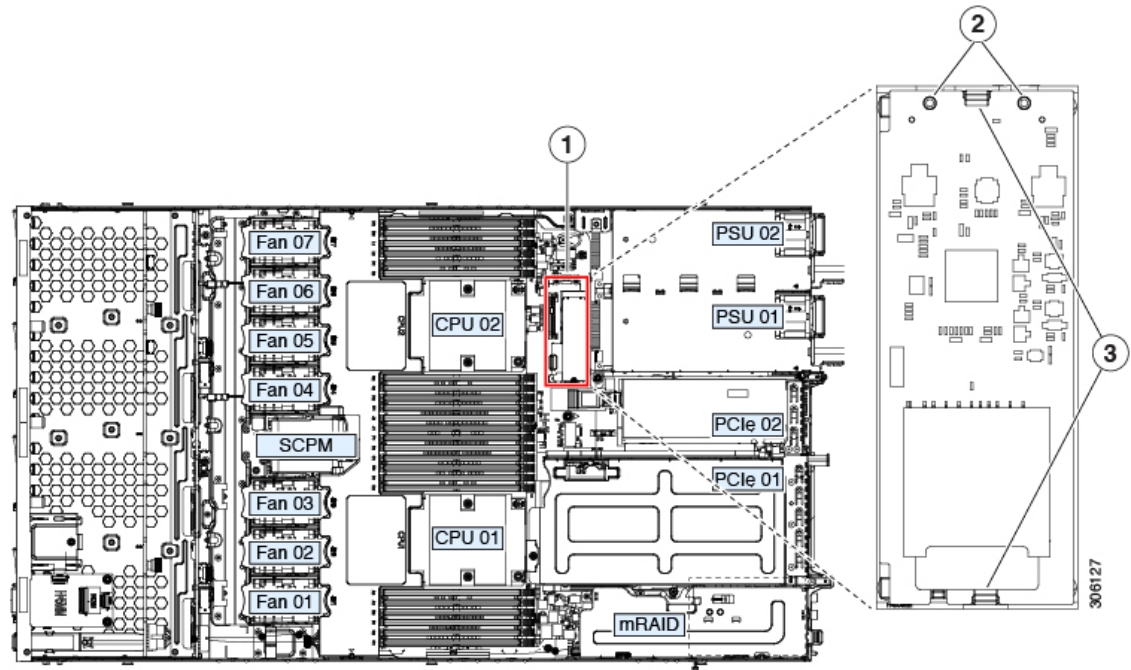
Replacing a Mini-Storage Module Carrier

This topic describes how to remove and replace a mini-storage module carrier. The carrier has one media socket on its top and one socket on its underside. Use the following procedure for any type of mini-storage module carrier (SD card or M.2 SSD).

Procedure

- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- Step 4** Remove a carrier from its socket:
- Locate the mini-storage module carrier in its socket just in front of power supply 1.
 - At each end of the carrier, push outward on the clip that secures the carrier.
 - Lift both ends of the carrier to disengage it from the socket on the motherboard.
 - Set the carrier on an anti-static surface.
- Step 5** Install a carrier to its socket:
- Position the carrier over socket, with the carrier's connector facing down and at the same end as the motherboard socket. Two alignment pegs must match with two holes on the carrier.
 - Gently push down the socket end of the carrier so that the two pegs go through the two holes on the carrier.
 - Push down on the carrier so that the securing clips click over it at both ends.
- Step 6** Replace the top cover to the server.
- Step 7** Replace the server in the rack, replace cables, and then fully power on the Cisco CSP 5200 by pressing the Power button.

Figure 24: Mini-Storage Module Carrier



1	Location of socket on motherboard	3	Securing clips
2	Alignment pegs	-	

Replacing an SD Card in a Mini-Storage Carrier For SD

This topic describes how to remove and replace an SD card in a mini-storage carrier for SD (PID UCS-MSTOR-SD). The carrier has one SD card slot on its top and one slot on its underside.

Population Rules For Mini-Storage SD Cards

- You can use one or two SD cards in the carrier.
- Dual SD cards can be configured in a RAID 1 array through the Cisco IMC interface.
- SD slot 1 is on the top side of the carrier; SD slot 2 is on the underside of the carrier (the same side as the carrier's motherboard connector).

Procedure

- Step 1** Power off the Cisco CSP 5200 and then remove the mini-storage module carrier from the Cisco CSP 5200 as described in [Replacing a Mini-Storage Module Carrier](#), on page 50.
- Step 2** Remove an SD card:
- a) Push on the top of the SD card, and then release it to allow it to spring out from the socket.
 - b) Grasp and remove the SD card from the socket.

- Step 3** Install a new SD card:
- Insert the new SD card into the socket with its label side facing up.
 - Press on the top of the SD card until it clicks in the socket and stays in place.
- Step 4** Install the mini-storage module carrier back into the server and then power it on as described in [Replacing a Mini-Storage Module Carrier, on page 50](#).
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Replacing an Internal USB Drive

This section includes procedures for installing a USB drive and for enabling or disabling the internal USB port.

Replacing a USB Drive



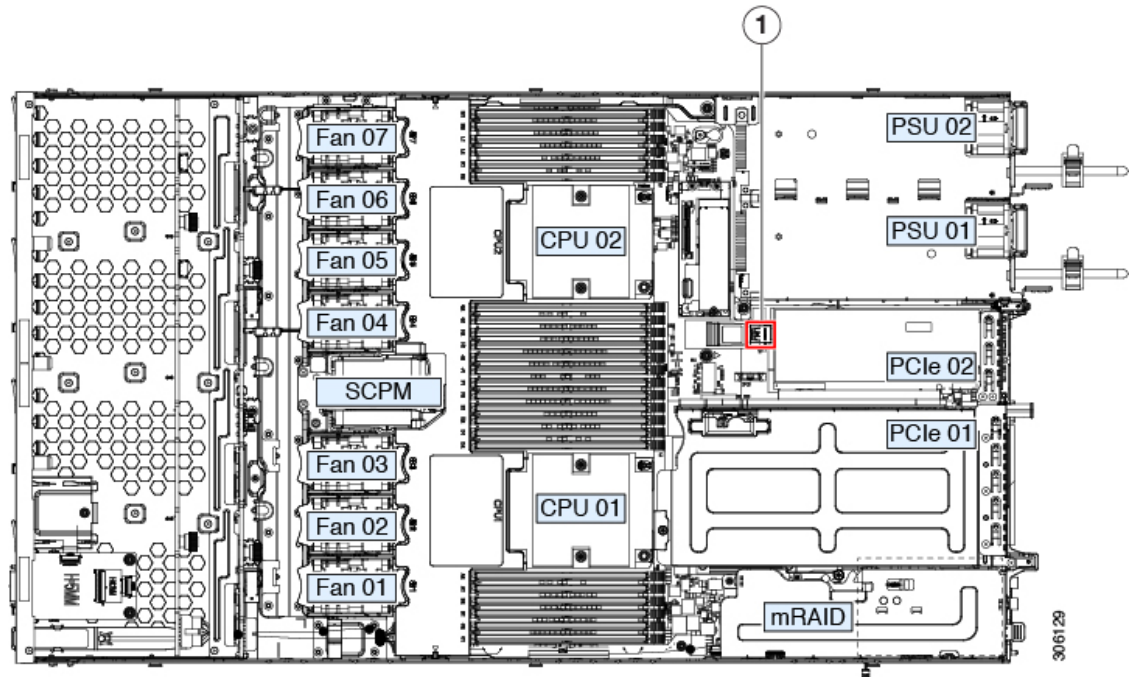
Caution We do not recommend that you hot-swap the internal USB drive while the Cisco CSP 5200 is powered on because of the potential for data loss.

Procedure

- Step 1** Remove an existing internal USB drive:
- Shut down and remove power from the Cisco CSP 5200 as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
 - Slide the Cisco CSP 5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the Cisco CSP 5200 from the rack.
 - Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
 - Locate the USB socket on the motherboard, directly in front of PCIe riser 2.
 - Grasp the USB drive and pull it horizontally to free it from the socket.
- Step 2** Install a new internal USB drive:
- Align the USB drive with the socket.
 - Push the USB drive horizontally to fully engage it with the socket.
 - Replace the top cover to the Cisco CSP 5200.
 - Replace the server in the rack, replace cables, and then fully power on the Cisco CSP 5200 by pressing the Power button.

Figure 25: Location of Internal USB Port



1	Location of horizontal USB socket on motherboard	-
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Enabling or Disabling the Internal USB Port

The factory default is that all USB ports on the Cisco CSP 5200 are enabled. However, the internal USB port can be enabled or disabled in the server BIOS.

Procedure

- Step 1** Enter the BIOS Setup Utility by pressing the **F2** key when prompted during bootup.
- Step 2** Navigate to the **Advanced** tab.
- Step 3** On the Advanced tab, select **USB Configuration**.
- Step 4** On the USB Configuration page, select **USB Ports Configuration**.
- Step 5** Scroll to **USB Port: Internal**, press **Enter**, and then choose either **Enabled** or **Disabled** from the dialog box.
- Step 6** Press **F10** to save and exit the utility.

Replacing the RTC Battery



Warning There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

[Statement 1015]

The real-time clock (RTC) battery retains system settings when the server is disconnected from power. The battery type is CR2032. Cisco supports the industry-standard CR2032 battery, which can be ordered from Cisco (PID N20-MBLIBATT) or purchased from most electronic stores.

Procedure

Step 1

Remove the RTC battery:

- a) Shut down and remove power from the Cisco CSP 5200 as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
- b) Slide the Cisco CSP 5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the Cisco CSP 5200 from the rack.

- c) Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- d) Locate the RTC battery. The vertical socket is directly in front of PCIe riser 2.
- e) Remove the battery from the socket on the motherboard. Gently pry the securing clip on one side open to provide clearance, then lift straight up on the battery.

Step 2

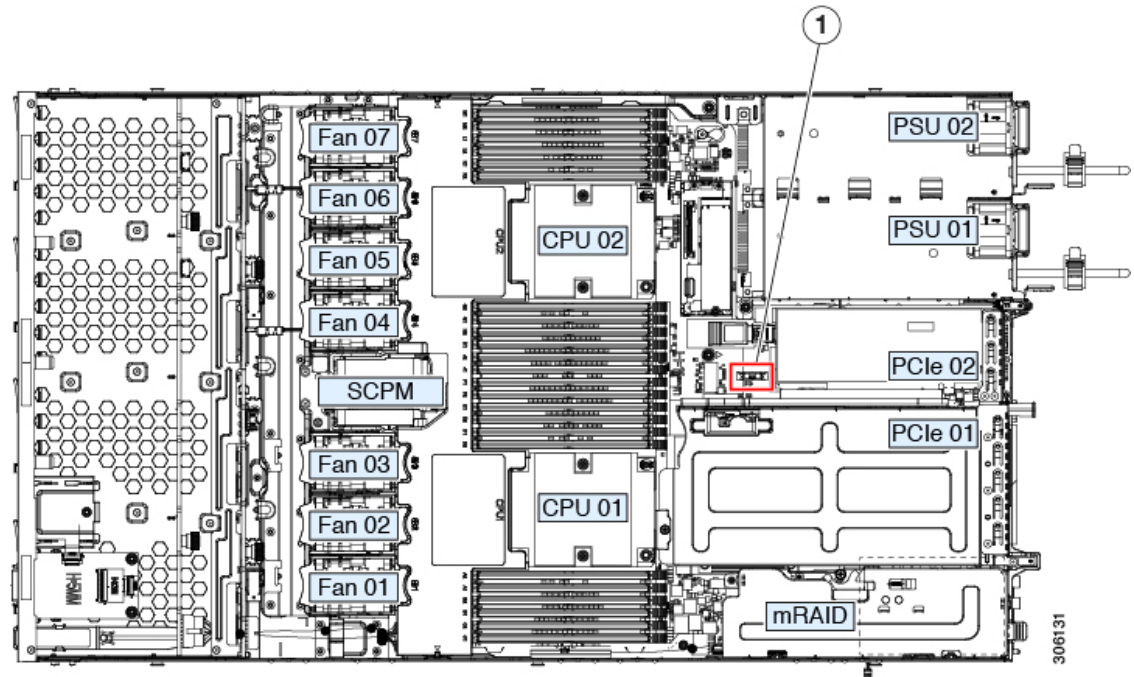
Install a new RTC battery:

- a) Insert the battery into its holder and press down until it clicks in place under the clip.

Note The flat, positive side of the battery marked "3V+" should face left as you face the Cisco CSP 5200 front.

- b) Replace the top cover to the Cisco CSP 5200.
- c) Replace the server in the rack, replace cables, and then fully power on the Cisco CSP 5200 by pressing the Power button.

Figure 26: RTC Battery Location on Motherboard



1	RTC battery in vertical socket	-	
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Replacing Power Supplies

The server can have one or two power supplies. When two power supplies are installed they are redundant as 1+1.

- See also [Power Specifications, on page 74](#) for more information about the power supplies.
- See also [Rear-Panel LEDs, on page 22](#) for information about the power supply LEDs.

This section includes procedures for replacing AC and DC power supply units.

- [Replacing AC Power Supplies, on page 55](#)

Replacing AC Power Supplies



Note If you have ordered a Cisco CSP 5200 with power supply redundancy (two power supplies), you do not have to power off the server to replace a power supply because they are redundant as 1+1.



Note Do not mix power supply types or wattages in the Cisco CSP 5200. Both power supplies must be identical.

Procedure

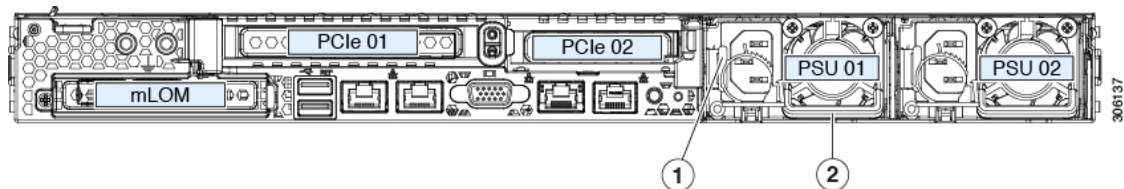
Step 1 Remove the power supply that you are replacing or a blank panel from an empty bay:

- a) Perform one of the following actions:
 - If your server has only one power supply, shut down and remove power from the Cisco CSP 5200 as described in [Shutting Down and Removing Power From the Cisco CSP 5200](#), on page 24.
 - If your Cisco CSP 5200 has two power supplies, you do not have to shut down the Cisco CSP 5200.
- b) Remove the power cord from the power supply that you are replacing.
- c) Grasp the power supply handle while pinching the release lever toward the handle.
- d) Pull the power supply out of the bay.

Step 2 Install a new power supply:

- a) Grasp the power supply handle and insert the new power supply into the empty bay.
- b) Push the power supply into the bay until the release lever locks.
- c) Connect the power cord to the new power supply.
- d) Only if you shut down the server, press the Power button to boot the Cisco CSP 5200 to main power mode.

Figure 27: Replacing AC Power Supplies



1	Power supply release lever	2	Power supply handle
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Replacing a PCIe Card

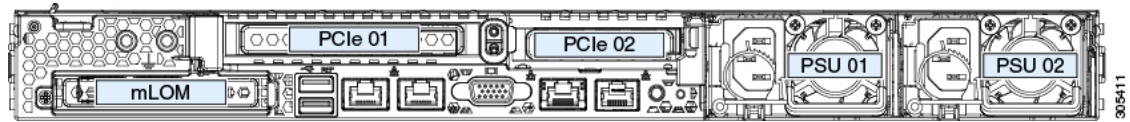


Note Cisco supports all PCIe cards qualified and sold by Cisco. PCIe cards not qualified or sold by Cisco are the responsibility of the customer. Although Cisco will always stand behind and support the C-Series rack-mount Cisco CSP 5200, customers using standard, off-the-shelf, third-party cards must go to the third-party card vendor for support if any issue with that particular card occurs.

PCIe Slot Specifications

The server contains two PCIe slots on one riser assembly for horizontal installation of PCIe cards. Both slots support the NCSI protocol and 12V standby power.

Figure 28: Rear Panel, Showing PCIe Slot Numbering



The following tables describe the specifications for the slots.

Table 4: PCIe Riser 1/Slot 1

Slot Number	Electrical Lane Width	Connector Length	Maximum Card Length	Card Height (Rear Panel Opening)	NCSI Support
1	Gen-3 x16	x24 connector	$\frac{3}{4}$ length	Full-height	Yes
Micro SD card slot	One socket for Micro SD card				

Table 5: PCIe Riser 2/Slot 2

Slot Number	Electrical Lane Width	Connector Length	Maximum Card Length	Card Height (Rear Panel Opening)	NCSI Support
2	Gen-3 x16	x24 connector	$\frac{1}{2}$ length	$\frac{1}{2}$ height	Yes
PCIe cable connector for front-panel NVMe SSDs	Gen-3 x8	Other end of cable connects to front drive backplane to support front-panel NVMe SSDs.			



Note Riser 2/Slot 2 is not available in single-CPU configurations.

Replacing a PCIe Card



Note If you are installing a Cisco CSP 5200 Virtual Interface Card, there are prerequisite considerations. See [Cisco Virtual Interface Card \(VIC\) Considerations, on page 60](#).



Note RAID controller cards install into a separate mRAID riser. See Replacing a SAS Storage Controller Card (RAID or HBA) topic.

Procedure

Step 1

Remove an existing PCIe card (or a blank filler panel) from the PCIe riser:

- a) Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
- b) Slide the Cisco CSP 5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the server from the rack.

- c) Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- d) Remove any cables from the ports of the PCIe card that you are replacing.
- e) Use two hands to grasp the external riser handle and the blue area at the front of the riser.
- f) Lift straight up to disengage the riser's connectors from the two sockets on the motherboard. Set the riser upside-down on an antistatic surface.
- g) Open the hinged plastic retainer that secures the rear-panel tab of the card.
- h) Pull evenly on both ends of the PCIe card to remove it from the socket on the PCIe riser.

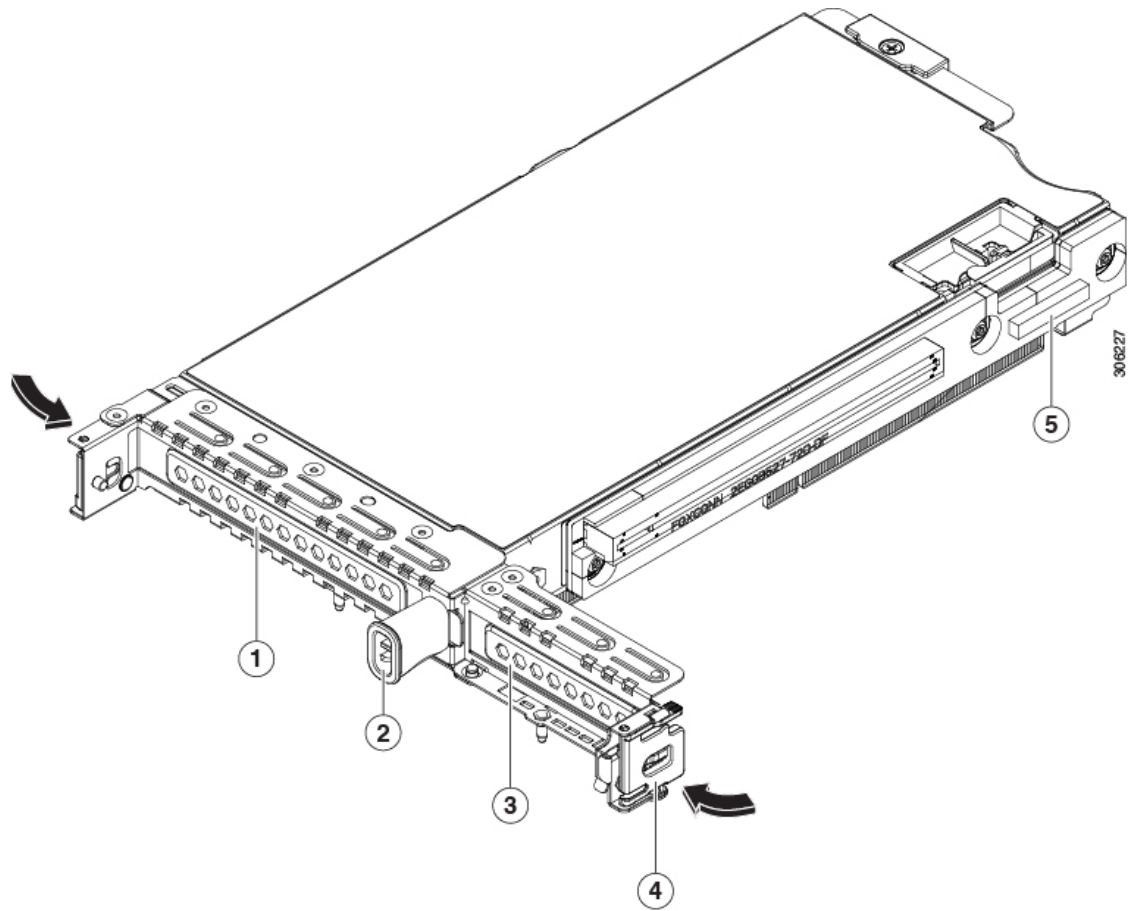
If the riser has no card, remove the blanking panel from the rear opening of the riser.

Step 2

Install a new PCIe card:

- a) With the hinged tab retainer open, align the new PCIe card with the empty socket on the PCIe riser.
PCIe riser 1/slot 1 has a long-card guide at the front end of the riser. Use the slot in the long-card guide to help support a full-length card.
- b) Push down evenly on both ends of the card until it is fully seated in the socket.
- c) Ensure that the card's rear panel tab sits flat against the riser rear-panel opening and then close the hinged tab retainer over the card's rear-panel tab.

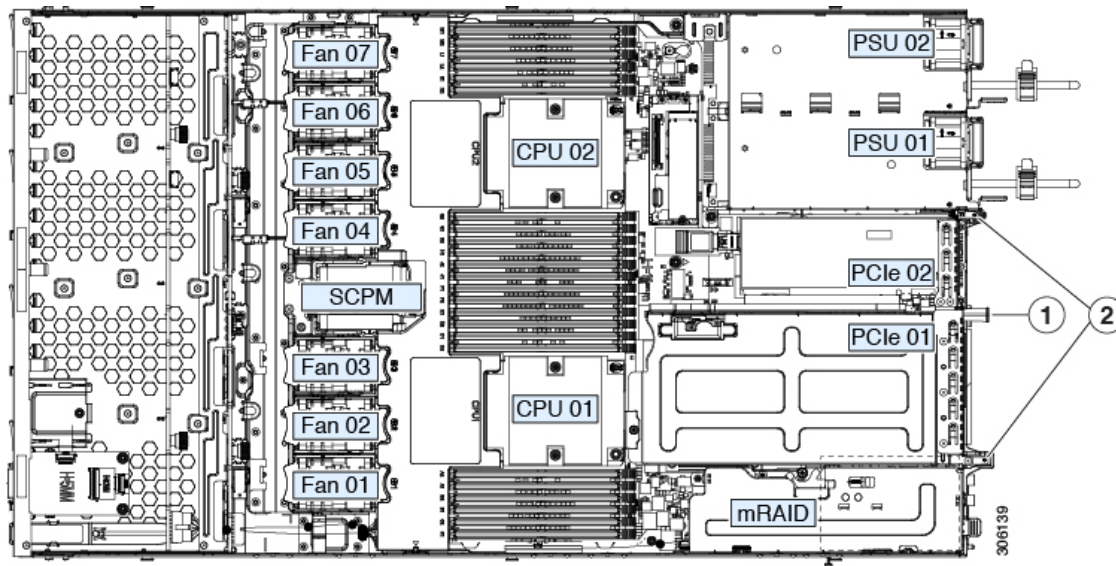
Figure 29: PCIe Riser Assembly



1	PCIe slot 1 rear-panel opening	4	Hinged card retainer (one each slot)
2	External riser handle	5	PCIe connector for cable that supports front-panel NVMe SSDs
3	PCIe slot 2 rear-panel opening		

- d) Position the PCIe riser over its two sockets on the motherboard and over the two chassis alignment channels.

Figure 30: PCIe Riser Alignment Features



1	Blue riser handle	2	Riser alignment features in chassis
---	-------------------	---	-------------------------------------

- e) Carefully push down on both ends of the PCIe riser to fully engage its two connectors with the two sockets on the motherboard.
- f) Replace the top cover to the Cisco CSP 5200.
- g) Replace the server in the rack, replace cables, and then fully power on the server by pressing the Power button.

Cisco Virtual Interface Card (VIC) Considerations

This section describes VIC card support and special considerations for this Cisco CSP 5200.



Note If you use the *Cisco Card* NIC mode, you must also make a *VIC Slot* setting that matches where your VIC is installed. The options are Riser1, Riser2, and Flex-LOM. See the "NIC Mode and NIC Redundancy Settings" topic for more information about NIC modes.

If you want to use the Cisco UCS VIC card for Cisco UCS Manager integration, see also the [Cisco UCS C-Series Server Integration with Cisco UCS Manager Guides](#) for details about supported configurations, cabling, and other requirements.

Table 6: VIC Support and Considerations in This Cisco CSP 5200

VIC	How Many Supported in Server	Slots That Support VICs	Primary Slot For Cisco UCS Manager Integration	Primary Slot For <i>Cisco Card</i> NIC Mode	Minimum Cisco IMC Firmware

Cisco UCS VIC 1385 UCSC-PCIE-C40Q-03	2 PCIe	PCIe 1 PCIe 2	PCIe 1	PCIe 1	3.1(1)
Cisco UCS VIC 1455 UCSC-PCIE-C25Q-04	2 PCIe	PCIe 1 PCIe 2	PCIe 1	PCIe 1	4.0(1)
Cisco UCS VIC 1387 UCSC-MLOM-C40Q-03	1 mLOM	mLOM	mLOM	mLOM	3.1(1)
Cisco UCS VIC 1457 UCSC-MLOM-C25Q-04	1 mLOM	mLOM	mLOM	mLOM	4.0(1)

Replacing an mLOM Card

The server supports a modular LOM (mLOM) card to provide additional rear-panel connectivity. The horizontal mLOM socket is on the motherboard, under the mRAID riser.

The mLOM socket provides a Gen-3 x16 PCIe lane. The socket remains powered when the server is in 12 V standby power mode and it supports the network communications services interface (NCSI) protocol.

Procedure

- Step 1** Remove any existing mLOM card (or a blanking panel):
- Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
 - Slide the Cisco CSP 5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the Cisco CSP 5200 from the rack.
 - Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
 - Remove the mRAID riser to provide access to the mLOM socket below the riser.

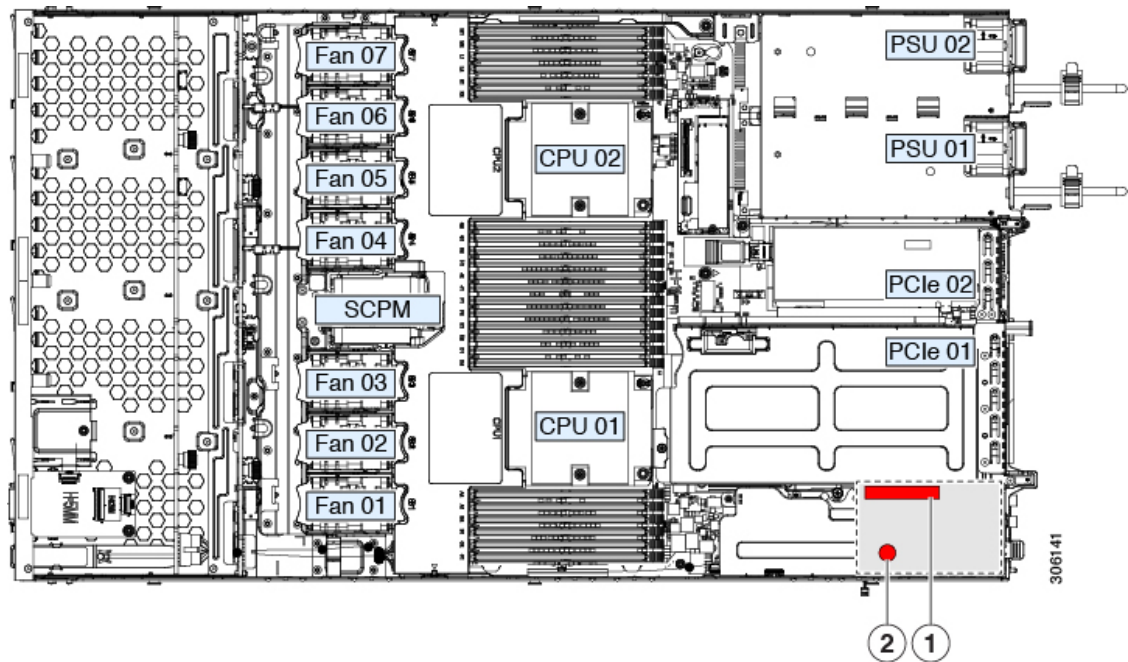
To remove the mRAID riser, use both hands to grasp the external blue handle on the rear and the blue finger-grip on the front. Lift straight up.

You do not have to disconnect cables from any RAID card or interposer card that is installed in the riser. Carefully move the riser aside only far enough to provide clearance.
 - Loosen the single captive thumbscrew that secures the mLOM card to the threaded standoff on the chassis floor.
 - Slide the mLOM card horizontally to free it from the socket, then lift it out of the Cisco CSP 5200.
- Step 2** Install a new mLOM card:
- Set the mLOM card on the chassis floor so that its connector is aligned with the motherboard socket.
 - Push the card horizontally to fully engage the card's edge connector with the socket.
 - Tighten the captive thumbscrew to secure the card to the standoff on the chassis floor.
 - Return the mRAID riser to its socket.

Carefully align the riser's edge connector with the motherboard socket at the same time you align the two channels on the riser with the two pegs on the inner chassis wall. Press down evenly on both ends of the riser to fully engage its connector with the motherboard socket.

- e) Replace the top cover to the Cisco CSP 5200.
- f) Replace the server in the rack, replace cables, and then fully power on the Cisco CSP 5200 by pressing the Power button.

Figure 31: Location of the mLOM Card Socket Below the mRAID Riser



1	Position of horizontal mLOM card socket	2	Position of mLOM card thumbscrew
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Replacing a SAS Storage Controller Card (RAID)

For hardware-based storage control, the Cisco CSP 5200 can use a Cisco modular SAS RAID controller that plugs into a horizontal socket on a dedicated mRAID riser (internal riser 3).

