



This product has been discontinued Spec Sheet

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

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PUBLICATION HISTORY

REV F.5 MAY 16, 2017

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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

The enterprise-class UCS C240 M3 server extends the capabilities of Cisco's Unified Computing System portfolio in a 2U form factor with the addition of the Intel Xeon E5-2600 v2 and 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 ports to provide outstanding levels of internal memory and storage expandability along with exceptional performance.

Figure 1 Cisco UCS C240 M3 High-Density LFF Rack Server

Front View



Rear View

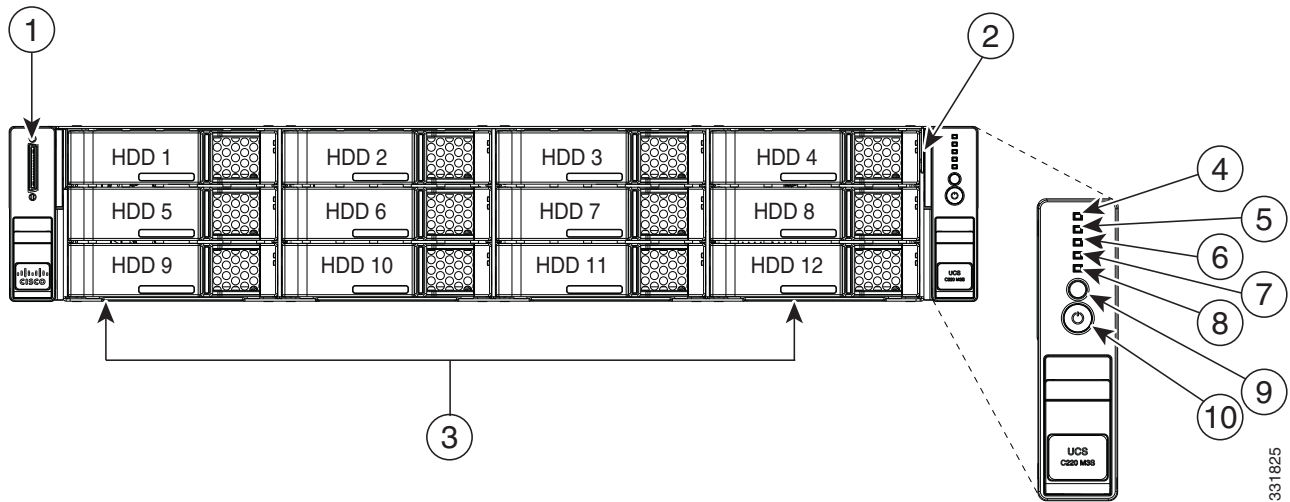


DETAILED VIEWS

Chassis Front View

Figure 2 shows the Cisco UCS C240 M3 High-Density LFF Rack Server.

Figure 2 Chassis Front View



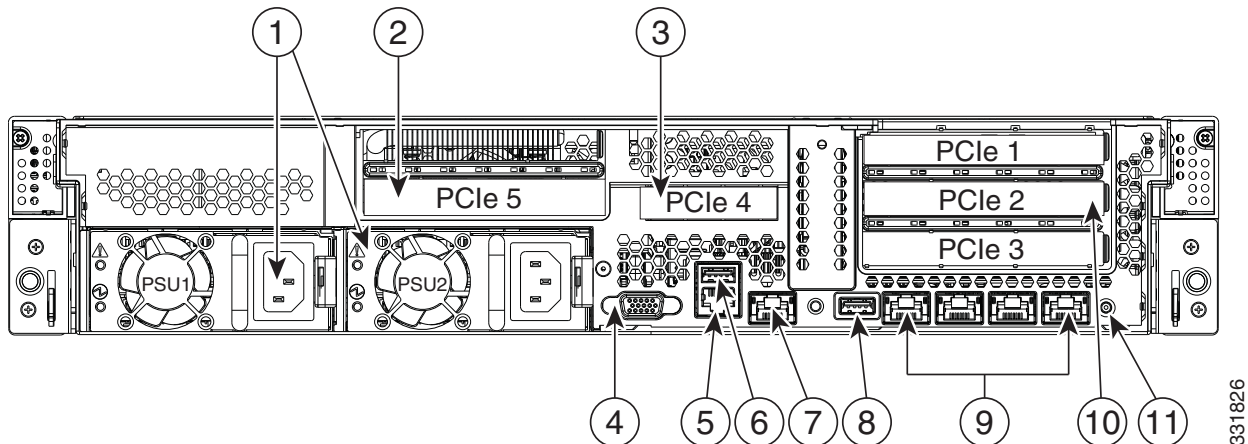
1	KVM connector (used with KVM cable that provides two USB, one VGA, and one serial connector)	6	Temperature status LED
2	Asset tag (serial number)	7	Fan status LED
3	Drives (up to 12 3.5-inch hot-swappable drives)	8	System status LED
4	Network link activity LED	9	Identification button/LED
5	Power supply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

For more information about the KVM cable connection, see [KVM CABLE, page 83](#).

Chassis Rear View

Figure 3 shows the external features of the rear panel.

