



## **Cisco UCS B200 M3 Blade Server Installation and Service Note**

**2**

**Cisco UCS B200 M3 Blade Server 2**

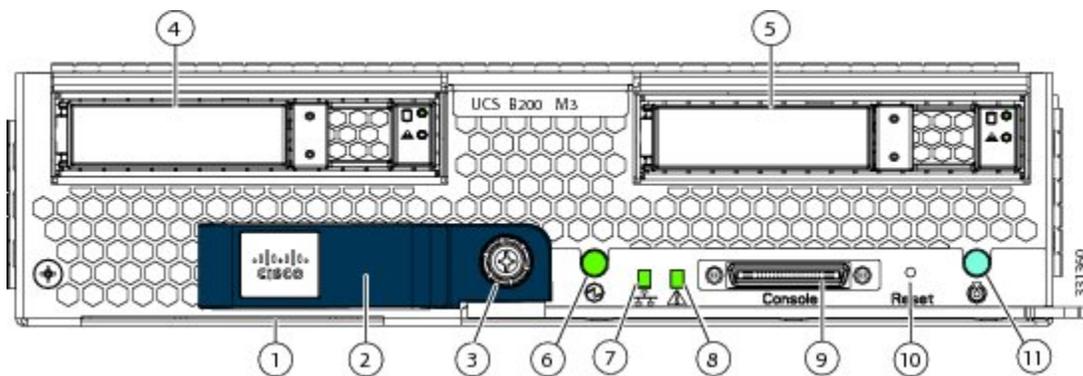
**Related Documentation 33**

**Obtaining Documentation and Submitting a Service Request 34**

## Cisco UCS B200 M3 Blade Server

The Cisco UCS B200 M3 is an Intel-based, half-width blade supporting two CPU sockets using Intel E5-2600 series CPUs and up to 24 DIMMs; it supports one modular LOM (dedicated slot for Cisco's Virtual Interface Card) and one mezzanine adapter. At this time, the UCS B200 M2 (second generation) server is still available and is documented elsewhere. You can install up to eight UCS B200 Blade Servers to a UCS chassis, mixing with other models or Cisco UCS blade servers in the chassis if desired.

**Figure 1: Cisco UCS B200 M3 Front Panel**



1	Asset tag <sup>1</sup>	7	Network link status LED
2	Blade ejector handle	8	Blade health LED
3	Ejector captive screw	9	Console connector
4	Hard drive bay 1	10	Reset button access
5	Hard drive bay 2	11	Beaoning LED and button
6	Power button and LED		

<sup>1</sup> Each server has a blank plastic tag that pulls out of the front panel which is provided so that you can add your own asset tracking label without interfering with the intended air flow.

### LEDs

Server LEDs indicate whether the blade server is in active or standby mode, the status of the network link, the over all health of the blade server, and whether the server is set to give a flashing blue beaoning indication.

The removable drives also have LEDs indicating hard disk access activity and disk health.

**Table 1: Blade Server LEDs**

LED	Color	Description
Power 	Off	Power off.
	Green	Normal operation.
	Amber	Standby.
Link 	Off	None of the network links are up.
	Green	At least one network link is up.
Health 	Off	Power off.
	Green	Normal operation.
	Amber	Minor error.
	Blinking Amber	Critical error.
Beaconing 	Off	Beaconing not enabled.
	Blinking blue 1 Hz	Beaconing to locate a selected blade—If the LED is not blinking, the blade is not selected. You can initiate beaconing in UCS Manager or with the button.
Activity (Disk Drive) 	Off	Inactive.
	Green	Outstanding I/O to disk drive.
	Flashing Amber 4 Hz	Rebuild in progress. Health LED will flash in unison.
	Flashing Amber 4 hz	Identify drive active.
Health (Disk Drive) 	Off	Can mean either no fault detected or the drive is not installed.
	Flashing Amber 4 hz	Identify drive active. If the Activity LED is also flashing amber, a drive rebuild is in progress.
	Amber	Fault detected.

## Buttons

The Reset button is just inside the chassis and must be pressed using the tip of a paper clip or a similar item. Hold the button down for five seconds, and then release it to restart the server if other methods of restarting are not working.

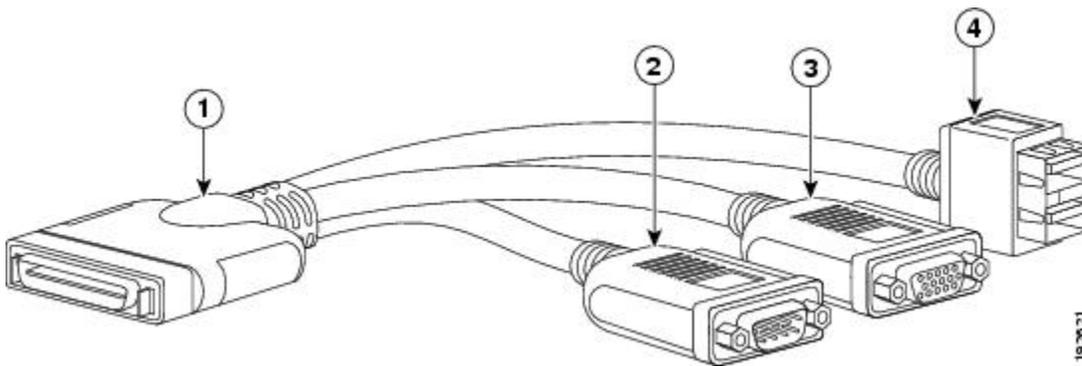
The beaoning function for an individual server may get turned on or off by pressing the combination button and LED.

The power button and LED allows you to manually take a server temporarily out of service but leave it in a state where it can be restarted quickly. If the desired power state for a service profile associated with a blade server or an integrated rack-mount server is set to "off", using the power button or Cisco UCS Manager to reset the server will cause the desired power state of the server to become out of sync with the actual power state and the server may unexpected shutdown at a later time. To safely reboot a server from a power-down state, use the Boot Server action in Cisco UCS Manager.

## Connectors

The console port allows a direct connection to a blade server to allow operating system installation and other management tasks to be done directly rather than remotely. The port uses the KVM dongle cable (N20-BKVM) which provides a connection into a Cisco UCS blade server; it has a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on a blade server. A KVM cable ships standard with each blade chassis accessory kit.

**Figure 2: KVM Cable for Blade Servers**



1	Connector to blade server slot	3	VGA connection for a monitor
2	DB9 serial connector	4	2-port USB connector for a mouse and keyboard

## Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in <b>this font</b> . Main titles such as window, dialog box, and wizard titles appear in <b>this font</b> .
Document titles	Document titles appear in <i>this font</i> .

Text Type	Indication
TUI elements	In a Text-based User Interface, text the system displays appears in <i>this font</i> .
System output	Terminal sessions and information that the system displays appear in <i>this font</i> .
CLI commands	CLI command keywords appear in <b>this font</b> . Variables in a CLI command appear in <i>this font</i> .
[ ]	Elements in square brackets are optional.
{x   y   z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x   y   z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
<>	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.




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**Note** Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

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**Tip** Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

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

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**Timesaver** Means *the described action saves time*. You can save time by performing the action described in the paragraph.

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**Warning**

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**IMPORTANT SAFETY INSTRUCTIONS**

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

SAVE THESE INSTRUCTIONS

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## Installing and Removing a Blade Server Hard Drive

There are up to two front-accessible, hot-swappable, 2.5-inch drives per blade. An LSI SAS 2004 RAID controller is embedded in the motherboard (it is not separately replaceable), and it supports RAID 0 and 1. You can remove blade server hard drives without removing the blade server from the chassis. All other component replacements for a blade server requires removing the blade from the chassis. Unused hard drive bays should always be covered with cover plates (N20-BBLKD) to ensure proper cooling and ventilation. The chassis is omitted from illustrations here to simplify the drawing.

**Caution**

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To prevent ESD damage, wear grounding wrist straps during these procedures and handle modules by the carrier edges only.

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**Caution**

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If you ever need to move a RAID cluster from one server to another, both the old and new servers for the cluster must use the same LSI controller. For example, migration from a server with an LSI 1064E to a server with an LSI MegaRAID is not supported. Migrating a RAID cluster from a B200 M1 or M2 to this server is not supported.

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Replacing an HDD or SSD with a drive of the same size, model, and manufacturer generally causes few problems with UCS Manager. If the drive being replaced was part of a RAID array we recommend using a newly ordered drive of identical size, model, and manufacturer to replace the failed drive. Cisco recommends following industry standard practice of using drives of the same capacity when creating RAID volumes. If drives of different capacities are used, the useable portion of the smallest drive will be used on all drives that make up the RAID volume. Before upgrading or adding an HDD to a running system, check the service profile in UCS Manager and make sure the new hardware configuration will be within the parameters allowed by the service profile.

Hard disk and RAID troubleshooting information is in the "Troubleshooting Server Hardware" chapter of the [Cisco UCS Troubleshooting Guide](#).

The drives supported in this blade server are all hot pluggable and come with the drive sled attached. Spare drive sleds are not available. The drives supported in this blade server are constantly being updated. A list of currently supported and available drives is in the specification sheets at:

[http://www.cisco.com/en/US/products/ps10280/products\\_data\\_sheets\\_list.html](http://www.cisco.com/en/US/products/ps10280/products_data_sheets_list.html)

The onboard RAID controller supports the following RAID levels:

- RAID 0 (data striping): Data is striped across all disks in the array, which provides fast throughput. There is no data redundancy, and all data is lost if any disk fails.
- RAID 1 (disk mirroring): Data is written to two disks, which provides complete data redundancy if one disk fails. The maximum array size is equal to the available space on the smaller of the two drives.

- RAID 5 (disk striping with distributed parity): Data is striped across all disks in the array. Part of the capacity of each disk stores parity information that can be used to reconstruct data if a disk fails. RAID 5 provides good data throughput for applications with high read request rates.
- RAID 10 (combination of RAID 0 and RAID 1): data is striped across mirrored drives. RAID 10 breaks up data into smaller blocks and mirrors the blocks of data to each RAID 1 drive group. The first RAID 1 drive in each drive group then duplicates its data to the second drive. The size of each block is determined by the stripe size parameter, which is set during the creation of the RAID set. The RAID 1 virtual drives must have the same stripe size.

