



Cisco UCS C250 M2 Extended Memory Rack-Mount Server

CISCO SYSTEMS
170 WEST TASMAN DR.
SAN JOSE, CA, 95134
WWW.CISCO.COM

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OVERVIEW

The Cisco® UCS C250 M2 Extended Memory Rack-Mount Server is a high-performance, memory-intensive, two-socket, two-rack unit (2RU) rack-mount server.

The Cisco UCS C250 M2 server, shown in [Figure 1](#), extends the capabilities of the Cisco Unified Computing System™, using Intel's latest Xeon 5600 Series multicore processors with 48 DIMM slots, 5 PCIe slots, embedded quad-port Gigabit Ethernet controller, and up to 8 2.5-inch SAS or SATA hot-pluggable hard disk drives (HDDs).

Figure 1 Cisco UCS C250 M2 High-Density Rack-Mount Server

Front View



Rear View

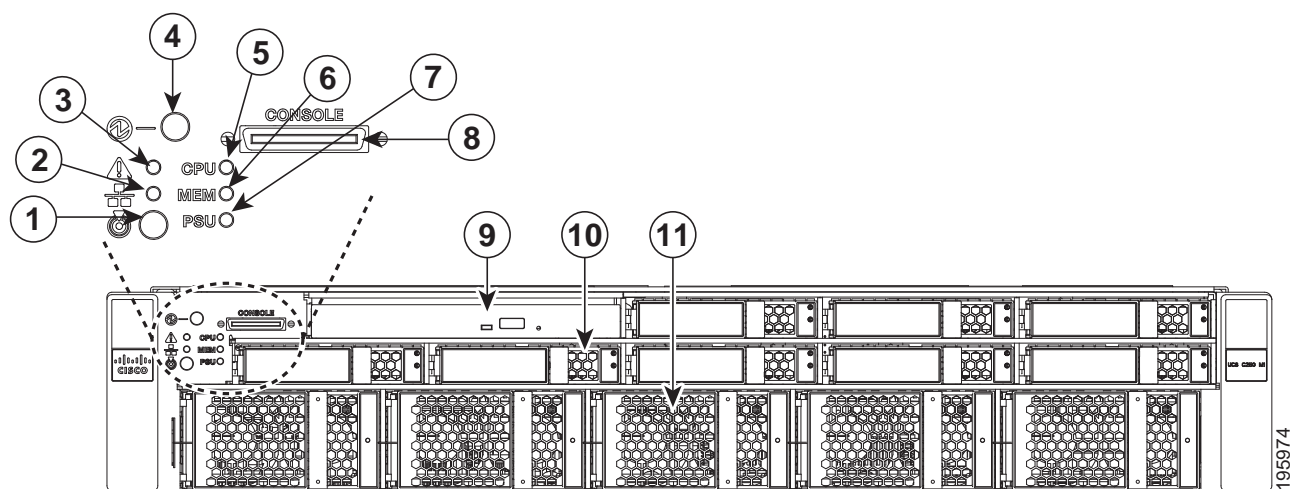


DETAILED VIEWS

Chassis Front View

Figure 2 shows the front view of the Cisco UCS C250 M2 Extended Memory Rack-Mount Server.

Figure 2 Chassis Front View



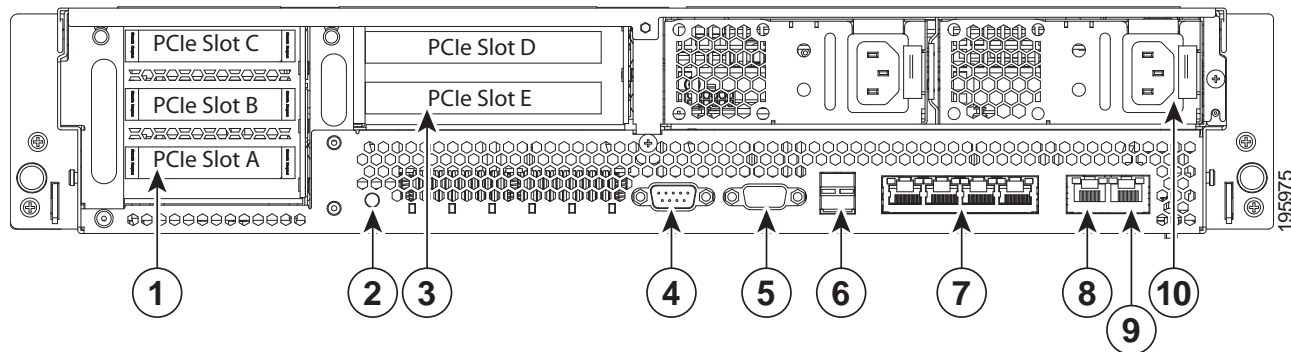
1	Locator LED/Locator Button	7	Power supply fault LED
2	Network Activity LED	8	Console connector (with supplied KVM cable, provides DB15 video, DB9 serial port, and two USB 2.0 connectors)
3	System fault LED	9	DVD-RW drive (optional)
4	Power button/Power status LED	10	Hard disk drives (up to 8 2.5-inch HDDs)
5	CPU fault LED	11	Fan modules (5)
6	Memory fault LED		

For more information about the KVM cable connection, see [KVM Cable](#) on page 49.

Chassis Rear View

Figure 3 shows the external features of the rear panel.

Figure 3 Chassis Rear View



1	Low-profile PCIe card slots (3)	6	USB 2.0 connectors (2)
2	Locator button/LED	7	10/100/1000 Ethernet ports (4)
3	Standard-profile PCIe card slots (2)	8	10/100 Ethernet management port M1
4	Serial connector (DB9)	9	10/100 Ethernet management port M2
5	Video connector (DB15 VGA)	10	Power supply (up to 2)

BASE SERVER STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in [CONFIGURING the SERVER on page 8](#).

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	Two rack unit (2RU) chassis
CPU	Up to two Intel® Xeon® 5500 or 5600 series processors
Chipset	Intel® 5520 (Tylersburg) chipset
Memory	Forty-eight slots for registered ECC DIMMS (up to 384 GB), supporting Intel SDDC
NIC	Embedded Broadcom NetXtreme II 5709 Quad Port Gigabit Ethernet controller with TCP Offload Engine (TOE)
Expansion slots	Five PCIe slots (on horizontal riser card sockets) <ul style="list-style-type: none"> ■ Slots A, B, and C are half-height, half-length, x8 lanes, with x16 connectors ■ Slots D and E are full-height, half-length, x16 lanes, with x16 connectors
Storage controller	One of the following: <ul style="list-style-type: none"> ■ LSI SAS 3081E-R PCIe Card RAID levels 0, 1, or 1E for up to 8 internal SAS or SATA drives, or ■ LSI 6G MegaRAID 9261-8i PCIe card RAID levels 0, 1, 5, 6, or 10 for up to 8 internal SAS or SATA drives
Internal storage devices	<ul style="list-style-type: none"> ■ Up to eight 2.5-inch SAS or SATA hot-pluggable hard disk drives (HDDs) ■ One general-purpose USB port on motherboard
Video	<ul style="list-style-type: none"> ■ 1280 x 1024 resolution ■ 32-bit color depth ■ 8 MB video memory

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Interfaces	<ul style="list-style-type: none"> ■ Rear panel <ul style="list-style-type: none"> • One DB9 serial port connector • Two USB 2.0 port connectors • One DB15 VGA connector • Four RJ-45 10/100/1000 Ethernet port connectors • Two RJ-45 10/100 Ethernet management ports ■ Front panel <ul style="list-style-type: none"> • One KVM console connector ■ Motherboard <ul style="list-style-type: none"> • One USB port
Front Panel	<ul style="list-style-type: none"> ■ Optional optical drive (24x CD±R/RW DVD±R/RW)
Power subsystem	Up to two 850 W power supplies (N+1 or nonredundant configuration options)
Fans	<p>Chassis:</p> <ul style="list-style-type: none"> ■ Five 80-mm hot-pluggable redundant fan modules (4 fans per module) <p>Power supply:</p> <ul style="list-style-type: none"> ■ Each power supply is equipped with a fan
Integrated management processor	Cisco Integrated Management Controller (CIMC) (with integrated video, KVM redirection, Security Intelligence Operations (SIO), fan speed control, Platform Environment Control Interface (PECI), and voltage monitoring)

CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS C250 M2 General-Purpose Rack-Mount Server:

- [STEP 1 VERIFY BASE SKU, page 9](#)
- [STEP 2 CHOOSE CPUS, page 10](#)
- [STEP 3 CHOOSE MEMORY DIMMs, page 12](#)
- [STEP 4 CHOOSE RAID CONFIGURATION, page 17](#)
- [STEP 5 CHOOSE HARD DISK DRIVES, page 19](#)
- [STEP 6 CHOOSE PCIe OPTION CARDS, page 20](#)
- [STEP 7 ORDER OPTIONAL REDUNDANT POWER SUPPLY, page 22](#)
- [STEP 8 CHOOSE AC POWER CORDS, page 23](#)
- [STEP 9 ORDER OPTIONAL CABLE MANAGEMENT ARM, page 26](#)
- [STEP 10 CHOOSE OPERATING SYSTEM, page 27](#)
- [STEP 11 CHOOSE OPERATING SYSTEM MEDIA KIT, page 29](#)
- [STEP 12 CHOOSE OPTIONAL VALUE-ADDED SOFTWARE, page 30](#)
- [STEP 13 CHOOSE SERVICE and SUPPORT LEVEL, page 31](#)
- [OPTIONAL STEP - ORDER RACK on page 35](#)
- [OPTIONAL STEP - ORDER PDU on page 36](#)

STEP 1 VERIFY BASE SKU

Verify the product ID (PID) of the base server as shown in [Table 2](#).

Table 2 PID of the Base C250 M2 Rack-Mount Server

Product ID (PID)	Description
R250-2480805W	UCS C250 M2 Srvr w/1PSU, DVD w/o CPU, mem, HDD, or PCIe card

The R250-2480805W base server:

- Includes one power supply.
- Includes a DVD-RW optical drive.
- Does not include CPU, memory, hard disk drives (HDDs), or plug-in PCIe cards.



NOTE: Use the steps on the following pages to configure the server with the components that you want to include.