Storage Controller Card Firmware Compatibility

Firmware on the storage controller (RAID) must be verified for compatibility with the current Cisco IMC and BIOS versions that are installed on the Cisco CSP 5200. If not compatible, upgrade or downgrade the storage controller firmware using the Cisco Host Upgrade Utility (HUU) for your firmware release to bring it to a compatible level.

See the HUU guide for your Cisco IMC release for instructions on downloading and using the utility to bring Cisco CSP 5200 components to compatible levels: [HUU Guides](#).

Replacing the Supercap (RAID Backup)

This Cisco CSP 5200 supports installation of one supercap unit. The unit mounts to a bracket that is in the middle of the row of cooling fan modules.

The supercap provides approximately three years of backup for the disk write-back cache DRAM in the case of a sudden power loss by offloading the cache to the NAND flash.



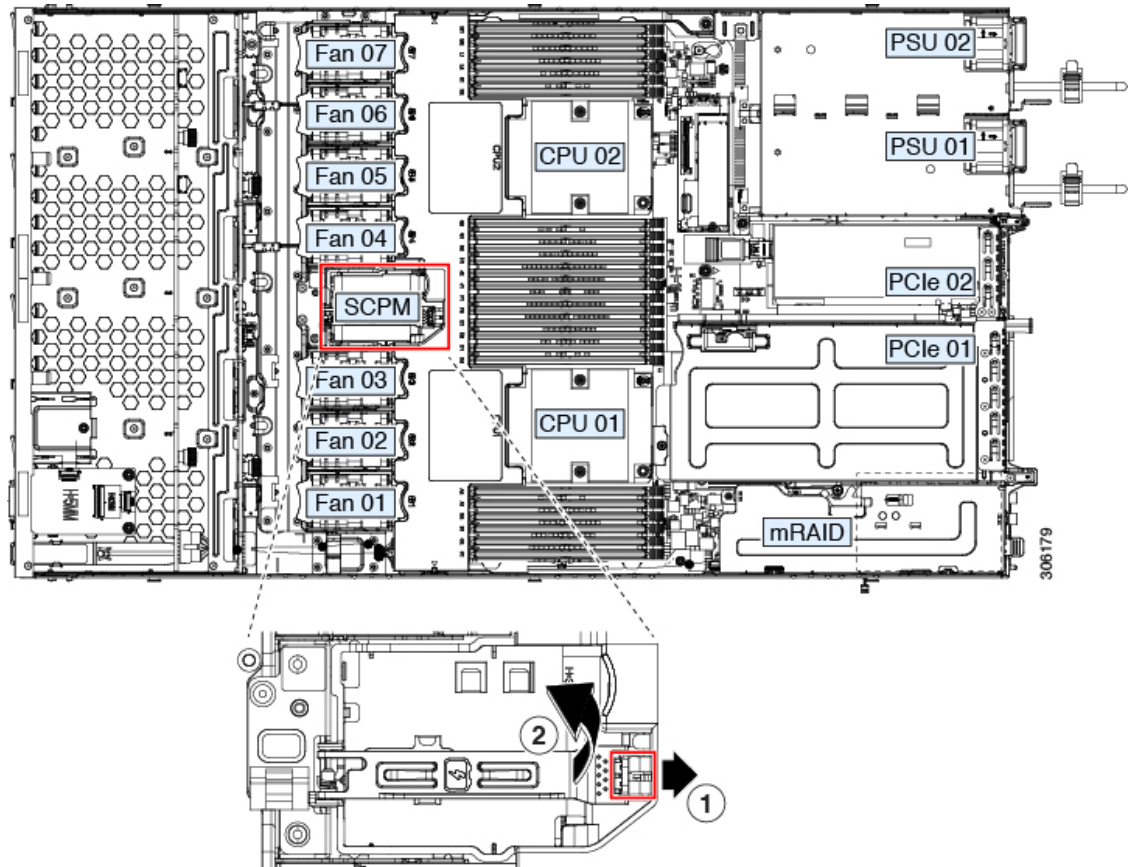
Warning There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Statement 1015

Procedure

- Step 1** Prepare the server for component installation:
- Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#).
 - Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
Caution If you cannot safely view and access the component, remove the server from the rack.
 - Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- Step 2** Remove an existing supercap:
- Disconnect the supercap cable from the existing supercap.
 - Push aside the securing tab to open the hinged latch that secures the supercap to its bracket on the removable air baffle.
 - Lift the supercap free of the bracket and set it aside.
- Step 3** Install a new supercap:
- Set the new supercap into the mounting bracket.
 - Close the hinged plastic clip over the supercap. Push down until the securing tab clicks.
 - Connect the supercap cable from the RAID controller card to the connector on the new supercap cable.
- Step 4** Replace the top cover to the Cisco CSP 5200.
- Step 5** Replace the Cisco CSP 5200 in the rack, replace cables, and then fully power on the server by pressing the Power button.

Figure 32: Replacing Supercap



1	Securing tab	2	Hinged latch
---	--------------	---	--------------

Service Headers and Jumpers

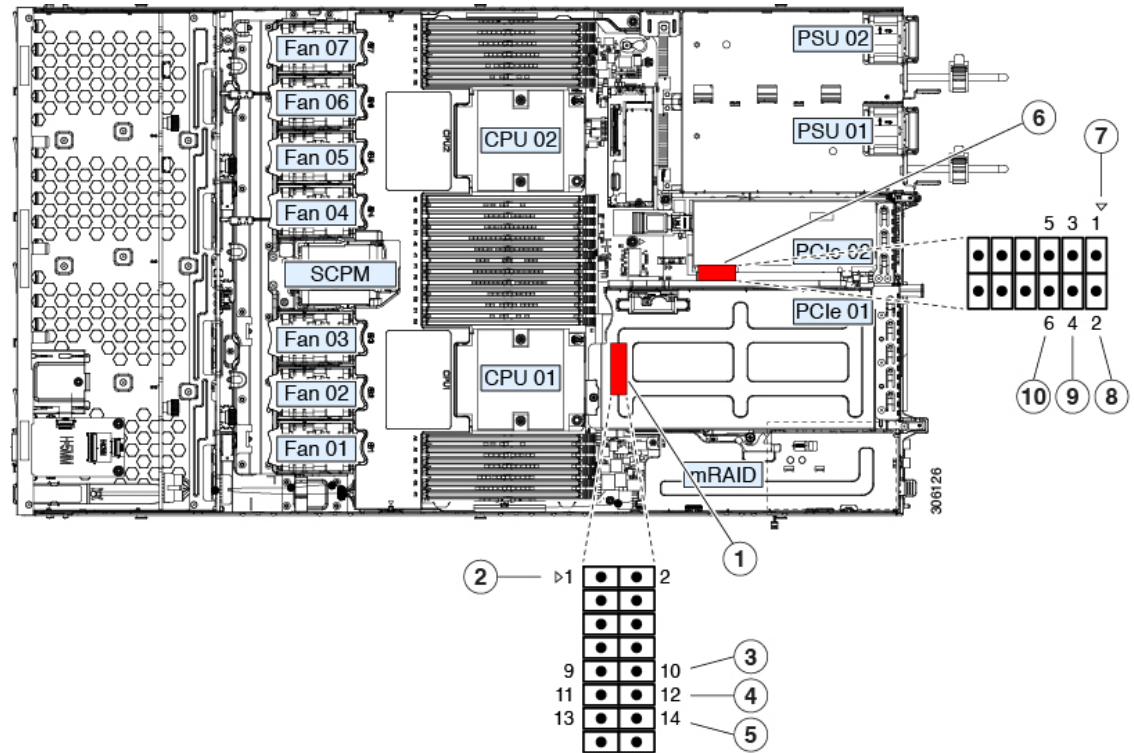
This server includes two blocks of headers (J38, J39) that you can jumper for certain service and debug functions.

This section contains the following topics:

- [Using the Clear CMOS Header \(J38, Pins 9 - 10\), on page 65](#)
- [Using the BIOS Recovery Header \(J38, Pins 11 - 12\), on page 66](#)
- [Using the Clear Password Header \(J38, Pins 13 - 14\), on page 68](#)
- [Using the Boot Alternate Cisco IMC Image Header \(J39, Pins 1 - 2\), on page 69](#)

- Using the Reset Cisco IMC Password to Default Header (J39, Pins 3 - 4), on page 70
- Using the Reset Cisco IMC to Defaults Header (J39, Pins 5 - 6), on page 71

Figure 33: Location of Service Header Blocks J38 and J39



1	Location of header block J38	6	Location of header block J39
2	J38 pin 1 arrow printed on motherboard	7	J39 pin 1 arrow printed on motherboard
3	Clear CMOS: J38 pins 9 - 10	8	Boot Cisco IMC from alternate image: J39 pins 1 - 2
4	Recover BIOS: J38 pins 11 - 12	9	Reset Cisco IMC password to default: J39 pins 3 - 4
5	Clear password: J38 pins 13 - 14	10	Reset Cisco IMC to defaults: J39 pins 5 - 6

Using the Clear CMOS Header (J38, Pins 9 - 10)

You can use this header to clear the server's CMOS settings in the case of a system hang. For example, if the Cisco CSP 5200 hangs because of incorrect settings and does not boot, use this jumper to invalidate the settings and reboot with defaults.



Caution Clearing the CMOS removes any customized settings and might result in data loss. Make a note of any necessary customized settings in the BIOS before you use this clear CMOS procedure. CSP 5200 sets Hyper-threading to 'Disabled'.

Procedure

- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#). Disconnect power cords from all power supplies.
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5200 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- Step 4** Locate header block J38 and pins 9-10, as shown in [Service Headers and Jumpers, on page 64](#).
- Step 5** Install a two-pin jumper across pins 9 and 10.
- Step 6** Reinstall the top cover and reconnect AC power cords to the Cisco CSP 5200. The Cisco CSP 5200 powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 7** Return the Cisco CSP 5200 to main power mode by pressing the Power button on the front panel. The Cisco CSP 5200 is in main power mode when the Power LED is green.
- Note** You must allow the entire Cisco CSP 5200 to reboot to main power mode to complete the reset. The state of the jumper cannot be determined without the host CPU running.
- Step 8** Press the Power button to shut down the Cisco CSP 5200 to standby power mode, and then remove AC power cords from the Cisco CSP 5200 to remove all power.
- Step 9** Remove the top cover from the Cisco CSP 5200
- Step 10** Remove the jumper that you installed.
- Note** If you do not remove the jumper, the CMOS settings are reset to the defaults every time you power-cycle the Cisco CSP 5200.
- Step 11** Replace the top cover, replace the server in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5200 by pressing the Power button.

Using the BIOS Recovery Header (J38, Pins 11 - 12)

Depending on which stage the BIOS becomes corrupted, you might see different behavior.

- If the BIOS BootBlock is corrupted, you might see the system get stuck on the following message:

```
Initializing and configuring memory/hardware
```

- If it is a non-BootBlock corruption, a message similar to the following is displayed:

```
****BIOS FLASH IMAGE CORRUPTED****
Flash a valid BIOS capsule file using Cisco IMC WebGUI or CLI interface.
```

IF Cisco IMC INTERFACE IS NOT AVAILABLE, FOLLOW THE STEPS MENTIONED BELOW.

1. Connect the USB stick with bios.cap file in root folder.
2. Reset the host.

IF THESE STEPS DO NOT RECOVER THE BIOS

1. Power off the system.
2. Mount recovery jumper.
3. Connect the USB stick with bios.cap file in root folder.
4. Power on the system.

Wait for a few seconds if already plugged in the USB stick.

REFER TO SYSTEM MANUAL FOR ANY ISSUES.



Note As indicated by the message shown above, there are two procedures for recovering the BIOS. Try procedure 1 first. If that procedure does not recover the BIOS, use procedure 2.

Procedure 1: Reboot With recovery.cap File

Procedure

-
- Step 1** Download the BIOS update package and extract it to a temporary location.
- Step 2** Copy the contents of the extracted recovery folder to the root directory of a USB drive. The recovery folder contains the bios.cap file that is required in this procedure.
- Note** The bios.cap file must be in the root directory of the USB drive. Do not rename this file. The USB drive must be formatted with either the FAT16 or FAT32 file system.
- Step 3** Insert the USB drive into a USB port on the Cisco CSP 5200.
- Step 4** Reboot the Cisco CSP 5200.
- Step 5** Return the Cisco CSP 5200 to main power mode by pressing the Power button on the front panel.
- The server boots with the updated BIOS boot block. When the BIOS detects a valid bios.cap file on the USB drive, it displays this message:
- ```
Found a valid recovery file...Transferring to Cisco IMC
System would flash the BIOS image now...
System would restart with recovered image after a few seconds...
```
- Step 6** Wait for server to complete the BIOS update, and then remove the USB drive from the Cisco CSP 5200.
- Note** During the BIOS update, Cisco IMC shuts down the Cisco CSP 5200 and the screen goes blank for about 10 minutes. Do not unplug the power cords during this update. Cisco IMC powers on the Cisco CSP 5200 after the update is complete.
- 

## Procedure 2: Use BIOS Recovery Header and bios.cap Recovery File

### Procedure

- 
- Step 1** Download the BIOS update package and extract it to a temporary location.



- Step 2** Copy the contents of the extracted recovery folder to the root directory of a USB drive. The recovery folder contains the bios.cap file that is required in this procedure.
- Note** The bios.cap file must be in the root directory of the USB drive. Do not rename this file. The USB drive must be formatted with either the FAT16 or FAT32 file system.
- Step 3** Shut down and remove power from the Cisco CSP 5200 as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#). Disconnect power cords from all power supplies.
- Step 4** Slide the Cisco CSP 5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5200r from the rack.
- Step 5** Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- Step 6** Locate header block J38 and pins 11-12, as shown in [Service Headers and Jumpers, on page 64](#).
- Step 7** Install a two-pin jumper across pins 11 and 12.
- Step 8** Reconnect AC power cords to the Cisco CSP 5200. The server powers up to standby power mode.
- Step 9** Insert the USB thumb drive that you prepared in Step 2 into a USB port on the Cisco CSP 5200.
- Step 10** Return the Cisco CSP 5200 to main power mode by pressing the Power button on the front panel.
- The server boots with the updated BIOS boot block. When the BIOS detects a valid bios.cap file on the USB drive, it displays this message:
- ```
Found a valid recovery file...Transferring to Cisco IMC
System would flash the BIOS image now...
System would restart with recovered image after a few seconds...
```
- Step 11** Wait for server to complete the BIOS update, and then remove the USB drive from the Cisco CSP 5200.
- Note** During the BIOS update, Cisco IMC shuts down the Cisco CSP 5200 and the screen goes blank for about 10 minutes. Do not unplug the power cords during this update. Cisco IMC powers on the Cisco CSP 5200 after the update is complete.
- Step 12** After the Cisco CSP 5200 has fully booted, power off the server again and disconnect all power cords.
- Step 13** Remove the jumper that you installed.
- Note** If you do not remove the jumper, after recovery completion you see the prompt, "Please remove the recovery jumper."
- Step 14** Replace the top cover, replace the Cisco CSP 5200 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5200 by pressing the Power button.

Using the Clear Password Header (J38, Pins 13 - 14)

You can use this header to clear the administrator password.

Procedure

- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#). Disconnect power cords from all power supplies.

- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- Step 4** Locate header block J38 and pins 13-14, as shown in [Service Headers and Jumpers, on page 64](#).
- Step 5** Install a two-pin jumper across pins 13 and 14.
- Step 6** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 7** Return the server to main power mode by pressing the Power button on the front panel. The server is in main power mode when the Power LED is green.
- Note** You must allow the entire server to reboot to main power mode to complete the reset. The state of the jumper cannot be determined without the host CPU running.
- Step 8** Press the Power button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.
- Step 9** Remove the top cover from the server.
- Step 10** Remove the jumper that you installed.
- Note** If you do not remove the jumper, the password is cleared every time you power-cycle the server.
- Step 11** Replace the top cover, replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the Power button.
-

Using the Boot Alternate Cisco IMC Image Header (J39, Pins 1 - 2)

You can use this Cisco IMC debug header to force the system to boot from an alternate Cisco IMC image.

Procedure

- Step 1** Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#). Disconnect power cords from all power supplies.
- Step 2** Slide the server out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the server from the rack.
- Step 3** Remove the top cover from the server as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).
- Step 4** Locate header block J39, pins 1-2, as shown in [Service Headers and Jumpers, on page 64](#).
- Step 5** Install a two-pin jumper across J39 pins 1 and 2.
- Step 6** Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 7** Return the server to main power mode by pressing the Power button on the front panel. The server is in main power mode when the Power LED is green.

Note When you next log in to Cisco IMC, you see a message similar to the following:

```
'Boot from alternate image' debug functionality is enabled.
CIMC will boot from alternate image on next reboot or input power cycle.
```

Step 8 Press the Power button to shut down the server to standby power mode, and then remove AC power cords from the server to remove all power.

Step 9 Remove the top cover from the server.

Step 10 Remove the jumper that you installed.

Note If you do not remove the jumper, the server will boot from an alternate Cisco IMC image every time that you power cycle the server or reboot Cisco IMC.

Step 11 Replace the top cover, replace the server in the rack, replace power cords and any other cables, and then power on the server by pressing the Power button.

Using the Reset Cisco IMC Password to Default Header (J39, Pins 3 - 4)

You can use this Cisco IMC debug header to force the Cisco IMC password back to the default.

Procedure

Step 1 Shut down and remove power from the Cisco CSP 5200 as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#). Disconnect power cords from all power supplies.

Step 2 Slide the Cisco CSP 5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the Cisco CSP 5200 from the rack.

Step 3 Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).

Step 4 Locate header block J39, pins 3-4, as shown in [Service Headers and Jumpers, on page 64](#).

Step 5 Install a two-pin jumper across J39 pins 3 and 4.

Step 6 Reinstall the top cover and reconnect AC power cords to the Cisco CSP 5200. The Cisco CSP 5200 powers up to standby power mode, indicated when the Power LED on the front panel is amber.

Step 7 Return the Cisco CSP 5200 to main power mode by pressing the Power button on the front panel. The Cisco CSP 5200 is in main power mode when the Power LED is green.

Note When you next log in to Cisco IMC, you see a message similar to the following:

```
'Reset to default CIMC password' debug functionality is enabled.
On input power cycle, CIMC password will be reset to defaults.
```

Step 8 Press the Power button to shut down the server to standby power mode, and then remove AC power cords from the Cisco CSP 5200 to remove all power.

Step 9 Remove the top cover from the Cisco CSP 5200.

Step 10 Remove the jumper that you installed.

Note If you do not remove the jumper, the Cisco CSP 5200 will reset the Cisco IMC password to the default every time that you power cycle the Cisco CSP 5200. The jumper has no effect if you reboot Cisco IMC.

Step 11 Replace the top cover, replace the Cisco CSP 5200 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5200 by pressing the Power button.

Using the Reset Cisco IMC to Defaults Header (J39, Pins 5 - 6)

You can use this Cisco IMC debug header to force the Cisco IMC settings back to the defaults.

Procedure

Step 1 Shut down and remove power from the server as described in [Shutting Down and Removing Power From the Cisco CSP 5200, on page 24](#). Disconnect power cords from all power supplies.

Step 2 Slide the Cisco CSP 5200 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the Cisco CSP 5200 from the rack.

Step 3 Remove the top cover from the Cisco CSP 5200 as described in [Removing the Cisco CSP 5200 Top Cover, on page 27](#).

Step 4 Locate header block J39, pins 5-6, as shown in [Service Headers and Jumpers, on page 64](#).

Step 5 Install a two-pin jumper across J39 pins 5 and 6.

Step 6 Reinstall the top cover and reconnect AC power cords to the server. The server powers up to standby power mode, indicated when the Power LED on the front panel is amber.

Step 7 Return the server to main power mode by pressing the Power button on the front panel. The server is in main power mode when the Power LED is green.

Note When you next log in to Cisco IMC, you see a message similar to the following:

```
'CIMC reset to factory defaults' debug functionality is enabled.  
On input power cycle, CIMC will be reset to factory defaults.
```

Step 8 To remove the jumper, press the Power button to shut down the Cisco CSP 5200 to standby power mode, and then remove AC power cords from the Cisco CSP 5200 to remove all power.

Step 9 Remove the top cover from the Cisco CSP 5200.

Step 10 Remove the jumper that you installed.

Note If you do not remove the jumper, the Cisco CSP 5200 will reset the Cisco IMC to the default settings every time that you power cycle the Cisco CSP 5200. The jumper has no effect if you reboot Cisco IMC.

Step 11 Replace the top cover, replace the Cisco CSP 5200 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5200 by pressing the Power button.



CHAPTER 4

Server Specifications

- [Server Specifications, on page 73](#)

Server Specifications

This chapter lists the physical, environmental, and power specifications for the Cisco CSP 5200.

- [Physical Specifications, on page 73](#)
- [Environmental Specifications, on page 73](#)
- [Power Specifications, on page 74](#)

Physical Specifications

The following table lists the physical specifications for the Cisco CSP 5200 versions.

Table 7: Physical Specifications

Description	Specification
Height	1.7 in. (43.2 mm)
Width	16.9 in. (429.0 mm)
Depth (length)	Server only: 29.5 in. (740.3 mm) Server with slide rail: 31.0 in (787.4 mm)
Weight	Maximum: 37.5 lb. (17.0 Kg) Minimum: 29.0 lb. (13.2 Kg)

Environmental Specifications

The following table lists the environmental requirements and specifications for the Cisco CSP 5200.

Table 8: Physical Specifications

Description	Specification
Temperature, Operating	41 to 95°F (5 to 35°C) Derate the maximum temperature by 1°C per every 305 meters of altitude above sea level.
Temperature, non-operating (when the server is stored or transported)	–40 to 149°F (–40 to 65°C)
Humidity (RH), operating	10 to 90%
Humidity (RH), non-operating (when the server is stored or transported)	5 to 93%
Altitude, operating	0 to 10,000 feet
Altitude, non-operating (when the server is stored or transported)	0 to 40,000 feet
Sound power level Measure A-weighted per ISO7779 LwAd (Bels) Operation at 73°F (23°C)	5.5
Sound pressure level Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C)	40

Power Specifications



Note Do not mix power supply types or wattages in the Cisco CSP 5200. Both power supplies must be identical.

You can get more specific power information for your exact Cisco CSP 5200 configuration by using the Cisco Power Calculator:

<http://ucspowercalc.cisco.com>

The power specifications for the supported power supply options are listed in the following sections.

770 W AC Power Supply

This section lists the specifications for each 770 W AC power supply (CSP-PSU1-770W).

Table 9: 770 W AC Specifications

Description	Specification
AC Input Voltage	Nominal range: 100–120 VAC, 200–240 VAC (Range: 90–132 VAC, 180–264 VAC)
AC Input Frequency	Nominal range: 50 to 60Hz (Range: 47–63 Hz)
Maximum AC Input current	9.5 A at 100 VAC 4.5 A at 208 VAC
Maximum input volt-amperes	950 VA at 100 VAC
Maximum inrush current	15 A (sub-cycle duration)
Maximum hold-up time	12 ms at 770 W
Maximum output power per PSU	770 W
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	Climate Savers Platinum Efficiency (80Plus Platinum certified)
Form factor	RSP2
Input connector	IEC320 C14

Power Cord Specifications

Each power supply in the Cisco CSP 5200 has a power cord. Standard power cords or jumper power cords are available for connection to the Cisco CSP 5200. The shorter jumper power cords, for use in racks, are available as an optional alternative to the standard power cords.



Note Only the approved power cords or jumper power cords listed below are supported.

Table 10: Supported Power Cords

Description	Length (Feet)	Length (Meters)
CAB-48DC-40A-8AWG Three-socket Mini-Fit connector to three-wire	11.7	3.5

CAB-C13-C14-AC AC power cord, 10 A; C13 to C14, recessed receptacle	9.8	3.0
CAB-250V-10A-AR AC power cord, 250 V, 10 A Argentina	8.2	2.5
CAB-C13-C14-2M-JP AC Power Cord, C13 to C14 Japan PSE Mark	6.6	2.0
CAB-9K10A-EU AC Power Cord, 250 V, 10 A; CEE 7/7 Plug Europe	8.2	2.5
CAB-250V-10A-IS AC Power Cord, 250 V, 10 A Israel	8.2	2.5
CAB-250V-10A-CN AC power cord, 250 V, 10 A PR China	8.2	2.5
CAB-ACTW AC power cord, 250 V, 10 A Taiwan	7.5	2.3
CAB-C13-CBN AC cabinet jumper power cord, 250, 10 A, C13 to C14	2.2	0.68
CAB-C13-C14-2M AC cabinet jumper power cord, 250 V, 10 A, C13 to C14	6.6	2.0
CAB-9K10A-AU AC power cord, 250 V, 10 A, 3112 plug, Australia	8.2	2.5
CAB-N5K6A-NA AC power cord, 200/240 V, 6 A, North America	8.2	2.5

CAB-250V-10A-ID AC power Cord, 250 V, 10 A, India	8.2	2.5
CAB-9K10A-SW AC power cord, 250 V, 10 A, MP232 plug Switzerland	8.2	2.5
CAB-250V-10A-BR AC power Cord, 250 V, 10 A Brazil	8.2	2.5
CAB-9K10A-UK AC power cord, 250 V, 10 A (13 A fuse), BS1363 plug United Kingdom	8.2	2.5
CAB-9K12A-NA AC power cord, 125 V, 13 A, NEMA 5-15 plug North America	8.2	2.5
CAB-AC-L620-C13 AC power cord, NEMA L6-20 to C13 connectors	6.6	2.0
CAB-9K10A-IT AC power cord, 250 V, 10 A, CEI 23-16/VII plug Italy	8.2	2.5
R2XX-DMYMPWRCORD No power cord; PID option for ordering server with no power cord	NA	NA



CHAPTER 5

Storage Controller Considerations

This chapter provides storage controller (RAID and HBA) information.

- [Supported Storage Controllers and Cables, on page 79](#)
- [Storage Controller Card Firmware Compatibility, on page 79](#)
- [RAID Backup \(Supercap\), on page 80](#)
- [Write-Cache Policy for Cisco 12G SAS Modular RAID Controller, on page 80](#)
- [Storage Controller and Backplane Connectors, on page 80](#)

Supported Storage Controllers and Cables

This server supports a single, PCIe-style controller that plugs into a dedicated internal riser.

This Cisco CSP 5200 supports the RAID and HBA controller options and cable requirements shown in the following table.

Controller	Cisco CSP 5200 Version/Maximum Drives Controlled	RAID Levels	Optional Supercap Backup?	Required Cables
Cisco 12G Modular RAID Controller with 2-GB cache	This controller is supported only in these Cisco CSP 5200 versions: <ul style="list-style-type: none">• SFF 10-drives: 10 front-loading SAS/SATA drives	10	Yes	Use SAS/SATA cable included with chassis to connect controller to drive backplane.

Storage Controller Card Firmware Compatibility

Firmware on the storage controller (RAID) must be verified for compatibility with the current Cisco IMC and BIOS versions that are installed on the Cisco CSP 5200. If not compatible, upgrade or downgrade the storage controller firmware using the Cisco Host Upgrade Utility (HUU) for your firmware release to bring it to a compatible level.

See the HUU guide for your Cisco IMC release for instructions on downloading and using the utility to bring Cisco CSP 5200 components to compatible levels: [HUU Guides](#).

RAID Backup (Supercap)

This Cisco CSP 5200 supports installation of one supercap unit. The unit mounts to a bracket in-line with the fan modules.

The optional SCPM provides approximately three years of backup for the disk write-back cache DRAM in the case of a sudden power loss by offloading the cache to the NAND flash.

For supercap unit replacement instructions, see [Replacing the Supercap \(RAID Backup\)](#), on page 63.

Write-Cache Policy for Cisco 12G SAS Modular RAID Controller

For this Cisco CSP 5200 and other Cisco Generation M5 Cisco CSP 5200, the default write-cache policy for the Cisco Modular RAID controller is *Write Through* (irrespective of the presence of a charged supercap or “good BBU”). This utilizes the optimal performance characteristics of the controller.

The write policy can be set to *Write Back*, if preferred. You can set the write policy using the following methods:

- For standalone Cisco CSP 5200, use the Cisco IMC interface to set Virtual Drive Properties > Write Policy. See the “Managing Storage Adapters” section in your Cisco IMC Configuration Guide.
[Cisco IMC GUI and CLI Configuration Guides](#)
- For Cisco UCS-integrated Cisco CSP 5200, use the Cisco UCS Manager interface to set the write-cache policy as part of virtual drive configuration in your storage profile.
[Cisco UCS Manager Configuration Guides](#)
- Use the LSI Option ROM Configuration Utility.

Storage Controller and Backplane Connectors

This section describes cabling connections for the storage controllers and the backplane. The SAS/SATA cables are factory-installed and are used for all supported internal controllers in the SFF 10-drive servers.

This section also contains diagrams that show the cable-to-drive mapping.

Cisco 12G Modular SAS RAID Controller

This HW RAID option can control up to 10 SAS/SATA drives in the SFF 10-drive version.

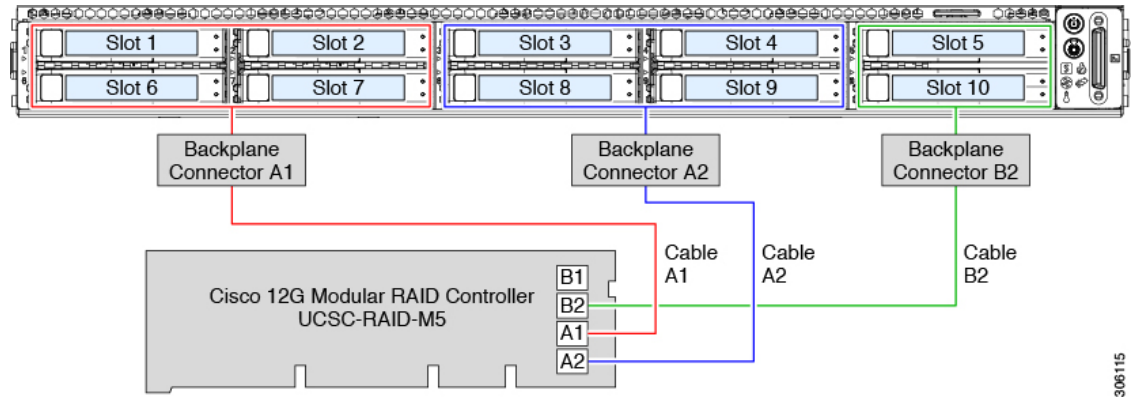
This option requires that you have a SAS RAID or HBA card installed in internal mRAID riser 3. Use the SAS/SATA cables that came with the server.

