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# Cisco UCS C240 M3 High-Density Rack Server (Large Form Factor Hard Disk Drive Model)

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CISCO SYSTEMS  
170 WEST TASMAN DR.  
SAN JOSE, CA, 95134  
[WWW.CISCO.COM](http://WWW.CISCO.COM)

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## OVERVIEW

The UCS C240 M3 rack server is designed for both performance and expandability over a wide range of storage-intensive infrastructure workloads from big data to collaboration

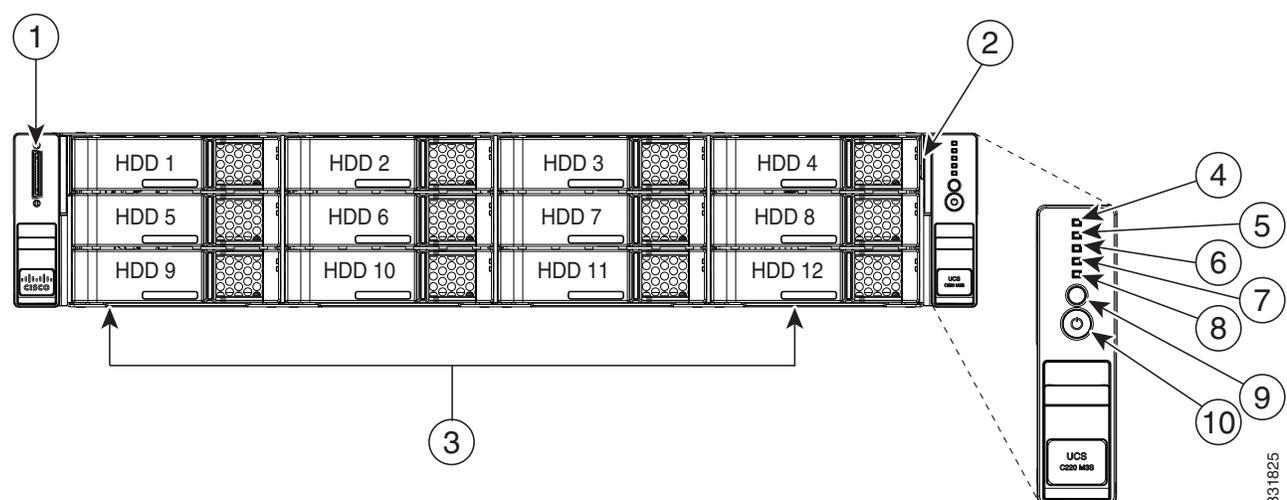
Building on the success of the Cisco UCS C210 M2 rack server, the enterprise-class UCS C240 M3 server further extends the capabilities of Cisco's Unified Computing System portfolio in a 2U form factor with the addition of the Intel® E5-2600 series processor family CPUs that deliver significant performance and efficiency gains. In addition, the UCS C240 M3 server provides 24 DIMM slots, up to twelve 3.5-inch drives and 4 x 1 GbE LOM to provide outstanding levels of internal memory and storage expandability along with exceptional performance.

## DETAILED VIEWS

### Chassis Front View

*Figure 1* shows the Cisco UCS C240 M3 High-Density LFF Rack Server.

Figure 1 Chassis Front View



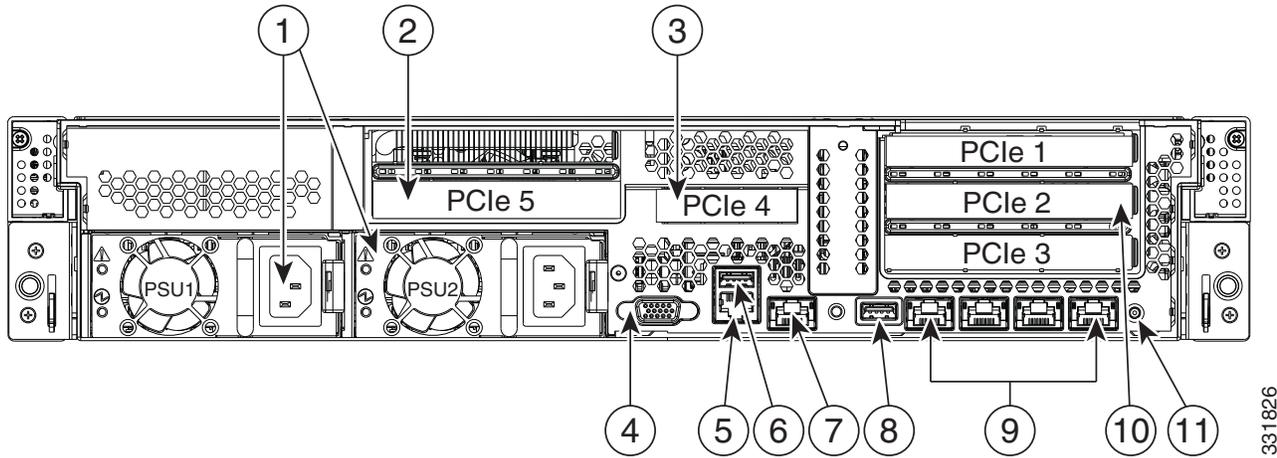
1	KVM connector (used with KVM cable that provides two USB, one VGA, and one serial connector)	6	Temperature status LED
2	Asset tag (serial number)	7	Fan status LED
3	Drives (up to 12 3.5-inch hot-swappable drives)	8	System status LED
4	Network link activity LED	9	Identification button/LED
5	Power supply status LED	10	Power button/power status LED

For more information about the KVM cable connection, see [KVM CABLE, page 54](#).

## Chassis Rear View

Figure 2 shows the external features of the rear panel.

Figure 2 Chassis Rear View



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1	Power supplies (up to two)	7	One RJ-45 10/100/1000 Ethernet dedicated management port
2	Standard-profile PCIe slot on riser: PCIe 5—full-height, 3/4-length, x16 lane width, x24 connector, GPU ready, supports Cisco CNIC <sup>1</sup> and NCSI <sup>2</sup>	8	USB 2.0 port
3	Low-profile PCIe slot on riser: PCIe 4—half-height, 3/4-length, x8 lane width, x16 connector, no NCSI <sup>2</sup> support	9	Quad 1-Gb Ethernet ports (LAN1, LAN2, LAN3, and LAN4)
4	VGA video connector	10	Standard-profile PCIe slots on riser (three): PCIe 1—full-height, half-length, x8 lane width, x8 connector PCIe 2—full-height, half-length, x8 lane width, x24 connector, supports Cisco CNIC <sup>1</sup> and NCSI <sup>2</sup> PCIe 3—full-height, half-length, x8 lane width, x16 connector
5	Serial connector (RJ-45)	11	Rear Identification button/LED
6	USB 2.0 port		-

Notes . . .

- 1. CNIC = Cisco Network Interface Card.
- 2. NCSI = Network Communications Services Interface protocol.

## 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, page 8*.

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	Two rack unit (2RU) chassis
CPU	One or two Intel® E5-2600 series processor family CPUs
Chipset	Intel® C600 series chipset
Memory	24 slots for registered ECC DIMMs or unregistered DIMMs
NIC	Embedded quad-port Intel i350 PCIe-based Gigabit Ethernet controller, supporting the following: <ul style="list-style-type: none"> <li>■ Pre-Execution Boot (PXE boot)</li> <li>■ TCP Offload Engine (TOE)</li> <li>■ iSCSI boot</li> </ul>
Expansion slots	Five PCIe slots (on two riser cards) <ul style="list-style-type: none"> <li>■ Riser 1 (PCIe slots 1, 2, and 3): <ul style="list-style-type: none"> <li>• One x16 PCIe Gen3 Slot, x24 extended connector (Cisco CNIC), full-Height, half-length</li> <li>• Two x8 PCIe Gen3 Slots Full Height, x16 connector, half-length</li> </ul> </li> <li>■ Riser 2 (PCIe slots 4 and 5): <ul style="list-style-type: none"> <li>• One x16 PCIe Gen3 Slot, Full Height, (225W GPU Ready &amp; Cisco CNIC support), x24 connector, three-quarter length</li> <li>• One x8 PCIe Gen3 Slot, half-height, x16 connector, half-length</li> </ul> </li> </ul>
Internal storage devices	Drives are installed into front-panel drive bays that provide hot-pluggable access. <ul style="list-style-type: none"> <li>■ Large Form Factor (LFF) drives. The server can hold up to 12 3.5 inch SAS or SATA hard disk drives (HDDs). The server uses a 12-drive backplane with a SAS expander.</li> <li>■ The server also contains one internal USB 2.0 port on the motherboard that you can use with a USB thumb drive for additional storage</li> </ul>
Cisco Flexible Flash drives	The server supports one optional internal Cisco Flexible Flash drive (SD card). <ul style="list-style-type: none"> <li>■ The SD card is pre-loaded with four virtual drives. The four virtual drives contain, respectively, the Cisco Server Configuration Utility, the Cisco Host Upgrade Utility, the Cisco C-Series server drivers set, and a blank virtual drive on which you can install an OS or a hypervisor.</li> <li>■ 4 GB is available for general use</li> </ul>

