

Cisco UCS B230 Blade Server Installation and Service Note

The Cisco UCS B230 Blade Server (shown in [Figure 1](#)) is one of the industry's highest-density two-socket blade server platforms, providing performance, density, and cost-effective value to data centers. With a half-width blade form factor, up to eight B230 servers can reside in the Cisco UCS 5100 Series Blade Server Chassis. Combining the performance of the Intel Xeon 6500 and 7500 series processors with up to 32 DIMM slots, the Cisco UCS B230 delivers compact performance and exceptional memory-per-core count to improve virtualization performance, reduce software license costs, and help enable more virtual machines. It has the following features:

- One or two Intel Xeon 6500 or 7500 series multi-core processors, for up to 16 processing cores
- 32 DIMM slots for industry-standard double-data-rate 3 (DDR3) memory
- Two optional solid-state drives (SSDs)
- One dual-port adapter slot for up to 20 Gbps of I/O throughput
- Remote management through a Cisco Integrated Management Controller (CIMC) that implements a policy established in Cisco UCS Manager software
- Local keyboard, video, and mouse (KVM) access through a front console port on each server
- Out-of-band access by remote KVM, Secure Shell (SSH) Protocol, and virtual media (vMedia) and Intelligent Platform Management Interface (IPMI)
- A compact, high-performance, half-width blade server form factor
- LSI SAS 2008 RAID controller (onboard version of MegaRAID 9240)

M1 and M2 versions are available, supporting different processor classes. The Cisco UCS B230 is managed by Cisco UCS Manager version 1.4(1) and later. Cisco UCS Manager provisions Cisco UCS B-Series Blade Servers and their I/O properties using service profiles, which are infrastructure policies needed to provision servers and deploy applications, such as policies for power and cooling, security, identity, hardware health, and Ethernet and storage networking. Use of service profiles helps reduce the number of steps needed for provisioning, the opportunities for human error, and server and network deployment times. In addition, service profiles improve policy consistency and coherency across the entire Cisco Unified Computing System.

Every Cisco UCS B-Series Blade Server uses converged network adapters (CNAs) for access to the unified fabric. This design reduces the number of adapters, cables, and access-layer switches needed while still allowing traditional LAN and SAN connectivity, thus reducing capital expenditures and



Comments to ucs-docfeedback@cisco.com

operating expenses. Among the I/O adapter options, and unique to the Cisco Unified Computing System, the Cisco UCS M81KR Virtual Interface Card (VIC) delivers up to 128 dynamic virtual adapters and interfaces, all integrated with Cisco UCS Manager and VMware vCenter Server. Incorporating Cisco VN-Link technology, this advanced fabric interface provides network visibility to virtual machines and helps enable configurations and policies to follow the virtual machine during migration.

Figure 1 Cisco UCS B230 (N20-B6730) Front Panel



1	SSD 1 activity LED	9	Beaconing LED and button
2	SSD 1 Fault/Locate LED	10	System activity LED
3	SSD sled in bay 1	11	Blade health LED
4	SSD 2 activity LED	12	Reset button access
5	SSD 2 fault LED	13	Power button and LED
6	Ejector lever captive screw	14	Console connector
7	Ejector lever	15	Asset tab ¹
8	SSD sled in bay 2		

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

Buttons

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

The beaconing function for an individual server can be turned on or off by pressing the combination button and LED or in UCS Manager. See [Table 1 on page 3](#) for details.

The power button and LED allows you to manually take a server temporarily out of service but leave it in a state where it can be restarted quickly. Pressing the button for one second initiates a graceful shutdown, and pressing it for over 4 seconds initiates an immediate shutdown. If the desired power state for a service profile associated with a blade server or an integrated rack-mount server is set to "off", using the power button or Cisco UCS Manager to reset the server will cause the desired power state of

Comments to ucs-docfeedback@cisco.com

the server to become out of sync with the actual power state and the server may unexpected shutdown at a later time. To safely reboot a server from a power-down state, use the Boot Server action in Cisco UCS Manager.

Connectors

A console port is provided to give 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 device included in the chassis accessory kit.

The KVM cable (N20-BKVM, see [Figure 2](#)) provides a connection into a Cisco UCS blade server, providing 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.

Figure 2 KVM Cable for Blade Servers



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

LEDs

The LED indicators 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 flashing blue beaconing indication. See [Table 1](#) for details.

