



This product has been  
discontinued

Spec Sheet

# Cisco UCS C250 M2 Extended Memory Rack-Mount Server

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## OVERVIEW

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

Front View



Rear View

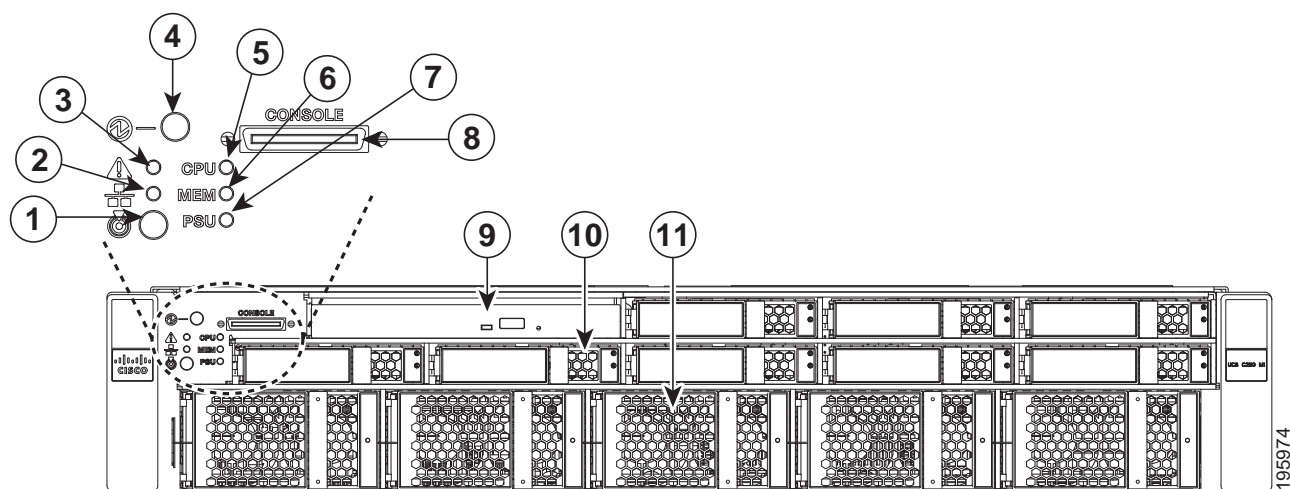


## DETAILED VIEWS

### Chassis Front View

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

Figure 2 Chassis Front View



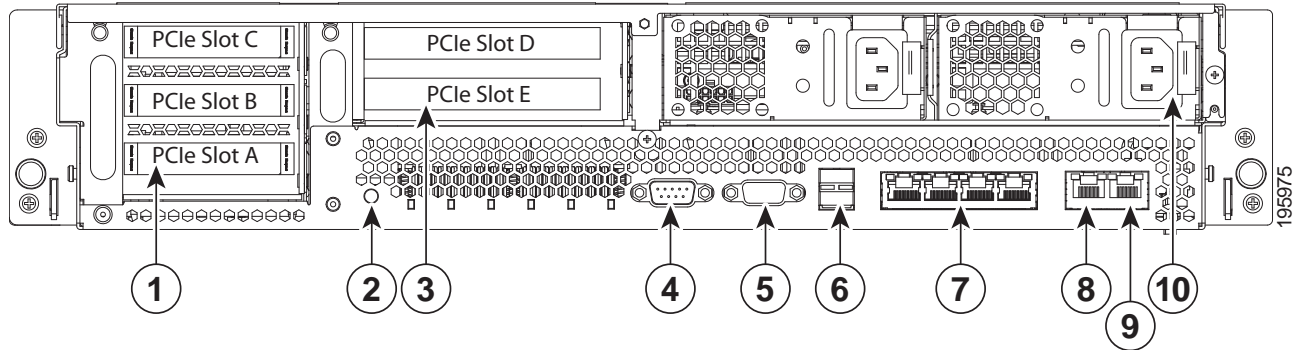
1	Locator LED/Locator Button	7	Power supply fault LED
2	Network Activity LED	8	Console connector (with supplied KVM cable, provides DB15 video, DB9 serial port, and two USB 2.0 connectors)
3	System fault LED	9	DVD-RW drive (optional)
4	Power button/Power status LED	10	Hard disk drives (up to 8 2.5-inch 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 53](#).

## 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"> <li>■ Slots A, B, and C are half-height, half-length, x8 lanes, with x16 connectors</li> <li>■ Slots D and E are full-height, half-length, x16 lanes, with x16 connectors</li> </ul>
Storage controller	One of the following: <ul style="list-style-type: none"> <li>■ LSI SAS 3081E-R PCIe Card RAID levels 0, 1, or 1E for up to 8 internal SAS or SATA drives, or</li> <li>■ LSI 6G MegaRAID 9261-8i PCIe card RAID levels 0, 1, 5, 6, 10, 50, or 60 support for up to 8 internal SAS or SATA drives</li> </ul>
Internal storage devices	<ul style="list-style-type: none"> <li>■ Up to eight 2.5-inch SAS or SATA hot-pluggable hard disk drives (HDDs)</li> <li>■ One general-purpose USB port on motherboard</li> </ul>
Video	<ul style="list-style-type: none"> <li>■ 1280 x 1024 resolution</li> <li>■ 32-bit color depth</li> <li>■ 8 MB video memory</li> </ul>

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Interfaces	<ul style="list-style-type: none"> <li>■ Rear panel <ul style="list-style-type: none"> <li>• One DB9 serial port connector</li> <li>• Two USB 2.0 port connectors</li> <li>• One DB15 VGA connector</li> <li>• Four RJ-45 10/100/1000 Ethernet port connectors</li> <li>• Two RJ-45 10/100 Ethernet management ports</li> </ul> </li> <li>■ Front panel <ul style="list-style-type: none"> <li>• One KVM console connector</li> </ul> </li> <li>■ Motherboard <ul style="list-style-type: none"> <li>• One USB port</li> </ul> </li> </ul>
Front Panel	<ul style="list-style-type: none"> <li>■ Optional optical drive (24x CD±R/RW DVD±R/RW)</li> </ul>
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"> <li>■ Five 80-mm hot-pluggable redundant fan modules (4 fans per module)</li> </ul> <p>Power supply:</p> <ul style="list-style-type: none"> <li>■ Each power supply is equipped with a fan</li> </ul>
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 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 20*
- *STEP 6 CHOOSE PCIe OPTION CARDS, page 21*
- *STEP 8 ORDER OPTIONAL REDUNDANT POWER SUPPLY, page 26*
- *STEP 9 CHOOSE AC POWER CORDS, page 27*
- *STEP 10 ORDER OPTIONAL RAIL KIT AND CABLE MANAGEMENT ARM, page 30*
- *STEP 11 CHOOSE OPERATING SYSTEM AND VALUE-ADDED SOFTWARE, page 31*
- *STEP 12 CHOOSE OPERATING SYSTEM MEDIA KIT, page 34*
- *STEP 13 CHOOSE SERVICE and SUPPORT LEVEL, page 35*
- *OPTIONAL STEP - ORDER RACK on page 39*
- *OPTIONAL STEP - ORDER PDU on page 40*



## 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 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) <sup>1</sup>
A01-X0115	X5690	3.46	130	12	6	6.4 GT/s	1333
A01-X0100	X5680	3.33	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) <sup>1</sup>
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.