Capability/Feature	Description
Storage controller	<ul style="list-style-type: none"> <li>■ Mezzanine Cards                             <ul style="list-style-type: none"> <li>• Cisco UCSC RAID SAS 2008M-8i Mezzanine Card supports up to 16 SAS/SATA drives (limited to 12 drives in the C240 M3 LFF chassis) supporting RAID 0, 1, 10, 5, and 50. SAS and SATA drives can be mixed.</li> <li>• Cisco UCSC RAID SAS 2008M-8i Mezzanine Card supports up to 16 SAS/SATA drives (limited to 12 drives in the C240 M3 LFF chassis) supporting RAID 0, 1, and 10. SAS and SATA drives can be mixed.</li> </ul> </li> <li>■ Plug-in PCIe Cards                             <ul style="list-style-type: none"> <li>• LSI MegaRAID SAS 9266-8i 8-port plug-in PCIe RAID controller card (occupies a half-height PCIe slot) supporting RAID levels 0, 1, 10, 5, 6, 50, 60 and up to 16 internal SAS or SATA drives (limited to 12 drives in the C240 M3 LFF chassis). SAS and SATA drives can be mixed.</li> <li>• LSI MegaRAID 9266CV-8i 8-port plug-in PCIe RAID controller card, supporting RAID 0, 1, 10, 5, 6, 50, and 60 and up to 16 internal SAS or SATA drives (limited to 12 drives in the C240 M3 LFF chassis). SAS and SATA drives can be mixed.</li> </ul> </li> </ul>
Video	<p>The Emulex Pilot 3 Integrated Baseboard Management Controller provides video:</p> <ul style="list-style-type: none"> <li>■ Matrox G200e video controller</li> <li>■ Integrated 2D graphics core with hardware acceleration</li> <li>■ Supports all display resolutions up to 1920 x 1200 x 16 bpp resolution at 60 Hz</li> <li>■ 24-bit color depth for all resolutions less than 1600x1200</li> <li>■ Up to 256 MB video memory</li> </ul>
Interfaces	<p>Rear panel</p> <ul style="list-style-type: none"> <li>■ One RJ-45 10/100/1000 Ethernet management port</li> <li>■ Four 1-Gb LOM ports</li> <li>■ One RJ45 serial port connector</li> <li>■ Two USB 2.0 port connectors</li> <li>■ One DB15 VGA connector</li> <li>■ Various PCIe card ports (dependent on which cards are installed)                             <ul style="list-style-type: none"> <li>• Converged Network Adapter (CNA) ports</li> <li>• Network Interface Card (NIC) ports</li> <li>• Host Bus Adapter (HBA) ports</li> </ul> </li> </ul> <p>Front panel</p> <ul style="list-style-type: none"> <li>■ One KVM console connector (supplies two USB 2.0, one VGA, and one serial connector)</li> </ul>
Front Panel	A front panel controller provides status indications and control buttons

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Capability/Feature	Description
Power subsystem	Two power supplies are required (either 650 W or 1200 W). Redundant as 1 + 1.
Fans	Chassis: <ul style="list-style-type: none"><li>■ Six hot-swappable fans for front-to-rear cooling</li></ul> Power supply: <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) firmware. Depending on your CIMC settings, the CIMC can be accessed through the 1-Gb Ethernet dedicated management port, the 1-Gb Ethernet LOM ports, or a Cisco P81E virtual interface card.

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## CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS C240 M3 High-Density LFF Rack Server:

- *STEP 1 VERIFY SERVER SKU, page 9*
- *STEP 2 SELECT CPU(s), page 10*
- *STEP 3 SELECT MEMORY, page 12*
- *STEP 4 SELECT RAID CONFIGURATION, page 16*
- *STEP 5 SELECT HARD DISK DRIVES (HDDs), page 19*
- *STEP 6 SELECT PCIe OPTION CARD(s), page 21*
- *STEP 7 ORDER OPTIONAL NETWORK CARD ACCESSORIES, page 23*
- *STEP 8 ORDER POWER SUPPLIES, page 26*
- *STEP 9 SELECT AC POWER CORD(s), page 27*
- *STEP 10 ORDER OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM, page 30*
- *STEP 11 ORDER A TRUSTED PLATFORM MODULE, page 31*
- *STEP 12 ORDER CISCO FLEXIBLE FLASH SD CARD MODULE (OPTIONAL), page 32*
- *STEP 13 ORDER USB 2.0 DRIVE (OPTIONAL), page 33*
- *STEP 14 SELECT OPERATING SYSTEM, page 34*
- *STEP 15 SELECT OPERATING SYSTEM MEDIA KIT, page 36*
- *STEP 16 SELECT OPTIONAL VALUE-ADDED SOFTWARE, page 37*
- *STEP 17 SELECT SERVICE and SUPPORT LEVEL, page 38*
- *OPTIONAL STEP - ORDER RACK(s), page 42*
- *OPTIONAL STEP - ORDER PDU, page 43*

## STEP 1 VERIFY SERVER SKU

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

Table 2 PID of the C240 M3 High-Density LFF Rack Base Server

Product ID (PID)	Description
UCSC-C240-M3L	UCS C240 M3 LFF, no CPU, memory, HDD, power supply, SD card, or PCIe cards, with rail kit

The Cisco C240 M3 server:

- Includes one tool-less rail kit, adjustable from 26 inches (660 mm) to 36 inches (914 mm)
- Does not include power supply, CPU, memory, hard disk drives (HDDs), SD card, 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 SELECT CPU(s)

The standard CPU features are:

- Intel E5-2600 series processor family CPU
- Intel® C600 series chipset
- Cache size of 10, 15, or 20 MB

### Select CPUs

The available CPUs are listed in [Table 3](#).

Table 3 Available Intel CPUs: E5-2600 Series Processor Family CPUs

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR3 DIMM Clock Support (MHz) <sup>1</sup>
UCS-CPU-E5-2690	E5-2690	2.90	135	20	8	8 GT/s	1600
UCS-CPU-E5-2680	E5-2680	2.70	130	20	8	8 GT/s	1600
UCS-CPU-E5-2665	E5-2665	2.40	115	20	8	8 GT/s	1600
UCS-CPU-E5-2660	E5-2660	2.20	95	20	8	8 GT/s	1600
UCS-CPU-E5-2650	E5-2650	2.00	95	20	8	8 GT/s	1600
UCS-CPU-E5-2650L	E5-2650L	1.80	70	20	8	8 GT/s	1600
UCS-CPU-E5-2643	E5-2643	3.30	130	10	4	8 GT/s	1600
UCS-CPU-E5-2640	E5-2640	2.50	95	15	6	7.2 GT/s	1333
UCS-CPU-E5-2630	E5-2630	2.30	95	15	6	7.2 GT/s	1333
UCS-CPU-E5-2630L	E5-2630L	2.00	60	15	6	7.2 GT/s	1333
UCS-CPU-E5-2620	E5-2620	2.00	95	15	6	7.2 GT/s	1333
UCS-CPU-E5-2609	E5-2609	2.40	80	10	4	6.4 GT/s	1066

#### Notes . . .

1. If higher or lower speed DIMMs are selected 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.

## Approved Configurations

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### (1) 1-CPU configurations:

- Select any one CPU listed in [Table 3](#).

### (2) 2-CPU Configurations:

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

## Caveats

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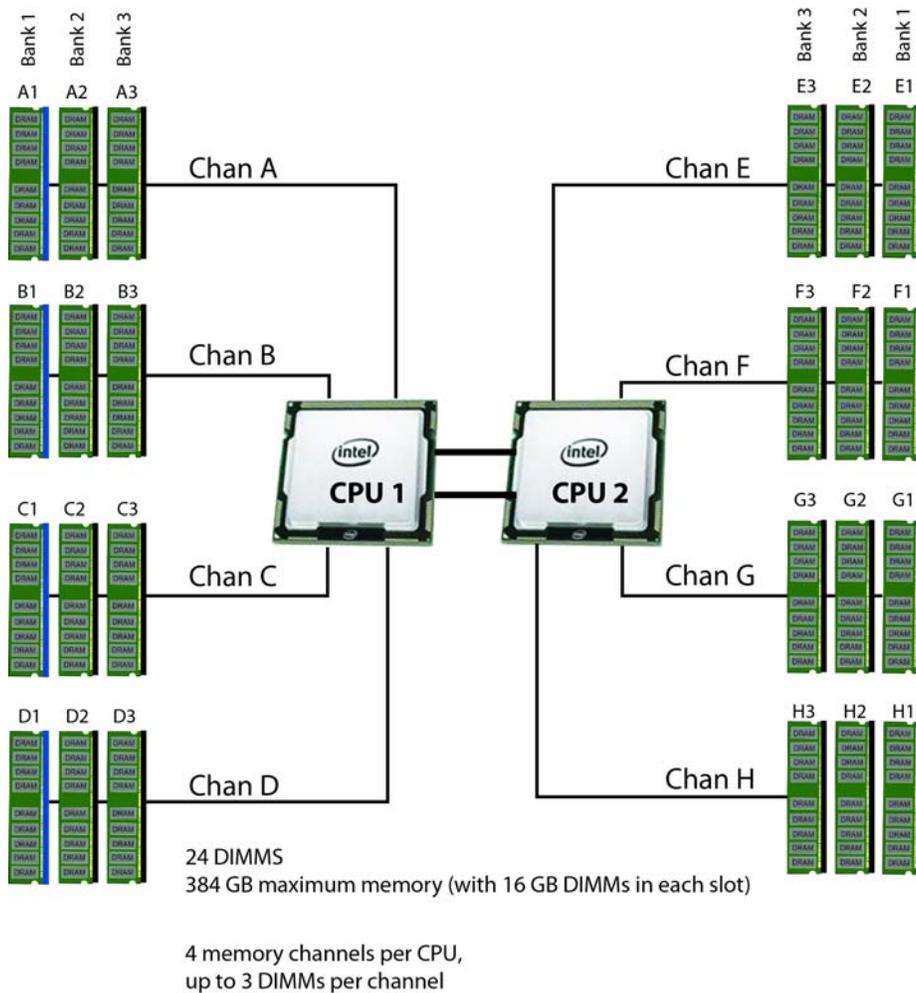
- You can select either one processor or two identical processors.
- For optimal performance, select DIMMs with the highest clock speed for a given processor (see [Table 3 on page 10](#)). If you select DIMMs whose speeds are lower or higher than that shown in the tables, suboptimal performance will result.

### STEP 3 SELECT MEMORY

The standard memory features are:

- DIMMs
  - Clock speed: 1333 or 1600 MHz
  - Ranks per DIMM: 1 or 2
  - Operational voltage: dual voltage capable (1.5 V or 1.35 V)
  - Registered ECC DDR3 DIMMS (RDIMMS) and unregistered DIMMs (UDIMMs)
- Memory is organized with four memory channels per CPU, with up to three DIMMs per channel, as shown in [Figure 3](#).