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

Table 1 Blade Server LEDs

LED	Color	Description
■ Power	Off	Not installed or Fault.
	Green	Normal operation.
	Amber	Standby.
■ Link	Off	None of the network links are up.
	Green	At least one network link is up.

Table 1 Blade Server LEDs (continued)

LED	Color	Description
 Health	Off	Power unavailable.
	Green	Normal operation.
	Amber	Minor error.
	Blinking Amber	Critical error.
 Beaconing	Off	Beaconing not enabled.
	Blinking blue 1 Hz	Beaconing to locate a selected blade—If the LED is not blinking, the blade is not selected. You can initiate beaconing in UCS Manager or with the button.
 Activity (Disk Drive)	Off	Drive not installed.
	Green (flashing)	Outstanding I/O to disk drive.
	Green (solid)	Drive installed.
 Health (Disk Drive)	Off	No fault.
	Amber (solid)	Some fault or drive error.
	Amber (flashing)	Locator function in OS is active.

Each UCS B230 blade server contains several Field Replaceable and Field Upgradable units:

- Solid State Drive
- CPU(s)
- Memory
- Adapter card

This document provides step-by-step information on how to add or replace all the above components.

Conventions

This document uses the following conventions for notes, cautions, and safety warnings.

Notes and Cautions contain important information that you should know.



Note

Means *reader take note*. Notes contain helpful suggestions or references to material that are not covered in the publication.



Caution

Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, can cause physical injuries. A warning symbol precedes each warning statement.



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. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus

TÄRKEITÄ TURVALLISUUSOHJEITA

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelyyn liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET

Attention

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS

Comments to ucs-docfeedback@cisco.com

Warnung WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

Avvertenza IMPORTANTI ISTRUZIONI SULLA SICUREZZA

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI

Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

GUARDE ESTAS INSTRUÇÕES

¡Advertencia! INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES

Comments to ucs-docfeedback@cisco.com

Varning! VIKTIGA SÄKERHETSANVISNINGAR

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR





Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES

Advarsel VIGTIGE SIKKERHEDSANVISNINGER

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemeskade. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER



Comments to ucs-docfeedback@cisco.com

■

[Redacted]

■

[Redacted]

■

[Redacted]

■

[Redacted]

■

[Redacted]

Comments to ucs-docfeedback@cisco.com

■



■



■



Installing and Removing a Solid State Drive

There are up to 2 front-accessible, hot-swappable SSD drives per blade. You can remove or install supported blade server SSD drives (see [Table 2](#)) without removing the blade server from the chassis. All other component replacements for a blade server require removing the blade from the chassis. Unused SSD drive bays should always be covered with cover plates (N20-BBLKD-7MM) to assure proper cooling and ventilation.

Table 2 **Supported SSD Drives (M1 Models)**

Product ID	Description
UCS-SSD100GI1F105	100 GB Low Height 7mm SATA SSD hot plug/drive sled mounted ¹
N20-D032SSD	32 GB Low Height SATA SSD SFF drive/hot plug/drive sled mounted
N20-D064SSD	64 GB Low Height SATA SSD SFF drive/hot plug/drive sled mounted

1. This SSD requires UCS capability catalog version 1.0.46 or later.

Comments to ucs-docfeedback@cisco.com

**Caution**

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

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

Disk and RAID troubleshooting information is in the *Troubleshooting Server Hardware* chapter of the *Cisco UCS Troubleshooting Guide*. The B230 uses a built-in LSI SAS 2008 RAID controller (onboard version of the LSI MegaRAID 9240).

Installing an SSD Drive

To install an SSD drive sled in a B230 blade server, follow these steps:

- Step 1** Remove the blank faceplate, if necessary.
- Step 2** With the drive label face up, align the drive with the desired drive bay and insert. (See [Figure 1](#) to locate the bays; [Figure 3](#) shows a drive removal which is largely the reverse process.)
- Step 3** Slide the drive into the opening in the blade server until the catch is secured. You should feel the catch click into place.
- Step 4** Give a gentle push to the rear to make sure the drive is fully seated.
- Step 5** Check the LEDs on the blade server to make sure the drive is functioning as expected. (See [Table 1](#).)

Removing an SSD Drive

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

- Step 1** Squeeze the catch mechanism to release the drive. (See [Figure 3](#), callout 1.)
- Step 2** Pull the drive from its slot. (See [Figure 3](#), callout 2.)