1. Connect SAS/SATA cable A1 from the A1 card connector to the A1 backplane connector.
2. Connect SAS/SATA cable A2 from the A2 card connector to the A2 backplane connector.
3. For SFF-10-drive servers only: Connect SAS/SATA cable B2 from the B2 card connector to the B2 backplane connector.



Note See the following figures that illustrate cable connections and which drives are controlled by each cable.

Figure 34: Hardware RAID Card Cable-to-Drive Backplane Mapping, SFF 10-Drive Version



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PART II

Cisco CSP 5400 (2RU NFV Platform)

- [Overview, on page 85](#)
- [Installing the Server, on page 93](#)
- [Maintaining Cisco CSP 5400, on page 105](#)
- [Server Specifications, on page 163](#)
- [Storage Controller Considerations, on page 169](#)



CHAPTER 6

Overview

- [Overview, on page 85](#)
- [External Features, on page 85](#)
- [Serviceable Component Locations, on page 87](#)
- [Summary of Server Features, on page 89](#)

Overview

This document includes information of components and information that may not be included in the Cloud Services Platform (CSP) 5400.

The Cisco CSP 5400 platform currently supports

Small form-factor (SFF) drives, with 24-drive backplane.

- Front-loading drive bays 1—24 support 2.5-inch SAS/SATA drives.
- The two rear-loading drive bays are not used.

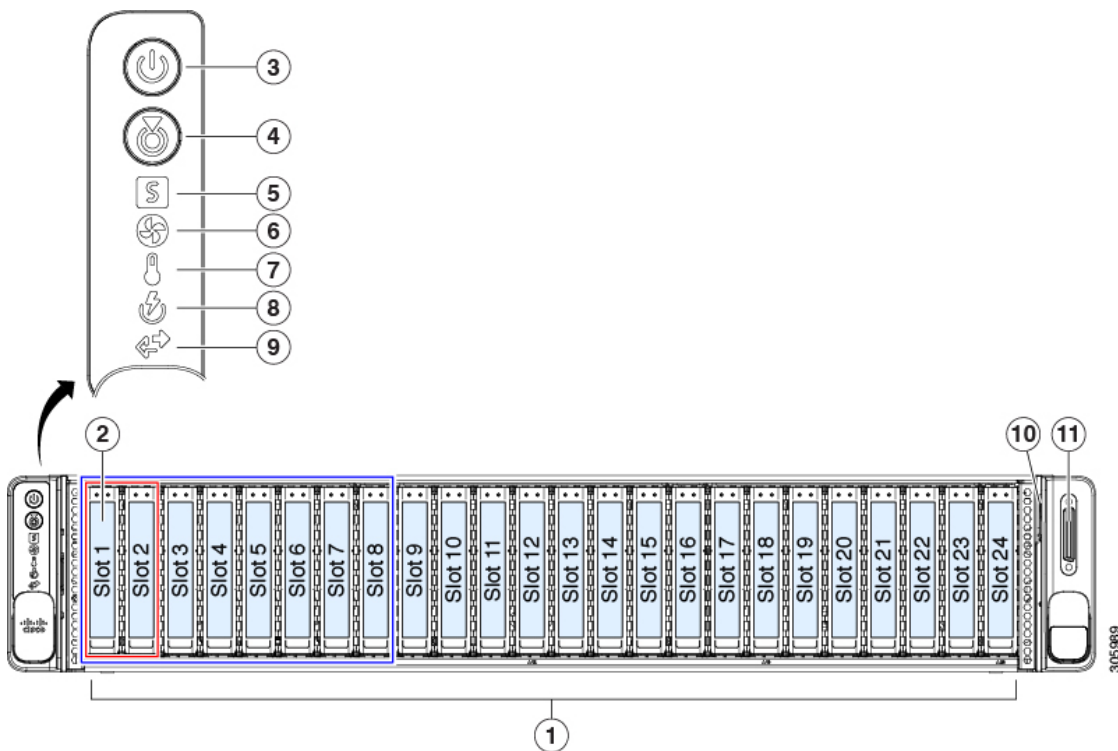
External Features

This topic shows the external features of the Cisco CSP 5400 versions.

For definitions of LED states, see [Front-Panel LEDs, on page 105](#).

Cisco CSP 5400 Server Front Panel Features

Figure 35: Cisco CSP 5400 Server Front Panel



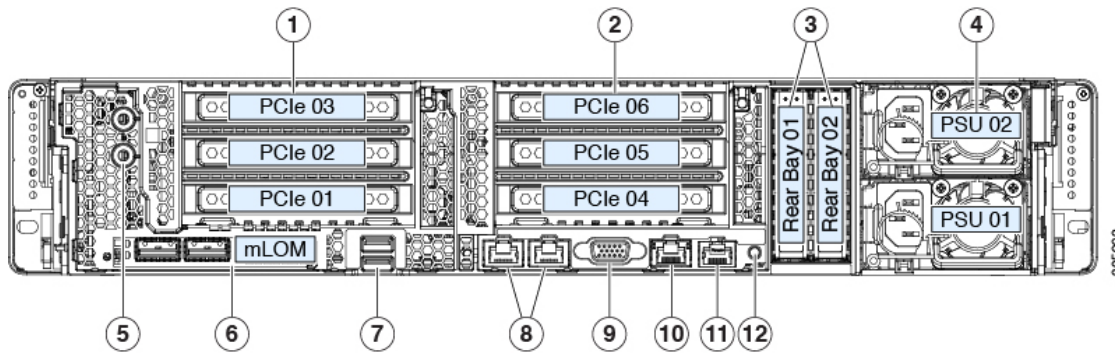
1	• CSP-5400: Drive bays 1—24 support SAS/SATA drives.	7	Temperature status LED
2	Not applicable	8	Power supply status LED
3	Power button/power status LED	9	Network link activity LED
4	Unit identification button/LED	10	Pull-out asset tag
5	System status LED	11	KVM connector (used with KVM cable that provides one DB-15 VGA, one DB-9 serial, and two USB connectors)
6	Fan status LED	-	

Cisco CSP 5400 Server Rear Panel Features

The rear panel features are the same for all versions of the server.

For definitions of LED states, see [Rear-Panel LEDs, on page 108](#).

Figure 36: Cisco CSP 5400 Server Rear Panel



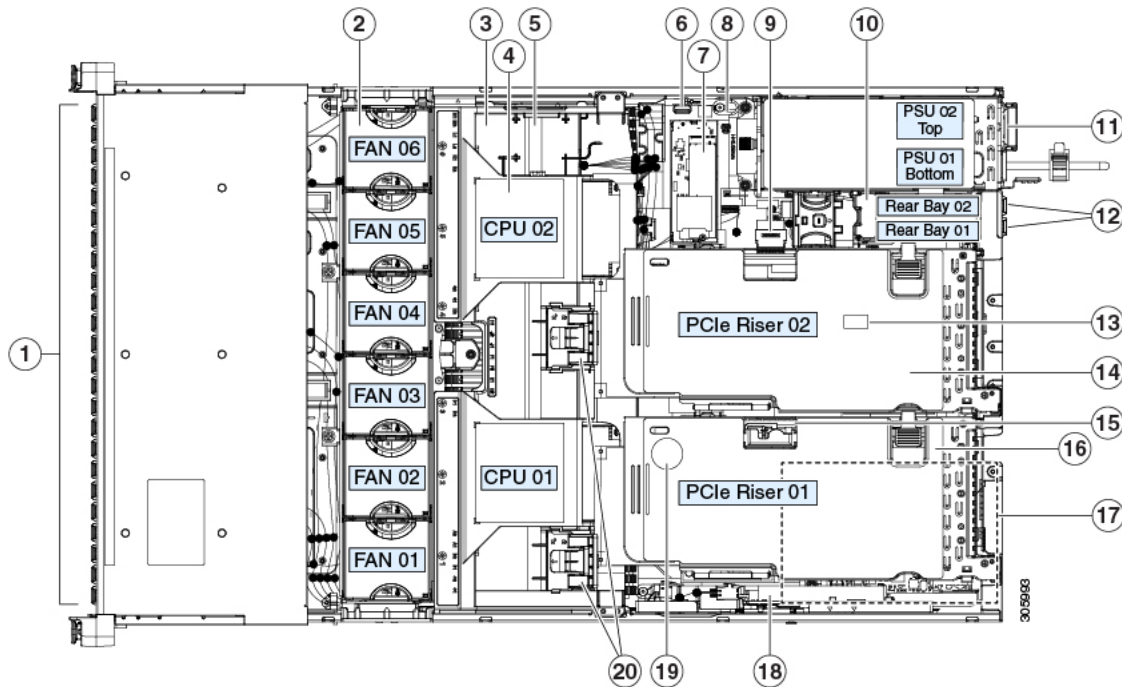
1	PCIe riser 1 (PCIe slot 1, 2, 3), with the following options: <ul style="list-style-type: none"> 1B—Slots 1 (x8), 2 (x8), 3 (x8); all slots supported by CPU1 See PCIe Slot Specifications, on page 146 for slot specifications.	7	USB 3.0 ports (two)
2	PCIe riser 2 (PCIe slots 4, 5, 6), with the following option: <ul style="list-style-type: none"> 2A—Slots 4 (x16), 5 (x16), and 6 (x8). 	8	Dual 1-Gb/10-Gb Ethernet ports (LAN1 and LAN2) The dual LAN ports can support 1 Gbps and 10 Gbps, depending on the link partner capability.
3	Not applicable	9	VGA video port (DB-15 connector)
4	Power supplies (two, redundant as 1+1) See Power Specifications, on page 164 for specifications and supported options.	10	1-Gb Ethernet dedicated management port
5	Threaded holes for dual-hole grounding lug.	11	Serial port (RJ-45 connector)
6	Modular LAN-on-motherboard (mLOM) card slot (x16)	12	Rear unit identification button/LED

Serviceable Component Locations

This topic shows the locations of the field-replaceable components and service-related items. The view in the following figure shows the Cisco CSP 5400 with the top cover removed.

Serviceable Component Locations

Figure 37: Cisco CSP 5400, Serviceable Component Locations



1	Front-loading drive bays.	11	Power supplies (hot-swappable when redundant as 1+1)
2	Cooling fan modules (six, hot-swappable)	12	Not applicable
3	DIMM sockets on motherboard (up to 12 per CPU) Not visible under air baffle in this view. See the "DIMM Population Rules and Memory Performance Guidelines" topic for DIMM slot numbering.	13	Trusted platform module (TPM) socket on motherboard (not visible in this view)
4	CPUs and heatsinks (up to two) Not visible under air baffle in this view.	14	PCIe riser 2 (PCIe slots 4, 5, 6), with the following option: • 2A—Slots 4 (x16), 5 (x16), and 6 (x8).
5	Supercap unit (RAID backup) mounting bracket	15	Micro-SD card socket on PCIe riser 1
6	Internal, vertical USB 3.0 port on motherboard	16	PCIe riser 1 (PCIe slot 1, 2, 3), with the following option: • 1B—Slots 1 (x8), 2 (x8), 3 (x8); all slots supported by CPU1
7	Mini storage module socket Supports an SD card carrier with two SD card slots.	17	Modular LOM (mLOM) card bay on chassis floor (x16 PCIe lane), not visible in this view

8	Chassis intrusion switch (optional)	18	Cisco modular RAID controller PCIe slot (dedicated slot)
9	Not applicable	19	RTC battery, vertical socket
10	Rear-drive backplane assembly	20	Securing clips for GPU cards on air baffle

The Technical Specifications Sheets for all versions of this Cisco CSP 5400, which include supported component part numbers, are at [Cisco UCS Cisco CSP 5400s Technical Specifications Sheets](#) (scroll down to *Technical Specifications*).

Summary of Server Features

The following table lists a summary of Cisco CSP 5200 features.

Feature	Description
Chassis	Two rack-unit (2RU) chassis
Central Processor	Up to two CPUs from the Intel Xeon Processor Scalable Family. This includes CPUs from the following series: <ul style="list-style-type: none"> • Intel Xeon Silver 4XXX Processors • Intel Xeon Gold 5XXX Processors • Intel Xeon Gold 6XXX Processors • Intel Xeon Platinum 8XXX Processors
Memory	24 DDR4 DIMM sockets on the motherboard (12 each CPU)
Multi-bit error protection	Multi-bit error protection is supported
Baseboard management	BMC, running Cisco Integrated Management Controller (Cisco IMC) firmware. Depending on your Cisco IMC settings, Cisco IMC can be accessed through the 1-Gb dedicated management port, the 1-Gb/10-Gb Ethernet LAN ports, or a Cisco virtual interface card.

Feature	Description
Network and management I/O	<p>Rear panel:</p> <ul style="list-style-type: none"> • One 1-Gb Ethernet dedicated management port (RJ-45 connector) • Two 1-Gb/10-Gb BASE-T Ethernet LAN ports (RJ-45 connectors) <p>The dual LAN ports can support 1 Gbps and 10 Gbps, depending on the link partner capability.</p> <ul style="list-style-type: none"> • One RS-232 serial port (RJ-45 connector) • One VGA video connector port (DB-15 connector) • Two USB 3.0 ports <p>Front panel:</p> <ul style="list-style-type: none"> • One front-panel keyboard/video/mouse (KVM) connector that is used with the KVM cable, which provides two USB 2.0, one VGA, and one DB-9 serial connector.
Modular LOM	One dedicated socket (x16 PCIe lane) that can be used to add an mLOM card for additional rear-panel connectivity.
WoL	The two 1-Gb/10-Gb BASE-T Ethernet LAN ports support the wake-on-LAN (WoL) standard.
Power	<p>Two power supplies, redundant as 1+1:</p> <p>AC power supplies 1050 W AC each</p> <p>Do not mix power supply types or wattages in the Cisco CSP 5200.</p>
ACPI	The advanced configuration and power interface (ACPI) 4.0 standard is supported.
Cooling	Six hot-swappable fan modules for front-to-rear cooling.
PCIe I/O	<p>Six horizontal PCIe expansion slots on two PCIe riser assemblies.</p> <p>See PCIe Slot Specifications, on page 146 for specifications of the slots.</p>
Storage, front-panel	<p>The Cisco CSP 5200 is orderable in the following version:</p> <p>Small form-factor (SFF) drives, with 24-drive backplane.</p> <ul style="list-style-type: none"> • Front-loading drive bays 1—24 support 2.5-inch SAS/SATA drives. <p>SAS/SATA drives are hot-swappable.</p>

Feature	Description
Other removable media	The SFF drives, 8-drive version of the Cisco CSP 5200 supports a front-loading DVD drive option.
Storage management	The Cisco CSP 5200 has a dedicated internal socket that supports the following storage-controller options: A PCIe-style Cisco modular RAID controller card (SAS/SATA). For a detailed list of storage controller options, see Supported Storage Controllers and Cables, on page 169 .
RAID backup	The Cisco CSP 5200 has a mounting bracket on the removable air baffle for one supercap unit that is used with the Cisco modular RAID controller card.
Integrated video	Integrated VGA video.



CHAPTER 7

Installing the Server

- [Preparing for Installation](#), on page 93
- [Installing the Cisco CSP 5400 in a Rack](#), on page 95
- [Initial Cisco CSP 5400 Setup](#), on page 97
- [Updating the BIOS and Cisco IMC Firmware](#), on page 102
- [Older NAND Flash Not Detectable By Latest Cisco IMC](#), on page 103
- [Accessing the System BIOS](#), on page 103
- [Smart Access Serial](#), on page 103
- [Smart Access USB](#), on page 104

Preparing for Installation

This section contains the following topics:

Installation Warnings and Guidelines



Note Before you install, operate, or service a Cisco CSP 5400, review the [Regulatory Compliance and Safety Information for Cisco CSP 5400](#) for important safety information.



Warning **IMPORTANT SAFETY INSTRUCTIONS**

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

Statement 1071



Warning To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 35° C (95° F).

Statement 1047



Warning The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.

Statement 1019



Warning This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 15 A.

Statement 1005



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

Statement 1074



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

Statement 1017



Caution To ensure proper airflow it is necessary to rack the Cisco CSP 5400s using rail kits. Physically placing the units on top of one another or “stacking” without the use of the rail kits blocks the air vents on top of the Cisco CSP 5400s, which could result in overheating, higher fan speeds, and higher power consumption. We recommend that you mount your Cisco CSP 5400s on rail kits when you are installing them into the rack because these rails provide the minimal spacing required between the Cisco CSP 5400. No additional spacing between the Cisco CSP 5400s is required when you mount the units using rail kits.



Caution Avoid uninterruptible power supply (UPS) types that use ferroresonant technology. These UPS types can become unstable with systems such as the Cisco UCS, which can have substantial current draw fluctuations from fluctuating data traffic patterns.

When you are installing a Cisco CSP 5400, use the following guidelines:

- Plan your site configuration and prepare the site before installing the Cisco CSP 5400. See the [Cisco UCS Site Preparation Guide](#) for the recommended site planning tasks.

- Ensure that there is adequate space around the Cisco CSP 5400 to allow for accessing the Cisco CSP 5400 and for adequate airflow. The airflow in this Cisco CSP 5400 is from front to back.
- Ensure that the air-conditioning meets the thermal requirements listed in the [Environmental Specifications, on page 163](#).
- Ensure that the cabinet or rack meets the requirements listed in the [Rack Requirements, on page 95](#).
- Ensure that the site power meets the power requirements listed in the [Power Specifications, on page 164](#). If available, you can use an uninterruptible power supply (UPS) to protect against power failures.

Rack Requirements

The rack must be of the following type:

- A standard 19-in. (48.3-cm) wide, four-post EIA rack, with mounting posts that conform to English universal hole spacing, per section 1 of ANSI/EIA-310-D-1992.
- The rack-post holes can be square 0.38-inch (9.6 mm), round 0.28-inch (7.1 mm), #12-24 UNC, or #10-32 UNC when you use the Cisco-supplied slide rails.
- The minimum vertical rack space per Cisco CSP 5400 must be two rack units (RUs), equal to 3.5 in. (88.9 mm).

Supported Cisco Slide Rail Kits

The Cisco CSP 5400 supports the following rail kit:

The ball-bearing slide rail kit is included with server.

Rack Installation Tools Required

The included slide rails for this Cisco CSP 5400 do not require tools for installation.

Installing the Cisco CSP 5400 in a Rack



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

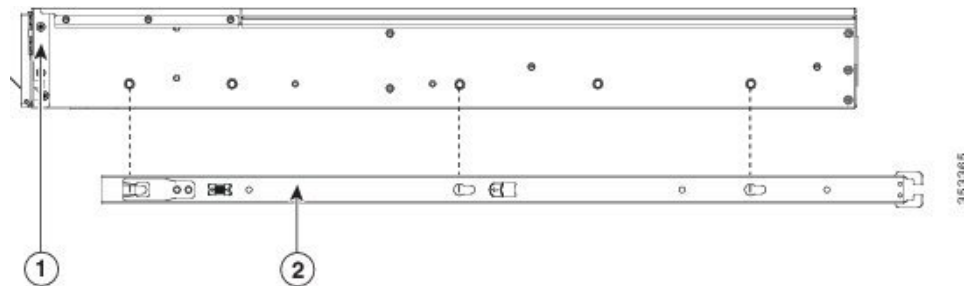
Procedure

Step 1

Attach the inner rails to the sides of the Cisco CSP 5400:

- Align an inner rail with one side of the Cisco CSP 5400 so that the three keyed slots in the rail align with the three pegs on the side of the Cisco CSP 5400.
- Set the keyed slots over the pegs, and then slide the rail toward the front to lock it in place on the pegs. The front slot has a metal clip that locks over the front peg.
- Install the second inner rail to the opposite side of the Cisco CSP 5400.

Figure 38: Attaching the Inner Rail to the Side of the Cisco CSP 5400



1	Front of Cisco CSP 5400	2	Inner rail
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Step 2

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

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

Figure 39: Front Securing Mechanism, Inside of Front End

1	Front mounting pegs	3	Securing plate shown pulled back to the open position
2	Rack post between mounting pegs and opened securing plate	-	

Step 3

Install the outer slide rails into the rack:

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

The slide rail front-end wraps around the outside of the rack post and the mounting pegs enter the rack-post holes from the outside-front. See [#unique_111 unique_111_Connect_42_fig_utv_jcv_2z](#).

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

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

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

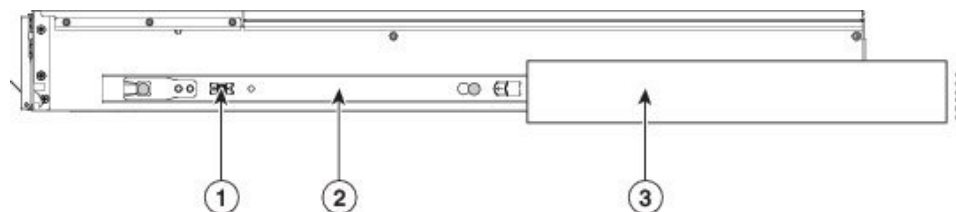
- e) Attach the second slide-rail assembly to the opposite side of the rack. Ensure that the two slide-rail assemblies are at the same height and are level front-to-back.
- f) Pull the inner slide rails on each assembly out toward the rack front until they hit the internal stops and lock in place.

Step 4 Insert the Cisco CSP 5400 into the slide rails:

Caution This Cisco CSP 5400 can weigh up to 64 pounds (29 kilograms) when fully loaded with components. We recommend that you use a minimum of two people or a mechanical lift when lifting the Cisco CSP 5400. Attempting this procedure alone could result in personal injury or equipment damage.

- a) Align the rear ends of the inner rails that are attached to the Cisco CSP 5400 sides with the front ends of the empty slide rails on the rack.
- b) Push inner rails into the slide rails on the rack until they stop at the internal stops.
- c) Slide the inner-rail release clip toward the rear on both inner rails, and then continue pushing the Cisco CSP 5400 into the rack until its front slam-latches engage with the rack posts.

Figure 40: Inner-Rail Release Clip



1	Inner-rail release clip	3	Outer slide rail attached to rack post
2	Inner rail attached to Cisco CSP 5400 and inserted into outer slide rail	-	

Step 5 (Optional) Secure the Cisco CSP 5400 in the rack more permanently by using the two screws that are provided with the slide rails. Perform this step if you plan to move the rack with Cisco CSP 5400s installed.

With the Cisco CSP 5400 fully pushed into the slide rails, open a hinged slam latch lever on the front of the Cisco CSP 5400 and insert a screw through the hole that is under the lever. The screw threads into the static part of the rail on the rack post and prevents the Cisco CSP 5400 from being pulled out. Repeat for the opposite slam latch.

Initial Cisco CSP 5400 Setup



Note This section describes how to power on the Cisco CSP 5400, assign an IP address, and connect to server management when using the Cisco CSP 5400 in standalone mode. To use the server in Cisco CSP 5400 Manager integration, specific cabling and settings are required. .

Cisco CSP 5400 Default Settings

The server is shipped with these default settings:

- The NIC mode is *Dedicated*.
- The NIC redundancy is *None*
- DHCP is enabled.
- IPv4 is enabled.

Connection Methods

There are two methods for connecting to the system for initial setup:

- Local setup—Use this procedure if you want to connect a keyboard and monitor directly to the system for setup. This procedure can use the included KVM cable or the ports on the rear of the Cisco CSP 5400.
- Remote setup—Use this procedure if you want to perform setup through your dedicated management LAN.



Note To configure the system remotely, you must have a DHCP server on the same network as the system. Your DHCP server must be preconfigured with the range of MAC addresses for this Cisco CSP 5400 node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This Cisco CSP 5400 node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.

Connecting to the Cisco CSP 5400 Locally For Setup

This procedure requires the following equipment:

- VGA monitor
- USB keyboard
- Either the included Cisco KVM cable, or a USB cable and VGA DB-15 cable

Procedure

Step 1 Attach a power cord to each power supply in your Cisco CSP 5400, and then attach each power cord to a grounded AC power outlet.

If you are using DC power supplies, see [Installing DC Power Supplies \(First Time Installation\)](#).

Wait for approximately two minutes to let the Cisco CSP 5400 boot to standby power during the first bootup. You can verify system power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.

- Step 2** Connect a USB keyboard and VGA monitor to the Cisco CSP 5400 using one of the following methods:
- Connect the included KVM cable to the KVM connector on the front panel. Connect your USB keyboard and VGA monitor to the KVM cable.
 - Connect a USB keyboard and VGA monitor to the corresponding connectors on the rear panel.
- Step 3** Open the Cisco IMC Configuration Utility:
- a) Press and hold the front panel power button for four seconds to boot the Cisco CSP 5400.
 - b) During bootup, press **F8** when prompted to open the Cisco IMC Configuration Utility.
- Note** The first time that you enter the Cisco IMC Configuration Utility, you are prompted to change the default password. The default password is *password*. The Strong Password feature is enabled.
- The following are the requirements for Strong Password:
- The password can have minimum 8 characters; maximum 14 characters.
 - The password must not contain the user's name.
 - The password must contain characters from three of the following four categories:
 - English uppercase letters (A through Z)
 - English lowercase letters (a through z)
 - Base 10 digits (0 through 9)
 - Non-alphabetic characters !, @, #, \$, %, ^, &, *, -, _, =, “
- Step 4** Continue with [Setting Up the System With the Cisco IMC Configuration Utility, on page 101](#).
-

Connecting to the Cisco CSP 5400 Remotely For Setup

This procedure requires the following equipment:

- One RJ-45 Ethernet cable that is connected to your management LAN.

Before you begin



- Note** To configure the system remotely, you must have a DHCP Cisco CSP 5400 on the same network as the system. Your DHCP Cisco CSP 5400 must be preconfigured with the range of MAC addresses for this Cisco CSP 5400 node. The MAC address is printed on a label that is on the pull-out asset tag on the front panel. This Cisco CSP 5400 node has a range of six MAC addresses assigned to the Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.
-

Procedure

- Step 1** Attach a power cord to each power supply in your Cisco CSP 5400, and then attach each power cord to a grounded AC power outlet.
- If you are using DC power supplies, see [Installing DC Power Supplies \(First Time Installation\)](#).
- Wait for approximately two minutes to let the Cisco CSP 5400 boot to standby power during the first bootup. You can verify system power status by looking at the system Power Status LED on the front panel. The system is in standby power mode when the LED is amber.
- Step 2** Plug your management Ethernet cable into the dedicated management port on the rear panel.
- Step 3** Allow your preconfigured DHCP Cisco CSP 5400 to assign an IP address to the Cisco CSP 5400 node.
- Step 4** Use the assigned IP address to access and log in to the Cisco IMC for the Cisco CSP 5400 node. Consult with your DHCP Cisco CSP 5400 administrator to determine the IP address.
- Note** The default user name for the Cisco CSP 5400 is *admin*. The default password is *password*.
- Step 5** From the Cisco IMC Cisco CSP 5400 Summary page, click **Launch KVM Console**. A separate KVM console window opens.
- Step 6** From the Cisco IMC Summary page, click **Power Cycle Cisco CSP 5400**. The system reboots.
- Step 7** Select the KVM console window.
- Note** The KVM console window must be the active window for the following keyboard actions to work.
- Step 8** When prompted, press **F8** to enter the Cisco IMC Configuration Utility. This utility opens in the KVM console window.
- Note** The first time that you enter the Cisco IMC Configuration Utility, you are prompted to change the default password. The default password is *password*. The Strong Password feature is enabled.
- The following are the requirements for Strong Password:
- The password can have minimum 8 characters; maximum 14 characters.
 - The password must not contain the user's name.
 - The password must contain characters from three of the following four categories:
 - English uppercase letters (A through Z)
 - English lowercase letters (a through z)
 - Base 10 digits (0 through 9)
 - Non-alphabetic characters !, @, #, \$, %, ^, &, *, -, _, =, “
- Step 9** Continue with [Setting Up the System With the Cisco IMC Configuration Utility, on page 101](#).
-

Setting Up the System With the Cisco IMC Configuration Utility

Before you begin

The following procedure is performed after you connect to the system and open the Cisco IMC Configuration Utility.

Procedure

-
- Step 1** Choose whether to enable DHCP for dynamic network settings, or to enter static network settings.
- Note** Before you enable DHCP, you must preconfigure your DHCP Cisco CSP 5400 with the range of MAC addresses for this Cisco CSP 5400. The MAC address is printed on a label on the rear of the Cisco CSP 5400. This Cisco CSP 5400 has a range of six MAC addresses assigned to Cisco IMC. The MAC address printed on the label is the beginning of the range of six contiguous MAC addresses.
- The *static* IPv4 and IPv6 settings include the following:
- The Cisco IMC IP address.
For IPv6, valid values are 1 - 127.
 - The gateway.
For IPv6, if you do not know the gateway, you can set it as none by entering :: (two colons).
 - The preferred DNS Cisco CSP 5400 address.
For IPv6, you can set this as none by entering :: (two colons).
- Step 2** (Optional) Make VLAN settings.
- Step 3** Press **F1** to go to the second settings window, then continue with the next step.
From the second window, you can press **F2** to switch back to the first window.
- Step 4** (Optional) Set a hostname for the Cisco CSP 5400.
- Step 5** (Optional) Enable dynamic DNS and set a dynamic DNS (DDNS) domain.
- Step 6** (Optional) If you check the Factory Default check box, the Cisco CSP 5400 reverts to the factory defaults.
- Step 7** (Optional) Set a default user password.
- Note** The factory default username for the Cisco CSP 5400 is *admin*. The default password is *password*.
- Step 8** (Optional) Enable auto-negotiation of port settings or set the port speed and duplex mode manually.
- Note** Auto-negotiation is applicable only when you use the Dedicated NIC mode. Auto-negotiation sets the port speed and duplex mode automatically based on the switch port to which the Cisco CSP 5400 is connected. If you disable auto-negotiation, you must set the port speed and duplex mode manually.
- Step 9** (Optional) Reset port profiles and the port name.
- Step 10** Press **F5** to refresh the settings that you made. You might have to wait about 45 seconds until the new settings appear and the message, “Network settings configured” is displayed before you reboot the Cisco CSP 5400 in the next step.

Step 11 Press **F10** to save your settings and reboot the Cisco CSP 5400.

Note If you chose to enable DHCP, the dynamically assigned IP and MAC addresses are displayed on the console screen during bootup.

What to do next

Use a browser and the IP address of the Cisco IMC to connect to the Cisco IMC management interface. The IP address is based upon the settings that you made (either a static address or the address assigned by your DHCP Cisco CSP 5400).



Note The factory default username for the Cisco CSP 5400 is *admin*. The default password is *password*.

To manage the Cisco CSP 5400, see the configuration guides in the [Cisco UCS C-Series Documentation Roadmap](#).