Figure 3 C240 M3 LFF Memory Organization



## Select DIMMs and Memory Mirroring

Select the memory configuration and whether or not you want the memory mirroring option. The available memory DIMMs and mirroring option are listed in [Table 4](#).



**NOTE:** When memory mirroring is enabled, the memory subsystem simultaneously writes identical data to two channels. If a memory read 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% because only one of the two populated channels provides data.

Table 4 Available DDR3 DIMMs

Product ID (PID)	PID Description	Voltage	Ranks/DIMM
<b>DIMM Options</b>			
UCS-MR-1X162RY-A	16GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.35v	1.35 V	2
UCS-MR-1X162RX-A	16GB DDR3-1333-MHz RDIMM/PC3-10600/2R/x4/1.35v	1.35 V	2
UCS-MR-1X082RY-A	8GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.35v	1.35 V	2
UCS-MR-1X082RX-A	8GB DDR3-1333-MHz RDIMM/PC3-10600/2R/x4/1.35v	1.35 V	2
UCS-MR-1X041RY-A	4GB DDR3-1600-MHz RDIMM/PC3-12800/single rank/x4/1.35v	1.35 V	1
UCS-MR-1X041RX-A	4GB DDR3-1333-MHz RDIMM/PC3-10600/single rank/x4/1.35v	1.35 V	1
<b>Memory Mirroring Option</b>			
N01-MMIRROR	Memory mirroring option		

### Approved Configurations

(1) 1-CPU configuration without memory mirroring:

- Select from 1 to 12 DIMMs. Refer to [Memory Population Rules, page 47](#), for more detailed information.

(2) 1-CPU configuration with memory mirroring:

- Select 4, 6, 8, or 12 DIMMs. The DIMMs will be placed by the factory as shown in the following table.

Number of DIMMs	DIMM Placement in Channels
4	Identical DIMMs in A1, A2; B1, B2
6	Identical DIMMs in A1, A2, A3; B1, B2, B3
8	Identical DIMMs in A1, A2, A3; B1, B2, B3; C1, and D1
12	Identical DIMMs in all 12 slots

- Select the memory mirroring option (N01-MMIRROR) as shown in [Table 4 on page 13](#).

(3) 2-CPU configuration without memory mirroring:

- Select from 1 to 12 DIMMs per CPU. Refer to [Memory Population Rules, page 47](#), for more detailed information.

(4) 2-CPU configuration with memory mirroring:

- Select 4, 6, 8, or 12 DIMMs per CPU. The DIMMs will be placed by the factory as shown in the following table. Note that all DIMMs are identical.

Number of DIMMs per CPU	DIMM Placement in Channels (all DIMMs are identical)	
	CPU 1	CPU 2
4	A1, A2; B1, B2	E1, E2; F1, F2
6	A1, A2, A3; B1, B2, B3	E1, E2, E3; F1, F2, F3
8	A1, A2, A3; B1, B2, B3; C1, D1	E1, E2, E3; F1, F2, F3; G1, and H1
12	A1, A2, A3; B1, B2, B3; C1, C2, C3; D1, D2, D3	E1, E2, E3; F1, F2, F3; G1, G2, G3; H1, H2, H3

- Select the memory mirroring option (N01-MMIRROR) as shown in [Table 4 on page 13](#).



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

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## Caveats

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- For optimum performance:
  - Populate at least one DIMM per memory channel per CPU
  - Do not mix DIMMs with different voltages, frequencies, or types (registered and unregistered). If you mix 1.35 V and 1.5 V DIMMs, the system defaults to the 1.5 V mode. If you mix DIMM frequencies, the system defaults to the lower frequency.
- DIMMs for CPU 1 and CPU 2 (when populated) must always be configured identically.
- Memory mirroring reduces the amount of available memory by 50% (quantity of DIMMs must be even for mirroring).
- When single- and dual-rank DIMMs are populated for 3DPC, always populate the dual-rank DIMM in the blue DIMM slot first (blue slot) and the single-rank DIMM last in the black DIMM slots (only the 4GB DIMMs are single-rank; all other DIMMs that Cisco offers on this server are dual-rank).
- By default, all DIMMs run at 1.35 V, which yields 1333-MHz memory speeds. To run the memory DIMMs at 1600 MHz, you need to go into the BIOS or set the policy with UCSM (service profile) to run in Performance Mode. This forces the DIMMs to operate at 1.5 V and yields 1600-MHz speeds, provided:
  - The DIMMs are 1600-MHz devices
  - The CPUs chosen support 1600-MHz operation
  - There are less than 3 DIMMs per channel
- With 3 DIMMs populated per channel, memory always runs at 1.5 V regardless if the BIOS setting is low-power mode (1.35 V) or performance mode (1.5 V).



**NOTE:** Memory speed is limited to 1066 MHz for 3 DPC configurations.

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For more information regarding memory, see [CPUs and DIMMs, page 45](#).

## STEP 4 SELECT RAID CONFIGURATION

The RAID controller choices are:

- Mezzanine RAID controller cards
- Plug-in PCIe RAID controller cards

Cisco can provide factory-configured RAID systems depending on the RAID controller chosen and the number of drives ordered. Factory-configured RAID options are listed with each RAID card description.



**NOTE:** The number of RAID groups (logical drives/virtual drives) supported per controller is as follows:

- Cisco UCSC RAID SAS 2008M-8i Mezzanine Card = 16 drives
- LSI MegaRAID SAS 9266-8i/9266CV-8i RAID controller cards = 64 drives

### Select RAID Options

Select as follows:

- One mezzanine RAID controller (see [Table 5](#)), or
- One PCIe RAID controller card (see [Table 6 on page 17](#))

Table 5 Available Mezzanine Card RAID Options

Product ID (PID)	PID Description
<b>RAID Controllers</b>	
UCSC-RAID-11-C240	<p>Cisco UCSC RAID SAS 2008M-8i Mezzanine Card (RAID 0, 1, 10, 5, and 50 supported)</p> <ul style="list-style-type: none"> <li>■ Supports up to 12 internal SAS or SATA drives (with the 12-drive backplane plus SAS expander). SAS and SATA drives can be mixed.</li> <li>■ Factory-configured RAID options available: RAID 0, 1, 10, and 5 (see the RAID PIDs section in this table)</li> <li>■ No data cache backup</li> </ul>
UCSC-RAID-MZ-240	<p>Cisco UCSC RAID SAS 2008M-8i Mezzanine Card (RAID 0, 1, 10 supported)</p> <ul style="list-style-type: none"> <li>■ Supports up to 12 internal SAS or SATA drives (with the 12-drive backplane plus SAS expander). SAS and SATA drives can be mixed.</li> <li>■ Factory-configured RAID options available: RAID 0, 1, and 10 (see the RAID PIDs section in this table)</li> <li>■ No data cache backup</li> </ul>

Table 6 Available Plug-In PCIe Card RAID Options

Product ID (PID)	PID Description
<b>RAID Controllers</b>	
UCS-RAID-9266NB	<p>LSI MegaRAID SAS 9266-8i RAID controller card with no data cache backup (RAID 0, 1, 10, 5, 6, 50, and 60 supported)</p> <ul style="list-style-type: none"> <li>■ Installed by default in the half-height PCIe slot (slot 2)</li> <li>■ Supports up to 16 internal SAS and/or SATA drives (limited to 12 drives for the C240 M3 LFF chassis). SAS and SATA drives can be mixed.</li> <li>■ Includes 1 GB of write cache</li> <li>■ Factory-configured RAID options available: RAID 0, 1, 10, 5, and 6 (see the RAID PIDs section in this table)</li> </ul>
UCS-RAID-9266CV	<p>LSI MegaRAID 9266CV-8i RAID controller card with data cache backup (RAID 0, 1, 10, 5, 6, 50, 60)</p> <ul style="list-style-type: none"> <li>■ Supports up to 16 internal SAS or SATA drives (limited to 12 drives for the C240 M3 LFF chassis). SAS and SATA drives can be mixed.</li> <li>■ Includes a 1 GB Transportable Memory Module (TMM) and SuperCap power module for data cache backup</li> <li>■ Factory-configured RAID options available: RAID 0, 1, 10, 5, and 6 (see the RAID PIDs section in this table)</li> </ul>
<b>Battery Backup Option</b>	
UCS-RAID-CV-SC=	LSI CacheVault Power Module for 9266CV-8i
<b>RAID Configuration Options</b>	
R2XX-RAID0	Factory preconfigured RAID striping option Enable RAID 0 Setting. Requires a minimum of one hard drive.
R2XX-RAID1	Factory preconfigured RAID mirroring option Enable RAID 1 Setting. Requires exactly two drives with the same size, speed, capacity.
R2XX-RAID5	Factory preconfigured RAID option Enable RAID 5 Setting. Requires a minimum of three drives of the same size, speed, capacity.
R2XX-RAID6	Factory preconfigured RAID option Enable RAID 6 Setting. Requires a minimum of four drives of the same size, speed, capacity.
R2XX-RAID10	Factory preconfigured RAID option Enable RAID 10 Setting. Requires an even number of drives (minimum of four drives) of the same size, speed, capacity.



**NOTE:** Although RAID levels 50 and 60 are not orderable from the factory, they are supported for selected controllers as shown in [Table 6](#)



NOTE: No RAID option can be chosen if you have no drives

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## Approved Configurations

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### (1) 1-CPU Configurations

Mezzanine cards are not supported for 1-CPU configurations, Therefore, only the following RAID controllers are supported for single-CPU configurations:

- LSI MegaRAID SAS 9266-8i
- LSI MegaRAID 9266CV-8i

### (2) 2-CPU Configurations

Select a mezzanine card RAID option from [Table 5](#) or one of the RAID controllers from [Table 6](#). You may also select an appropriate optional RAID configuration listed in [Table 6](#).