Comments to ucs-docfeedback@cisco.com

Figure 3 ***Squeeze the Catch on the Drive Sled***



- 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 blank faceplate (N20-BBLKD-7MM) to keep dust out of the blade server if the slot will remain empty.

Removing and Installing a UCS B230



Caution

To prevent ESD damage, wear grounding wrist straps while performing procedures where the server is removed from the chassis, and handle modules by the carrier edges only.

Before performing any internal operation on a blade server, you must remove it from the chassis. This section describes the following topics:

- [Removing a Cisco UCS B230 Blade Server, page 13](#)
- [Installing a Cisco UCS B230 Blade Server, page 14](#)

Shutting Down and Powering Off a Blade Server

The server has two power modes:

- Main power mode—Power is supplied to all server components and any supported operating system.

Comments to ucs-docfeedback@cisco.com

- Standby power mode—Power is supplied only to the service processor and the cooling fans and it is safe to remove the server for service.

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

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

- UCS Manager, see either the Cisco UCS Manager GUI configuration guide or the Cisco UCS Manager CLI configuration guide.
- Use the Power button on the server front panel. To use the Power button, follow these steps:

-
- Step 1** Check the color of the Power Status LED.
- Green indicates that the server is in main power mode and must be shut down before it can be safely removed. Go to Step 2.
 - Amber indicates that the server is already in standby mode and can be safely removed. Go to Step 3.

- Step 2** Invoke either a graceful shutdown or a hard shutdown:



Caution

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

-
- Graceful shutdown—Press and release the Power button. The operating system performs a graceful shutdown and the server goes to standby mode, which is indicated by an amber Power Status LED.
 - Emergency shutdown—Press and hold the Power button for 4 seconds to force the main power off and immediately enter standby mode.
- Step 3** If you are shutting down an entire chassis, you should now disconnect the power cords from the chassis to completely power off the servers. If you are only shutting down one server, you do not need to unplug the chassis and may simply to removing the server.
-

Removing a Cisco UCS B230 Blade Server

To remove a blade server from the chassis, follow these steps:

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

[Comments to ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)

Installing a Cisco UCS B230 Blade Server

To install a blade server, follow these steps:

-
- Step 1** Grasp the front of the blade server and place your other hand under the blade to support it.
 - Step 2** Open the ejector lever in the front of the blade server. (See [Figure 4.](#))

Figure 4 *Inserting a Blade Server in the Chassis*



- Step 3** Gently slide the server into the opening until you cannot push it any farther. At a certain point it will engage the ejector lever.
 - Step 4** Press the ejector lever as it catches the edge of the chassis and presses the blade server all the way in. Give a gentle push to the rear to be sure the server is fully seated into the midplane.
 - Step 5** Tighten the captive screw on the front of the blade to no more than 3 in-lbs. Tightening with bare fingers only is unlikely to lead to stripped or damaged captive screws.
-

[Comments to ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)

Removing a Blade Server Cover

**Caution**

To prevent ESD damage, wear grounding wrist straps while performing procedures where the cover is removed from the server, and handle modules by the carrier edges only.

To open the blade server, follow these steps:

- Step 1** Set the ejector lever to the angle shown in [Figure 5](#).

Figure 5 *Opening a Cisco UCS B230 Blade Server*



- Step 2** Remove any installed SSDs. If needed, refer to “[Removing an SSD Drive, page 11.](#)”
- Step 3** Press and hold the button down as shown in [Figure 5](#).
- Step 4** While holding the back end of the cover, pull the cover forward and up.

**Note**

The front face of the server is attached to the top cover and will come off with the cover.

**Tip**

Replacement of the cover is the reverse of the removal procedure. Be sure to re-install the SSDs after the cover is secured.

Blade Server Internal Components

Figure 6 calls out the various components within the blade server.

Figure 6 *Inside View of a Blade Server*



1	DIMM slots	2	CPU 1 and heat sink
3	CPU 2 and heat sink	4	DIMM slots
5	Adapter card connector	6	Diagnostic button

Diagnostics Button and LEDs

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

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

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

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

Comments to ucs-docfeedback@cisco.com

Working Inside the Blade Server

This section describes how to perform the following tasks within a blade server:

- [Removing a CPU or Heat Sink, page 17](#)
- [Installing a CPU or Heat Sink, page 19](#)
- [Installing a Motherboard CMOS Battery, page 21](#)
- [Installing an Adapter Card, page 22](#)
- [Installing Memory, page 24](#)

Removing a CPU or Heat Sink

You can order your blade server with two CPUs, or upgrade later to a second CPU. Both CPUs must be of the same type, and memory in slots intended for the second CPU is not recognized if the second CPU is not present. You may need to use these procedures to move a CPU from one server to another, or to replace a faulty CPU.