### Removing a Blade Server Hard Drive

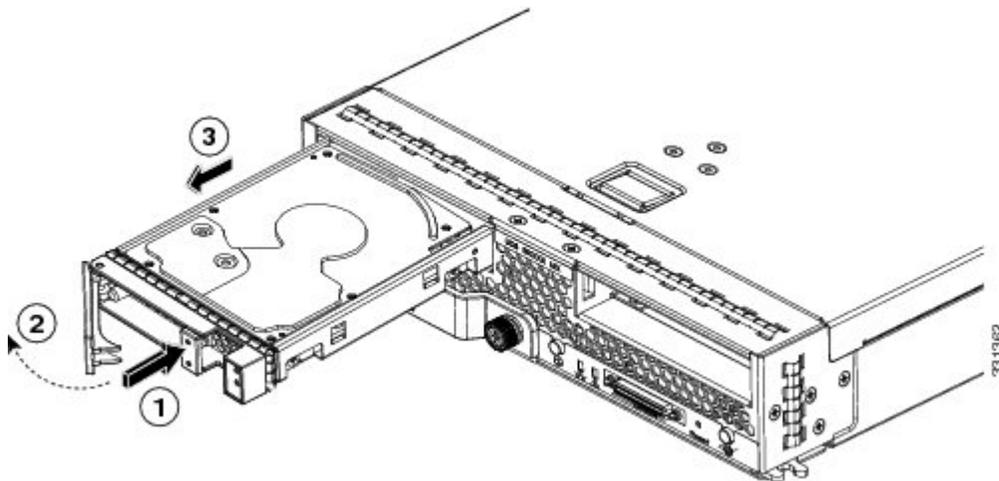
To remove a hard drive from a blade server, follow these steps:

#### Procedure

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**Step 1** Push the button to release the ejector, and then pull the hard drive from its slot.

*Figure 3: Removing the Hard Drive*



**Step 2** Place the hard drive on an antistatic mat or antistatic foam if you are not immediately reinstalling it in another server.

**Step 3** Install a hard disk drive blank faceplate (N20-BBLKD) to keep dust out of the blade server if the slot will remain empty.

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### Installing a Blade Server Hard Drive

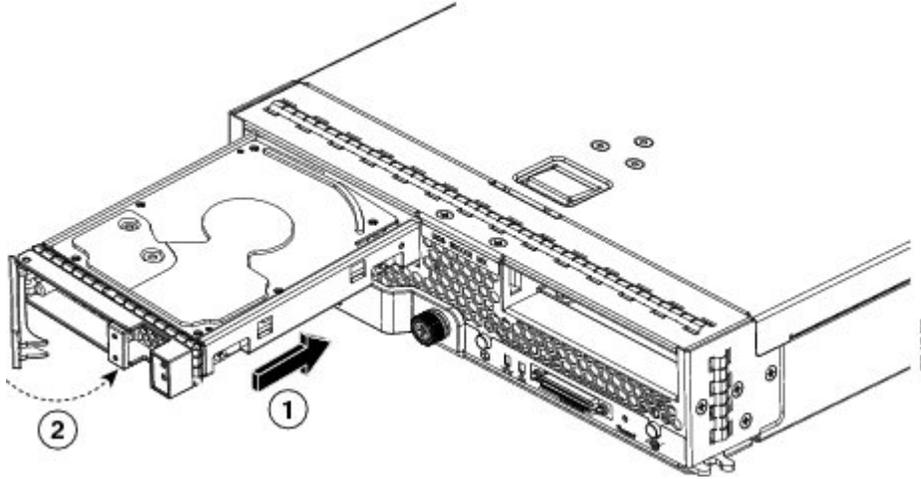
To install a blade server hard drive in a blade server, follow these steps:

## Procedure

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**Step 1** Place the hard drive lever into the open position by pushing the release button.

**Figure 4: Installing a Hard Drive in a Blade Server**



**Step 2** Gently slide the hard drive into the opening in the blade server until it seats into place.

**Step 3** Push the hard drive lever into the closed position.

You can use UCS Manager to format and configure RAID services. Refer to the UCS Manager configuration guide for your software release for details on RAID configuration.

If you need to move a RAID cluster, refer to the [Moving a RAID Cluster](#) section of the "Troubleshooting Server Hardware" chapter of the Cisco UCS Troubleshooting Guide.

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## Removing and Installing a Blade Server

Before performing any of the following internal operations on this blade server, you must remove it from the chassis. To prevent ESD damage, wear grounding wrist straps during these procedures and handle modules by the carrier edges only.



**Caution** To prevent ESD damage, wear grounding wrist straps during these procedures and handle modules by the carrier edges only.

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## Shutting Down and Powering Off a Blade Server

The server can run in two power modes:

- Main power mode—Power is supplied to all server components, and any operating system on your hard drives can run.

- Standby power mode—Power is supplied only to the service processor and the cooling fans, and it is safe to power off the server from this mode.

After establishing a connection to the blade server's operating system, you can directly shut down the blade server using the operating system.

You can invoke a graceful shutdown or an emergency shutdown (hard shutdown) by using either of the following methods:

- Use the UCS Manager. See either the *Cisco UCS Manager GUI Configuration Guide* or the *Cisco UCS Manager CLI Configuration Guide*.
- Use the Power button on the server front panel.

To use the Power button, follow these steps:

## Procedure

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**Step 1** Check the color of the Power Status LED.

- Green indicates that the server is in main power mode and must be shut down before it can be safely powered off. Go to Step 2.
- Amber indicates that the server is already in standby mode and can be safely powered off. Go to Step 3.

**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 Status 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 you are shutting down all blade servers in a chassis, you should now disconnect the power cords from the chassis to completely power off the servers. If you are only shutting down one server, you can skip unplugging the chassis and move to removing the server.

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## Removing a Blade Server

Using UCS Manager, decommission the server before physically removing the server. To remove a blade server from the chassis, follow these steps:

## Procedure

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- Step 1** Loosen the captive screw on the front of the blade.
  - Step 2** Remove the blade from the chassis by pulling the ejector lever on the blade until it unseats the blade server.
  - Step 3** Slide the blade part of the way out of the chassis, and place your other hand under the blade to support its weight.
  - Step 4** Once removed, place the blade on an antistatic mat or antistatic foam if you are not immediately reinstalling it into another slot.
  - Step 5** If the slot is to remain empty, install a blank faceplate (N20-CBLKB1) to keep dust out of the chassis.
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### Installing a Half-width Blade Server

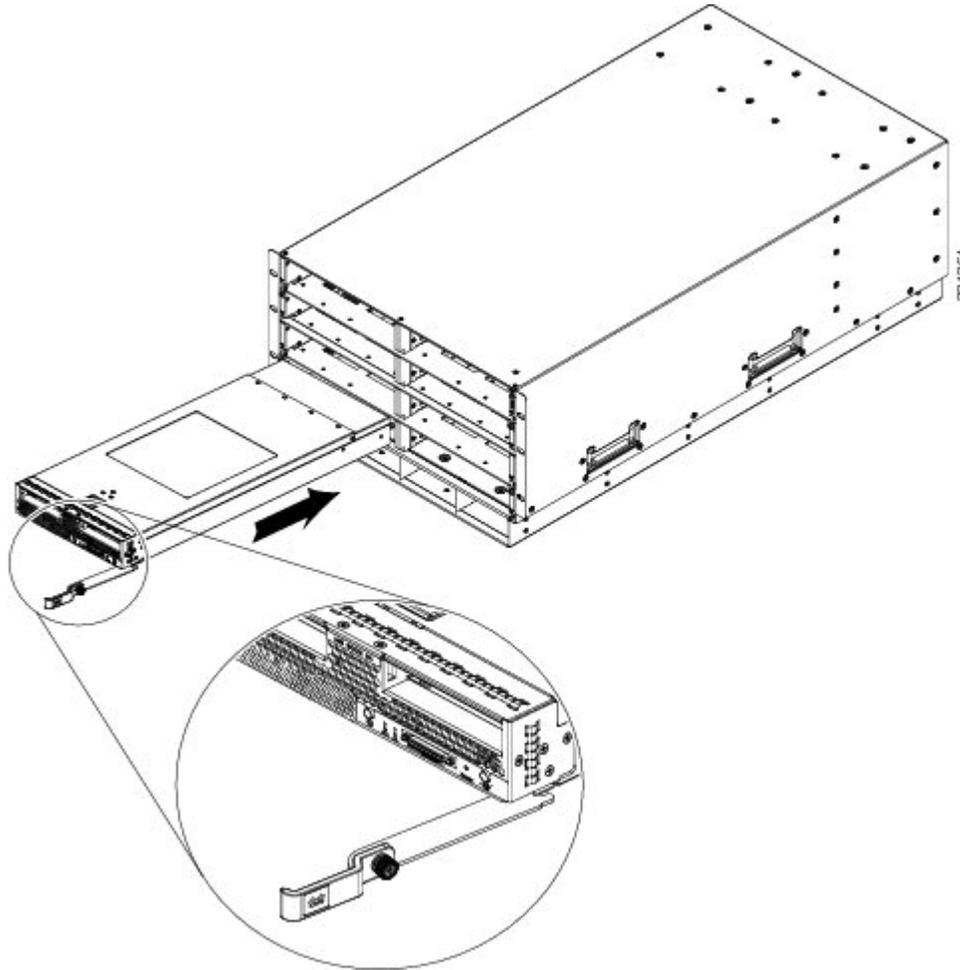
UCS B200 M3 and UCS B22 M3 half-width blade servers are interoperable in a UCS chassis with any other UCS blade servers, including prior generation B200 M2 and B200 M1 servers, or other UCS B-Series blade servers. To install a half-width blade server, follow these steps:

## Procedure

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- Step 1** Grasp the front of the blade server and place your other hand under the blade to support it.