STEP 2 CHOOSE CPUS

The standard CPU features are:

- Intel Xeon 5600-series (Westmere-EP) or Intel Xeon 5500-series (Nehalem-EP) CPUs
- Intel 5520 chipset
- Cache size of 8 or 12 MB

Choose CPUs

The available Intel Xeon 5600-series CPUs are listed in [Table 3](#).

Table 3 Available CPUs: Intel Xeon Westmere-EP x56xx Family

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR3 DIMM Clock Support (MHz) ¹
A01-X0115	X5690	3.46	130	12	6	6.4 GT/s	1333
A01-X0100	X5680	3.06	130	12	6	6.4 GT/s	1333
A01-X0117	X5675	3.06	95	12	6	6.4 GT/s	1333
A01-X0102	X5670	2.93	95	12	6	6.4 GT/s	1333
A01-X0105	X5650	2.66	95	12	6	6.4 GT/s	1333
A01-X0109	E5640	2.66	80	12	4	5.86 GT/s	1066
A01-X0120	E5649	2.53	80	12	6	5.86 GT/s	1333
A01-X0111	E5620	2.40	80	12	4	5.86 GT/s	1066

Notes . . .

1. If you select higher or lower speed DIMMs than what is shown in the table for a given CPU, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock. For example:

Selecting lower-speed DIMMs: If you use an X5690 CPU (which can support up to 1333-MHz DIMMs) with 1066-MHz DIMMs, the DIMMs will be clocked at the lower speed of 1066 MHz.

Selecting higher-speed DIMMs: If you use 1333-MHz DIMMs with an E5620 CPU (which can support up to 1066-MHz DIMMs), the DIMMs will be clocked at the lower speed of 1066 MHz.

The available 5500-series CPUs are listed in [Table 4](#).

Table 4 Available Intel CPUs: Xeon Nehalem x55xx Family

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR3 DIMM Clock Support (MHz) ¹
N20-X00001	X5570	2.93	95	8	4	6.4 GT/s	1333
N20-X00006	X5550	2.66	95	8	4	6.4 GT/s	1333
N20-X00002	E5540	2.53	80	8	4	5.86 GT/s	1066

Notes . . .

1. If you select higher or lower speed DIMMs than what is shown in the table for a given CPU, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock. For example:

Selecting lower-speed DIMMs: if you use an X5570 CPU (which can support up to 1333-MHz DIMMs) with 1066-MHz DIMMs, the DIMMs will be clocked at the lower speed of 1066 MHz.

Selecting higher-speed DIMMs: If you use 1333-MHz DIMMs with an E5540 CPU (which can support up to 1066-MHz DIMMs), the DIMMs will be clocked at the lower speed of 1066 MHz.

Approved Configurations

(1) One-CPU Configuration

- Choose one CPUs from any one of the rows of [Table 3 on page 10](#) or [Table 4 on page 11](#).

(2) Two-CPU Configuration (this is the mandatory configuration)

- Choose two identical CPUs from any one of the rows of [Table 3 on page 10](#) or [Table 4](#).

Caveats

- For optimal performance, select DIMMs with the highest clock speed for a given processor (see [Table 5 on page 13](#)). If you select DIMMs whose speeds are lower or higher than that shown in the tables, suboptimal performance will result.

STEP 3 CHOOSE MEMORY DIMMs



NOTE: The C250 M2 server implements Cisco Extended Memory Technology. Therefore, there are special rules for memory pairing.

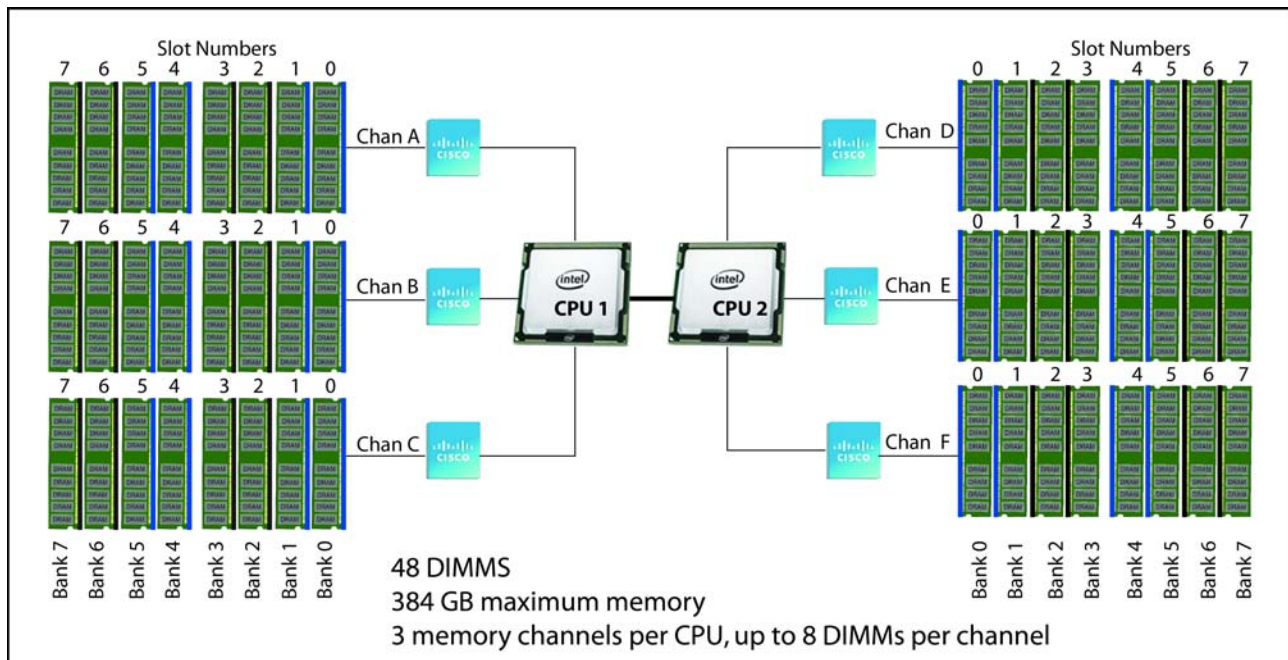
The standard memory features are:

- DIMMs
 - Clock speed: 1333 MHz
 - Ranks per DIMM: 1 or 2
 - Operational voltage: single voltage (1.5 V) or dual voltage (1.35 V/1.5 V)
 - Registered
- DDR3 ECC registered DIMMs (RDIMMs), supporting Intel SDDC
- Memory is organized with three memory channels per CPU, with up to eight DIMMs per channel, for a maximum of 48 DIMMs, as shown in [Figure 4](#).



NOTE: The diagram in [Figure 4](#) is a logical representation of how memory is organized. See [Physical Layout on page 39](#) for the physical CPU and DIMM layout on the motherboard.

Figure 4 C250 M2 Memory Organization



Choose DIMMs and Memory Mirroring

Choose the memory configuration and whether or not you want the memory mirroring option. The available memory DIMMs and mirroring option are listed in [Table 5](#).



NOTE: When memory mirroring is enabled, the memory subsystem simultaneously writes identical data to two adjacent channels. If a memory read operation from one of the channels returns incorrect data due to an uncorrectable memory error, the system automatically retrieves the data from the other channel. A transient or soft error in one channel does not affect the mirrored data, and operation continues unless there is a simultaneous error in exactly the same location on a DIMM and its mirrored DIMM. Memory mirroring reduces the amount of memory available to the operating system by 50 percent because only one of the two populated channels provides data.

Table 5 Available 1333-MHz DDR3 DIMMs

Product ID (PID)	PID Description	Voltage	Ranks/ DIMM
DIMM Pair Kit Options (2 DIMMs per kit)			
A02-M308GB1-2	8GB DDR3-1333MHz RDIMM/PC3-10600/2x4GB 2R Kit	1.5 V	2
A02-M308GB1-2-L	8GB DDR3-1333MHz RDIMM/PC3-10600/2x4GB 2R Kit/Low-Dual Volt	1.35/1.5 V	2
A02-M316GB1-2	16GB DDR3-1333MHz RDIMM/PC3-10600/2x8GB 2R Kit	1.5 V	2
A02-M316GB1-2-L	16GB DDR3-1333MHz RDIMM/PC3-10600/2x8GB 2R Kit/Low-Dual Volt	1.35/1.5 V	2
Memory Mirroring Option			
N01-MMIRROR	Memory mirroring option		

Approved Configurations

(1) One-CPU Configuration without memory mirroring

- Choose a number of DIMM-pair kits (2 DIMMs per kit): 4, 5, 6, 8, 9, 10, or 12

(2) One-CPU Configuration with memory mirroring

- Choose a number of DIMM-pair kits (2 DIMMs per kit): 4 or 8

The DIMMs will be placed by the factory as shown in the following table:

Number of DIMMs	DIMM Placement (Channel C is not used with memory mirroring)	
	CPU 1	CPU 2
8	4 DIMMs in Channel A (A0, A1, A2, A3) 4 DIMMs in Channel B (B0, B1, B2, B3)	—
16	8 DIMMs in Channel A (A0, A1, A2, A3, A4, A5, A6, A7) 8 DIMMs in Channel B (B0, B1, B2, B3, B4, B5, B6, B7)	—

- Choose the memory mirroring option (N01-MMIRROR) as shown in [Table 5 on page 13](#).



NOTE: System performance is optimized when the DIMM memory type and the DIMM quantity is equal for both CPUs.

(3) 2-CPU configuration without memory mirroring:

- Choose a number of DIMM-pair kits (2 DIMMs per kit): 8, 10, 12, 16, 18, 20, 24

(4) 2-CPU configuration with memory mirroring:

- Choose a number of DIMM-pair kits (2 DIMMs per kit): 8 or 16

The DIMMs will be placed by the factory as shown in the following table:

Number of DIMMs	DIMM Placement (Channels C and F are not used with memory mirroring)	
	CPU 1	CPU 2
16	4 DIMMs in Channel A (A0, A1, A2, A3) 4 DIMMs in Channel B (B0, B1, B2, B3)	4 DIMMs in Channel D (D0, D1, D2, D3) 4 DIMMs in Channel E (E0, E1, E2, E3)
32	8 DIMMs in Channel A (A0, A1, A2, A3, A4, A5, A6, A7) 8 DIMMs in Channel B (B0, B1, B2, B3, B4, B5, B6, B7)	8 DIMMs in Channel D (D0, D1, D2, D3, D4, D5, D6, D7) 8 DIMMs in Channel E (E0, E1, E2, E3, E4, E5, E6, E7)

- Choose the memory mirroring option (N01-MMIRROR) as shown in [Table 5 on page 13](#).