## Caveats

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- The mezzanine controller is not available for 1-CPU configurations.
- If you choose a mezzanine card RAID controller, all five of the PCIe card slots are still available for adding optional PCIe cards.
- The optional PCIe RAID controllers are all half-height PCIe cards. If you choose one of these cards, four PCIe card slots will be available for adding an optional PCIe card.
- Note that only a single Cisco UCS P81E Virtual Interface Card (VIC) card (a full-height PCIe card) is supported and it must be installed in the full-length, full-height PCIe slot (slot 1) on riser 1. So take this into account when populating RAID controller cards.
- You can choose only one RAID controller (plug-in PCIe RAID controller or mezzanine card RAID controller).
- You can choose an optional RAID configuration (RAID 0, 1, 5, 6, or 10), which is preconfigured at the factory. The RAID level you choose must be an available RAID choice for the controller selected. RAID levels 50 and 60 are supported, although they are not available as configuration options.

## STEP 5 SELECT HARD DISK DRIVES (HDDs)

The standard disk drive features are:

- 3.5-inch large form factor
- Hot-pluggable
- Sled-mounted

### Select 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
<b>HDDs</b>			
UCS-HDD3Ti2F214	3 TB SAS 7.2K RPM 3.5 inch HDD <sup>1</sup>	SAS	3 TB
UCS-HDD2Ti2F213	2 TB SAS 7.2K RPM 3.5 inch HDD	SAS	2 TB
UCS-HDD1Ti2F212	1 TB SAS 7.2K RPM 3.5 inch HDD	SAS	1 TB
UCS-HDD600Gi2F210	600 GB SAS 15K RPM 3.5 inch HDD	SAS	600 GB
UCS-HDD450Gi2F209	450 GB SAS 15K RPM 3.5 inch HDD	SAS	450 GB
UCS-HDD500Gi1F211	500 GB SATA 7.2K RPM 3.5 inch HDD	SAS	500 GB
UCS-HDD300Gi2F208	300 GB SAS 15K RPM 3.5 inch HDD	SAS	300 GB

**Notes . . .**

1. The 3TB hard drive is currently not supported with the embedded RAID controller options (UCSC-RAID-ROM1 or UCSC-RAID-ROM15).



**NOTE:** No RAID option can be chosen if you have no drives

### Approved Configurations

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#### (1) Mezzanine Cards, and all Plug-In RAID Controllers

- Select up to 12 SAS/SATA drives listed in [Table 7](#).

### Caveats

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- You can mix SATA and SAS drives.

## STEP 6 SELECT PCIe OPTION CARD(s)

The standard PCIe card offerings are:

- Converged Network Adapters (CNAs)
- Network Interface Cards (NICs)
- Host Bus Adapters (HBAs)

### Select 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 (CNAs)</b>		
N2XX-ACPCI01	Cisco UCS P81E Virtual Interface Card (VIC)/ 2-port 10Gbps	Full
UCSC-PCIE-BSFP	Broadcom 57712 Dual Port 10Gb SFP+ w/TOE iSCSI	Half
<b>Network Interface Cards (NICs)</b>		
N2XX-ABPCI01-M3	Broadcom 5709 Dual Port 1Gb w/TOE iSCSI for M3 Servers	Half
N2XX-ABPCI03-M3	Broadcom 5709 Quad Port 1Gb w/TOE iSCSI for M3 Servers	Half
N2XX-AIPCI01	Intel X520 Dual Port 10Gb SFP+ Adapter	Half
UCSC-PCIE-IRJ45	Intel i350 Quad Port 1Gb Adapter	Half
UCSC-PCIE-BTG	Broadcom 57712 Dual Port 10GBASE-T w/TOE iSCSI	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) No RAID controller plug-in card

- If you did not choose a plug-in RAID controller (for example, you are using the mezzanine RAID controller), you can select up to five PCIe option cards listed in [Table 8](#).

### (2) One RAID controller plug-in card

- If you selected a plug-in PCIe RAID controller, you can select only one 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 the full-height slot. RAID controllers are always installed in the half-height slot.

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## Caveats

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- For 1-CPU systems:
  - Only the three PCIe slots on PCIe riser 1 are supported. The three slots are PCIe slots 1, 2, and 3 (see [Figure 2 on page 4](#)). These are the three slots on the right when looking at the rear of the server.
  - Neither the PCIe riser 2 (with the two PCIe slots numbered PCIe 4 and PCIe 5, at the left when viewing the server from the rear) nor the mezzanine card are supported on 1-CPU systems.
  - Only a single VIC card (a full-height PCIe card) may be installed on a 1-CPU system, and it must be installed in slot 2. See [Table 1 on page 5](#) for the slot descriptions.
- For 2-CPU systems:
  - Five PCIe slots are supported, three on PCIe riser 1 (PCIe slots 1, 2, and 3) and two on PCIe riser 2 (PCIe slots 4 and 5).
  - All of the slots are full-height except one.
  - All of the server PCIe adapter cards are half-height cards, with the exception of the Virtual Interface Card (VIC) (N2XX-ACPCI01), which is a full-height card. Therefore, two VIC cards may be installed in 2-CPU systems, using slots 2 or 5. Note, however, that if the server is using UCSM, only slot 2 is supported for the VIC card. See [Table 1 on page 5](#) for the slot descriptions.
- All PCIe cards will fit in either slot, except the VIC card, which must be installed in a full-height slot (slots 2 or 5, except only slot 2 when the server uses UCSM).
- 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

*Table 9* lists the copper twinax cables available for the PCIe cards. 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-AEPCI01 (Emulex OCe10102-F)
- N2XX-AIPCI01 (Intel Dual Port Ethernet X520)

## Choose Optional SFP Modules

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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

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### (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 4 on page 25](#) for typical SFP+ and twinax connections to the network cards.

## Caveats

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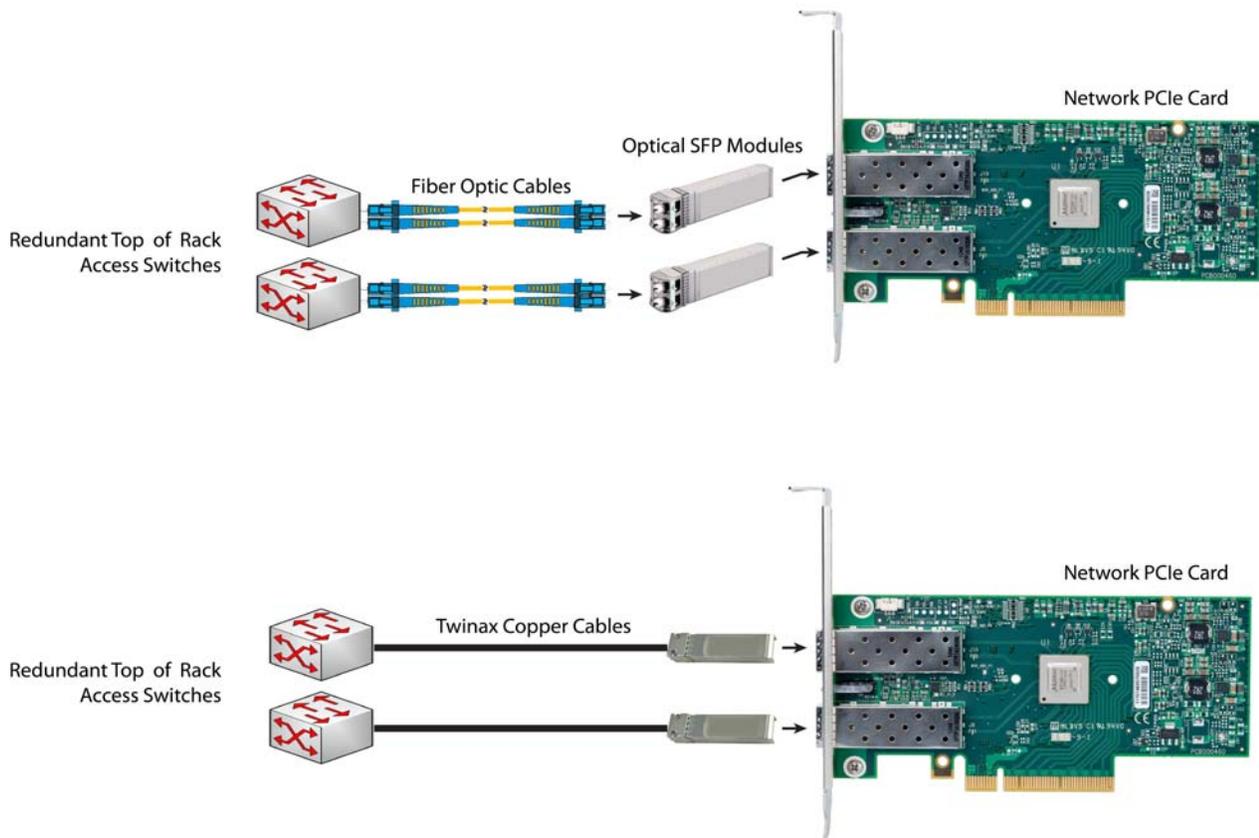
The SFP-10G-SR optical module listed in [Table 10](#) should be ordered only for the following PCIe cards, as they do not come by default with any optical modules:

- 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, 8Gb dual-port Fibre Channel HBA)

Figure 4 Network Card Connections



## STEP 8 ORDER POWER SUPPLIES

The C240 M3 server requires two power supplies. A lightly loaded server may require two 650 W power supplies. A fully loaded server might need to be powered with two 1200 W power supplies (see [Table 11](#)). Use the power calculator at the following link to determine the needed power based on the options chosen (CPUs, drives, memory, and so on):

<https://express.salire.com/Go/Cisco/Cisco-UCS-Power-Calculator.aspx>

Table 11 Power Supply

Product ID (PID)	PID Description
UCSC-PSU-650W	650 W power supply (CSCI platinum).
UCSC-PSU2-1200	1200 W power supply (CSCI platinum).