*Figure 5: Positioning a Blade Server in the Chassis*

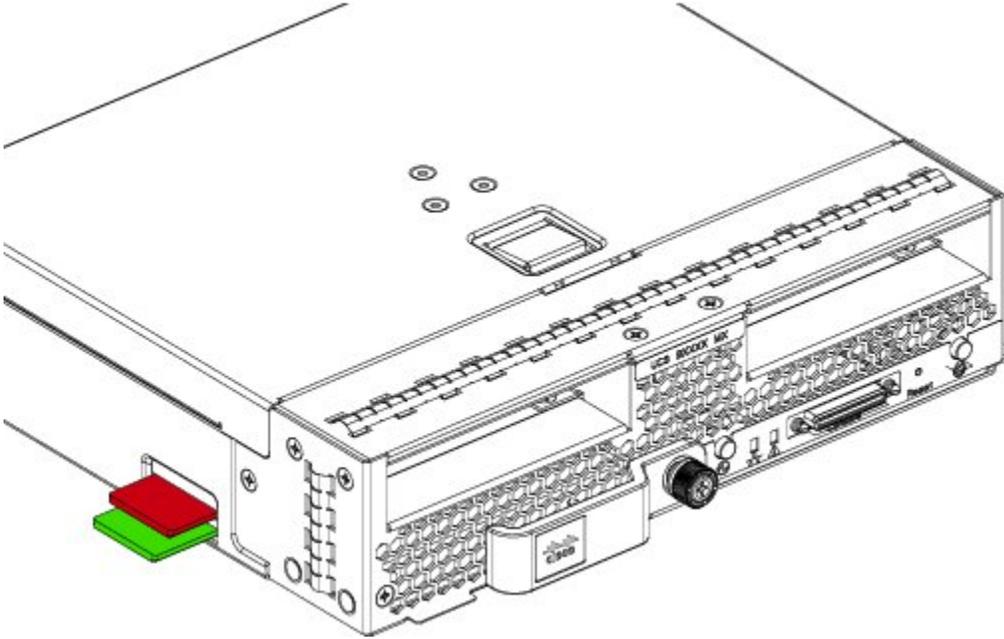


- Step 2** Open the ejector lever in the front of the blade server.
- Step 3** Gently slide the blade into the opening until you cannot push it any farther.
- Step 4** Press the ejector lever so that it catches the edge of the chassis and presses the blade server all the way in.
- Step 5** Tighten the captive screw on the front of the blade to no more than 3 in-lbs. Tightening with bare fingers only is unlikely to lead to stripped or damaged captive screws.
- Step 6** Power on the server. UCS Manager automatically reacknowledges, reassociates, and recommissions the server, provided any hardware changes are allowed by the service profile.
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## Secure Digital (SD) Card Access

SD card slots are provided for future usage. Their use is not supported at product release. They will require a future software update to be used.

**Figure 6: SD Card Slot Locations**



33/22 19

## Removing a Blade Server Cover

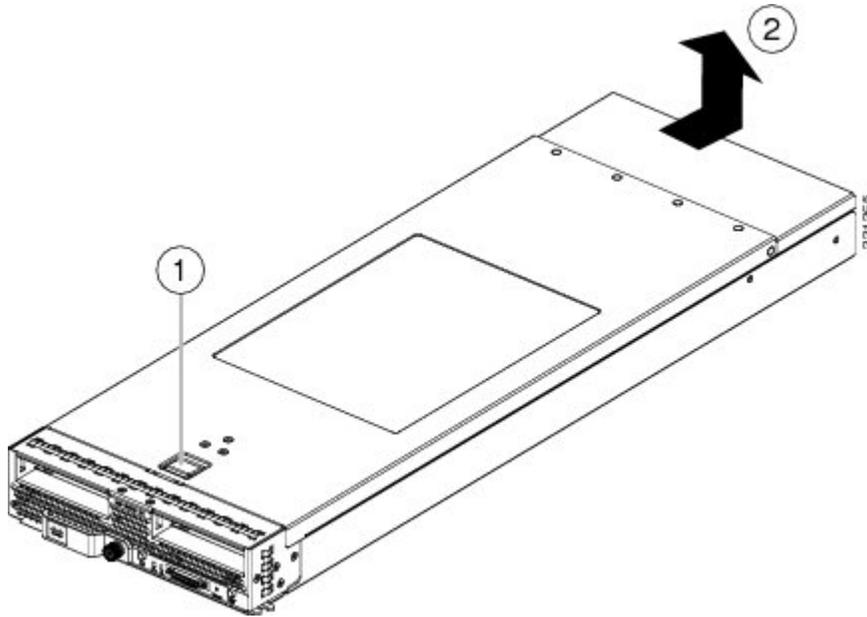
Replacing the cover is the reverse of removing the cover. To open a blade server, follow these steps:

## Procedure

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- Step 1** Press and hold the button down as shown in the figure below.
- Step 2** While holding the back end of the cover, pull the cover back and then up.

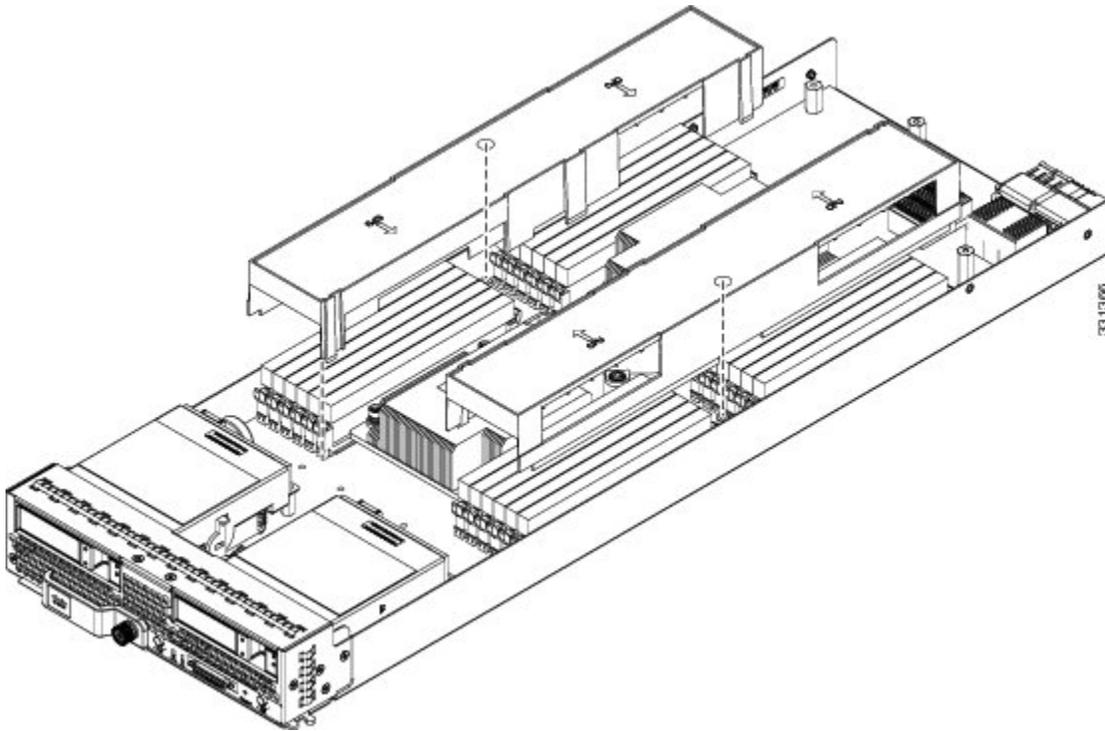
*Figure 7: Opening a Cisco UCS B200 M3 Blade Server*



## Air Baffles

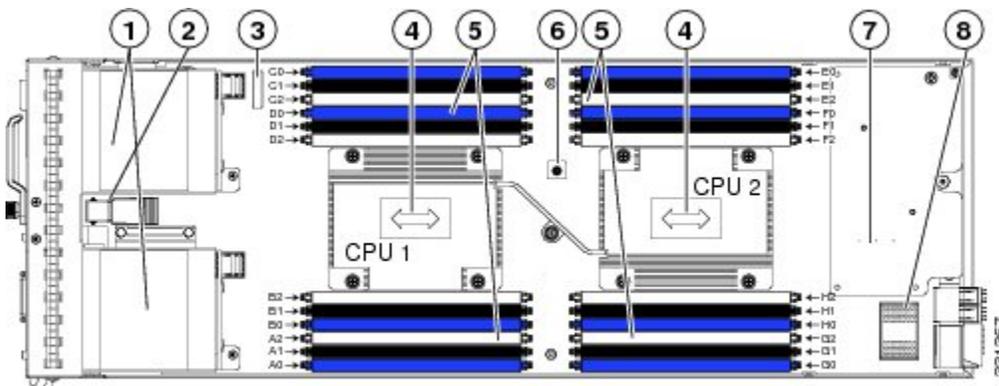
The air baffles direct and improve air flow for the server components. Two identical baffles ship with each B200 M3 server. No tools are necessary to install them, just place them over the DIMMs as shown, with the holes in the center of the baffles aligned with the corresponding motherboard standoffs.

**Figure 8: Cisco UCS B200 M3 Air Baffles**



## Internal Components

**Figure 9: Inside View of the B200 M3 Blade Server**



1	Hard drive bays	2	Internal USB connector <sup>2</sup>
3	Battery	4	CPU and heat sink
5	DIMM slots	6	Diagnostic button
7	Modular LOM (shown installed)	8	Adapter card connector (Adapter not shown installed)

<sup>2</sup> Cisco UCS-USBFLSH-S-4GB= is recommended, but if another USB drive will be used it must be no wider than .8 inches, and no more than 1.345 inches long in order to provide needed clearances to install or remove the USB drive.

### Diagnostics Button and LEDs

At blade start-up, POST diagnostics test the CPUs, DIMMs, HDDs, and adapter cards, and any failure notifications are sent to UCS Manager. You can view these notifications in the System Error Log or in the output of the **show tech-support** command. If errors are found, an amber diagnostic LED also lights up next to the failed component. During run time, the blade BIOS, component drivers, and OS all monitor for hardware faults and will light up the amber diagnostic LED for a component if an uncorrectable error or correctable errors (such as a host ECC error) over the allowed threshold occur.