NOTE: System performance is optimized when the DIMM memory type and the DIMM quantity is equal for both CPUs.

Caveats

- DIMM voltage:
 - You can mix dual-voltage DIMMs (operate at either 1.5 V or 1.35 V) and single voltage DIMMs (operate at only 1.5 V).
 - Dual-voltage DIMMs can be operated in either of these modes:
 - Power Saving Mode at a maximum speed of 1066 MHz
 - Performance Mode at a maximum speed of 1333 MHz

If you mix both types of DIMMs in your configuration, the server forces all DIMMs to operate in Performance Mode.

- The two DIMMs within a DIMM pair must have the identical manufacturer, type, speed, and size. Cisco provides spare DIMMs for this product in matched pair kits.
- Only certain DIMM configurations are supported due to the extended memory design of the C250 M2 server. See [CPUs and DIMMs on page 39](#) for more information.
- Memory mirroring:

If you choose the Memory RAS option, be aware that it is available only with an even number of memory channels. For example, if you have two CPUs, choose 48 DIMMs, and select RAS, mirroring will go into effect on only 2 channels with 8 DIMMS per channel:

- CPU1: 4 DIMM pairs for Channel A and 4 DIMM pairs for Channel B (16 DIMMs)
- CPU2: 4 DIMM pairs for Channel D and 4 DIMM pairs for Channel E (16 DIMMs)

Only 32 of the 48 DIMMs are used (in this example) when memory mirroring is implemented. In this case, 16 DIMMs would go unused.



NOTE: For memory mirroring, DIMM pairing across buses must be identical and the DIMM PIDs must be the same for all channels.

For more information about memory and memory optimization, see:

- [CPUs and DIMMs on page 39](#)
- [Physical Layout on page 39](#)
- [Memory Population Rules on page 41](#)
- [Low-Voltage DIMM Considerations on page 41](#)
- [Supported DIMM Configurations on page 42](#)
- [DIMM Population Order on page 43](#)
- [Optimized Memory Configuration on page 44](#)

STEP 4 CHOOSE RAID CONFIGURATION

You can choose to implement a RAID configuration by using an optional plug-in PCIe RAID controller card.



NOTE: The C250 M2 server does not have a RAID controller integrated on the motherboard and it does not offer an optional mezzanine card RAID controller. All RAID controllers are plug-in PCIe cards.

Cisco can provide factory-configured RAID 0, 1, 5, 6, and 10 systems depending on the RAID implementation chosen and the number of drives ordered. Factory-configured RAID options are listed at the end of [Table 6](#).

Choose RAID Options

Choose one RAID controller, one RAID configuration option, and, if desired, the battery backup option listed in [Table 6](#).

Table 6 Available RAID Options

Product ID (PID)	PID Description
RAID Controllers	
R250-PL003	LSI SAS3081E-R PCIe Card (RAID 0, 1, or 1E) <ul style="list-style-type: none"> ■ Takes up one of five available PCIe slots ■ Supports up to eight internal SAS or SATA drives ■ No battery backup is available ■ Factory-configured RAID options: RAID 0, 1, or 1E (see the RAID PIDs section in this table)
R2XX-PL003	LSI MegaRAID SAS 9261-8i (RAID 0, 1, 5, 6, 10) <ul style="list-style-type: none"> ■ Takes up one of five available PCIe slots ■ Supports up to eight internal SAS or SATA drives. ■ Includes 512 MB of write cache ■ Battery backup option available (see the battery backup PID section in this table) ■ Factory-configured RAID options: RAID 0, 1, 5, 6, 10 (see the RAID PIDs section in this table)
RAID Battery Backup Option	
R2XX-LBBU2	Battery Backup
RAID Configuration	
R2XX-RAID0	Factory preconfigured RAID striping option Enable RAID 0 Setting. Requires a minimum of 1 hard drive.

Table 6 Available RAID Options (*continued*)

Product ID (PID)	PID Description
R2XX-RAID1	Factory preconfigured RAID mirroring option Enable RAID 1 Setting. Requires an even number of drives (minimum of 2 drives, maximum of 8 drives) with same size, speed, capacity.
R2XX-RAID5	Factory preconfigured RAID option Enable RAID 5 Setting. Requires minimum 3 drives of same size, speed, capacity.
R2XX-RAID6	Factory preconfigured RAID option Enable RAID 6 Setting. Requires minimum 4 drives of same size, speed, capacity.
R2XX-RAID10	Factory preconfigured RAID option Enable RAID 10 Setting. Requires minimum 4 drives of same size, speed, capacity.



NOTE: No RAID option can be chosen if you have one of the following configurations:

- A mix of SAS and SATA drives
- No drives

Approved Configurations

(1) Optional RAID controller

- Choose one of the RAID controllers options (with or without battery backup) listed in [Table 6](#).

(2) Optional RAID configuration

- Choose one of the RAID configuration options listed in [Table 6](#).



NOTE: If an optional RAID configuration is not chosen, the disks will be configured as a JBOD.

Caveats

- The two optional plug-in RAID controllers are each half-height PCIe cards. If you choose one of these optional cards, you will still have four slots available for adding other optional PCIe cards.
- You can choose only one RAID controller.
- You can choose an optional RAID configuration (RAID 0, 1, 5, 6, or 10), which is preconfigured at the factory. If you do not choose a RAID configuration, the disks will be configured as a JBOD.

STEP 5 CHOOSE HARD DISK DRIVES

The standard disk drive features are:

- 2.5-inch small form factor
- Hot-pluggable
- Sled-mounted

Choose Drives

The available drives are listed in [Table 7](#).

Table 7 Available Hot-Pluggable Sled-Mounted HDDs

Product ID (PID)	PID Description	Drive Type	Capacity
A03-D146GC2	146 GB SAS 15K RPM SFF HDD	SAS	146 GB
A03-D300GA2	300 GB 6 Gb SAS 10K RPM SFF HDD	SAS	300 GB
A03-D500GC3	500 GB 6 Gb SATA 7.2K RPM SFF	SATA	500 GB
A03-D600GA2	600 GB 6 Gb SAS 10K RPM SFF HDD	SAS	600 GB
A03-D1TBSATA	1 TB SATA 7.2K RPM SFF HDD	SATA	1 TB

Approved Configurations

(1) LSI SAS3081E-R PCIe Card RAID controller

- Select up to eight SAS or SATA drives listed in [Table 7](#).

(2) LSI MegaRAID SAS 9261-8i RAID controller

- Select up to eight internal SAS or SATA drives listed in [Table 7](#).

Caveats

- For RAID configurations, see the RAID Configuration section of [Table 6 on page 17](#). For RAID, the drives you select must be the same size, speed, and capacity.

STEP 6 CHOOSE PCIe OPTION CARDS

The standard PCIe card offerings are:

- Ethernet
- Fibre Channel
- iSCSI
- Virtual Interface Card (VIC)

Choose PCIe Option Cards

The available PCIe option cards are listed in [Table 8](#).

Table 8 Available PCIe Option Cards

Product ID (PID)	PID Description	Card Height
Converged Network Adapters (CNA)		
N2XX-ACPCI01	Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbps	Full
N2XX-AEPCI01	Emulex OneConnect OCe10102-F CNA 2-port 10Gbps	Half
N2XX-AQPCI01	Qlogic QLE 8152-CNA 2port 10Gb SFP+ Copper	Half
UCSC-PCIE-BSFP	Broadcom NetXtreme II 57712 Dual Port 10 Gigabit Ethernet PCIe Adapter Card with SFP+	Half
Network Interface Cards (NICs)		
N2XX-ABPCI02	Broadcom 57711 Dual Port 10GbE NIC w/TOE iSCSI	Half
N2XX-ABPCI03	Broadcom 5709 Quad Port 10/100/1Gb NIC w/TOE iSCSI	Half
N2XX-ABPCI01	Broadcom 5709 Dual-Port Ethernet PCIe Adapter	Half
N2XX-AIPCI02	Intel Quad port GbE Controller (E1G44ETG1P20)	Half
N2XX-AIPCI01	Intel Dual Port 10 GbE Ethernet X520 Server Adapter	Half
N2XX-AMPCI01	Mellanox ConnectX-2 EN with dual 10GbE SFP+ ports	Half
Host Bus Adapters (HBAs)		
N2XX-AEPCI03	Emulex LPe 11002, 4Gb Fibre Channel PCIe Dual Channel HBA	Half
N2XX-AEPCI05	Emulex LPe 12002, 8Gb dual port Fibre Channel HBA	Half
N2XX-AQPCI03	Qlogic QLE2462, 4Gb dual port Fibre Channel HBA	Half
N2XX-AQPCI05	Qlogic QLE2562, 8Gb dual port Fibre Channel HBA	Half

Approved Configurations

(1) One RAID controller plug-in card

- If you selected a plug-in RAID controller, you can select up to four of the optional PCIe cards listed in [Table 8](#).



NOTE: If a plug-in RAID controller card is installed, any optional PCIe card you select will be installed in one of the remaining four PCIe slots. You can install a maximum of one plug-in PCIe RAID controller card.

Caveats

- There are five PCIe slots. Three of the slots (slots A, B, and C) are half-height slots and two (slots D and E) are full-height slots (see [Figure 3 on page 5](#) for slot numbering). All of the PCIe adapter cards are half-height cards, with the exception of the Virtual Interface Card (VIC) (N2XX-ACPCI01), which is a full-height card.
 - If you selected a plug-in RAID controller in [STEP 4 CHOOSE RAID CONFIGURATION](#), four slots remain available.
 - Only a single VIC card can be installed and it must be installed in slot D.
- To help ensure that your operating system is compatible with the card you have selected, check the Hardware Compatibility List at this URL:

http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

STEP 7 ORDER OPTIONAL REDUNDANT POWER SUPPLY

The C250 M2 server can accommodate two power supplies. Only one power supply is required. One 850 W power supply ships with the base server chassis. You can order an optional redundant power supply listed in [Table 9](#).

Table 9 Redundant Power Supply

Product ID (PID)	PID Description
R250-PSU2-850W	850W power supply for the UCS C250 M2

STEP 8 CHOOSE AC POWER CORDS

Select the appropriate AC power cords listed in [Table 10](#). You may select a minimum of no power cords and a maximum of two power cords. If you select the option R2XX-DMYPWRCORD, no power cord is shipped with the server.

