Cisco UCS B260 M4 and B460 M4 Blade Server Installation and Service Note for Servers with E7 v4 CPUs

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CONTENTS

Preface

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Audience

To use this installation guide, you must be familiar with electronic circuitry and wiring practices and preferably be an electronic or electromechanical technician who has experience with electronic and electromechanical equipment.

Only trained and qualified service personnel (as defined in IEC 60950-1 and AS/NZS60950) should install, replace, or service the equipment. Install the system in accordance with the U.S. National Electric Code if you are in the United States.

Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in **this font**. Main titles such as window, dialog box, and wizard titles appear in **this font**.
Document titles	Document titles appear in *this font*.
TUI elements	In a Text-based User Interface, text the system displays appears in `this font`.
System output	Terminal sessions and information that the system displays appear in `this font`.
CLI commands	CLI command keywords appear in **this font**. Variables in a CLI command appear in *this font*.
[ ]	Elements in square brackets are optional.

Text Type	Indication
{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.

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

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.

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

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

Warning   IMPORTANT SAFETY INSTRUCTIONS

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

SAVE THESE INSTRUCTIONS

Related Cisco UCS Documentation

Documentation Roadmaps

For a complete list of all B-Series documentation, see the *Cisco UCS B-Series Servers Documentation Roadmap* available at the following URL: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/overview/guide/UCS_roadmap.html

For a complete list of all C-Series documentation, see the *Cisco UCS C-Series Servers Documentation Roadmap* available at the following URL: https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/overview/guide/ucs_rack_roadmap.html.

For information on supported firmware versions and supported UCS Manager versions for the rack servers that are integrated with the UCS Manager for management, refer to Release Bundle Contents for Cisco UCS Software.

Other Documentation Resources

Follow Cisco UCS Docs on Twitter to receive document update notifications.

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.

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

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C H A P T E R 1

Overview

This chapter contains the following sections:

Cisco UCS B260 M4 Blade Server

The UCS B260 M4 Blade Server is a full-width blade that is formed from the following parts:

- One UCS Scalable Blade Module

- One UCS Scalability Terminator that attaches to the front of the UCS Scalable Blade Module

The following table lists the features of the Cisco UCS B260 M4 Blade Server.

Table 1: Features of the UCS B260 M4 Blade Server

Feature	UCS B260 M4 with Intel Xeon E7 v4 CPU
Base server PID	UCSB-EX-M4-3
Form factor	Full width
Number of CPUs	2
CPU Model	Intel Xeon E7 v4
Memory type	DDR4 DIMMs
Memory slots	48
LSI3008 SAS RAID Controller	1 that supports 2 SAS or SATA hard drives
Drive Quantity	2 SSD
Mezzanine slots	2+ mLOM
Secure digital (SD) cards	2

Feature	UCS B260 M4 with Intel Xeon E7 v4 CPU
Internal USB device	1
Trusted platform module (TPM)	1

You can install up to four Cisco UCS B260 M4 Blade Servers in the Cisco UCS 5108 server chassis.

The following figure shows the front of the Cisco UCS B260 M4 Blade Server.

Figure 1: Cisco UCS B260 M4 Blade Server Front View
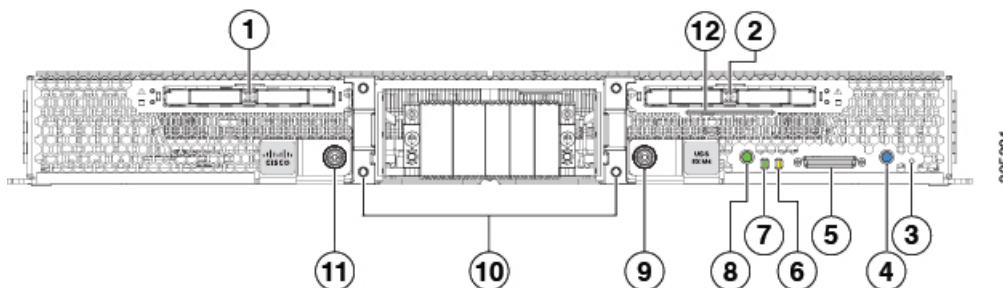
1	SSD 1	7	Network link status
2	SSD 2	8	Power button and LED
3	Reset button	9	Right ejector handle
4	Beaconing button and LED	10	Terminator/connector interface
5	Local console connection	11	Left ejector handle
6	Blade health LED	12	Asset tag

The plastic asset tag pulls out of the front panel and does not interfere with the air flow of the module. A label that identifies the version of the UCS Scalable M4 Blade Module appears on the asset tag.

The Cisco UCS B460 M4 Blade Server

The UCS B460 M4 blade server is a four-socket blade server that consists of two UCS Scalable M4 Blade Modules that are attached together with the UCS Scalability Connector.

An upgrade kit is available to upgrade the Cisco UCS B260 blade server to the UCS B460 M4 blade server. The upgrade kits includes the following parts:

- One UCS Scalable M4 Blade Module

- One UCS Scalability Connector that attaches to the front of the blade modules and connects them to form the four-socket blade server.

The two UCS Scalable M4 Blade Modules in the UCS B460 M4 blade server are in a master-slave relationship. The lower module is the master, and the upper module is the slave. The KVM cable, USB flash drive, and SD cards must be configured in the master blade module of a B460 M4 blade server; if they are configured in the slave module, they will not operate.

See Upgrading to a Cisco UCS B460 M4 Blade Server, on page 33 for the instructions to upgrade to a UCS B460 M4 blade server.

The following table lists the features of the Cisco UCS B460 M4 Blade Server.

Table 2: Features of the Cisco UCS B460 M4 Blade Server

Feature	UCS B460 M4 with Intel Xeon E7 v4 CPU
Base server PID	UCSB-EX-M4-3
Form factor	Full width, double height
Number of CPUs	4
CPU Model	Intel Xeon E7 v4
Memory type	DDR4 DIMMs
Memory slots	96
LSI3008 SASRAID Controller	2 that supports 4 SAS or SATA hard drives
Drive Quantity	4 SSD
Mezzanine slots	2 + 2x mLOM
Secure digital (SD) cards	2
Internal USB device	1
Trusted platform module (TPM)	1

Figure 2: Cisco UCS B460 M4 Blade Server
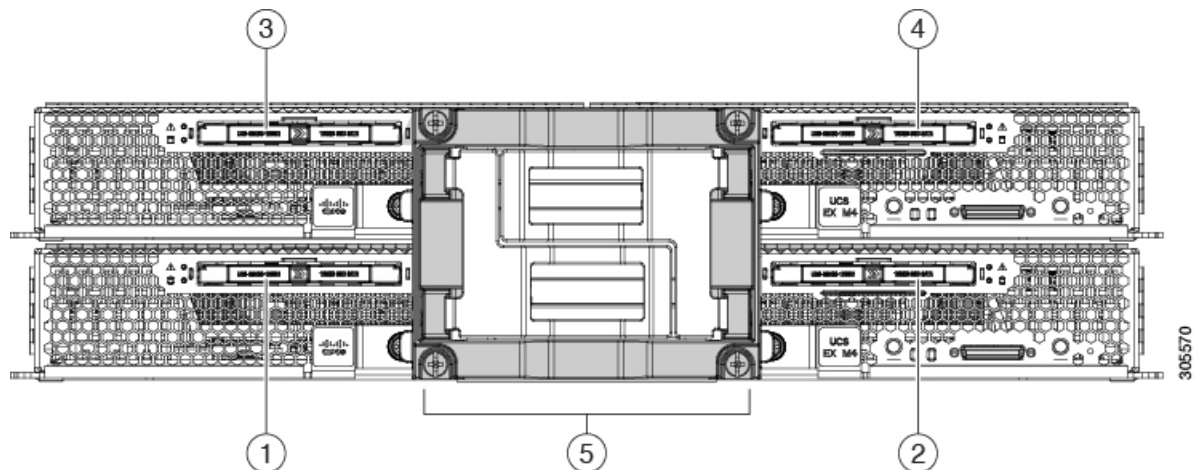
1	Drive bay 1	4	Drive bay 4
2	Drive bay 2	5	UCS Scalability Connector

3	Drive bay 3		

External Features Overview

The features of the blade server that are externally accessible are described in this section.

LEDs

Server LEDs indicate whether the blade server is in active or standby mode, the status of the network link, the overall health of the blade server, and whether the server is set to give a blinking blue locator light from the locator button.