[Table 3](#) and [Table 4](#) list the available CPU options:

Table 3 CPU Options, M1 Models

Product ID	Power Draw (W)	Clock Speed	Cores	Cache
A01-X0308 / Xeon X6550	130 W	2 GHz	8	18 MB
A01-X0304 / Xeon E6540	105W	2 GHz	6	18 MB
A01-X0302 / Xeon E6510	105 W	1.73 GHz	4	12 MB
A01-X0200 / Xeon X7560	130 W	2.26 GHz	8	24 MB
A01-X0206 / Xeon L7555	95 W	1.86 GHz	8	24 MB

Table 4 CPU Options, M2 Models

Product ID	Power Draw (W)	Clock Speed	Cores	Cache
UCS-CPU-E72870	130 W	2.4 GHz	10	30 MB
UCS-CPU-E72860	130 W	2.26 GHz	10	24 MB
UCS-CPU-E72850	130 W	2 GHz	10	24 MB
UCS-CPU-E72830	105 W	2.13 GHz	8	24 MB
UCS-CPU-E72803	105 W	1.73 GHz	6	18 MB
UCS-CPU-E78867L	105 W	2.13 GHz	10	30 MB

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

-
- Step 1** Unscrew the two captive screws securing the heat sink to the motherboard. (See [Figure 7](#), callout 1.)
 - Step 2** Remove the heat sink (N20-BHTS6). (See [Figure 7](#), callout 2.) Remove the old thermal compound from the bottom of the heat sink using the cleaning kit (UCSX-HSCK=) available from Cisco. Follow the instructions on the two bottles of cleaning solvent.

Comments to ucs-docfeedback@cisco.com

- Step 3** Unhook the socket latch. (See [Figure 7](#), callout 3.)
- Step 4** Open the socket latch. (See [Figure 7](#), callout 4.)
- Step 5** Remove the CPU or socket protective cover. (See [Figure 7](#), callout 5.)

Figure 7 *Removing the Heat Sink and Accessing the CPU Socket*



Comments to ucs-docfeedback@cisco.com

In systems shipped with one CPU, the vacant CPU has an N20-BBFLA-230 air blocker (see [Figure 8](#)) in place of the CPU heat sink. The blocker is needed for cooling air to flow as designed and needed through the server, and should be kept in place unless another CPU is added. If you are downgrading to a single CPU, order the air blocker and install it in the empty CPU location.

Figure 8 ***Air Blocker (shown in CPU 2)***



Installing a CPU or Heat Sink

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

-
- Step 1** Place the CPU on the base with the notches aligned to the pins on the base. (See [Figure 9](#), callout 1.)

Comments to ucs-docfeedback@cisco.com

Figure 9 ***Inserting the CPU and Replacing the Heat Sink***



- Step 2** Close the socket latch. (See [Figure 9](#), callout 2.)
- Step 3** Lock the socket latch into place with the hook. (See [Figure 9](#), callout 3.)
- Step 4** Attach the thermal pad (also available as a spare A04-BTHP3=) provided with the replacement CPU or server to the bottom of the heat sink, then remove the covering film from the side that will adhere to the CPU. (See [Figure 9](#), callout 4.)
- Step 5** Replace the heat sink (N20-BHTS6). (See [Figure 9](#), callout 5.)



Caution Make sure that the heat sink fins are aligned to run along the length of the blade server (see [Figure 9](#)).

