Cisco UCS B260 M4 and B460 M4 Blade Server Installation and Service Note for Servers with E7 v3 and E7 v2 CPUs

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CONTENTS

Preface

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.

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.

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

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 M4 Blade Module

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

There are two versions of the UCS B260 M4 Blade Server. The following table lists the features of each version.

Table 1: Features of the UCS B260 M4 Blade Server

Feature	UCS B260 M4 with Intel Xeon E7 v2 CPU	UCS B260 M4 with Intel Xeon E7 v3 CPU
Base server PID	UCSB-EX-M4-1	UCSB-EX-M4-2
Form factor	Full width	Full width
Number of CPUs	2	2
CPU Model	Intel Xeon E7 v2	Intel Xeon E7 v3
Memory type	DDR3 DIMMs	DDR3 DIMMs
Memory slots	48	48
LSI3008 SASRAID Controller	1 that supports 2 SAS or SATA hard drives	1 that supports 2 SAS or SATA hard drives
Drive Quantity	2 HDD or SSD	2 HDD or SSD

Feature	UCS B260 M4 with Intel Xeon E7 v2 CPU	UCS B260 M4 with Intel Xeon E7 v3 CPU
Mezzanine slots	2+ mLOM	2+ mLOM
Secure digital (SD) cards	2	2
Internal USB device	1	1
Trusted platform module (TPM)	1	1

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

Figure 1: Cisco UCS B260 M4 Scalable Blade Server
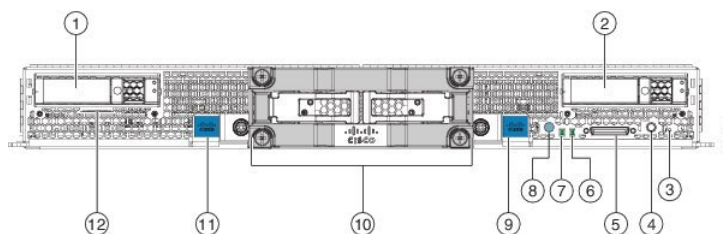
1	Drive bay 1	7	Network link status LED
2	Drive bay 2	8	Power button and LED
3	Reset button access	9	Right ejector handle
4	Blue locator button and LED	10	UCS Scalability Terminator
5	Local console connector	11	Left ejector handle
6	Blade health LED	12	Asset tag
			Each server has a plastic tag that 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 31 for the instructions to upgrade to a UCS B460 M4 blade server.

Figure 2: Cisco UCS B460 M4 Blade Server

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 2: 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.

LED	Color	Description
Health	Off	Power off.
	Green	Normal operation.
	Amber	Minor error.
	Blinking Amber	Critical error.
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
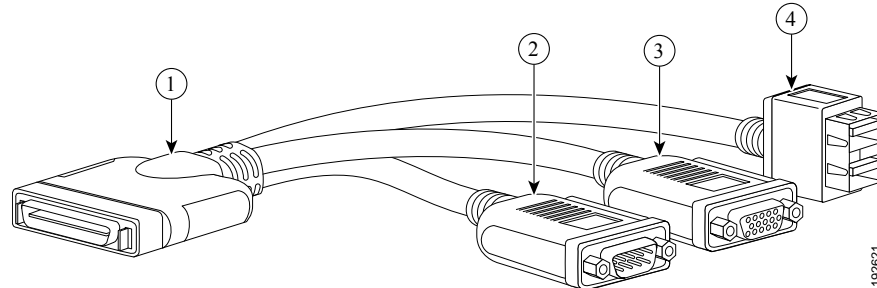
1	Connector to blade server local console connection	2	DB9 serial connector
3	VGA connector for a monitor	4	2-port USB connector for a mouse and keyboard

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.

Figure 4: SD Card Slots

Drives

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
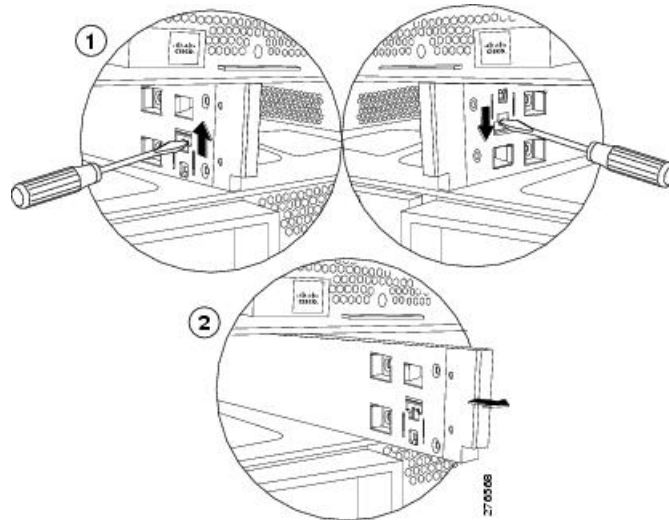
| Tip | To reinstall the slot divider, align it with the dimples in the slot top and bottom and slide it back in until it clicks into place. |