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

Table 3: Blade Server LEDs

LED	Color	Description
Power	Off	Power off.
	Green	Main power state. Power is supplied to all server components and the server is operating normally.
	Amber	Standby power state. Power is supplied only to the service processor of the server so that the server can still be managed.
		Note The front-panel power button is disabled by default. It can be re-enabled through Cisco UCS Manager. After it's enabled, if you press and release the front-panel power button, the server performs an orderly shutdown of the 12 V main power and goes to standby power state. You cannot shut down standby power from the front-panel power button. See the Cisco UCS Manager Configuration Guides for information about completely powering off the server from the software interface.
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.

LED	Color	Description
Blue locator button and LED	Off	Blinking is not enabled.
	Blinking blue 1 Hz	Blinking to locate a selected blade—If the LED is not blinking, the blade is not selected. You can control the blinking in UCS Manager or by using the blue locator button/LED.
Activity (Disk Drive)	Off	Inactive.
	Green	Outstanding I/O to disk drive.
Health (Disk Drive)	Off	Can mean either no fault detected or the drive is not installed.
	Flashing Amber 4 hz	Rebuild drive active. If the Activity LED is also flashing amber, a drive rebuild is in progress.
	Amber	Fault detected.

Buttons

The Reset button is recessed in the front panel of the server. You can press the button with 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 do not work.

The locator function for an individual server may get turned on or off by pressing the locator button/LED.

The front-panel power button is disabled by default. It can re-enabled through Cisco UCS Manager. After it's enabled, The power button 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 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 unexpectedly shut down at a later time. To safely reboot a server from a power-down state, use the Boot Server action in Cisco UCS Manager.

Local Console Connection

The local console connector 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 that 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 3: KVM Cable for Blade Servers
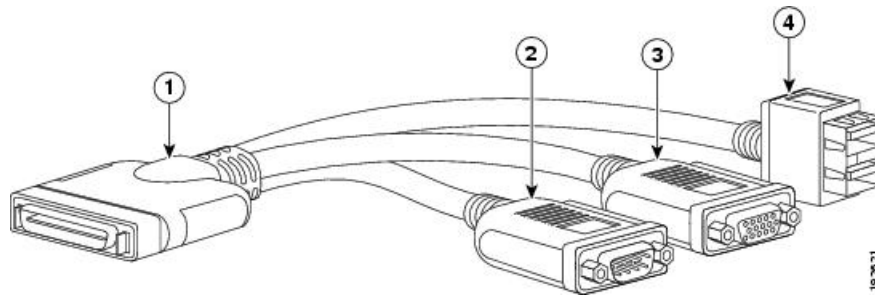
1	Connector to blade server local console connection	2	DB9 serial connector
3	VGA connector for a monitor	4	2-port USB connector for a mouse and keyboard

Secure Digital Cards

Secure Digital (SD) card slots are provided and one or two SD cards can be populated. If two SD cards are populated, they can be used in a mirrored mode.

Note   Do not mix different capacity cards in the same server.

The SD cards can be used to store operating system boot images or other information. Once the server is removed from the chassis, you can access the SD cards from the back of the server. When facing the back of the server, the SD cards are in the lower right corner. The following figure shows the SD cards and the process to remove them:

1. Press down on the retainer top to expose the SD cards.

2. While holding down the retainer top, push on the edge of the SD card to remove it.

Figure 4: SD Card Slots
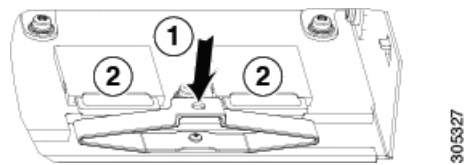
Drives

Each UCS Scalable M4 Blade Module has two front-accessible, hot-swappable 7-mm SSDs. Unused drive bays should always be covered with a blank faceplate (N20-BBLKD-7MM) if the bay is to remain empty.

The drives supported in the blade server come with the drive sled attached. Spare drive sleds are not available. A list of currently supported drives is in the specification sheets at this URL:http://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-b-series-blade-servers/datasheet-listing.html

Installing a Blade Server

This chapter contains the following sections:

Installing a Blade Server in the Chassis

If a UCS B460 M4 blade server is mixed with other full-width or half-width blades in the chassis, the UCS B460 M4 blade servers must occupy the bottom two full-width slots in the chassis. The chassis should be loaded with the largest server on the bottom, starting with a UCS B460 M4 blade server on the bottom, followed by full-width blades above, and the half-width blades at the very top of the chassis.

Procedure

Step 1   If necessary, remove the slot divider from the chassis.

a) Simultaneously pull up on the left side catch and push down on the right side catch as shown in callout 1 of the following figure.

b) Pull the slot divider out of the chassis as shown in callout 2 of the following figure. Keep the slot divider in case it is needed at another time.

Figure 5: Removing a Slot Divider
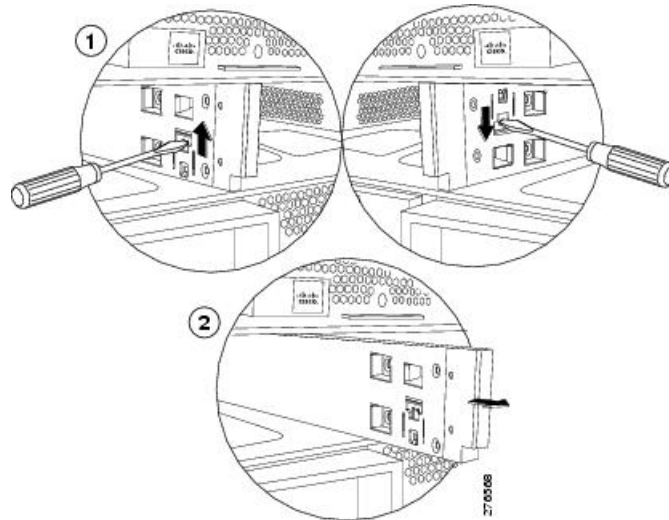
| **Tip** | To reinstall the slot divider, align it with the dimples in the slot top and bottom and slide it back in until it clicks into place. |

Step 2   Grasp the front of the blade module and place your other hand under the blade to support it.

Figure 6: Positioning a UCS B260 M4 Blade Module in the Chassis
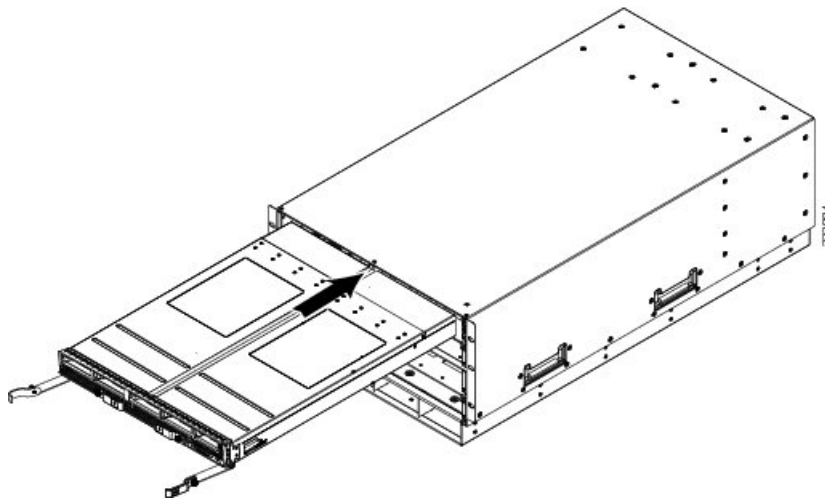
Step 3   Open the ejector levers in the front of the blade module.

Step 4   Gently slide the blade into the blade slot opening until you cannot push it any farther.

Step 5   Press the ejector levers so that they latch with the edge of the chassis and press the blade module all the way in.

Step 6   Tighten the captive screw on the front of the blade to no more than 3 in-lbs. Tightening with bare fingers will prevent stripped or damaged captive screws.

Step 7   Attach the UCS Scalability Terminator or UCS Scalability Connector to the blade module(s) as follows:

a) Line up the four captive screws on the UCS Scalability Terminator with the holes on the front of the blade module(s).

b) Push the UCS Scalability Terminator or UCS Scalability Connector into place.

c) Tighten the captive screws on the front of the UCS Scalability Terminator or the UCS Scalability Connector.