LED states are saved, and if you remove the blade from the chassis the LED values will persist for up to 10 minutes. Pressing the LED diagnostics button on the motherboard causes the LEDs that currently show a component fault to light for up to 30 seconds for easier component identification. LED fault values are reset when the blade is reinserted into the chassis and booted, and the process begins from its start.

If DIMM insertion errors are detected, they may cause the blade discovery to fail and errors will be reported in the server POST information, which is viewable using the UCS Manager GUI or CLI. UCS blade servers require specific rules to be followed when populating DIMMs in a blade server, and the rules depend on the blade server model. Refer to the documentation for a specific blade server for those rules.

HDD status LEDs are on the front face of the HDD. Faults on the CPU, DIMMs, or adapter cards also cause the server health LED to light solid amber for minor error conditions or blinking amber for critical error conditions.

## Working Inside the Blade Server

All tasks in the following sections require that the server be removed from the Cisco UCS 5108 chassis.

### Installing a Motherboard CMOS Battery

All Cisco UCS blade servers use a CR2032 battery (Cisco PID N20-MBLIBATT=) to preserve BIOS settings while the server is powered down.



#### 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

To install or replace a motherboard complementary metal-oxide semiconductor (CMOS) battery, follow these steps:

## Procedure

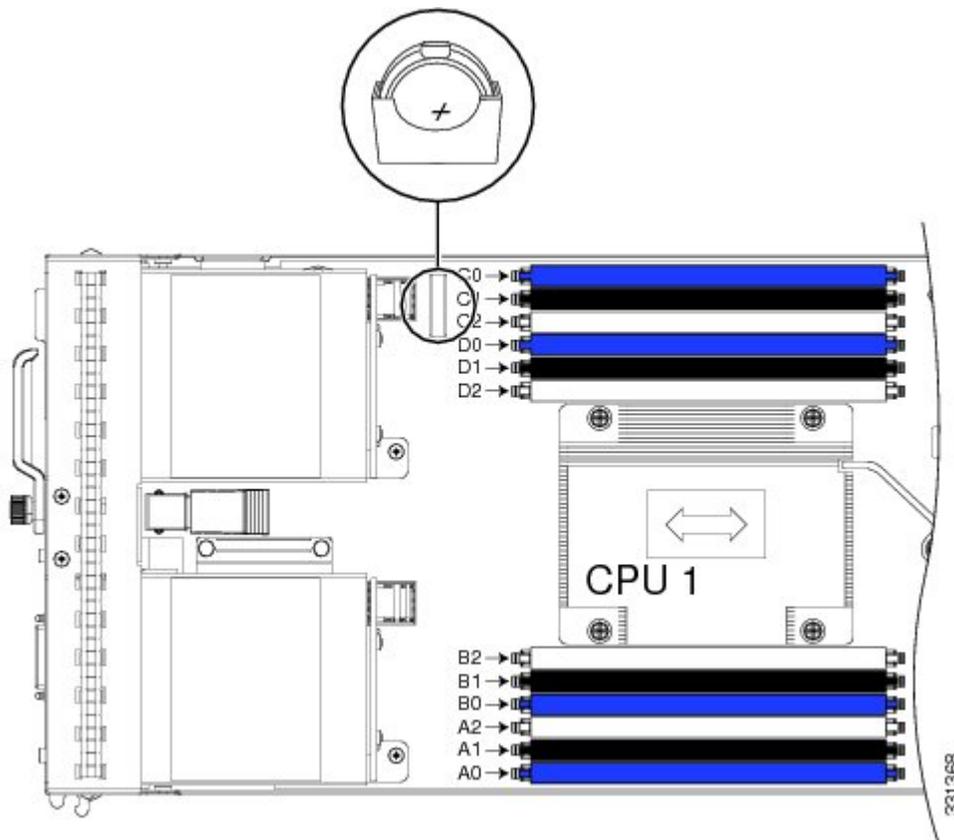
### Step 1 Remove the old CMOS battery:

- Power off the blade, remove it from the chassis, and remove the top cover.
- Push the battery socket retaining clip away from the battery.
- Lift the battery from the socket. Use needle-nose pliers to grasp the battery if there is not enough clearance for your fingers.

### Step 2 Install a motherboard CMOS battery:

- Push the battery socket retaining clip away from where the battery fits in the housing.
- Insert the new battery into the socket with the battery's positive (+) marking facing away from the retaining clip. Ensure that the retaining clip can click over the top of the battery to secure it in the housing.
- Replace the top cover.
- Replace the server in the chassis and power on the blade by pressing the **Power** button.

**Figure 10: Location of the Motherboard CMOS Battery**



## Removing a CPU and Heat Sink

You will use these procedures to move a CPU from one server to another, to replace a faulty CPU, or to upgrade from one CPU to another.



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**Note** The CPU pick and place tool is required to prevent damage to the connection pins between the motherboard and the CPU. Do not attempt this procedure without the required tool, which is included with each CPU option kit.

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To remove a CPU and heat sink, follow these steps:

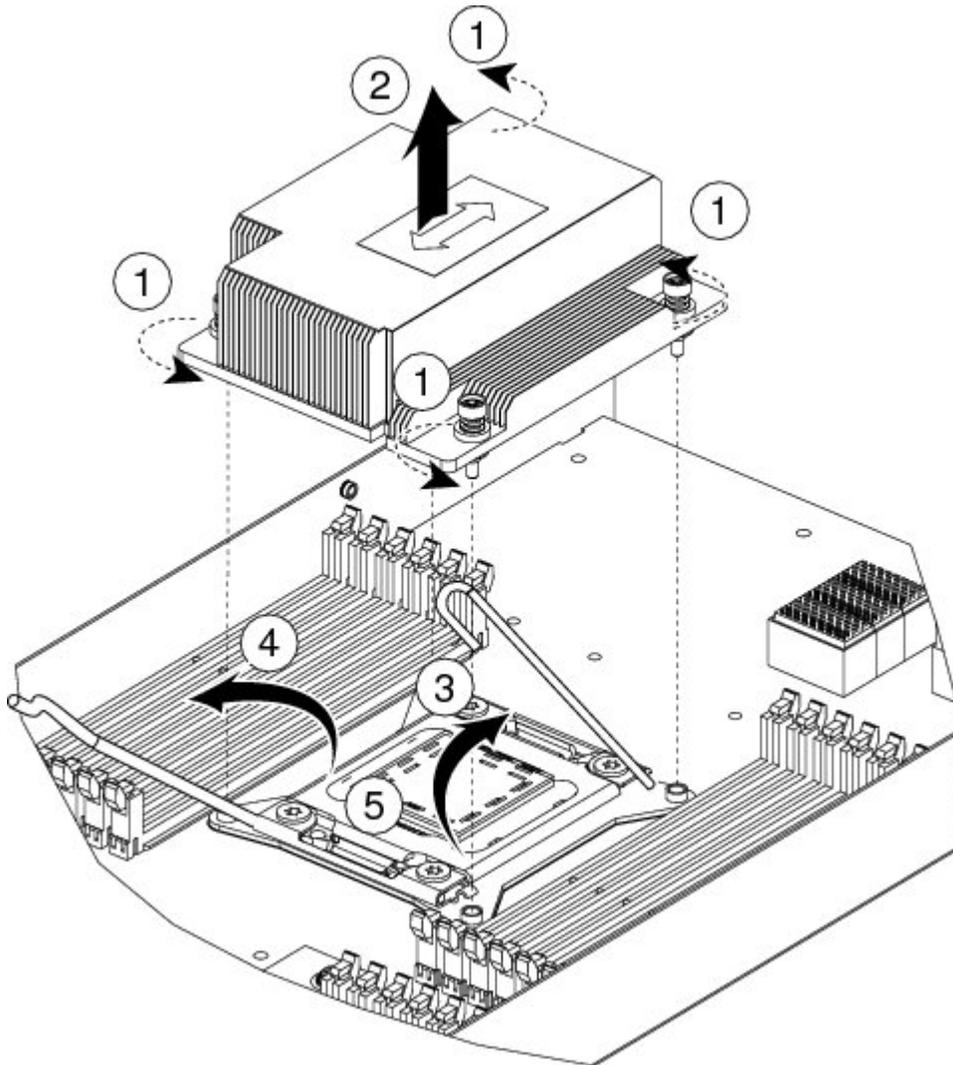
### Procedure

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- Step 1** Unscrew the four captive screws securing the heat sink to the motherboard. See callout 1. Loosen one screw by a quarter turn, then move to the next in the X pattern shown in Figure 6. Continue loosening until the heat sink can be lifted off.
- Step 2** Remove the heat sink (UCSB-HS-01-EP). See callout 2. Remove the existing thermal compound from the bottom of the heat sink using the cleaning kit (UCSX-HSCK=) included with each CPU option kit. Follow the instructions on the two bottles of cleaning solvent.

- Step 3** Unhook the first socket hook, marked with an  icon. See callout 3.
- Step 4** Unhook the second socket hook, marked with an  icon. See callout 4.
- Step 5** Open the socket latch. See callout 5.