Table 10 Available Power Cords

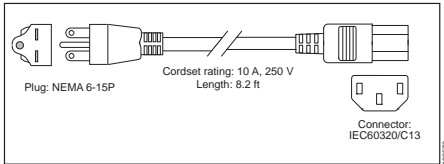
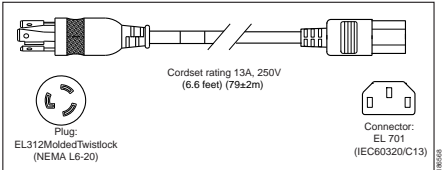
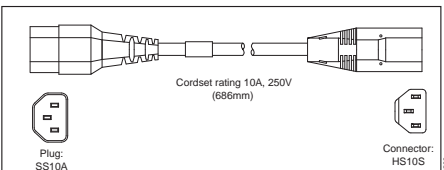
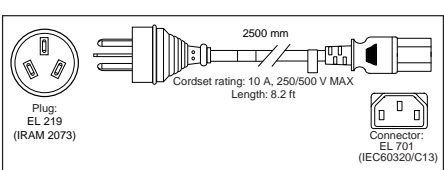
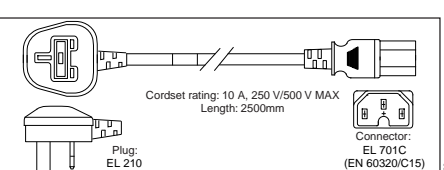
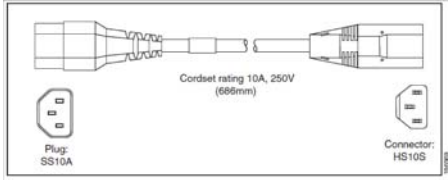
Product ID (PID)	PID Description	Images
R2XX-DMYPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-N5K6A-NA	Power Cord, 200/240V 6A, North America	 <p>Plug: NEMA 6-15P</p> <p>Cordset rating: 10 A, 250 V Length: 8.2 ft</p> <p>Connector: IEC60320/C13</p>
CAB-AC-250V/13A	Power Cord, NEMA L6-20 250V/20A plug-IEC320/C13 receptacle, North America	 <p>Plug: EL312Molded Twistlock (NEMA L6-20)</p> <p>Cordset rating: 13A, 250V (6.6 feet) (79±2m)</p> <p>Connector: EL 701 (IEC60320/C13)</p>
CAB-C13-C14-JMPR	Power Cord, recessed receptacle AC power cord 27	 <p>Plug: SS10A</p> <p>Cordset rating: 10A, 250V (686mm)</p> <p>Connector: HS10S</p>
SFS-250V-10A-AR	Power Cord, SFS, 250V, 10A, Argentina	 <p>Plug: EL 219 (IRAM 2073)</p> <p>Cordset rating: 10 A, 250/500 V MAX Length: 8.2 ft</p> <p>Connector: EL 701 (IEC60320/C13)</p>
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	 <p>Plug: EL 210 (BS 1363A) 13 AMP fuse</p> <p>Cordset rating: 10 A, 250 V/500 V MAX Length: 2500mm</p> <p>Connector: EL 701C (EN 60320/C15)</p>

Table 10 Available Power Cords (*continued*)

Product ID (PID)	PID Description	Images
SFS-250V-10A-CN	Power Cord, SFS, 250V, 10A, China	<p>Plug: EL 218 (CCEE GB2009)</p> <p>Cordset rating: 10A, 250V (2500 mm)</p> <p>Connector: EL 701 (IEC60320/C13)</p>
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU	<p>Plug: M2511</p> <p>Cordset rating: 10A/16 A, 250 V Length: 8 ft 2 in. (2.5 m)</p> <p>Connector: VSCC15</p>
SFS-250V-10A-ID	Power Cord, SFS, 250V, 10A, India	<p>Plug: EL 208</p> <p>Cordset rating: 16A, 250V (2500mm)</p> <p>Connector: EL 701</p>
SFS-250V-10A-IS	Power Cord, SFS, 250V, 10A, Israel	<p>Plug: EL 212 (SI-32)</p> <p>Cordset rating: 10A, 250V/500V MAX (2500 mm)</p> <p>Connector: EL 701B (IEC60320/C13)</p>
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	<p>Plug: I/3G (CEI 23-16)</p> <p>Cordset rating: 10 A, 250 V Length: 8 ft 2 in. (2.5 m)</p> <p>Connector: C15M (EN60320/C15)</p>
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	<p>Plug: MP232-R</p> <p>Cordset rating: 10 A, 250 V Length: 8 ft. 2 in (2.5 m)</p> <p>Connector: IEC 60320 C15</p>
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	<p>Plug: EL 210 (BS 1363A) 13 AMP fuse</p> <p>Cordset rating: 10 A, 250 V/500 V MAX Length: 2500mm</p> <p>Connector: EL 701C (EN 60320/C15)</p>

Table 10 Available Power Cords (*continued*)

Product ID (PID)	PID Description	Images
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	
CAB-JPN-3PIN	Power Cord 3PIN, Japan	Image not available

STEP 9 ORDER OPTIONAL CABLE MANAGEMENT ARM

A rail kit is shipped with the Cisco UCS C250 M2 base server chassis. The cable management arm hooks onto the right and left slide rails at the rear of the server and is used for cable management. You can order the cable management arm listed in [Table 11](#).

Table 11 Cable Management Arm

Product ID (PID)	PID Description
R250-CBLARM	Cable Management Arm for R200-1032RAIL rail kit for C250 rack server

For more information about the cable management arm, see the *Cisco UCS C250 Installation and Service Guide* at this URL:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C250M1/install/C250M1.html

See [OPTIONAL STEP - ORDER RACK on page 35](#) for information about racks and rack equipment.

STEP 10 CHOOSE OPERATING SYSTEM

Several operating systems are available from which to choose. Choose one of the operating systems listed in [Table 12](#).

Table 12 Operating Systems

PID Description	Product ID (PID)
SUSE Linux Enterprise Server	
SLES-1A	SLES/1yr subscription/svcs required/0 media
SLES-3A	SLES/3yr subscription/svcs required/0 media
Red Hat Enterprise Linux	
RHEL-2S-1G-1A	RHEL/2 Socket/1 Guest/1Yr Svcs Required
RHEL-2S-1G-3A	RHEL/2 Socket/1 Guest/3Yr Svcs Required
RHEL-2S-4G-1A	RHEL/2 Socket/4 Guest/1Yr Svcs Required
RHEL-2S-4G-3A	RHEL/2 Socket/4 Guest/3Yr Svcs Required
RHEL-2S-UG-1A	RHEL/2 Socket/U Guest/1Yr Svcs Required
RHEL-2S-UG-3A	RHEL/2 Socket/U Guest/3Yr Svcs Required
RHEL-2S-1G-1A-RS	RHEL/2 Socket/1 Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-1G-3A-RS	RHEL/2 Socket/1 Guest/3Yr Subscription/Redhat Svcs Included
RHEL-2S-4G-3A-RS	RHEL/2 Socket/2 Guest/3Yr Subscription/Redhat Svcs Included
RHEL-2S-4G-1A-RS	RHEL/2 Socket/4 Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-UG-1A-RS	RHEL/2 Socket/U Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-UG-3A-RS	RHEL/2 Socket/U Guest/3Yr Subscription/Redhat Svcs Included
RHEL Add-Ons	
RHEL-HA-2S-1A	RHEL Option/High-Availability/2 Socket/1Yr Svcs Required
RHEL-RS-2S-1A	RHEL Option/Resilient w/Ha /2 Socket/1 Yr Svcs Required
RHEL-SFS-2S-1A	RHEL Option/Scalable File System/2 Socket/1 Yr Svcs Required
RHEL-HA-2S-3A	RHEL Option/High-Availability/2 Socket/3Yr Svcs Required
RHEL-RS-2S-3A	RHEL Option/Resilient Storage w/ HA /2 Socket/3 Yr Svcs Req'd
RHEL-SFS-2S-3A	RHEL Option/Scalable File System/2 Socket/3 Yr Svcs Required
RHEL-HA-2S-1A-RS	RHEL Option/High-Availability/2 Socket/1Yr Redhat Svcs Incl'd
RHEL-RS-2S-1A-RS	RHEL Option/Resilient Storage/2 Socket/1 Yr Redhat Svcs Incl

Table 12 Operating Systems *(continued)*

PID Description	Product ID (PID)
RHEL-SFS-2S-1A-RS	RHEL Option/Scalable File Sys/2 Socket/1 Yr Redhat Svcs Incl
RHEL-HA-2S-3A-RS	RHEL Option/High-Availability/2 Socket/3Yr Redhat Svcs Incl
RHEL-RS-2S-3A-RS	RHEL Option/Resilient Storage/2 Socket/3 Yr Redhat Svcs Incl
RHEL-SFS-2S-3A-RS	RHEL Option/Scalable File Sys/2 Socket/3 Yr Redhat Svcs Incl
Windows Server	
MSWS-08-STHV	Windows Svr 2008 ST media (1-4CPU, 5CAL)
MSWS-08-ENHV	Windows Svr 2008 EN media (1-8CPU, 25CAL)
MSWS-08R2-STHV	Windows Svr 2008 ST media R2 ST (1-4CPU, 5CAL)
MSWS-08R2-ENHV	Windows Svr 2008 EN media R2 EN (1-8CPU, 25CAL)
MSWS-08R2-DCHV2S	Windows Svr 2008 R2-2 CPU-Data Center
MSWS-08R2-DCHV4S	Windows Svr 2008 R2-4 CPU-Data Center
VMWare Server	
VMW-VS-ADV-1A	VMware vSphere Advanced (1 CPU), 1yr 24x7 support
VMW-VS-ADV-3A	VMware vSphere Advanced (1 CPU), 3yr 24x7 support
VMW-VS-ENT-1A	VMware vSphere Enterprise (1 CPU), 1yr 24x7 support
VMW-VS-ENT-3A	VMware vSphere Enterprise (1 CPU), 3yr 24x7 support
VMW-VS-ENTP-1A	VMware vSphere Enterprise Plus (1 CPU), 1yr 24x7 support
VMW-VS-ENTP-3A	VMware vSphere Enterprise Plus (1 CPU), 3yr 24x7 support
VMW-VCS-1A	VMware vCenter Server Standard, 1yr support required
VMW-VCS-3A	VMware vCenter Server Standard, 3yr support required

STEP 11 CHOOSE OPERATING SYSTEM MEDIA KIT

Choose the optional operating system media listed in [Table 13](#).