Server Configuration

Cisco UCS blade servers should be configured and managed using Cisco UCS Manager. For details, see the *Configuration Guide* for the version of Cisco UCS Manager that you are using. The configuration guides are available at the following URL:
http://www.cisco.com/en/US/products/ps10281/products_installation_and_configuration_guides_list.html

Powering Off a Blade Server Using the Power Button

Note The front panel power button is disabled by default to ensure that servers are decommissioned through the UCS Manager software before shutdown. If you prefer to shut down the server locally with the button, you can enable front power-button control in UCS Manager.

Tip You can also shut down servers remotely using Cisco UCS Manager. For details, see the *Configuration Guide* for the version of Cisco UCS Manager that you are using. The configuration guides are available at the following URL:
http://www.cisco.com/en/US/products/ps10281/products_installation_and_configuration_guides_list.html

Procedure

Step 1 If you are local to the server, check the color of the **Power Status** LED for each server in the chassis that you want to power off.

- Green indicates that the server is running 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 If you previously enabled front power-button control through Cisco UCS Manager, press and release the **Power** button, then wait until the **Power Status** LED changes to amber.

The operating system performs a graceful shutdown and the server goes to standby mode.

Caution To avoid data loss or damage to your operating system, you should always invoke a graceful shutdown of the operating system.

Step 3 (Optional) If you are shutting down all blade servers in a chassis, disconnect the power cords from the chassis to completely power off the servers.

Step 4 Remove the appropriate servers from the chassis.

Removing a Blade Server from the Chassis

You must power off the blade server or decommission it using Cisco UCS Manager before physically removing the blade server from the chassis.

Procedure

Step 1 Turn off the blade server using either Cisco UCS Manager or the power button.

Step 2 If you are removing a UCS B460 M4 blade server, completely loosen the captive screws on the UCS Scalability Connector and remove the connector by pulling it away from the two UCS B260 blade modules. If you are removing a UCS B260 M4 blade server, you do not need to remove the UCS Scalability Terminator prior to removing the UCS B260 M4 blade server.

Step 3 Completely loosen the captive screws on the front of the blade.

Step 4 Remove the blade from the chassis by pulling the ejector levers on the blade until it unseats the blade server.

Step 5 Slide the blade part of the way out of the chassis, and place your other hand under the blade to support its weight.

Step 6 Once removed, place the blade on an antistatic mat or antistatic foam if you are not immediately reinstalling it.

Step 7 If the blade server slot is to remain empty, reinstall the slot divider and install two blade server blanking panels.

Server Troubleshooting

For general troubleshooting information, see the Cisco UCS Manager Troubleshooting Reference Guide.

CHAPTER 3

Servicing the Blade Server

This chapter contains the following sections:

Drive Replacement

You can remove and install a drive without removing the blade server from the chassis.

The drives supported in this blade server come with the drive sled attached. Spare drive sleds are not available. Currently supported drives are listed in the specification sheets at this URL:http://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-b-series-blade-servers/datasheet-listing.html

Before upgrading or adding a drive to a running system, check the service profile in Cisco UCS Manager and make sure the new hardware configuration will be within the parameters allowed by the service profile.

⚠️

Caution To prevent ESD damage, wear grounding wrist straps when replacing a drive.

Removing an SSD Drive

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

Procedure

Step 1 Press the latch inward on the drive front panel. See callout 1 in the following figure.

Step 2   Pull the drive from the slot. See callout 2 in the following figure.

Figure 7: Removing an SSD
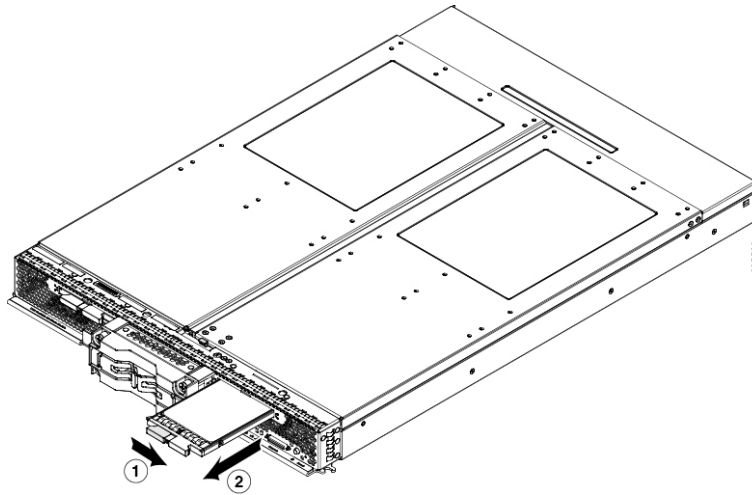
Step 3   Place the drive on an antistatic mat or antistatic foam if you are not immediately reinstalling it in another blade server.

Step 4   Install a blanking panel (N20-BBLKD-7MM) if the slot will remain empty.

Installing an SSD Drive

To install an SSD drive in the blade server, follow these steps:

Procedure

Step 1   Remove the blanking panel, if necessary.

Step 2   With the drive label face up, align the drive with the desired drive bay and insert.

Step 3   Gently slide the drive into the opening in the blade server until the SSD clicks into place and the latch fully engages.

Step 4   Check the LEDs on the blade server to make sure the drive is functioning as expected.

Removing a Blade Server Cover

Procedure

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 8: Opening a B260 M4 Blade Server
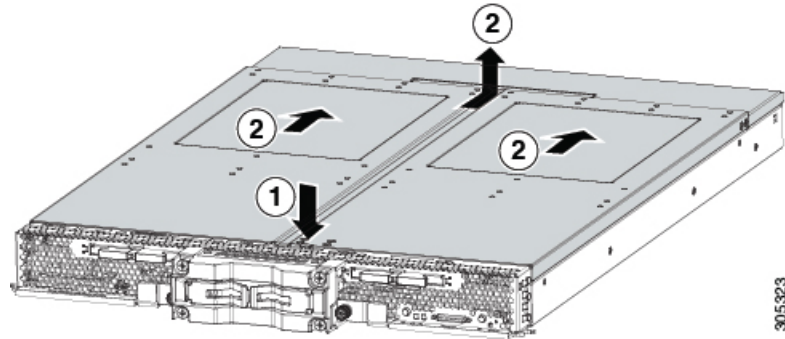
Internal Components

The UCS B260 M4 Blade Module has the internal components shown in the following figure.

Figure 9: Inside View of the Blade Server
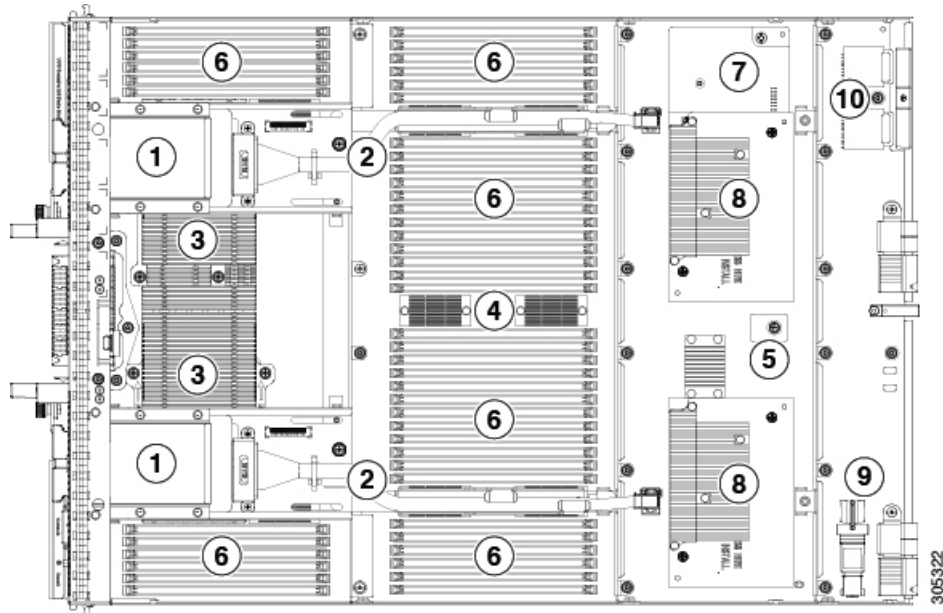
1	Drive bay	6	DIMM slots
2	SSD cable	7	mLOM card
3	Heat sinks covering CPU 1 on the left (facing the server) and CPU 2 on the right (facing the server)	8	Adapter cards

4	Memory buffers	9	USB memory
5	Trusted Platform Module (TPM)	10	SD card slots

Note

- A squeeze-to-remove retaining clip is provided to secure the internal USB flash memory. The clip must always be securely fastened when the flash memory is in use. Memory that does not fit in the clip should not be used.