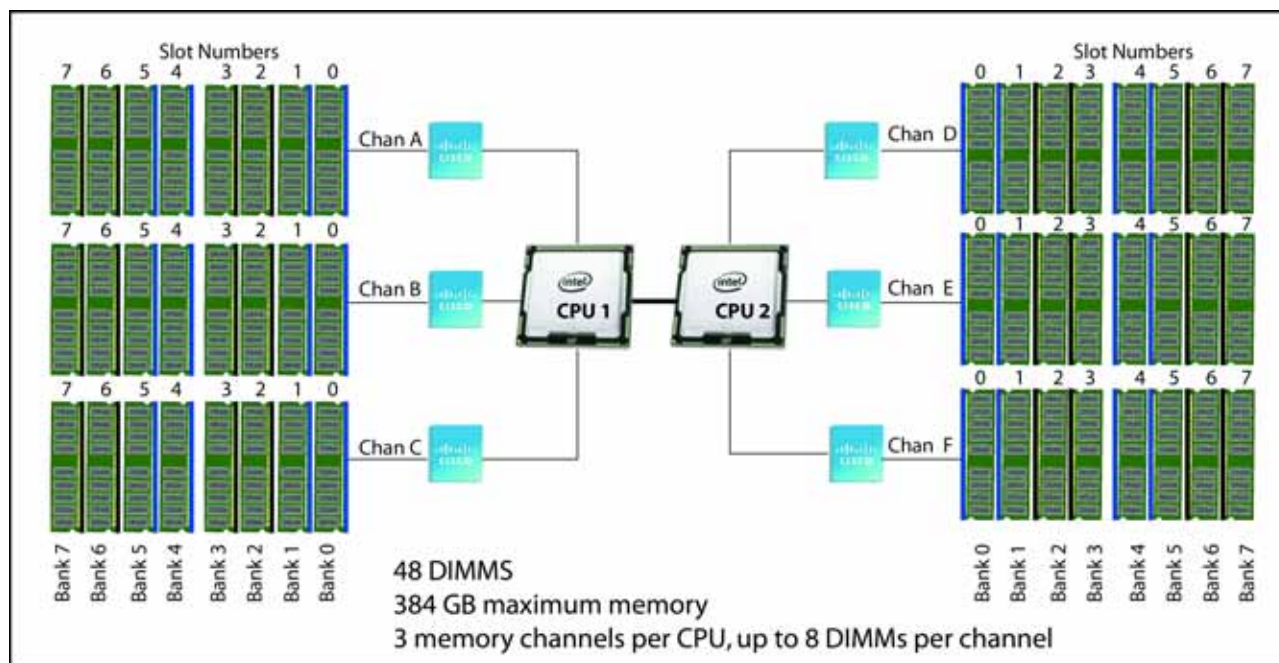
The standard memory features are:

- 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 43](#) 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)			
UCS-MR-2X082RX-B	2X8GB DDR3-1333-MHz RDIMM/PC3-10600/2R/x4/1.35v	1.35 V	2
UCS-MR-2X041RX-B	2X4GB DDR3-1333-MHz RDIMM/PC3-10600/1R/x4/1.35v	1.35 V	1
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 43](#) 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.

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For more information about memory and memory optimization, see:

- [\*CPU1 and DIMMs on page 43\*](#)
- [\*Physical Layout on page 43\*](#)
- [\*Memory Population Rules on page 45\*](#)
- [\*Low-Voltage DIMM Considerations on page 45\*](#)
- [\*Supported DIMM Configurations on page 46\*](#)
- [\*DIMM Population Order on page 47\*](#)
- [\*Optimized Memory Configuration on page 48\*](#)



## 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](#). Note that RAID levels 50 and 60 are supported on the 9261-8i, but are not factory configurable.

### 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"> <li>■ Takes up one of five available PCIe slots</li> <li>■ Supports up to eight internal SAS or SATA drives</li> <li>■ No battery backup is available</li> <li>■ Factory-configured RAID options: RAID 0, 1, or 1E (see the RAID PIDs section in this table)</li> </ul>
R2XX-PL003	LSI MegaRAID SAS 9261-8i (RAID 0, 1, 5, 6, 10) <ul style="list-style-type: none"> <li>■ Takes up one of five available PCIe slots</li> <li>■ Supports up to eight internal SAS or SATA drives.</li> <li>■ Includes 512 MB of write cache</li> <li>■ Battery backup option available (see the battery backup PID section in this table)</li> <li>■ Factory-configured RAID options: RAID 0, 1, 5, 6, 10 (see the RAID PIDs section in this table)</li> </ul>
RAID Battery Backup Option	
R2XX-LBBU2	Battery Backup
RAID Configuration	

Table 6 Available RAID Options (*continued*)

Product ID (PID)	PID Description
R2XX-RAID0	Factory preconfigured RAID striping option Enable RAID 0 Setting. Requires a minimum of 1 hard drive.
R2XX-RAID1	Factory preconfigured RAID mirroring option Enable RAID 1 Setting. Requires exactly 2 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 an even number of drives (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
UCS-HDD900GI2F106	900 GB 6 Gb SAS 10K RPM SFF HDD	SAS	900 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
<b>Converged Network Adapters (CNA)</b>		
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
<b>Network Interface Cards (NICs)</b>		
N2XX-ABPCI02	Broadcom 57711 Dual Port 10GbE NIC w/TOE iSCSI	Half
N2XX-ABPCI03-M3	Broadcom 5709 Quad Port 10/100/1Gb NIC w/TOE iSCSI	Half
N2XX-ABPCI01-M3	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
<b>Host Bus Adapters (HBAs)</b>		
N2XX-AEPCI03	Emulex LPe 11002 Dual Port 4Gb Fibre Channel HBA	Half
N2XX-AEPCI05	Emulex LPe 12002 Dual Port 8Gb Fibre Channel HBA	Half
N2XX-AQPCI03	Qlogic QLE2462 Dual Port 4Gb Fibre Channel HBA	Half
N2XX-AQPCI05	Qlogic QLE2562 Dual Port 8Gb Fibre Channel HBA	Half

## Approved Configurations

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### (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.