Figure 3 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 2: PCIe 5—full-height, 3/4-length (approximately 10.5 in. long), x16 lane width, x24 connector, GPU ready, and supports Cisco Virtual Interface Card (VIC)	8	USB 2.0 port
3	PCIe slot on riser 2: PCIe 4—half-height, half-length (9.64 in.), x8 lane width, x16 connector, no NCSI ² support	9	Quad 1-GbE ports (LAN1, LAN2, LAN3, and LAN4)
4	VGA video connector	10	Standard-profile PCIe slots on riser 1(three): PCIe 1—full-height, 3/4-length, x8 lane width, x16 connector ¹ PCIe 2—full-height, 3/4-length (approximately 10.5 in. long), x16 lane width, x24 connector, GPU ready, and supports Cisco Virtual Interface Card (VIC) PCIe 3—full-height, half-length, x8 lane width, x16 connector
5	Serial connector (RJ-45) ²	11	Rear Identification button/LED
6	USB 2.0 port	—	—

Notes . . .

1. PCIe slot 1 is not available when a double-width GPU is installed in slot 2.
2. For serial port pinout details, see [Serial Port Details, page 75](#)

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 11*.

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	Two rack unit (2RU) chassis
CPU	One or two Intel® Xeon E5-2600 v2 or E5-2600 series processor family CPUs
Chipset	Intel® C600 series chipset
Memory	24 slots for registered or unbuffered ECC DIMMs (RDIMMs or UDIMMs) or load-reduced DIMMs (LRDIMMs)
Multi-bit Error Protection	This server supports multi-bit error protection.
NIC	Embedded quad-port Intel i350 PCIe-based Gigabit Ethernet controller, supporting the following: <ul style="list-style-type: none"> ■ Pre-Execution Boot (PXE boot) ■ iSCSI boot ■ Checksum and segmentation offload ■ NIC teaming
Expansion slots	Five PCIe slots (on two riser cards) <ul style="list-style-type: none"> ■ Riser 1 (PCIe slots 1, 2, and 3) ■ Riser 2 (PCIe slots 4 and 5)
Internal storage devices	Drives are installed into front-panel drive bays that provide hot-pluggable access. <ul style="list-style-type: none"> ■ Large Form Factor (LFF) drives. The server can hold up to twelve 3.5-inch SAS or SATA hard disk drives (HDDs). The server uses a 12-drive backplane with a SAS expander. ■ 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. ■ UCS Storage Accelerator are also available. These PCIe flash storage devices provide independent high-speed storage.
Cisco Flexible Flash drives	The server supports up to two internal 32 GB Cisco Flexible Flash drives (SD cards). The second SD card is blank and can be used to mirror the first SD card. It can be used to protect the Hypervisor Partition with RAID1.

Capability/Feature	Description
Storage controller	<ul style="list-style-type: none"> ■ 2008M-8i Mezzanine Cards - two versions <ul style="list-style-type: none"> • 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, 5, 10, and 50 plus JBOD. This card has a product ID (PID) of UCSC-RAID-11-C240. • 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 plus JBOD. This card has a product ID (PID) of UCSC-RAID-MZ-240. ■ PCIe RAID Controllers <ul style="list-style-type: none"> • LSI MegaRAID SAS 9271-8i or 9271CV-8i 8-port PCIe RAID controllers with on-board 1 GB data cache and chassis-mounted (remote) supercap for data cache power backup (supercap not present on 9271-8i), supporting RAID levels 0, 1, 5, 6, 10, 50, 60 and up to 16 internal SAS or SATA drives (limited to 12 drives in the C240 M3 LFF chassis). • LSI MegaRAID 9285CV-8e, or 9286CV-8e 8-port PCIe RAID controllers with on-board 1 GB cache and chassis-mounted (remote) supercap for data cache power backup, supporting RAID levels 0, 1, 5, 6, 10, 50, 60. Supports 8 external SAS ports (up to 240 external drives). • Cisco Nytro MegaRAID 200 GB PCIe RAID controller with on-board 1 GB data cache and 200 GB flash memory. Supports RAID levels 0, 1, 5, 6, 10, 50, and 60. Up to 12 SAS + SATA drives are supported.
Video	<p>The Cisco Integrated Management Controller (CIMC) provides video using the Matrox G200e video/graphics controller:</p> <ul style="list-style-type: none"> ■ Integrated 2D graphics core with hardware acceleration ■ DDR2/3 memory interface supports up to 512 MB of addressable memory (8 MB is allocated by default to video memory) ■ Supports display resolutions up to 1920 x 1200 16bpp @ 60Hz ■ High-speed integrated 24-bit RAMDAC ■ Single lane PCI-Express host interface running at Gen 1 speed