**NOTE:** In a two power supply server, both power supplies must be identical.

## STEP 9 SELECT AC POWER CORD(S)

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

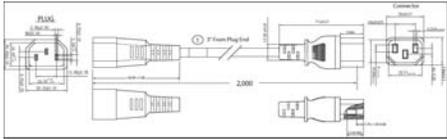
Table 12 Available Power Cords

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: EL312 Molded Twistlock (NEMA L6-20) Cordset rating 13A, 250V (6.6 feet) (79±2mm) Connector: EL 701 (IEC60320/C13)</p>
CAB-C13-C14-JMPR	Power Cord, recessed receptacle AC power cord 27	<p>Plug: SS10A Cordset rating 10A, 250V (686mm) Connector: HS10S</p>
SFS-250V-10A-AR	Power Cord, SFS, 250V, 10A, Argentina	<p>Plug: EL 219 (IRAM 2073) Cordset rating: 10 A, 250/500 V MAX Length: 8.2 ft 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 Cordset rating: 10 A, 250 V/500 V MAX Length: 2500mm Connector: EL 701C (EN 60320/C15)</p>

Table 12 Available Power Cords

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: 1/3G (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>Cordset rating: 10 A, 250 V/500 V MAX Length: 2500mm</p> <p>Plug: EL 210 (BS 1363A) 13 AMP fuse</p> <p>Connector: EL 701C (EN 60320/C15)</p>

Table 12 Available Power Cords

Product ID (PID)	PID Description	Images
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	Image not available
CAB-JPN-3PIN	Power Cord 3PIN, Japan	Image not available
CAB-C13-C14-2M	CABASY,WIRE,JUMPER CORD,PWR,2 Meter,C13/C14,10A/250V	

## STEP 10 ORDER OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM

The reversible cable management arm mounts on either the right or left slide rails at the rear of the server and is used for cable management. Use [Table 13](#) to order a cable management arm.

Table 13 Cable Management Arm

Product ID (PID)	PID Description
UCSC-CMA2	Cable Management Arm for C240 rack servers

For more information about the cable management arm, see the *Cisco UCS C240 M3 Installation and Service Guide* at this URL:

[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/c/hw/C240/install/C240.pdf](http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C240/install/C240.pdf)

## STEP 11 ORDER A TRUSTED PLATFORM MODULE

Trusted Platform Module (TPM) is a computer chip (microcontroller) that can securely store artifacts used to authenticate the platform (server). These artifacts can include passwords, certificates, or encryption keys. A TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy. Authentication (ensuring that the platform can prove that it is what it claims to be) and attestation (a process helping to prove that a platform is trustworthy and has not been breached) are necessary steps to ensure safer computing in all environments.

The TPM ordering information is listed in [Table 14](#).

Table 14 Trusted Platform Module

Product ID (PID)	PID Description
UCSX-TPM1-001	Trusted Platform Module

## STEP 12 ORDER CISCO FLEXIBLE FLASH SD CARD MODULE (OPTIONAL)

You can order one optional 16 GB Cisco Flexible Flash secure digital (SD) card. This SD card contains preloaded software for simplified server operation. The ordering information is listed in [Table 15](#).

Table 15 Secure Digital (SD) Card

Product ID (PID)	PID Description
UCSC-SD-16G-C240	16GB SD Card for C240 servers

See [Figure 5 on page 44](#) for the location of the SD cards. There are two locations, SD1 and SD2; however at present only SD1 is supported.

## STEP 13 ORDER USB 2.0 DRIVE (OPTIONAL)

You can order one optional USB 2.0 drive. The USB drive ordering information is listed in [Table 16](#).

Table 16 USB 2.0 Drive

Product ID (PID)	PID Description
UCS-USBFLSH-S-4GB	4GB Flash USB Drive (shorter length) for all servers except C260

See [Figure 5 on page 44](#) for the location of the USB connector.

## STEP 14 SELECT OPERATING SYSTEM

Several operating systems are available from which to choose. Select one of the operating systems shown in [Table 17](#).

Table 17 Operating Systems

PID Description	Product ID (PID)
<b>SUSE Linux Enterprise Server</b>	
SLES-1A	SLES/1yr subscription/svcs required/0 media
SLES-3A	SLES/3yr subscription/svcs required/0 media
<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
<b>RHEL Add-Ons</b>	
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 Reqd
RHEL-SFS-2S-3A	RHEL Option/Scalable File System/2 Socket/3 Yr Svcs Required
<b>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-08R2-DCHV4S	Windows Svr 2008 R2-4 CPU-Data Center
<b>VMWare Server</b>	
VMW-VS5-STD-1A	VMware vSphere 5 Standard for 1 Processor, 1 Year, Support Required
VMW-VS5-STD-2A	VMware vSphere 5 Standard for 1 Processor, 2 Year, Support Required

Table 17 Operating Systems *(continued)*

PID Description	Product ID (PID)
VMW-VS5-STD-3A	VMware vSphere 5 Standard for 1 Processor, 3 Year, Support Required
VMW-VS5-STD-4A	VMware vSphere 5 Standard for 1 Processor, 4 Year, Support Required
VMW-VS5-STD-5A	VMware vSphere 5 Standard for 1 Processor, 5 Year, Support Required
VMW-VS5-ENT-1A	VMware vSphere 5 Enterprise for 1 Processor, 1 Year Support Required
VMW-VS5-ENT-2A	VMware vSphere 5 Enterprise for 1 CPU, 2 Yr Support Required
VMW-VS5-ENT-3A	VMware vSphere 5 Enterprise for 1 CPU, 3 Yr Support Required
VMW-VS5-ENT-4A	VMware vSphere 5 Enterprise for 1 Processor, 4 Year Support
VMW-VS5-ENT-5A	VMware vSphere 5 Enterprise for 1 CPU, 5 Yr Support Required
VMW-VS5-ENTP-1A	VMware vSphere 5 Enterprise Plus for 1 Processor, 1 Year Support Required
VMW-VS5-ENTP-2A	VMware vSphere 5 Enterprise Plus for 1 CPU, 2 Yr Support Required
VMW-VS5-ENTP-3A	VMware vSphere 5 Enterprise Plus for 1 Processor, 3 Year Support Required
VMW-VS5-ENTP-4A	VMware vSphere 5 Enterprise Plus for 1 Processor, 4 Year Support Required
VMW-VS5-ENTP-5A	VMware vSphere 5 Enterprise Plus for 1 Processor, 5 Year Support Required

## STEP 15 SELECT OPERATING SYSTEM MEDIA KIT

Select the optional operating system media listed in [Table 18](#).

Table 18 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-08R2-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 16 SELECT OPTIONAL VALUE-ADDED SOFTWARE

You can select from a variety of value-added software listed in [Table 19](#).

Table 19 Value Added Software

Product ID (PID)	PID Description
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	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 Advanced Edition, 10 Cores, Support Required
BMC-002	BMC BladeLogic CM for Physical Cisco Servers
BMC-012	BMC BPPM Per Server
VMW-VC5-STD-1A	VMware vCenter 5 Standard for 1 Processor, 1 Year, Support Required
VMW-VC5-STD-2A	VMware vCenter 5 Standard for 1 Processor, 2 Year, Support Required
VMW-VC5-STD-3A	VMware vCenter 5 Standard for 1 Processor, 3 Year, Support Required
VMW-VC5-STD-4A	VMware vCenter 5 Standard for 1 Processor, 4 Year, Support Required
VMW-VC5-STD-5A	VMware vCenter 5 Standard for 1 Processor, 5 Year, Support Required
N1K-VLEM-UCS-1	Nexus 1000V License PAK for 1 Virtual Ethernet module
N1K-CSK9-UCS-404	Nexus 1000V VSM Virtual Appliance Software

## STEP 17 SELECT 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 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 Support Service

For support of the entire Cisco 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 20](#).

Table 20 UCS Computing Support Service

Product ID (PID)	On Site?	Description
CON-UCS1-C240-M3-W	No	UC Support 8X5XNBD
CON-UCS2-C240-M3-W	No	UC Support 8X5X4
CON-UCS3-C240-M3-W	No	UC Support 24x7x4
CON-UCS4-C240-M3-W	No	UC Support 24x7x2
CON-UCS5-C240-M3-W	Yes	UC Support 8X5XNBD
CON-UCS6-C240-M3-W	Yes	UC Support 8X5X4
CON-UCS7-C240-M3-W	Yes	UC Support 24x7x4
CON-UCS8-C240-M3-W	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. See [Table 21](#).

**Table 21 UCS Computing Warranty Plus Service**

Product ID (PID)	On Site?	Description
CON-UCW2-C240-M3-W	No	UC Warranty Plus 8x5x4
CON-UCW3-C240-M3-W	No	UC Warranty Plus 24x7x4
CON-UCW4-C240-M3-W	No	UC Warranty Plus 24x7x2
CON-UCW5-C240-M3-W	Yes	UC Warranty Plus 8X5XNBD
CON-UCW6-C240-M3-W	Yes	UC Warranty Plus 8X5X4
CON-UCW7-C240-M3-W	Yes	UC Warranty Plus 24x7x4
CON-UCW8-C240-M3-W	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 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 22](#).



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

Table 22 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-C240-M3-WLFF
		UCMD8	24x7x2 Onsite	CON-UCMD8-C240-M3-WLFF
UCS Support Service With Drive Retention	UC SUPP DR	UCSD1	8x5xNBD	CON-UCSD1-C240-M3-WLFF
		UCSD2	8x5x4	CON-UCSD2-C240-M3-WLFF
		UCSD3	24x7x4	CON-UCSD3-C240-M3-WLFF
		UCSD4	24x7x2	CON-UCSD4-C240-M3-WLFF
		UCSD5	8x5xNBD Onsite	CON-UCSD5-C240-M3-WLFF
		UCSD6	8x5x4 Onsite	CON-UCSD6-C240-M3-WLFF
		UCSD7	24x7x4 Onsite	CON-UCSD7-C240-M3-WLFF
		UCSD8	24x7x2 Onsite	CON-UCSD8-C240-M3-WLFF
UCS Warranty Plus With Drive Retention	UC PLUS DR	UCWD2	8x5x4	CON-UCWD2-C240-M3-WLFF
		UCWD3	24x7x4	CON-UCWD3-C240-M3-WLFF
		UCWD4	24x7x2	CON-UCWD4-C240-M3-WLFF
		UCWD5	8x5xNBD Onsite	CON-UCWD5-C240-M3-WLFF
		UCWD6	8x5x4 Onsite	CON-UCWD6-C240-M3-WLFF
		UCWD7	24x7x4 Onsite	CON-UCWD7-C240-M3-WLFF
		UCWD8	24x7x2 Onsite	CON-UCWD8-C240-M3-WLFF

**Mission Critical Support 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 Cisco's Technical Assistance Center (TAC).