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## Caveats

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- 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 or E. Note, however, if the server is running UCSM, only slot D is supported for the VIC card.
- 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](http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html)

## STEP 7 ORDER OPTIONAL NETWORK CARD ACCESSORIES

Copper twinax cables and SFP optical modules may be ordered to support the two-port network cards that are available with the server.

### Choose Optional Twinax Cables

Copper twinax cables are listed in [Table 9](#). You can choose cable lengths of 1, 3, 5, 7, or 10 meters. The two longer cables (7 and 10 meters) are active, which means that they contain active components within the SFP+ housing to improve signal quality.

Table 9 Available Twinax Cables

Product ID (PID)	PID Description
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable (1 M)
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable (3 M)
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable (5 M)
SFP-H10GB-ACU7M	10GBASE-CU SFP+ Cable (7 M)
SFP-H10GB-ACU10M	10GBASE-CU SFP+ Cable (10 M)

### Approved Configurations

#### (1) Choose Up to Two Twinax Cables for Each Network Card Ordered

- You may choose one or two twinax cables for each network card ordered. The cables can be different lengths; however, you would normally order two cables of equal lengths to connect to the primary and redundant network switching equipment.

### Caveats

The twinax cables listed in [Table 9](#) can be ordered only for the following PCIe cards:

- N2XX-ACPCI01 (Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbps)
- UCS-PCIE-BSFP (Broadcom 57712)
- N2XX-ABPCI02 (Broadcom 57711)
- N2XX-AEPCI01 (Emulex OCe10102-F)
- N2XX-AIPCI01 (Intel Dual Port Ethernet X520)
- N2XX-AQPCI01 (Qlogic QLE 8152-CNA)

## Choose Optional SFP Modules

Optical Cisco SFP+ modules are listed in [Table 10](#).

Table 10 Available SFP Modules

Product ID (PID)	PID Description
SFP-10G-SR	10GBASE-SR SFP+ Module 850 nm, multimode, SR, 3.3V, LC connector, with Digital Optical Monitoring
DS-SFP-FC8G-SW	8 Gbit SFP+ Module 850 nm, multimode, SR, 3.3V, LC connector, with Digital Optical Monitoring

## Approved Configurations

### (1) Choose Up to Two SFP+ Modules for Each Network Card Ordered

- You may choose one or two SFP+ optical modules cables for each network card ordered. You would normally order two modules for connecting to the primary and redundant network switching equipment. With the SFP+ optical modules, you can use common fiber optic cables, widely available.

See [Figure 5 on page 25](#) for typical SFP+ and twinax connections to the network cards.

## Caveats

The SFP-10G-SR optical module listed in [Table 10](#) should be ordered only for the following PCIe cards, as they do not come by default with any optical modules:

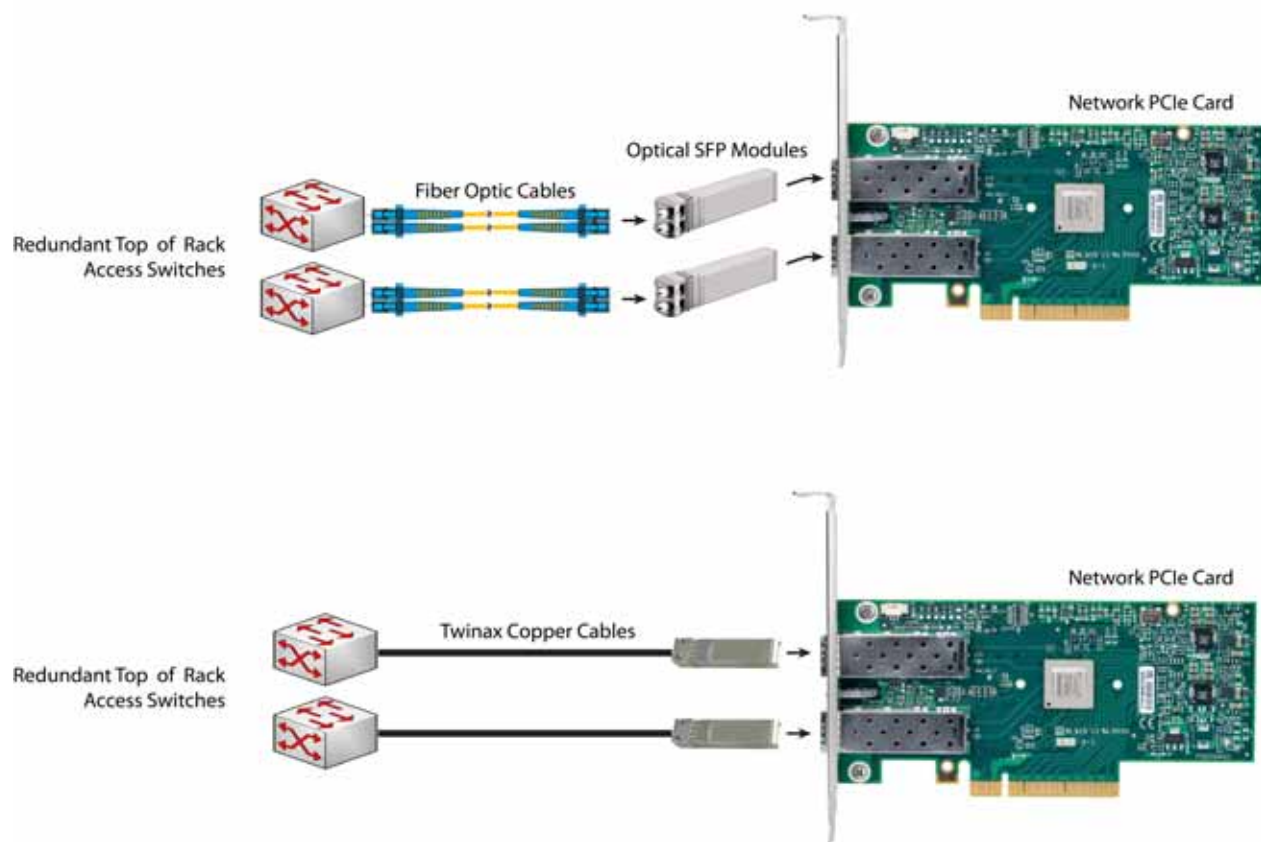
- N2XX-ACPCI01 (Cisco UCS P81E Virtual Interface Card/ 2-port 10Gbps)
- UCSC-PCIE-BSFP (Broadcom 57712)
- N2XX-ABPCI02 (Broadcom 57711)
- N2XX-AEPCI01 (Emulex OCe10102-F)