- Use of this server may require an upgrade to the FEX in the chassis. The Cisco 2104XP fabric extender is not compatible when any Cisco-certified adapter is installed in slot 1 or slot 2. If a Cisco VIC 1240 modular LOM card is installed, you will have connectivity through the mLOM but other adapters will not be recognized.

Diagnostics Button and LEDs

At blade start-up, POST diagnostics test the CPUs, DIMMs, HDDs, and rear mezzanine modules, and any failure notifications are sent to Cisco UCS Manager. You can view these notifications in the Cisco UCS Manager 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 and component drivers monitor for hardware faults and will light up the amber diagnostic LED as needed.

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.

The following figure shows the LED diagnostics button on the Cisco UCS B260 Blade Server.

Figure 10: LED Diagnostics Button
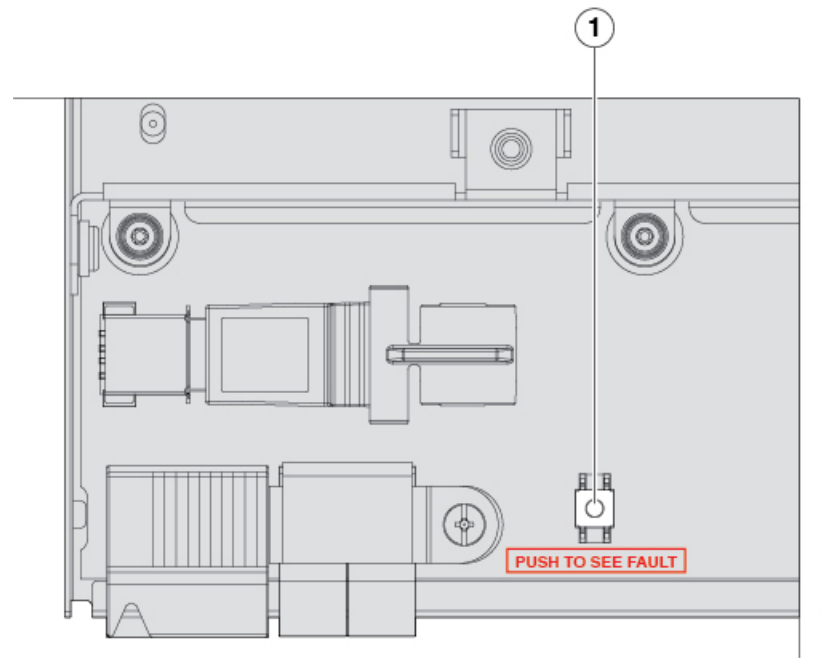
1	LED diagnostics button on the server motherboard

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

Faults on the DIMMs or rear mezzanine modules also cause the server health LED to light solid amber for minor error conditions or blinking amber for critical error conditions.

Removing a CPU and Heat Sink

Use the following procedures to remove, replace, or upgrade a CPU.

Procedure

Step 1	Remove any SSDs or blanking panels by squeezing the slide latch and pulling outward. See callout 1 in the following figure.
Step 2	Unscrew one captive screw on each SSD cage. See callout 2.
Step 3	Slide the SSD cage back and upward to fully remove it. See callout 3.
Step 4	Place the SSD cages next to the sides of the base, keeping all cables connected. See callout 4.

Figure 11: Removing an SSD Cage
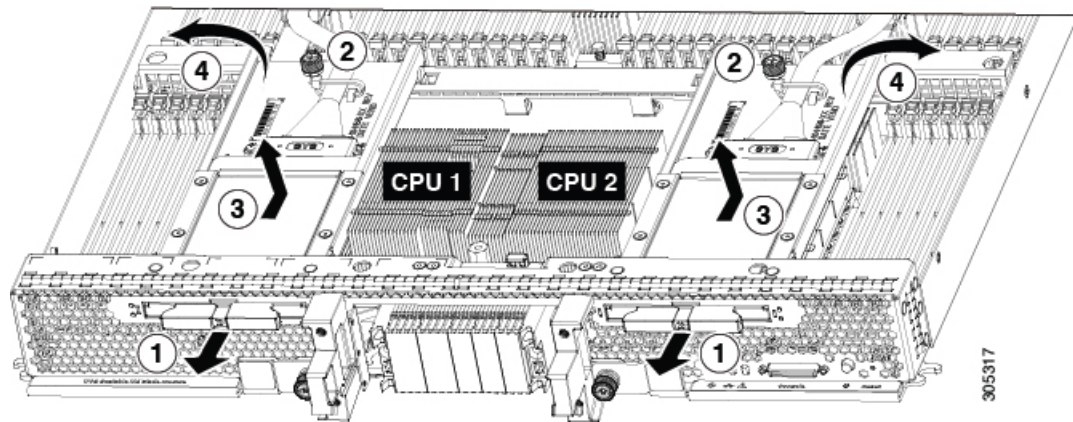
Step 5 Unscrew the four heat sink captive screws in the order shown in the following figure.

Note There and left and right versions of the heat sinks and CPUs. The left heat sink, shown in the following figure, is for CPU1 and the right heat sink, shown in the following figure, is for CPU 2.

Figure 12: Unscrewing the Heat Sink Captive Screws
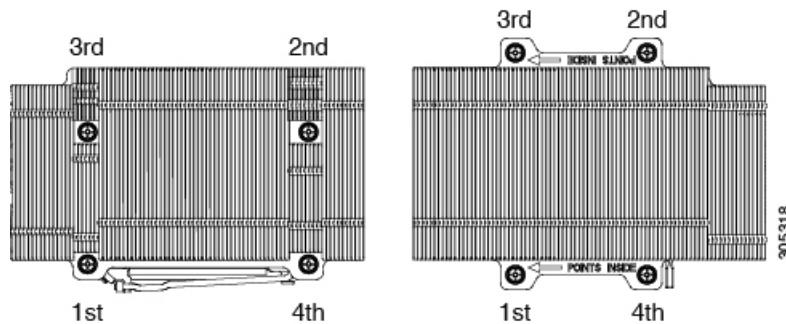
Step 6 Unscrew the captive screw. See callout 1 in the following figure.

Step 7 Remove the heat sink. See callout 2.

Step 8 Unlock the first socket hook that has the following icon: ⌐ᐣ. See callout 3.

Step 9 Unlock the second socket hook that has the following icon: ᐸ. See callout 4.

Figure 13: Removing the Heat Sink
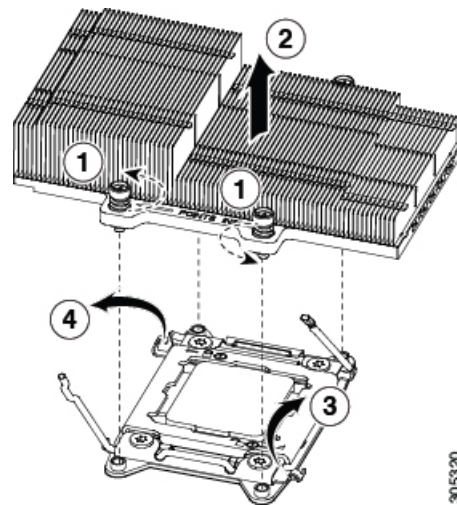
Step 10   Open the socket latch.

Step 11   Remove the old CPU using the CPU alignment tool. See the following figure.

Figure 14: CPU Alignment Tool
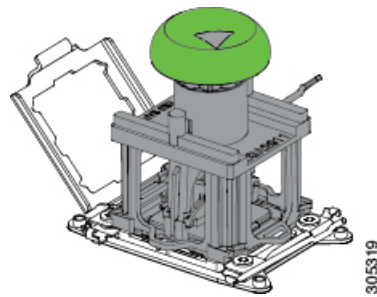
Installing a New CPU and Heat Sink

Before installing a new CPU, verify the following:

- The CPU is supported for the server. Refer to the Specification Sheet for the server to see the list of supported CPUs. The specifications sheets are available at this URL: http://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-b-series-blade-servers/datasheet-listing.html.