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
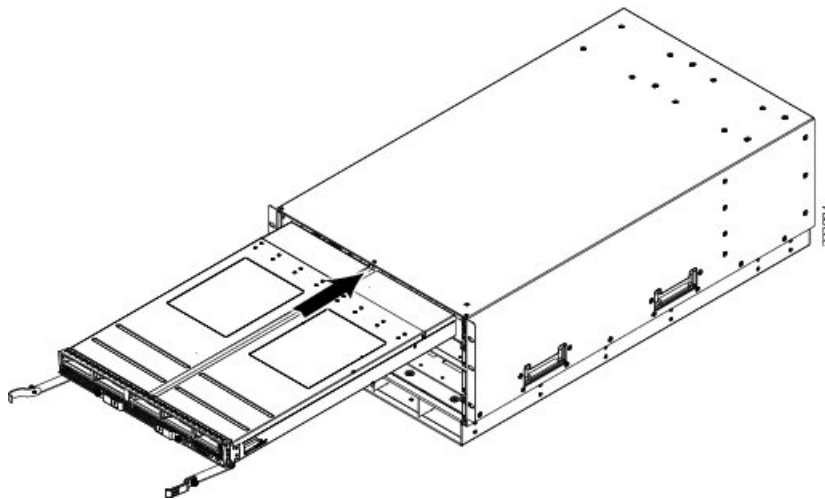
Step 3   Open the ejector levers in the front of the blade module.

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 can be configured and managed using the following UCS management software interfaces.

Cisco Intersight Managed Mode

Cisco UCS blade servers can be configured and managed using the Cisco Intersight management platform in Intersight Managed Mode (Cisco Intersight Managed Mode). For details, see the *Cisco Intersight Managed Mode Configuration Guide*, which is available at the following URL: https://www.cisco.com/c/en/us/td/docs/unified_computing/Intersight/b_Intersight_Managed_Mode_Configuration_Guide.html

Cisco UCS Manager

Cisco UCS blade servers can 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 management software interface before shutdown. If you prefer to shut down the server locally with the button, you can enable front power-button control in the UCS management software interface.

Tip
You can also shut down servers remotely using the UCS management software interface. For details, see the configuration guide for the version the UCS management software interface that you are using. The configuration guides are available at the URLs documented in .

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 the UCS management software interface, 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) Although not recommended, if you are shutting down all blade servers in a chassis, you can disconnect the power cords from the chassis to completely power off the servers.

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

The blade servers will power down. You can now perform additional tasks with the blades as needed, for example, replacing a blade.

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.

Basic Troubleshooting: Reseating a SAS/SATA Drive

Sometimes it is possible for a false positive UBAD error to occur on SAS/SATA HDDs installed in the server.

- Only drives that are managed by the UCS MegaRAID controller are affected.

- Drives can be affected regardless where they are installed in the server (front-loaded, rear-loaded, and so on).

- Both SFF and LFF form factor drives can be affected.

- Drives installed in all Cisco UCS C-Series servers with M3 processors and later can be affected.

- Drives can be affected regardless of whether they are configured for hotplug or not.

- The UBAD error is not always terminal, so the drive is not always defective or in need of repair or replacement. However, it is also possible that the error is terminal, and the drive will need replacement.

Before submitting the drive to the RMA process, it is a best practice to reseat the drive. If the false UBAD error exists, reseating the drive can clear it. If successful, reseating the drive reduces inconvenience, cost, and service interruption, and optimizes your server uptime.

Note　Reseat the drive only if a UBAD error occurs. Other errors are transient, and you should not attempt diagnostics and troubleshooting without the assistance of Cisco personnel. Contact Cisco TAC for assistance with other drive errors.

To reseat the drive, see Reseating a SAS/SATA Drive, on page 11.

Reseating a SAS/SATA Drive

Sometimes, SAS/SATA drives can throw a false UBAD error, and reseating the drive can clear the error.

