



Servicing the Blade Server

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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.



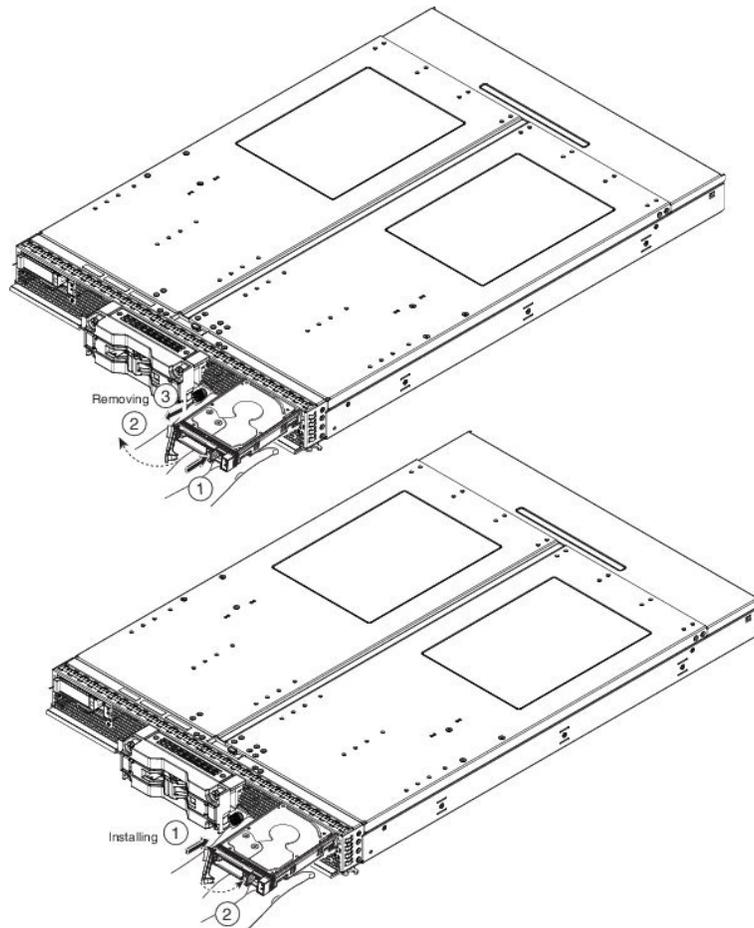
Caution To prevent ESD damage, wear grounding wrist straps during these procedures.

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 1: Removing and Installing a Server Drive



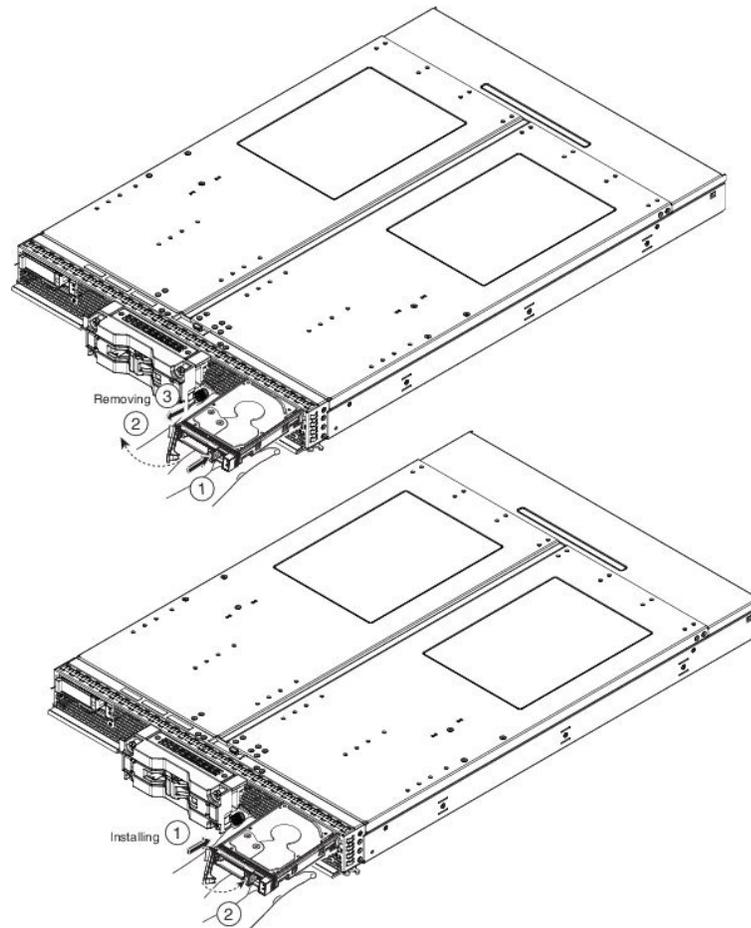
- Step 2** Place the hard drive on an antistatic mat or antistatic foam if you are not immediately reinstalling it in another blade server.
- Step 3** Install a blank faceplate (N20-BBLKD) to keep dust out of the blade server if the slot will remain empty.