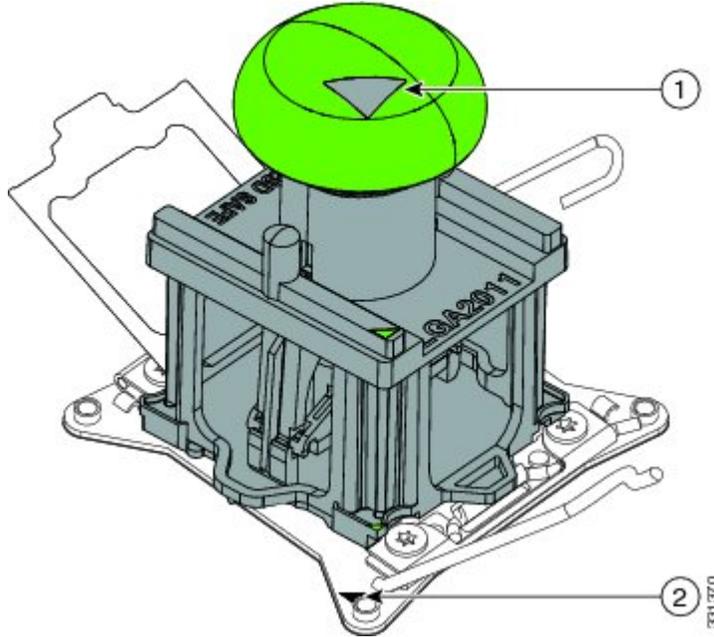
**Figure 11: Removing the Heat Sink and Accessing the CPU Socket (UCS B200 M3 Server Shown)**



- Step 6** Press the central button on the provided CPU pick and place tool (UCS-CPU-EP-PNP=) to release the catch. The CPU pick and place tool is included with each CPU option kit, or the tool may be purchased separately. Be sure to use the tool for the Intel Xeon E5-2600 Series processors.
- Step 7** Remove an old CPU as follows:
- Place the CPU pick and place tool on the CPU socket aligned with the arrow pointing to the CPU registration mark as shown in Figure 2.
  - Press the button/handle on the tool to grasp the installed CPU.

c) Lift the tool and CPU straight up.

**Figure 12: Proper Alignment of CPU Pick and Place Tool (for Intel Xeon E5-2600 Series Processors)**



1	Alignment mark on the button/handle of the pick and place tool	2	Alignment mark on the socket
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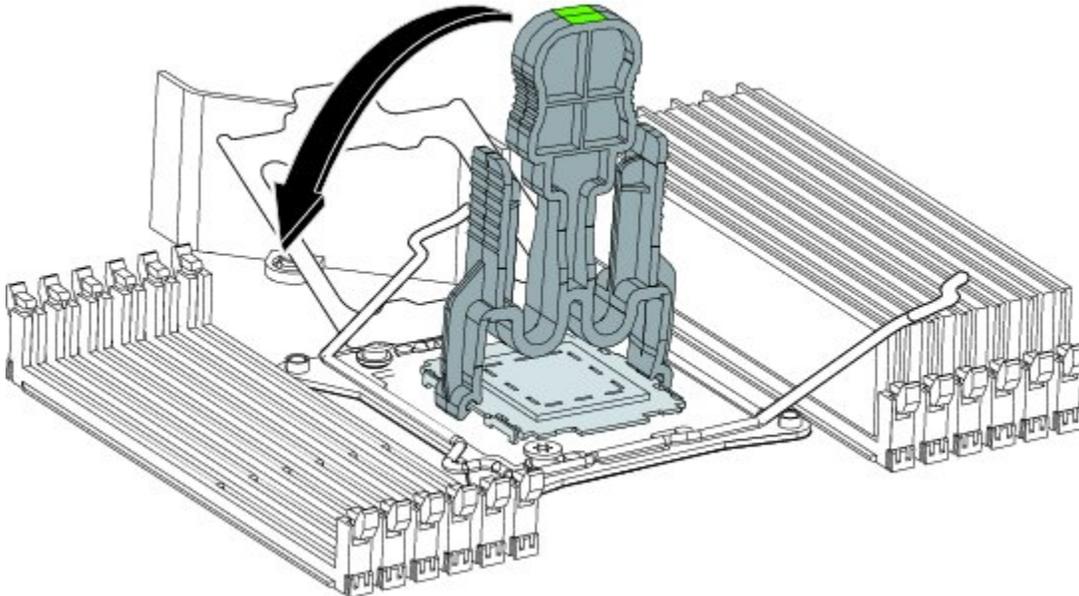
### Installing a New CPU and Heat Sink

Before installing a new CPU in a server, verify the following:

- The CPU is supported for that given server model. This may be verified via the server's Technical Specifications ordering guides or by the relevant release of the Cisco UCS Capability Catalog.
- A BIOS update is available and installed that supports the CPU and the given server configuration.
- If the server will be managed by Cisco UCS Manager, the service profile for this server in UCS Manager will recognize and allow the new CPU.

If you are installing a CPU in a socket that had been shipped empty, there will be a protective cap intended to prevent bent or touched contact pins. The pick and pull cap tool provided can be used in a manner similar to a pair of tweezers. Grasp the protective cap and pivot as shown.

**Figure 13: Protective Cap Removal**



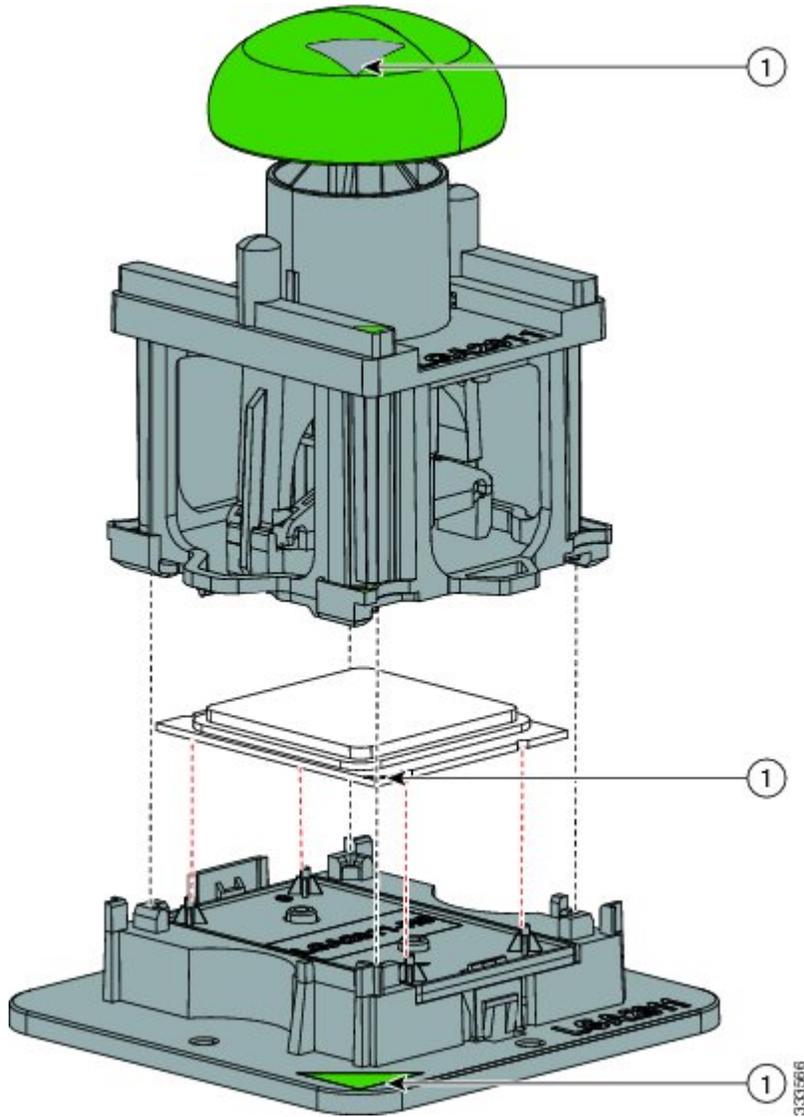
To install a CPU and heat sink, follow these steps:

## Procedure

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- Step 1** Release the catch on the pick and place tool by pressing the handle/button.
- Step 2** Remove the new CPU from the packaging, and load it into the pick and place tool as follows:
- Confirm that the pedestal is set up correctly for your processor. The pedestal ships configured with the markings "LGA2011-R0" facing upward, and this is the correct orientation.
  - Place the CPU on the pedestal. The CPU corners should fit snugly at the pedestal corners and the notches should meet the pegs perfectly.
  - Place the CPU pick and place tool on the CPU pedestal aligned with the A1 arrow pointing to the A1 registration mark on the pedestal.
  - Press the button/handle on the tool to grasp the CPU.

e) Lift the tool and CPU straight up off of the pedestal.

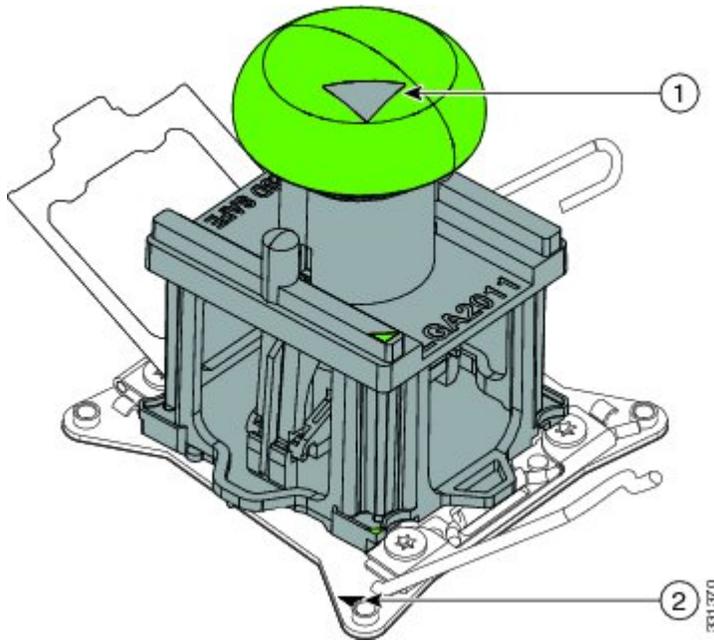
**Figure 14: Loading the Pick and Place Tool**



<b>1</b>	Alignment mark on the pick and place tool, CPU and pedestal		
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- Step 3** Place the CPU and tool on the CPU socket with the registration marks aligned as shown.
- Step 4** Press the button/handle on the pick and place tool to release the CPU into the socket.

