Maintaining Cisco CSP 5200

Status LEDs and Buttons

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

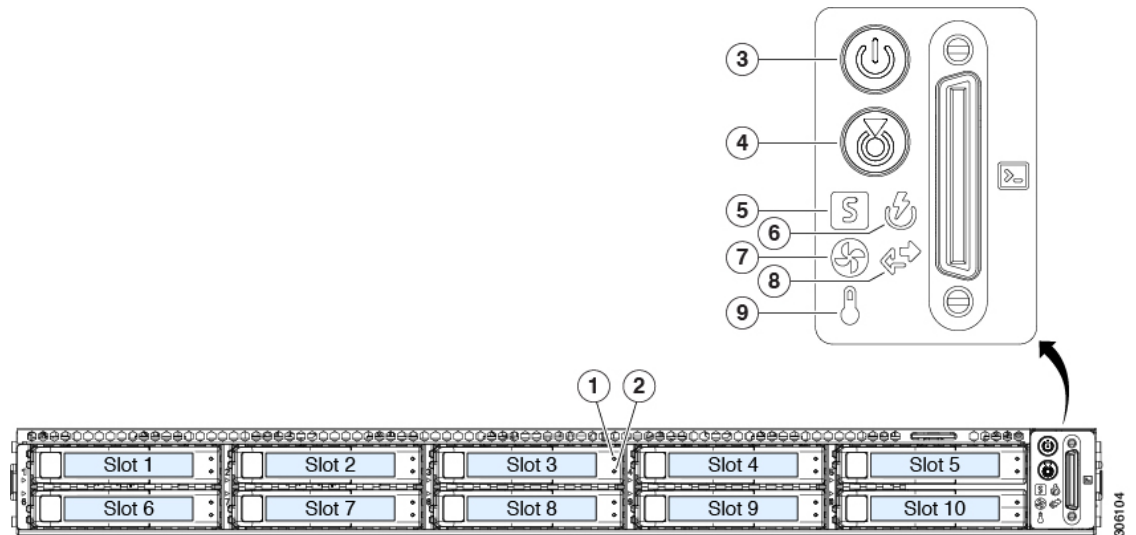### Front-Panel LEDs

Figure 1: Front Panel LEDs

Table 1: Front Panel LEDs, Definition of States

	LED Name	States

1 SAS	SAS/SATA drive fault	• 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	• 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	• 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	• Off—The unit identification function is not in use. • Blue, blinking—The unit identification function is activated.

| 5	System health	• 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:
		• 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	• 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	• Green—All fan modules are operating properly.
		• Amber, blinking—One or more fan modules breached the non-recoverable threshold.
8	Network link activity	• 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	• 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 2: Rear Panel LEDs
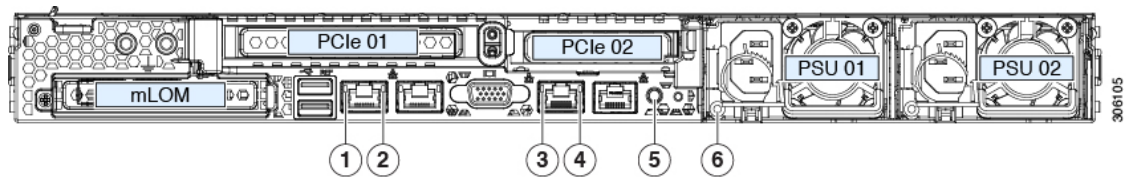
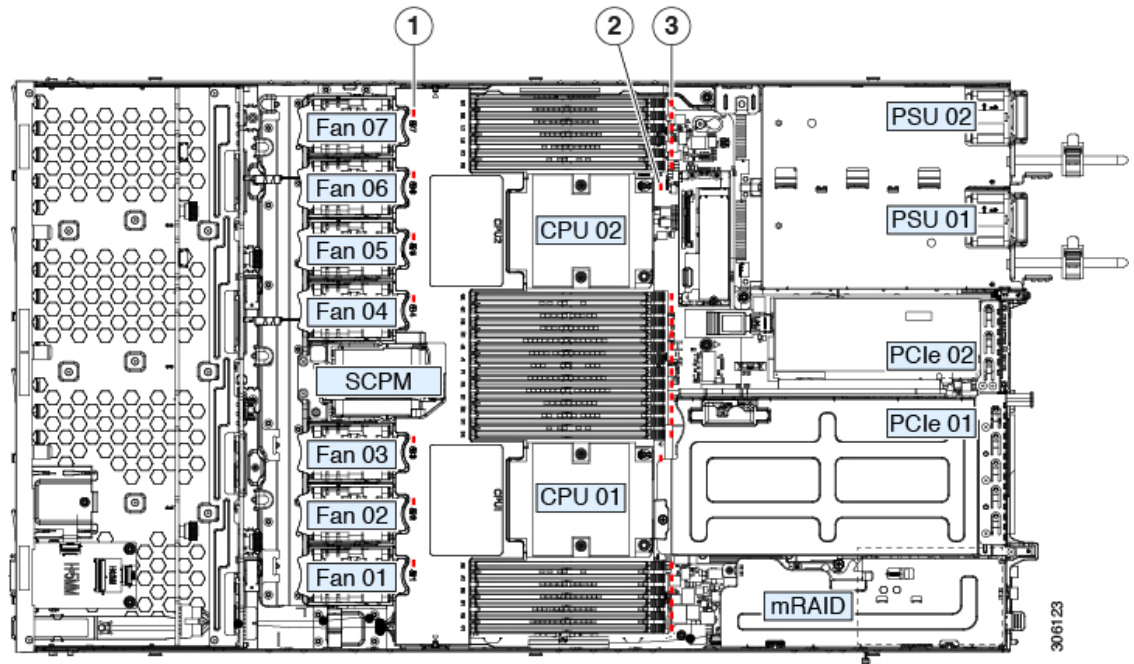*Table 2: Rear Panel LEDs, Definition of States*

	LED Name	**States**
1	1-Gb/10-Gb Ethernet link speed (on both LAN1 and LAN2)	• 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)	• 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	• 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	• Off—No link is present. • Green—Link is active. • Green, blinking—Traffic is present on the active link.
5	Rear unit identification	• 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)	**AC power supplies:**
		• 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 3: Internal Diagnostic LED Locations

1	Fan module fault LEDs (one behind each fan connector on the motherboard)	3	DIMM fault LEDs (one behind each DIMM socket on the motherboard)
	• Amber—Fan has a fault or is not fully seated.		These LEDs operate only when the server is in standby power mode.
	• Green—Fan is OK.		• Amber—DIMM has a fault.
			• Off—DIMM is OK.
2	CPU fault LEDs (one behind each CPU socket on the motherboard).	-	
	These LEDs operate only when the server is in standby power mode.		
	• 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:

    a) If the cover latch is locked, use a screwdriver to turn the lock 90-degrees counterclockwise to unlock it.

    b) 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.

    c) Lift the top cover straight up from the Cisco CSP 5200 and set it aside.

Step 2   Replace the top cover:

    a) 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.

    b) Press the cover latch down to the closed position. The cover is pushed forward to the closed position as you push down the latch.

    c) If desired, lock the latch by using a screwdriver to turn the lock 90-degrees clockwise.

Figure 4: Removing the Top Cover

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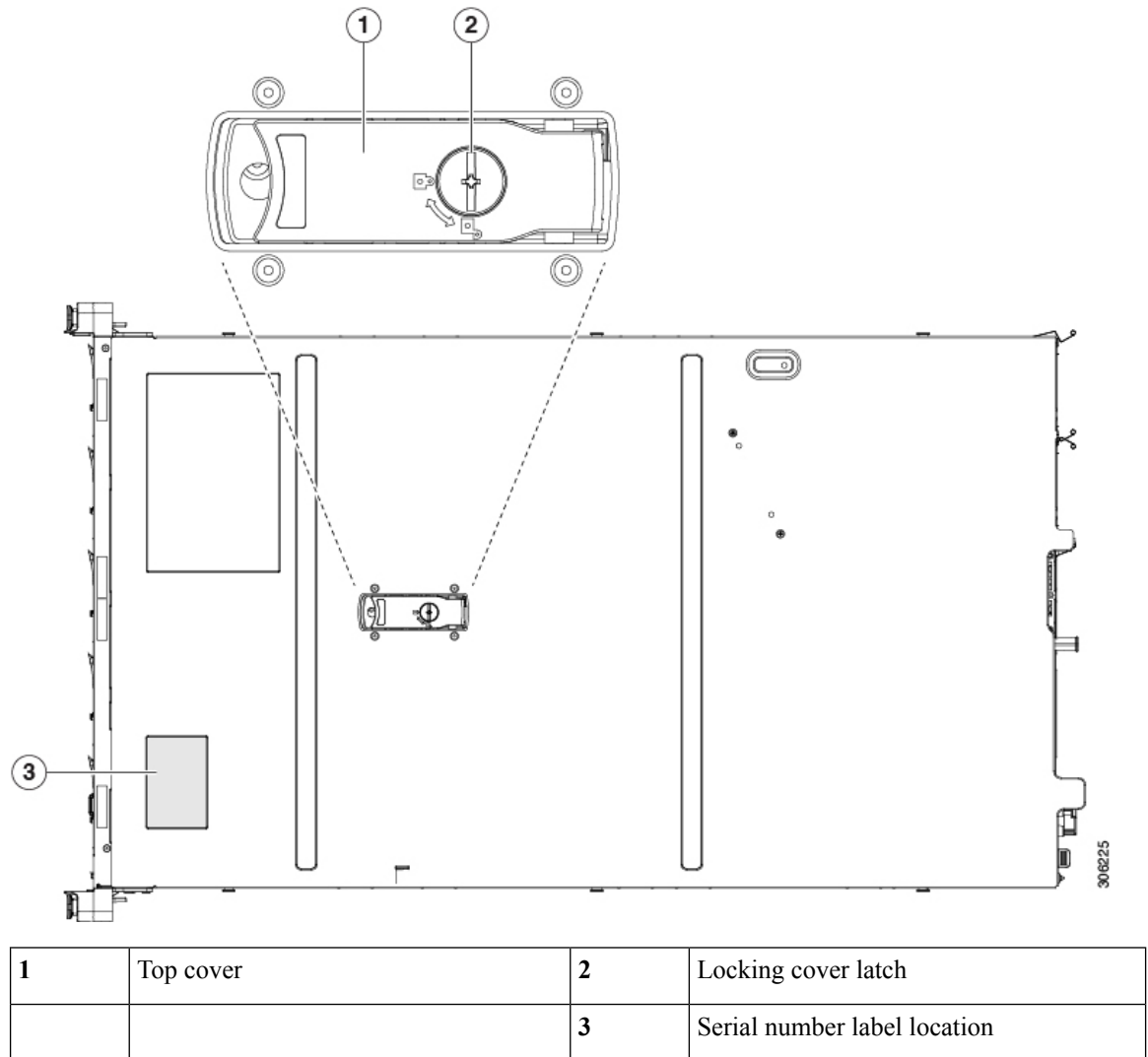
Serial Number Location