The DS-SFP-FC8G-SW optical module listed in [Table 10](#) should be ordered only for the following PCIe cards, as they do not come by default with any optical modules:

- N2XX-AEPCI05 (Emulex LPe 12002 Dual Port 8Gb Fibre Channel HBA)



Figure 5 Network Card Connections



## STEP 8 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 11](#).

Table 11 Redundant Power Supply

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

## STEP 9 CHOOSE AC POWER CORDS

Select the appropriate AC power cords listed in [Table 12](#). You may select a minimum of no power cords and a maximum of two power cords. If you select the option R2XX-DMYMPWRCORD, no power cord is shipped with the server.

Table 12 Available Power Cords

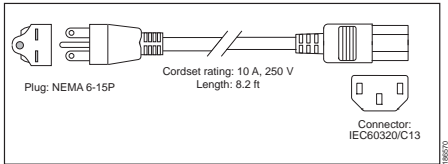
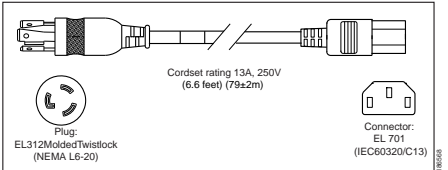
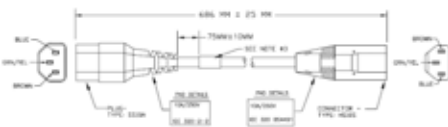
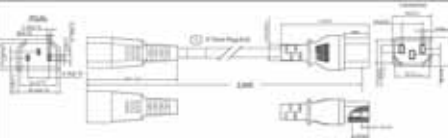
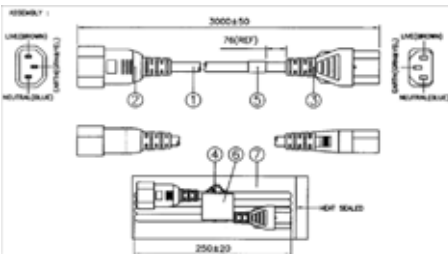
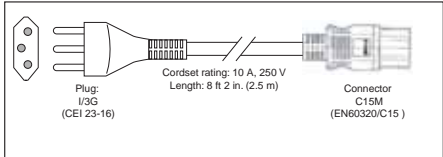
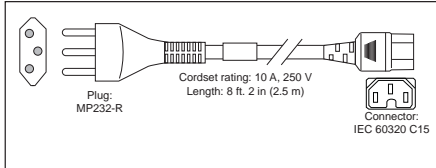
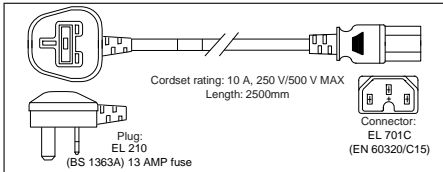
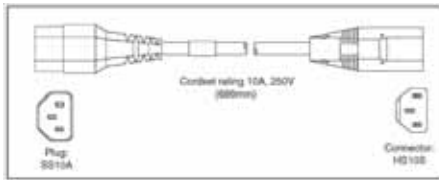
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-N5K6A-NA	Power Cord, 200/240V 6A, North America	 <p>Plug: NEMA 6-15P Cordset rating: 10 A, 250 V Length: 8.2 ft Connector: IEC60320/C13</p>
CAB-AC-250V/13A	Power Cord, NEMA L6-20 250V/20A plug-IEC320/C13 receptacle, North America	 <p>Plug: EL312Molded Twistlock (NEMA L6-20) Cordset rating: 13A, 250V (6.6 feet) (79±2m) Connector: EL701 (IEC60320/C13)</p>
CAB-C13-CBN	CABASY,WIRE,JUMPER CORD, 27" L, C13/C14, 10A/250V	
CAB-C13-C14-2M	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V	
CAB-C13-C14-AC	CORD,PWR,JMP,IEC60320/C14,IEC60320/C13, 3.0M	

Table 12 Available Power Cords (*continued*)

Product ID (PID)	PID Description	Images
SFS-250V-10A-AR	Power Cord, SFS, 250V, 10A, Argentina	<p>Plug: EL 219 (IIRAM 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>
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-250V-10A-CN	AC Power Cord - 250V, 10A - PRC	<p>A</p> <p>2500mm (82 ft)</p> <p>B</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>

Table 12 Available Power Cords (*continued*)

Product ID (PID)	PID Description	Images
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	
CAB-JPN-3PIN	Power Cord 3PIN, Japan	Image not available

## STEP 10 ORDER OPTIONAL RAIL KIT AND CABLE MANAGEMENT ARM

There are two tool-less rail kits and a cable management arm (CMA) available for the C250 M2 server. The rail kits are listed in [Table 13](#) and the CMA is listed in [Table 14](#).

Table 13 Rail Kits

Product ID (PID)	PID Description
UCSC-RAIL-KT-C250 <sup>1</sup>	Shortened Rail Kit for UCS C250 Rack Servers 43.8 mm (1.72 in) high x 10 mm (0.39 in) thick x 848 mm (33.39 in) long; weight 1.36 kg (3 lbs)
R200-1032RAIL <sup>2</sup>	Rail Kit for UCS C250 Rack Servers (27- to 37-inch racks) 42.9 mm (1.69 in) high x 9.6 mm (0.38 in) thick x 746.7 mm (29.4 in) long without the cable management arm attachment brackets and 773.8 mm (30.46 in) with the brackets; weight 1.36 kg (3 lbs)

Notes . . .

1. There is no cable management arm available for this rail kit.
2. This rail kit is compatible with the R250-CBLARM cable management arm (see [Table 14](#)).

The available 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 14](#).

Table 14 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](http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C250M1/install/C250M1.html)

See [OPTIONAL STEP - ORDER RACK on page 39](#) for information about racks and rack equipment.

## STEP 11 CHOOSE OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

Several operating systems and value-added software programs are available. Select as desired from [Table 15](#).