- 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 Cisco UCS Manager will recognize and allow the new CPU.

Procedure

Step 1   Remove the CPU from the packaging and load it in the CPU alignment tool, as follows:

a)   Confirm that the pedestal is set up correctly for the CPU. The pedestal ships configured with the markings "LGA2011-R1" facing upwards, which is the correct orientation.

b)   Place the CPU on the pedestal. The CPU corners should fit snugly at the pedestal corners and the notches should meet the pegs perfectly.

c)   Place the CPU alignment tool on the CPU pedestal with the tool aligned with the A1 arrow pointing to the A1 registration mark on the pedestal.

d)   Press the button/handle on the tool to grasp the CPU.

e)   Lift the tool and CPU straight up off the pedestal as shown in the following figure:

Figure 15: Loading the CPU Into the CPU Alignment Tool
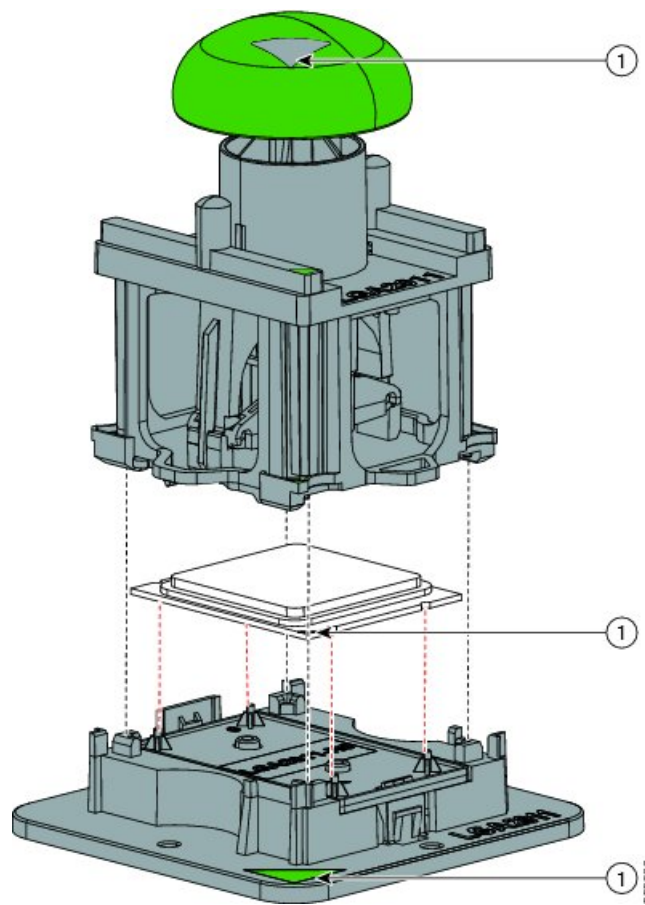
1	Alignment mark on the CPU alignment tool, CPU, and pedestal

Step 2   To ensure proper seating and prevent pin damage, place the CPU alignment tool with the registration marks aligned, and press the green button on the tool to release the CPU in place.

Step 3   Close the socket latch.

Step 4   Secure the first hook, which has the following icon: ⌂

Step 5   Secure the second hook, which has the following icon: 🔓

Step 6   If reusing the heat sink, clean off the old thermal compound from the heat sink and CPU.

Step 7   Use the syringe of thermal grease to apply 2 cubic centimeters of the thermal grease (about half of the contents of the syringe) to the top of the CPU where it will contact the heat sink. Use the pattern shown in the following figure:

Figure 16: Thermal Grease Application Pattern
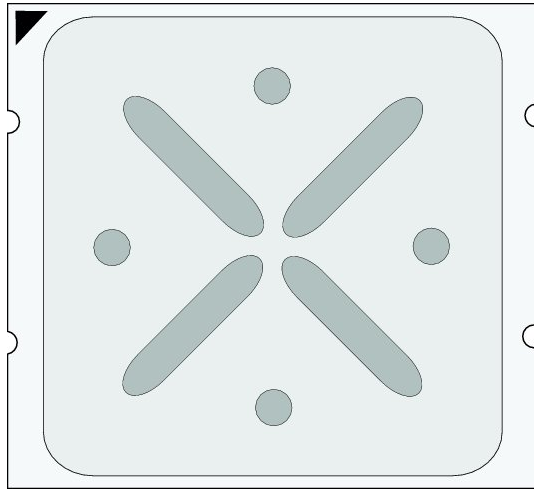
Note	CPUs come with two syringes of thermal grease; one with a blue cap and one with a red cap. Use the syringe with the blue cap. This thermal grease has very specific properties. Thermal grease from any other sources should not be used because it may lead to damage.

Step 8   Replace the heat sinks and tighten the screws in the order shown in the following figure.

Figure 17: Tightening the Heat Sink Screws
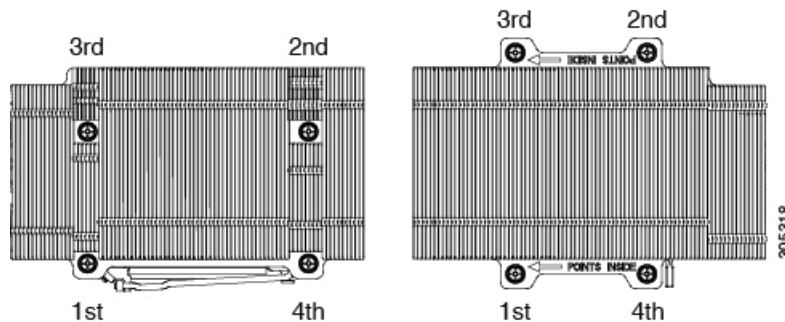
Caution	Left and right heat sinks are different and are not interchangeable. They must be installed in the correct position.

Installing Memory

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

Procedure

Step 1 Open the DIMM connector latches. See callout 1 in the following figure.

Step 2 Press the DIMM into its slot, evenly applying pressure on both ends until it clicks. See callout 2.

Step 3 Close the DIMM connector latches. See callout 3.

Figure 18: Installing a DIMM
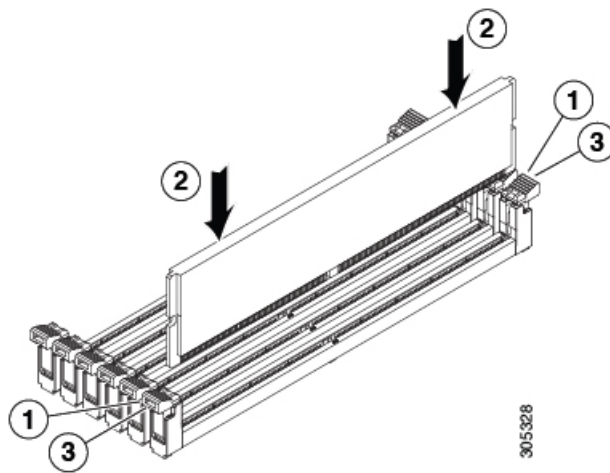
Supported DIMMs

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

http://www.cisco.com/en/US/products/ps10280/products_data_sheets_list.html

Do not use any memory DIMMs other than those listed in the specification sheet. Doing so may irreparably damage the server and require down time.

Memory Arrangement

Each UCS B260 M4 blade module has 48 slots for installing DIMMs—24 for each CPU. Each CPU has 24 DIMM slots spread over 8 channels. This blade server needs at least one DIMM attached to all populated CPUs. DIMMs installed in slots for an absent CPU will not be recognized. For optimal performance, distribute DIMMs evenly across all CPUs. DIMM connector latches are color coded blue, black, and white/ivory, and we recommend that you install the DIMMs in that order.

> **Note** An absent CPU is not a supported configuration.