Updating the BIOS and Cisco IMC Firmware



Caution

When you upgrade the BIOS firmware, you must also upgrade the Cisco IMC firmware to the same version or the Cisco CSP 5400 does not boot. Do not power off the Cisco CSP 5400 until the BIOS and Cisco IMC firmware are matching or the Cisco CSP 5400 does not boot.

Cisco provides the *Cisco Host Upgrade Utility* to assist with simultaneously upgrading the BIOS, Cisco IMC, and other firmware to compatible levels.

The Cisco CSP 5400 uses firmware obtained from and certified by Cisco. Cisco provides release notes with each firmware image. There are several possible methods for updating the firmware:

- **Recommended method for firmware update:** Use the Cisco Host Upgrade Utility to simultaneously upgrade the Cisco IMC, BIOS, and component firmware to compatible levels.
See the *Cisco Host Upgrade Utility Quick Reference Guide* for your firmware release at the documentation roadmap link below.
- You can upgrade the Cisco IMC and BIOS firmware by using the Cisco IMC GUI interface.
See the *Cisco UCS C-Series Rack-Mount Cisco CSP 5400 Configuration Guide*.
- You can upgrade the Cisco IMC and BIOS firmware by using the Cisco IMC CLI interface.
See the *Cisco UCS C-Series Rack-Mount Cisco CSP 5400 CLI Configuration Guide*.

For links to the documents listed above, see the [Cisco UCS C-Series Documentation Roadmap](#).

Older NAND Flash Not Detectable By Latest Cisco IMC



Caution If your system is running Cisco IMC 4.0(1b) or later, and you have the latest NAND flash chip MT29F4G08ABAFWP-IT:F (M70A), do not downgrade the Cisco IMC to an earlier version. Earlier versions of the BMC cannot detect this latest NAND Flash chip.

Accessing the System BIOS

Procedure

-
- Step 1** Enter the BIOS Setup Utility by pressing the **F2** key when prompted during bootup.
- Note** The version and build of the current BIOS are displayed on the Main page of the utility.
- Step 2** Use the arrow keys to select the BIOS menu page.
- Step 3** Highlight the field to be modified by using the arrow keys.
- Step 4** Press **Enter** to select the field that you want to change, and then modify the value in the field.
- Step 5** Press the right arrow key until the Exit menu screen is displayed.
- Step 6** Follow the instructions on the Exit menu screen to save your changes and exit the setup utility (or press **F10**). You can exit without saving changes by pressing **Esc**.
-

Smart Access Serial

This Cisco CSP 5400 supports the Smart Access Serial feature. This feature allows you to switch between host serial and Cisco IMC CLI.

- This feature has the following requirements:
 - A serial cable connection, which can use either the RJ-45 serial connector on the Cisco CSP 5400 rear panel, or a DB-9 connection when using the KVM cable (Cisco PID N20-BKVM) on the front-panel KVM console connector.
 - Console redirection must be enabled in the Cisco CSP 5400 BIOS.
 - Terminal type must be set to VT100+ or VTUFT8.
 - Serial-over-LAN (SOL) must be disabled (SOL is disabled by default).
- To switch from host serial to Cisco IMC CLI, press **Esc+9**.
You must enter your Cisco IMC credentials to authenticate the Cisco CSP 5400.
- To switch from Cisco IMC CLI to host serial, press **Esc+8**.



Note You cannot switch to Cisco IMC CLI if the serial-over-LAN (SOL) feature is enabled.

- After a session is created, it is shown in the CLI or web GUI by the name `serial`.

Smart Access USB

This Cisco CSP 5400 supports the Smart Access USB feature. The board management controller (BMC) in this Cisco CSP 5400 can accept a USB mass storage device and access the data on it. This feature allows you to use the front-panel USB device as a medium to transfer data between the BMC and the user without need for network connectivity. This can be useful, for example, when remote BMC interfaces are not yet available, or are not accessible due to network misconfiguration.

- This feature has the following requirements:
 - The included KVM cable connected to the front panel KVM console connector.
 - A USB storage device connected to one of the USB 2.0 connectors on the KVM cable. The USB device must draw less than 500 mA to avoid disconnect by the current-protection circuit.



Note Any mouse or keyboard that is connected to the KVM cable is disconnected when you enable Smart Access USB.

- You can use USB 3.0-based devices, but they will operate at USB 2.0 speed.
- We recommend that the USB device have only one partition.
- The file system formats supported are: FAT16, FAT32, MSDOS, EXT2, EXT3, and EXT4. NTFS is not supported.
- The front-panel KVM connector has been designed to switch the USB port between Host OS and BMC.
- Smart Access USB can be enabled or disabled using any of the BMC user interfaces. For example, you can use the Cisco IMC Configuration Utility that is accessed by pressing **F8** when prompted during bootup.
 - Enabled: the front-panel USB device is connected to the BMC.
 - Disabled: the front-panel USB device is connected to the host.
- In a case where no management network is available to connect remotely to Cisco IMC, a Device Firmware Update (DFU) shell over serial cable can be used to generate and download technical support files to the USB device that is attached to front panel USB port.



CHAPTER 8

Maintaining Cisco CSP 5400

This chapter contains the following sections:

- [Status LEDs and Buttons](#), on page 105
- [Preparing For Component Installation](#), on page 111
- [Removing and Replacing Components](#), on page 116
- [Service Headers and Jumpers](#), on page 154

Status LEDs and Buttons

This section contains information for interpreting LED states.

Front-Panel LEDs

Figure 41: Front Panel LEDs

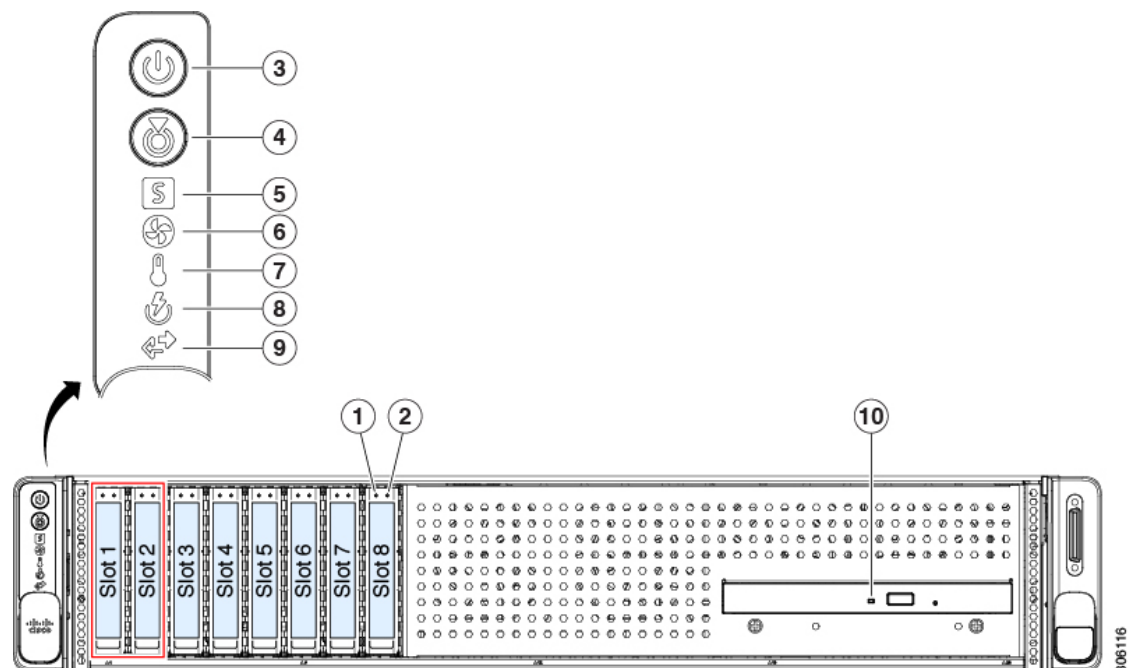


Table 11: Front Panel LEDs, Definition of States

	LED Name	States
1 SAS	SAS/SATA drive fault	<ul style="list-style-type: none"> • Off—The hard drive is operating properly. • Amber—Drive fault detected. • Amber, blinking—The device is rebuilding. • Amber, blinking with one-second interval—Drive locate function activated in the software.
2 SAS	SAS/SATA drive activity LED	<ul style="list-style-type: none"> • Off—There is no hard drive in the hard drive tray (no access, no fault). • Green—The hard drive is ready. • Green, blinking—The hard drive is reading or writing data.
3	Power button/LED	<ul style="list-style-type: none"> • Off—There is no AC power to the Cisco CSP 5400. • Amber—The Cisco CSP 5400 is in standby power mode. Power is supplied only to the Cisco IMC and some motherboard functions. • Green—The Cisco CSP 5400 is in main power mode. Power is supplied to all Cisco CSP 5400 components.
4	Unit identification	<ul style="list-style-type: none"> • Off—The unit identification function is not in use. • Blue, blinking—The unit identification function is activated.

5	System health	<ul style="list-style-type: none"> • Green—The Cisco CSP 5400 is running in normal operating condition. • Green, blinking—The Cisco CSP 5400 is performing system initialization and memory check. • Amber, steady—The Cisco CSP 5400 is in a degraded operational state (minor fault). For example: <ul style="list-style-type: none"> • 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, 2 blinks—There is a major fault with the system board. • Amber, 3 blinks—There is a major fault with the memory DIMMs. • Amber, 4 blinks—There is a major fault with the CPUs.
6	Power supply status	<ul style="list-style-type: none"> • 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.
7	Fan status	<ul style="list-style-type: none"> • Green—All fan modules are operating properly. • Amber, blinking—One or more fan modules breached the non-recoverable threshold.
8	Network link activity	<ul style="list-style-type: none"> • Off—The Ethernet LOM port 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.

9	Temperature status	<ul style="list-style-type: none"> • Green—The Cisco CSP 5400 is operating at normal temperature. • Amber, steady—One or more temperature sensors breached the critical threshold. • Amber, blinking—One or more temperature sensors breached the non-recoverable threshold.
10	DVD drive activity	<ul style="list-style-type: none"> • Off—The drive is idle. • Green, steady—The drive is spinning up a disk. • Green, blinking—The drive is accessing data.

Rear-Panel LEDs

Figure 42: Rear Panel LEDs

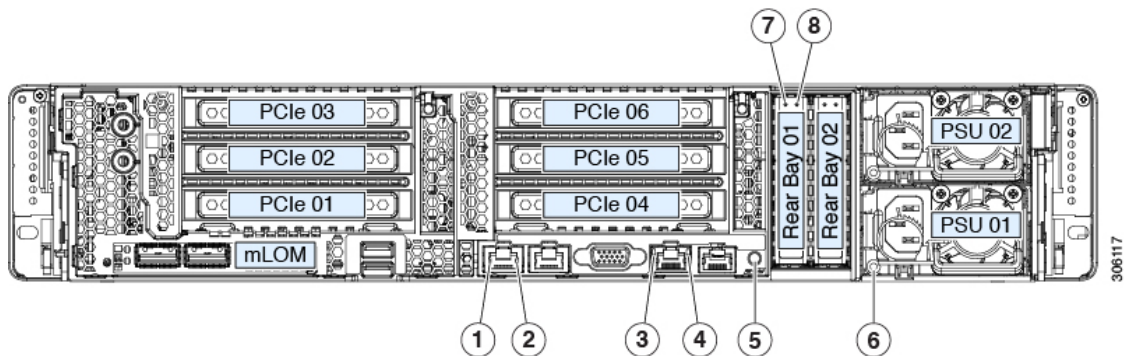


Table 12: Rear Panel LEDs, Definition of States

	LED Name	States
1	1-Gb/10-Gb Ethernet link speed (on both LAN1 and LAN2)	<ul style="list-style-type: none"> • Off—Link speed is 100 Mbps. • Amber—Link speed is 1 Gbps. • Green—Link speed is 10 Gbps.
2	1-Gb/10-Gb Ethernet link status (on both LAN1 and LAN2)	<ul style="list-style-type: none"> • Off—No link is present. • Green—Link is active. • Green, blinking—Traffic is present on the active link.
3	1-Gb Ethernet dedicated management link speed	<ul style="list-style-type: none"> • Off—Link speed is 10 Mbps. • Amber—Link speed is 100 Mbps. • Green—Link speed is 1 Gbps.

4	1-Gb Ethernet dedicated management link status	<ul style="list-style-type: none"> • Off—No link is present. • Green—Link is active. • Green, blinking—Traffic is present on the active link.
5	Rear unit identification	<ul style="list-style-type: none"> • Off—The unit identification function is not in use. • Blue, blinking—The unit identification function is activated.
6	Power supply status (one LED each power supply unit)	<p>AC power supplies:</p> <ul style="list-style-type: none"> • Off—No AC input (12 V main power off, 12 V standby power off). • Green, blinking—12 V main power off; 12 V standby power on. • Green, solid—12 V main power on; 12 V standby power on. • Amber, blinking—Warning threshold detected but 12 V main power on. • Amber, solid—Critical error detected; 12 V main power off (for example, over-current, over-voltage, or over-temperature failure). <p>DC power supply:</p> <ul style="list-style-type: none"> • Off—No DC input (12 V main power off, 12 V standby power off). • Green, blinking—12 V main power off; 12 V standby power on. • Green, solid—12 V main power on; 12 V standby power on. • Amber, blinking—Warning threshold detected but 12 V main power on. • Amber, solid—Critical error detected; 12 V main power off (for example, over-current, over-voltage, or over-temperature failure).
7 SAS	SAS/SATA drive fault	<ul style="list-style-type: none"> • Off—The hard drive is operating properly. • Amber—Drive fault detected. • Amber, blinking—The device is rebuilding. • Amber, blinking with one-second interval—Drive locate function activated in the software.

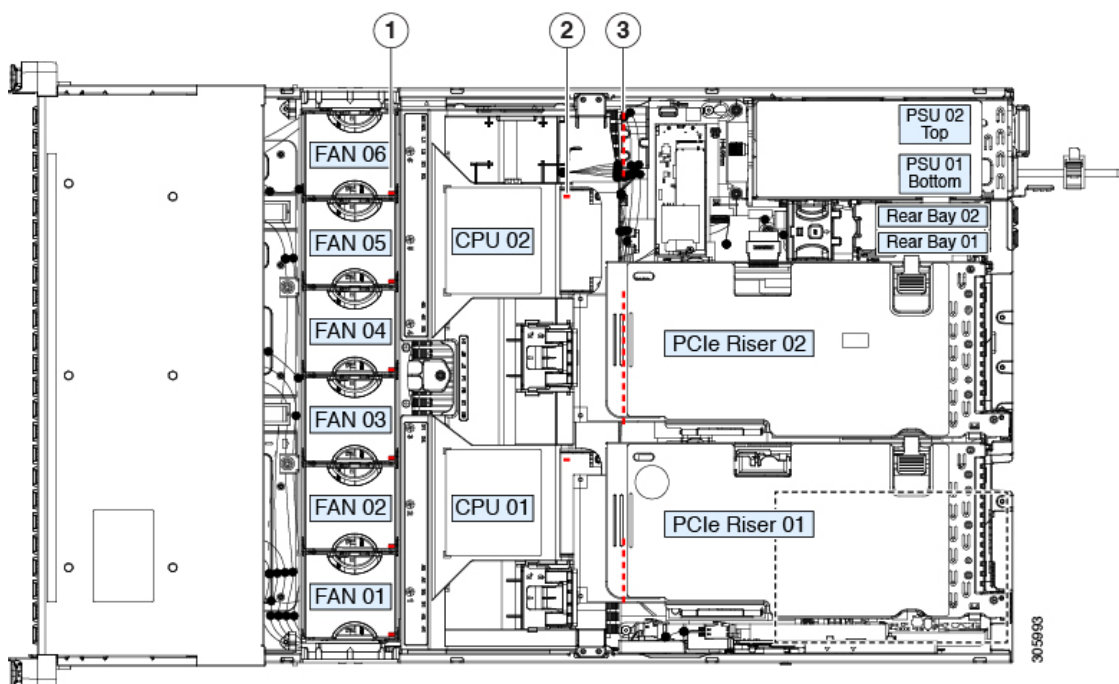
Internal Diagnostic LEDs

8 SAS	SAS/SATA drive activity LED	<ul style="list-style-type: none"> • Off—There is no hard drive in the hard drive tray (no access, no fault). • Green—The hard drive is ready. • Green, blinking—The hard drive is reading or writing data.
----------	-----------------------------	--

Internal Diagnostic LEDs

The Cisco CSP 5400 has internal fault LEDs for CPUs, DIMMs, and fan modules.

Figure 43: Internal Diagnostic LED Locations



1	<p>Fan module fault LEDs (one on the top of each fan module)</p> <ul style="list-style-type: none"> • Amber—Fan has a fault or is not fully seated. • Green—Fan is OK. 	3	<p>DIMM fault LEDs (one behind each DIMM socket on the motherboard)</p> <p>These LEDs operate only when the Cisco CSP 5400 is in standby power mode.</p> <ul style="list-style-type: none"> • Amber—DIMM has a fault. • Off—DIMM is OK.
---	--	---	---

2	<p>CPU fault LEDs (one behind each CPU socket on the motherboard).</p> <p>These LEDs operate only when the Cisco CSP 5400 is in standby power mode.</p> <ul style="list-style-type: none"> • Amber—CPU has a fault. • Off—CPU is OK. 	-	
---	--	---	--

Preparing For Component Installation

This section includes information and tasks that help prepare the Cisco CSP 5400 for component installation.

Required Equipment For Service Procedures

The following tools and equipment are used to perform the procedures in this chapter:

- T-30 Torx driver (supplied with replacement CPUs for heatsink removal)
- #1 flat-head screwdriver (used during CPU or heatsink replacement)
- #1 Phillips-head screwdriver (for M.2 SSD and intrusion switch replacement)
- Electrostatic discharge (ESD) strap or other grounding equipment such as a grounded mat

Shutting Down and Removing Power From the Cisco CSP 5400

The Cisco CSP 5400 can run in either of two power modes:

- Main power mode—Power is supplied to all Cisco CSP 5400 components and any operating system on your drives can run.
- Standby power mode—Power is supplied only to the service processor and certain components. It is safe for the operating system and data to remove power cords from the Cisco CSP 5400 in this mode.



Caution

After a Cisco CSP 5400 is shut down to standby power, electric current is still present in the Cisco CSP 5400. To completely remove power, you must disconnect all power cords from the power supplies in the Cisco CSP 5400, as directed in the service procedures.

You can shut down the Cisco CSP 5400 by using the front-panel power button or the software management interfaces.

Shutting Down Using the Power Button

Procedure

- Step 1** Check the color of the Power button/LED:
- Amber—The Cisco CSP 5400 is already in standby mode and you can safely remove power.
 - Green—The Cisco CSP 5400 is in main power mode and must be shut down before you can safely remove power.
- Step 2** Invoke either a graceful shutdown or a hard shutdown:
- Caution** To avoid data loss or damage to your operating system, you should always invoke a graceful shutdown of the operating system.
- Graceful shutdown—Press and release the **Power** button. The operating system performs a graceful shutdown and the Cisco CSP 5400 goes to standby mode, which is indicated by an amber Power button/LED.
 - Emergency shutdown—Press and hold the **Power** button for 4 seconds to force the main power off and immediately enter standby mode.
- Step 3** If a service procedure instructs you to completely remove power from the Cisco CSP 5400, disconnect all power cords from the power supplies in the Cisco CSP 5400.
-

Shutting Down Using The Cisco IMC GUI

You must log in with user or admin privileges to perform this task.

Procedure

- Step 1** In the Navigation pane, click the **Cisco CSP 5400** tab.
- Step 2** On the Cisco CSP 5400 tab, click **Summary**.
- Step 3** In the Actions area, click **Power Off Cisco CSP 5400**.
- Step 4** Click **OK**.
- The operating system performs a graceful shutdown and the Cisco CSP 5400 goes to standby mode, which is indicated by an amber Power button/LED.
- Step 5** If a service procedure instructs you to completely remove power from the Cisco CSP 5400, disconnect all power cords from the power supplies in the Cisco CSP 5400.
-

Shutting Down Using The Cisco IMC CLI

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 At the Cisco CSP 5400 prompt, enter:

Example:

```
Cisco CSP 5400# scope chassis
```

Step 2 At the chassis prompt, enter:

Example:

```
Cisco CSP 5400/chassis# power shutdown
```

The operating system performs a graceful shutdown and the Cisco CSP 5400 goes to standby mode, which is indicated by an amber Power button/LED.

Step 3 If a service procedure instructs you to completely remove power from the Cisco CSP 5400, disconnect all power cords from the power supplies in the Cisco CSP 5400.

Shutting Down Using The Cisco UCS Manager Equipment Tab

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 In the Navigation pane, click **Equipment**.

Step 2 Expand **Equipment > Rack Mounts > Cisco CSP 5400s**.

Step 3 Choose the Cisco CSP 5400 that you want to shut down.

Step 4 In the Work pane, click the **General** tab.

Step 5 In the Actions area, click **Shutdown Cisco CSP 5400**.

Step 6 If a confirmation dialog displays, click **Yes**.

The operating system performs a graceful shutdown and the Cisco CSP 5400 goes to standby mode, which is indicated by an amber Power button/LED.

Step 7 If a service procedure instructs you to completely remove power from the Cisco CSP 5400, disconnect all power cords from the power supplies in the Cisco CSP 5400.

Shutting Down Using The Cisco UCS Manager Service Profile

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 In the Navigation pane, click **Cisco CSP 5400s**.

Step 2 Expand **Cisco CSP 5400s > Service Profiles**.

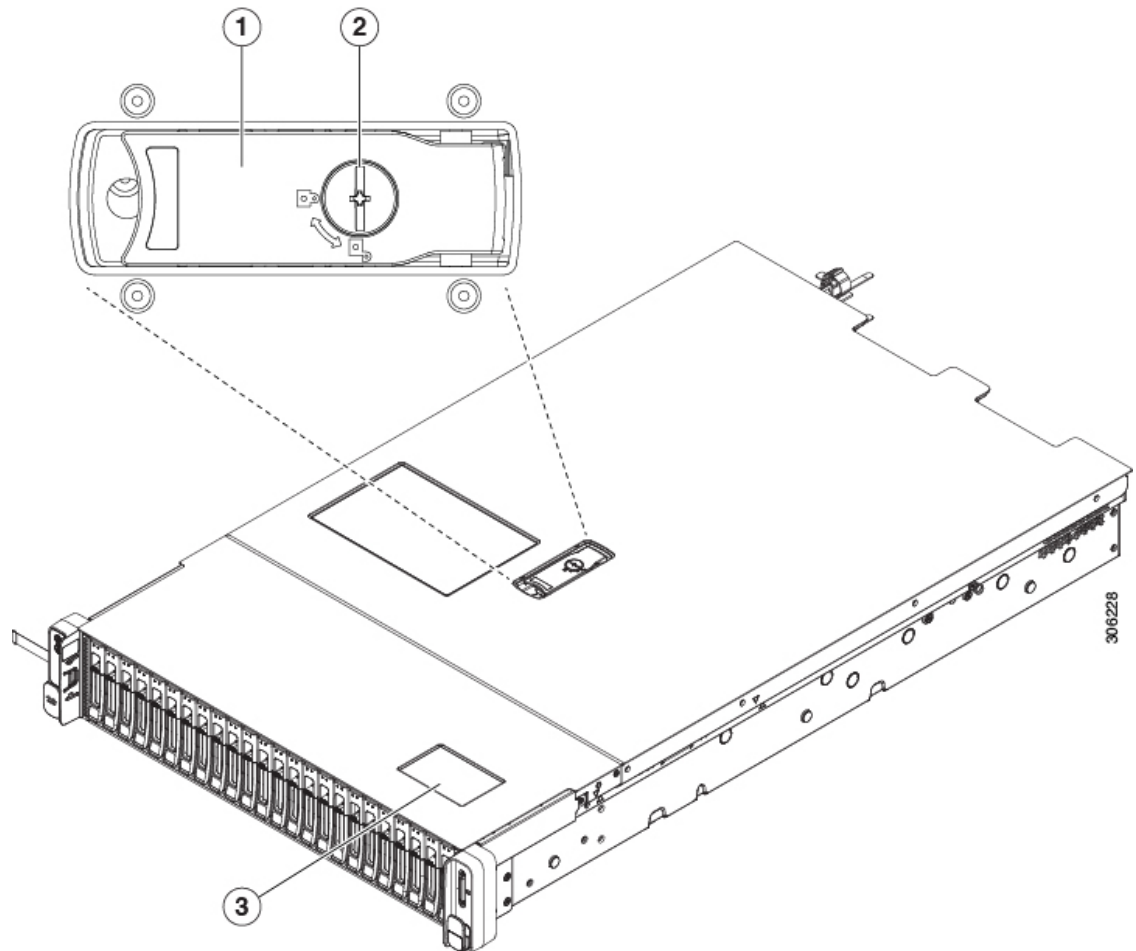
- Step 3** Expand the node for the organization that contains the service profile of the Cisco CSP 5400 that you are shutting down.
- Step 4** Choose the service profile of the Cisco CSP 5400 that you are shutting down.
- Step 5** In the **Work** pane, click the **General** tab.
- Step 6** In the **Actions** area, click **Shutdown Cisco CSP 5400**.
- Step 7** If a confirmation dialog displays, click **Yes**.
- The operating system performs a graceful shutdown and the Cisco CSP 5400 goes to standby mode, which is indicated by an amber Power button/LED.
- Step 8** If a service procedure instructs you to completely remove power from the Cisco CSP 5400, disconnect all power cords from the power supplies in the Cisco CSP 5400.
-

Removing the Cisco CSP 5400 Top Cover

Procedure

- Step 1** Remove the top cover:
- If the cover latch is locked, use a screwdriver to turn the lock 90-degrees counterclockwise to unlock it.
 - Lift on the end of the latch that has the green finger grip. The cover is pushed back to the open position as you lift the latch.
 - Lift the top cover straight up from the Cisco CSP 5400 and set it aside.
- Step 2** Replace the top cover:
- With the latch in the fully open position, place the cover on top of the Cisco CSP 5400 about one-half inch (1.27 cm) behind the lip of the front cover panel. The opening in the latch should fit over the peg that sticks up from the fan tray.
 - Press the cover latch down to the closed position. The cover is pushed forward to the closed position as you push down the latch.
 - If desired, lock the latch by using a screwdriver to turn the lock 90-degrees clockwise.

Figure 44: Removing the Top Cover



1	Cover latch	3	Serial number label location
2	Cover lock		

Serial Number Location

The serial number for the server is printed on a label on the top of the server, near the front. See [Removing the Cisco CSP 5400 Top Cover](#), on page 114.

Hot Swap

Some components can be removed and replaced without shutting down and removing power from the Cisco CSP 5400.

- Hot-swap replacement—You do not have to shut down the component in the software or operating system. This applies to the following components:

- SAS/SATA hard drives
- SAS/SATA solid state drives
- Cooling fan modules
- Power supplies (when redundant as 1+1)

Removing and Replacing Components



Warning Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Statement 1029



Caution When handling Cisco CSP 5400 components, handle them only by carrier edges and use an electrostatic discharge (ESD) wrist-strap or other grounding device to avoid damage.



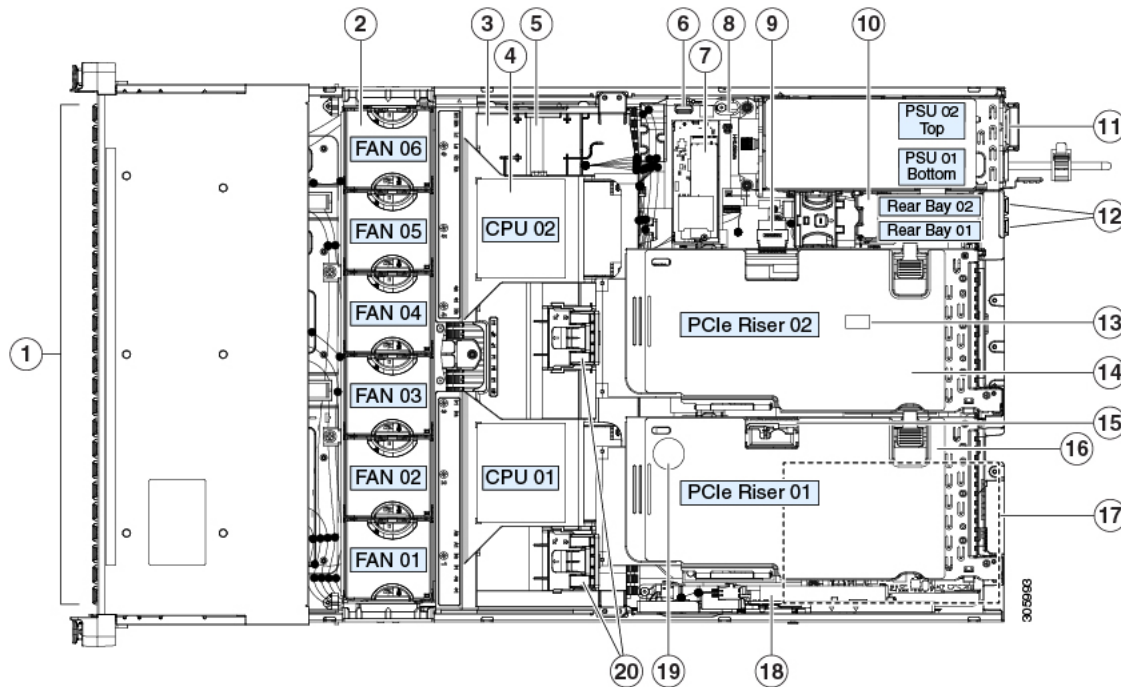
Tip You can press the unit identification button on the front panel or rear panel to turn on a flashing, blue unit identification LED on both the front and rear panels of the Cisco CSP 5400. This button allows you to locate the specific Cisco CSP 5400 that you are servicing when you go to the opposite side of the rack. You can also activate these LEDs remotely by using the Cisco IMC interface.

This section describes how to install and replace Cisco CSP 5400 components.

Serviceable Component Locations

This topic shows the locations of the field-replaceable components and service-related items. The view in the following figure shows the Cisco CSP 5400 with the top cover removed.