Table 15 OSs and Value-Added Software (for 2-CPU servers)

PID Description	Product ID (PID)
<b>Microsoft Windows Server</b>	
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-12-ST2S	Windows Server 2012 Standard (2 CPU/2 VMs)
MSWS-12-DC2S	Windows Server 2012 Datacenter (2 CPU/Unlimited VMs)
MSWS-12-ST2S-NS	Windows Server 2012 Standard (2 CPU/2 VMs) No Cisco SVC
MSWS-12-DC2S-NS	Windows Server 2012 Datacenter (2 CPU/Unlim VM) No Cisco Svc
<b>SUSE Linux Enterprise Server</b>	
SLES-1A	SLES/1yr subscription/svcs required/0 media
SLES-3A	SLES/3yr subscription/svcs required/0 media
UCS-SLES-TERMS	Acceptance of Terms, Standalone SLES License for UCS Servers
<b>Red Hat Enterprise Linux</b>	
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-HA-2S-1A	RHEL Option/High-Availability/2 Socket/1Yr Svcs Required
RHEL-HA-2S-3A	RHEL Option/High-Availability/2 Socket/3Yr Svcs Required
RHEL-RS-2S-1A	RHEL Option/Resilient w/Ha /2 Socket/1 Yr Svcs Required
RHEL-RS-2S-3A	RHEL Option/Resilient Storage w/ HA /2 Socket/3 Yr Svcs Req'd
RHEL-SFS-2S-1A	RHEL Option/Scalable File System/2 Socket/1 Yr Svcs Required
RHEL-SFS-2S-3A	RHEL Option/Scalable File System/2 Socket/1 Yr Svcs Required

Table 15 OSs and Value-Added Software (for 2-CPU servers) *(continued)*

PID Description	Product ID (PID)
<b>BMC</b>	
BMC-002	BMC BladeLogic CM, Physical Server
BMC-012	BMC BPPM Per Server
BMC-SE-4C	BMC BladeLogic Standard Edition, 4 Cores, Support Required
BMC-SE-6C	BMC BladeLogic Standard Edition, 6 Cores, Support Required
BMC-SE-8C	BMC BladeLogic Standard Edition, 8 Cores, Support Required
BMC-SE-10C	BMC BladeLogic Standard Edition, 10 Cores, Support Required
BMC-AE-4C	BMC BladeLogic Advanced Edition, 4 Cores, Support Required
BMC-AE-6C	BMC BladeLogic Advanced Edition, 6 Cores, Support Required
BMC-AE-8C	BMC BladeLogic Advanced Edition, 8 Cores, Support Required
BMC-AE-10C	BMC BladeLogic Standard Edition, 10 Cores, Support Required
UCS-BMC-TERMS	Acceptance of Terms, Standalone BMC License for UCS Servers
<b>VMware 5</b>	
VMW-VS5-STD-1A	VMware vSphere 5 Standard for 1 Processor, 1 Year, Support Rqd
VMW-VS5-STD-2A	VMware vSphere 5 Standard for 1 Processor, 2 Year, Support Rqd
VMW-VS5-STD-3A	VMware vSphere 5 Standard for 1 Processor, 3 Year, Support Rqd
VMW-VS5-STD-4A	VMware vSphere 5 Standard for 1 Processor, 4 Year, Support Rqd
VMW-VS5-STD-5A	VMware vSphere 5 Standard for 1 Processor, 5 Year, Support Rqd
VMW-VS5-ENT-1A	VMware vSphere 5 Enterprise for 1 Processor, 1 Year Support Rqd
VMW-VS5-ENT-2A	VMware vSphere 5 Enterprise for 1 CPU, 2 Yr Support Rqd
VMW-VS5-ENT-3A	VMware vSphere 5 Enterprise for 1 CPU, 3 Yr Support Rqd
VMW-VS5-ENT-4A	VMware vSphere 5 Enterprise for 1 Processor, 4 Year Support Rqd
VMW-VS5-ENT-5A	VMware vSphere 5 Enterprise for 1 CPU, 5 Yr Support Rqd
VMW-VS5-ENTP-1A	VMware vSphere 5 Enterprise Plus for 1 Processor, 1 Year Support Rqd
VMW-VS5-ENTP-2A	VMware vSphere 5 Enterprise Plus for 1 CPU, 2 Yr Support Rqd
VMW-VS5-ENTP-3A	VMware vSphere 5 Enterprise Plus for 1 Processor, 3 Year Support Rqd
VMW-VS5-ENTP-4A	VMware vSphere 5 Enterprise Plus for 1 Processor, 4 Year Support Rqd
VMW-VS5-ENTP-5A	VMware vSphere 5 Enterprise Plus for 1 Processor, 5 Year Support Rqd
VMW-VC5-STD-1A	VMware vCenter 5 Server Standard, 1 yr support required
VMW-VC5-STD-2A	VMware vCenter 5 Server Standard, 2 yr support required
VMW-VC5-STD-3A	VMware vCenter 5 Server Standard, 3 yr support required
VMW-VC5-STD-4A	VMware vCenter 5 Server Standard, 4 yr support required



Table 15 OSs and Value-Added Software (for 2-CPU servers) *(continued)*

PID Description	Product ID (PID)
VMW-VC5-STD-5A	VMware vCenter 5 Server Standard, 5 yr support required
UCS-VMW-TERMS	Acceptance of Terms, Standalone VMW License for UCS Servers

## STEP 12 CHOOSE OPERATING SYSTEM MEDIA KIT

Choose the optional operating system media listed in [Table 16](#).

Table 16 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
MSWS-12-ST2S-RM	Windows Server 2012 Standard (2 CPU/2 VMs) Recovery Media
MSWS-12-DC2S-RM	Windows Server 2012 Datacenter (2 CPU/Unlimited VM) Rec Media

## 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 17](#).

**Table 17** Unified Computing Mission Critical Service

Product ID (PID)	On Site?	Description
CON-UCM7-R250W	Yes	UC Mission Critical 24x7x4 On-site
CON-UCM8-R250W	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 18](#).

Table 18 UCS Computing Support Service

Product ID (PID)	On Site?	Description
CON-UCS1-R250W	No	UC Support 8X5XNBD
CON-UCS2-R250W	No	UC Support 8X5X4
CON-UCS3-R250W	No	UC Support 24x7x4
CON-UCS4-R250W	No	UC Support 24x7x2
CON-UCS5-R250W	Yes	UC Support 8X5XNBD
CON-UCS6-R250W	Yes	UC Support 8X5X4
CON-UCS7-R250W	Yes	UC Support 24x7x4
CON-UCS8-R250W	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 19](#).