The serial number for the server is printed on a label on the top of the server, near the front. See .

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 5: Cisco CSP 5200, Serviceable Component Locations
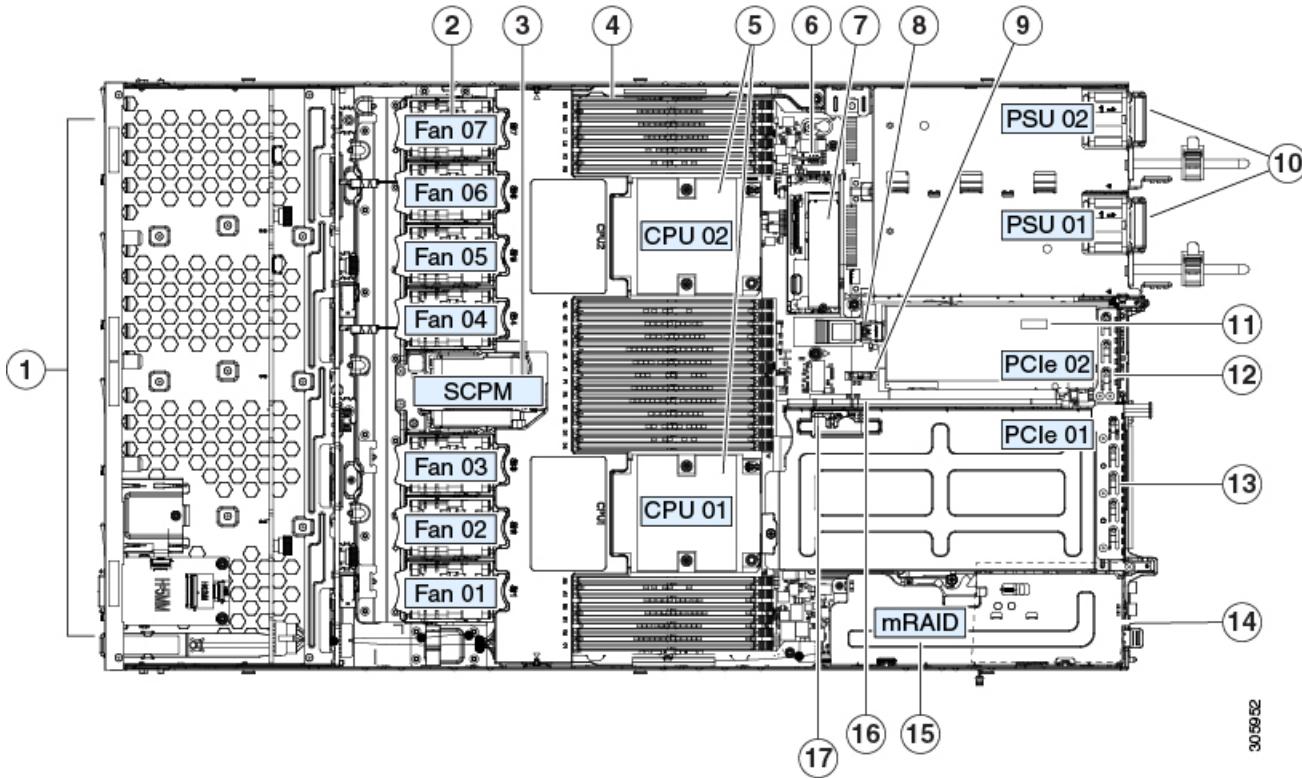
1	Front-loading drive bays 1–10 support SAS/SATA drives.	10	Power supplies (hot-swappable when redundant as 1+1)
2	Cooling fan modules (seven, hot-swappable)	11	Trusted platform module (TPM) socket on motherboard (not visible in this view)
3	Supercap unit mounting bracket (RAID backup)	12	PCIe riser 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.
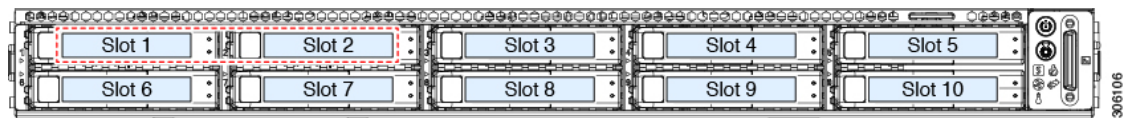
SAS/SATA Drive Population Guidelines

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 6: 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 7: Replacing a Drive in a Drive Tray
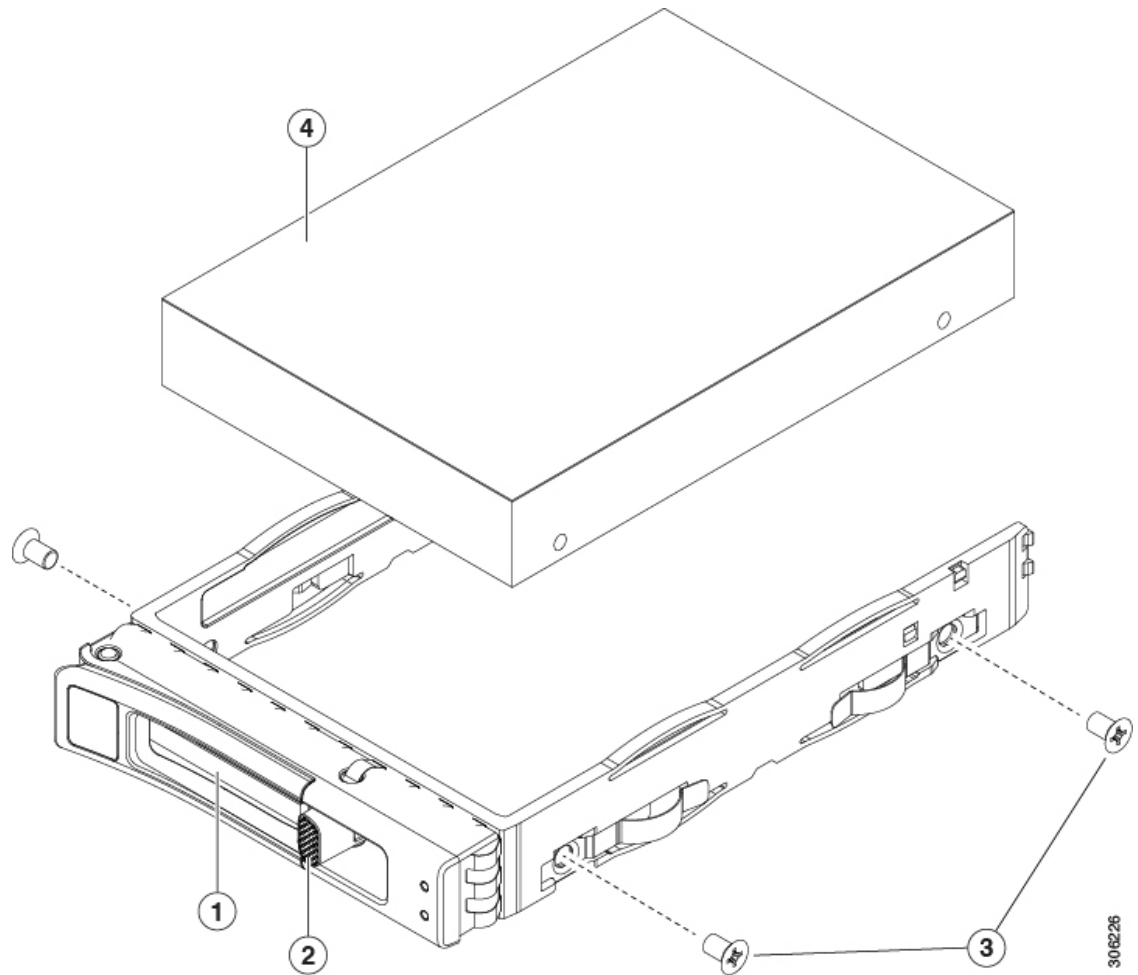
1	Ejector lever	3	Drive tray screws (two on each side)
2	Release button	4	Drive removed from drive tray

Replacing Fan Modules

The seven fan modules in the CSP-5200 are numbered as shown in Figure 1.