Figure 19: Memory Slots Within the Blade Server
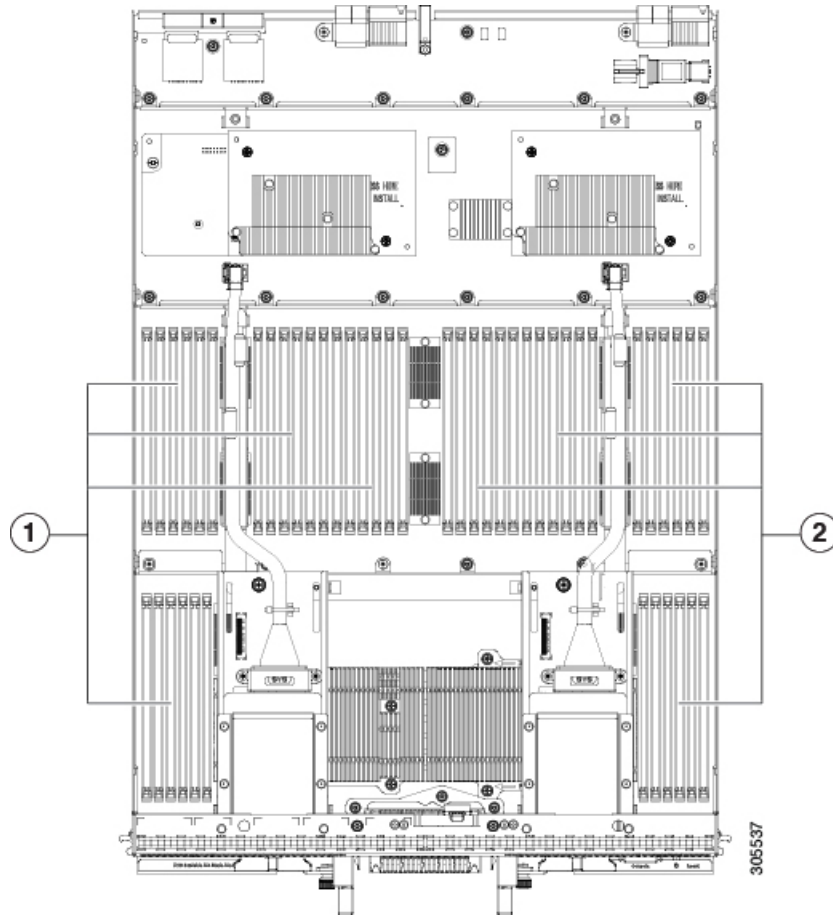
1	DIMMs for CPU 1	2	DIMMs for CPU 2

Channels

Each CPU has 8 channels, consisting of 3 DIMMs. Each channel is identified by a letter. Each channel member is identified by numbers, 1, 2, or 3.

Install DIMMs according to the configuration in the following table.

Table 4: DIMM Configuration Order

DIMMs per CPU	CPU 1 DIMMs	CPU 2 DIMMs
1	(A1) - blue slot	(O1) - blue slot

DIMMs per CPU	CPU 1 DIMMs	CPU 2 DIMMs
2	(A1, B1) - blue slots	(O1, P1) - blue slots
3	(A1, B1) (C1) - blue slots	(O1, P1) (L1) - blue slots
4	(A1, B1) (C1, D1) - blue slots	(O1, P1) (L1, K1) - blue slots
5	(A1, B1) (C1, D1) (E1) - blue slots	(O1, P1) (L1, K1) (M1) - blue slots
6	(A1, B1) (C1, D1) (E1, F1) - blue slots	(O1, P1) (L1, K1) (M1, N1) - blue slots
7	(A1, B1) (C1, D1) (E1, F1) (G1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1) - blue slots
8	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
9	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2) - black slot	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2) - black slot
10	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) - black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) - black slots
11	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2) - black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2) - black slots
12	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2, D2) - black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2, K2) - black slots
13	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2, D2) (E2)- black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2, K2) (M2) - black slots
14	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2, D2) (E2, F2)- black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2, K2) (M2, N2) - black slots
15	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2, D2) (E2, F2) (G2)- black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2, K2) (M2, N2) (J2)- black slots

DIMMs per CPU	CPU 1 DIMMs	CPU 2 DIMMs
16	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2)- black slots
17	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2)- black slots
	(A3) - white or ivory slots	(O3) - white or ivory slots
18	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2)- black slots
	(A3, B3) - white or ivory slots	(O3, P3) - white or ivory slots
19	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots
	(A3, B3) (C3)- white or ivory slots	(O3, P3) (L3)- white or ivory slots
20	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots
	(A3, B3) (C3, D3)- white or ivory slots	(O3, P3) (L3, K3)- white or ivory slots
21	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots
	(A3, B3) (C3, D3) (E3) - white or ivory slots	(O3, P3) (L3, K3) (M3) - white or ivory slots
22	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots
	(A3, B3) (C3, D3) (E3, F3) - white or ivory slots	(O3, P3) (L3, K3) (M3, N3) - white or ivory slots

DIMMs per CPU	CPU 1 DIMMs	CPU 2 DIMMs
23	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots
	(A3, B3) (C3, D3) (E3, F3) (G3) - white or ivory slots	(O3, P3) (L3, K3) (M3, N3) (J3) - white or ivory slots
24	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots
	(A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O2, P2) (L2, K2) (M2, N2) (J2, I2) - black slots
	(A3, B3) (C3, D3) (E3, F3) (G3, H3) - white or ivory slots	(O3, P3) (L3, K3) (M3, N3) (J3, I3) - white or ivory slots

The following figure shows the physical representation of DIMMs in a UCS B260 M4 with E7 v4 CPUs.

Figure 20: Physical Representation of DIMMs
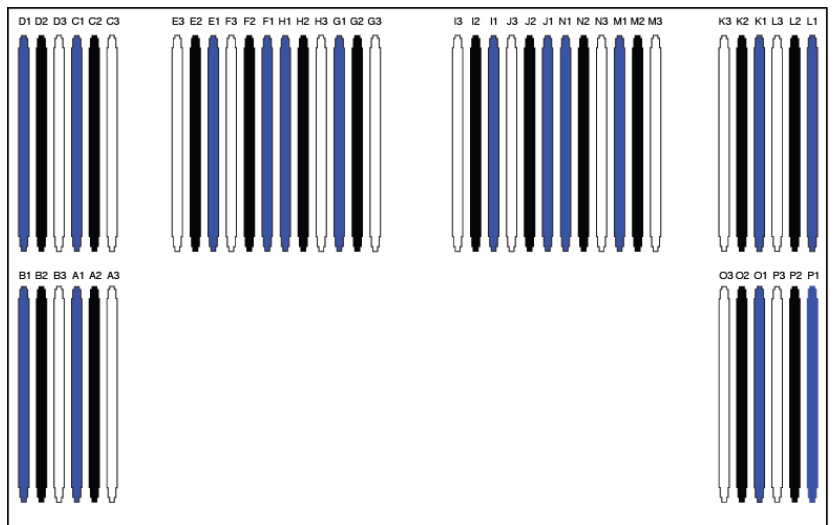
The following figure shows the logical representation of the channels.

Figure 21: Logical Representation of Channels
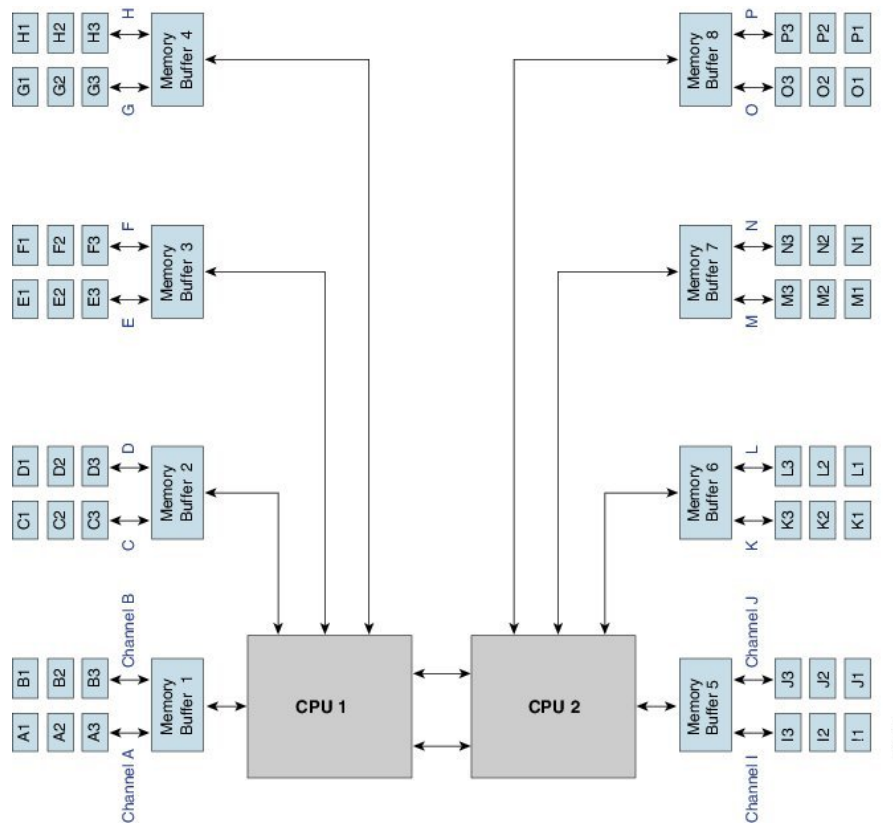
Memory Performance

When configuring your server, consider the following:

- DIMMs within the blade can be of different speeds, but all DIMMs will run at the speed of the DIMM with the lowest speed.