Table 13 OS Media

Product ID (PID)	PID Description
RHEL-6	RHEL 6 Recovery Media Only (Multilingual)
SLES-11	SLES 11 media only (multilingual)
MSWS-08R2-STHV-RM	Windows Svr 2008 R2 ST (1-4CPU, 5CAL), Media
MSWS-08RS-ENHV-RM	Windows Svr 2008 R2 EN (1-8CPU, 25CAL), Media
MSWS-08R2-DCHV-RM	Windows Svr 2008 R2 DC (1-8CPU, 25CAL), Media

STEP 12 CHOOSE OPTIONAL VALUE-ADDED SOFTWARE

You can select from a variety of value-added software listed in [Table 13](#).

Table 14 Value Added Software

Product ID (PID)	PID Description
BMC-001	BMC BladeLogic CM for Virtualized Cisco Servers
BMC-001-COMP	BMC Blade Logic Compliance, VM Bundle, 2 Socket Server
BMC-002	BMC BladeLogic CM for Physical Cisco Servers
BMC-002-COMP	BMC Blade Logic Compliance, Single OS
BMC-012	BMC BPPM Per Server
VMW-VCS-1A	VMware vCenter Server Standard, 1yr 24x7 support
VMW-VCS-3A	VMware vCenter Server Standard, 3yr 24x7 support
N1K-VLEM-UCS-1	Cisco Nexus 1000V License PAK for 1 Virtual Ethernet module
N1K-CSK9-UCS-404	Cisco Nexus 1000V VSM Virtual Appliance Software

STEP 13 CHOOSE SERVICE and SUPPORT LEVEL

A variety of service options are available, as described in this section.

Unified Computing Warranty, No Contract

If you have noncritical implementations and choose to have no service contract, the following coverage is supplied:

- Three-year parts coverage.
- Next business day (NBD) parts replacement eight hours a day, five days a week.
- 90-day software warranty on media.
- Downloads of BIOS, drivers, and firmware updates.
- UCSM updates for systems with Unified Computing System Manager. These updates include minor enhancements and bug fixes that are designed to maintain the compliance of UCSM with published specifications, release notes, and industry standards.

Unified Computing Mission Critical Service

This service delivers personalized technical account management, expedited technical support, and expert field support engineering for the Cisco Unified Computing System (UCS).

The Mission Critical Support Service provides a designated technical account manager (TAM) who acts as a strategic resource to help ensure that the unified computing environment runs at peak efficiency. If a problem arises that threatens business continuity, the TAM provides crisis management leadership, and your IT staff receives expedited access to the Cisco Technical Assistance Center (TAC).

Choose the desired service listed in [Table 15](#).

Table 15 Unified Computing Mission Critical Service

Product ID (PID)	On Site?	Description
CON-UCM7-R210W	Yes	UC Mission Critical 24x7x4 On-site
CON-UCM8-R210W	Yes	UC Mission Critical 24x7x2 On-site

Unified Computing Support Service

For support of the entire Unified Computing System, Cisco offers the Cisco Unified Computing Support Service. This service provides expert software and hardware support to help sustain performance and high availability of the unified computing environment. Access to the Cisco Technical Assistance Center (TAC) is provided around the clock, from anywhere in the world.

For UCS blade servers, there is Smart Call Home, which provides proactive, embedded diagnostics and real-time alerts. For systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Unified Computing Support Service includes flexible hardware replacement options, including replacement in as little as two hours. There is also access to Cisco's extensive online technical resources to help maintain

optimal efficiency and uptime of the unified computing environment. You can choose a desired service listed in [Table 16](#).

Table 16 UCS Computing Support Service

Product ID (PID)	On Site?	Description
CON-UCS1-R210W	No	UC Support 8X5XNBD
CON-UCS2-R210W	No	UC Support 8X5X4
CON-UCS3-R210W	No	UC Support 24x7x4
CON-UCS4-R210W	No	UC Support 24x7x2
CON-UCS5-R210W	Yes	UC Support 8X5XNBD
CON-UCS6-R210W	Yes	UC Support 8X5X4
CON-UCS7-R210W	Yes	UC Support 24x7x4
CON-UCS8-R210W	Yes	UC Support 24x7x2

Unified Computing Warranty Plus Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco Unified Computing Warranty Plus Service. You can choose from several levels of advanced parts replacement coverage, including onsite parts replacement in as little as two hours. Warranty Plus provides remote access any time to Cisco support professionals who can determine if a return materials authorization (RMA) is required. You can choose a service listed in [Table 17](#).

Table 17 UCS Computing Warranty Plus Service

Product ID (PID)	On Site?	Description
CON-UCW2-R210W	No	UC Warranty Plus 8x5x4
CON-UCW3-R210W	No	UC Warranty Plus 24x7x4
CON-UCW4-R210W	No	UC Warranty Plus 24x7x2
CON-UCW5-R210W	Yes	UC Warranty Plus 8X5XNBD
CON-UCW6-R210W	Yes	UC Warranty Plus 8X5X4
CON-UCW7-R210W	Yes	UC Warranty Plus 24x7x4
CON-UCW8-R210W	Yes	UC Warranty Plus 24x7x2

Unified Computing Drive Retention Service

With the Cisco Unified Computing Drive Retention (UCDR) service, you can obtain a new disk drive in exchange for a faulty drive without returning the faulty drive. In exchange for a Cisco replacement drive, you provide a signed Certificate of Destruction (CoD) confirming that the drive has been removed from the system listed, is no longer in service, and has been destroyed.

Sophisticated data recovery techniques have made classified, proprietary, and confidential information vulnerable, even on malfunctioning disk drives. The UCDR service enables you to retain your drives and ensures that the sensitive data on those drives is not compromised, which thereby reduces the risk of any potential liabilities. This service also enables you to comply with regulatory, local, and federal requirements.

If your company has a need to control confidential, classified, sensitive, or proprietary data, you might want to consider one of the Drive Retention Services listed in [Table 18](#).



NOTE: Cisco does not offer a certified drive destruction service as part of this service.

Table 18 Drive Retention Service Options

Service Description	Service Program Name	Service Level GSP	Service Level	Product ID (PID)
UCS Mission Critical Support Service With Drive Retention	UC CRIT DR	UCMD7	24x7x4 Onsite	CON-UCMD7-R250W
		UCMD8	24x7x2 Onsite	CON-UCMD8-R250W
UCS Support Service With Drive Retention	UC SUPP DR	UCSD1	8x5xNBD	CON-UCSD1-R250W
		UCSD2	8x5x4	CON-UCSD2-R250W
		UCSD3	24x7x4	CON-UCSD3-R250W
		UCSD4	24x7x2	CON-UCSD4-R250W
		UCSD5	8x5xNBD Onsite	CON-UCSD5-R250W
		UCSD6	8x5x4 Onsite	CON-UCSD6-R250W
		UCSD7	24x7x4 Onsite	CON-UCSD7-R250W
		UCSD8	24x7x2 Onsite	CON-UCSD8-R250W

Table 18 Drive Retention Service Options *(continued)*

Service Description	Service Program Name	Service Level GSP	Service Level	Product ID (PID)
UCS Warranty Plus With Drive Retention	UC PLUS DR	UCWD2	8x5x4	CON-UCWD2-R250W
		UCWD3	24x7x4	CON-UCWD3-R250W
		UCWD4	24x7x2	CON-UCWD4-R250W
		UCWD5	8x5xNBD Onsite	CON-UCWD5-R250W
		UCWD6	8x5x4 Onsite	CON-UCWD6-R250W
		UCWD7	24x7x4 Onsite	CON-UCWD7-R250W
		UCWD8	24x7x2 Onsite	CON-UCWD8-R250W

For more service and support information, see this URL:

http://www.cisco.com/en/US/services/ps2961/ps10312/ps10321/Cisco_UC_Warranty_Support_DS.pdf

For a complete listing of available services for Cisco Unified Computing System, see this URL:

http://www.cisco.com/en/US/products/ps10312/serv_group_home.html

OPTIONAL STEP - ORDER RACK

The optional R42610 rack is available from Cisco for the C-Series servers, including the C250 M2 server. This rack is a standard 19-inch rack and can be ordered with a variety of options, as listed in [Table 19](#). Racks are shipped separately from the C250 M2 server.

Table 19 Racks and Rack Options

Product ID (PID)	PID Description
RACK-UCS ¹	Cisco R42610 expansion rack, no side panels
RACK-UCS2 ¹	Cisco R42610 standard rack, w/side panels
RACK-BLANK-001	Filler panels (qty 12), 1U, plastic, toolless
RACK-CBLMGT-001	Cable mgt D rings (qty 10), metal
RACK-CBLMGT-011	Cable mgt straps (qty 10), Velcro
RACK-FASTEN-001	Mounting screws (qty 100), M6
RACK-FASTEN-002	Cage nuts (qty 50), M6
RACK-JOIN-001	Rack joining kit

Notes . . .

1. Use these same base PIDs to order spare racks (available only as next-day replacements).

For more information about the R42610 rack, see [Racks on page 45](#).

OPTIONAL STEP - ORDER PDU

An optional power distribution unit (PDU) is available from Cisco for the C-Series rack servers, including the C250 M2 server. This PDU is available in a zero rack unit (RU) style (see [Table 20](#)).