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:

a) 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.

b) Remove the top cover from the CSP-5200 as described in .

c) 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:

a) 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.

b) Press down gently on the fan module to fully engage it with the connector on the motherboard.

c) Replace the top cover to the CSP-5200.

d) 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 8: DIMM Slot Numbering
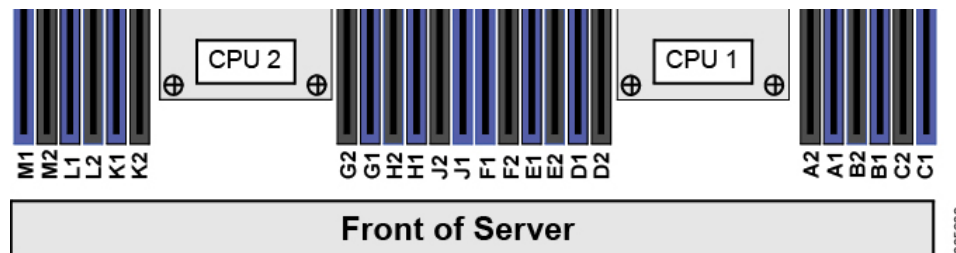
DIMM Population Rules

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 5 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:

a) Shut down and remove power from the server as described in Shutting Down and Removing Power From the Cisco CSP 5200, on page 6.

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 9.

d) Remove the air baffle that covers the front ends of the DIMM slots to provide clearance.

e) 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 17.

a) Align the new DIMM with the empty slot on the motherboard. Use the alignment feature in the DIMM slot to correctly orient the DIMM.

b) 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.

c) Replace the top cover to the Cisco CSP 5200.

d) 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 17 .

- 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 26.

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 6.

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 9.

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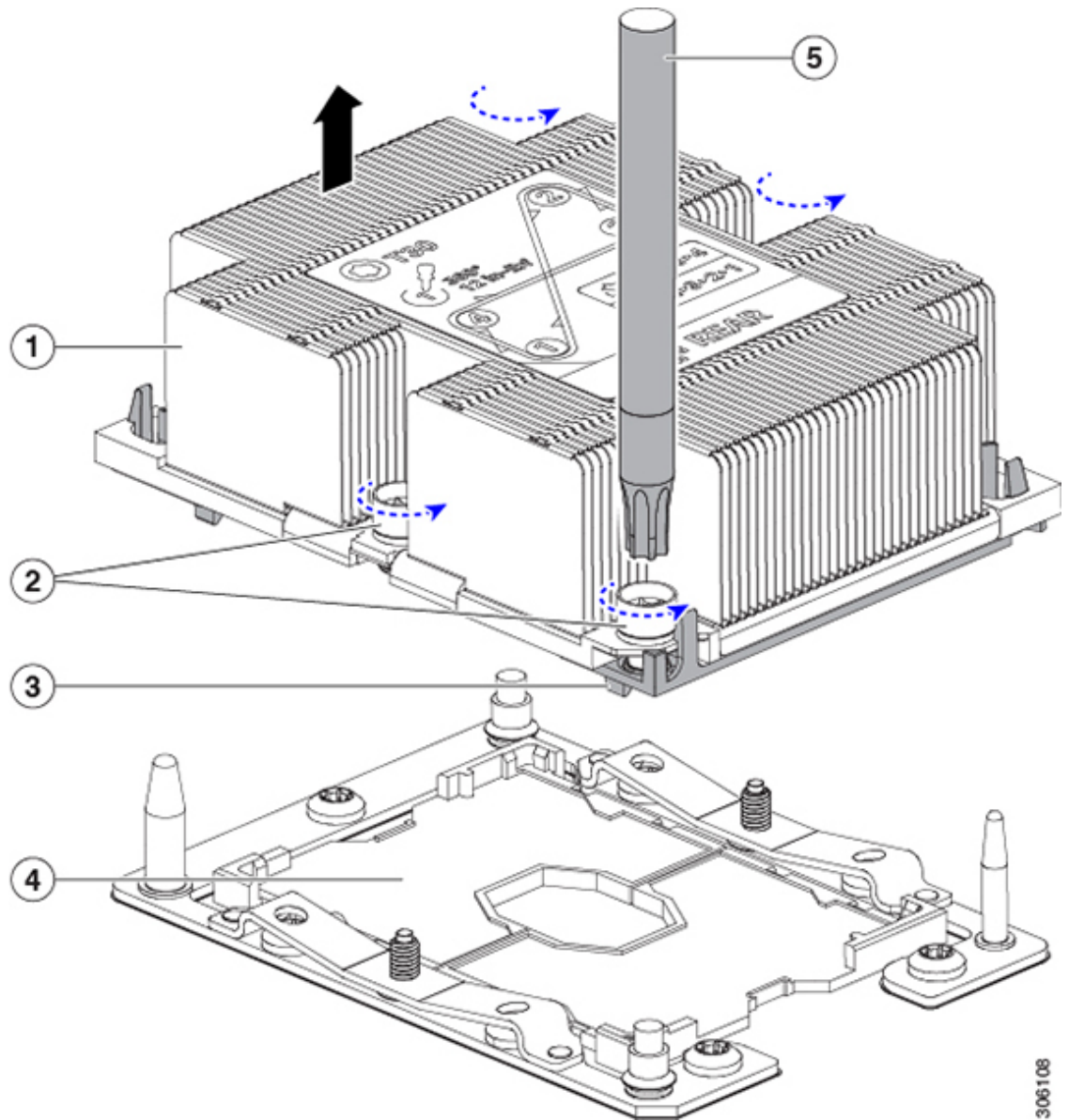
1	Heatsink	4	CPU socket on motherboard
2	Heatsink captive nuts (two on each side)	5	T-30 Torx driver
3	CPU carrier (below heatsink in this view)	-	

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

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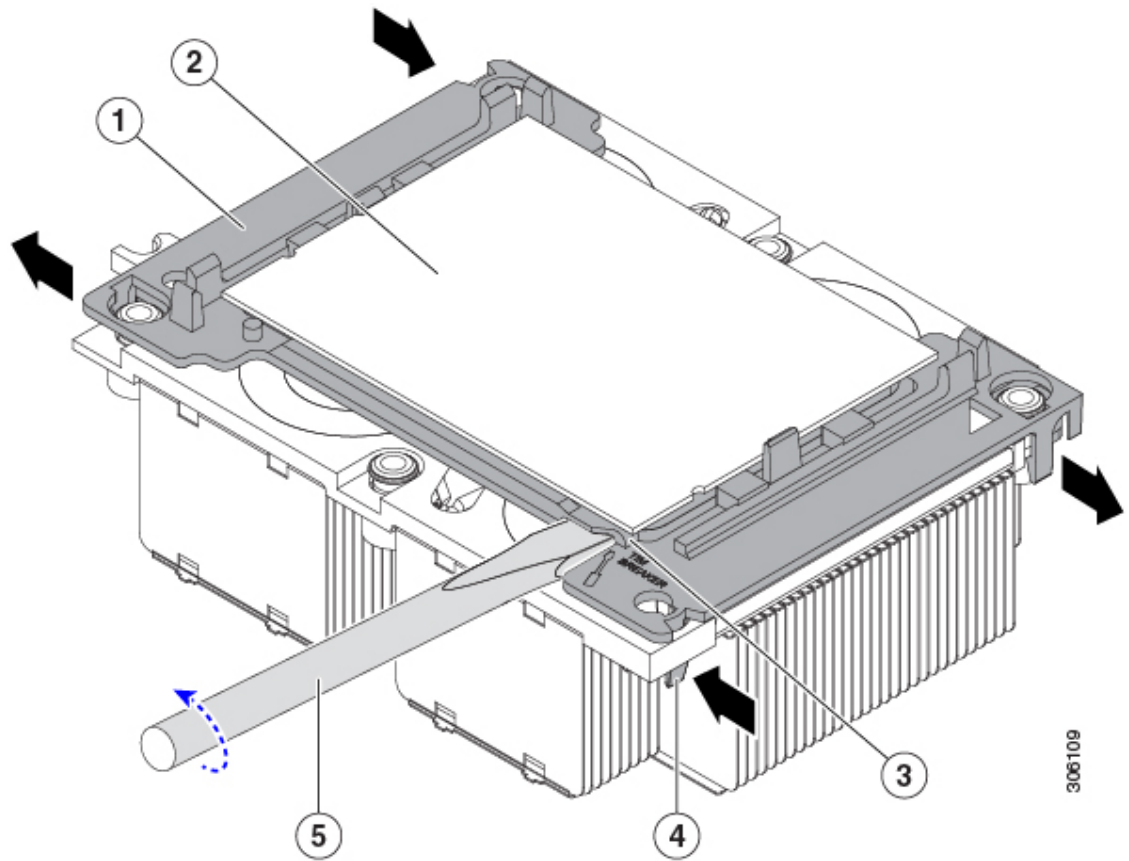
1	CPU carrier	4	CPU-carrier inner-latch nearest to the TIM breaker slot
2	CPU	5	#1 flat-head screwdriver inserted into TIM breaker slot
3	TIM BREAKER slot in CPU carrier	-	