- Step 6** Secure the heat sink to the motherboard by tightening the two captive screws hand tight. (See [Figure 9](#), callout 6.)
-

Comments to ucs-docfeedback@cisco.com

Installing a Motherboard CMOS Battery

The B230 blade server supports the following Cisco component:

Supported Components	Part Number
CR2032 battery	N20-MBLIBATT



Warning

There is danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

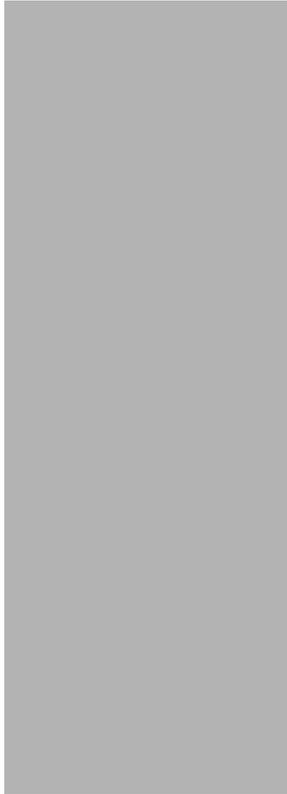
Statement 1015

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

- Step 1** Remove a motherboard CMOS battery:
- a. Power off the blade, remove it from the chassis, and remove the top cover as described in the [“Removing a Blade Server Cover”](#) section on page 15.
 - b. Press the battery socket retaining clip away from the chassis wall (see [Figure 10](#)).
 - c. Lift the battery from the socket. Use needle-nose pliers to grasp the battery if there is not enough clearance for your fingers.
 - d. Note the orientation of the the battery's positive (+) marking.
- Step 2** Install a motherboard CMOS battery:
- a. Press the battery socket retaining clip away from the chassis wall.
 - b. Insert the new battery into the socket with the battery's positive (+) marking oriented as it was in step 1d. Ensure that the retaining clip clicks over the top of the battery.
 - c. Replace the top cover.
 - d. Replace the server in the chassis and press the **Power** button to power on the blade.

[Comments to ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)

Figure 10 *Removing and Replacing a Motherboard CMOS Battery*



Installing an Adapter Card

The network adapters and interface cards all have a shared installation process. [Table 5](#) lists the available options:

Table 5 *Adapter Card Options*

Cisco Product ID	Name
N20-AC0002	Cisco UCS M81KR Virtual Interface Card
N20-AB0002	Cisco UCS NIC M51KR-B Broadcom BCM57711 Network Adapter
N20-AI0102	Cisco UCS CNA M61KR-I Intel Converged Network Adapter ¹
N20-AQ0102	Cisco UCS CNA M72KR-Q QLogic Converged Network Adapter ¹
N20-AE0102	Cisco UCS CNA M72KR-E Emulex Converged Network Adapter ¹
UCS-VIC-M82-8P	Cisco UCS Virtual Interface Card 1280 ¹

1. Requires UCS Manager 2.0(2) or later.

Comments to ucs-docfeedback@cisco.com

If you are switching from one type of adapter card to another, before you physically perform the switch make sure you have downloaded the appropriate device drivers and loaded them into the server's operating system. For more information, refer to the firmware management chapter of one of the UCS Manager software configuration guides.

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

-
- Step 1** Position the adapter board connector above the motherboard connector and align the three adapter captive screws to the posts on the motherboard. (See [Figure 11](#), callout 1.)
 - Step 2** Firmly press the adapter connector into the motherboard connector. (See [Figure 11](#), callout 2.)
 - Step 3** Tighten the three captive screws. (See [Figure 11](#), callout 3.)

Figure 11 ***Installing an Adapter Card***



[Comments to ucs-docfeedback@cisco.com](mailto:ucs-docfeedback@cisco.com)

Installing Memory

Only the DIMMs listed in [Table 6](#) should be used. Memory must be installed in the order shown in [Table 8](#) into the slots located in [Figure 13](#). To install a DIMM into a slot in the B230 blade server, follow these steps:

-
- Step 1** Open both DIMM connector latches. (See [Figure 12](#), callout 1.)

Figure 12 *Installing DIMMs in the Blade Server*



- Step 2** Press the DIMM into its slot evenly on both ends until it clicks into place. (See [Figure 12](#), callout 2.)
- Step 3** Press the DIMM connector latches inward slightly to seat them fully. (See [Figure 12](#), callout 3.)
-

Memory and Performance

This section describes the type of memory that the B230 blade server requires and its effect on performance. The following topics are covered:

- [Supported DIMMs, page 25](#)
- [Memory Arrangement, page 25](#)
- [Memory Performance, page 26](#)

Comments to ucs-docfeedback@cisco.com

Supported DIMMs

Table 6 lists the type of DIMMs that Cisco Systems makes available for use with this blade server:

Table 6 Cisco Systems Supported DIMMs (M1 Models)