Figure 45: Cisco CSP 5400, Serviceable Component Locations



1	Front-loading drive bays.	11	Power supplies (hot-swappable when redundant as 1+1)
2	Cooling fan modules (six, hot-swappable)	12	Not applicable
3	DIMM sockets on motherboard (up to 12 per CPU) Not visible under air baffle in this view. See the "DIMM Population Rules and Memory Performance Guidelines" topic for DIMM slot numbering.	13	Trusted platform module (TPM) socket on motherboard (not visible in this view)
4	CPUs and heatsinks (up to two) Not visible under air baffle in this view.	14	PCIe riser 2 (PCIe slots 4, 5, 6), with the following option: <ul style="list-style-type: none">• 2B—Slots 4 (x8), 5 (x16), and 6 (x8); includes cable connector for rear-loading NVMe SSDs.
5	Supercap unit (RAID backup) mounting bracket	15	Micro-SD card socket on PCIe riser 1
6	Internal, vertical USB 3.0 port on motherboard	16	PCIe riser 1 (PCIe slot 1, 2, 3), with the following option: <ul style="list-style-type: none">• 1A—Slots 1 (x8), 2 (x16), 3 (x8); slot 2 requires CPU2.
7	Mini storage module socket Supports an SD card carrier with two SD card slots.	17	Modular LOM (mLOM) card bay on chassis floor (x16 PCIe lane), not visible in this view

8	Chassis intrusion switch (optional)	18	Cisco modular RAID controller PCIe slot (dedicated slot)
9	Not applicable	19	RTC battery, vertical socket
10	Rear-drive backplane assembly	20	Securing clips for GPU cards on air baffle

For all versions of Cisco CSP 5400, which include supported component part numbers, are at [Cisco UCS Cisco CSP 5400s Technical Specifications Sheets](#) (scroll down to *Technical Specifications*).

Replacing Front-Loading SAS/SATA Drives



Note You do not have to shut down the Cisco CSP 5400 or drive to replace SAS/SATA hard drives or SSDs because they are hot-swappable.

To replace rear-loading SAS/SATA drives, see [Replacing a Front-Loading SAS/SATA Drive, on page 119](#).

Front-Loading SAS/SATA Drive Population Guidelines

The following version of the server is orderable:

Small form-factor (SFF) drives, with 24-drive backplane.

- Front-loading drive bays 1—24 support 2.5-inch SAS/SATA drives.

Drive bay numbering is shown in the following figures.

Figure 46: Small Form-Factor Drive (24-Drive) Versions, Drive Bay Numbering

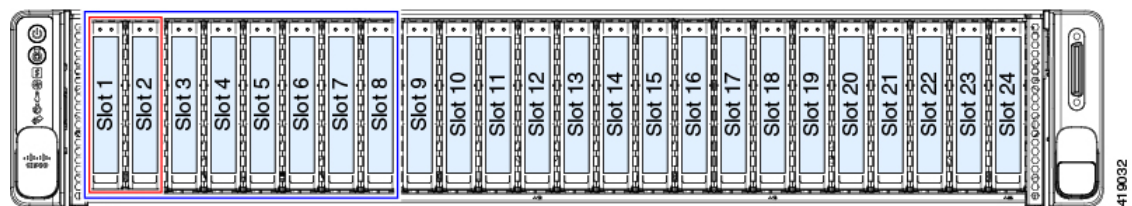
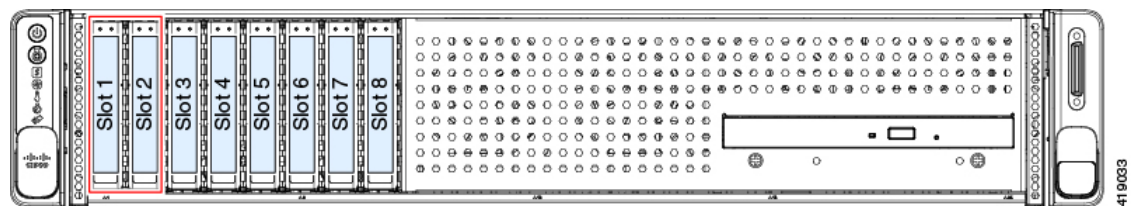


Figure 47: Small Form-Factor Drive (8-Drive) Version, Drive Bay Numbering



Observe these drive population guidelines for optimum performance:

- When populating drives, add drives to the lowest-numbered bays first.



Note For diagrams of which drive bays are controlled by particular controller cables on the backplane, see [Storage Controller Cable Connectors and Backplanes](#), on page 170.

- Keep an empty drive blanking tray in any unused bays to ensure proper airflow.

Replacing a Front-Loading SAS/SATA Drive

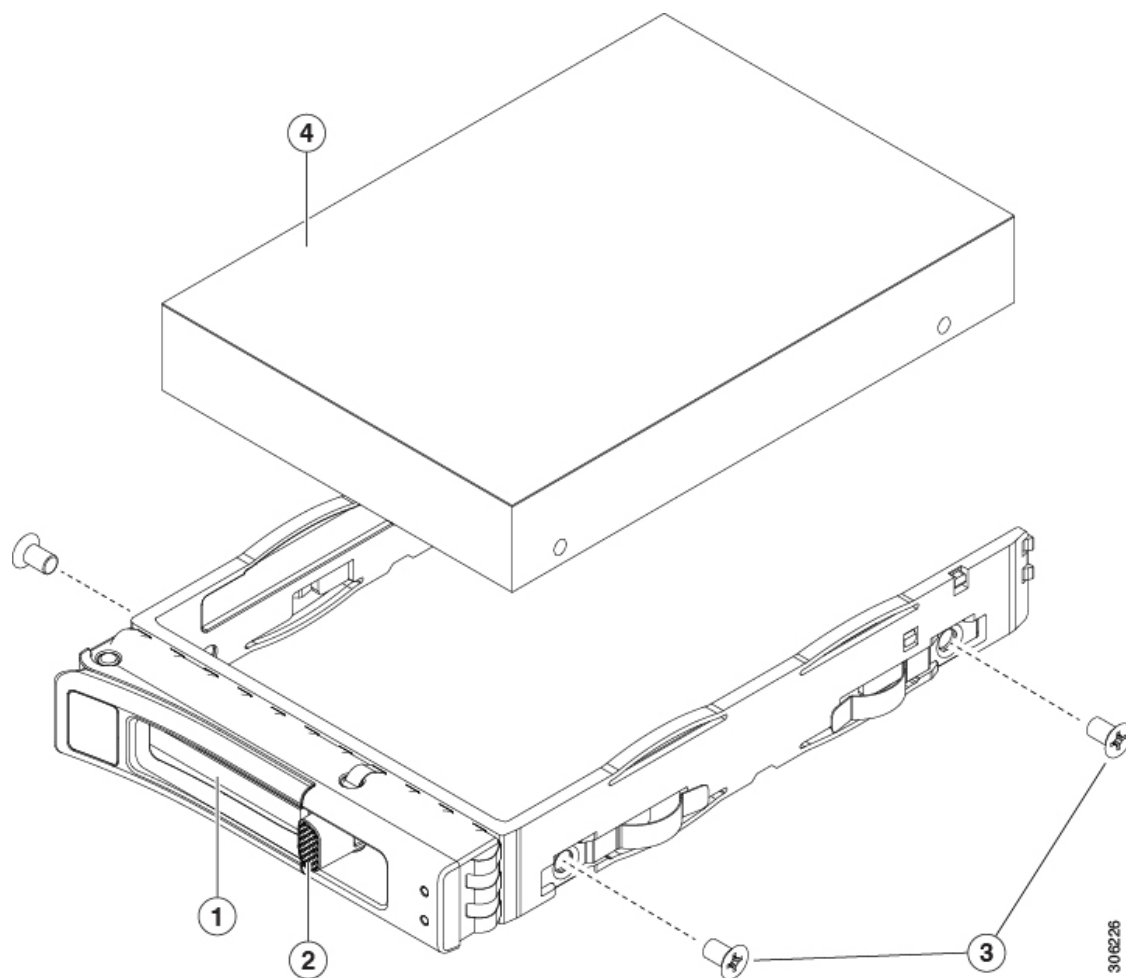


Note You do not have to shut down the Cisco CSP 5400 or drive to replace SAS/SATA hard drives or SSDs because they are hot-swappable.

Procedure

- Step 1** Remove the drive that you are replacing or remove a blank drive tray from the bay:
- Press the release button on the face of the drive tray.
 - Grasp and open the ejector lever and then pull the drive tray out of the slot.
 - If you are replacing an existing drive, remove the four drive-tray screws that secure the drive to the tray and then lift the drive out of the tray.
- Step 2** Install a new drive:
- Place a new drive in the empty drive tray and install the four drive-tray screws.
 - With the ejector lever on the drive tray open, insert the drive tray into the empty drive bay.
 - Push the tray into the slot until it touches the backplane, and then close the ejector lever to lock the drive in place.

Figure 48: Replacing a Drive in a Drive Tray



1	Ejector lever	3	Drive tray screws (two on each side)
2	Release button	4	Drive removed from drive tray

Replacing Fan Modules

The six fan modules in the Cisco CSP 5400 are numbered as shown in [Serviceable Component Locations](#), on page 87.



Tip There is a fault LED on the top of each fan module. This LED lights green when the fan is correctly seated and is operating OK. The LED lights amber when the fan has a fault or is not correctly seated.

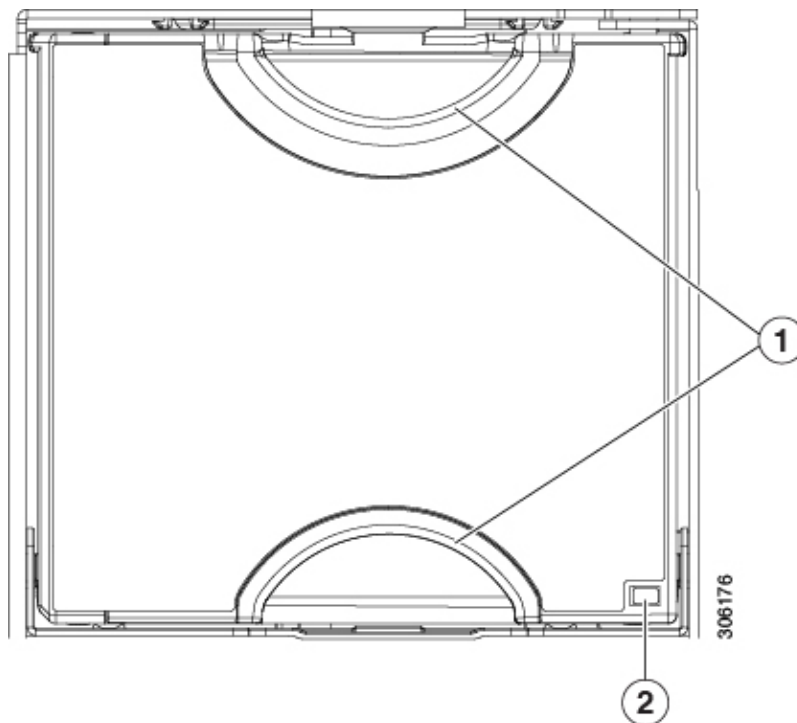


Caution You do not have to shut down or remove power from the Cisco CSP 5400 to replace fan modules because they are hot-swappable. However, to maintain proper cooling, do not operate the Cisco CSP 5400 for more than one minute with any fan module removed.

Procedure

- Step 1** Remove an existing fan module:
- Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
Caution If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
 - Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
 - Grasp and squeeze the fan module release latches on its top. Lift straight up to disengage its connector from the motherboard.
- Step 2** Install a new fan module:
- Set the new fan module in place. The arrow printed on the top of the fan module should point toward the rear of the Cisco CSP 5400.
 - Press down gently on the fan module to fully engage it with the connector on the motherboard.
 - Replace the top cover to the Cisco CSP 5400.
 - Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 49: Top View of Fan Module



1	Fan module release latches	2	Fan module fault LED
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Replacing Memory DIMMs



Caution DIMMs and their sockets are fragile and must be handled with care to avoid damage during installation.



Caution Cisco does not support third-party DIMMs. Using non-Cisco DIMMs in the Cisco CSP 5400 might result in system problems or damage to the motherboard.



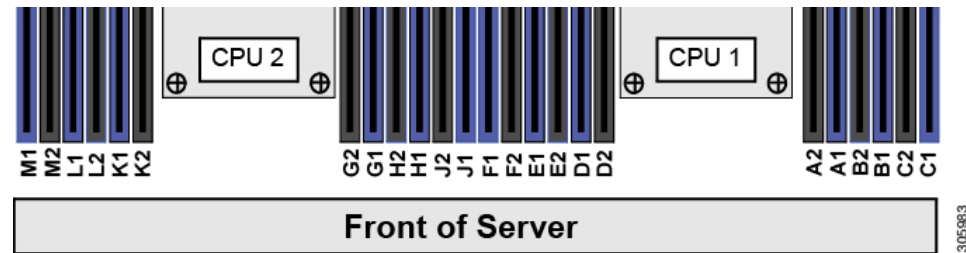
Note To ensure the best Cisco CSP 5400 performance, it is important that you are familiar with memory performance guidelines and population rules before you install or replace DIMMs.

DIMM Population Rules and Memory Performance Guidelines

DIMM Slot Numbering

The following figure shows the numbering of the DIMM slots on the motherboard.

Figure 50: DIMM Slot Numbering



DIMM Population Rules

Observe the following guidelines when installing or replacing DIMMs for maximum performance:

- Each CPU supports six memory channels.
 - CPU 1 supports channels A, B, C, D, E, F.
 - CPU 2 supports channels G, H, J, K, L, M.
- Each channel has two DIMM sockets (for example, channel A = slots A1, A2).
- In a single-CPU configuration, populate the channels for CPU1 only (A, B, C, D, E, F).
- For optimal performance, populate DIMMs in the order shown in the following table, depending on the number of CPUs and the number of DIMMs per CPU. If your server has two CPUs, balance DIMMs evenly across the two CPUs as shown in the table.



Note The table below lists recommended configurations. Using 5, 7, 9, 10, or 11 DIMMs per CPU is not recommended.

Table 13: DIMM Population Order

Number of DIMMs per CPU (Recommended Configurations)	Populate CPU 1 Slot		Populate CPU2 Slots	
	Blue #1 Slots	Black #2 Slots	Blue #1 Slots	Black #2 Slots
1	(A1)	-	(G1)	-
2	(A1, B1)	-	(G1, H1)	-
3	(A1, B1, C1)	-	(G1, H1, J1)	-
4	(A1, B1); (D1, E1)	-	(G1, H1); (K1, L1)	-

6	(A1, B1); (C1, D1); (E1, F1)	-	(G1, H1); (J1, K1); (L1, M1)	-
8	(A1, B1); (D1, E1)	(A2, B2); (D2, E2)	(G1, H1); (K1, L1)	(G2, H2); (K2, L2)
12	(A1, B1); (C1, D1); (E1, F1)	(A2, B2); (C2, D2); (E2, F2)	(G1, H1); (J1, K1); (L1, M1)	(G2, H2); (J2, K2); (L2, M2)

Replacing DIMMs

Identifying a Faulty DIMM

Each DIMM socket has a corresponding DIMM fault LED, directly in front of the DIMM socket. See [Internal Diagnostic LEDs, on page 110](#) for the locations of these LEDs. When the Cisco CSP 5400 is in standby power mode, these LEDs light amber to indicate a faulty DIMM.

Procedure

Step 1 Remove an existing DIMM:

- Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
- Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.

- Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Remove the air baffle that covers the front ends of the DIMM slots to provide clearance.
- Locate the DIMM that you are removing, and then open the ejector levers at each end of its DIMM slot.

Step 2 Install a new DIMM:

Note Before installing DIMMs, see the memory population rules for this Cisco CSP 5400: See the "DIMM Population Rules and Memory Performance Guidelines" topic.

- Align the new DIMM with the empty slot on the motherboard. Use the alignment feature in the DIMM slot to correctly orient the DIMM.
- Push down evenly on the top corners of the DIMM until it is fully seated and the ejector levers on both ends lock into place.
- Replace the top cover to the Cisco CSP 5400.
- Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Replacing CPUs and Heatsinks

This section contains the following topics:

CPU Configuration Rules

This Cisco CSP 5400 has two CPU sockets on the motherboard. Each CPU supports six DIMM channels (12 DIMM slots). See the "DIMM Population Rules and Memory Performance Guidelines" topic.

- The Cisco CSP 5400 can operate with two identical CPUs installed.
- Install CPU 1 first, and then CPU 2.

Tools Required For CPU Replacement

You need the following tools and equipment for this procedure:

- T-30 Torx driver—Supplied with replacement CPU.
- #1 flat-head screwdriver—Supplied with replacement CPU.
- CPU assembly tool—Supplied with replacement CPU. Orderable separately as Cisco PID UCS-CPUAT=.
- Heatsink cleaning kit—Supplied with replacement CPU. Orderable separately as Cisco PID UCSX-HSCK=.
- Thermal interface material (TIM)—Syringe supplied with replacement CPU. Use only if you are reusing your existing heatsink (new heatsinks have a pre-applied pad of TIM). Orderable separately as Cisco PID UCS-CPU-TIM=.

See also [Additional CPU-Related Parts to Order with RMA Replacement CPUs, on page 132](#).

Replacing a CPU and Heatsink



Caution

CPUs and their sockets are fragile and must be handled with extreme care to avoid damaging pins. The CPUs must be installed with heatsinks and thermal interface material to ensure cooling. Failure to install a CPU correctly might result in damage to the Cisco CSP 5400.

Procedure

Step 1

Remove the existing CPU/heatsink assembly from the Cisco CSP 5400:

- Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
- Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

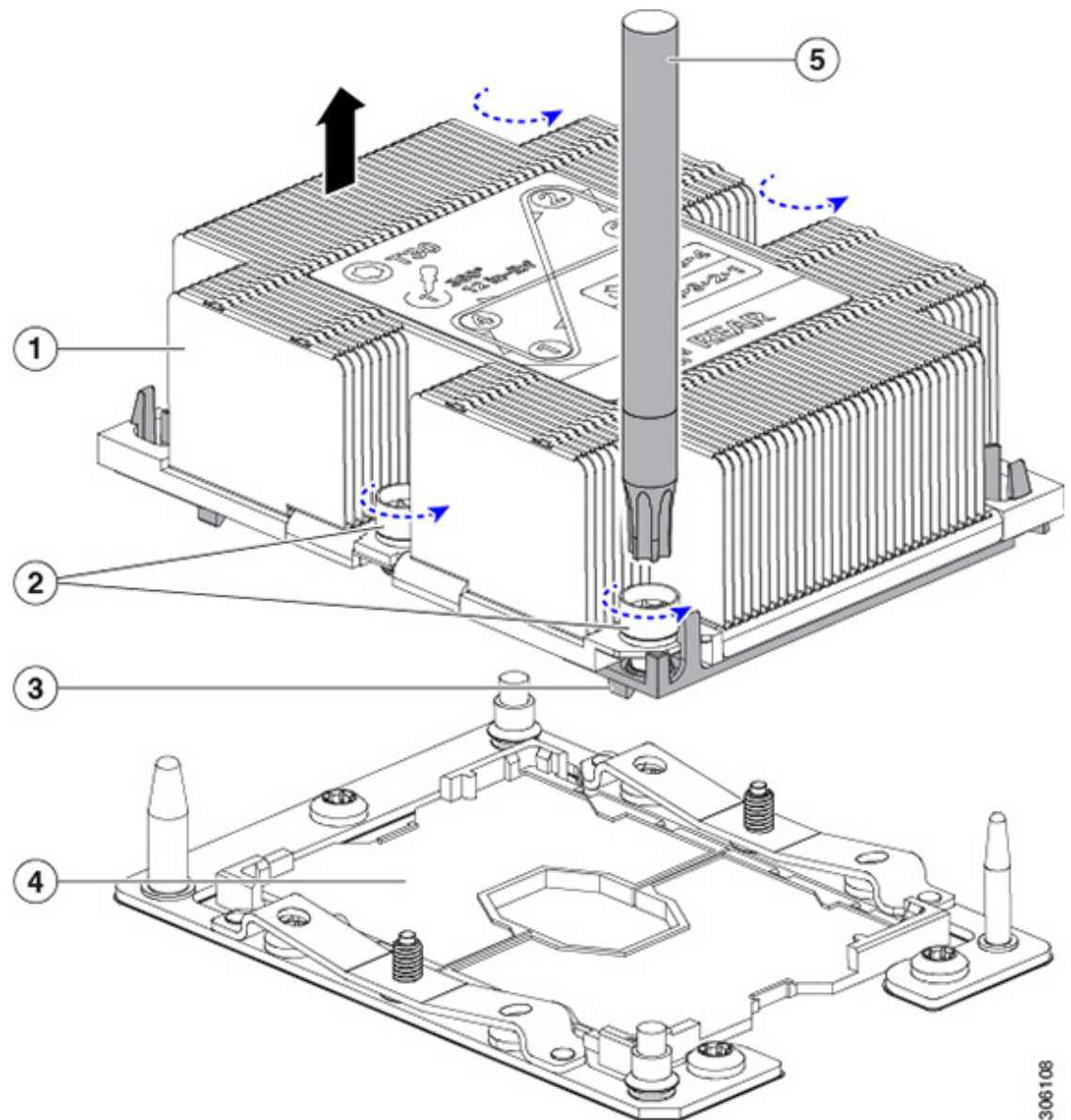
Caution If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.

- Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Use the T-30 Torx driver that is supplied with the replacement CPU to loosen the four captive nuts that secure the assembly to the motherboard standoffs.

Note Alternate loosening the heatsink nuts evenly so that the heatsink remains level as it is raised. Loosen the heatsink nuts in the order shown on the heatsink label: 4, 3, 2, 1.

- e) Lift straight up on the CPU/heatsink assembly and set it heatsink-down on an antistatic surface.

Figure 51: Removing the CPU/Heatsink Assembly



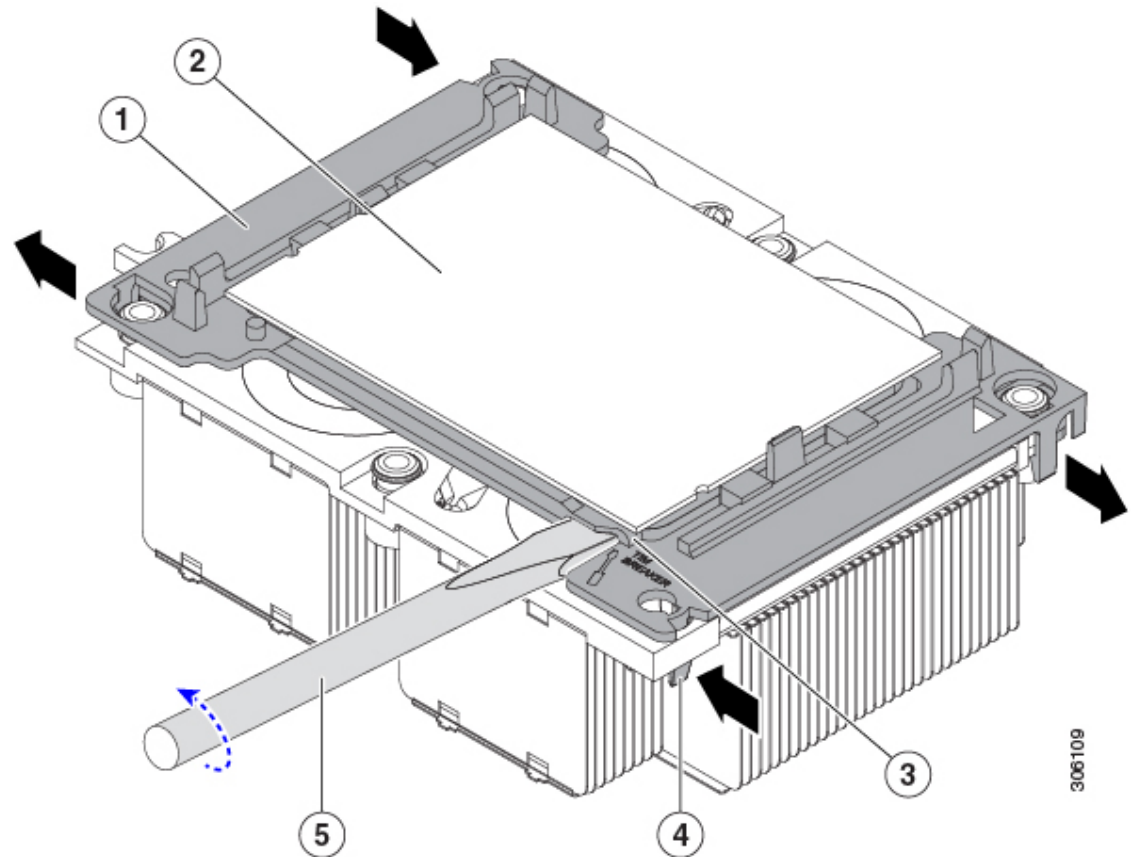
1	Heatsink	4	CPU socket on motherboard
2	Heatsink captive nuts (two on each side)	5	T-30 Torx driver
3	CPU carrier (below heatsink in this view)	-	

Step 2 Separate the heatsink from the CPU assembly (the CPU assembly includes the CPU and the plastic CPU carrier):

- a) Place the heatsink with CPU assembly so that it is oriented upside-down as shown below.

Note the thermal-interface material (TIM) breaker location. TIM BREAKER is stamped on the CPU carrier next to a small slot.

Figure 52: Separating the CPU Assembly From the Heatsink



1	CPU carrier	4	CPU-carrier inner-latch nearest to the TIM breaker slot
2	CPU	5	#1 flat-head screwdriver inserted into TIM breaker slot
3	TIM BREAKER slot in CPU carrier	-	

- b) Pinch inward on the CPU-carrier inner-latch that is nearest the TIM breaker slot and then push up to disengage the clip from its slot in the heatsink corner.
- c) Insert the blade of a #1 flat-head screwdriver into the slot marked TIM BREAKER.

Caution In the following step, do not pry on the CPU surface. Use gentle rotation to lift on the plastic surface of the CPU carrier at the TIM breaker slot. Use caution to avoid damaging the heatsink surface.
- d) Gently rotate the screwdriver to lift up on the CPU until the TIM on the heatsink separates from the CPU.

Note Do not allow the screwdriver tip to touch or damage the green CPU substrate.

- e) Pinch the CPU-carrier inner-latch at the corner opposite the TIM breaker and push up to disengage the clip from its slot in the heatsink corner.
- f) On the remaining two corners of the CPU carrier, gently pry outward on the outer-latches and then lift the CPU-assembly from the heatsink.

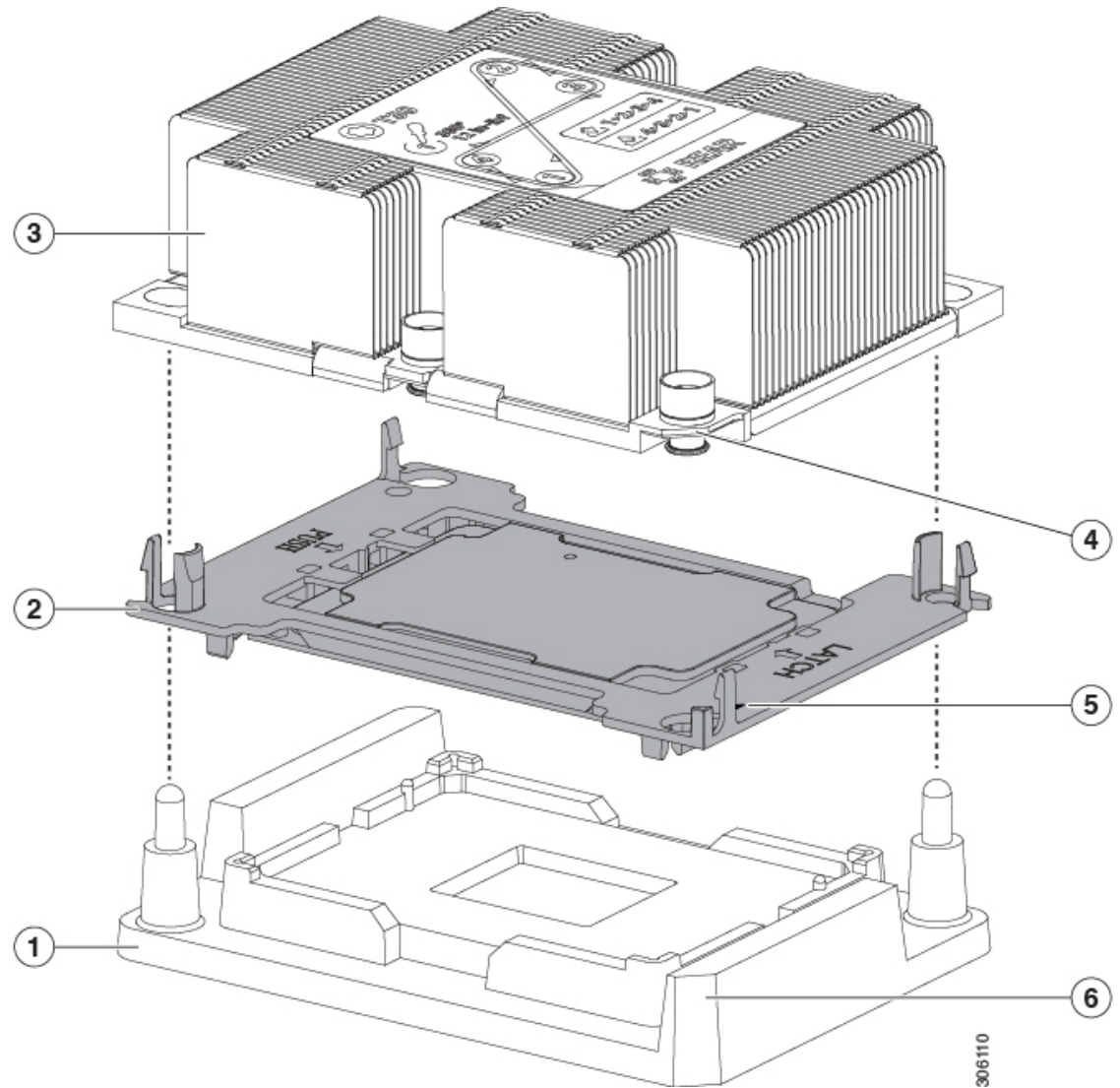
Note Handle the CPU-assembly by the plastic carrier only. Do not touch the CPU surface. Do not separate the CPU from the carrier.

Step 3 The new CPU assembly is shipped on a CPU assembly tool. Take the new CPU assembly and CPU assembly tool out of the carton.

If the CPU assembly and CPU assembly tool become separated, note the alignment features shown below for correct orientation. The pin 1 triangle on the CPU carrier must be aligned with the angled corner on the CPU assembly tool.

Caution CPUs and their sockets are fragile and must be handled with extreme care to avoid damaging pins.