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 11: CPU Assembly Tool, CPU Assembly, and Heatsink Alignment Features
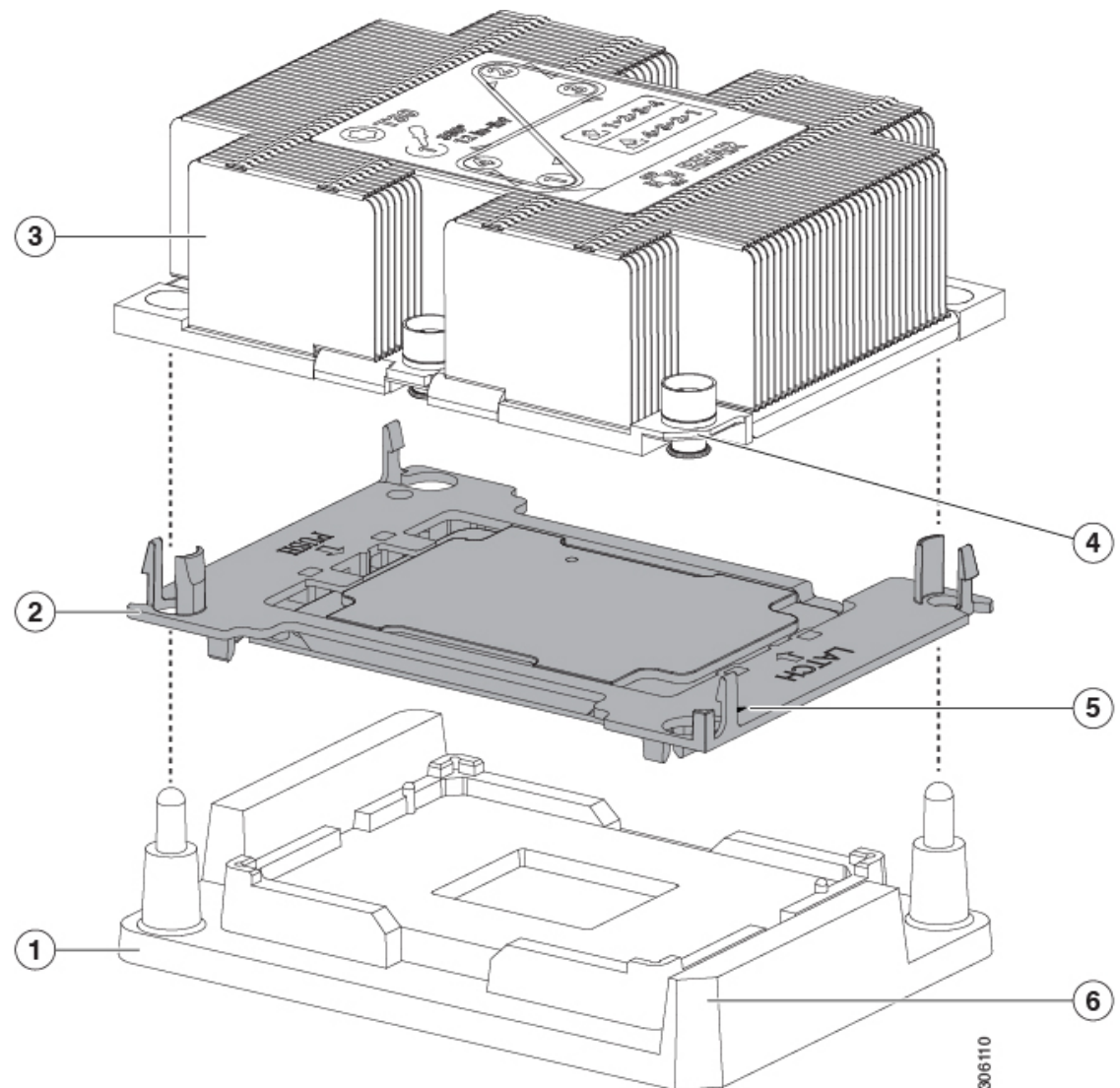
1	CPU assembly tool	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU assembly (CPU in plastic carrier)	5	Triangle cut into carrier (pin 1 alignment feature)
3	Heatsink	6	Angled corner on CPU assembly tool (pin 1 alignment feature)

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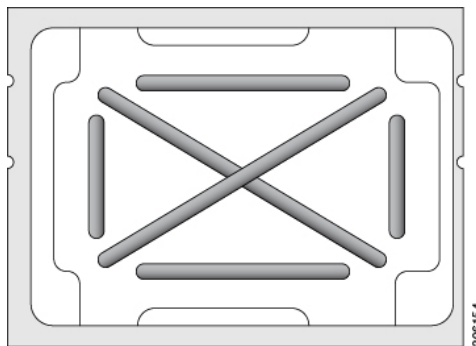
> **Caution**   Use only the correct heatsink for your CPUs to ensure proper cooling. There are two different heatsinks: UCSC-HS-C220M5= for standard-performance CPUs 150 W and less; UCSC-HS2-C220M5= for high-performance CPUs above 150 W. Note the wattage described on the heatsink label.

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 13: Installing the Heatsink/CPU Assembly to the CPU Socket
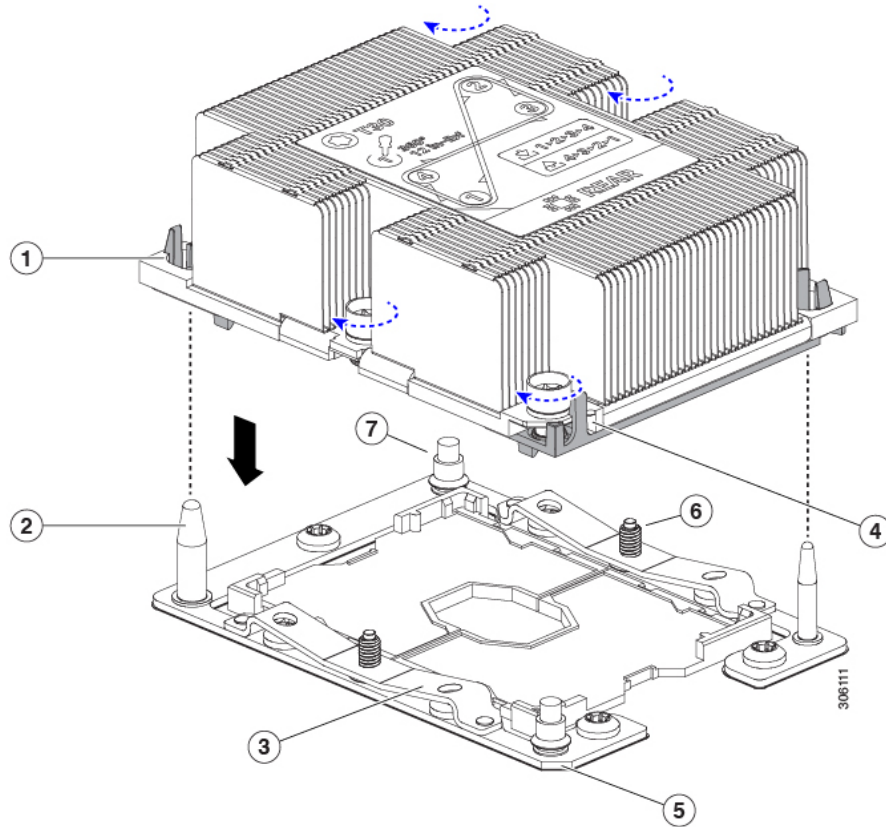
1	Guide hole in assembly (two)	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU socket alignment post (two)	5	Angled corner on socket (pin 1 alignment feature)
3	CPU socket leaf spring	-	

    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 27.

- 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 27.

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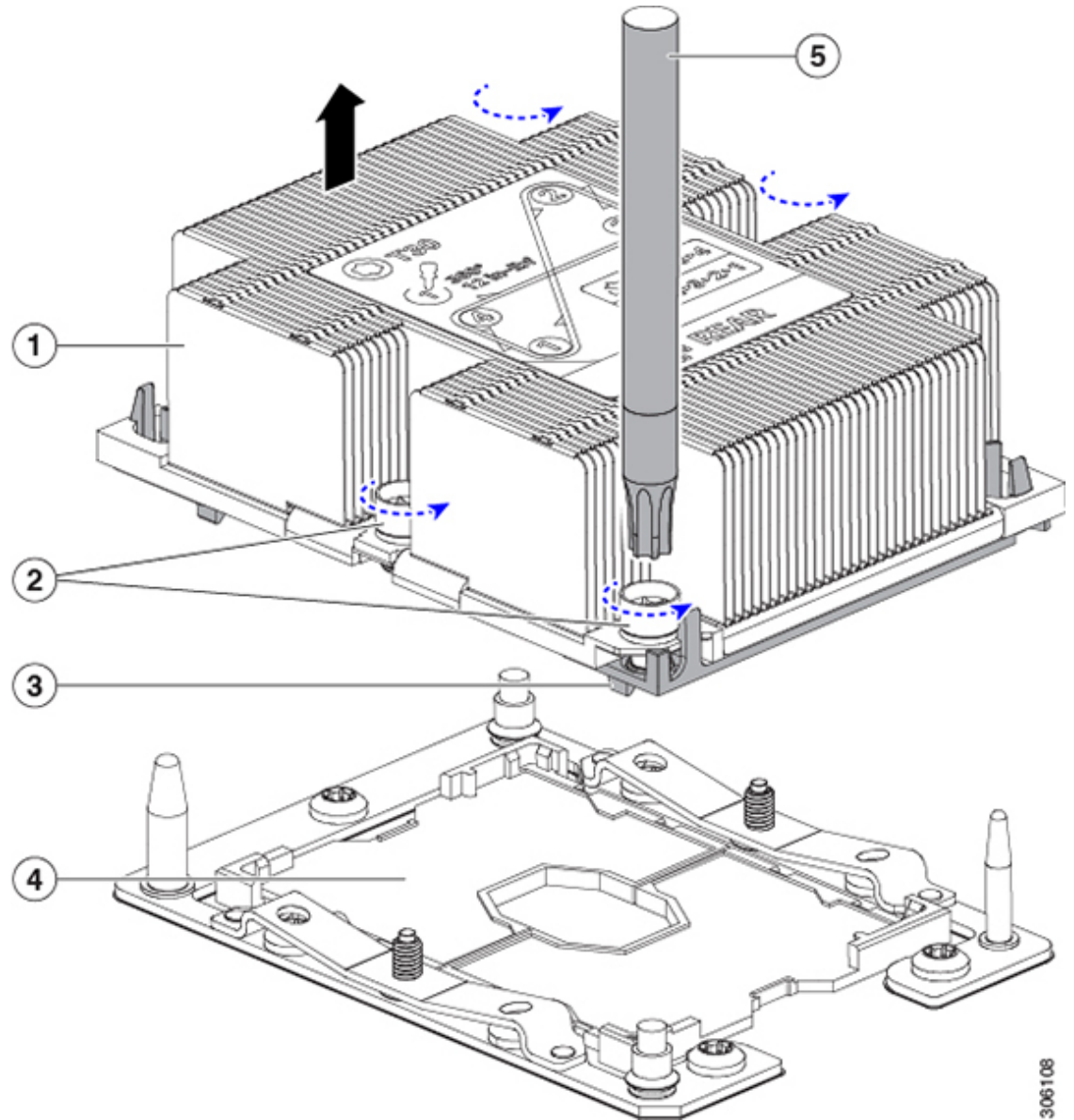
| 1	Heatsink	4	CPU socket on motherboard
2	Heatsink captive nuts (two on each side)	5	T-30 Torx driver
3	CPU carrier (below heatsink in this view)	-	