Capability/Feature	Description
Interfaces	<p>Rear panel</p> <ul style="list-style-type: none"> ■ One RJ-45 10/100/1000 Ethernet management port, using Cisco Integrated Management Controller (CIMC) firmware ■ Four 1-GbE (10/100/1000 Mbps capable) LOM ports ■ One RJ45 serial port connector ■ Two USB 2.0 port connectors ■ One DB15 VGA connector ■ Various PCIe card ports (dependent on which cards are installed) <ul style="list-style-type: none"> • Converged Network Adapter (CNA) ports • Network Interface Card (NIC) ports • Host Bus Adapter (HBA) ports <p>Front panel</p> <ul style="list-style-type: none"> ■ One KVM console connector (supplies two USB 2.0, one VGA, and one serial connector)
WoL	The 1-Gb Base-T Ethernet LAN ports support the wake-on-LAN (WoL) standard.
InfiniBand	The bus slots in this server support the InfiniBand architecture.
Front Panel	A front panel controller provides status indications and control buttons
Power subsystem	Two power supplies are required (either 650 W AC or 1200 W AC or 930 W DC). Redundant as 1 + 1.
ACPI	This server supports the advanced configuration and power interface (ACPI) 4.0 standard.
Fans	<p>Chassis:</p> <ul style="list-style-type: none"> ■ Six hot-swappable fans for front-to-rear cooling. <p>Power supply:</p> <ul style="list-style-type: none"> ■ Each power supply is equipped with a fan.
Integrated management processor	<p>BMC running Cisco Integrated Management Controller (CIMC) firmware.</p> <p>Depending on your CIMC settings, the CIMC can be accessed through the 1-GbE dedicated management port, the 1-GbE LOM ports, or a Cisco virtual interface card (VIC).</p>

CONFIGURING the SERVER

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

- *STEP 1 VERIFY SERVER SKU, page 12*
- *STEP 2 SELECT CPU(s), page 13*
- *STEP 3 SELECT MEMORY, page 16*
- *STEP 4 SELECT RAID CONFIGURATION, page 22*
- *STEP 5 SELECT HARD DISK DRIVES (HDDs), page 29*
- *STEP 6 SELECT PCIe OPTION CARD(s), page 31*
- *STEP 7 ORDER OPTIONAL NETWORK CARD ACCESSORIES, page 33*
- *STEP 8 ORDER GPU CARDS and ACCESSORIES (OPTIONAL), page 39*
- *STEP 9 ORDER POWER SUPPLY, page 43*
- *STEP 10 SELECT AC POWER CORD(s), page 44*
- *STEP 11 ORDER OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM, page 47*
- *STEP 12 SELECT NIC MODE (OPTIONAL), page 48*
- *STEP 13 ORDER A TRUSTED PLATFORM MODULE (OPTIONAL), page 49*
- *STEP 14 ORDER CISCO FLEXIBLE FLASH SD CARD MODULE (OPTIONAL), page 50*
- *STEP 15 ORDER USB 2.0 DRIVE (OPTIONAL), page 51*
- *STEP 16 SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE, page 52*
- *STEP 17 SELECT OPERATING SYSTEM MEDIA KIT, page 55*
- *STEP 18 SELECT SERVICE and SUPPORT LEVEL, page 56*
- *OPTIONAL STEP - ORDER RACK(s), page 61*
- *OPTIONAL STEP - ORDER PDU, page 62*

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 cards, or PCIe cards, with rail kit

The Cisco C240 M3 LFF server:

- Includes one tool-less rail kit (UCSC-RAIL-2U), adjustable from 26 inches (660 mm) to 36 inches (914 mm)
- Does not include power supply, CPU, memory, hard disk drives (HDDs), SD cards, 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 Xeon E5-2600 v2 and E5-2600 series processor family CPUs (see the following link for instructions on how to upgrade your server from Intel Xeon E5-2600 to Intel Xeon E5-2600 v2 CPUs:
http://preview.cisco.com/en/US/docs/unified_computing/ucs/c/CPU/IVB/install/IVB-C.html)
- Intel® C600 series chipset
- Cache sizes of up to 30 MB

Select CPUs

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

Table 3 Available Intel CPUs: Intel Xeon E5-2600 v2 and 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) ¹
Intel Xeon E5-2600 v2							
UCS-CPU-E52697B	E5-2697 v2	2.70	130	30	12	8 GT/s	1866
UCS-CPU-E52695B	E5-2695 v2	2.40	115	30	12	8 GT/s	1866
UCS-CPU-E52690B	E5-2690 v2	3.00	130	25	10	8 GT/s	1866
UCS-CPU-E52680B	E5-2680 v2	2.80	115	25	10	8 GT/s	1866
UCS-CPU-E52670B	E5-2670 v2	2.50	115	25	10	8 GT/s	1866
UCS-CPU-E52667B	E5-2667 v2	3.30	130	25	8	8 GT/s	1866
UCS-CPU-E52660B	E5-2660 v2	2.20	95	25	10	8 GT/s	1866
UCS-CPU-E52650B	E5-2650 v2	2.60	95	20	8	8 GT/s	1866
UCS-CPU-E52640B	E5-2640 v2	2.00	95	20	8	7.2 GT/s	1600
UCS-CPU-E52637B	E5-2637 v2	3.50	130	15	4	8 GT/s	1866
UCS-CPU-E52630B	E5-2630 v2	2.60	80	15	6	7.2 GT/s	1600
UCS-CPU-E52620B	E5-2620 v2	2.10	80	15	6	7.2 GT/s	1600
UCS-CPU-E52643B	E5-2643 v2	3.50	130	25	6	8 GT/s	1866
UCS-CPU-E52650LB	E5-2650L v2	1.70	70	25	10	8 GT/s	1600
UCS-CPU-E52630LB	E5-2630L v2	2.40	60	15	6	7.2 GT/s	1600
UCS-CPU-E52609B	E5-2609 v2	2.50	80	10	4	6.4 GT/s	1333

Table 3 Available Intel CPUs: Intel Xeon E5-2600 v2 and 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) ¹
Intel Xeon E5-2600							
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-E5-2670	E5-2670	2.60	115	20	8	8 GT/s	1600
UCS-CPU-E5-2667	E5-2667	2.90	130	15	6	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

(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 13](#).