Table 20 PDU Options

Product ID (PID)	PID Description
RP208-30-2P-U-2	Zero RU PDU

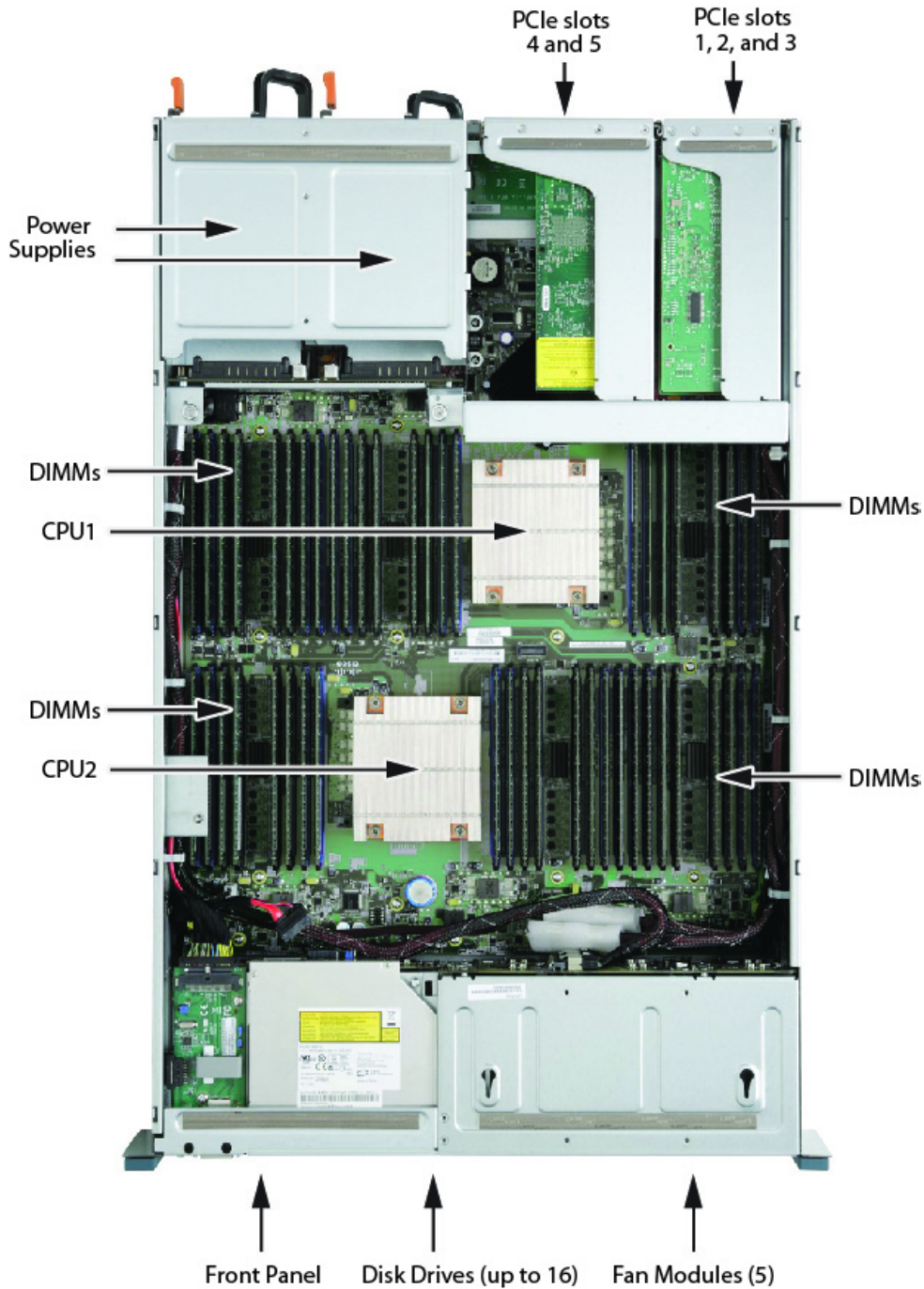
For more information about the PDU, see [PDUs on page 47](#).

SUPPLEMENTAL MATERIAL

Chassis

An internal view of the C250 M2 chassis with the top cover removed is shown in [Figure 5](#).

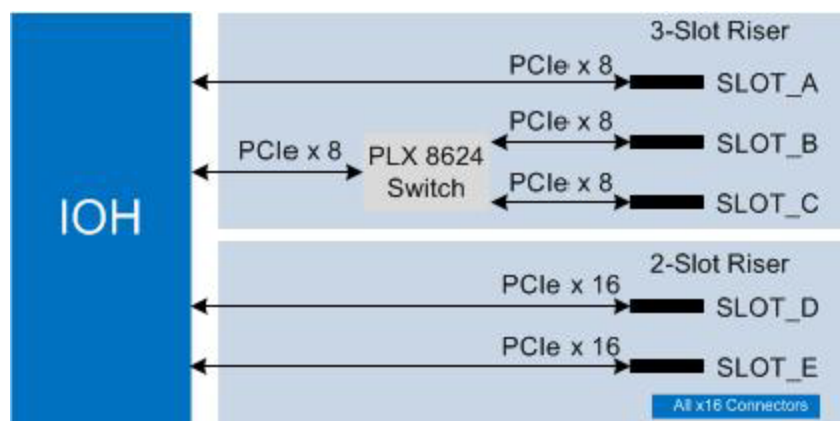
Figure 5 C250 M2 Chassis With Top Cover Removed



PCIe Cards

As [Figure 5 on page 37](#) and [Figure 6](#) show, the Cisco UCS C250 M2 server has five PCIe slots available. Two are standard height, half-length x16-lane slots with x16 connectors. Three are low-profile, half-length slots that are x8-lane with x16 connectors (PCIe G2). The Cisco UCS C250 M2 server can host five PCIe option cards (including the LSI MegaRAID SAS 9261-8i card or LSI SAS3081E-R card).

Figure 6 PCIe Slots on the C250 M2 Rack Server



CPUs and DIMMs

Physical Layout

Each CPU has three DIMM channels:

- CPU1 has channels A, B, and C.
- CPU2 has channels D, E, and F.

There are eight banks for each CPU, arranged as follows:

For CPU 1:

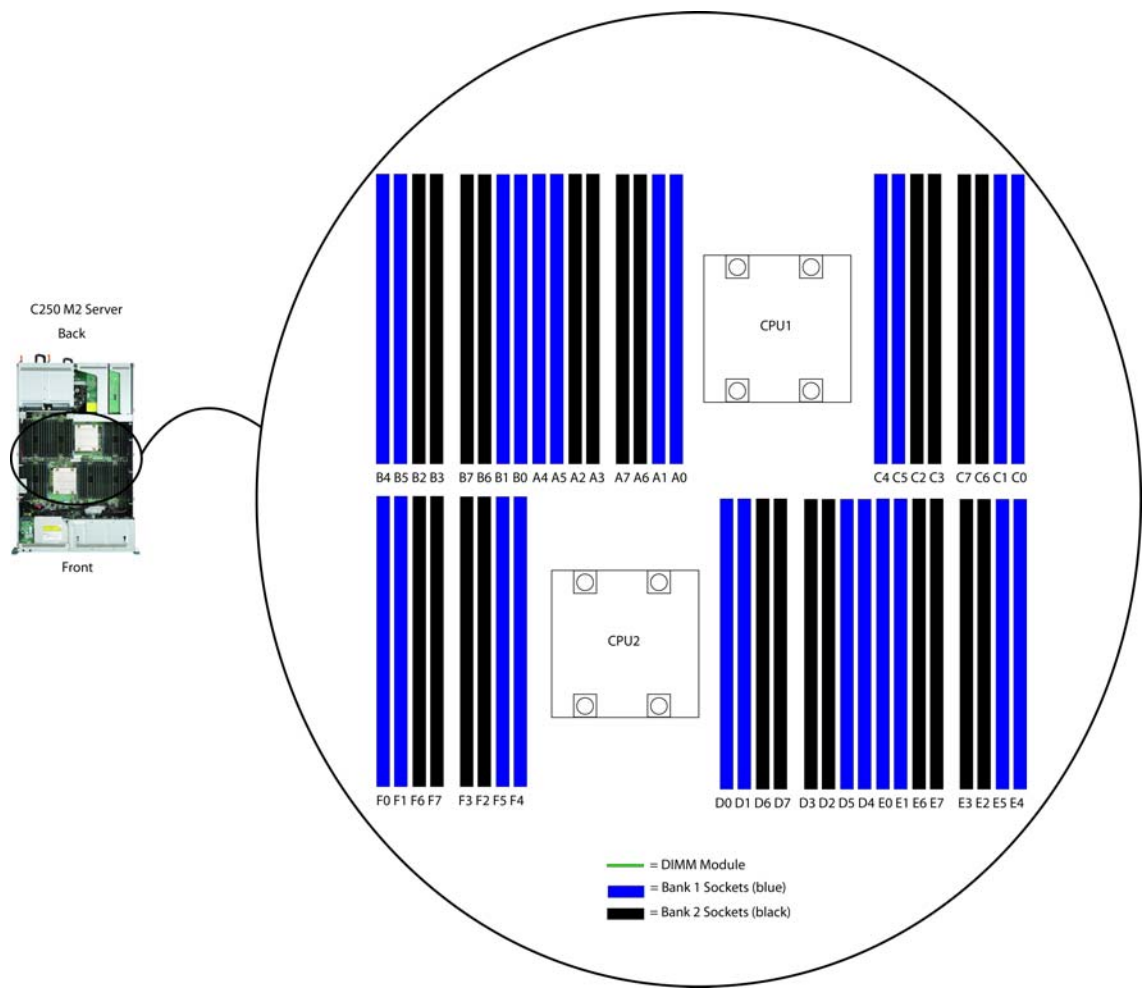
- Bank 0: DIMM slots A0, B0, C0 (blue DIMM slots)
- Bank 1: DIMM slots A1, B1, C1 (blue DIMM slots)
- Bank 2: DIMM slots A2, B2, C2 (black DIMM slots)
- Bank 3: DIMM slots A3, B3, C3 (black DIMM slots)
- Bank 4: DIMM slots A4, B4, C4 (blue DIMM slots)
- Bank 5: DIMM slots A5, B5, C5 (blue DIMM slots)
- Bank 6: DIMM slots A6, B6, C6 (black DIMM slots)
- Bank 7: DIMM slots A7, B7, C7 (black DIMM slots)

For CPU 2:

- Bank 0: DIMM slots D0, E0, F0 (blue DIMM slots)
- Bank 1: DIMM slots D1, E1, F1 (blue DIMM slots)
- Bank 2: DIMM slots D2, E2, F2 (black DIMM slots)
- Bank 3: DIMM slots D3, E3, F3 (black DIMM slots)
- Bank 4: DIMM slots D4, E4, F4 (blue DIMM slots)
- Bank 5: DIMM slots D5, E5, F5 (blue DIMM slots)
- Bank 6: DIMM slots D6, E6, F6 (black DIMM slots)
- Bank 7: DIMM slots D7, E7, F7 (black DIMM slots)

Figure 7 shows how banks and channels are physically laid out on the motherboard. The DIMM slots on the top (channels A, B, and C) are associated with CPU 1, while the DIMM slots on the bottom (channels D, E, and F) are associated with CPU 2. Lower numbered bank slots are populated before higher-numbered slots.