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 15: Removing a CPU Socket Dust Cover
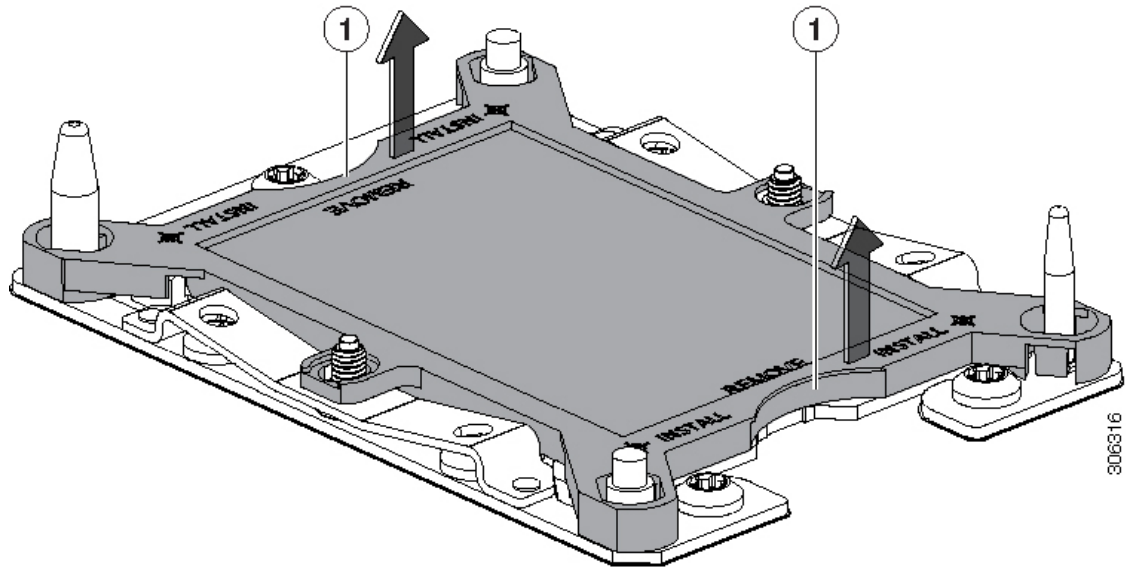
1	Finger-grip areas marked "REMOVE"	-	

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 16: Installing a CPU Socket Dust Cover
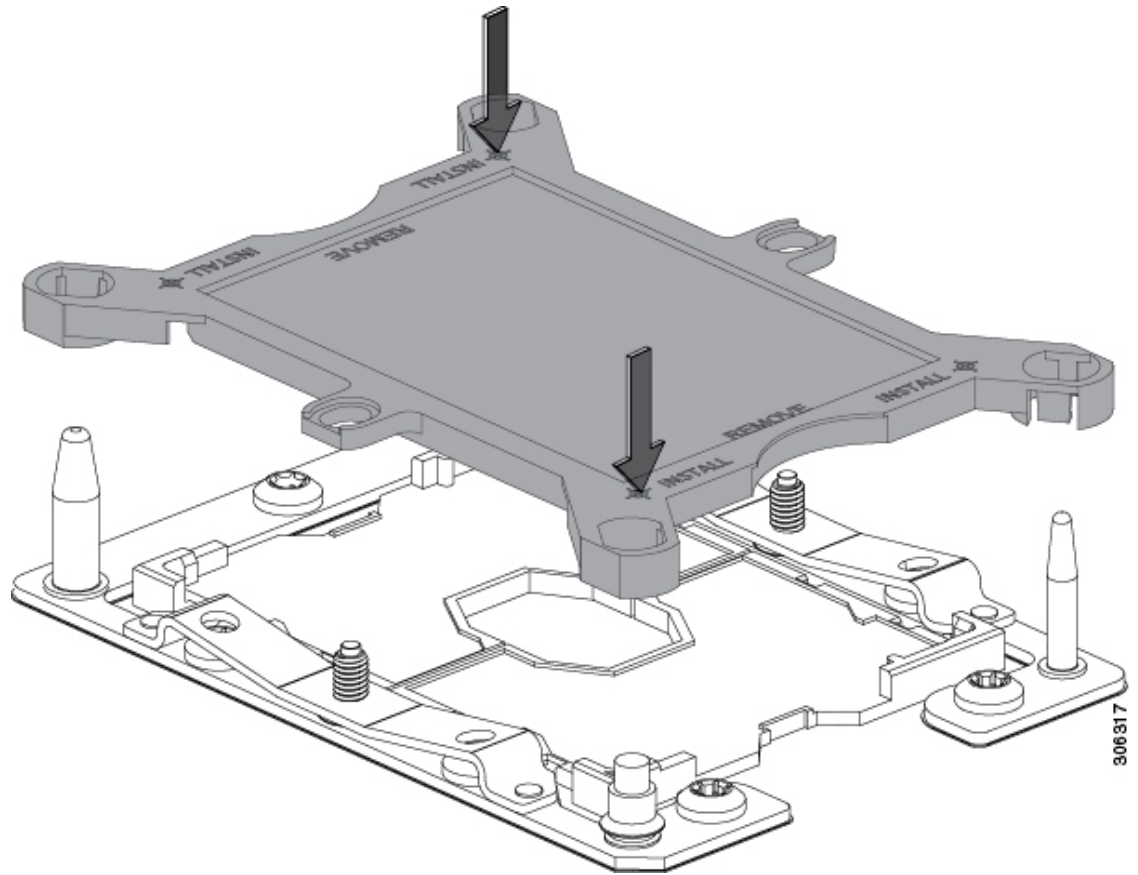
-	Press down on the two circular marks next to the word INSTALL.	-	

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 17: Installing the Heatsink/CPU Assembly to the CPU Socket
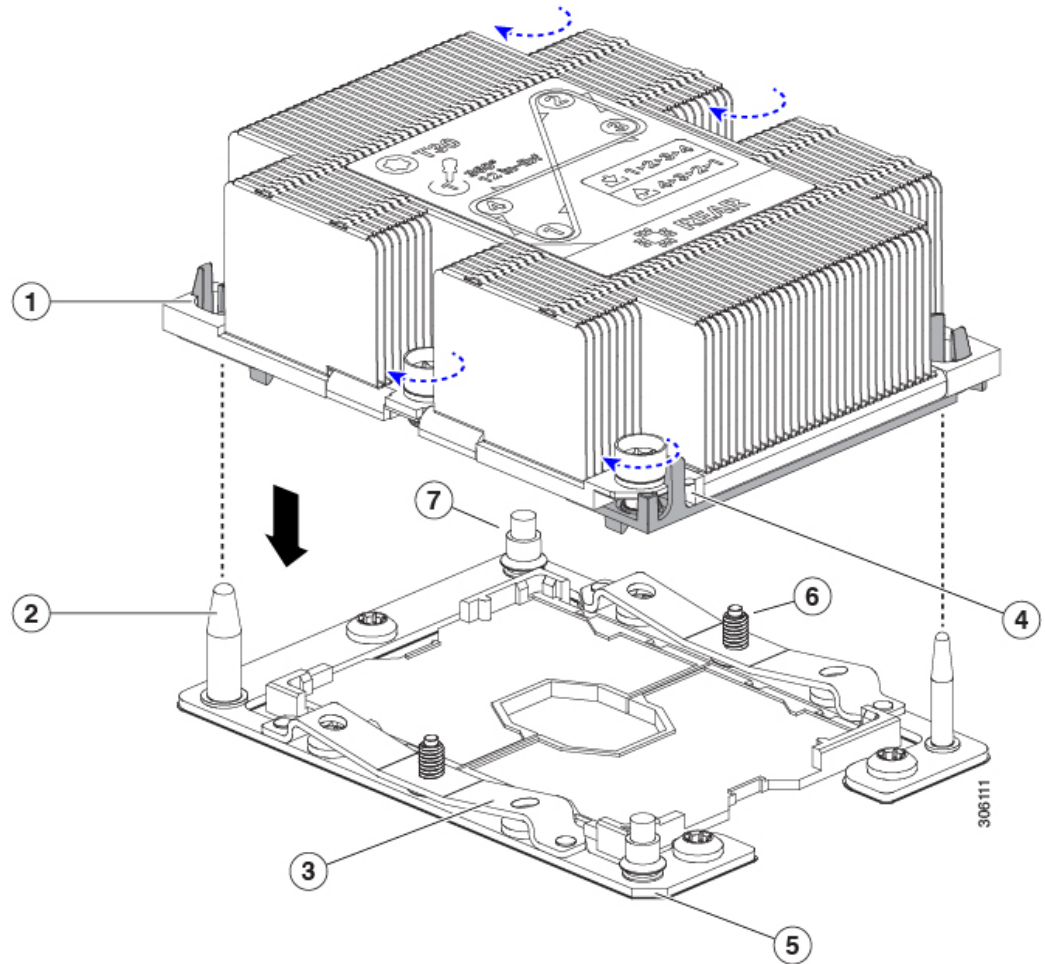
1	Guide hole in assembly (two)	4	Angled corner on heatsink (pin 1 alignment feature)
2	CPU socket alignment post (two)	5	Angled corner on socket (pin 1 alignment feature)
3	CPU socket leaf spring	-	