Table 19 UCS Computing Warranty Plus Service

Product ID (PID)	On Site?	Description
CON-UCW2-R250W	No	UC Warranty Plus 8x5x4
CON-UCW3-R250W	No	UC Warranty Plus 24x7x4
CON-UCW4-R250W	No	UC Warranty Plus 24x7x2
CON-UCW5-R250W	Yes	UC Warranty Plus 8X5XNBD
CON-UCW6-R250W	Yes	UC Warranty Plus 8X5X4
CON-UCW7-R250W	Yes	UC Warranty Plus 24x7x4
CON-UCW8-R250W	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 20](#).



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

Table 20 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 20 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](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](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 21](#). Racks are shipped separately from the C250 M2 server.

Table 21 Racks and Rack Options

Product ID (PID)	PID Description
RACK-UCS <sup>1</sup>	Cisco R42610 expansion rack, no side panels
RACK-UCS2 <sup>1</sup>	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 49](#).

## 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 22](#)).

Table 22 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 51](#).

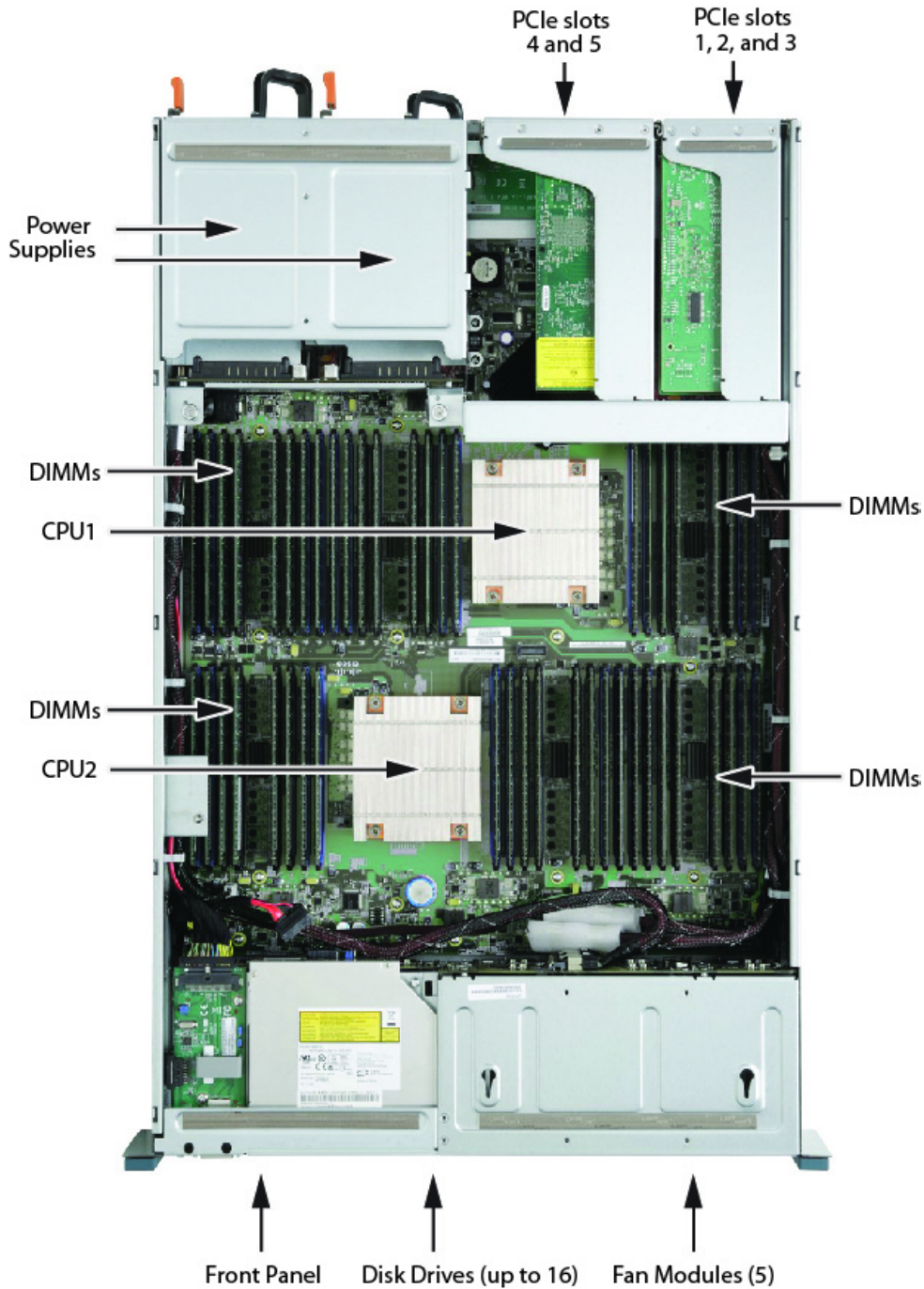


## SUPPLEMENTAL MATERIAL

### Chassis

An internal view of the C250 M2 chassis with the top cover removed is shown in [Figure 6](#).

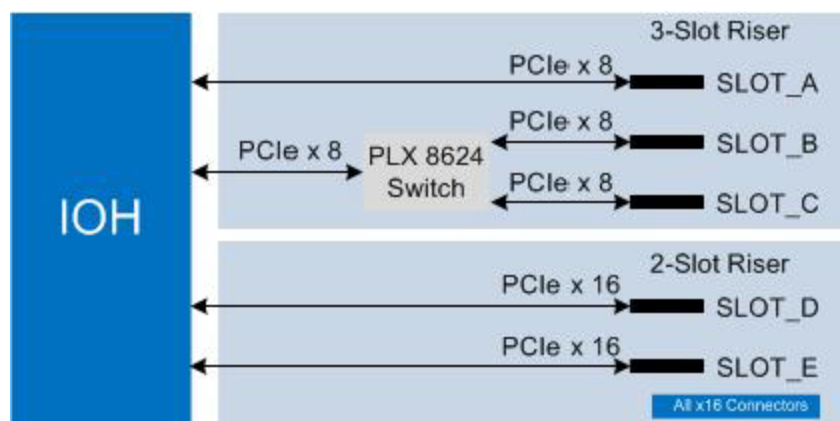
Figure 6 C250 M2 Chassis With Top Cover Removed



## PCIe Cards

As [Figure 6 on page 41](#) and [Figure 7](#) 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 7 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:

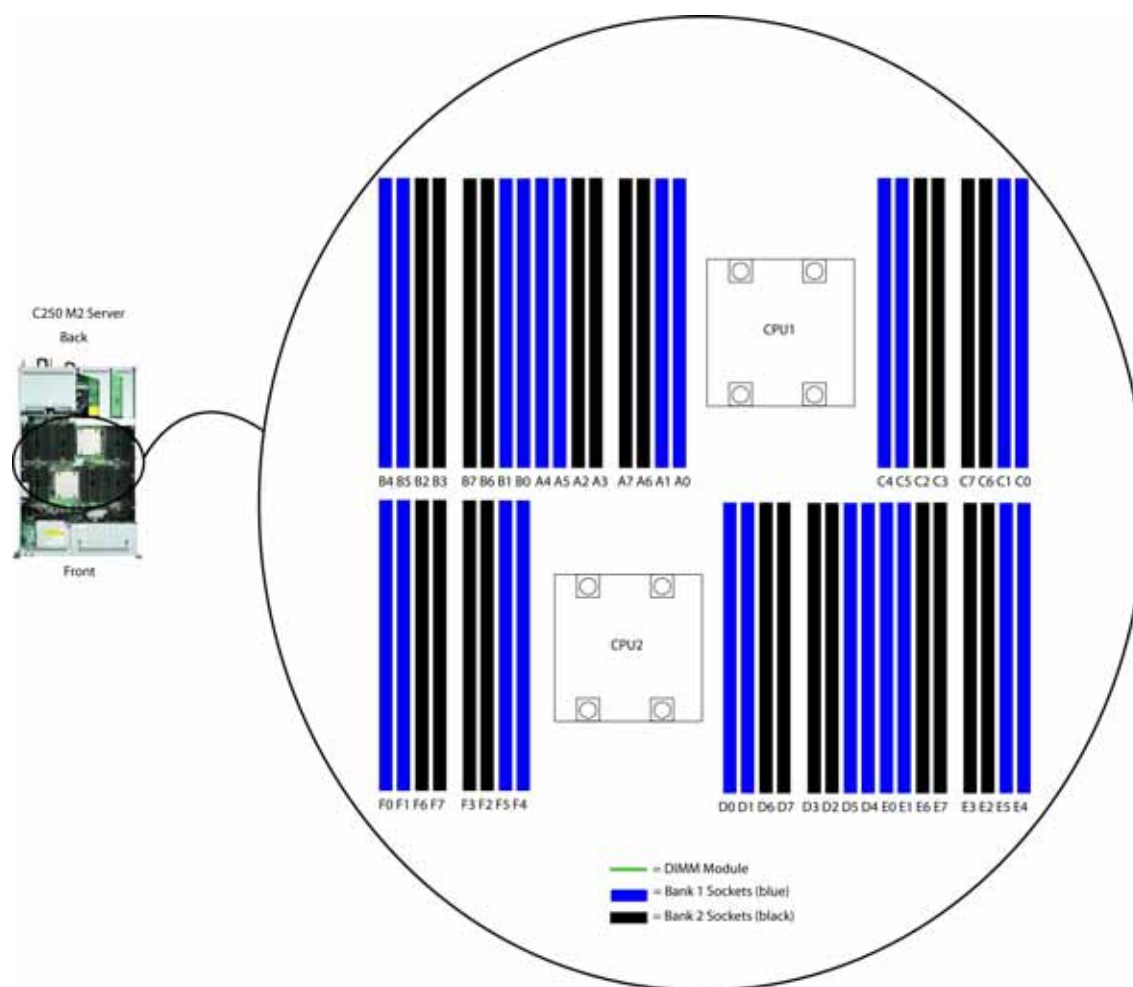
- Bank 0: DIMM slots A0, B0, C0 (blue DIMM slots)
- Bank 1: DIMM slots A1, B1, C1 (blue DIMM slots)
- Bank 2: DIMM slots A2, B2, C2 (black DIMM slots)
- Bank 3: DIMM slots A3, B3, C3 (black DIMM slots)
- Bank 4: DIMM slots A4, B4, C4 (blue DIMM slots)
- Bank 5: DIMM slots A5, B5, C5 (blue DIMM slots)
- 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 8* 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 8 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 23 on page 46](#) for supported DIMM combinations.
- DIMMs must be populated according to [Table 23 on page 46](#).
- 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 23* lists the supported DIMM configurations for the C250 M2 server.

Table 23 Supported DIMM Configurations <sup>1 2</sup>

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 23* shows the order in which the DIMM slots are populated for each configuration, according to the total number of DIMMs as specified in *Table 23 on page 46*.

Table 24 DIMM Population Order<sup>1</sup>

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 23](#) and [Table 24](#), a large number of memory configurations are possible. [Table 25](#) 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 25 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 9](#)) 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 26](#).

Table 26 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 9 Cisco R42610 Rack



Front view - door closed



Front view - door open



Front view - door removed

PDU

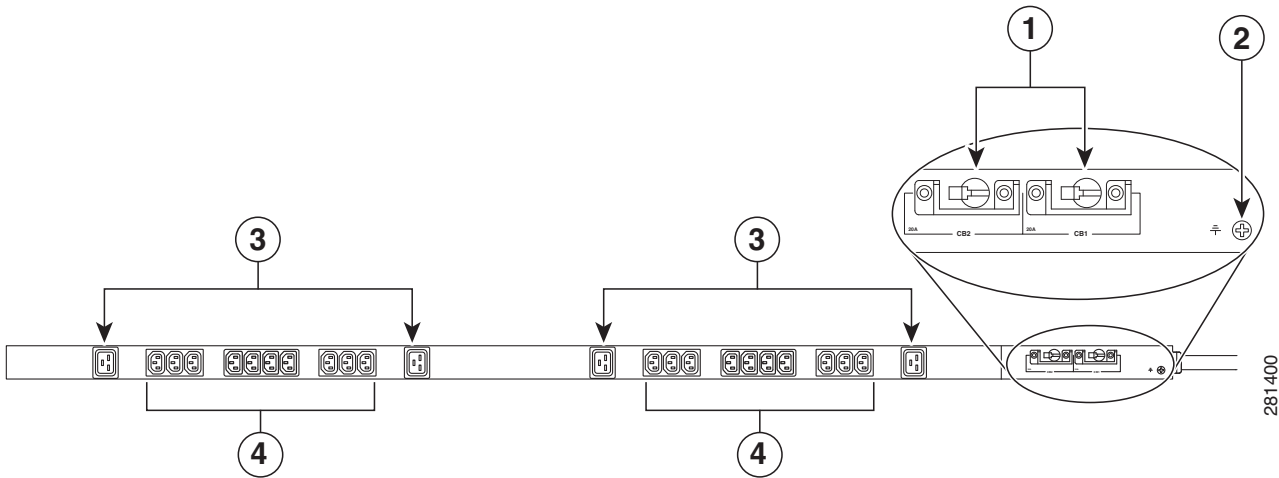
Cisco RP-Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

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 10](#).