Use the following procedure to reseat the drive.

Caution　This procedure might require powering down the server. Powering down the server will cause a service interruption.

Before you begin

Before attempting this procedure, be aware of the following:

- Before reseating the drive, it is a best practice to back up any data on it.

- When reseating the drive, make sure to reuse the same drive bay.

  - Do not move the drive to a different slot.

  - Do not move the drive to a different server.

• If you do not reuse the same slot, the Cisco management software (for example, Cisco IMM) might require a rescan/rediscovery of the server.

• When reseating the drive, allow 20 seconds between removal and reinsertion.

Procedure

Step 1   Attempt a hot reseat of the affected drive(s). Choose the appropriate option.

Note	While the drive is removed, it is a best practice to perform a visual inspection. Check the drive bay to ensure that no dust or debris is present. Also, check the connector on the back of the drive and the connector on the inside of the server for any obstructions or damage.
	Also, when reseating the drive, allow 20 seconds between removal and reinsertion.

Step 2   During boot up, watch the drive's LEDs to verify correct operation.

See LEDs.

Step 3   If the error persists, cold reseat the drive, which requires a server power down. Choose the appropriate option:

a)   Use your server management software to gracefully power down the server.

See the appropriate Cisco management software documentation.

b)   If server power down through software is not available, you can power down the server by pressing the power button.

See Buttons.

c)   Reseat the drive as documented in Step 1.
d)   When the drive is correctly reseated, restart the server, and check the drive LEDs for correct operation as documented in Step 2.

Step 4   If hot and cold reseating the drive (if necessary) does not clear the UBAD error, choose the appropriate option:

a)   Contact Cisco Systems for assistance with troubleshooting.
b)   Begin an RMA of the errored drive.

Servicing the Blade Server

The chapter contains the following sections:

Drive Replacement

You can remove and install hard drives 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. 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

Before upgrading or adding a drive to a running blade server, 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.

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Caution   To prevent ESD damage, wear grounding wrist straps during these procedures.

Removing a Blade Server Drive

Procedure

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

Figure 7: Removing and Installing a Server Drive
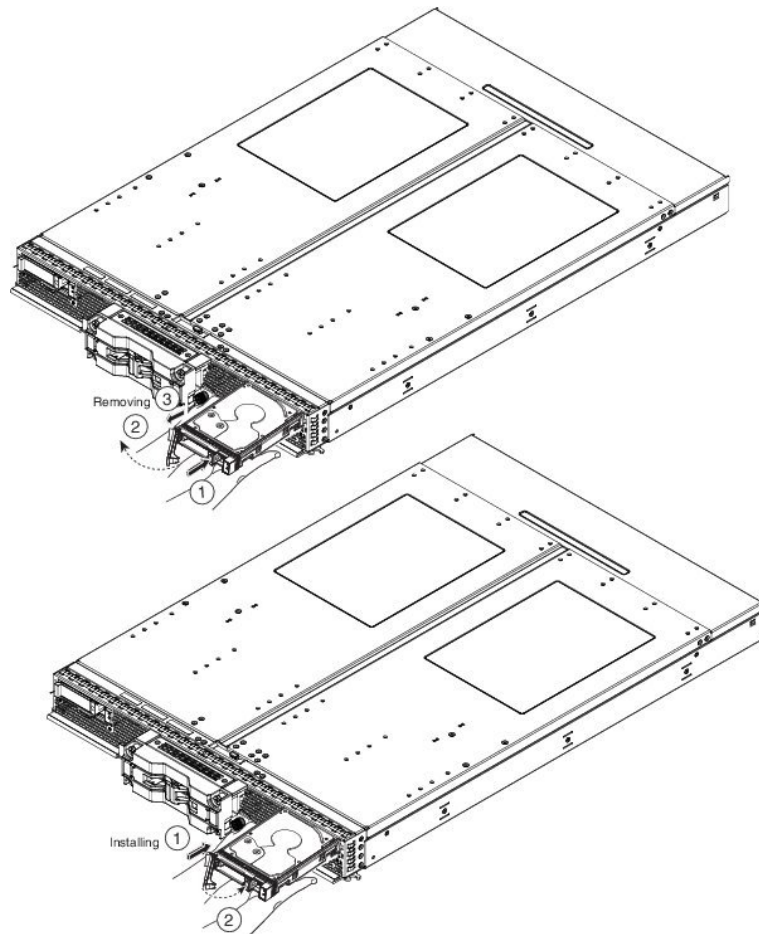
Step 2   Place the hard drive on an antistatic mat or antistatic foam if you are not immediately reinstalling it in another blade server.