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).
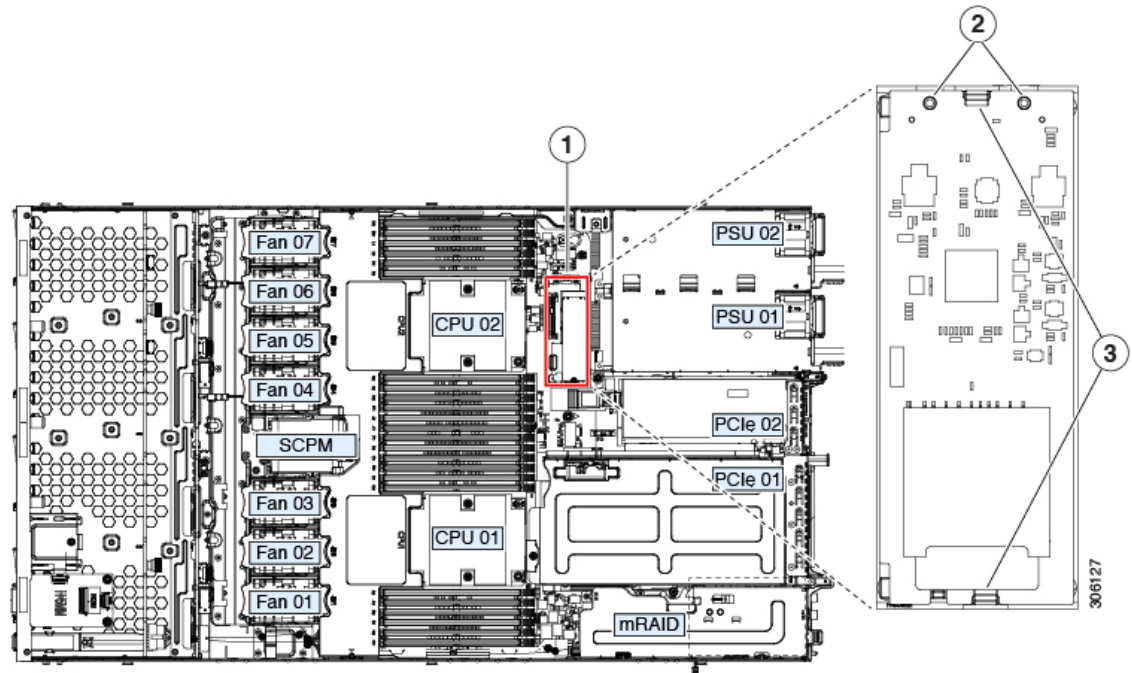
Replacing a Mini-Storage Module Carrier

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 6.

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 9.

Step 4　Remove a carrier from its socket:

a)　Locate the mini-storage module carrier in its socket just in front of power supply 1.

b)　At each end of the carrier, push outward on the clip that secures the carrier.

c)　Lift both ends of the carrier to disengage it from the socket on the motherboard.

d)　Set the carrier on an anti-static surface.

Step 5　Install a carrier to its socket:

a)　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.

b)　Gently push down the socket end of the carrier so that the two pegs go through the two holes on the carrier.

c)　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 18: 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

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.
   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 server and then power it on as described in Replacing a Mini-Storage Module Carrier, on page 32.

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:

   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 6.
   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 theCisco CSP 5200 as described in Removing the Cisco CSP 5200 Top Cover, on page 9.
   d)   Locate the USB socket on the motherboard, directly in front of PCIe riser 2.
   e)   Grasp the USB drive and pull it horizontally 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 horizontally to fully engage it with the socket.
   c)   Replace the top cover to the Cisco CSP 5200.
   d)   Replace the server in the rack, replace cables, and then fully power on the Cisco CSP 5200by pressing the Power button.

Figure 19: Location of Internal USB Port
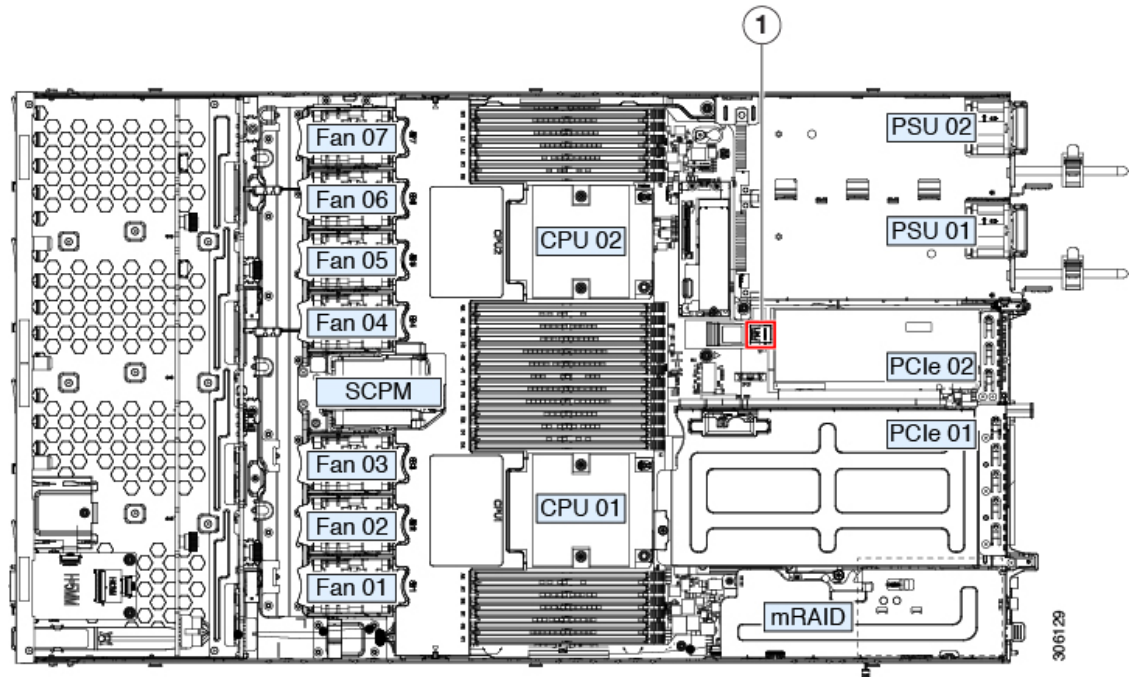
1	Location of horizontal USB socket on motherboard	-	

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 6.

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 9.

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 20: RTC Battery Location on Motherboard
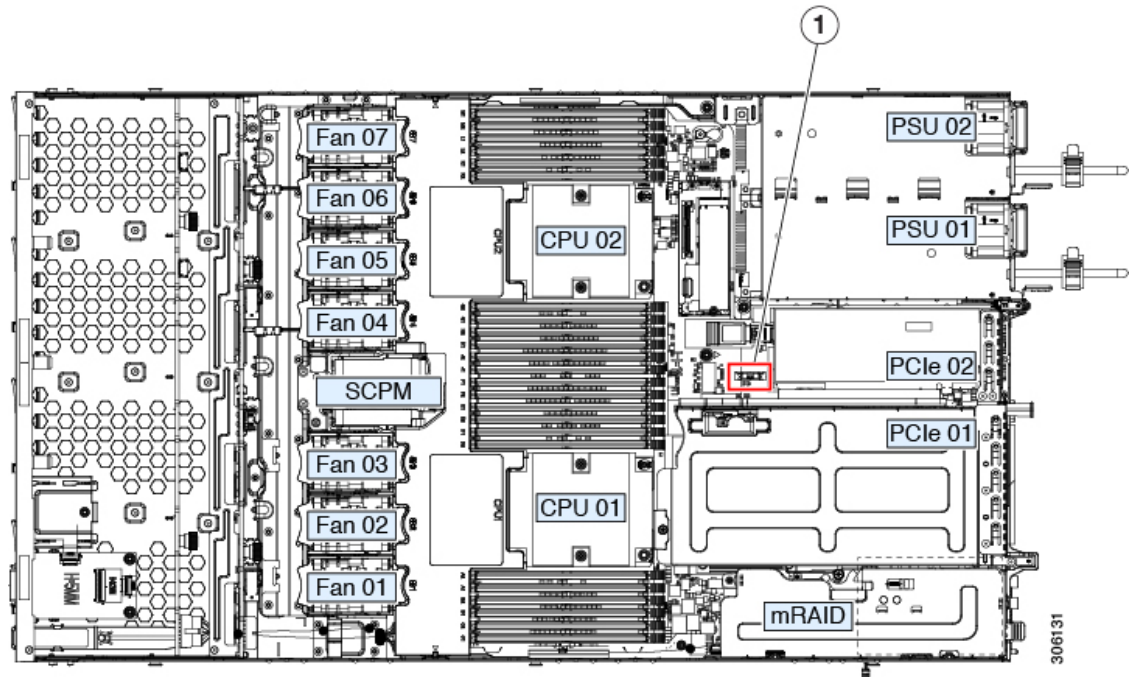
1	RTC battery in vertical socket	-	

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 for more information about the power supplies.