Product ID	Description
A02-M308GB3-2	Two DIMMs, each 4 GB DDR3–1333 MHz (Low Voltage supported)
A02-M316GB3-2	Two DIMMs, each 8 GB DDR3–1333 MHz (Low Voltage supported)
A02-M308GD5-2	Two DIMMs, each 4 GB DDR3–1333 MHz
A02-M316GD5-2	Two DIMMs, each 8 GB DDR3–1333 MHz
UCS-MR-2X041RX-C	Two DIMMs, each 4 GB DDR3–1333 MHz (Low Voltage supported)

Table 7 Cisco Systems Supported DIMMs (M2 Models)

Product ID	Description
A02-M308GB3-2	Two DIMMs, each 4 GB DDR3–1333 MHz (Low Voltage supported)
A02-M316GB3-2	Two DIMMs, each 8 GB DDR3–1333 MHz (Low Voltage supported)
A02-M332GD3-2-L	Two DIMMs, each 16 GB DDR3–1066 MHz (Low Voltage supported)

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

Memory Arrangement

The UCS B230 contains 32 slots for installing DIMMs. Each CPU has 16 DIMM slots organized in pairs. This blade server needs at least one matched pair of DIMMs attached to CPU 1 or CPU 2. Both CPUs can boot and run from a single DIMM pair. DIMM pairs must be identical (the same size, speed, and manufacturer) and are sold in appropriately matched pairs, but one DIMM pair on a CPU can be different from other pairs. DIMMs installed in slots for an absent CPU are not recognized. You should also install memory evenly across the installed CPUs, though it is not a requirement. DIMM slots are color coded blue, white, yellow, and black, and we recommend that you install memory in that order. Each channel pair is identified by a letter: A, B, C, or D for each CPU. Each DIMM pair member is identified by numbers, 0, 1, 2 or 3. You must install additional DIMMs as shown in Table 8.

Table 8 DIMM Installation Order

DIMMs per CPU	Numbered slots ¹
2 (Blue)	(B0, B1)
4 (Blue)	(B0, B1) – (D0, D1)
8 (Blue, White)	(B0, B1) – (D0, D1) – (A0, A1) – (C0, C1)
16 (Blue, white, yellow, black)	(B0, B1) – (D0, D1) – (A0, A1) – (C0, C1) – (B2, B3) – (D2, D3) – (A2, A3) – (C2, C3)

Comments to ucs-docfeedback@cisco.com

1. The slots inside the brackets are electrically paired with each other, and should be populated with identical matched DIMMs that were ordered as a pair. Do not swap a paired DIMM with a DIMM that is not identical in manufacturer part number.

Figure 13 shows how DIMMs slots are laid out on the blade server. A CPU uses the DIMM slots directly to the right or the left of the CPU. Note that the arrangement for CPU 2 and CPU 1 is not identical.

Figure 13 *DIMM Slot Numbering*



Memory Performance

When configuring your server, consider the following.

- DIMMs within the blade server can be of a different size.
- Your selected CPU(s) can have some effect on performance. If two CPUs are used, both must be of the same type.

Bandwidth and Performance

You can achieve maximum bandwidth, performance, and system memory using the following configuration:

- 16 DIMM per CPU (32 DIMMs total)
- Maximum capacity of 256 GB (using 8 GB DIMMs)

Performance Loss

Performance is less than optimal if the following memory configurations are used:

- Mixing DIMM sizes and densities within a pair is not allowed and both DIMMs in the pair will be removed from the memory array
- Unevenly populating DIMMs between CPUs

Depending on the application needed, performance loss might or might not be noticeable or measurable. Partially populating a pair is unsupported and will not work at all.

Comments to ucs-docfeedback@cisco.com

Server Troubleshooting

For general server troubleshooting information, refer to the "*Troubleshooting Server Hardware*" chapter of the *Cisco UCS Troubleshooting Guide*.

Server Configuration

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

Server Specifications

Table 9 *Physical Specifications for the Cisco UCS B230 Blade Server*

Specification	Value
Height	1.95 inches (50 mm)
Width	8.00 inches (203 mm)
Depth	24.4 inches (620 mm)
Weight	18.0 lbs (8.16 kg) ¹

1. The system weight listed here is an estimate for a fully configured system and will vary depending on peripheral devices installed.

Related Documentation

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

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

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, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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

Comments to ucs-docfeedback@cisco.com

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)