- No mixing of DIMM type (LRDIMM, RDIMM, TSV-RDIMM) is allowed.

- Your selected CPU(s) can have some affect on performance. CPUs used must be of the same type.

- Mixing DIMM ranks and densities can lower performance.

- Unevenly populating DIMMs between CPUs can lower performance.

Installing a Virtual Interface Card Adapter

The Cisco UCS B260 M4 Blade Server and UCS 460 M4 Blade Server support the Cisco VIC 1300 Series (VIC 1340 and VIC 1380). The Cisco VIC 1300 Series is compatible with UCS 6200 Series Fabric Interconnects and the UCS 6300 Series Fabric Interconnects.

The VIC 1340 is a specialized adapter that provides 2 x 40-Gb Ethernet or Fibre Channel over Ethernet (FCoE) connectivity to the blade server. It plugs into the dedicated VIC connector and is the only adapter that can plugged into the slot 1 connector.

Note You must remove the adapter card to service it.

To install a Cisco VIC 1340 in the blade server, follow these steps:

Procedure

Step 1 Position the VIC board connector above the motherboard connector and align the captive screw to the standoff post on the motherboard.

Step 2 Firmly press the VIC board connector into the motherboard connector.

Step 3 Tighten the captive screw.

Tip To remove a VIC, 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 a VIC Adapter
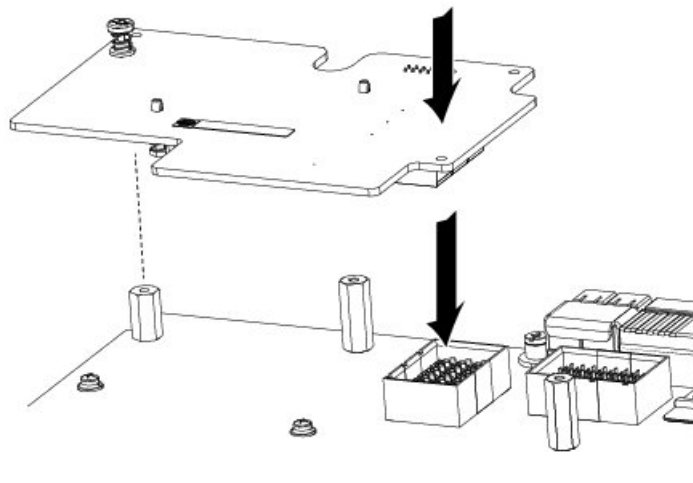
Installing an Adapter Card

All the supported mezzanine cards have a common installation process. These cards are updated frequently. Currently supported cards and the available models for this server are listed in the specification sheets at this URL:

http://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-b-series-blade-servers/datasheet-listing.html

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.
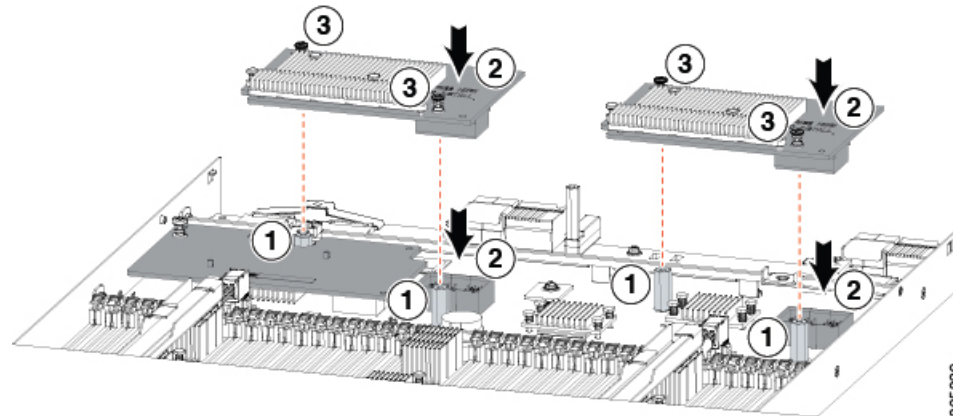
Figure 23: Installing an Adapter Card

Procedure

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.

Enabling the Trusted Platform Module

The Trusted Platform Module (TPM) 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. 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.

Table 5: TPM Support by Intel CPU Version

Intel CPU	TPM Version Supported	Minimum UCS Manager (UCSM) Version
Intel Xeon E7 v4	TPM 1.2	Release 2.2(8) or Release 3.1(2)
	TPM 2.0	Release 2.2(8) or Release 3.1(2)

Procedure

Step 1   Install the TPM hardware.

   a) Decommission and remove the blade server from the chassis.
   b) Remove the blade server cover.
   c) Install the TPM to the TPM socket on the server motherboard and secure it using the one-way screw that is provided. See the figure below for the location of the TPM socket.
   d) Return the blade server to the chassis and allow it to be automatically reacknowledged, reassociated, and recommissioned.
   e) Continue with enabling TPM support in the server BIOS in the next step.

Figure 24: TPM Socket Location
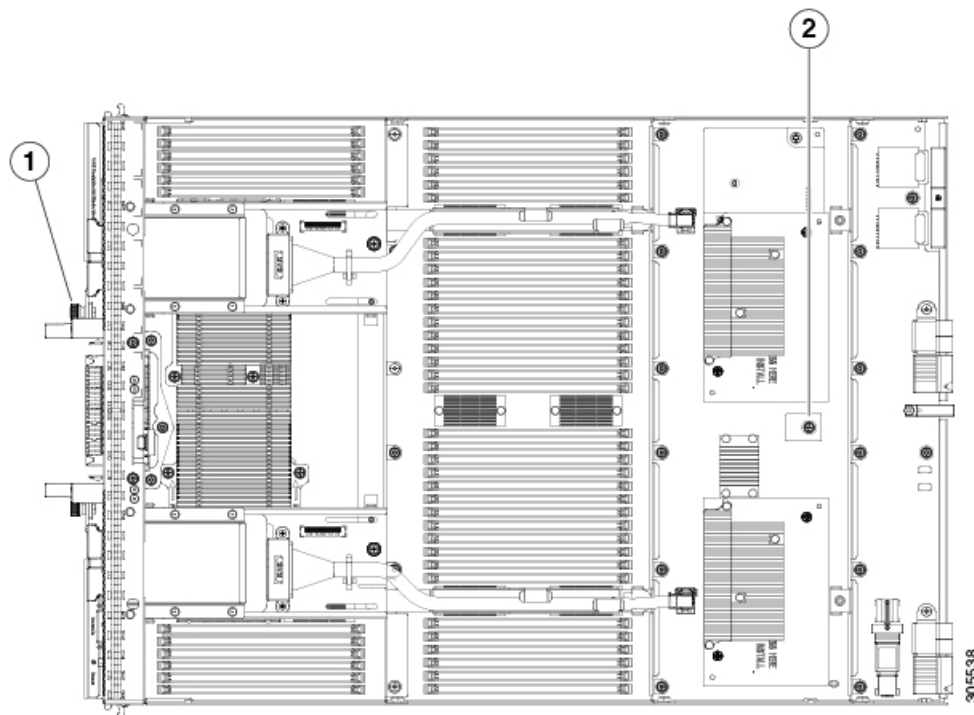
1		Front of server	2		TPM socket on motherboard

Step 2   Enable TPM Support in the BIOS.

TPM 2.0 support is enabled by default in Cisco UCS Manager Release 3.1(2) and Release 2.2(8) and later BIOS policy. If your Cisco UCS Manager Release 3.1(2) or Release 2.2(8) and later BIOS policy is using the default setting and TPM 2.0 support is already enabled, skip this procedure and go to the next step.