Caveats

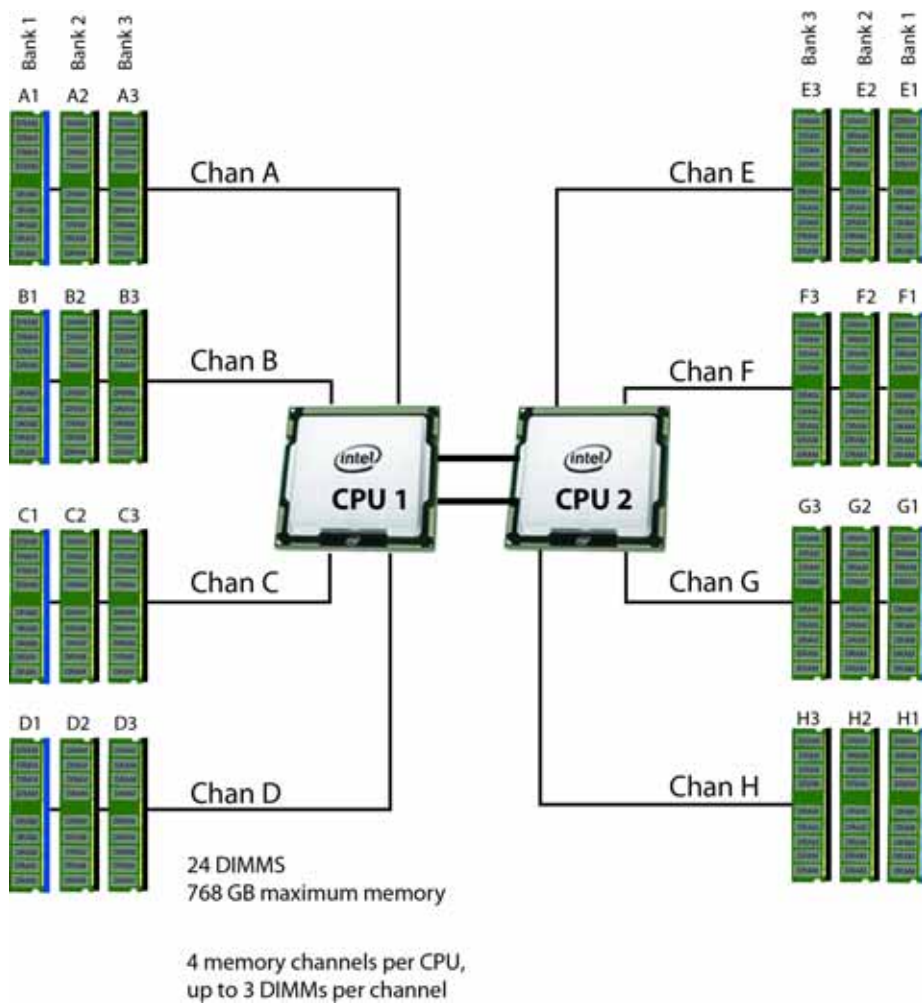
- You can select either one processor or two identical processors.
- For optimal performance, select DIMMs with the highest clock speed for a given processor (see [Table 3 on page 13](#)). If you select DIMMs whose speeds are lower or higher than that shown in the tables, suboptimal performance will result.

STEP 3 SELECT MEMORY

The standard memory features are:

- DIMMs
 - Clock speed: 1866, 1600, or 1333 MHz
 - Ranks per DIMM: 1, 2, or 4
 - Operational voltage: 1.5 V or 1.35 V
 - Registered or Unbuffered ECC DDR3 DIMMs (RDIMMs or UDIMMs) or load-reduced DIMMs (LRDIMMs)
- Memory is organized with four memory channels per CPU, with up to three DIMMs per channel, as shown in [Figure 4](#).

Figure 4 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
DIMM Options			
UCS-ML-1X324RY-A	32 GB DDR3-1600-MHz LR DIMM/PC3-12800/4R/x4/1.35v	1.5/1.35 V ¹	4
UCS-ML-1X324RZ-A	32 GB DDR3-1866-MHz LR DIMM/PC3-14900/4R/4x/1.5v	1.5 V	4
UCS-MR-1X162RY-A	16 GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.35v	1.5/1.35 V ¹	2
UCS-MR-1X162RZ-A	16 GB DDR3-1866-MHz RDIMM PC3-14900/2R/x4/	1.5 V	2
UCS-MR-1X082RY-A	8 GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.35v	1.5/1.35 V ¹	2
Memory Mirroring Option			
N01-MMIRROR	Memory mirroring option		

Notes . . .

1. Dual voltage DIMM (operates at 1.5 V with BIOS is set for memory performance mode (default), or 1.35 V when BIOS is set for power-savings mode).

The DDR3 DIMMs that have been discontinued but are still supported are shown in [Table 5](#).