Figure 53: CPU Assembly Tool, CPU Assembly, and Heatsink Alignment Features



1	CPU assembly tool	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU assembly (CPU in plastic carrier)	5	Triangle cut into carrier (pin 1 alignment feature)
3	Heatsink	6	Angled corner on CPU assembly tool (pin 1 alignment feature)

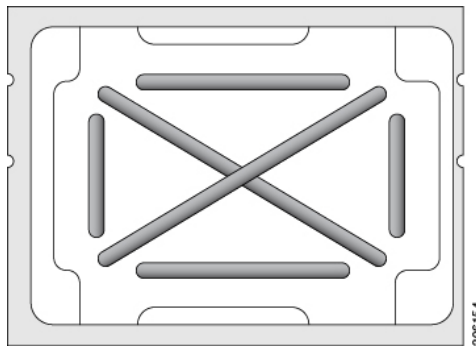
Step 4 Apply new TIM to the heatsink:

Note The heatsink must have new TIM on the heatsink-to-CPU surface to ensure proper cooling and performance.

- If you are installing a new heatsink, it is shipped with a pre-applied pad of TIM. Go to step 5.

- If you are reusing a heatsink, you must remove the old TIM from the heatsink and then apply new TIM to the CPU surface from the supplied syringe. Continue with step a below.
- a) Apply the cleaning solution that is included with the heatsink cleaning kit (UCSX-HSCK=) to the old TIM on the heatsink and let it soak for a least 15 seconds.
- b) Wipe all of the TIM off the heatsink using the soft cloth that is included with the heatsink cleaning kit. Be careful to avoid scratching the heatsink surface.
- c) Using the syringe of TIM provided with the new CPU (UCS-CPU-TIM=), apply 4 cubic centimeters of thermal interface material to the top of the CPU. Use the pattern shown below to ensure even coverage.

Figure 54: Thermal Interface Material Application Pattern



Caution Use only the correct heatsink for your CPUs to ensure proper cooling. There are two different heatsinks: UCSC-HS-C240M5 for standard-performance CPUs 150 W and less; UCSC-HS2-C240M5 for high-performance CPUs above 150 W. Note the wattage described on the heatsink label.

Step 5 With the CPU assembly on the CPU assembly tool, set the heatsink onto the CPU assembly. Note the pin 1 alignment features for correct orientation. Push down gently until you hear the corner clips of the CPU carrier click onto the heatsink corners.

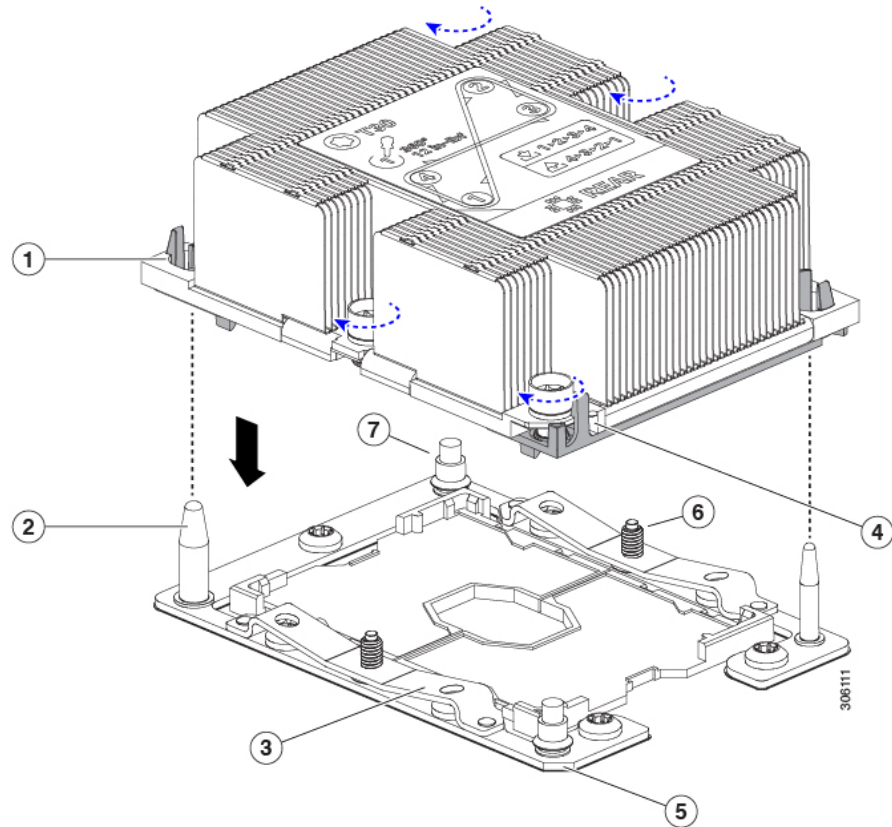
Caution In the following step, use extreme care to avoid touching or damaging the CPU contacts or the CPU socket pins.

Step 6 Install the CPU/heatsink assembly to the Cisco CSP 5400:

- a) Lift the heatsink with attached CPU assembly from the CPU assembly tool.
- b) Align the assembly over the CPU socket on the motherboard.

Note the alignment features. The pin 1 angled corner on the heatsink must align with the pin 1 angled corner on the CPU socket. The CPU-socket posts must align with the guide-holes in the assembly.

Figure 55: Installing the Heatsink/CPU Assembly to the CPU Socket



1	Guide hole in assembly (two)	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU socket alignment post (two)	5	Angled corner on socket (pin 1 alignment feature)
3	CPU socket leaf spring	-	

- c) Set the heatsink with CPU assembly down onto the CPU socket.
- d) Use the T-30 Torx driver that is supplied with the replacement CPU to tighten the four captive nuts that secure the heatsink to the motherboard standoffs.

Caution Alternate tightening the heatsink nuts evenly so that the heatsink remains level while it is lowered. Tighten the heatsink nuts in the order shown on the heatsink label: 1, 2, 3, 4. The captive nuts must be fully tightened so that the leaf springs on the CPU socket lie flat.
- e) Replace the top cover to the Cisco CSP 5400.
- f) Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Additional CPU-Related Parts to Order with RMA Replacement CPUs

When a return material authorization (RMA) of the CPU is done on a Cisco CSP 5400, additional parts might not be included with the CPU spare. The TAC engineer might need to add the additional parts to the RMA to help ensure a successful replacement.



Note The following items apply to CPU *replacement* scenarios. If you are replacing a system chassis and *moving* existing CPUs to the new chassis, you do not have to separate the heatsink from the CPU. See [Additional CPU-Related Parts to Order with RMA Replacement System Chassis, on page 132](#).

- Scenario 1—You are reusing the existing heatsinks:
 - Heat sink cleaning kit (UCSX-HSCK=)
 - Thermal interface material (TIM) kit for M5 Cisco CSP 5400s (UCS-CPU-TIM=)
- Scenario 2—You are replacing the existing heatsinks:



Caution Use only the correct heatsink for your CPUs to ensure proper cooling. There are two different heatsinks: UCSC-HS-C240M5= for CPUs 150 W and less; UCSC-HS2-C240M5= for CPUs above 150 W.

- Heat sink: UCSC-HS-C240M5= for CPUs 150 W and less; UCSC-HS2-C240M5= for CPUs above 150 W
- Heat sink cleaning kit (UCSX-HSCK=)
- Scenario 3—You have a damaged CPU carrier (the plastic frame around the CPU):
 - CPU Carrier: UCS-M5-CPU-CAR=
 - #1 flat-head screwdriver (for separating the CPU from the heatsink)
 - Heatsink cleaning kit (UCSX-HSCK=)
 - Thermal interface material (TIM) kit for M5 Cisco CSP 5400s (UCS-CPU-TIM=)

A CPU heat sink cleaning kit is good for up to four CPU and heat sink cleanings. The cleaning kit contains two bottles of solution, one to clean the CPU and heat sink of old TIM and the other to prepare the surface of the heat sink.

New heat sink spares come with a pre-applied pad of TIM. It is important to clean any old TIM off of the CPU surface prior to installing the heat sinks. Therefore, even when you are ordering new heat sinks, you must order the heat sink cleaning kit.

Additional CPU-Related Parts to Order with RMA Replacement System Chassis

When a return material authorization (RMA) of the system chassis is done on a Cisco UCS C-Series Cisco CSP 5400, you move existing CPUs to the new chassis.



Note Unlike previous generation CPUs, the M5 Cisco CSP 5400 CPUs do not require you to separate the heatsink from the CPU when you *move* the CPU-heatsink assembly. Therefore, no additional heatsink cleaning kit or thermal-interface material items are required.

- The only tool required for moving a CPU/heatsink assembly is a T-30 Torx driver.

To move a CPU to a new chassis, use the procedure in [Moving an M5 Generation CPU, on page 133](#).

Moving an M5 Generation CPU

Tool required for this procedure: T-30 Torx driver

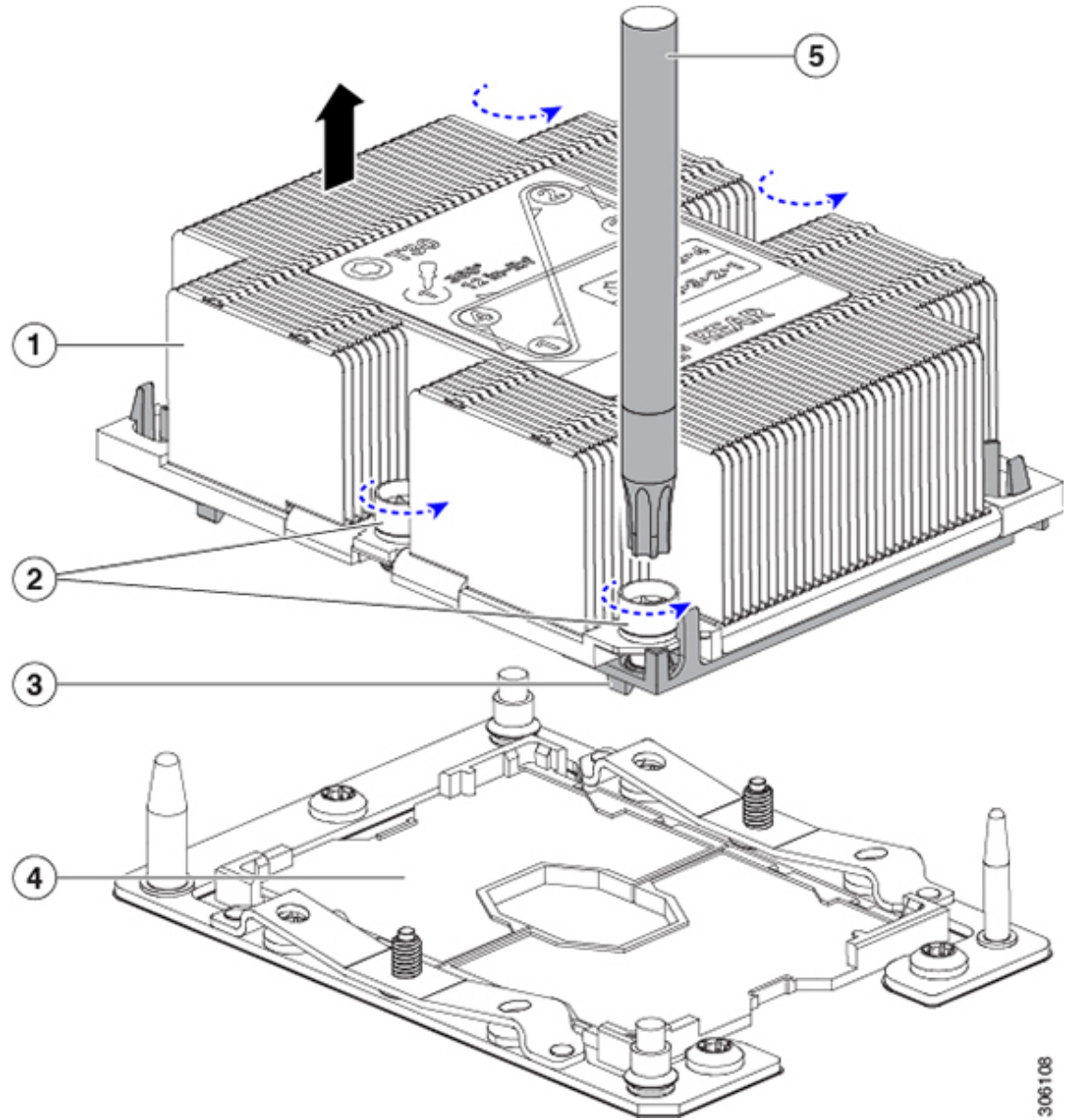


Caution When you receive a replacement Cisco CSP 5400 for an RMA, it includes dust covers on all CPU sockets. These covers protect the socket pins from damage during shipping. You must transfer these covers to the system that you are returning, as described in this procedure.

Procedure

-
- Step 1** When moving an M5 CPU to a new Cisco CSP 5400, you do not have to separate the heatsink from the CPU. Perform the following steps:
- a) Use a T-30 Torx driver to loosen the four captive nuts that secure the assembly to the board standoffs.
Note Alternate loosening the heatsink nuts evenly so that the heatsink remains level as it is raised. Loosen the heatsink nuts in the order shown on the heatsink label: 4, 3, 2, 1.
 - b) Lift straight up on the CPU/heatsink assembly to remove it from the board.
 - c) Set the CPUs with heatsinks aside on an anti-static surface.

Figure 56: Removing the CPU/Heatsink Assembly



1	Heatsink	4	CPU socket on motherboard
2	Heatsink captive nuts (two on each side)	5	T-30 Torx driver
3	CPU carrier (below heatsink in this view)	-	

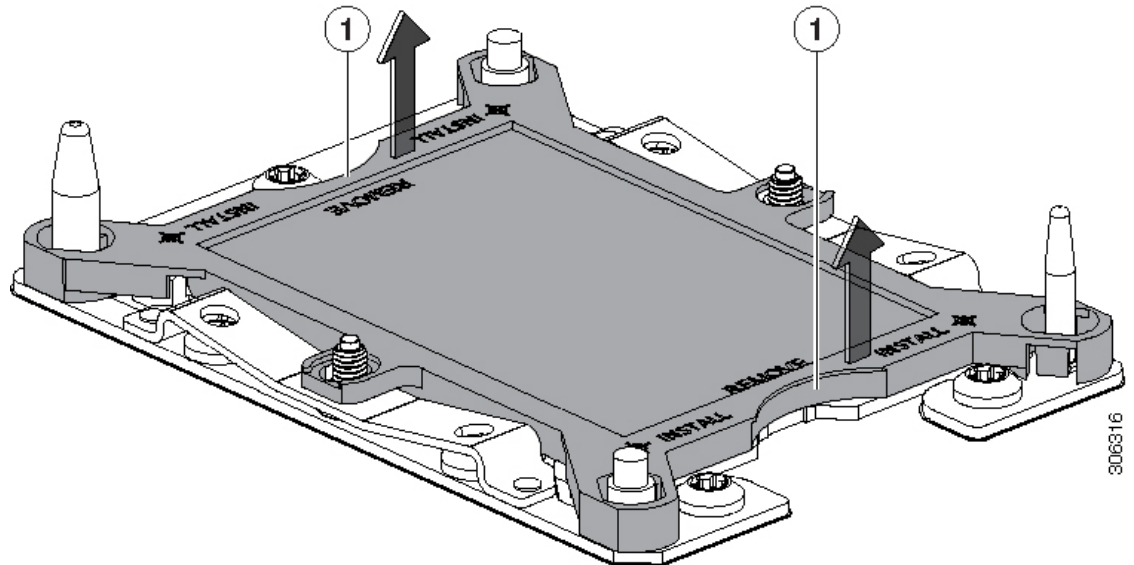
Step 2

Transfer the CPU socket covers from the new system to the system that you are returning:

- a) Remove the socket covers from the replacement system. Grasp the two recessed finger-grip areas marked "REMOVE" and lift straight up.

Note Keep a firm grasp on the finger-grip areas at both ends of the cover. Do not make contact with the CPU socket pins.

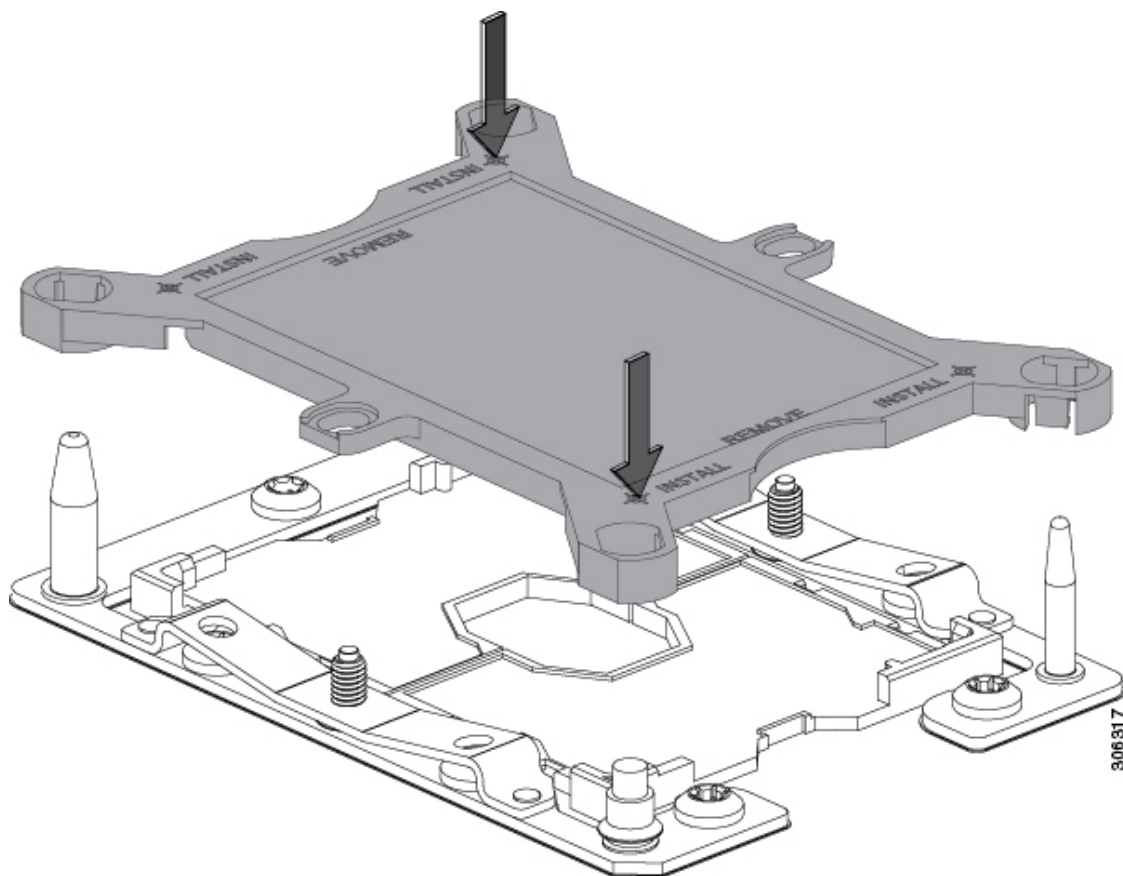
Figure 57: Removing a CPU Socket Dust Cover



1	Finger-grip areas marked "REMOVE" -	
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- b) With the wording on the dust cover facing up, set it in place over the CPU socket. Make sure that all alignment posts on the socket plate align with the cutouts on the cover.
- Caution** In the next step, do not press down anywhere on the cover except the two points described. Pressing elsewhere might damage the socket pins.
- c) Press down on the two circular markings next to the word "INSTALL" that are closest to the two threaded posts (see the following figure). Press until you feel and hear a click.
- Note** You must press until you feel and hear a click to ensure that the dust covers do not come loose during shipping.

Figure 58: Installing a CPU Socket Dust Cover



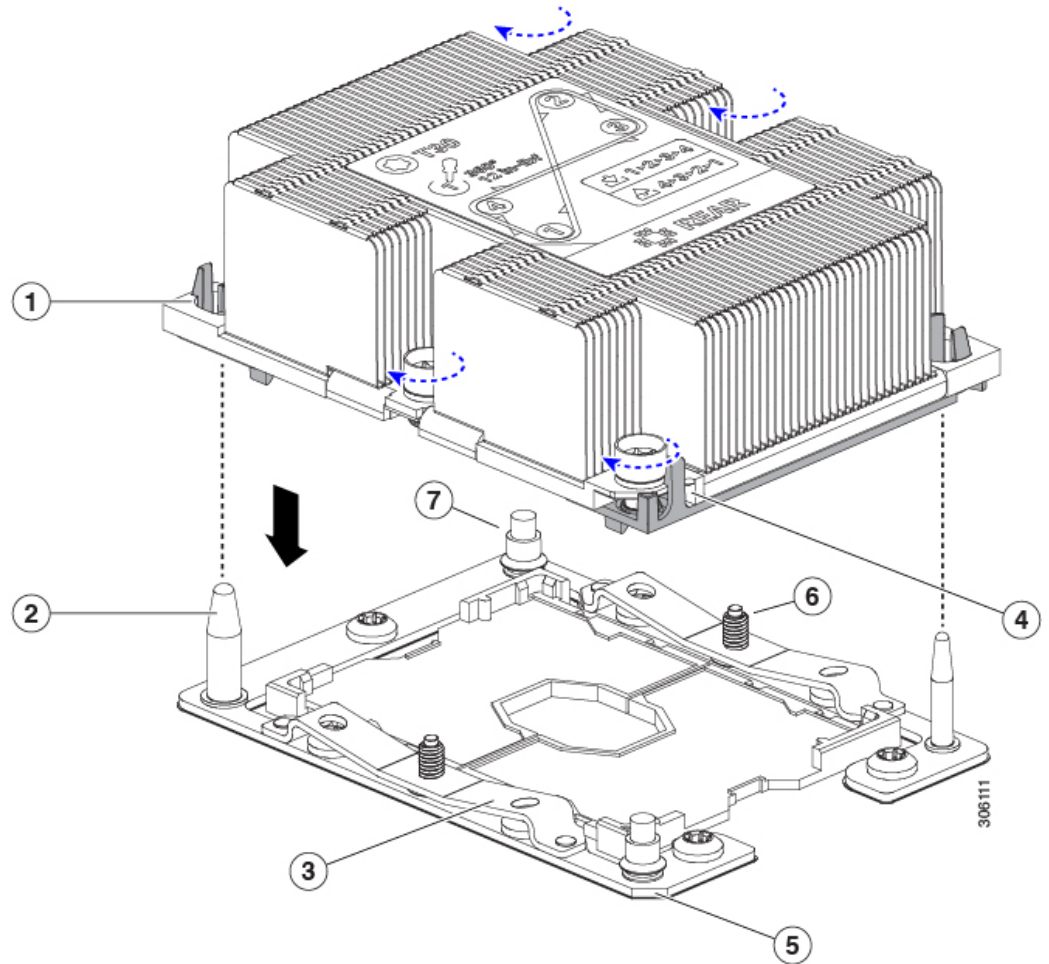
-	Press down on the two circular marks next to the word INSTALL.	-	
---	--	---	--

Step 3 Install the CPUs to the new system:

- a) On the new board, align the assembly over the CPU socket, as shown below.

Note the alignment features. The pin 1 angled corner on the heatsink must align with the pin 1 angled corner on the CPU socket. The CPU-socket posts must align with the guide-holes in the assembly.

Figure 59: Installing the Heatsink/CPU Assembly to the CPU Socket



1	Guide hole in assembly (two)	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU socket alignment post (two)	5	Angled corner on socket (pin 1 alignment feature)
3	CPU socket leaf spring	-	

- b) On the new board, set the heatsink with CPU assembly down onto the CPU socket.
- c) Use a T-30 Torx driver to tighten the four captive nuts that secure the heatsink to the board standoffs.

Note Alternate tightening the heatsink nuts evenly so that the heatsink remains level while it is lowered. Tighten the heatsink nuts in the order shown on the heatsink label: 1, 2, 3, 4. The captive nuts must be fully tightened so that the leaf springs on the CPU socket lie flat.

Replacing a Mini-Storage Module

The mini-storage module plugs into a motherboard socket to provide additional internal storage. The module is available in the following version:

- SD card carrier—provides two SD card sockets.

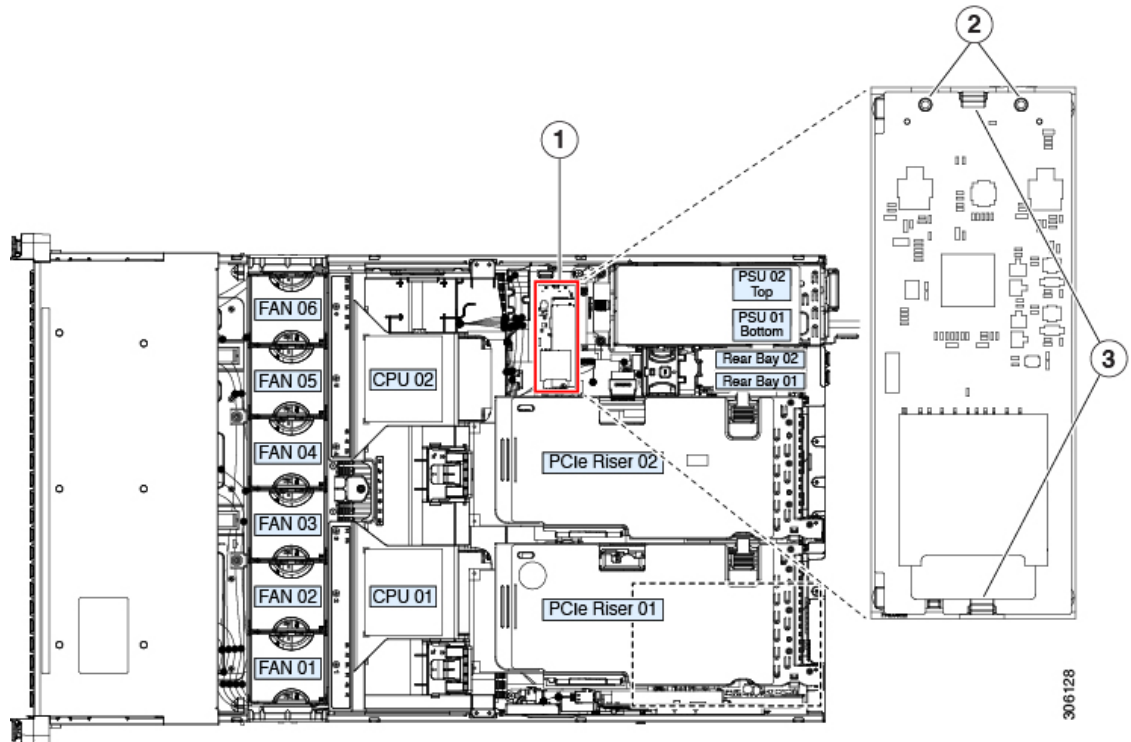
Replacing a Mini-Storage Module Carrier

This topic describes how to remove and replace a mini-storage module carrier. The carrier has one media socket on its top and one socket on its underside. Use the following procedure for any type of mini-storage module carrier (SD card or M.2 SSD).

Procedure

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
- Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Step 4** Remove a carrier from its socket:
- Locate the mini-storage module carrier in its socket just in front of power supply 1.
 - Push outward on the securing clips that holds each end of the carrier.
 - Lift both ends of the carrier to disengage it from the socket on the motherboard.
 - Set the carrier on an anti-static surface.
- Step 5** Install a carrier to its socket:
- Position carrier over socket, with the carrier's connector facing down. Two alignment pegs must match with two holes on the carrier.
 - Gently push down the socket end of the carrier so that the two pegs go through the two holes on the carrier.
 - Push down on the carrier so that the securing clips click over it at both ends.
- Step 6** Replace the top cover to the Cisco CSP 5400.
- Step 7** Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 60: Mini-Storage Module Carrier Socket



1	Location of socket on motherboard	3	Securing clips
2	Alignment pegs	-	

Replacing an SD Card in a Mini-Storage Carrier For SD

This topic describes how to remove and replace an SD card in a mini-storage carrier for SD (PID CSP-MSTOR-SD). The carrier has one SD card socket on its top and one socket on its underside.

Population Rules For Mini-Storage SD Cards

- You can use one or two SD cards in the carrier.
- Dual SD cards can be configured in a RAID 1 array through the Cisco IMC interface.
- SD socket 1 is on the top side of the carrier; SD socket 2 is on the underside of the carrier (the same side as the carrier's motherboard connector).

Procedure

- Step 1** Power off the Cisco CSP 5400 and then remove the mini-storage module carrier from the Cisco CSP 5400 as described in [Replacing a Mini-Storage Module Carrier](#), on page 138.
- Step 2** Remove an SD card:

- a) Push on the top of the SD card, and then release it to allow it to spring out from the socket.
- b) Grasp and remove the SD card from the socket.

Step 3 Install a new SD card:

- a) Insert the new SD card into the socket with its label side facing up (away from the carrier).
- b) Press on the top of the SD card until it clicks in the socket and stays in place.

Step 4 Install the mini-storage module carrier back into the Cisco CSP 5400 and then power it on as described in [Replacing a Mini-Storage Module Carrier, on page 138](#).

Replacing an Internal USB Drive

This section includes procedures for installing a USB drive and for enabling or disabling the internal USB port.

Replacing a USB Drive



Caution We do not recommend that you hot-swap the internal USB drive while the Cisco CSP 5400 is powered on because of the potential for data loss.

Procedure

Step 1 Remove an existing internal USB drive:

- a) Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
- b) Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

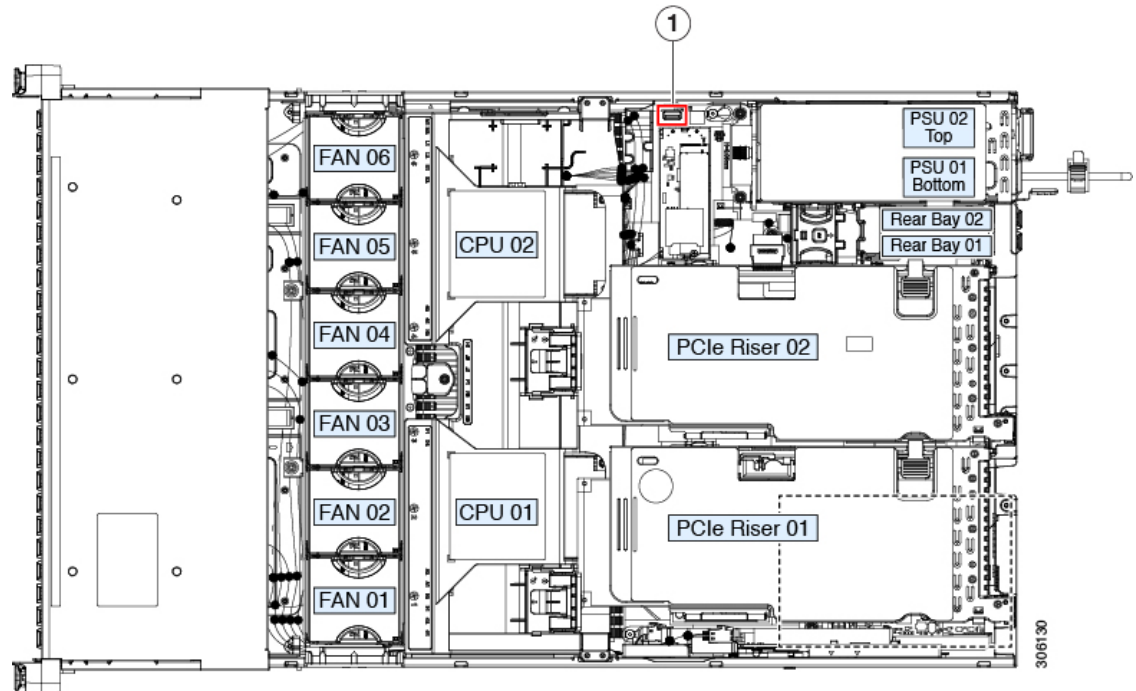
Caution If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.