If TPM support was disabled for any reason, use the following procedure to enable it.

a) In the Cisco UCS Manager Navigation pane, click the **Servers** tab.
b) On the Servers tab, expand **Servers > Policies**.
c) Expand the node for the organization where you want to configure the TPM.
d) Expand BIOS Policies and select the BIOS policy for which you want to configure the TPM.
e) In the Work pane, click the **Advanced** tab.
f) Click the **Trusted Platform** sub-tab.
g) To enable TPM support, click **Enable** or **Platform Default.**
h) Click **Save Changes**.
i) Continue with the next step.

Step 3 Enable TXT Support in the BIOS Policy.

Follow the procedures in the Cisco UCS Manager Configuration Guide for the release that is running on the server.

Upgrading to a Cisco UCS B460 M4 Blade Server

This chapter contains the following sections:

Upgrading to a Cisco UCS B460 M4 Blade Server

Before you begin

- Ensure that the UCS B260 M4 Blade Module is installed in slot 7 in the chassis. This module will the be master in the UCS B460 M4 blade server.

- Ensure that the UCS B260 M4 Blade Module from the upgrade kit is installed in slot 5 in the chassis.

Note The KVM cable, USB flash device, and the SD cards must be configured in the UCS B260 M4 Blade Module installed in slot 7. These components only operate in the master blade.

The following procedure describes installing a UCS B460 M4 blade server in slots 7 and 5. Other slot combinations can also be used, including slots 5 and 3, and slots 3 and 1. However, the heaviest blade server in the chassis should be installed in the lowest slots so if only one UCS B460 M4 is to be installed, then it should go in slots 7 and 5.

Procedure

Step 1 Remove the UCS Scalability Terminator from the UCS B260 M4 Blade Module installed in slot 7. See Removing the Scalability Terminator, on page 34.

Step 2 Install the UCS B260 M4 Blade Module from the upgrade kit into slot 5 if the module is not already installed.

Step 3 Use the UCS Scalability Connector to connect together the blade modules in slot 7 and slot 5. See Installing a Scalability Connector, on page 34.

Removing the Scalability Terminator

Upgrading to the UCS B460 M4 blade server requires that you remove the UCS Scalability Terminator from a UCS B260 M4 blade server. If you do not plan to upgrade to a UCS B460 M4 Blade Server, you should not need to remove the UCS Scalability Terminator from a UCS B260 M4 Blade Server.

Before you begin

Decommission the blade server using Cisco UCS Manager to take the server offline.

Procedure

|	
Step 1	Completely loosen the captive screws on the front of the UCS Scalability Terminator. See callout 1 in the following figure.
Step 2	Open both ejector levers on the front of the UCS Scalability Terminator. See callout 2 in the following figure.
Step 3	While holding the ejector levers open, pull the UCS Scalability Terminator away from the blade server to separate it from the blade server. See callout 3 in the following figure.
Step 4	Once removed, place the UCS Scalability Terminator on an antistatic mat or antistatic foam.

Figure 25: Removing the Scalability Terminator
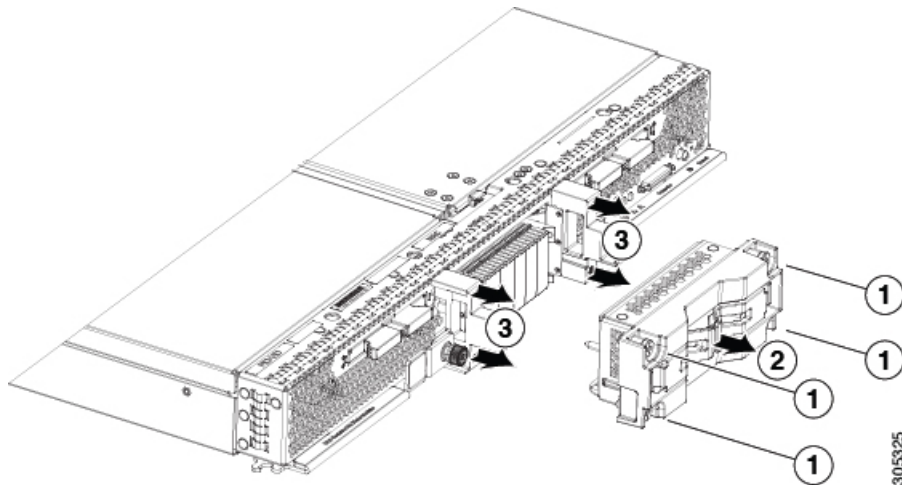
Installing a Scalability Connector

Use a UCS Scalability Connector to connect together two UCS Scalable M4 Blade Modules and form the UCS B460 M4 Blade Server.

Procedure

Step 1	Open the ejector levers on the front of the UCS Scalability Connector. See callout 1 in the following figure.
Step 2	While holding the ejector levers open, line up the four guide posts with the holes on the bracket and push the UCS Scalability Connector into place until it engages. See callout 2.
Step 3	Close the ejector levers.
Step 4	Tighten the captive screws on the front of the UCS Scalability Connector. See callout 3.
Step 5	Use Cisco UCS Manager to power on the blade server and reconfigure it.

Figure 26: Installing the UCS Scalability Connector
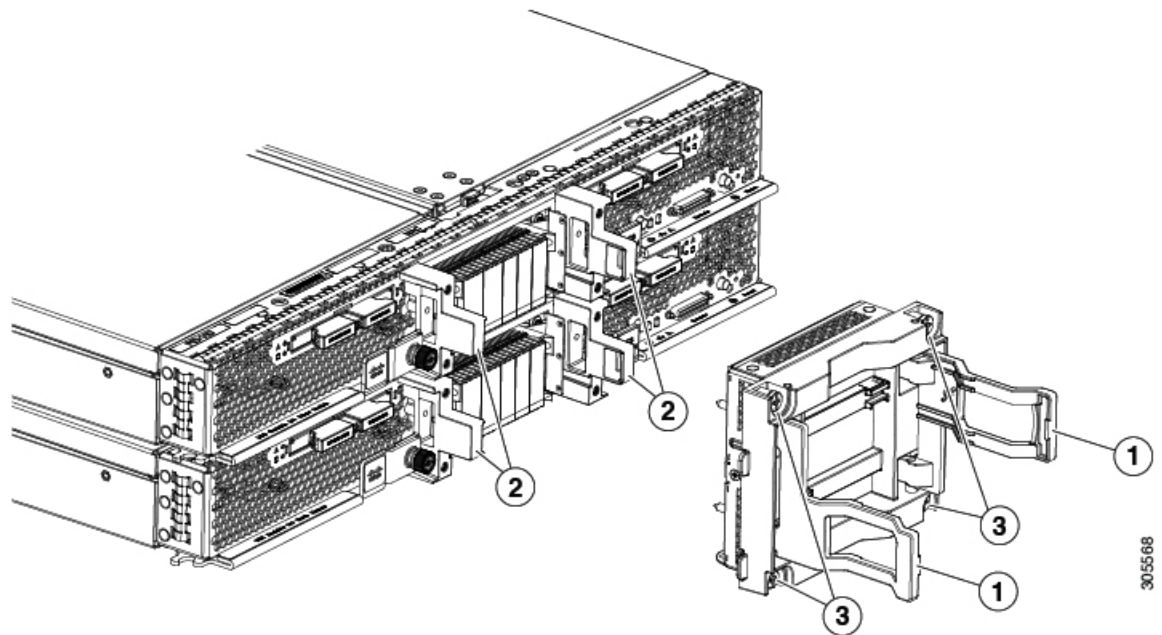
Technical Specifications

This chapter contains the following section:

Physical Specifications

Table 6: Cisco UCS B260 M4 Blade Server

Specification	Value
Height	1.95 inches (49.5 mm)
Width	16.50 inches (419.1 mm)
Depth	25.5 inches (647.7mm)
Weight	34.5 lbs (15.65 kg) The system weight listed here is an estimate for a fully configured system and will vary depending on peripheral devices installed.

Table 7: Cisco UCS B460 M4 Blade Server

Specification	Value
Height	4.04 inches (102.6 mm)
Width	16.50 inches (419.1 mm)
Depth	25.5 inches (647.7 mm)
Weight	67.4 lbs (30.5 kg) The system weight listed here is an estimate for a fully configured system and will vary depending on peripheral devices installed.