Table 5 Discontinued but Still Supported DDR3 DIMMs

Product ID (PID)	PID Description	Voltage	Ranks /DIMM
DIMM Options			
UCS-MU-1X042RE-A	4 GB DDR3-1600-MHz ECC UDIMM/PC3-12800/2R/x8/1.35v	1.35v	2
UCS-MR-1X041RX-A	4 GB DDR3-1333-MHz RDIMM/PC3-10600/1R/x4/1.35V	1.35v	1
UCS-MR-1X041RY-A	4 GB DDR3-1600-MHz RDIMM/PC3-12800/1R/x4/1.35V	1.5/1.35 V	1
UCS-MR-1X082RX-A	8 GB DDR3-1333-MHz RDIMM/PC3-10600/2R/x4/1.35V	1.5/1.35 V	2
UCS-MR-1X082RZ-A	8 GB DDR3-1866-MHz RDIMM/PC3-14900/2R/x4/1.5	1.5 V	2

Approved Configurations

(1) 1-CPU configuration without memory mirroring:

- Select from 1 to 12 DIMMs. Refer to [Memory Population Rules, page 66](#), for more detailed information.

(2) 1-CPU configuration with memory mirroring:

- Select 2, 4, 6, 8, 10, or 12 identical DIMMs. The DIMMs will be placed by the factory as shown in the following table.

Total Number of DIMMs	CPU 1 DIMM Placement in Channels (for <u>identical</u> DIMMs)		
	Blue Slot (Slot 1)	Black Slot (Slot 2)	Black Slots (Slot 3)
2	(A1, B1)	—	—
4	(A1,B1); (C1,D1)	—	—
8	(A1,B1); (C1,D1)	(A2,B2); (C2,D2)	—
12 ¹	(A1,B1); (C1,D1)	(A2,B2); (C2,D2)	(A3,B3); (C3,D3)

Notes . . .

1. If this 3DPC configuration is implemented with quad-rank DIMMs (the 32 GB LR DIMM), the maximum DIMM speed will be 1066 MHz, even though the DIMM is specified to operate at a higher speed.

- Select the memory mirroring option (N01-MMIRROR) as shown in [Table 4 on page 17](#).

(3) 2-CPU configuration without memory mirroring:

- Select from 1 to 12 DIMMs per CPU. Refer to [Memory Population Rules, page 66](#), for more detailed information.

(4) 2-CPU configuration with memory mirroring:

- Select 2, 4, 6, 8, or 12 identical DIMMs per CPU. The DIMMs will be placed by the factory as shown in the following table.

Number of DIMMs per CPU	CPU 1 DIMM Placement in Channels (for <u>identical</u> DIMMs)			CPU 2 DIMM Placement in Channels (for <u>identical</u> DIMMs)		
	Blue Slots	Black Slots	Black Slots	Blue Slots	Black Slots	Black Slots
2	(A1, B1)			(E1, F1)		
4	(A1,B1); (C1,D1)	—	—	(E1,F1); (G1,H1)	—	—
8	(A1,B1); (C1,D1)	(A2,B2); (C2,D2)	—	(E1,F1); (G1,H1)	(E2,F2); (G2,H2)	—
12 ¹	(A1,B1); (C1,D1)	(A2,B2); (C2,D2)	(A3,B3); (C3,D3)	(E1,F1); (G1,H1)	(E2,F2); (G2,H2)	(E3,F3); (G3,H3)

Notes . . .

1. If this 3DPC configuration is implemented with quad-rank DIMMs (the 32 GB LR DIMM), the maximum DIMM speed will be 1066 MHz, even though the DIMM is specified to operate at a higher speed.

- Select the memory mirroring option (N01-MMIRROR) as shown in [Table 4 on page 17](#).



NOTE: System performance is optimized when the DIMM type and quantity are equal for both CPUs, and when all channels are filled equally across the CPUs in the server.

Caveats

- System speed is dependent on how many DIMMs are populated per channel. See [Table 6](#) for details.

Table 6 DIMM Memory Speeds

DIMM Speed	DPC	1333-MHz Capable CPU				1600-MHz Capable CPU				1866-MHz Capable CPU			
		LRDIMM		RDIMM (DR, SR)		LRDIMM		RDIMM (DR, SR)		LRDIMM		RDIMM (DR, SR)	
		Voltages		Voltages		Voltages		Voltages		Voltages		Voltages	
		1.3 V	1.5 V	1.3 V	1.5 V	1.3 V	1.5 V	1.3 V	1.5 V	1.3 V	1.5 V	1.3 V	1.5 V
1333 DIMM	1DPC	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333
	2DPC	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333	1333
	3DPC	1066	1066	NA ¹	1066	1066	1066	NA ¹	1066	1066	1066	NA ¹	1066
1600 DIMM	1DPC	1333	1333	1333	1333	1600 ²	1600 ²	1333	1600	1600 ²	1600 ²	1333	1600
	2DPC	1333	1333	1333	1333	1600 ²	1600 ²	1333	1600	1600 ²	1600 ²	1333	1600
	3DPC	1066	1066	NA ¹	1066	1066	1066	NA ¹	1333	1066	1066	NA ¹	1333
1866 DIMM	1DPC	NA ¹	1333	NA ¹	1333	NA ¹	1600	NA ¹	1600	NA ¹	1866	NA ¹	1866
	2DPC	NA ¹	1333	NA ¹	1333	NA ¹	1600	NA ¹	1600	NA ¹	1866	NA ¹	1866
	3DPC	NA ¹	1066	NA ¹	1066	NA ¹	1066	NA ¹	1333	NA ¹	1333	NA ¹	1333

Notes . . .