- c) Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- d) Locate the USB socket on the motherboard, in front of the power supplies.
- e) Grasp the USB drive and pull it vertically to free it from the socket.

Step 2 Install a new internal USB drive:

- a) Align the USB drive with the socket.
- b) Push the USB drive vertically to fully engage it with the socket.
- c) Replace the top cover to the Cisco CSP 5400.
- d) Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 61: Location of Internal USB Port <ILLO PENDING>



1	Location of vertical USB socket on motherboard	-
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Enabling or Disabling the Internal USB Port

The factory default is that all USB ports on the Cisco CSP 5400 are enabled. However, the internal USB port can be enabled or disabled in the Cisco CSP 5400 BIOS.

Procedure

- Step 1** Enter the BIOS Setup Utility by pressing the **F2** key when prompted during bootup.
- Step 2** Navigate to the **Advanced** tab.
- Step 3** On the Advanced tab, select **USB Configuration**.
- Step 4** On the USB Configuration page, select **USB Ports Configuration**.
- Step 5** Scroll to **USB Port: Internal**, press **Enter**, and then choose either **Enabled** or **Disabled** from the dialog box.
- Step 6** Press **F10** to save and exit the utility.

Replacing the RTC Battery



Warning There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

[Statement 1015]

The real-time clock (RTC) battery retains system settings when the Cisco CSP 5400 is disconnected from power. The battery type is CR2032. Cisco supports the industry-standard CR2032 battery, which can be ordered from Cisco (PID N20-MBLIBATT) or purchased from most electronic stores.

Procedure

Step 1

Remove the RTC battery:

- a) Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
- b) Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.

Caution If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.

- c) Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- d) Remove PCIe riser 1 from the Cisco CSP 5400 to provide clearance to the RTC battery socket that is on the motherboard. See [Replacing a PCIe Riser, on page 144](#).
- e) Locate the horizontal RTC battery socket.
- f) Remove the battery from the socket on the motherboard. Gently pry the securing clip to the side to provide clearance, then lift up on the battery.

Step 2

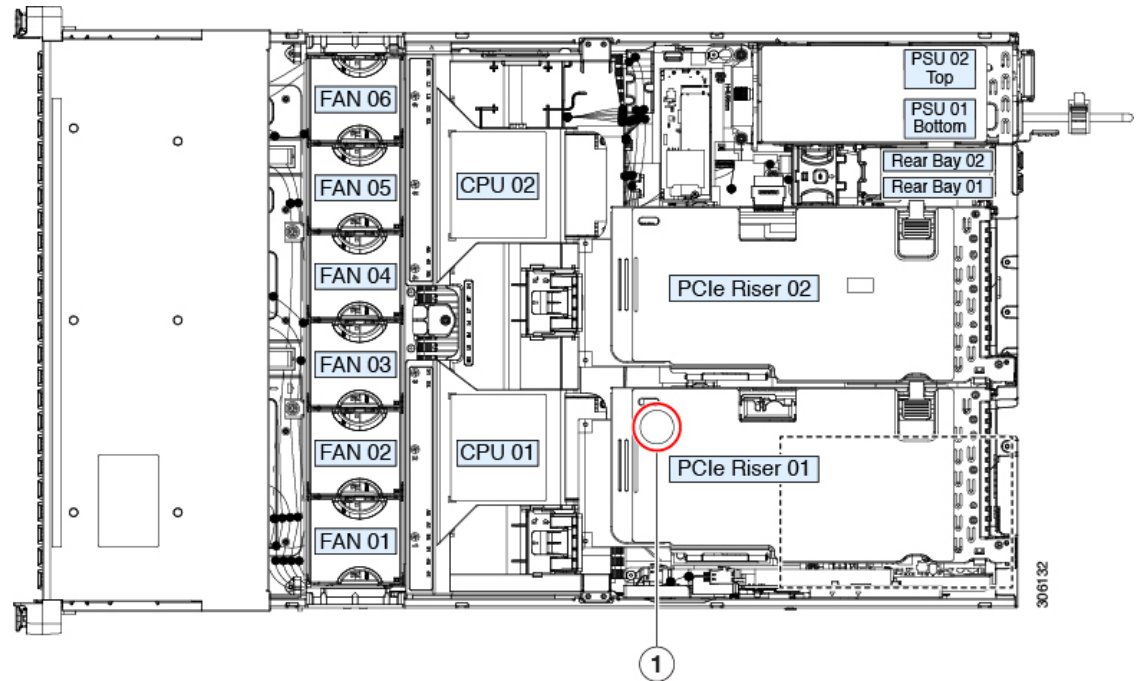
Install a new RTC battery:

- a) Insert the battery into its socket and press down until it clicks in place under the clip.

Note The positive side of the battery marked "3V+" should face up.

- b) Replace PCIe riser 1 to the Cisco CSP 5400. See [Replacing a PCIe Riser, on page 144](#).
- c) Replace the top cover to the Cisco CSP 5400.
- d) Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 62: RTC Battery Location on Motherboard



1	RTC battery in horizontal socket on motherboard	-	
---	---	---	--

Replacing Power Supplies

The Cisco CSP 5400 can have one or two power supplies. When two power supplies are installed they are redundant as 1+1.

- See also [Power Specifications, on page 164](#) for more information about the supported power supplies.
- See also [Rear-Panel LEDs, on page 108](#) for information about the power supply LEDs.

This section includes procedures for replacing AC and DC power supply units.

Replacing AC Power Supplies



Note If you have ordered a Cisco CSP 5400 with power supply redundancy (two power supplies), you do not have to power off the Cisco CSP 5400 to replace a power supply because they are redundant as 1+1.

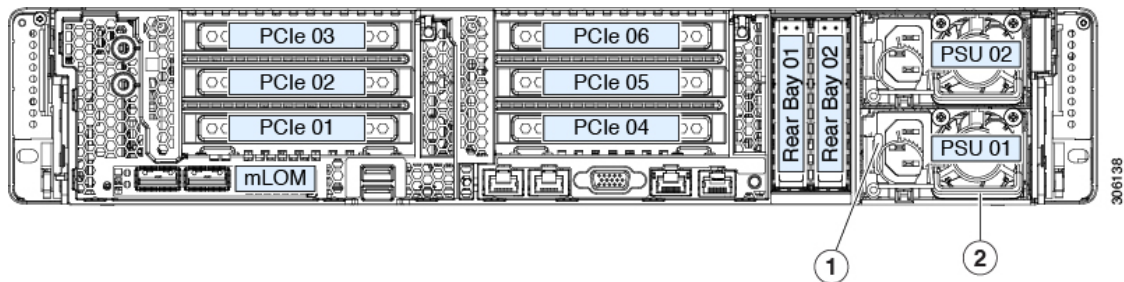


Note Do not mix power supply types or wattages in the Cisco CSP 5400. Both power supplies must be identical.

Procedure

- Step 1** Remove the power supply that you are replacing or a blank panel from an empty bay:
- Perform one of the following actions:
 - If your Cisco CSP 5400 has only one power supply, shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400](#), on page 111.
 - If your Cisco CSP 5400 has two power supplies, you do not have to shut down the Cisco CSP 5400.
 - Remove the power cord from the power supply that you are replacing.
 - Grasp the power supply handle while pinching the release lever toward the handle.
 - Pull the power supply out of the bay.
- Step 2** Install a new power supply:
- Grasp the power supply handle and insert the new power supply into the empty bay.
 - Push the power supply into the bay until the release lever locks.
 - Connect the power cord to the new power supply.
 - Only if you shut down the Cisco CSP 5400, press the Power button to boot the Cisco CSP 5400 to main power mode.

Figure 63: Replacing AC Power Supplies



1	Power supply release lever	2	Power supply handle
---	----------------------------	---	---------------------

Replacing a PCIe Riser

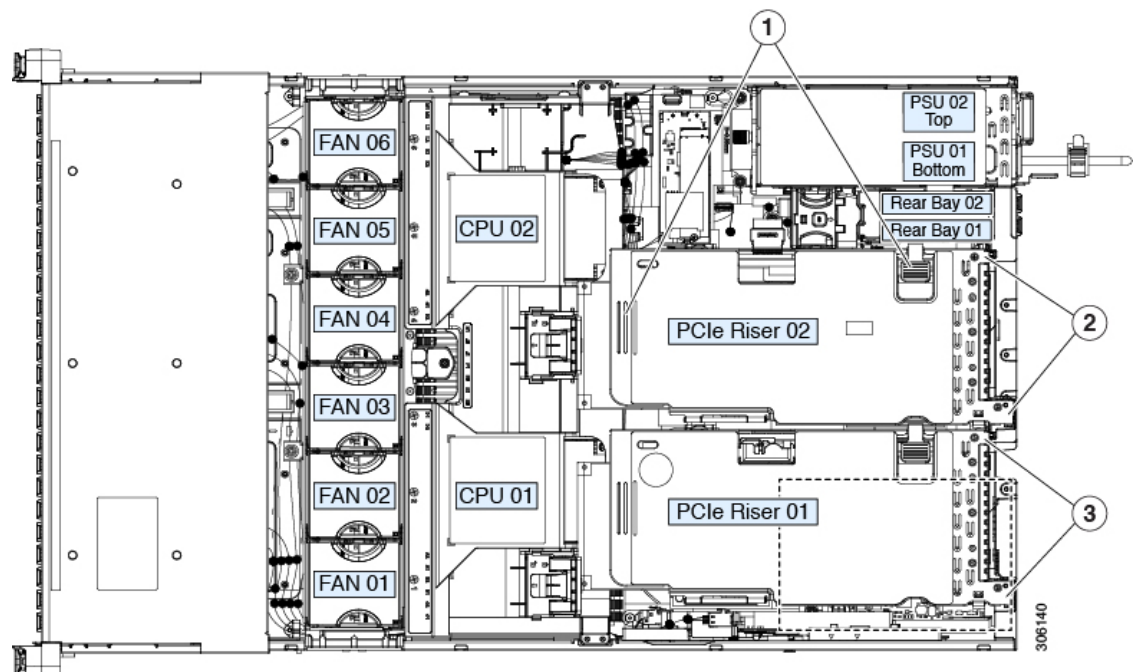
This Cisco CSP 5400 has two toolless PCIe risers for horizontal installation of PCIe cards. Each riser is available in multiple versions. See [PCIe Slot Specifications](#), on page 146 for detailed descriptions of the slots and features in each riser version.

Procedure

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400](#), on page 111.

- Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover](#), on page 114.
- Step 4** Remove the PCIe riser that you are replacing:
- Grasp the flip-up handle on the riser and the blue forward edge, and then lift up evenly to disengage its circuit board from the socket on the motherboard. Set the riser on an antistatic surface.
 - If the riser has a card installed, remove the card from the riser. See [Replacing a PCIe Card](#), on page 147.
- Step 5** Install a new PCIe riser:
- Note** The PCIe risers are not interchangeable. If you plug a PCIe riser into the wrong socket, the Cisco CSP 5400 will not boot. Riser 1 must plug into the motherboard socket labeled “RISER1.” Riser 2 must plug into the motherboard socket labeled “RISER2.”
- If you removed a card from the old PCIe riser, install the card to the new riser. See [Replacing a PCIe Card](#), on page 147.
 - Position the PCIe riser over its socket on the motherboard and over its alignment slots in the chassis.
 - Carefully push down on both ends of the PCIe riser to fully engage its circuit board connector with the socket on the motherboard.
- Step 6** Replace the top cover to the Cisco CSP 5400.
- Step 7** Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 64: PCIe Riser Alignment Features



1	Riser handling points (flip-up handle and blue forward edge)	3	Riser 1 alignment features in chassis
2	Riser 2 alignment features in chassis		

Replacing a PCIe Card



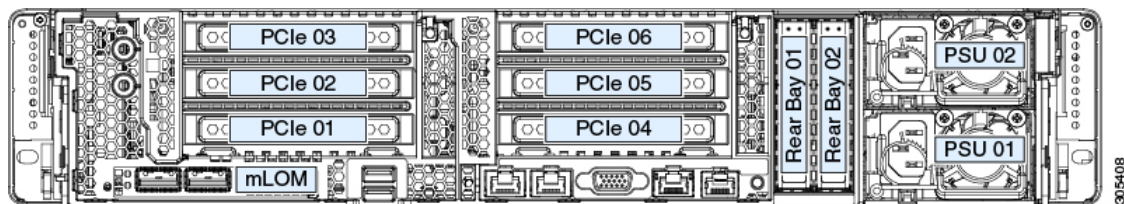
Note Cisco supports all PCIe cards qualified and sold by Cisco. PCIe cards not qualified or sold by Cisco are the responsibility of the customer. Although Cisco will always stand behind and support the C-Series rack-mount Cisco CSP 5400s, customers using standard, off-the-shelf, third-party cards must go to the third-party card vendor for support if any issue with that particular card occurs.

PCIe Slot Specifications

The Cisco CSP 5400 contains two toolless PCIe risers for horizontal installation of PCIe cards. Each riser is orderable in multiple versions.

- Riser 1 contains PCIe slots 1, 2, and 3 and is available in the following option:
 - Option 1B—Slots 1 (x8), 2 (x8), and 3 (x8). All slots are controlled by CPU 1.
- Riser 2 contains PCIe slots 4, 5 and 6 and is available in the following options:
 - Option 2A—Slots 4 (x16), 5 (x16), and 6 (x8).
 - Option 2C—With slots 4 (x8), 5 (x8), and 6 (x8); includes one PCIe cable connector for rear-loading NVMe SSDs, plus one PCIe cable connector for front-loading NVMe SSDs.

Figure 65: Rear Panel, Showing PCIe Slot Numbering



The following tables describe the specifications for the slots.

Table 14: PCIe Riser 1B (UCSC-PCI-1B-C240M5) PCIe Expansion Slots

Slot Number	Electrical Lane Width	Connector Length	Maximum Card Length	Card Height (Rear Panel Opening)	NCSI Support	Double-Wide GPU Card Support
1	Gen-3 x8	x24 connector	$\frac{3}{4}$ length	Full height	Yes ¹	No

2	Gen-3 x8	x24 connector	Full length	Full height	Yes	Yes
3	Gen-3 x8	x16 connector	Full length	Full height	No	No

¹ NCSI is supported in only one slot at a time. If a GPU card is present in slot 2, NCSI support automatically moves to slot 1.

Table 15: PCIe Riser 2A (UCSC-PCI-2A-C240M5) PCIe Expansion Slots

Slot Number	Electrical Lane Width	Connector Length	Maximum Card Length	Card Height (Rear Panel Opening)	NCSI Support	Double-Wide GPU Card Support
4	Gen-3 x16	x24 connector	¾ length	Full height	Yes ²	No
5	Gen-3 x16	x24 connector	Full length	Full height	Yes	Yes
6	Gen-3 x8	x16 connector	Full length	Full height	No	No

² NCSI is supported in only one slot at a time. If a GPU card is present in slot 5, NCSI support automatically moves to slot 4.

Replacing a PCIe Card



Note If you are installing a Cisco UCS Virtual Interface Card, there are prerequisite considerations. See [Cisco Virtual Interface Card \(VIC\) Considerations, on page 149](#).



Note RAID controller cards install into a dedicated motherboard socket. See [Replacing a SAS Storage Controller Card \(RAID\), on page 152](#).



Note For instructions on installing or replacing double-wide GPU cards, see GPU Card Installation topic.

Procedure

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
- Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Step 4** Remove the PCIe card that you are replacing:

- a) Remove any cables from the ports of the PCIe card that you are replacing.
- b) Use two hands to flip up and grasp the blue riser handle and the blue fingergrip area on the front edge of the riser, and then lift straight up.
- c) On the bottom of the riser, push the release latch that holds the securing plate, and then swing the hinged securing plate open.
- d) Open the hinged card-tab retainer that secures the rear-panel tab of the card.
- e) Pull evenly on both ends of the PCIe card to remove it from the socket on the PCIe riser.

If the riser has no card, remove the blanking panel from the rear opening of the riser.

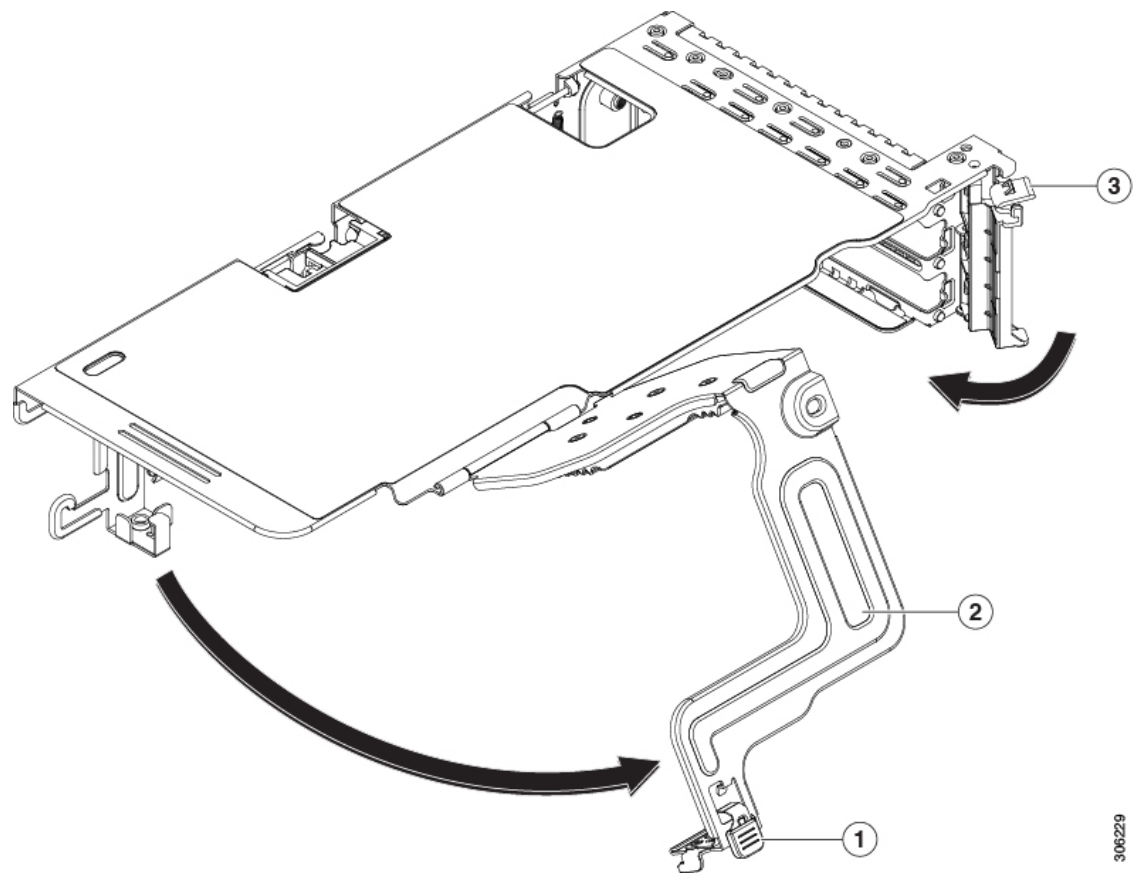
Step 5 Install a new PCIe card:

- a) With the hinged card-tab retainer open, align the new PCIe card with the empty socket on the PCIe riser.
- b) Push down evenly on both ends of the card until it is fully seated in the socket.
- c) Ensure that the card's rear panel tab sits flat against the riser rear-panel opening and then close the hinged card-tab retainer over the card's rear-panel tab.
- d) Swing the hinged securing plate closed on the bottom of the riser. Ensure that the clip on the plate clicks into the locked position.
- e) Position the PCIe riser over its socket on the motherboard and over the chassis alignment channels.
- f) Carefully push down on both ends of the PCIe riser to fully engage its connector with the sockets on the motherboard.

Step 6 Replace the top cover to the Cisco CSP 5400.

Step 7 Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 66: PCIe Riser Card Securing Mechanisms



1	Release latch on hinged securing plate	3	Hinged card-tab retainer
2	Hinged securing plate	-	

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Cisco Virtual Interface Card (VIC) Considerations

This section describes VIC card support and special considerations for this Cisco CSP 5400.



Note If you use the *Cisco Card* NIC mode, you must also make a *VIC Slot* setting that matches where your VIC is installed. The options are Riser1, Riser2, and Flex-LOM.

If you want to use the Cisco UCS VIC card for Cisco UCS Manager integration, see also the [Cisco UCS C-Series Cisco CSP 5400 Integration with Cisco UCS Manager Guides](#) for details about supported configurations, cabling, and other requirements.

Table 16: VIC Support and Considerations in This Cisco CSP 5400

VIC	How Many Supported in Cisco CSP 5400	Slots That Support VICs	Primary Slot For Cisco UCS Manager Integration	Primary Slot For Cisco Card NIC Mode	Minimum Cisco IMC Firmware
Cisco UCS VIC 1385 UCSC-PCIE-C40Q-03	2 PCIe	PCIe 2 PCIe 5	PCIe 2	PCIe 2	3.1(1)
Cisco UCS VIC 1455 UCSC-PCIE-C25Q-04	2 PCIe	PCIe 2 PCIe 5	PCIe 2	PCIe 2	4.0(1)
Cisco UCS VIC 1387 UCSC-MLOM-C40Q-03	1 mLOM	mLOM	mLOM	mLOM	3.1(1)
Cisco UCS VIC 1457 UCSC-MLOM-C25Q-04	1 mLOM	mLOM	mLOM	mLOM	4.0(1)

- A total of 3 VICs are supported in the Cisco CSP 5400: 2 PCIe style, and 1 mLOM style.



Note Single wire management is supported on only one VIC at a time. If multiple VICs are installed on a Cisco CSP 5400, only one slot has NCSI enabled at a time. For single wire management, priority goes to the MLOM slot, then slot 2, then slot 5 for NCSI management traffic. When multiple cards are installed, connect the single-wire management cables in the priority order mentioned above.

- The primary slot for a VIC card in PCIe riser 1 is slot 2. The secondary slot for a VIC card in PCIe riser 1 is slot 1.



Note The NCSI protocol is supported in only one slot at a time in each riser. If a GPU card is present in slot 2, NCSI automatically shifts from slot 2 to slot 1.

- The primary slot for a VIC card in PCIe riser 2 is slot 5. The secondary slot for a VIC card in PCIe riser 2 is slot 4.



Note The NCSI protocol is supported in only one slot at a time in each riser. If a GPU card is present in slot 5, NCSI automatically shifts from slot 5 to slot 4.



Note PCIe riser 2 is not available in a single-CPU system.

Replacing an mLOM Card

The Cisco CSP 5400 supports a modular LOM (mLOM) card to provide additional rear-panel connectivity. The mLOM socket is on the motherboard, under the storage controller card.

The mLOM socket provides a Gen-3 x16 PCIe lane. The socket remains powered when the Cisco CSP 5400 is in 12 V standby power mode and it supports the network communications services interface (NCSI) protocol.

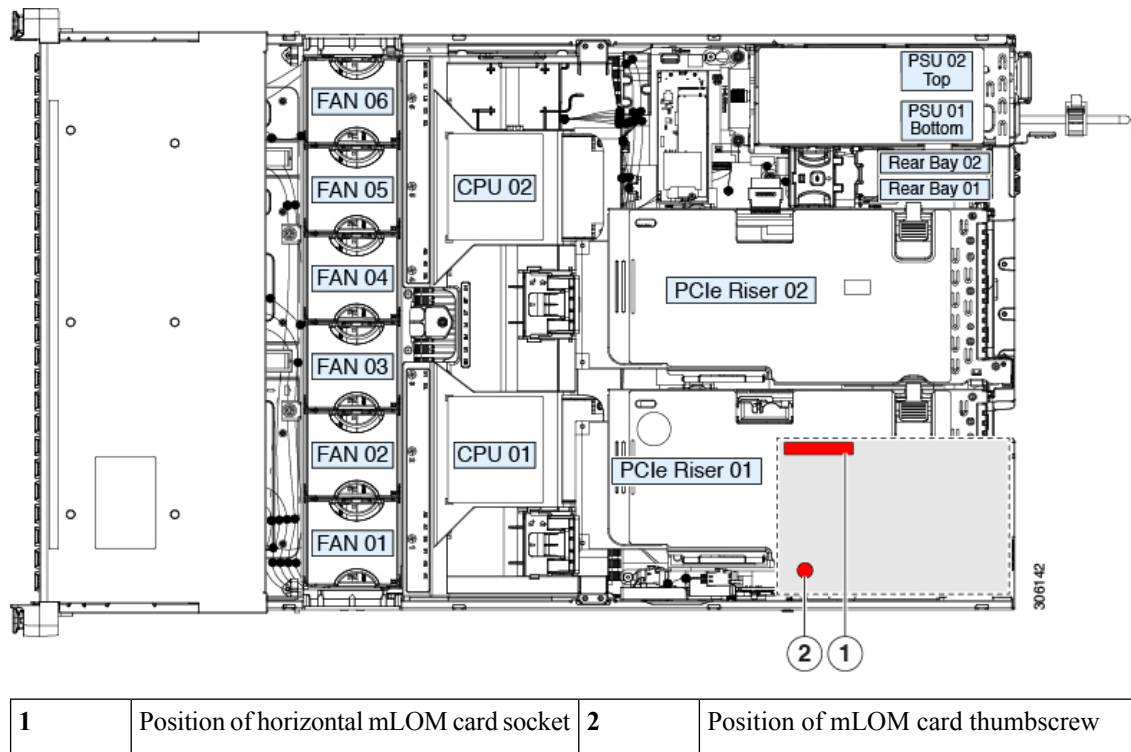


Note If your mLOM card is a Cisco UCS Virtual Interface Card (VIC), see [Cisco Virtual Interface Card \(VIC\) Considerations, on page 149](#) for more information and support details.

Procedure

- Step 1** Remove any existing mLOM card (or a blanking panel):
- Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
 - Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
Caution If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
 - Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
 - Remove any storage controller (RAID or HBA card) to provide clearance to the mLOM socket on the motherboard. See [Replacing a SAS Storage Controller Card \(RAID\), on page 152](#).
 - Loosen the single captive thumbscrew that secures the mLOM card to the threaded standoff on the chassis floor.
 - Slide the mLOM card horizontally to free it from the socket, then lift it out of the Cisco CSP 5400.
- Step 2** Install a new mLOM card:
- Set the mLOM card on the chassis floor so that its connector is aligned with the motherboard socket.
 - Push the card horizontally to fully engage the card's edge connector with the socket.
 - Tighten the captive thumbscrew to secure the card to the chassis floor.
 - Return the storage controller card to the Cisco CSP 5400. See [Replacing a SAS Storage Controller Card \(RAID\), on page 152](#).
 - Replace the top cover to the Cisco CSP 5400.
 - Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 67: Location of the mLOM Card Socket Below the Storage Controller Card



Replacing a SAS Storage Controller Card (RAID)

For hardware-based storage control, the Cisco CSP 5400 can use a Cisco modular SAS RAID controller or SAS HBA that plugs into a dedicated, vertical socket on the motherboard.

Storage Controller Card Firmware Compatibility

Firmware on the storage controller (RAID) must be verified for compatibility with the current Cisco IMC and BIOS versions that are installed on the Cisco CSP 5400. If not compatible, upgrade or downgrade the storage controller firmware using the Host Upgrade Utility (HUU) for your firmware release to bring it to a compatible level.

See the HUU guide for your Cisco IMC release for instructions on downloading and using the utility to bring Cisco CSP 5400 components to compatible levels: [HUU Guides](#).

Replacing the Supercap (RAID Backup)

This Cisco CSP 5400 supports installation of one supercap unit. The unit mounts to a bracket on the removable air baffle.

The supercap provides approximately three years of backup for the disk write-back cache DRAM in the case of a sudden power loss by offloading the cache to the NAND flash.