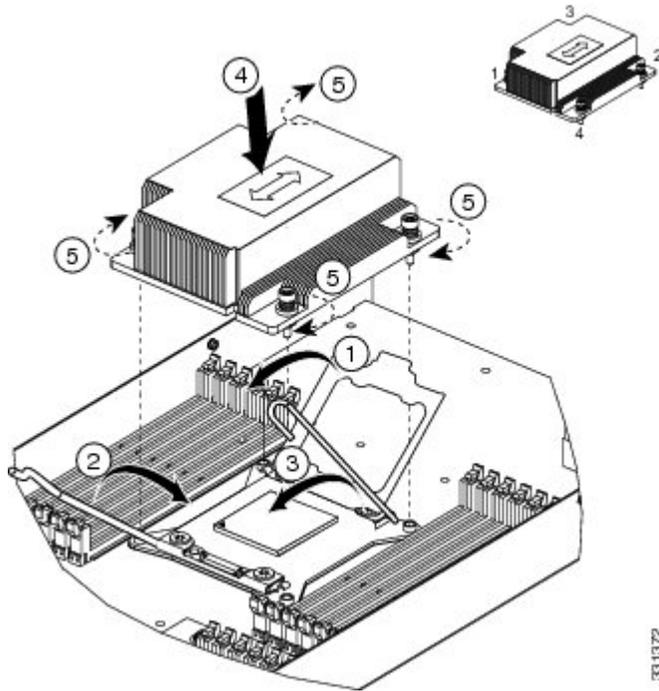
**Figure 15: Using the CPU Pick and Place Tool to Insert the CPU**



1	Alignment mark on the tool button/handle	2	Alignment mark on the CPU socket
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- Step 5** Close the socket latch. See callout 1 below.
- Step 6** Secure the first hook, marked with an  icon. See callout 2 below.
- Step 7** Secure the second hook, marked with an  icon. See callout 3 below.

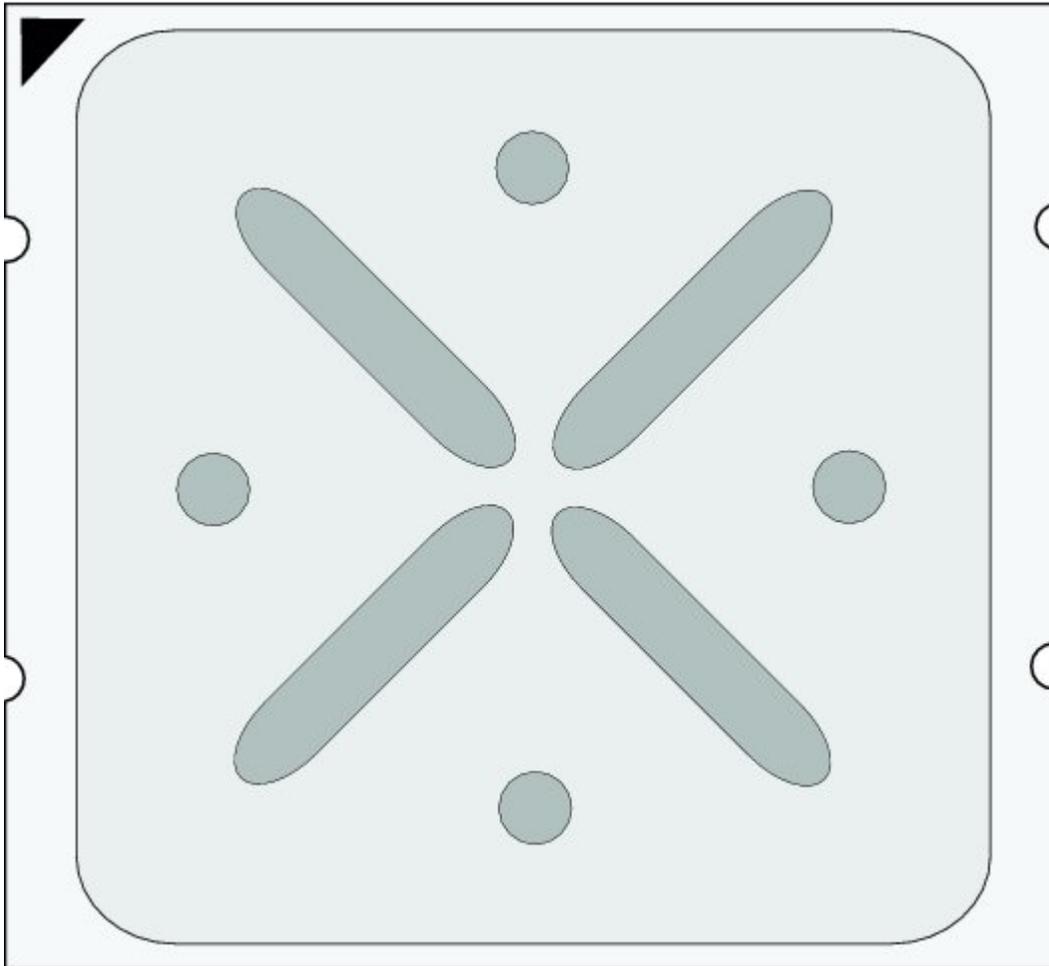
**Figure 16: Replacing the Heat Sink (B200 M3 Shown)**



- Step 8** Using the syringe of thermal grease provided with replacement CPUs and servers (and available separately as UCS-CPU-GREASE=, the only exceptions are Cisco UCS C220 M3 and C240 M3 servers which use UCS-CPU-GREASE2=

instead), add 2 cubic centimeters of thermal grease to the top of the CPU where it will contact the heat sink. Use the pattern shown. This should require half the contents of the syringe.

**Figure 17: Thermal Grease Application Pattern**



**Caution** The thermal grease has very specific thermal properties, and thermal grease from other sources should not be substituted. Using other thermal grease may lead to damage.

**Step 9** Replace the heat sink. See callout 4.

**Caution** On certain models, heat sinks are keyed to fit into the plastic baffle extending from the motherboard. Do not force a heat sink if it is not fitting well, rotate it and re-orient the heat sink.

**Step 10** Secure the heat sink to the motherboard by tightening the four captive screws a quarter turn at a time in an X pattern as shown in the upper right.

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## Memory and Performance

### Installing Memory

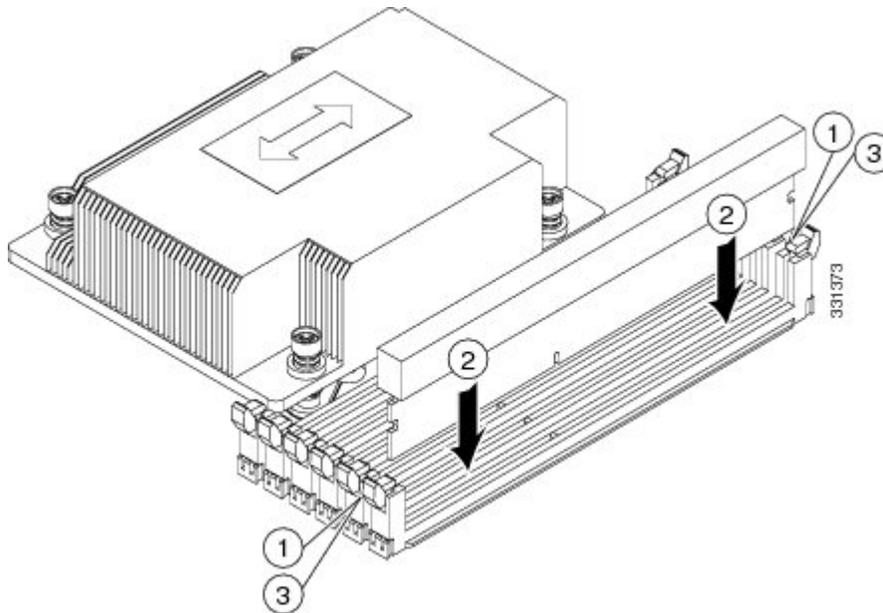
To install a DIMM into the blade server, follow these steps:

## Procedure

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**Step 1** Open both DIMM connector latches.

**Figure 18: Installing DIMMs in the Blade Server**



**Step 2** Press the DIMM into its slot evenly on both ends until it clicks into place. DIMMs are keyed, if a gentle force is not sufficient, make sure the notch on the DIMM is correctly aligned.

**Note** Be sure that the notch in the DIMM aligns with the slot. If the notch is misaligned you may damage the DIMM, the slot, or both.

**Step 3** Press the DIMM connector latches inward slightly to seat them fully.

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### Supported DIMMs

The DIMMs supported in this blade server are constantly being updated. A list of currently supported and available drives is in the specification sheets at:

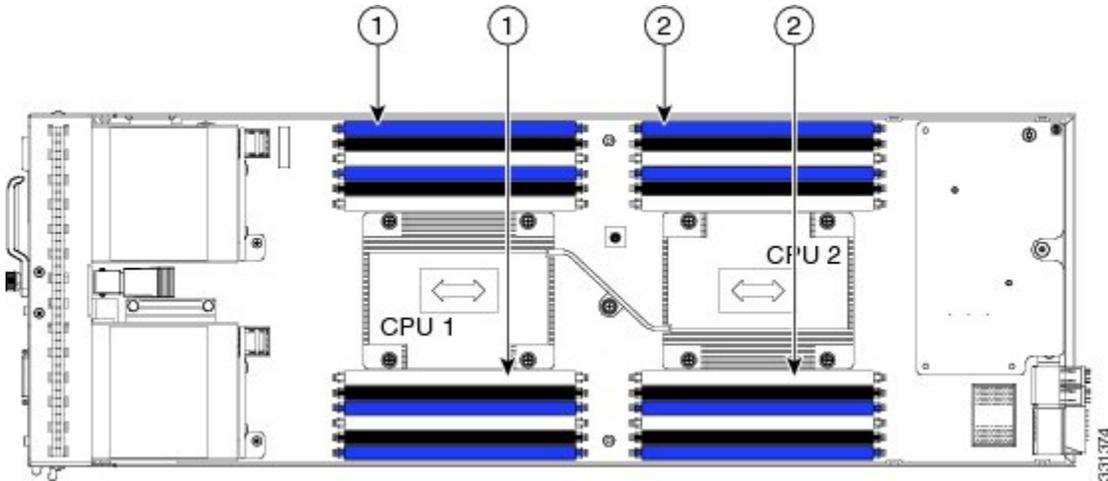
[http://www.cisco.com/en/US/products/ps10280/products\\_data\\_sheets\\_list.html](http://www.cisco.com/en/US/products/ps10280/products_data_sheets_list.html)

Cisco does not support third-party memory DIMMs, and in some cases their use may irreparably damage the server and require an RMA and down time.