Figure 10 Zero Rack Unit PDU (PID = RP208-30-2P-U-2)



1	Breakers	3	C19 plugs
2	Ground connection	4	C13 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 11](#).

Figure 11 C250 M2 Server Power Supply



KVM Cable

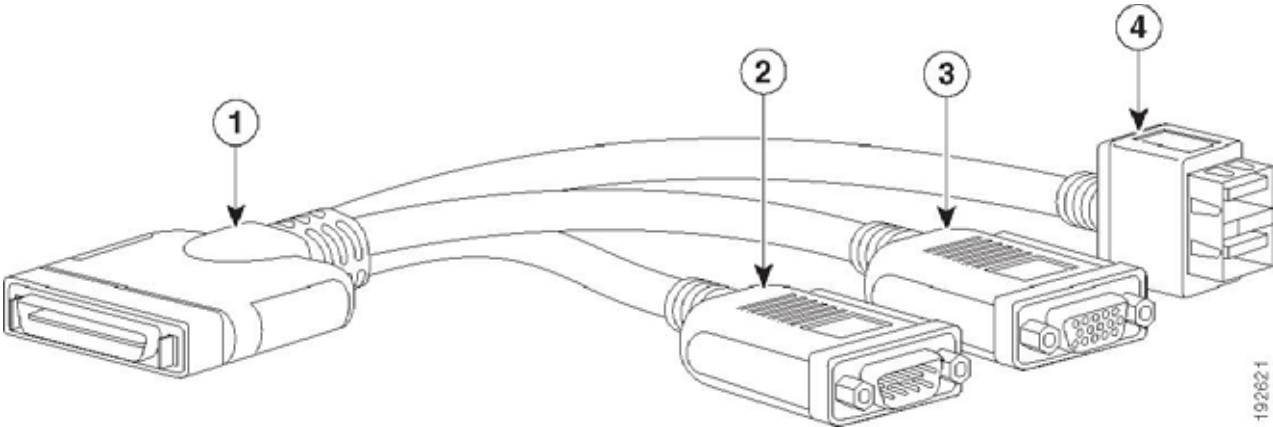
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in [Table 27](#).

Table 27 KVM Cable

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

Figure 12 KVM Cable

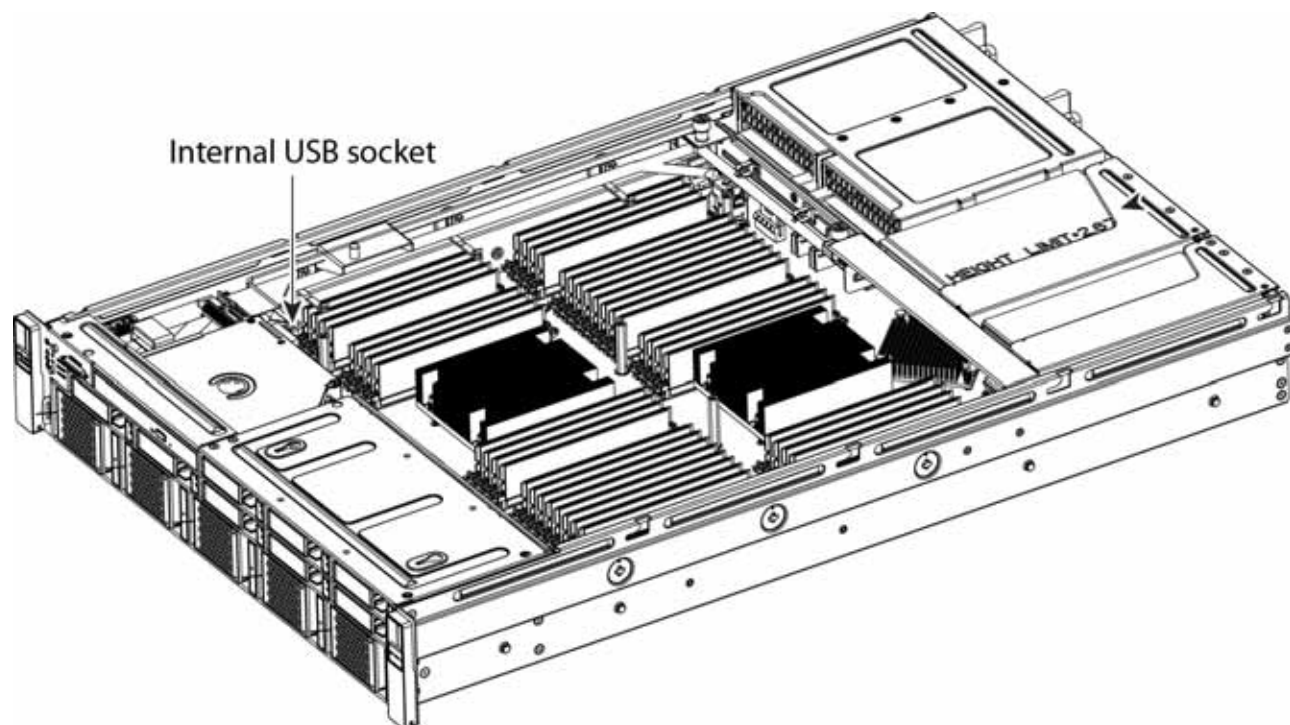


1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB connector (for a mouse and keyboard)

## Motherboard USB Port

The C250 M2 motherboard has a general-purpose USB socket, as shown in [Figure 13](#).

Figure 13 Motherboard USB Port



## TECHNICAL SPECIFICATIONS

### Dimensions and Weight

Table 28 UCS C250 M2 Server Dimensions and Weight<sup>1</sup>

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 29](#).

Table 29 UCS C250 M2 Power Specifications

Description	Specification
AC input voltage	100 to 127 VAC nominal (Range: 90 to 264 VAC)
AC input frequency	50 to 60 Hz nominal (Range: 47 to 63 Hz)
Maximum AC input current	9 A at 100 VAC
Maximum AC inrush current	30 A peak sub-cycle duration
Maximum output power for each power supply	850 W
Power supply output voltage	Main power: 12 VDC Standby Power: 5 VDC
Power supply efficiency	92% Peak, complies with 80Plus Gold Standard



NOTE: AC input connector is an IEC 320 C-14 15A/250VAC 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/](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 30](#).

Table 30 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 31](#).

**Table 31 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



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