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

Installing a Blade Server Drive

Procedure

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

Figure 8: Removing and Installing a Drive
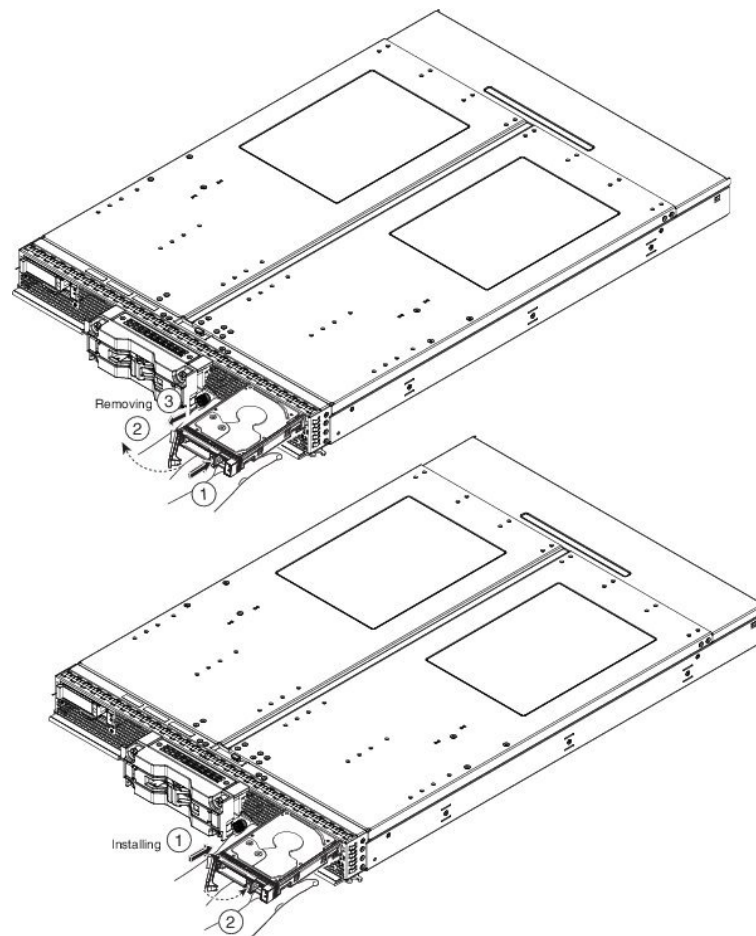
| **Step 2** | Gently slide the hard drive into the opening in the blade server until it seats into place and the latch fully engages. |
| **Step 3** | Push the hard drive lever into the closed position. |

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

If you need to move a RAID cluster from one server to another, refer to the "Moving a RAID Cluster" section of the "Troubleshooting Server Hardware" chapter of the Cisco UCS Troubleshooting Guide.

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.

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

✎

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.

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.

Installing a CMOS Battery

All Cisco UCS blade servers use a CR2032 battery to preserve BIOS settings while the server is not installed in a powered-on chassis. Cisco supports the industry standard CR2032 battery that is available at most electronics stores.

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.

To install or replace the battery, follow these steps:

Procedure

Step 1   Remove the existing battery:
- a) Power off the blade, remove it from the chassis, and remove the top cover.
- b) Push the battery socket retaining clip away from the battery.
- c) 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 the replacement battery:
- a) Push the battery socket retaining clip away from where the battery fits in the housing.
- b) 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.
- c) Replace the top cover.
- d) Replace the blade server in the chassis.

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.

Caution   The Pick-and-Place tools used in this procedure are required to prevent damage to the contact pins between the motherboard and the CPU. Do not attempt this procedure without the required tools. If you do not have the tool, you can order a spare.

- UCS-CPU-EP-PNP=; Pick n place CPU tools for M3/EP 10/8/6/4/2 core CPUs (Green)

- UCS-CPU-EP2-PNP=; Pick n place CPU tools for M3/EP v2 12 core CPUs (Purple)

Procedure

Step 1   Unscrew the four captive screws securing the heat sink to the motherboard.

Loosen one screw by a quarter turn, then move to the next screw. Continue loosening until the heat sink can be lifted off.

Step 2   Remove the heat sink.

Remove the existing thermal compound from the bottom of the heat sink using the cleaning kit included with each CPU option kit. Follow the instructions on the two bottles of cleaning solvent.