### Memory Arrangement

The blade server contains 24 DIMM slots—12 for each CPU. Each set of 12 DIMM slots is arranged into four channels, where each channel has three DIMMs.

**Figure 19: Memory Slots within the Blade Server**



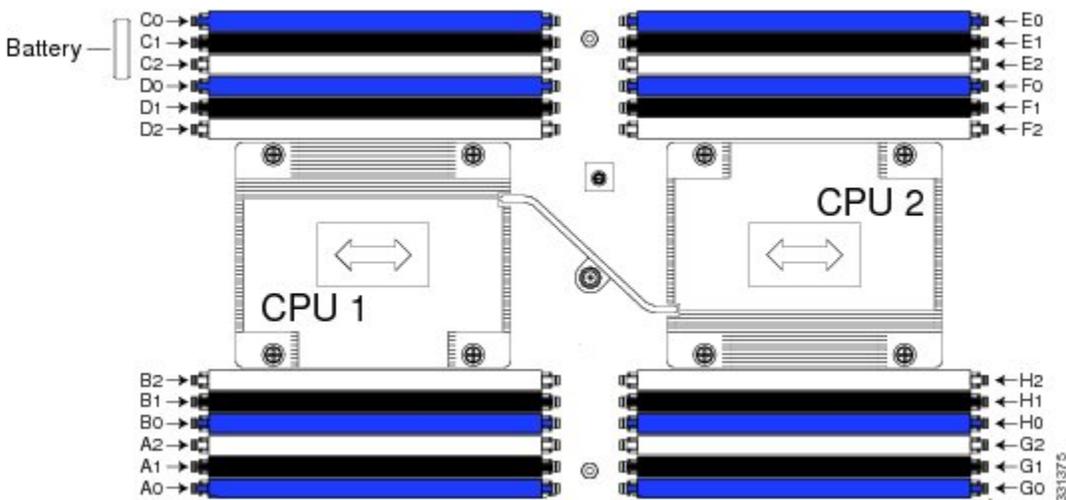
1	Channels A-D for CPU 1	2	Channels E-H for CPU 2
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**DIMMs and Channels**

Each channel is identified by a letter—A, B, C, D for CPU1, and E, F, G, H for CPU 2. Each DIMM slot is numbered 0, 1, or 2. Note that each DIMM slot 0 is blue, each slot 1 is black, and each slot 2 is off-white or beige.

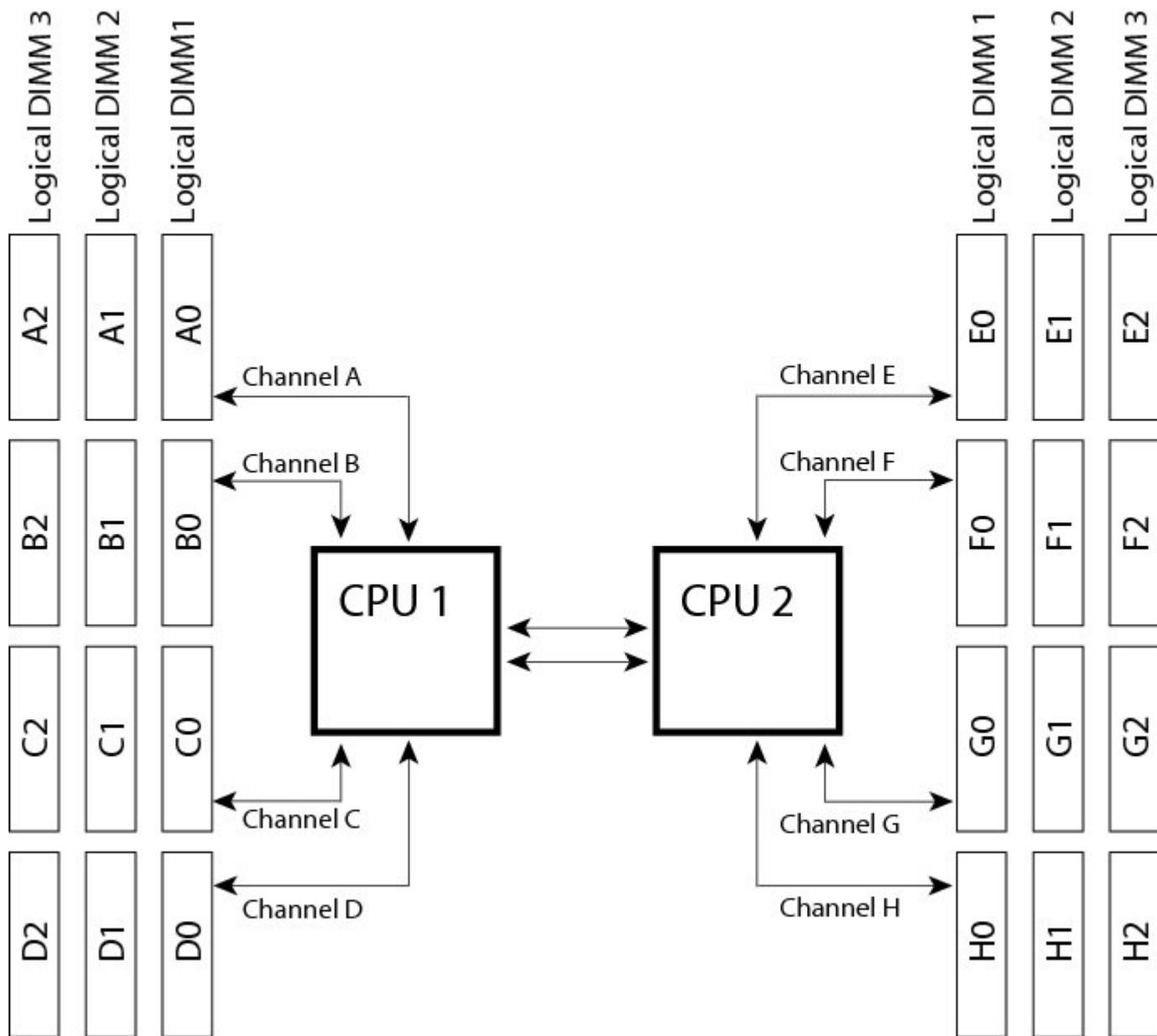
The figure below shows how DIMMs and channels are physically laid out on the blade server. The DIMM slots in the upper and lower right are associated with the second CPU (CPU shown on right in the diagram), while the DIMM slots in the upper and lower left are associated with the first CPU (CPU shown on left).

**Figure 20: Physical Representation of DIMMs and Channels**



The figure below shows a logical view of the DIMMs and channels.

**Figure 21: Logical Representation of DIMMs and Channels**



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DIMMs can be used in the blade server in a one DIMM per Channel (1DPC) configuration, in a two DIMMs per Channel (2DPC) configuration, or a three DIMMs per Channel (3DPC) configuration.

Each CPU in a Cisco UCS B200 M3 blade server supports four channels of three memory slots each. In a 1 DPC configuration, DIMMs are in slot 0 only. In a 2 DPC configuration, DIMMs are in both slot 0 and slot 1. In a 3 DPC configuration, DIMMs are in slot 0, slot 1, and slot 2.

**Table 2: Supported DIMM Population Order**

<b>DIMMs per CPU</b>	<b>CPU 1 installed slots</b>	<b>CPU 2 installed slots</b>
1	A0	E0
2	A0, B0	E0, F0
3	A0, B0, C0	E0, F0, G0
4 (Blue slots)	A0, B0, C0, D0	E0, F0, G0, H0
5	A0, B0, C0, D0, A1	E0, F0, G0, H0, E1
6	A0, B0, C0, D0, A1, B1	E0, F0, G0, H0, E1, F1
7	A0, B0, C0, D0, A1, B1, C1	E0, F0, G0, H0, E1, F1, G1
8 (Blue and black slots)	A0, B0, C0, D0, A1, B1, C1, D1	E0, F0, G0, H0, E1, F1, G1, H1
9	A0, B0, C0, D0, A1, B1, C1, D1,A2	E0, F0, G0, H0, E1, F1, G1, H1, E2
10	A0, B0, C0, D0, A1, B1, C1, D1,A2, B2	E0, F0, G0, H0, E1, F1, G1, H1, E2, F2
11	A0, B0, C0, D0, A1, B1, C1, D1,A2, B2, C2	E0, F0, G0, H0,E1, F1, G1, H1, E2, F2, G2
12 (Blue, black and beige slots)	A0, B0, C0, D0,A1, B1, C1, D1,A2, B2, C2, D2	E0, F0, G0, H0, E1, F1, G1, H1, E2, F2, G2, H2

### Memory Performance

When considering the memory configuration of your blade server, there are several things you need to consider. For example:

- When mixing DIMMs of different densities, the highest density DIMM goes in slot 0 then in descending density (ex: A0: UCS-MR-1X162RY-A , A1: UCS-MR-1X082RY-A, A2: UCS-MR-1X041RY-A)
- Your selected CPU(s) can have some affect on performance.
- DIMMs can be run in a 1DPC, a 2DPC, or a 3DPC configuration. 1 DPC and 2DPC can provide the maximum rated speed that the CPU and DIMMs are rated for. 3DPC causes the DIMMs to run at a slower speed.

### Memory Mirroring and RAS

The Intel E5-2600 CPUs within the blade server support memory mirroring only when an even number of Channels are populated with DIMMs. If one or three channels are populated with DIMMs, memory mirroring is automatically disabled. Furthermore, if memory mirroring is used, DRAM size is reduced by 50 percent for reasons of reliability.

### Installing a Modular LOM

The Cisco VIC 1240 is a specialized modular Lan on Motherboard (mLOM) adapter that provides dual 2 x 10 Gb of Ethernet/ or Fiber Channel over Ethernet (FCoE) connectivity to each chassis. It plugs into the dedicated mLOM connector only. It is currently

the only card that can be plugged into the mLOM connector and it will provide connectivity through either a 2100 series or 2200 series IOM.