Installing a Blade Server Drive

Procedure

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

Figure 2: Removing and Installing a Drive



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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 3: 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.
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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

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- Step 1** Remove the existing battery:
- Power off the blade, remove it from the chassis, and remove the top cover.
 - Push the battery socket retaining clip away from the battery.
 - Lift the battery from the socket. Use needle-nose pliers to grasp the battery if there is not enough clearance for your fingers.
- Step 2** Install the replacement battery:
- Push the battery socket retaining clip away from where the battery fits in the housing.
 - Insert the new battery into the socket with the battery's positive (+) marking facing away from the retaining clip. Ensure that the retaining clip can click over the top of the battery to secure it in the housing.
 - Replace the top cover.
 - Replace the blade server in the chassis.
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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

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- 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:
- Place the CPU Pick-and-Place tool on the CPU socket aligned with the arrow pointing to the CPU registration mark.
 - Press the button/handle on the tool to grasp the installed CPU.
 - 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.



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.

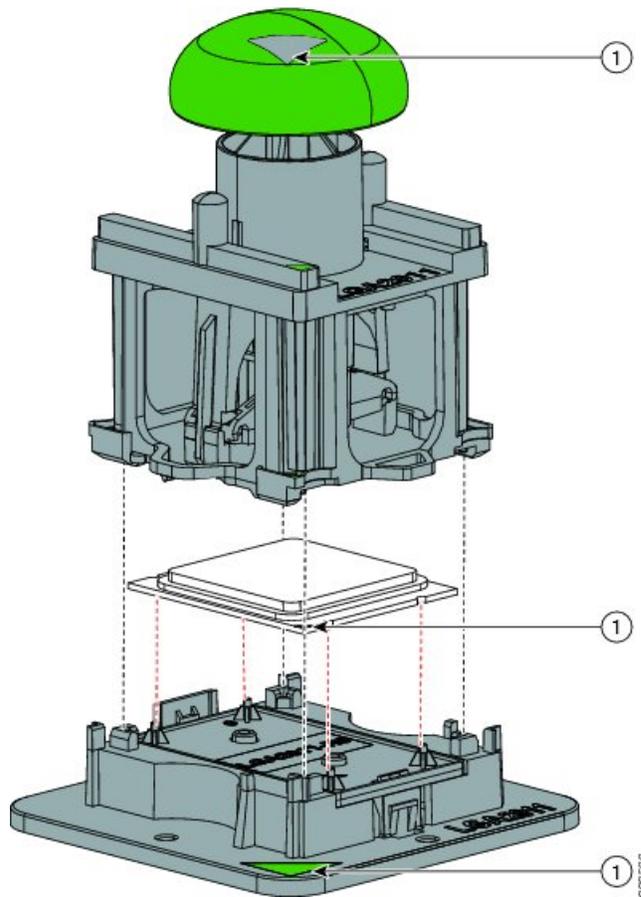
- UCS-CPU-EP-PNP=; Pick n place CPU tools for M3/EP 10/8/6/4/2 core CPUs (Green)
- UCS-CPU-EP2-PNP=; Pick n place CPU tools for M3/EP v2 12 core CPUs (Purple)

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:
- 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 4: Loading the Pick and Place Tool

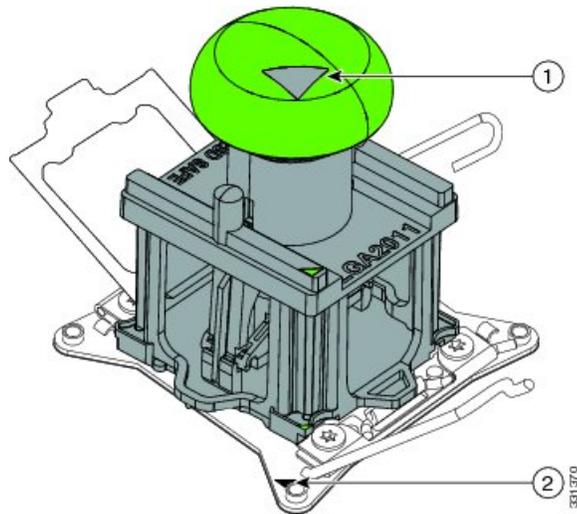


- | | |
|----------|---|
| 1 | Alignment mark on the pick and place tool, CPU and pedestal |
|----------|---|

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.