Step 3   Unhook the first socket hook, which has the following icon: 🔓 See callout 3 in the following figure.

Step 4   Unhook the second socket hook, which has the following icon: 🔒 See callout 4 in the following figure.

Step 5   Open the socket latch.

Step 6   Press the central button on the CPU Pick-and-Place tool to release the catch.

Step 7   Remove an old CPU as follows:

a)   Place the CPU Pick-and-Place tool on the CPU socket aligned with the arrow pointing to the CPU registration mark.

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

c)   Lift the tool and CPU straight up.

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. Refer to the Specification Sheet for this server to see the list of supported CPUs. The Specification 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.

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Caution   The Pick-and-Place tools used in this procedure are required to prevent damage to the contact pins between the motherboard and the CPU. Do not attempt this procedure without the required tools. If you do not have the tool, you can order a spare.

- UCS-CPU-EP-PNP=; Pick n place CPU tools for M3/EP 10/8/6/4/2 core CPUs (Green)

- UCS-CPU-EP2-PNP=; Pick n place CPU tools for M3/EP v2 12 core CPUs (Purple)

Procedure

Step 1   Required: To install a CPU in an empty socket, remove the protective cap that is 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.

Step 2   Release the catch on the pick and pull tool by pressing the handle/button.

Step 3   Remove the new CPU from the packaging, and load it into the pick and place tool as follows:

a)   Confirm that the pedestal is set up correctly for your processor. The pedestal ships configured with the markings "LGA2011-R1" facing upward, and this 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 pick and place tool on the CPU pedestal 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 of the pedestal.

Figure 10: Loading the Pick and Place Tool
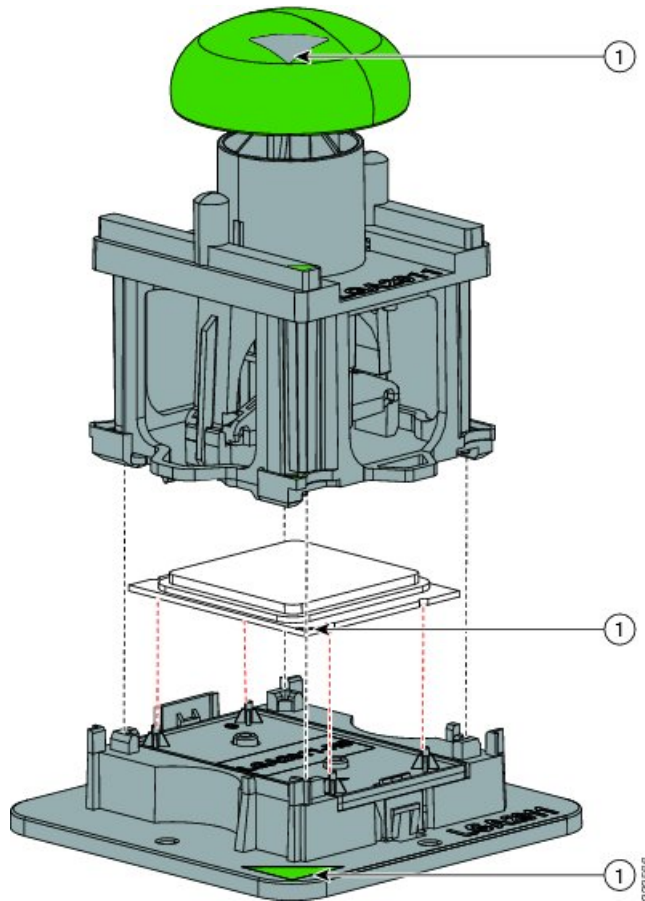
1	Alignment mark on the pick and place tool, CPU and pedestal

Step 4   Place the CPU and tool on the CPU socket with the registration marks aligned as shown.

Step 5   Press the button/handle on the pick and place tool to release the CPU into the socket.