Figure 7 CPU DIMM Channels and Banks



Memory Population Rules

When considering the memory configuration of your server, you should review the following items:

- DIMMs within the server should all be the same type and speed. If you mix different DIMM types or DIMMs with different clock rates in the same server, such configurations are supported; however, these configurations may cause the system to operate at less than optimum levels. See [Table 21 on page 42](#) for supported DIMM combinations.
- DIMMs must be populated according to [Table 21 on page 42](#).
- There are blue DIMM slots and black DIMM slots. Populate blue slots in a bank first.
- Low-voltage (1.35 V) DIMMs and standard-voltage DIMMs (1.5 V) can be mixed in the same server. Note that mixing DIMMs causes the system BIOS to default to standard-voltage operation (Performance Mode). See [Low-Voltage DIMM Considerations](#).

Low-Voltage DIMM Considerations

The C250 M2 server can be ordered with low-voltage (1.35 V) DIMMs or standard-voltage (1.5 V) DIMMs. Note the following considerations:

- Low-voltage DIMMs within the server must have the identical manufacturer, type, speed, and size.
- Low-voltage DIMMs and standard-voltage DIMMs can be mixed in the same server. Note that mixing DIMMs causes the system BIOS to default to standard-voltage operation (Performance Mode). That is, the server cannot operate in Power Saving Mode unless all DIMMs are low-voltage DIMMs.
- CPUs that have a maximum memory frequency less than 1333 MHz support low-voltage DIMMs operating in Power Saving Mode only and do not support Performance Mode.

Supported DIMM Configurations

Table 21 lists the supported DIMM configurations for the C250 M2 server.

Table 21 Supported DIMM Configurations ^{1 2}

Total Memory for CPU1 + CPU2	CPU 1 DIMMs	CPU 2 DIMMs	Total Number of DIMMs
64 GB	Four 8GB pair-kits (eight 4GB DIMMs)	Four 8GB pair-kits (eight 4GB DIMMs)	16
80 GB	Five 8GB pair-kits (ten 4GB DIMMs)	Five 8GB pair-kits (ten 4GB DIMMs)	20
96 GB	Six 8GB pair-kits (twelve 4GB DIMMs)	Six 8GB pair-kits (twelve 4GB DIMMs)	24
128 GB	Eight 8GB pair-kits (sixteen 4GB DIMMs)	Eight 8GB pair-kits (sixteen 4GB DIMMs)	32
128 GB	Four 16GB pair-kits (eight 8GB DIMMs)	Four 16GB pair-kits (eight 8GB DIMMs)	16
144 GB	Nine 8GB pair-kits (eighteen 4GB DIMMs)	Nine 8GB pair-kits (eighteen 4GB DIMMs)	36
160 GB	Ten 8GB pair-kits (twenty 4GB DIMMs)	Ten 8GB pair-kits (twenty 4GB DIMMs)	40
192 GB	Twelve 8GB pair-kits (twenty-four 4GB DIMMs)	Twelve 8GB pair-kits (twenty-four 4GB DIMMs)	48
192 GB	Six 16GB pair-kits (twelve 8GB DIMMs)	Six 16GB pair-kits (twelve 8GB DIMMs)	24
256 GB	Eight 8GB pair-kits (sixteen 4GB DIMMs) plus Four 16GB pair-kits (eight 8GB DIMMs)	Eight 8GB pair-kits (sixteen 4GB DIMMs) plus Four 16GB pair-kits (eight 8GB DIMMs)	48
320 GB	Four 8GB pair-kits (eight 4GB DIMMs) plus Eight 16GB pair-kits (sixteen 8GB DIMMs)	Four 8GB pair-kits (eight 4GB DIMMs) plus Eight 16GB pair-kits (sixteen 8GB DIMMs)	48
384 GB	Twelve 16GB pair-kits (twenty-four 8GB DIMMs)	Twelve 16GB pair-kits (twenty-four 8GB DIMMs)	48

Notes . . .

1. Configurations for optimum memory performance are highlighted in green.
2. Configurations that support memory mirroring are highlighted in yellow.

DIMM Population Order

Table 21 shows the order in which the DIMM slots are populated for each configuration, according to the total number of DIMMs as specified in [Table 21 on page 42](#).

Table 22 DIMM Population Order¹

16 DIMMs		20 DIMMs		24 DIMMs		32 DIMMs		36 DIMMs		40 DIMMs		48 DIMMs	
CPU1	CPU2	CPU1	CPU2	CPU1	CPU2	CPU1	CPU2	CPU1	CPU2	CPU1	CPU2	CPU1	CPU2
B1	F0	B4	F0	B4	F0	B4	F0	B4	F0	B4	F0	B4	F0
		B5		B5	F1	B5	F1	B5	F1	B5	F1	B5	F1
								B2		B2		B2	F6
								B3		B3		B3	F7
									F3	B7		B7	F3
									F2	B6		B6	F2
		B1		B1	B5	B1	B5	B1	B5	B1	B5	B1	B5
B0	F1	B0	F1	B0	F4	B0	F4	B0	F4	B0	F4	B0	F4
A4	D0	A4	D0	A4	D0	A4	D0	A4	D0	A4	D0	A4	D0
A5	D1	A5	D1	A5	D1	A5	D1	A5	D1	A5	D1	A5	D1
						A2	D6	A2		A2	D6	A2	D6
						A3	D7	A3		A3	D7	A3	D7
						A7	D3		D3	A7	D3	A7	D3
						A6	D2		D2	A6	D2	A6	D2
A1	D5	A1	D5	A1	D5	A1	D5	A1	D5	A1	D5	A1	D5
A0	D4	A0	D4	A0	D4	A0	D4	A0	D4	A0	D4	A0	D4
C1	E0		E0	C4	E0	C4	E0	C4	E0	C4	E0	C4	E0
			E1	C5	E1	C5	E1	C5	E1	C5	E1	C5	E1
								C2			E6	C2	E6
								C3			E7	C3	E7
									E3		E3	C7	E3
									E2		E2	C6	E2
		C1	E5	C1	E5	C1	E5	C1	E5	C1	E5	C1	E5
C0	E1	C0	E4	C0	E4	C0	E4	C0	E4	C0	E4	C0	E4

Notes . . .

1. Configurations for optimum memory performance are highlighted in green.

Optimized Memory Configuration

As shown in [Table 21](#) and [Table 22](#), a large number of memory configurations are possible. [Table 23](#) lists the memory population patterns that have optimal memory access performance. These patterns form three-way interleaving across three channels to achieve optimal memory bandwidth.

Table 23 Optimized Memory Configurations

Total Memory for CPU1 + CPU2	Memory Slot Pairs in Each Channel (Three Channels per CPU, a Total of Six Channels)				Highest DIMM Operation Speed	Total Number of DIMMs in System
	Slot Pair (0, 1)	Slot Pair (2, 3)	Slot Pair (4, 5)	Slot Pair (6, 7)		
96 GB	8 GB kit x 6		8 GB kit x 6		1333 MHz	24
192 GB	8 GB kit x 6	8 GB kit x 6	8 GB kit x 6	8 GB kit x 6	1333 MHz	48
384 GB	16 GB kit x 6	16 GB kit x 6	16 GB kit x 6	16 GB kit x 6	1333 MHz	48

Racks

The Cisco R42610 rack (see [Figure 8](#)) is certified for Cisco UCS installation at customer sites and is suitable for the following equipment:

- Cisco UCS B-Series servers and fabric interconnects
- Cisco UCS C-Series and select Cisco Nexus switches

The rack is compatible with hardware designed for EIA-standard 19-inch (482.6 mm) racks. Rack specifications are listed in [Table 24](#).

Table 24 Cisco R42610 Rack Specifications

Parameter	Standard Rack	Expansion Rack
Dimensions (H x W x D)	78.74 x 24 x 43.38 in. (2000 x 610 x 1102 mm)	78.74 x 23.58 x 43.38 in. (2000 x 599 x 1102 mm)
Dimensions (H x W x D) with packaging	89 x 33 x 47 in. (2261 x 838 x 1194 mm)	89 x 33 x 47 in. (2261 x 838 x 1194 mm)
Distance from front mounting rail to rear mounting rail	29.2 in. (741 mm)	29.2 in. (741 mm)
Weight	299.83 lb (136 kg)	231.49 lb (105 kg)
Weight with packaging	354 lb (161 kg)	284 lb (129 kg)
Side panels included	Yes	No
Equipment mounting capacity	42RU	42RU
Static load capacity	2100 lb (954 kg)	2100 lb (954 kg)
Dynamic load capacity	Not applicable	Not applicable



NOTE: The AC input connector is an IEC 320 C-14 15 A/250 VAC power inlet.

Figure 8 Cisco R42610 Rack



Front view - door closed



Front view - door open



Front view - door removed

PDU

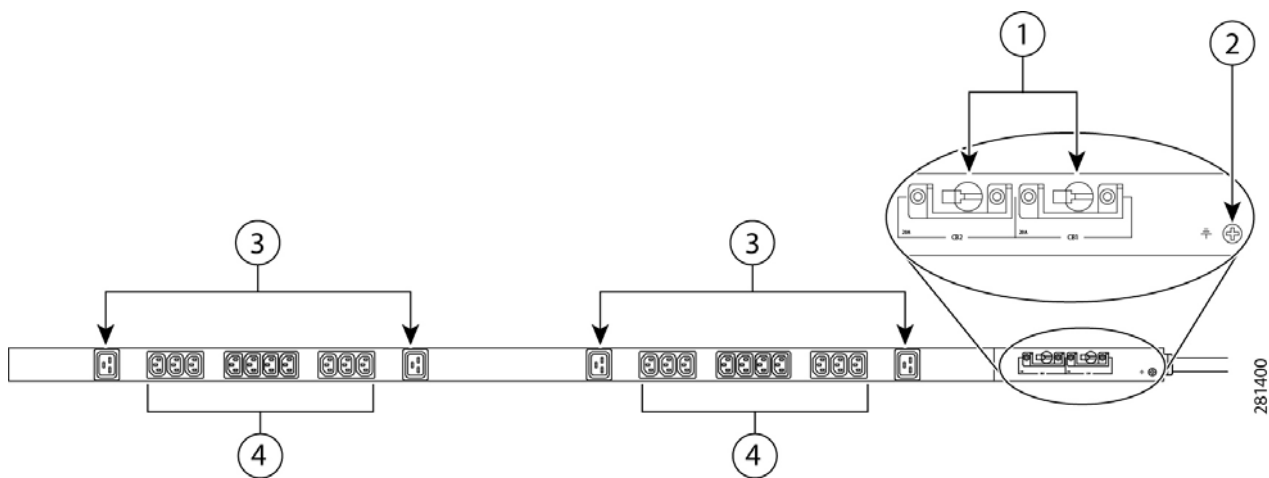
Cisco RP-Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

Cisco RP Series PDU models distribute power to up to 24 outlets. The architecture organizes power distribution, simplifies cable management, and enables you to move, add, and change rack equipment without an electrician.