Mission Critical Support Service is a layered service available for all Cisco data center products already support by a UCS Support Service or SMARTnet service contract. For further information about Cisco Mission Critical Support Service, please consult the Service Description that can be found at the following link:

[http://www.cisco.com/web/about/doing\\_business/legal/service\\_descriptions/index.html](http://www.cisco.com/web/about/doing_business/legal/service_descriptions/index.html)

or contact your Cisco account Manager.

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(S)

The optional R42610 rack is available from Cisco for the C-Series servers, including the C240 M3 LFF server. This rack is a standard 19-inch rack and can be ordered with a variety of options, as listed in [Table 23](#). Racks are shipped separately from the C240 M3 LFF server.

Table 23 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, page 51](#).

## OPTIONAL STEP - ORDER PDU

An optional power distribution unit (PDU) is available from Cisco for the C-Series rack servers, including the C240 M3 server. This PDU is available in a zero rack unit (RU) style (see [Table 23](#)).

Table 24 PDU Options

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

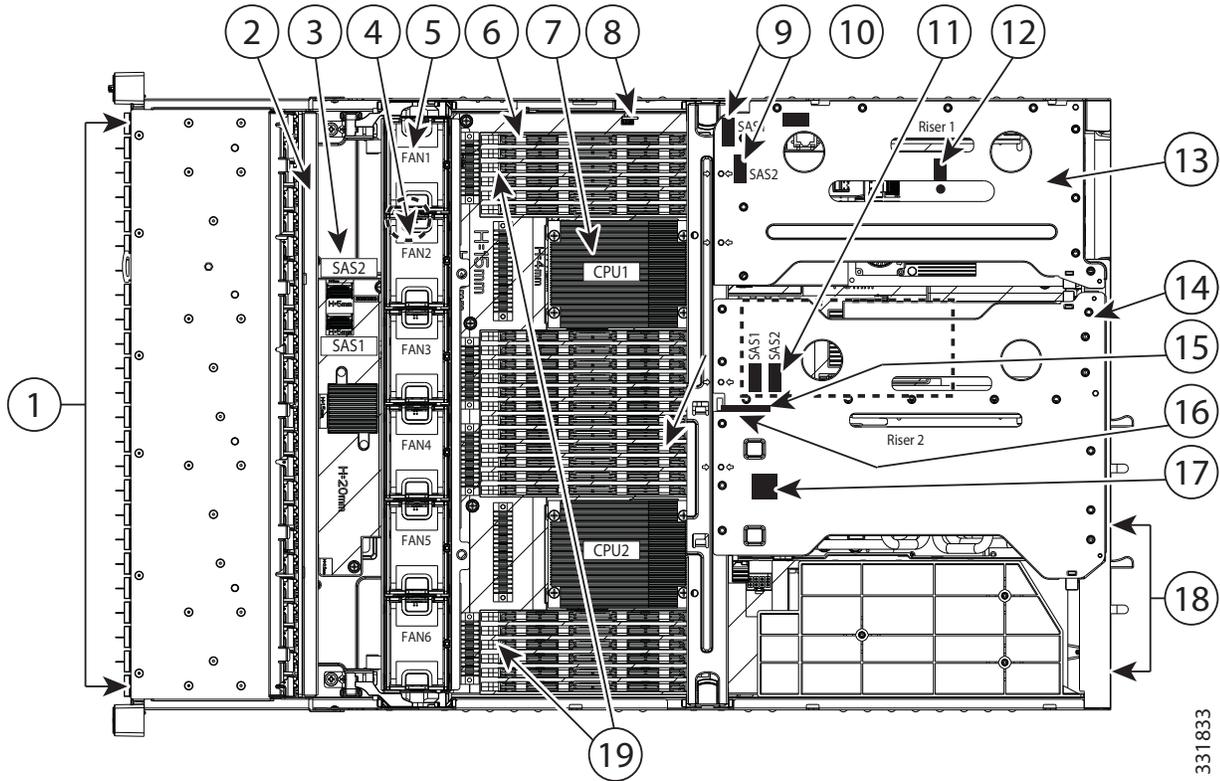
For more information about the PDU, see [PDUs, page 53](#).

# SUPPLEMENTAL MATERIAL

## CHASSIS

An internal view of the C240 M3 chassis with the top cover removed is shown in *Figure 5*.

Figure 5 C240 M3 LFF With Top Cover Off



331833

1	Drives (hot-swappable, accessed through front panel)	11	Optional mezzanine RAID controller, mini-SAS connectors SAS1 and SAS2
2	Drive backplane	12	Trusted platform module socket on motherboard
3	Drive backplane expander	13	PCIe riser 1 (three standard-profile slots)
4	RTC battery (on motherboard under fan tray)	14	PCIe riser 1 (one standard-profile slot and one low-profile slot)
5	Fan modules (six)	15	Cisco Flexible Flash card slot SD2
6	DIMM slots on motherboard (24)	16	Cisco Flexible Flash card slot SD1
7	CPUs and heatsinks (two)	17	Internal USB 2.0 port on motherboard

8	SCU upgrade ROM header	18	Power supplies (two, hot-swappable access through rear panel)
9	Integrated RAID on motherboard, and mini-SAS connectors	19	SuperCap RAID backup unit mounting locations (two, on air baffle not shown in this view)
10	Software RAID key header	-	

## CPU and DIMMs

### Physical Layout

Each CPU has four DIMM channels:

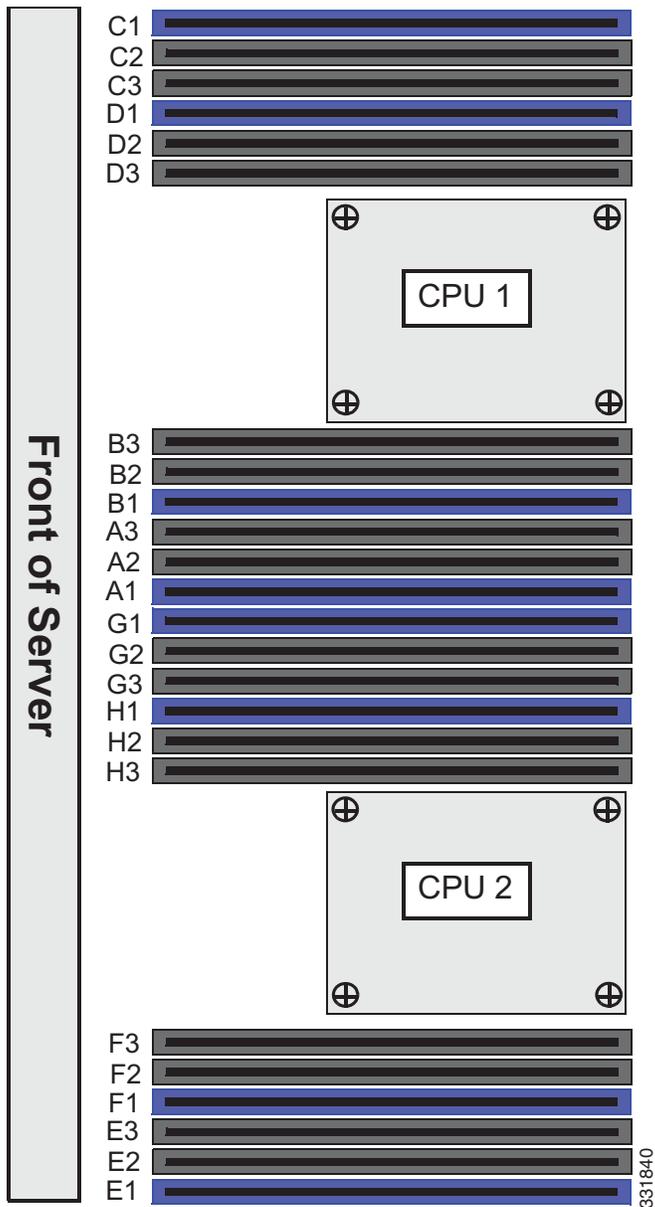
- CPU1 has channels A, B, C, and D
- CPU2 has channels E, F, G, and H

Each DIMM channel has three banks: bank 1, 2, and 3. The blue-colored DIMM banks are for bank 1 and the black-colored are for banks 2 and 3.

As an example, DIMM slots A1, B1, C1, and D1 belong to bank 1, while A2, B2, C2, and D2 belong to bank 2.

*Figure 6* shows how banks and channels are physically laid out on the motherboard. The DIMM slots on the top (channels A, B, C, and D) are associated with CPU 1, while the DIMM slots on the bottom (channels E, F, G, and H) are associated with CPU 2. The bank 1 (blue) DIMM slots are always located farther away from a CPU than the corresponding bank 2 or 3 (black) slots. Bank 1 slots (blue) are populated before bank 2 and 3 slots (black).