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**Note** You must remove the adapter card to service the modular LOM.

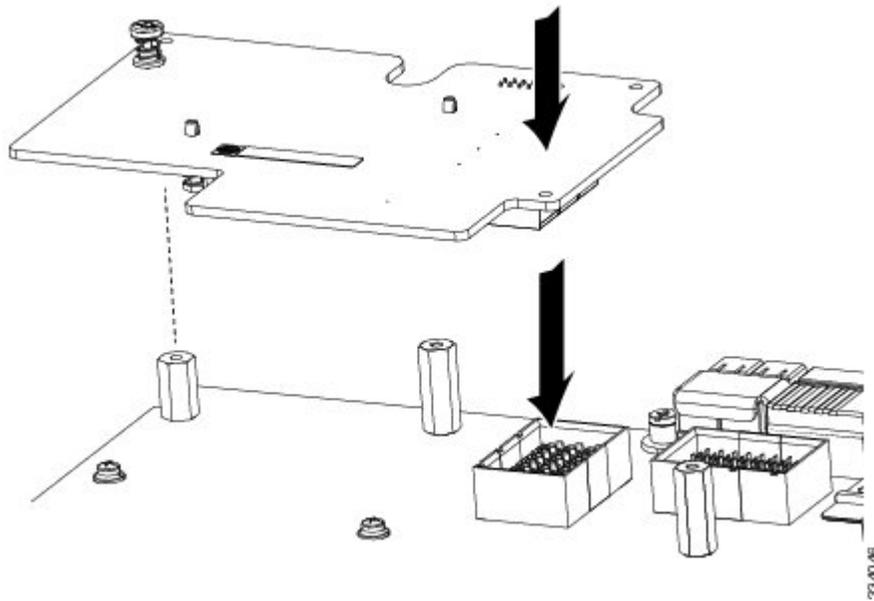
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To install an mLOM on the blade server, follow these steps:

### Procedure

- 
- Step 1** Position the mLOM's board connector above the motherboard connector and align the captive screw to the standoff post on the motherboard.
  - Step 2** Firmly press the modular LOM's board connector into the motherboard connector.
  - Step 3** Tighten the captive screw.
- Tip** To remove a modular LOM, reverse the above procedure. You might find it helpful when removing the connector from the motherboard to gently rock the board along the length of the connector until it loosens.

**Figure 22: Installing an mLOM**



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### Installing an Adapter Card

The network adapters and interface cards all have a shared installation process and are constantly being updated. A list of currently supported and available models for this server is in the specification sheets at this URL:

[http://www.cisco.com/en/US/products/ps10280/products\\_data\\_sheets\\_list.html](http://www.cisco.com/en/US/products/ps10280/products_data_sheets_list.html)



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**Note** If a VIC 1240 mLOM is not installed, you must have an adapter card installed.

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**Note** Use of the adapters available for this server might require an upgrade to the FEX in the chassis. The 2104XP FEX is not compatible with any Cisco-certified adapter. If a VIC 1240 mLOM card is installed, you will have connectivity through the mLOM but other adapters will not be recognized. Use of all slots requires Cisco UCS 2200 series FEXes.

---

If you are switching from one type of adapter card to another, before you physically perform the switch make sure that you download the latest device drivers and load them into the server's operating system. For more information, see the firmware management chapter of one of the Cisco UCS Manager software configuration guides.

The Cisco UCS 785GB or 365GB MLC Fusion-io Drive and LSI 400GB SLC WarpDrive have the same form factor as M3 adapter cards and can be installed and removed using the same procedures. Using these drives in a B200 M3 or B22 M3 blade server requires the presence of a VIC 1240 mLOM to provide blade I/O. They will not work in M1 and M2 generation Cisco UCS servers. These drives appear in Cisco UCS Manager as regular SSDs.

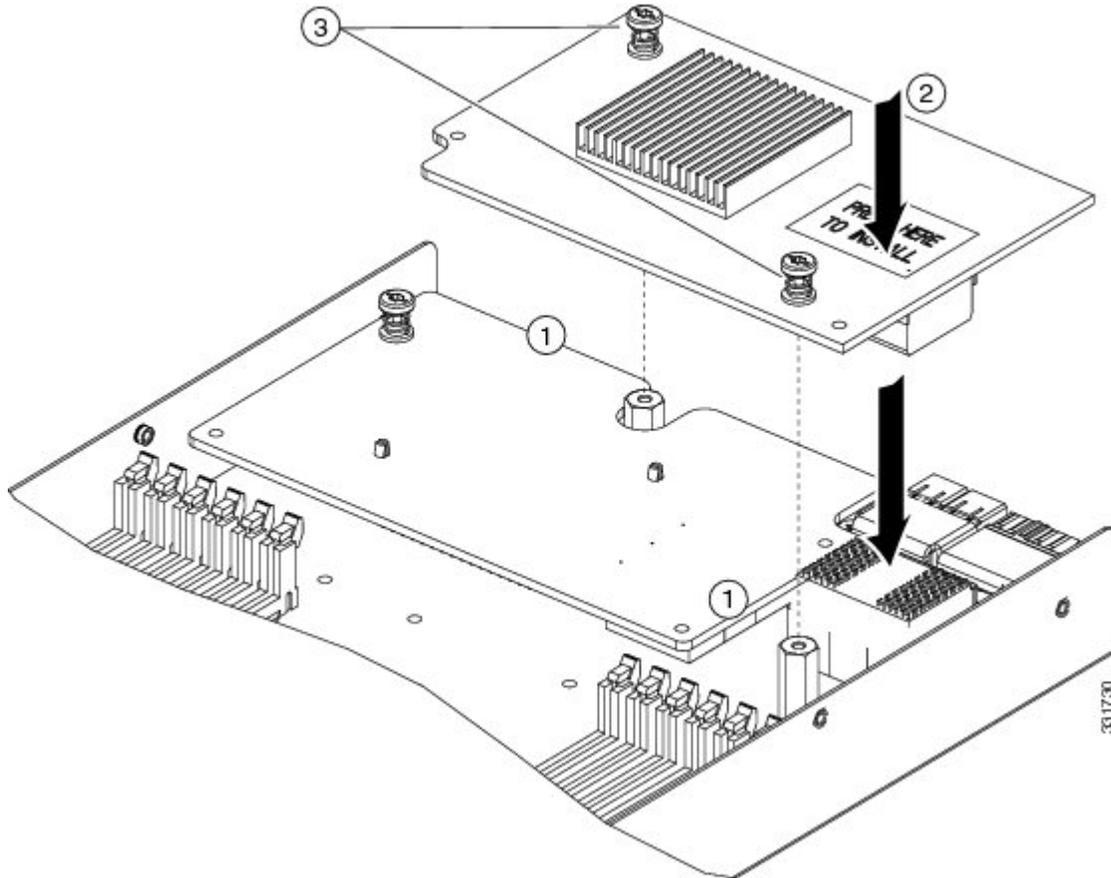
## Procedure

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- Step 1** Position the adapter board connector above the motherboard connector and align the two adapter captive screws to the standoff posts (see callout 1) on the motherboard.
- Step 2** Firmly press the adapter connector into the motherboard connector (see callout 2) .
- Step 3** Tighten the two captive screws (see callout 3) .

**Tip** Removing an adapter card is the reverse of installing it. You might find it helpful when removing the connector from the motherboard to gently rock the board along the length of the connector until it loosens.

**Figure 23: Installing an Adapter Card**



## Enabling a Trusted Platform Module

The Trusted Platform Module (TPM, Cisco Product ID UCSX-TPM1-001) is a component that can securely store artifacts used to authenticate the server. These artifacts can include passwords, certificates, or encryption keys. A TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy. Authentication (ensuring that the platform can prove that it is what it claims to be) and attestation (a process helping to prove that a platform is trustworthy and has not been breached) are necessary steps to ensure safer computing in all environments.

A TPM is a factory-configurable option for this server. It is a requirement for the Intel Trusted Execution Technology (TXT) security feature, which must be enabled in the BIOS settings for a server equipped with a TPM. A TPM can not be added later by customers, or moved from one server to another.

To enable the TPM:

## Procedure

- 
- Step 1** Enable Quiet Mode in the BIOS policy of the server's Service Profile.
  - Step 2** Establish a direct connection to the server, either by connecting a keyboard, monitor, and mouse to the front panel using a KVM dongle (N20-BKVM) or by other means.
  - Step 3** Reboot the server.
  - Step 4** Press **F2** during reboot to enter the BIOS setup screens.
  - Step 5** On the Advanced tab, select **Trusted Computing** and press **Enter**.
  - Step 6** Set the TPM Support option to **Enable**.
  - Step 7** Press **F10** to save and exit. Allow the server to finish booting.
- 

## Server Troubleshooting

For general server troubleshooting information, refer to the [Troubleshooting Server Hardware](#) chapter of the Cisco UCS Troubleshooting Guide.

## Server Configuration

UCS blade servers are intended to be configured and managed using UCS Manager. Refer to the [UCS Manager Configuration Guide](#) appropriate for your UCS Manager version.

## Server Specifications

**Table 3: Physical Specifications for the Cisco UCS B200 M3 Blade Server**

Specification	Value
Height	1.95 inches (50 mm)
Width	8.00 inches (203 mm)
Depth	24.4 inches (620 mm)
Weight	15.0 lbs (6.8 kg) <sup>3</sup>

<sup>3</sup> The system weight listed here is an estimate for a fully configured system and will vary depending on peripheral devices installed.

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## Related Documentation

The documentation set for the Cisco Unified Computing System environment is described in full at:

<http://www.cisco.com/go/unifiedcomputing/b-series-doc>

For specifics on which component models are supported on which servers refer to the server's Technical Specifications ordering guide at:

[http://www.cisco.com/en/US/products/ps10493/products\\_data\\_sheets\\_list.html](http://www.cisco.com/en/US/products/ps10493/products_data_sheets_list.html)

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## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly [What's New in Cisco Product Documentation](#), which also lists all new and revised Cisco technical documentation.

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