1. NA = not applicable
2. These DIMMs operate at 1333 MHz instead of 1600 MHz when used with any E5-2600 CPUs. They operate at 1600 MHz when used with E5-2600 v2 CPUs that support 1600- and 1866-MHz speeds.

- For optimum performance, do not mix DIMMs with different frequencies. If you mix DIMM frequencies, the system defaults to the lower frequency.
- Do not mix RDIMMs with LRDIMMs
- 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).
- By default, starting with UCSM 2.0.4, DIMMs run in memory performance mode (1.5v) by BIOS default, which yields faster memory speeds than when the BIOS is set for the memory to run in power-savings mode. Memory speed is dependent on factors such as:
 - CPU choice
 - DIMM choice
 - DIMM population (how many DIMMs per channel are populated)

- BIOS setting.

For the DIMMs to run in power-savings mode (1.35 V, if the DIMM supports this), change the BIOS setting to power-savings mode.

- With 3 RDIMMs populated per channel, memory always runs at 1.5 V regardless if the BIOS setting is power-savings mode (1.35 V) or performance mode (1.5 V).
- With 3 LRDIMMs populated per channel, memory can operate at 1.5 V or 1.35 V, depending on the BIOS setting.

For more information regarding memory, see [CPUs and DIMMs, page 64](#).

STEP 4 SELECT RAID CONFIGURATION



NOTE: When creating a RAID volume, follow these guidelines:

- Use the same capacity for each drive in the volume
- Use either all SAS drives or all SATA drives
- Use either all HDDs or all SSDs



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

- LSI MegaRAID 9271-8i or 9271CV-8i RAID controller card = 64
- LSI MegaRAID 9285CV-8e or 9286CV-8e RAID controller card = 64
- Cisco Nytro MegaRAID 200 GB PCIe RAID controller = 64
- Cisco UCSC RAID SAS 2008M-8i Mezzanine Card = 16

The RAID controller choices are:

- (1) Mezzanine RAID controllers
- (2) PCIe RAID controllers

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.

Select RAID Options

Select as follows (these choices are dependent on the number of CPUs installed):

- One mezzanine RAID controller, or
- One mezzanine RAID controller and one external RAID controller, or
- One internal RAID controller, or
- One external RAID controller, or
- One internal RAID controller and one external RAID controller



NOTE: For all valid combinations of mezzanine RAID and internal/external RAID controller combinations, see [Table 9 on page 26](#) and [RAID Details, page 73](#).

Table 7 Available Mezzanine Card RAID Options

Product ID (PID)	PID Description
RAID Controllers	
UCSC-RAID-11-C240	<p>Cisco UCSC RAID SAS 2008M-8i Mezzanine Card (RAID 0, 1, 5, 10, and 50 plus JBOD supported), operating at 6 Gbs.</p> <ul style="list-style-type: none"> ■ Supports up to 12 internal SAS+SATA drives (with the 12-drive backplane). SAS and SATA drives can be mixed. ■ Factory-configured RAID options available: RAID 0, 1, 5, and 10 (see the RAID PIDs section in this table) ■ No data cache backup
UCSC-RAID-MZ-240	<p>Cisco UCSC RAID SAS 2008M-8i Mezzanine Card (RAID 0, 1, 10 plus JBOD supported), operating at 6 Gbs.</p> <ul style="list-style-type: none"> ■ Supports up to 12 internal SAS+SATA drives (with the 12-drive backplane). SAS and SATA drives can be mixed. ■ Factory-configured RAID options available: RAID 0, 1, and 10 (see the RAID PIDs section in this table) ■ No data cache backup

Table 8 Available PCIe RAID Controller Options


Product ID (PID)	PID Description
RAID Controllers¹	
<p>Note that PCIe RAID controllers are installed by default in slot 3 for 1-CPU systems and slot 4 for 2-CPU systems)</p>	
UCS-RAID9271-8I or UCS-RAID9271CV-8I	<p>LSI MegaRAID SAS 9271-8i or 9271CV-8i RAID controller card with data cache backup (RAID 0, 1, 5, 6, 10, 50, 60), operating at 6 Gbps</p> <ul style="list-style-type: none"> ■ Supports up to 16 internal SAS+SATA drives (limited to 12 drives for the C240 M3 LFF chassis). SAS and SATA drives can be mixed. ■ Includes a 1 GB Transportable Memory Module (TMM) and a chassis-mounted (remote) supercapacitor for data cache power backup (supercapacitor not available on the 9271-8i) ■ Factory-configured RAID options available: RAID 0, 1, 5, 6, and 10 (see the RAID PIDs section in this table)
<p> NOTE: For applications requiring Virtualization support (VMs), with write cache/scalable performance, use the 9271CV-8I RAID controller instead of the mezzanine RAID controllers (UCSC-RAID-11-C240 or UCSC-RAID-MZ-240), as the latter controllers do not support a write cache.</p>	

Table 8 Available PCIe RAID Controller Options (*continued*)