Figure 6 Physical Layout of CPU DIMM Channels and Banks



## Memory Population Rules

When considering the memory configuration of your server, you should take into account the following:

- For optimum performance, populate at least one DIMM per memory channel per CPU.
- Each channel has three DIMM slots (for example, channel A = slots A1, A2, and A3).
  - A channel can operate with one or two DIMMs installed.
  - If a channel has only one DIMM, populate slot 1 first (the blue slot).
- When both CPUs are installed, populate the DIMM slots of each CPU identically.
  - Fill bank 1 blue slots in the channels first: A1, E1, B1, F1, C1, G1, D1, H1
  - Fill bank 2 black slots in the channels second: A2, E2, B2, F2, C2, G2, D2, H2
  - Fill bank 3 black slots in the channels second: A3, E3, B3, F3, C3, G3, D3, H3
- Any DIMM installed in a DIMM socket for which the CPU is absent is not recognized.
- Observe the DIMM mixing rules shown in [Table 25](#)

Table 25 DIMM Mixing Rules for C240 M3 Server

DIMM Parameter Mixed	Mix Across a Single Bank?	Mix Across Multiple Banks?
DIMM Size (4, 8, 16 GB)	No—Must be same size in the same bank	Yes—Different banks can use different DIMM sizes (as long as all DIMMs in a single bank use the same DIMM size).
DIMM Speed (1066, 1333, or 1600 MHz) <sup>1</sup>	No—Must be same speed in the same bank.	No—All DIMMs in the server must be same speed.
DIMM Type (R-DIMM)	No—All DIMMs in a bank must be same type.	No—All DIMMs in the server must be same type.

Notes . . .

1. Only 1333 and 1600 MHz DIMMs are currently available for the C240 M3 server.

## Recommended Memory Population Order

This section explains the recommended DIMM population order rules for the C240 M3 server.

- All DIMMs must be DDR3 DIMMs.
- Mixing of Registered and Unbuffered DIMMs is not allowed per platform.
- Mixing of ECC and non-ECC DIMMs is not allowed per platform.
- Mixing of DIMMs with different timing parameters within one channel is allowed.
- A DDR3-1600 DIMM is allowed only when two DIMMs Per Channel (2DPC) are populated
- When single and dual rank DIMMs are populated for 3DPC, always populate the dual-rank DIMM in the blue DIMM slot first (blue slot) and the single-rank DIMM last in the black DIMM slots.

Follow [Table 26](#) when populating DIMMs in the server.

Table 26 Recommended DIMM Population Order Rules

DIMM Socket DIMM Slot Numbers												
BLUE			A1	E1	A1	E1	A1	E1	A1	E1	A1	E1
BLACK							A2	E2	A2	E2	A2	E2
BLACK									A3	E3	A3	E3
BLUE	B1	F1	B1	F1	B1	F1	B1	F1	B1	F1	B1	F1
BLACK					B2	F2	B2	F2	B2	F2	B2	F2
BLACK											B3	F3
Number of DIMMs Per CPU	2 DIMMs on CPU1	2 DIMMs on CPU2	4 DIMMs on CPU1	4 DIMMs on CPU2	6 DIMMs on CPU2	6 DIMMs on CPU2	8 DIMMs on CPU1	8 DIMMs on CPU2	10 DIMMs on CPU2	10 DIMMs on CPU2	12 DIMMs on CPU1	12 DIMMs on CPU2
BLACK											D3	H3
BLACK					D2	H2	D2	H2	D2	H2	D2	H2
BLUE	D1	H1	D1	H1	D1	H1	D1	H1	D1	H1	D1	H1
BLACK									C3	G3	C3	G3
BLACK							C2	G2	C2	G2	C2	G2
BLUE			C1	G1	C1	G1	C1	G1	C1	G1	C1	G1



**NOTE:** Columns in yellow have DIMM configurations that do not support memory mirroring. They do, however, offer superior performance. Columns highlighted in green do support memory mirroring.

## Supported DIMM Populations

The supported DIMM populations are listed in [Table 27](#).

Table 27 Supported DIMM Configurations <sup>1</sup>

CPU 1 DIMMs	Total DIMMs for CPU 1	CPU 1 Capacity	CPU 2 DIMMs	Total DIMMs for CPU 2	CPU 2 Capacity	Total Capacity for 2 CPUs
2 x 4 GB	2	8 GB	2 x 4 GB	2	8 GB	16 GB
4 x 4 GB	4	16 GB	4 x 4 GB	4	16 GB	32 GB
2 x 8 GB	2	16 GB	2 x 8 GB	2	16 GB	32 GB
6 x 4 GB	6	24 GB	6 x 4 GB	6	24 GB	48 GB
4 x 8 GB	4	32 GB	4 x 8 GB	4	32 GB	64 GB
8 x 4 GB	8	32 GB	8 x 4 GB	8	32 GB	64 GB
9 x 4 GB	9	36 GB	9 x 4 GB	9	36 GB	72 GB
5 x 8 GB	5	40 GB	5 x 8 GB	5	40 GB	80 GB
10 x 4 GB	10	40 GB	10 x 4 GB	10	40 GB	80 GB
11 x 4 GB	11	44 GB	11 x 4 GB	11	44 GB	88 GB
3 x 16 GB	3	48 GB	3 x 16 GB	3	48 GB	96 GB
6 x 8 GB	6	48 GB	6 x 8 GB	6	48 GB	96 GB
4x8GB + 4x4GB	8	48 GB	4x8GB + 4x4GB	8	48 GB	96 GB
12 x 4 GB	12	48 GB	12 x 4 GB	12	48 GB	96 GB
7 x 8 GB	7	56 GB	7 x 8 GB	7	56 GB	112 GB
4 x 16 GB	4	64 GB	4 x 16 GB	4	64 GB	128 GB
8 x 8 GB	8	64 GB	8 x 8 GB	8	64 GB	128 GB
9 x 8 GB	9	72 GB	9 x 8 GB	9	72 GB	144 GB
5 x 16 GB	5	80 GB	5 x 16 GB	5	80 GB	160 GB
4x16GB + 4x4GB	8	80 GB	4x16GB + 4x4GB	8	80 GB	160 GB
10 x 8 GB	10	80 GB	10 x 8 GB	10	80 GB	160 GB
11 x 8 GB	11	88 GB	11 x 8 GB	11	88 GB	176 GB
6 x 16 GB	6	96 GB	6 x 16 GB	6	96 GB	192 GB
4x8GB + 4x16GB	8	96 GB	4x8GB + 4x16GB	8	96 GB	192 GB
12 x 8 GB	12	96 GB	12 x 8 GB	12	96 GB	192 GB

Table 27 Supported DIMM Configurations (continued) <sup>1</sup>

CPU 1 DIMMs	Total DIMMs for CPU 1	CPU 1 Capacity	CPU 2 DIMMs	Total DIMMs for CPU 2	CPU 2 Capacity	Total Capacity for 2 CPUs
7 x 16 GB	7	112 GB	7 x 16 GB	7	112 GB	224 GB
8 x 16 GB	8	128 GB	8 x 16 GB	8	128 GB	256 GB
9 x 16 GB	9	144 GB	9 x 16 GB	9	144 GB	288 GB
10 x 16 GB	10	160 GB	10 x 16 GB	10	160 GB	320 GB
11 x 16 GB	11	176 GB	11 x 16 GB	11	176 GB	352 GB
12 x 16 GB	12	192 GB	12 x 16 GB	12	192 GB	384 GB

Notes . . .

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

### Low-Voltage DIMM Considerations

The C240 M3 server can be ordered with dual-voltage (1.35 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 this 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.

### RAID Summary

The C240 M3 LFF server has a 12-drive backplane with a SAS expander.

- No embedded RAID support
- Mezzanine card (UCSC-RAID-11-C220) supports up to 12 drives
- Mezzanine card (UCSC-RAID-MZ-220) supports up to 12 drives
- 9266-8i and 9266CV-8i PCIe cards support up to 12 drives



**NOTE:** If you do not select a mezzanine card or a plug-in PCIe RAID card you will have no RAID at all since the embedded SATA-only RAID controller that supports up to four SATA-only drives (RAID 0, 1, 10) is not compatible with a SAS expander.

## RACKS

The Cisco R42610 rack (see [Figure 7](#)) 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 Nexus switches

The rack is compatible with hardware designed for EIA-standard 19-inch racks. Rack specifications are listed in [Table 28](#).

Table 28 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 7 Cisco R42610 Rack



Front view - door closed



Front view - door open



Front view - door removed

## PDU

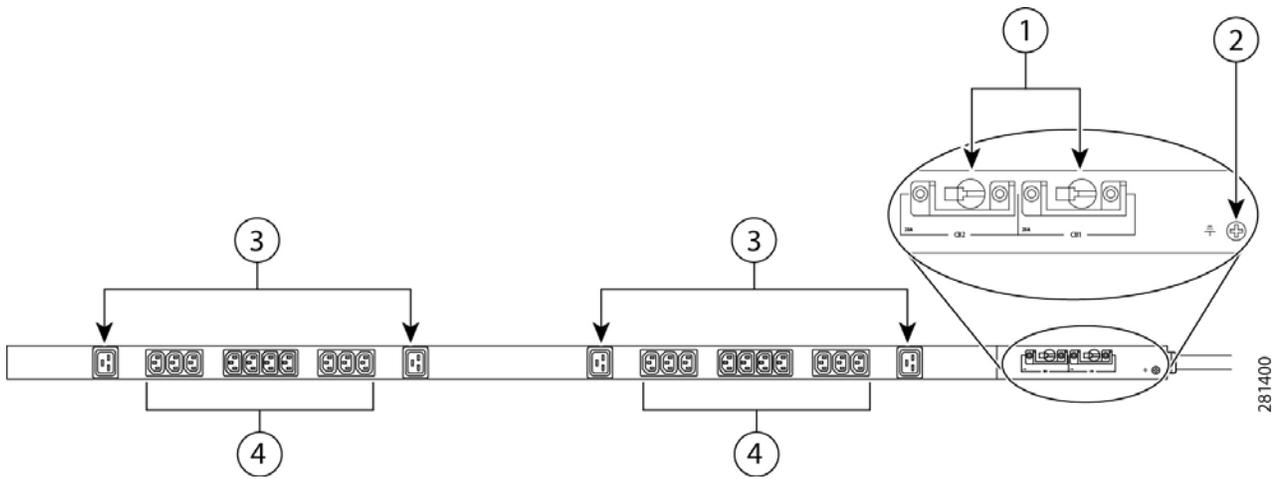
Cisco RP Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

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. 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 severs accept the zero-rack-unit (ORU) PDU. See [Figure 8](#).