- See also Rear-Panel LEDs, on page 4 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 37

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.

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 6.

- 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 21: Replacing AC Power Supplies
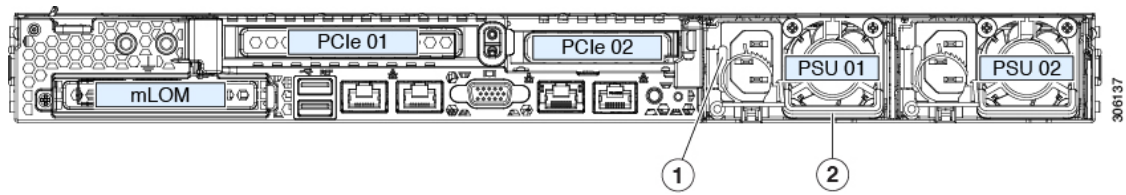
1	Power supply release lever	2	Power supply handle

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 22: Rear Panel, Showing PCIe Slot Numbering
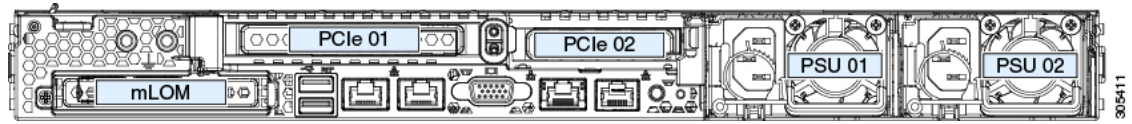
The following tables describe the specifications for the slots.

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	¾ 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	½ length	½ 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 42.

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 6.

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 9.

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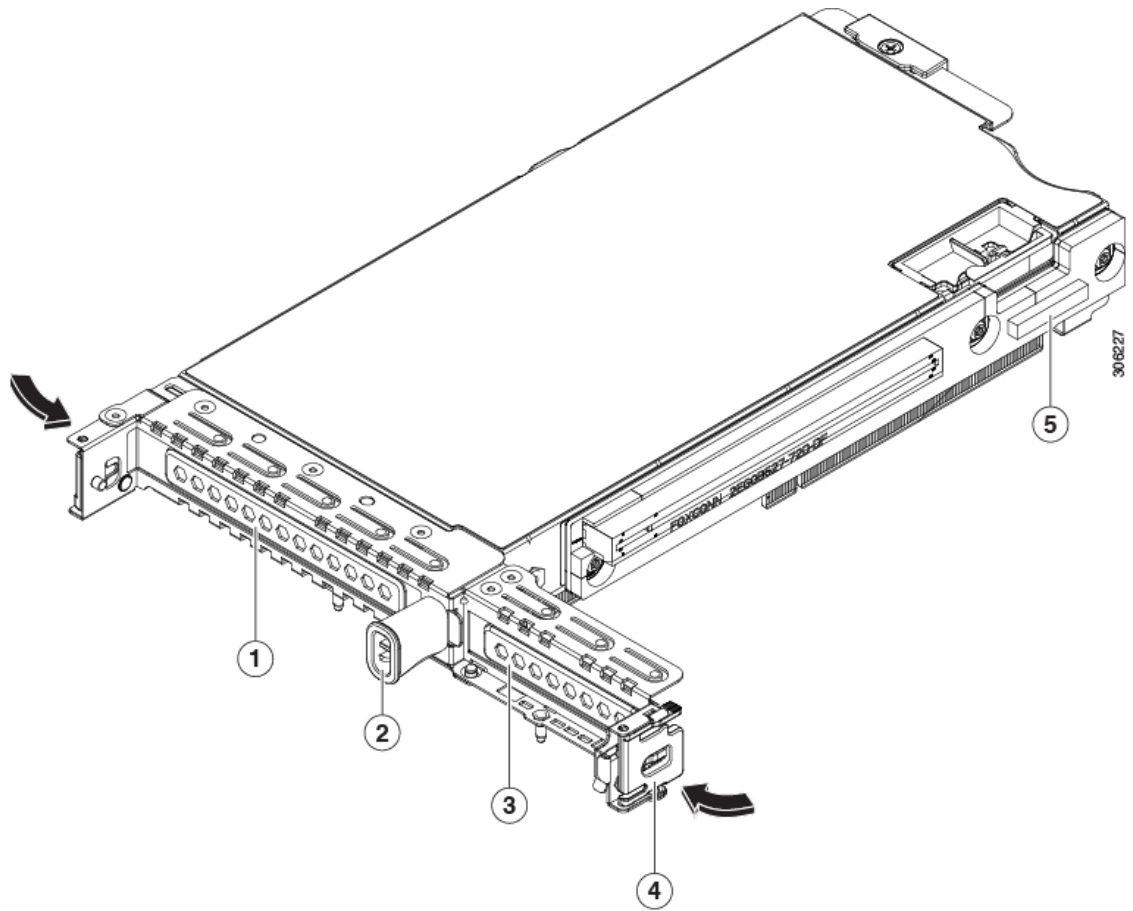
1	PCIe slot 1 rear-panel opening	4	Hinged card retainer (one each slot)
2	External riser handle	5	PCIe connector for cable that supports front-panel NVMe SSDs
3	PCIe slot 2 rear-panel opening		

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

Figure 24: PCIe Riser Alignment Features
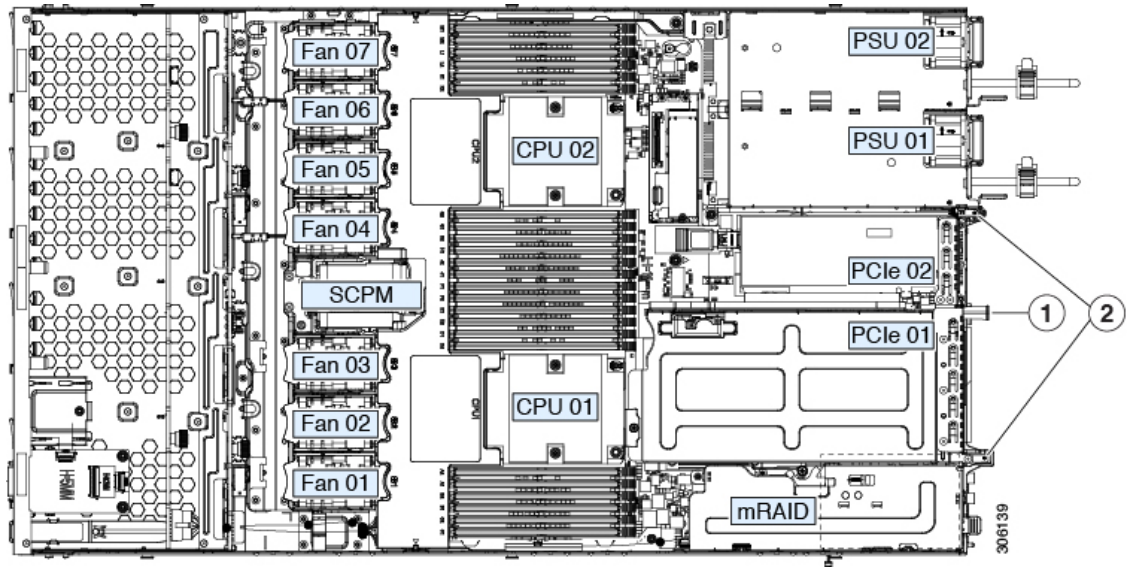
1	Blue riser handle	**2**	Riser alignment features in chassis

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 *Cisco Card* 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):

a) Shut down and remove power from the server as described in Shutting Down and Removing Power From the Cisco CSP 5200, on page 6.