Figure 11: Using the CPU Pick and Place Tool to Insert the CPU
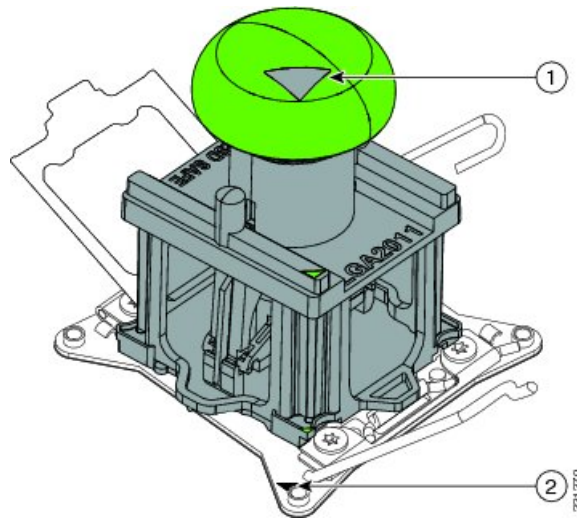
1	Alignment mark on the tool button/handle	**2**	Alignment mark on the CPU socket

Step 6   Close the socket latch. See callout 1 in the following figure.

Step 7   Secure the first hook, which has the following icon: ⌒ See callout 2 in the following figure.

Step 8   Secure the second hook, which has the following icon: ⌒ See callout 3 in the following figure.

Step 9   Using the syringe of thermal grease provided with replacement CPUs and servers, 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.

> | **Caution** | The thermal grease has very specific thermal properties. Thermal grease from other sources should not be substituted because it may lead to damage. |
> |---|---|

> | **Note** | CPU spares come with two syringes of thermal grease; one with a blue cap and one with a red cap. The syringe with the blue cap is used with this server. |
> |---|---|

Figure 12: Thermal Grease Application Pattern
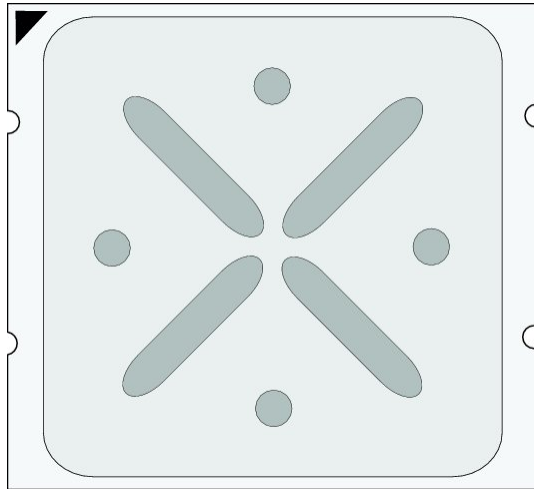
Step 10   Replace the heat sink. See callout 4.

| **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 11   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.

Installing Memory

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

Procedure

Step 1   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 2   Press the DIMM connector latches inward slightly to seat them fully.

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 13: 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 3: DIMM Configuration Order

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

DIMMs per CPU	CPU 1 DIMMs	CPU 2 DIMMs
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
16	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2, K2) (M2, N2) (J2, I2)- black slots
17	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots (A3) - white or ivory slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, P2) (L2, K2) (M2, N2) (J2, I2)- black slots (O3) - white or ivory slots

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

DIMMs per CPU	CPU 1 DIMMs	CPU 2 DIMMs
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 logical representation of the channels.

Figure 14: Logical Representation of Channels
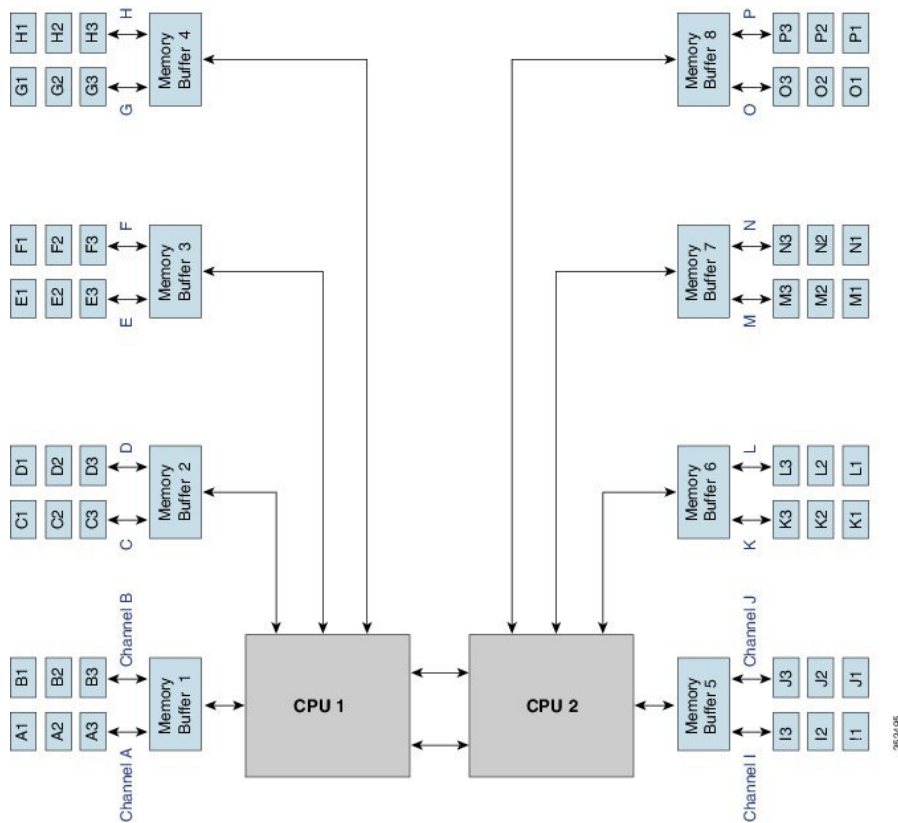
Memory Performance