Product ID (PID)	PID Description
UCS-RAID-9285CV-E or UCS-RAID9286CV-8E	<p>LSI MegaRAID SAS 9285CV-8e or 9286CV-8e (RAID 0, 1, 5, 6, 10)</p> <ul style="list-style-type: none"> ■ Supports from one to eight external SAS ports (up to 240 external drives).
<hr/> <div style="display: flex; align-items: flex-start;">  <div> <p>NOTE: For SAS 9285CV-8e or 9286CV-8e external drive enclosure support, see the compatibility list (enclosure section) at the following link:</p> <p>http://tinyurl.com/b4etshk</p> <p>Cisco is able to support customers with questions related to the SAS 9285CV-8e or 9286CV-8e RAID card; however, customers should contact their storage vendor for technical support related to enclosure/JBOD.</p> </div> </div> <hr/>	
	<ul style="list-style-type: none"> ■ Includes an chassis-mount (remote) supercapacitor to power on-board 1 GB flash-backed write cache. ■ Factory-configured RAID options: RAID 0, 1, 5, 6, 10 (see the RAID Configuration section in this table). Note that factory RAID configuration is not available for these controllers, because the factory does not control the storage array attached to them.
UCSC-NYTRO-200GB	<p>Cisco Nytro MegaRAID 200 GB RAID controller</p> <ul style="list-style-type: none"> ■ Supports up to 12 internal SAS+SATA drives. SAS and SATA drives can be mixed. ■ 1 GB data cache backup ■ 200 GB flash memory. ■ Supports RAID 0, 1, 5, 6, 10, 50, and 60 ■ Operates at 6 Gbps.
<hr/> <div style="display: flex; align-items: flex-start;">  <div> <p>NOTE:</p> <ul style="list-style-type: none"> ■ Must be installed in slot 3 only. ■ Supported only with the operating systems listed in http://www.cisco.com/c/en/us/support/servers-unified-computing/unified-computing-system/products-technical-reference-list.html ■ Supported only in 2-CPU systems. ■ Supports only HDDs (not SSDs). ■ Cannot coexist with multiple RAID controllers (embedded RAID, mezzanine RAID card, or PCIe RAID controller). </div> </div> <hr/>	

Table 8 Available PCIe RAID Controller Options (*continued*)

Product ID (PID)	PID Description
Supercapacitor Option	
UCS-RAID-CV-SC=	LSI CacheVault Power Module. This is a spare supercapacitor. It is the exact same supercapacitor that ships with the 9271CV-8i, 9285CV-8e, and 9286CV-8e cards listed earlier in this table and can be used as a replacement or upgrade part.
RAID Configuration Options	
R2XX-SRAID0	Enable Single Disk Raid 0 Setting (for the following PIDs only): <ul style="list-style-type: none"> ■ UCS-RAID9271-8i or UCS-RAID9271CV-8i ■ UCSC-RAID-11-C240 ■ UCSC-RAID-MZ-240
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 a even number of drives (minimum of four drives) of the same size, speed, capacity.

Notes . . .

1. The SAS 9285CV-8e is compatible with PCI Express Gen 2.
The 9271-8i, 9271CV-8i, 9286CV-8e, and Cisco Nytro MegaRAID 200 GB support PCIe Gen 3.



NOTE: The 9266CV-8i and 9285CV-8e RAID controllers will reach end-of-life (EOL) in November, 2013. After then, they will no longer be available.



NOTE: Although RAID levels 50 and 60 are not orderable from the factory, they are supported for selected controllers as shown in [Table 8](#)



CAUTION: If one of your RAID cards is equipped with a battery backup unit (BBU), be aware that hot swapping the BBU is not supported. Please perform a graceful shutdown of the server prior to replacing the BBU.

Approved Configurations

The C240 M3 LFF server has a 12-drive backplane with a SAS expander and supports the following RAID options:

- Mezzanine card (UCSC-RAID-11-C240) supports up to 12 internal drives.
- Mezzanine card (UCSC-RAID-MZ-240) supports up to 12 internal drives.
- LSI MegaRAID SAS 9271-8i and 9271CV-8i PCIe cards support up to 12 internal drives.
- LSI MegaRAID SAS 9285CV-8e and 9286CV-8e PCIe cards support up to 8 external SAS ports (240 external drives).
- The Cisco Nytro MegaRAID 200 GB card supports up to 12 internal drives.

See [Table 9](#) for a summary of the supported RAID configuration options.



NOTE: As shown in the table, the NYTRO MegaRAID 200 RAID controller is supported only in slot 3 of a 2-CPU system.