Figure 8 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 (A) circuit breakers for groups of receptacles. The effects of a tripped circuit are limited to a receptacle group. Simply press a button to reset that circuit.

## KVM CABLE

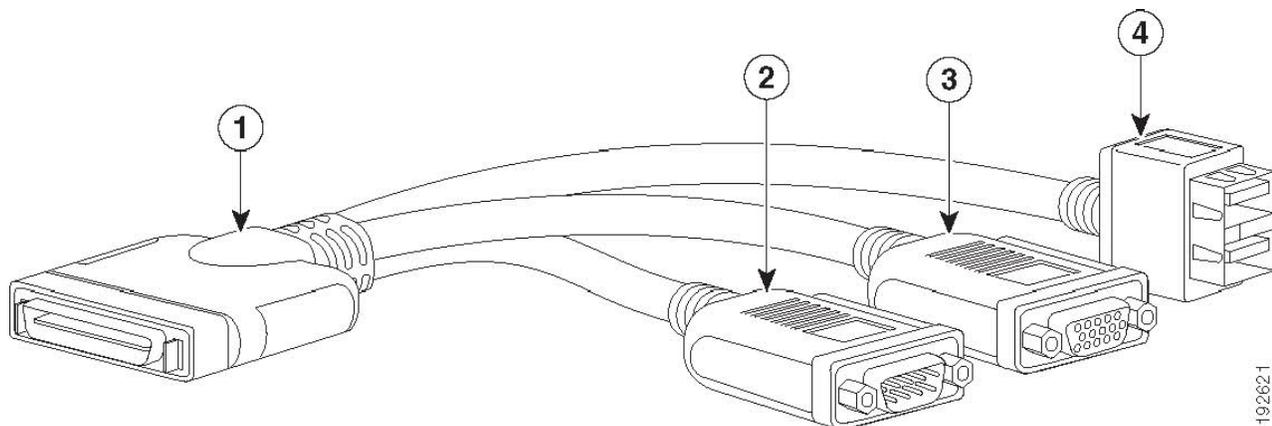
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB 2.0 ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in [Table 29](#).

Table 29 KVM Cable

Product ID (PID)	PID Description
N20-BKVM	KVM cable for B-Series Blade Server console port

Figure 9 KVM Cable

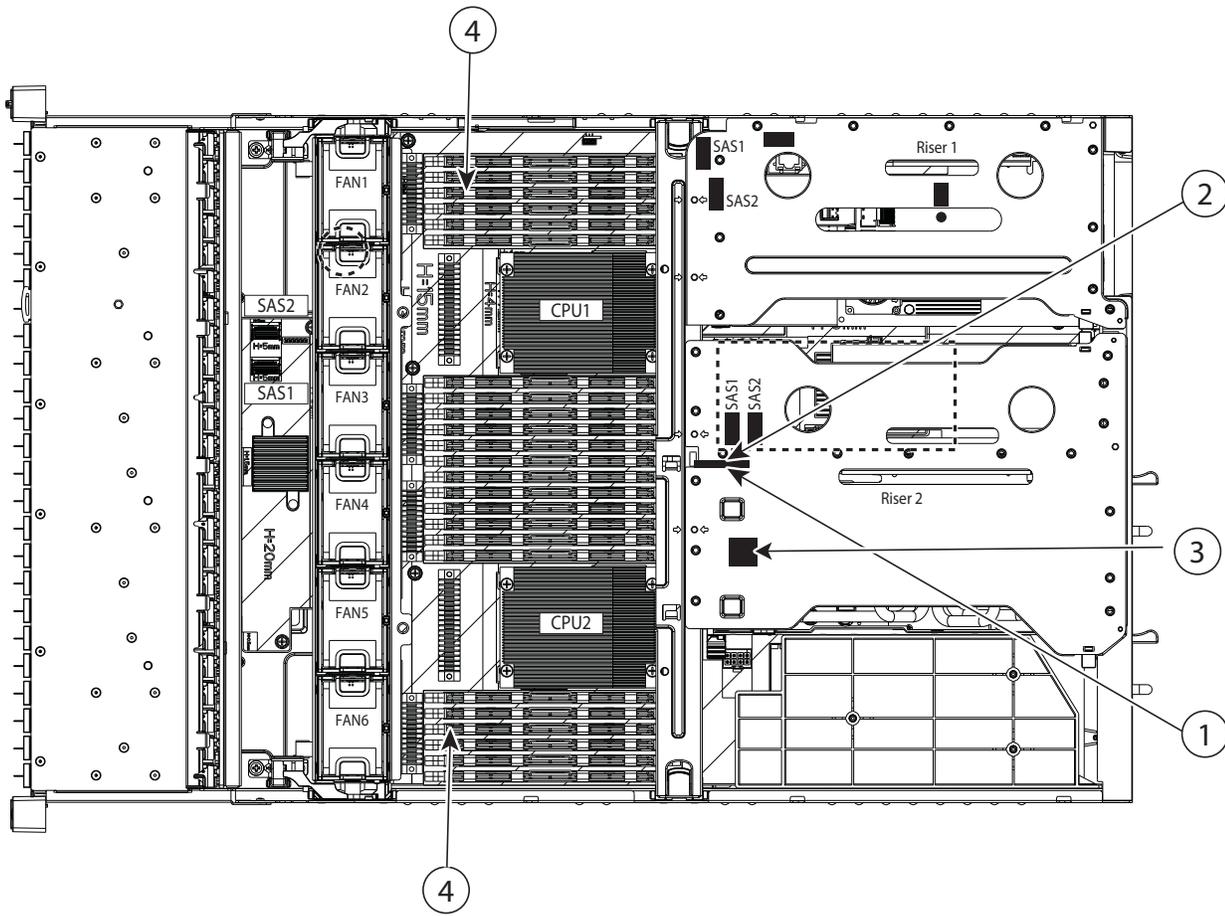


1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB 2.0 connector (for a mouse and keyboard)

## Motherboard USB and SD Ports, and RAID Card Backup Locations

The C240 M3 LFF motherboard has a general-purpose USB socket and two SD sockets, as shown in *Figure 10*. The mounting locations for RAID SuperCap data cache power backup are also shown

Figure 10 Motherboard USB and SD Ports and RAID Battery Backup Location



1	SD1 connector (on riser 2 board)	3	USB connector (on motherboard)
2	SD2 connector (on riser 2 board)	4	SuperCap RAID backup unit mounting locations (two, on air baffle not shown in this view)

## TECHNICAL SPECIFICATIONS

### Dimensions and Weight

Table 30 UCS C240 M3 LFF Dimensions and Weight

Parameter	Value
Height	3.43 in. (8.70 cm)
Width (including slam latches)	17.54 in.(44.55 cm)
Depth	29.3 in. (74.4 cm)
Front Clearance	3 in. (76 mm)
Side Clearance	1 in. (25 mm)
Rear Clearance	6 in. (152 mm)
Weight	
Maximum (12 HDDs, 2 CPUs, 24 DIMMs, 2 power supplies)	62 lbs (28.1 kg)
Minimum (1 HDD, 1 CPU, 1 DIMM, 1 power supply)	40.25 lbs (18.3 kg)
Bare (0 HDD, 0 CPU, 0 DIMM, 1 power supply)	34.8 lbs (15.8 kg)

### Power Specifications

The general power specifications for the C240 M3 LF server 450 W power supply are listed in [Table 31](#).

Table 31 UCS C240 M3 LFF 450 W Power Supply Specifications

Description	Specification
AC input voltage	90 to 264 VAC self-ranging, 100 to 120 VAC nominal 200 to 240 VAC nominal
AC input frequency	Range: 47 to 63 Hz (single phase, 50 to 60 Hz nominal)
Maximum AC input current	6 A maximum @ 100 VAC 3 A maximum @ 208 VAC
Maximum AC inrush current	9 A peak at 35° C, 208 VAC
Maximum output power for the power supply	450 W
Power supply output voltage	Main power: 12 VDC Standby power: 12 VDC

Table 31 UCS C240 M3 LFF 450 W Power Supply Specifications (*continued*)

Description	Specification
Power supply efficiency	CSCI Platinum



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

The general power specifications for the C240 M3 LFF server 650 W power supply are listed in [Table 31](#).

Table 32 UCS C240 M3 LFF 650 W Power Supply Specifications

Description	Specification
AC input voltage	90 to 264 VAC self-ranging, 100 to 120 VAC nominal 200 to 240 VAC nominal
AC input frequency	Range: 47 to 63 Hz (single phase, 50 to 60 Hz nominal)
Maximum AC input current	7.6 A maximum @ 100 VAC 3.65 A maximum @ 208 VAC
Maximum AC inrush current	11 A peak at 35° C, 208 VAC
Maximum output power for the power supply	650 W
Power supply output voltage	Main power: 12 VDC Standby power: 12 VDC
Power supply efficiency	CSCI Platinum



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:

<https://express.salire.com/Go/Cisco/Cisco-UCS-Power-Calculator.aspx>

## Environmental Specifications

The power specifications for the C240 M3 server are listed in [Table 33](#).

Table 33 UCS C240 M3 Environmental Specifications

Parameter	Minimum
Temperature operating	41 to 104° F (5 to 40° C) derate the maximum temperature by 1°C per every 305 m of altitude above sea level
Temperature nonoperating	-40 to 149°F (-40 to 65°C)
Humidity (RH) operating, non-condensing	10 to 90%
Altitude operating	0 to 3,000 m (0 to 10,000 ft.)
Altitude nonoperating	0 to 12,192 m (0 to 40,000 ft.)
Sound Power level, Measure A-weighted per ISO7779 LWAd (Bels)Operation at 73°F (23°C)	5.8
Sound Pressure level, Measure A-weighted per ISO7779 LpAm (dBA)Operation at 73°F (23°C)	43

## Compliance Requirements

The regulatory compliance requirements for C-Series servers are listed in [Table 34](#).

**Table 34 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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**Americas Headquarters**  
Cisco Systems, Inc.  
San Jose, CA

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

**Europe Headquarters**  
Cisco Systems International BV Amsterdam,  
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