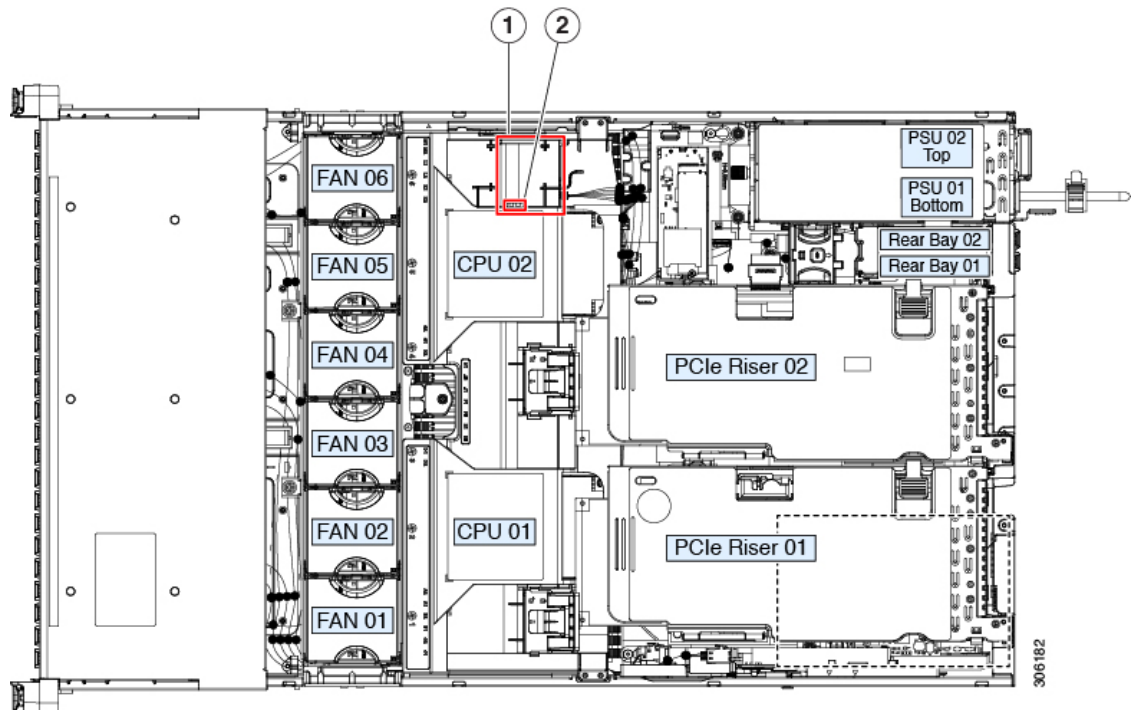
Warning There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Statement 1015

Procedure

- Step 1** Prepare the Cisco CSP 5400 for component installation:
- Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
 - Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
Caution If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
 - Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Step 2** Remove an existing supercap:
- Disconnect the supercap cable from the existing supercap.
 - Push aside the securing tab that holds the supercap to its bracket on the air baffle.
 - Lift the supercap free of the bracket and set it aside.
- Step 3** Install a new supercap:
- Set the new supercap into the mounting bracket.
 - Push aside the black plastic tab on the air baffle and set the supercap into the bracket. Relax the tab so that it closes over the top edge of the supercap.
 - Connect the supercap cable from the RAID controller card to the connector on the supercap cable.
- Step 4** Replace the top cover to the Cisco CSP 5400.
- Step 5** Replace the Cisco CSP 5400 in the rack, replace cables, and then fully power on the Cisco CSP 5400 by pressing the Power button.

Figure 68: Supercap Bracket on Air Baffle



1	Supercap bracket on removeable air baffle	2	Securing tab
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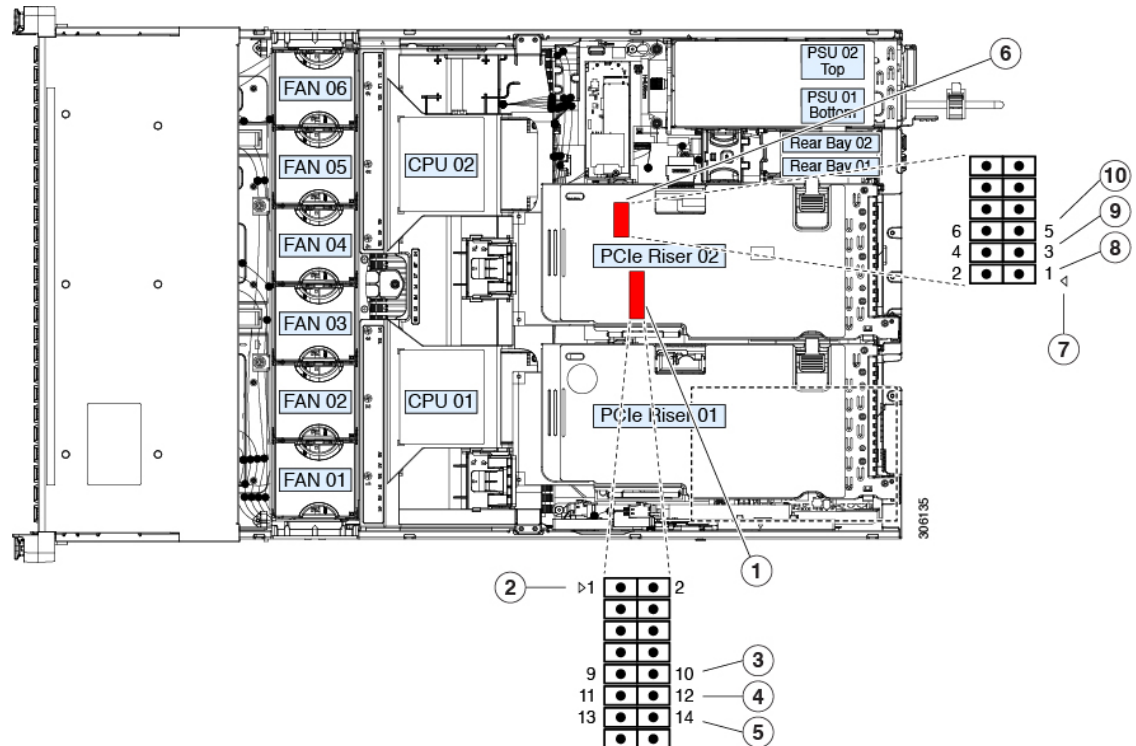
Service Headers and Jumpers

This Cisco CSP 5400 includes two blocks of headers (J38, J39) that you can jumper for certain service and debug functions.

This section contains the following topics:

- [Using the Clear CMOS Header \(J38, Pins 9 - 10\), on page 155](#)
- [Using the BIOS Recovery Header \(J38, Pins 11 - 12\), on page 156](#)
- [Using the Clear Password Header \(J38, Pins 13 - 14\), on page 158](#)
- [Using the Boot Alternate Cisco IMC Image Header \(J39, Pins 1 - 2\), on page 159](#)
- [Using the Reset Cisco IMC Password to Default Header \(J39, Pins 3 - 4\), on page 160](#)
- [Using the Reset Cisco IMC to Defaults Header \(J39, Pins 5 - 6\), on page 161](#)

Figure 69: Location of Service Header Blocks J38 and J39



1	Location of header block J38	6	Location of header block J39
2	J38 pin 1 arrow printed on motherboard	7	J39 pin 1 arrow printed on motherboard
3	Clear CMOS: J38 pins 9 - 10	8	Boot Cisco IMC from alternate image: J39 pins 1 - 2
4	Recover BIOS: J38 pins 11 - 12	9	Reset Cisco IMC password to default: J39 pins 3 - 4
5	Clear password: J38 pins 13 - 14	10	Reset Cisco IMC to defaults: J39 pins 5 - 6

Using the Clear CMOS Header (J38, Pins 9 - 10)

You can use this switch to clear the Cisco CSP 5400's CMOS settings in the case of a system hang. For example, if the Cisco CSP 5400 hangs because of incorrect settings and does not boot, use this jumper to invalidate the settings and reboot with defaults.



Caution

Clearing the CMOS removes any customized settings and might result in data loss. Make a note of any necessary customized settings in the BIOS before you use this clear CMOS procedure.

Procedure

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#).
- Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Step 4** Install a two-pin jumper across J38 pins 9 and 10.
- Step 5** Reinstall the top cover and reconnect AC power cords to the Cisco CSP 5400. The Cisco CSP 5400 powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 6** Return the Cisco CSP 5400 to main power mode by pressing the Power button on the front panel. The Cisco CSP 5400 is in main power mode when the Power LED is green.
- Note** You must allow the entire Cisco CSP 5400 to reboot to main power mode to complete the reset. The state of the jumper cannot be determined without the host CPU running.
- Step 7** Press the Power button to shut down the Cisco CSP 5400 to standby power mode, and then remove AC power cords from the Cisco CSP 5400 to remove all power.
- Step 8** Remove the top cover from the Cisco CSP 5400.
- Step 9** Remove the jumper that you installed.
- Note** If you do not remove the jumper, the CMOS settings are reset to the defaults every time you power-cycle the Cisco CSP 5400.
- Step 10** Replace the top cover, replace the Cisco CSP 5400 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5400 by pressing the Power button.
-

Using the BIOS Recovery Header (J38, Pins 11 - 12)

Depending on which stage the BIOS becomes corrupted, you might see different behavior.

- If the BIOS BootBlock is corrupted, you might see the system get stuck on the following message:

```
Initializing and configuring memory/hardware
```

- If it is a non-BootBlock corruption, a message similar to the following is displayed:

```
****BIOS FLASH IMAGE CORRUPTED****
Flash a valid BIOS capsule file using Cisco IMC WebGUI or CLI interface.
IF Cisco IMC INTERFACE IS NOT AVAILABLE, FOLLOW THE STEPS MENTIONED BELOW.
1. Connect the USB stick with bios.cap file in root folder.
2. Reset the host.
IF THESE STEPS DO NOT RECOVER THE BIOS
1. Power off the system.
2. Mount recovery jumper.
3. Connect the USB stick with bios.cap file in root folder.
4. Power on the system.
Wait for a few seconds if already plugged in the USB stick.
REFER TO SYSTEM MANUAL FOR ANY ISSUES.
```




Note As indicated by the message shown above, there are two procedures for recovering the BIOS. Try procedure 1 first. If that procedure does not recover the BIOS, use procedure 2.

Procedure 1: Reboot With bios.cap Recovery File

Procedure

-
- Step 1** Download the BIOS update package and extract it to a temporary location.
- Step 2** Copy the contents of the extracted recovery folder to the root directory of a USB drive. The recovery folder contains the bios.cap file that is required in this procedure.
- Note** The bios.cap file must be in the root directory of the USB drive. Do not rename this file. The USB drive must be formatted with either the FAT16 or FAT32 file system.
- Step 3** Insert the USB drive into a USB port on the Cisco CSP 5400.
- Step 4** Reboot the Cisco CSP 5400.
- Step 5** Return the Cisco CSP 5400 to main power mode by pressing the Power button on the front panel.
- The Cisco CSP 5400 boots with the updated BIOS boot block. When the BIOS detects a valid bios.cap file on the USB drive, it displays this message:
- ```
Found a valid recovery file...Transferring to Cisco IMC
System would flash the BIOS image now...
System would restart with recovered image after a few seconds...
```
- Step 6** Wait for Cisco CSP 5400 to complete the BIOS update, and then remove the USB drive from the Cisco CSP 5400.
- Note** During the BIOS update, Cisco IMC shuts down the Cisco CSP 5400 and the screen goes blank for about 10 minutes. Do not unplug the power cords during this update. Cisco IMC powers on the Cisco CSP 5400 after the update is complete.
- 

## Procedure 2: Use BIOS Recovery Header and bios.cap File

### Procedure

- 
- Step 1** Download the BIOS update package and extract it to a temporary location.
- Step 2** Copy the contents of the extracted recovery folder to the root directory of a USB drive. The recovery folder contains the bios.cap file that is required in this procedure.
- Note** The bios.cap file must be in the root directory of the USB drive. Do not rename this file. The USB drive must be formatted with either the FAT16 or FAT32 file system.
- Step 3** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#). Disconnect power cords from all power supplies.

- Step 4** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 5** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Step 6** Install a two-pin jumper across J38 pins 11 and 12.
- Step 7** Reconnect AC power cords to the Cisco CSP 5400. The Cisco CSP 5400 powers up to standby power mode.
- Step 8** Insert the USB thumb drive that you prepared in Step 2 into a USB port on the Cisco CSP 5400.
- Step 9** Return the Cisco CSP 5400 to main power mode by pressing the Power button on the front panel.
- The Cisco CSP 5400 boots with the updated BIOS boot block. When the BIOS detects a valid bios.cap file on the USB drive, it displays this message:
- ```
Found a valid recovery file...Transferring to Cisco IMC
System would flash the BIOS image now...
System would restart with recovered image after a few seconds...
```
- Step 10** Wait for Cisco CSP 5400 to complete the BIOS update, and then remove the USB drive from the Cisco CSP 5400.
- Note** During the BIOS update, Cisco IMC shuts down the Cisco CSP 5400 and the screen goes blank for about 10 minutes. Do not unplug the power cords during this update. Cisco IMC powers on the Cisco CSP 5400 after the update is complete.
- Step 11** After the Cisco CSP 5400 has fully booted, power off the Cisco CSP 5400 again and disconnect all power cords.
- Step 12** Remove the jumper that you installed.
- Note** If you do not remove the jumper, after recovery completion you see the prompt, “Please remove the recovery jumper.”
- Step 13** Replace the top cover, replace the Cisco CSP 5400 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5400 by pressing the Power button.

Using the Clear Password Header (J38, Pins 13 - 14)

You can use this switch to clear the administrator password.

Procedure

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#). Disconnect power cords from all power supplies.
- Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).

- Step 4** Install a two-pin jumper across J38 pins 13 and 14.
- Step 5** Reinstall the top cover and reconnect AC power cords to the Cisco CSP 5400. The Cisco CSP 5400 powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 6** Return the Cisco CSP 5400 to main power mode by pressing the Power button on the front panel. The Cisco CSP 5400 is in main power mode when the Power LED is green.
- Note** You must allow the entire Cisco CSP 5400 to reboot to main power mode to complete the reset. The state of the jumper cannot be determined without the host CPU running.
- Step 7** Press the Power button to shut down the Cisco CSP 5400 to standby power mode, and then remove AC power cords from the Cisco CSP 5400 to remove all power.
- Step 8** Remove the top cover from the Cisco CSP 5400.
- Step 9** Remove the jumper that you installed.
- Note** If you do not remove the jumper, the password is cleared every time you power-cycle the Cisco CSP 5400.
- Step 10** Replace the top cover, replace the Cisco CSP 5400 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5400 by pressing the Power button.
-

Using the Boot Alternate Cisco IMC Image Header (J39, Pins 1 - 2)

You can use this Cisco IMC debug header to force the system to boot from an alternate Cisco IMC image.

Procedure

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#). Disconnect power cords from all power supplies.
- Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Step 4** Install a two-pin jumper across J39 pins 1 and 2.
- Step 5** Reinstall the top cover and reconnect AC power cords to the Cisco CSP 5400. The Cisco CSP 5400 powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 6** Return the Cisco CSP 5400 to main power mode by pressing the Power button on the front panel. The Cisco CSP 5400 is in main power mode when the Power LED is green.
- Note** When you next log in to Cisco IMC, you see a message similar to the following:
- ```
'Boot from alternate image' debug functionality is enabled.
CIMC will boot from alternate image on next reboot or input power cycle.
```
- Note** If you do not remove the jumper, the Cisco CSP 5400 will boot from an alternate Cisco IMC image every time that you power cycle the Cisco CSP 5400 or reboot Cisco IMC.

- Step 7** To remove the jumper, press the Power button to shut down the Cisco CSP 5400 to standby power mode, and then remove AC power cords from the Cisco CSP 5400 to remove all power.
  - Step 8** Remove the top cover from the Cisco CSP 5400.
  - Step 9** Remove the jumper that you installed.
  - Step 10** Replace the top cover, replace the Cisco CSP 5400 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5400 by pressing the Power button.
- 

## Using the Reset Cisco IMC Password to Default Header (J39, Pins 3 - 4)

You can use this Cisco IMC debug header to force the Cisco IMC password back to the default.

### Procedure

---

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#). Disconnect power cords from all power supplies.
  - Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
    - Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
  - Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
  - Step 4** Install a two-pin jumper across J39 pins 3 and 4.
  - Step 5** Reinstall the top cover and reconnect AC power cords to the Cisco CSP 5400. The Cisco CSP 5400 powers up to standby power mode, indicated when the Power LED on the front panel is amber.
  - Step 6** Return the Cisco CSP 5400 to main power mode by pressing the Power button on the front panel. The Cisco CSP 5400 is in main power mode when the Power LED is green.
    - Note** When you next log in to Cisco IMC, you see a message similar to the following:
 

```
'Reset to default CIMC password' debug functionality is enabled.
On input power cycle, CIMC password will be reset to defaults.
```
    - Note** If you do not remove the jumper, the Cisco CSP 5400 will reset the Cisco IMC password to the default every time that you power cycle the Cisco CSP 5400. The jumper has no effect if you reboot Cisco IMC.
  - Step 7** To remove the jumper, press the Power button to shut down the Cisco CSP 5400 to standby power mode, and then remove AC power cords from the Cisco CSP 5400 to remove all power.
  - Step 8** Remove the top cover from the Cisco CSP 5400.
  - Step 9** Remove the jumper that you installed.
  - Step 10** Replace the top cover, replace the Cisco CSP 5400 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5400 by pressing the Power button.
-

## Using the Reset Cisco IMC to Defaults Header (J39, Pins 5 - 6)

You can use this Cisco IMC debug header to force the Cisco IMC settings back to the defaults.

### Procedure

---

- Step 1** Shut down and remove power from the Cisco CSP 5400 as described in [Shutting Down and Removing Power From the Cisco CSP 5400, on page 111](#). Disconnect power cords from all power supplies.
- Step 2** Slide the Cisco CSP 5400 out the front of the rack far enough so that you can remove the top cover. You might have to detach cables from the rear panel to provide clearance.
- Caution** If you cannot safely view and access the component, remove the Cisco CSP 5400 from the rack.
- Step 3** Remove the top cover from the Cisco CSP 5400 as described in [Removing the Cisco CSP 5400 Top Cover, on page 114](#).
- Step 4** Install a two-pin jumper across J39 pins 5 and 6.
- Step 5** Reinstall the top cover and reconnect AC power cords to the Cisco CSP 5400. The Cisco CSP 5400 powers up to standby power mode, indicated when the Power LED on the front panel is amber.
- Step 6** Return the Cisco CSP 5400 to main power mode by pressing the Power button on the front panel. The Cisco CSP 5400 is in main power mode when the Power LED is green.
- Note** When you next log in to Cisco IMC, you see a message similar to the following:
- ```
'CIMC reset to factory defaults' debug functionality is enabled.  
On input power cycle, CIMC will be reset to factory defaults.
```
- Note** If you do not remove the jumper, the Cisco CSP 5400 will reset the Cisco IMC to the default settings every time that you power cycle the Cisco CSP 5400. The jumper has no effect if you reboot Cisco IMC.
- Step 7** To remove the jumper, press the Power button to shut down the Cisco CSP 5400 to standby power mode, and then remove AC power cords from the Cisco CSP 5400 to remove all power.
- Step 8** Remove the top cover from the Cisco CSP 5400.
- Step 9** Remove the jumper that you installed.
- Step 10** Replace the top cover, replace the Cisco CSP 5400 in the rack, replace power cords and any other cables, and then power on the Cisco CSP 5400 by pressing the Power button.
-



CHAPTER 9

Server Specifications

- [Cisco CSP 5400 Specifications, on page 163](#)
- [Power Cord Specifications, on page 165](#)

Cisco CSP 5400 Specifications

This appendix lists the physical, environmental, and power specifications for the Cisco CSP 5400.

- [Physical Specifications, on page 163](#)
- [Environmental Specifications, on page 163](#)
- [Power Specifications, on page 164](#)

Physical Specifications

The following table lists the physical specifications for the Cisco CSP 5400 versions.

Table 17: Physical Specifications

Description	Specification
Height	3.4 in. (86.4 mm)
Width	16.9 in. (429.0 mm)
Depth (length)	Cisco CSP 5400 only: 29.5 in. (740.3 mm) Cisco CSP 5400 with slide rail: 31.0 in (787.4 mm)
Maximum weight (fully loaded chassis)	SFF 8-drive: 45.5 lb. (20.6 Kg) SFF 24-drive: 57.5 lb. (26.1 Kg)

Environmental Specifications

The following table lists the environmental requirements and specifications for the Cisco CSP 5400.

Table 18: Physical Specifications

Description	Specification
Temperature, Operating	41 to 95°F (5 to 35°C) Derate the maximum temperature by 1°C per every 305 meters of altitude above sea level.
Temperature, non-operating (when the Cisco CSP 5400 is stored or transported)	–40 to 149°F (–40 to 65°C)
Humidity (RH), operating	10 to 90%
Humidity (RH), non-operating (when the Cisco CSP 5400 is stored or transported)	5 to 93%
Altitude, operating	0 to 10,000 feet
Altitude, non-operating (when the Cisco CSP 5400 is stored or transported)	0 to 40,000 feet
Sound power level Measure A-weighted per ISO7779 LwAd (Bels) Operation at 73°F (23°C)	5.5
Sound pressure level Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C)	40

Power Specifications



Note Do not mix power supply types or wattages in the Cisco CSP 5400. Both power supplies must be identical.

You can get more specific power information for your exact Cisco CSP 5400 configuration by using the Cisco UCS Power Calculator:

<http://ucspowercalc.cisco.com>

The power specifications for the supported power supply options are listed in the following sections.

1050 W AC Power Supply

This section lists the specifications for each 1050 W AC power supply (Cisco part number CSP-PSU1-1050W).

Table 19: 1050 W AC Specifications

Description	Specification
AC Input Voltage	Nominal range: 100–120 VAC, 200–240 VAC (Range: 90–132 VAC, 180–264 VAC)
AC Input Frequency	Nominal range: 50 to 60Hz (Range: 47–63 Hz)
Maximum AC Input current	12.5 A at 100 VAC 6.0 A at 208 VAC
Maximum input volt-amperes	1250 VA at 100 VAC
Maximum inrush current	15 A (sub-cycle duration)
Maximum hold-up time	12 ms at 1050 W
Maximum output power per PSU	800 W at 100–120 VAC 1050 W at 200–240 VAC
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	Climate Savers Platinum Efficiency (80Plus Platinum certified)
Form factor	RSP2
Input connector	IEC320 C14

Power Cord Specifications

Each power supply in the Cisco CSP 5400 has a power cord. Standard power cords or jumper power cords are available for connection to the Cisco CSP 5400. The shorter jumper power cords, for use in racks, are available as an optional alternative to the standard power cords.



Note Only the approved power cords or jumper power cords listed below are supported.

Table 20: Supported Power Cords

Description	Length (Feet)	Length (Meters)

CAB-48DC-40A-8AWG DC power cord, -48 VDC, 40 A, 8 AWG Three-socket Mini-Fit connector to three-wire	11.7	3.5
CAB-C13-C14-AC AC power cord, 10 A; C13 to C14, recessed receptacle	9.8	3.0
CAB-250V-10A-AR AC power cord, 250 V, 10 A Argentina	8.2	2.5
CAB-C13-C14-2M-JP AC Power Cord, C13 to C14 Japan PSE Mark	6.6	2.0
CAB-9K10A-EU AC Power Cord, 250 V, 10 A; CEE 7/7 Plug Europe	8.2	2.5
CAB-250V-10A-IS AC Power Cord, 250 V, 10 A Israel	8.2	2.5
CAB-250V-10A-CN AC power cord, 250 V, 10 A PR China	8.2	2.5
CAB-ACTW AC power cord, 250 V, 10 A Taiwan	7.5	2.3
CAB-C13-CBN AC cabinet jumper power cord, 250, 10 A, C13 to C14	2.2	0.68
CAB-C13-C14-2M AC cabinet jumper power cord, 250 V, 10 A, C13 to C14	6.6	2.0
CAB-9K10A-AU AC power cord, 250 V, 10 A, 3112 plug, Australia	8.2	2.5

CAB-N5K6A-NA AC power cord, 200/240 V, 6 A, North America	8.2	2.5
CAB-250V-10A-ID AC power Cord, 250 V, 10 A, India	8.2	2.5
CAB-9K10A-SW AC power cord, 250 V, 10 A, MP232 plug Switzerland	8.2	2.5
CAB-250V-10A-BR AC power Cord, 250 V, 10 A Brazil	8.2	2.5
CAB-9K10A-UK AC power cord, 250 V, 10 A (13 A fuse), BS1363 plug United Kingdom	8.2	2.5
CAB-9K12A-NA AC power cord, 125 V, 13 A, NEMA 5-15 plug North America	8.2	2.5
CAB-AC-L620-C13 AC power cord, NEMA L6-20 to C13 connectors	6.6	2.0
CAB-9K10A-IT AC power cord, 250 V, 10 A, CEI 23-16/VII plug Italy	8.2	2.5
R2XX-DMYMPWRCORD No power cord; PID option for ordering Cisco CSP 5400 with no power cord	NA	NA



CHAPTER 10

Storage Controller Considerations

This chapter provides storage controller (RAID and HBA) information.

- [Supported Storage Controllers and Cables, on page 169](#)
- [Storage Controller Card Firmware Compatibility, on page 169](#)
- [RAID Backup \(Supercap\), on page 170](#)
- [Write-Cache Policy for Cisco 12G SAS Modular RAID Controllers, on page 170](#)
- [Storage Controller Cable Connectors and Backplanes, on page 170](#)

Supported Storage Controllers and Cables

This Cisco CSP 5400 supports a single, PCIe-style controller that plugs into a dedicated internal socket.

This Cisco CSP 5400 supports the RAID controller option and cable requirements shown in the following table.

Controller	Cisco CSP 5400 Version/Maximum Drives Controlled	RAID Levels	Optional Supercap Backup?	Required Cables
Cisco 12G Modular RAID Controller CSP-RAID-M5HD	This controller is supported only in the following Cisco CSP 5400 version: <ul style="list-style-type: none">• SFF 24-drives: 24 front-loading, SAS/SATA drives	10	Yes	Use SAS/SATA cable included with chassis to connect controller to drive backplanes.

Storage Controller Card Firmware Compatibility

Firmware on the storage controller (RAID) must be verified for compatibility with the current Cisco IMC and BIOS versions that are installed on the Cisco CSP 5400. If not compatible, upgrade or downgrade the storage controller firmware using the Host Upgrade Utility (HUU) for your firmware release to bring it to a compatible level.

See the HUU guide for your Cisco IMC release for instructions on downloading and using the utility to bring Cisco CSP 5400 components to compatible levels: [HUU Guides](#).

RAID Backup (Supercap)

This Cisco CSP 5400 supports installation of one supercap unit. The unit mounts to a bracket in-line with the fan modules.

The optional SCPM provides approximately three years of backup for the disk write-back cache DRAM in the case of a sudden power loss by offloading the cache to the NAND flash.

For supercap unit replacement instructions, see [Replacing the Supercap \(RAID Backup\)](#), on page 152.

Write-Cache Policy for Cisco 12G SAS Modular RAID Controllers

For this Cisco CSP 5400 and other Cisco Generation M5 Cisco CSP 5400s, the default write-cache policy for the Cisco Modular RAID controllers is *Write Through* (irrespective of the presence of a charged supercap or “good BBU”). This utilizes the optimal performance characteristics of the controller.

The write policy can be set to *Write Back*, if preferred. You can set the write policy using the following methods:

- Use the Cisco IMC interface to set Virtual Drive Properties > Write Policy. See the “Managing Storage Adapters” section in your Cisco IMC Configuration Guide.

[Cisco IMC GUI and CLI Configuration Guides](#)

Storage Controller Cable Connectors and Backplanes

This section describes cabling for the storage controllers and backplanes. The SAS/SATA cables are factory-installed and are used for all supported internal controllers.

This section also contains diagrams that show the cable-to-drive mapping.

Cisco 12G Modular SAS RAID Controller (CSP-RAID-M5HD)

This controller is supported only in this Cisco CSP 5400 version:

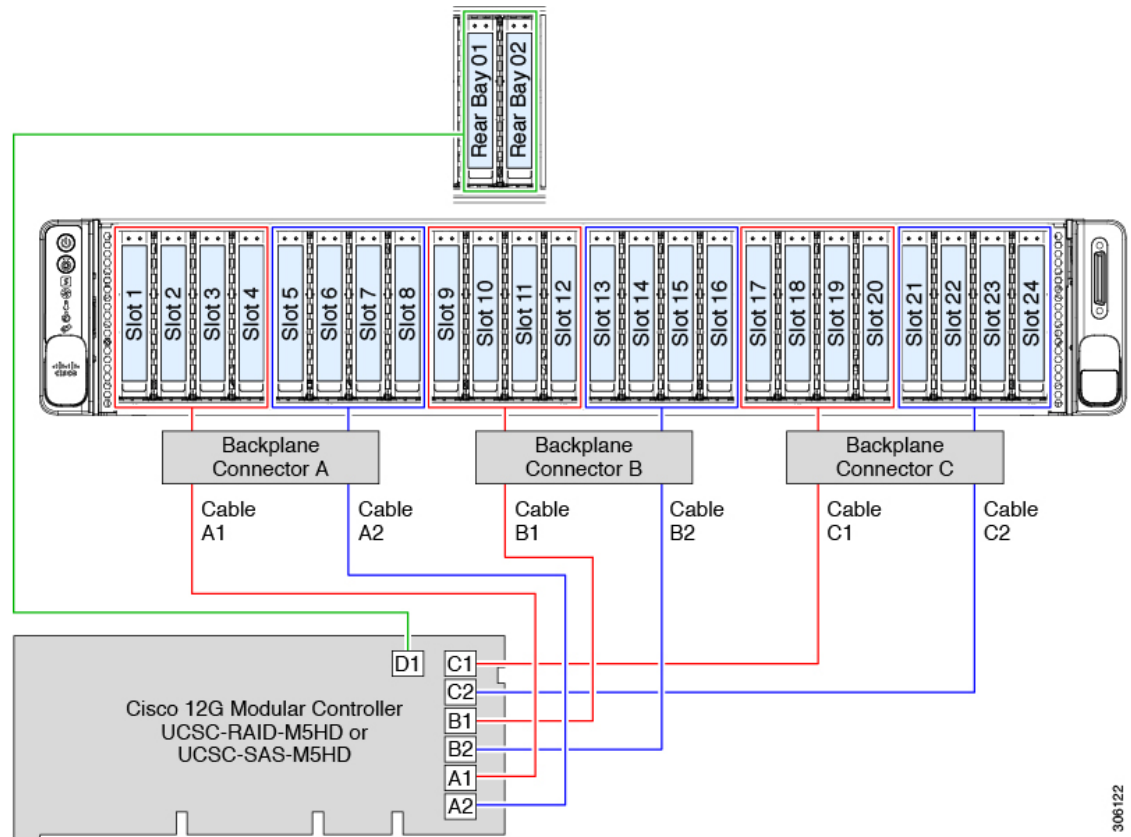
- SFF 24-Drives

This HW RAID option can control up to 24 front-loading SAS/SATA drives in this Cisco CSP 5400 version, plus 2 rear-loading SAS/SATA drives.

1. Connect SAS/SATA cable A double-connectors A1 and A2 to the A1 and A2 connectors on the controller card.
2. Connect SAS/SATA cable A, single connector CONN-A to the CONN-A backplane connector.
3. Connect SAS/SATA cable B double-connectors B1 and B2 to the B1 and B2 connectors on the controller card.
4. Connect SAS/SATA cable B, single connector CONN-B to the CONN-B backplane connector.
5. Connect SAS/SATA cable C double-connectors C1 and C2 to the C1 and C2 connectors on the controller card.

6. Connect SAS/SATA cable C, single connector CONN-C to the CONN-C backplane connector.
7. Optional for rear drives: Connect SAS/SATA cable D from the D1 card connector (on the reverse side of the card) to the rear backplane connector.

Figure 70: SFF, 24-Drive CSP 5400 Cabling With CSP-RAID-M5HD



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