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

Note   You must remove the adapter card to service it.

To install a Cisco VIC 1340 or VIC 1240 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 15: Installing a VIC mLOM Adapter
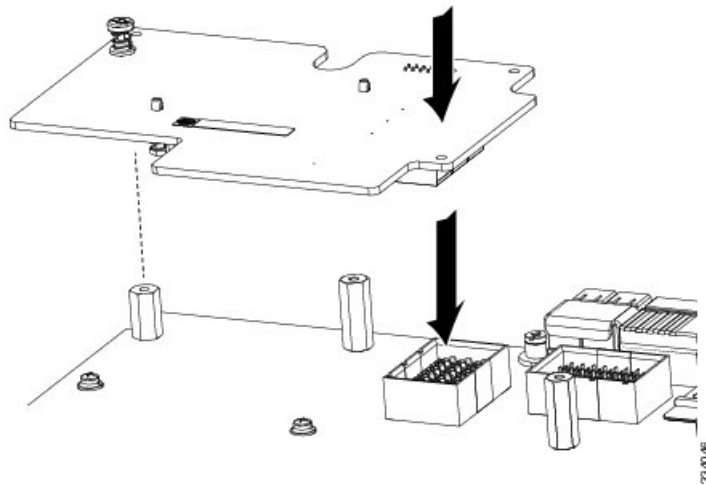
Installing an Adapter Card

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.

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.

Installing and Enabling a 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.

Note TPM installation is supported after-factory. However, a TPM installs with a one-way screw and cannot be replaced or moved to another server. If a server with a TPM is returned, the replacement server must be ordered with a new TPM.

Procedure

Step 1 Install the TPM hardware.

a) Power off, 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, power it on, 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 16: TPM Socket Location

1	Front of server	2	TPM socket on motherboard

Step 2   Enable TPM Support in the BIOS.

a) Enable **Quiet Mode** in the BIOS policy of the server's service profile.

b) 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.

c) Reboot the server.

d) Press **F2** during reboot to enter the BIOS setup screens.

e) On the **Advanced** tab, select **Trusted Computing** and press **Enter** to open the TPM Security Device Configuration window.

f) Set the TPM Support option to **Enabled**.

g) Press **F10** to save and exit. Allow the server to reboot, but watch for the prompt to press F2 in the next step.

Step 3   Enable TPM State in the BIOS.

a) Press **F2** during reboot to enter the BIOS setup screens.

b) On the **Advanced** tab, select **Trusted Computing** and press **Enter** to open the TPM Security Device Configuration window.

c) Set the TPM State option to **Enabled**.

d) Press **F10** to save and exit. Allow the server to reboot, but watch for the prompt to press F2 in the next step.

Step 4   Verify that TPM Support and TPM State are enabled.

a) Press **F2** during reboot to enter the BIOS setup screens.

b) On the **Advanced** tab, select **Trusted Computing** and press **Enter** to open the TPM Security Device Configuration window.

c) Verify that TPM Support and TPM State are set to **Enabled**.

d) Continue with enabling the Intel TXT feature in the next step.

Step 5   Enable the Intel TXT feature in the BIOS.

a) Choose the **Advanced** tab.

b) Choose **Intel TXT (LT-SX) Configuration** to open the Intel TXT (LT-SX) Hardware Support window.

c) Set TXT Support to **Enabled**.

d) Verify that the following items are listed as Enabled:

• VT Support (default is Enabled)

• VT-d Support (default is Enabled)

• TPM Support

• TPM State

If VT Support and VT-d Support are not enabled, return to the **Advanced** tab, select **Processor Configuration**, and then set Intel (R) VT and Intel (R) VT-d to `Enabled`.

e) Press `F10` to save and exit.