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 9.

d) 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.

e) Loosen the single captive thumbscrew that secures the mLOM card to the threaded standoff on the chassis floor.

f) 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:

a) Set the mLOM card on the chassis floor so that its connector is aligned with the motherboard socket.

b) Push the card horizontally to fully engage the card's edge connector with the socket.

c) Tighten the captive thumbscrew to secure the card to the standoff on the chassis floor.

d) 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 25: Location of the mLOM Card Socket Below the mRAID Riser
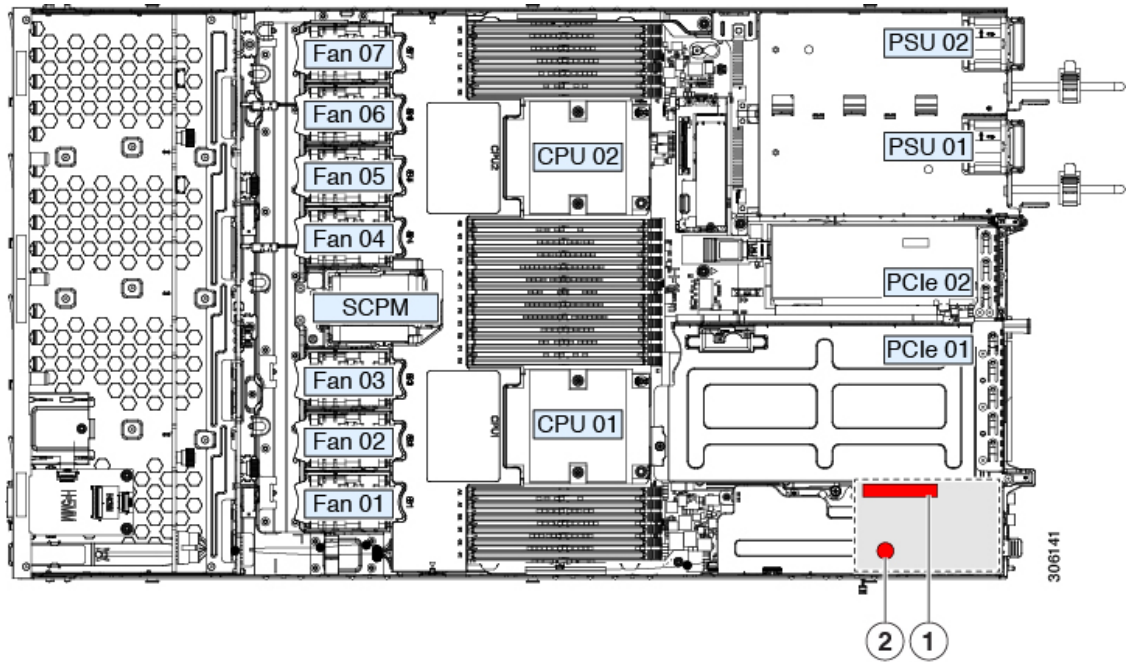
1	Position of horizontal mLOM card socket	2	Position of mLOM card thumbscrew

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:

a) Shut down and remove power from the server as described in Shutting Down and Removing Power From the Cisco CSP 5200, on page 6.

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 Cisco CSP 5200 as described in Removing the Cisco CSP 5200 Top Cover, on page 9.

Step 2   Remove an existing supercap:

a) Disconnect the supercap cable from the existing supercap.

b) Push aside the securing tab to open the hinged latch that secures the supercap to its bracket on the removable air baffle.

c) Lift the supercap free of the bracket and set it aside.

Step 3   Install a new supercap:

a) Set the new supercap into the mounting bracket.

b) Close the hinged plastic clip over the supercap. Push down until the securing tab clicks.

c) 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 26: Replacing Supercap
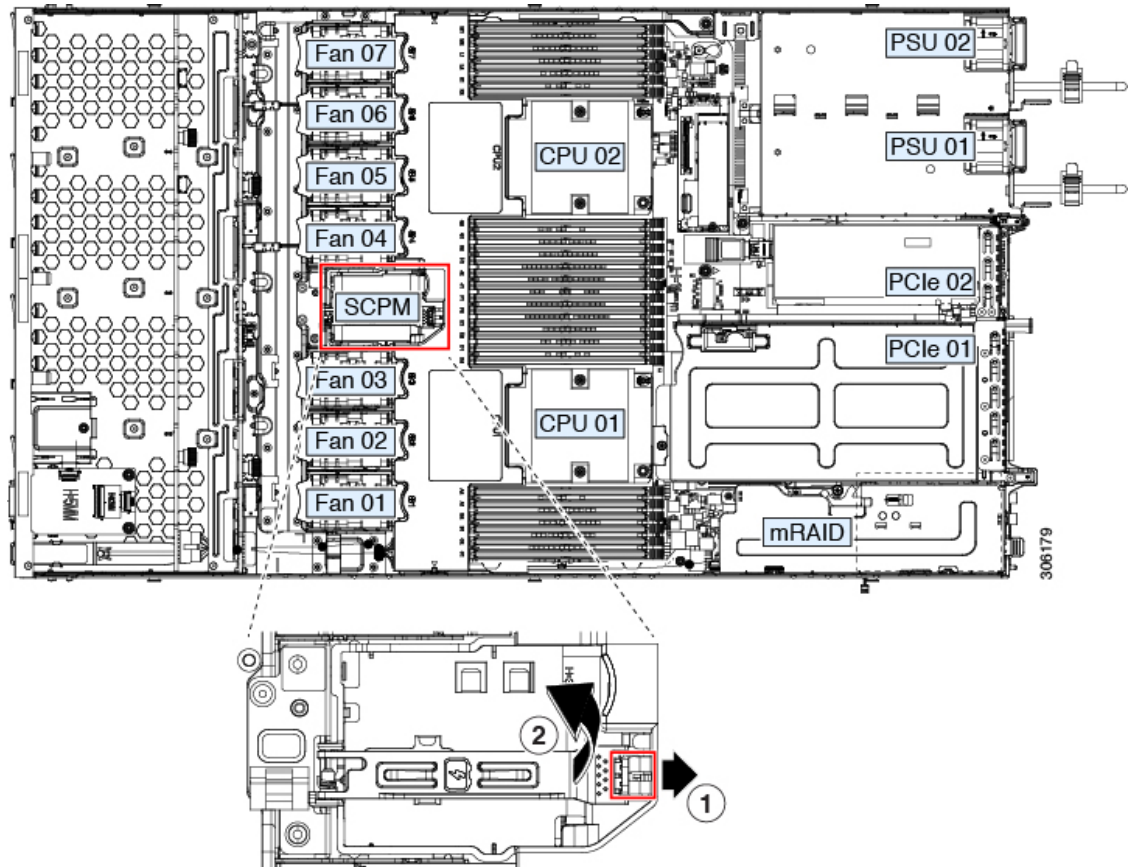
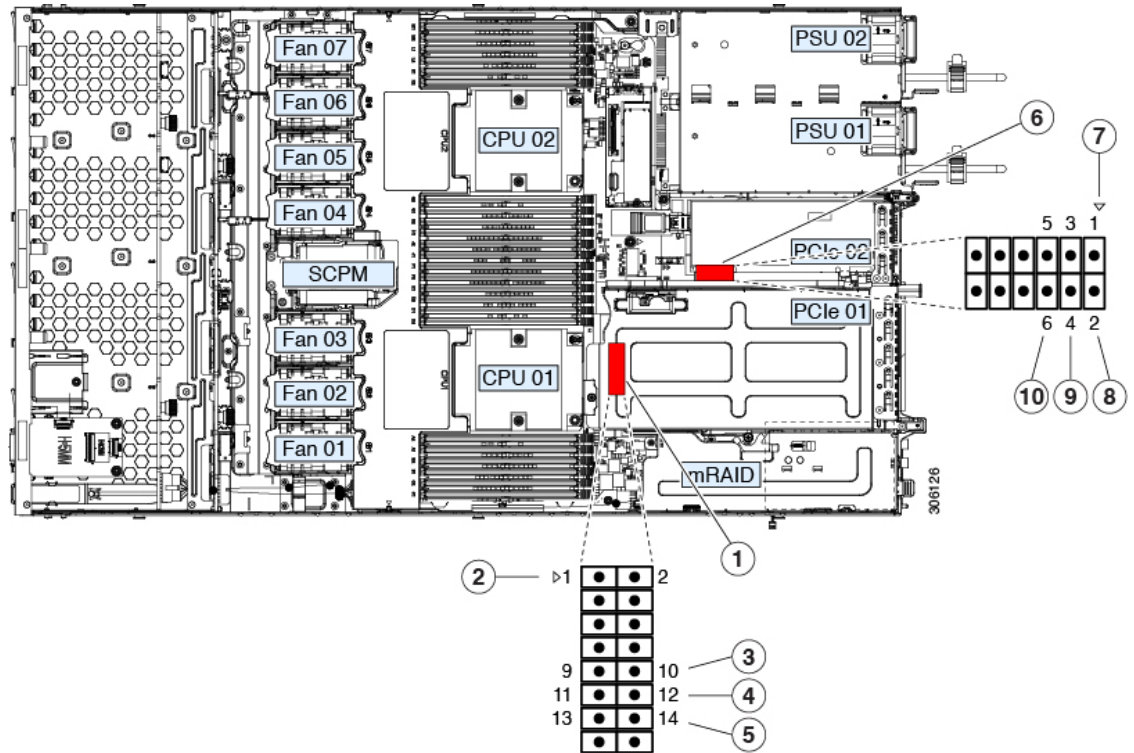| 1	Securing tab	2	Hinged latch

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:

Figure 27: 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 6. 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 9.

Step 4   Locate header block J38 and pins 9-10, as shown in Service Headers and Jumpers, on page 46.

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 6. 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 9.

Step 6 Locate header block J38 and pins 11-12, as shown in Service Headers and Jumpers, on page 46.

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 6. 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 9.

Step 4 Locate header block J38 and pins 13-14, as shown in Service Headers and Jumpers, on page 46.

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 6. 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 9.

Step 4 Locate header block J39, pins 1-2, as shown in Service Headers and Jumpers, on page 46.

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 6. 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 9.

Step 4 Locate header block J39, pins 3-4, as shown in Service Headers and Jumpers, on page 46.

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. TheCisco 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 6. 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 9.

Step 4   Locate header block J39, pins 5-6, as shown in Service Headers and Jumpers, on page 46.

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 settiings 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.