With a Cisco RP-Series PDU in the rack, you can replace up to two dozen input power cords with just one power cord. The fixed input cord connects to the power source from overhead or under-floor distribution. Your IT equipment is then powered by PDU outlets in the rack using short, easy-to-manage power cords.

The C-series servers accept the zero rack unit (0RU) PDU. See [Figure 9](#).

Figure 9 Zero Rack Unit PDU (PID = RP208-30-2P-U-2)



1	Breakers	3	C13 plugs
2	Ground connection	4	C19 plugs

Cisco RP-Series PDU models provide two 20-Ampere circuit breakers for groups of receptacles. The effects of a tripped circuit are limited to a receptacle group. You only need to press a button to reset that circuit.

Power Supplies

The C250 M2 server can accommodate one or two 850 W power supplies. A typical power supply is shown in [Figure 10](#).

Figure 10 C250 M2 Server Power Supply



KVM Cable

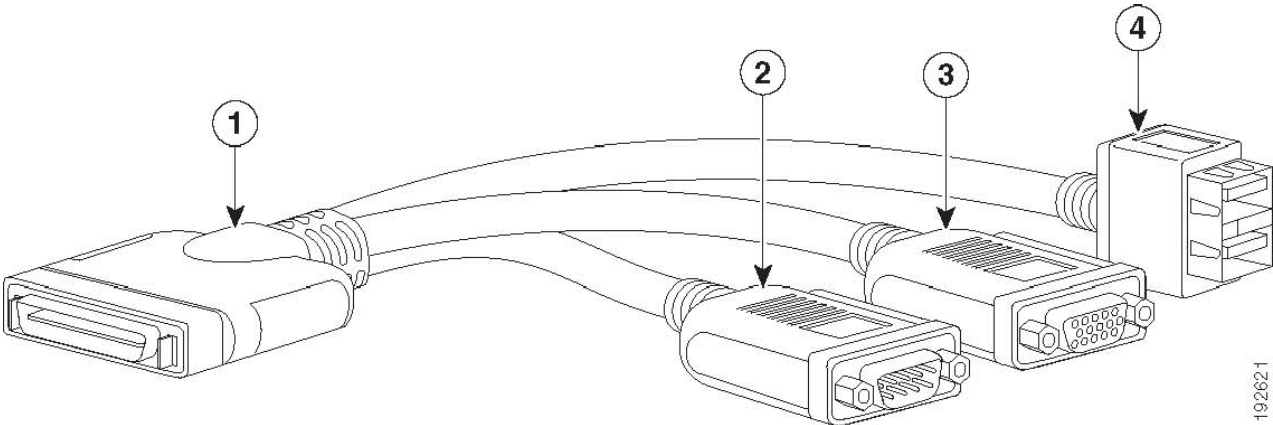
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in [Table 25](#).

Table 25 KVM Cable

Product ID (PID)	PID Description
37-1016-01	KVM Cable

Figure 11 KVM Cable

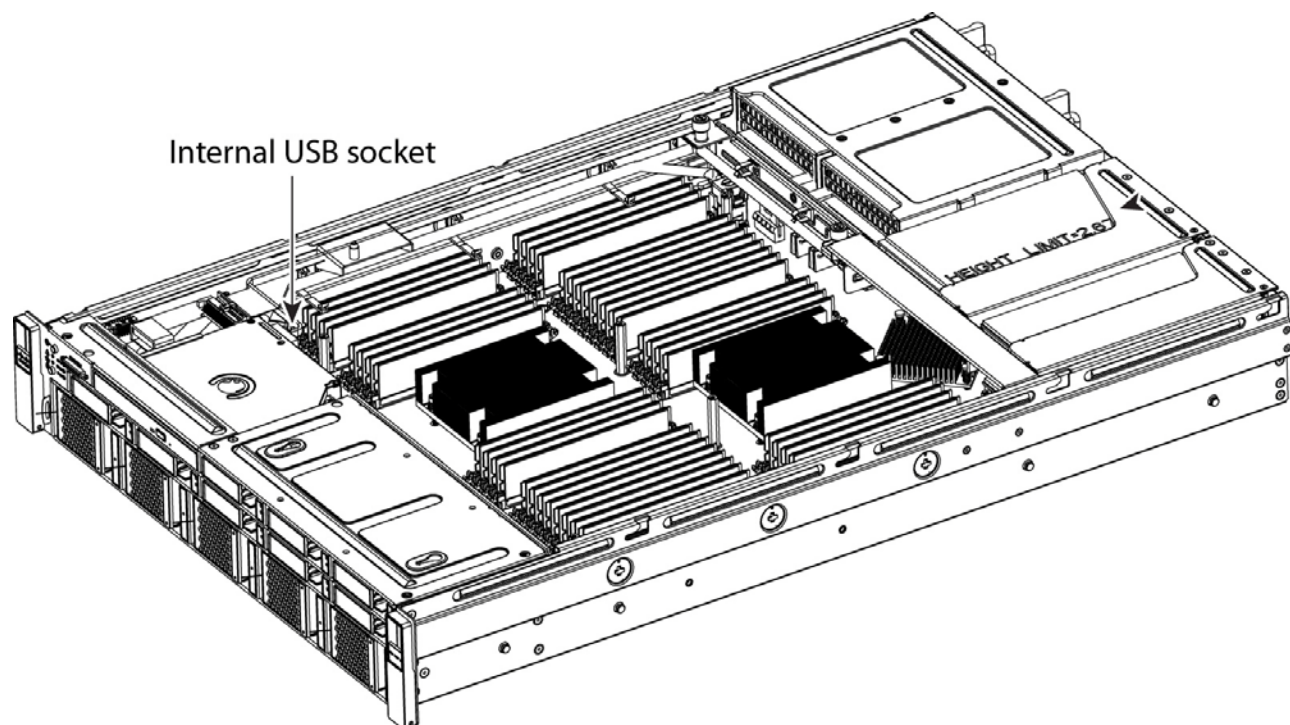


1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB connector (for a mouse and keyboard)

Motherboard USB Port

The C250 M2 motherboard has a general-purpose USB socket, as shown in [Figure 12](#).

Figure 12 Motherboard USB Port



TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 26 UCS C250 M2 Server Dimensions and Weight¹

Parameter	Value
Height	3.45 in. (8.76 cm)
Width	17.25 in. (43.82 cm)
Depth (including power supply handle)	29.30 in. (74.42 cm)
Front Clearance	3 in. (7.62 cm)
Side Clearance	1 in. (2.54 cm)
Rear Clearance	6 in. (15.24 cm)
Weight	51.50 lbs (23.36 kg)

Notes . . .

1. The system weight given here is an estimate for a fully configured system and will vary depending on the number of peripheral devices and power supplies.

Power Specifications

The general power specifications for the C250 M2 server are listed in [Table 27](#).

Table 27 UCS C250 M2 Server Power Specifications

Parameter	Minimum	Nominal	Maximum	Start Up VAC	Power Off VAC
Voltage (115)	90 Vrms	100-127 Vrms	264 Vrms	85 VAC +/-4 VAC	75 VAC +/-5 VAC
Voltage (220)	180 Vrms	200-240 Vrms	264 Vrms		
Frequency	47 Hz	50/60 Hz	63 Hz		



NOTE: The AC input connector is an IEC60320 C14 power inlet.

For configuration-specific power specifications, use the Cisco UCS Power Calculator at this URL:
http://www.cisco.com/assets/cdc_content_elements/flash/dataCenter/cisco_ucs_power_calculator/.

As an example, using the calculator, you can determine the approximate power for the following C250 M2 server configuration:

- Voltage = 115 VAC
- Power Supplies = 2
- Processors = 2 CPUs (Intel Xeon 3.45 GHz X5690)
- Memory DIMMs = 48 x 4 GB
- Disk Drives = 8 x 500 GB
- PCIe Cards = 3

The resulting power calculations are:

- Idle Power = 239 W
- 50% Load Power = 469 W
- Max Power = 695 W

Environmental Specifications

The power specifications for the C250 M2 server are listed in [Table 28](#).

Table 28 UCS C250 M2 Server Environmental Specifications

Parameter	Minimum
Temperature operating	10°C to 35°C (50°F to 95°F)
Temperature nonoperating	-40°C to 65°C (-40°F to 149°F)
Altitude operating	0 to 3,000 m (0 to 10,000 ft.); maximum ambient temperature decreases by 1° per 300 m
Humidity nonoperating	5 to 93%, noncondensing
Vibration nonoperating	2.2 Grms, 10 minutes per axis on each of the three axes
Shock operating	Half-sine 2 G, 11 ms pulse, 100 pulses in each direction, on each of the three axes
Shock nonoperating	Trapezoidal, 25 G, two drops on each of six faces Velocity = 175 inches per second on bottom face drop Velocity = 90 inches per second on the other five faces
Electrostatic discharge	Tested to ESD levels up to 15 kilovolts (kV) air discharge and up to 8 kV contact discharge without physical damage
Acoustic	Sound power: 83 dB sound power at ambient temperature 23°C measured using the Dome Method GOST MsanPiN 001-96

Compliance Requirements

The regulatory compliance requirements for C-Series servers are listed in [Table 29](#).

Table 29 UCS C-Series Regulatory Compliance Requirements

Parameter	Description
Regulatory Compliance	Products should comply with CE Markings per directives 2004/108/EC and 2006/95/EC
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1 GB4943 2001
EMC - Emissions	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR22 Class A CISPR22 Class A EN55022 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN22 Class A CNS13438 Class A
EMC - Immunity	EN55024 CISPR24 EN300386 KN24



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
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