CHAPTER 4

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 32.

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 32.

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 17: Removing the Scalability Terminator
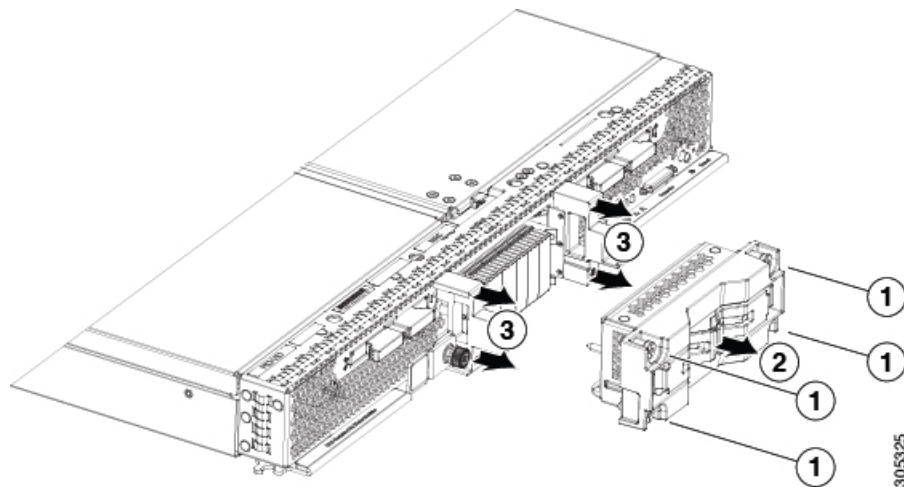
Installing a Scalability Connector

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 18: Installing the UCS Scalability Connector
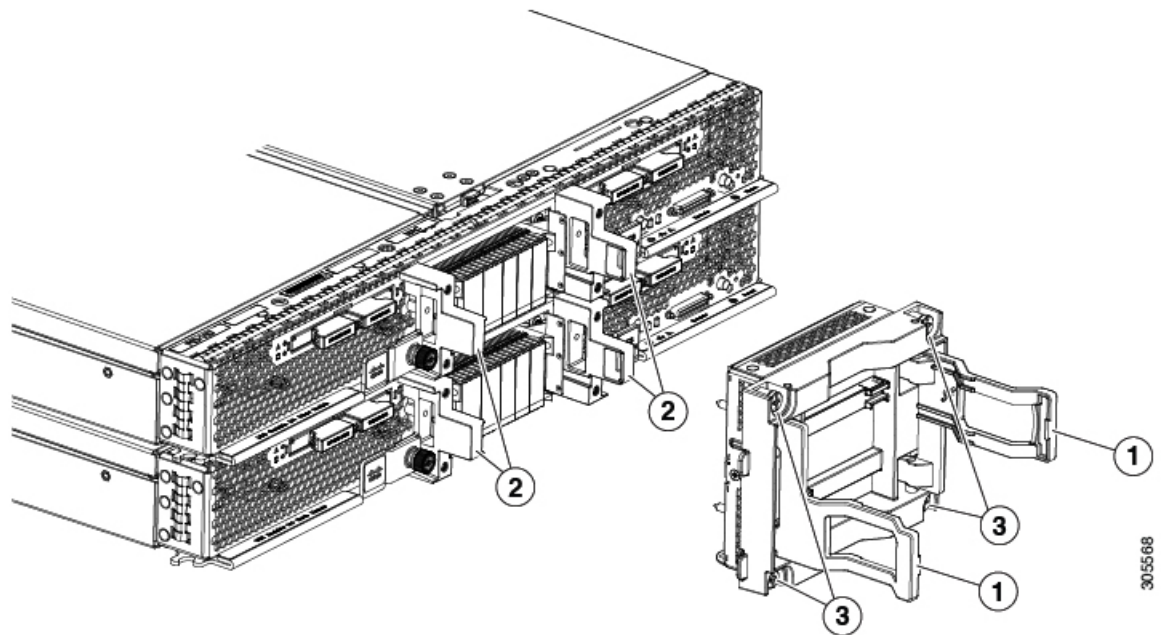
Technical Specifications

This chapter contains the following section:

-

Physical Specifications

Table 4: 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 5: 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.