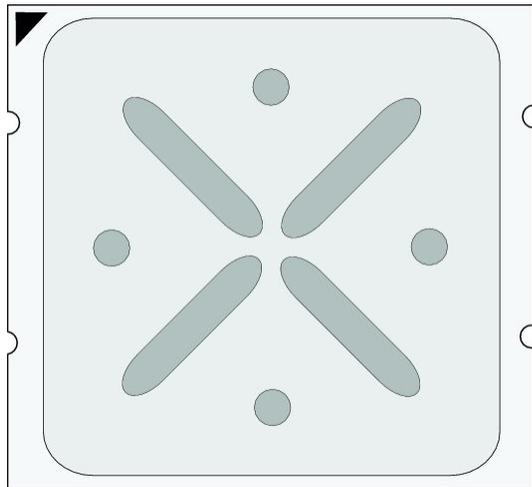
Figure 5: Using the CPU Pick and Place Tool to Insert the CPU



1	Alignment mark on the tool button/handle	2	Alignment mark on the CPU socket
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- Step 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 6: 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 7: Memory Slots Within the Blade Server

1	DIMMs for CPU 1	2	DIMMs for CPU 2
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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 1: 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

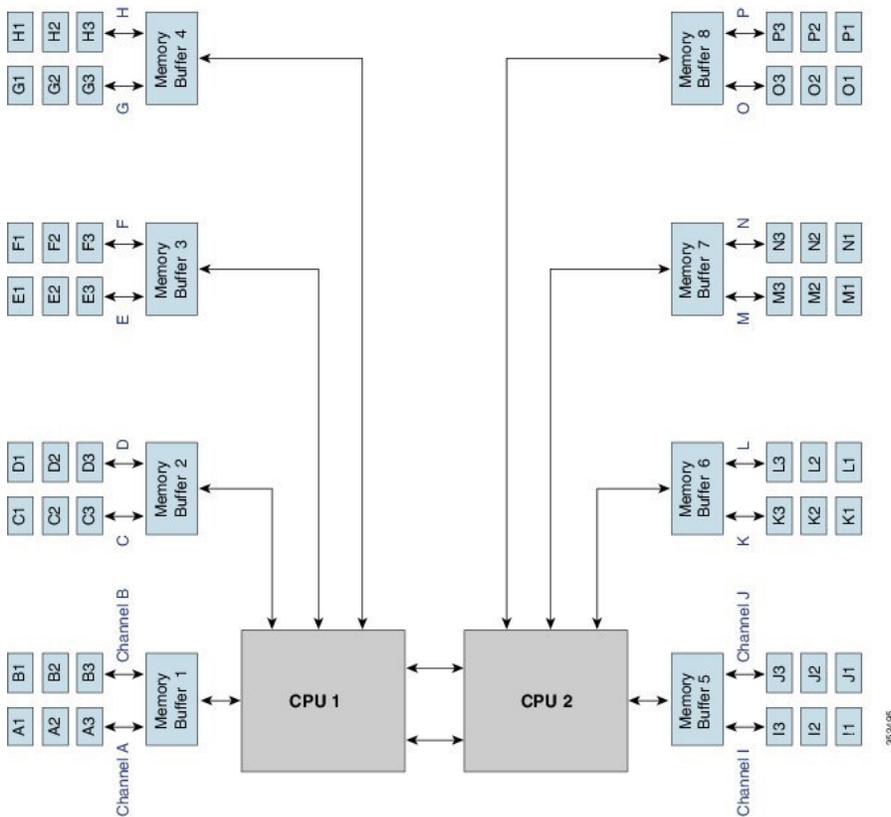
DIMMs per CPU	CPU 1 DIMMs	CPU 2 DIMMs
9	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2) - black slot	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2) - black slot
10	(A1, B1) (C1, D1) (E1, F1) (G1, H1) - blue slots (A2, B2) - black slots	(O1, P1) (L1, K1) (M1, N1) (J1, I1) - blue slots (O2, 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 (A2, B2) (C2, D2) (E2, F2) (G2, H2)- black slots (A3, B3) (C3, D3) (E3, F3) (G3, H3) - 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, I3) - white or ivory slots

The following figure shows the logical representation of the channels.

Figure 8: 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.

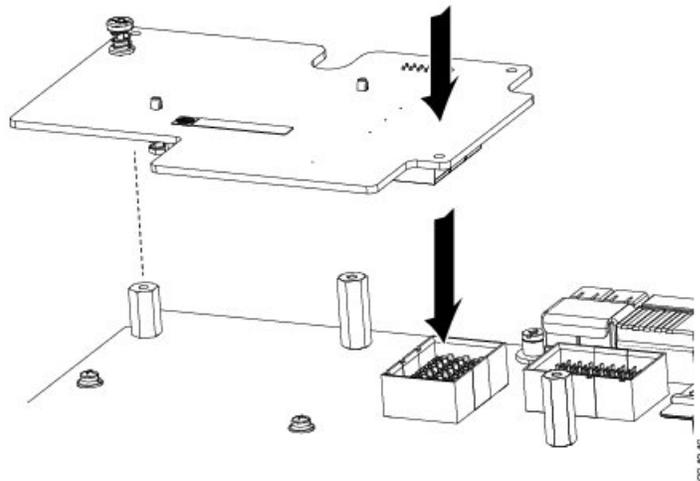
To install a Cisco VIC 1340 or VIC 1240 in the blade server, follow these steps:

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 9: 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 10: TPM Socket Location

1	Front of server	2	TPM socket on motherboard
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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.
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