Table 9 Supported RAID Configurations

Server	# CPUs	Mezz RAID ¹	NYTRO MegaRAID 200 RAID Card	Internal PCIe RAID #1 ²	Internal PCIe RAID #2	External PCIe RAID ³	# Drives Supported	PCIe Slots ⁴				
								1	2	3	4	5
C240 M3 LFF 12 HDD	1	Not allowed ⁵	Not allowed	Installed slot 3 (default) ⁶	Not allowed	Not allowed	12 internal	A	A	O	U	U
C240 M3 LFF 12 HDD	1	Not allowed	Not allowed	Not allowed	Not allowed	Installed in slots 1, 2, or 3	0 internal 240 external	A	A	A	U	U
C240 M3 LFF 12 HDD	2	Installed	Not allowed	Not allowed	Not allowed	Card absent	12 internal	A	A	A	A	A
C240 M3 LFF 12 HDD	2	Not allowed	Not allowed	Installed slot 4 (default)	Not allowed	Card absent	12 internal	A	A	A	O	A
C240 M3 LFF 12 HDD	2	Not allowed	Installed slot 3	Not allowed	Not allowed	Not allowed	12 internal	A	A	O	A	A

Table 9 Supported RAID Configurations (*continued*)

Server	# CPUs	Mezz RAID ¹	NYTRO MegaRAID 200 RAID Card	Internal PCIe RAID #1 ²	Internal PCIe RAID #2	External PCIe RAID ³	# Drives Supported	PCIe Slots ⁴				
								1	2	3	4	5
C240 M3 LFF 12 HDD	2	Card absent	Not allowed	Card absent	Not allowed	Installed any slot	0 internal 240 external	A	A	A	A	A
C240 M3 LFF 12 HDD	2	Not allowed	Not allowed	Installed slot 4 (default)	Not allowed	Installed in slots 1, 2, 3, or 5	12 internal 240 external	A	A	A	O	A
C240 M3 LFF 12 HDD	2	Installed	Not allowed	Not allowed	Not allowed	Installed any slot	12 internal 240 external	A	A	A	A	A

Notes . . .

- Never disable OPROM for the mezzanine slot if the mezzanine card is present, or the system will not boot. If you remove the mezzanine card and disable its OPROM, you can boot from another bootable device (RAID card, or from SAN via an HBA or CNA card). When you boot from a device, make sure its OPROM is enabled, it is in the proper boot sequence, and its BIOS is configured for a bootable device.
- If you want to boot from a device other than the 9271-8i or 9271CV-8i MegaRAID PCIe card, you can leave the card installed. Just disable the OPROM for its slot, and the system will boot even with the card installed.
- External RAID card is the 9285CV-8e or 9286CV-8e. Any of these can be installed simultaneously with either one mezzanine RAID controller card or one internal RAID controller card (9271-8i or 9271CV-8i).
- A = available slot, O = occupied slot, U = unsupported slot (slots 4 and 5 are not supported in 1-CPU systems)
- The mezzanine cards are not supported in 1-CPU systems
- The OPROM is enabled for the default PCIe RAID controller slots. If you want to enable a different slot, you must go into the BIOS and enable the OPROM for the desired slot and disable the OPROM for the default PCIe slot (see [Figure 9 on page 74](#)).

Caveats

- Note that when just one CPU is populated, only a single Cisco 1225 or 1285 Virtual Interface Card (VIC) card is supported and it must be installed in the full-height PCIe slot (slot 2) on riser 1. So take this into account when populating RAID controller cards. When two CPUs are populated, two VIC cards are supported (the Cisco VIC 1225 or 1285). One can be installed in slot 2 of riser 1 and one in slot 5 of riser 2. The primary slot for a VIC card is slot 2. If you have only one of these cards, install it in slot 2.
- 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.



NOTE: RAID for the external RAID controllers (LSI MegaRAID SAS 9286CV-e and LSI MegaRAID SAS 9285CV-e) is not factory configured.



NOTE: For more important information regarding RAID support, see [RAID Details, page 73](#) and [RAID Option ROM \(OPROM\) Settings, page 74](#).

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 10](#).

Table 10 Available Hot-Pluggable Sled-Mounted HDDs

Product ID (PID)	PID Description	Drive Type	Capacity
HDDs			
UCS-HD4T7KL12G	4 TB 12G SAS 7.2K RPM LFF HDD	SAS	4 TB
UCS-HD2T7KL12G	2 TB 12G SAS 7.2K RPM LFF HDD	SAS	2 TB
UCS-HD1T7KL12G	1TB 12G SAS 7.2K RPM LFF HDD	SAS	1 TB



NOTE: When creating a RAID volume, follow these guidelines:

- Use the same capacity for each drive in the volume
- Use either all SAS drives or all SATA drives
- Use either all HDDs or all SSDs

Approved Configurations

(1) Mezzanine cards, and all internal drive PCIe RAID controllers

- Select up to 12 SAS+SATA drives listed in [Table 10](#).

Caveats

- 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)
- UCS Storage Accelerators

Select PCIe Option Cards

The available PCIe option cards are listed in [Table 11](#).

Table 11 Available PCIe Option Cards

Product ID (PID)	PID Description	Card Height
Converged Network Adapters (CNAs)		
UCSC-PCIE-CSC-02	Cisco VIC 1225 Dual Port 10Gb SFP+ CNA	Half
UCSC-PCIE-C10T-02	Cisco VIC 1225T Dual Port 10GBaseT CNA	Half
UCSC-PCIE-C40Q-02	Cisco VIC 1285 Dual Port 40 Gb QSFP CNA	Half
UCSC-PCIE-ESFP	Emulex OCe11102-FX dual-port 10 GbE FCoE CNA (Gen 3 CNA)	Half
UCSC-PCIE-B3SFP	Broadcom 57810 10Gb A-FEX SFP+	Half
UCSC-PCIE-Q8362	Qlogic QLE8362 dual-port 10 GbE FCoE CNA	Half
Network Interface Cards (NICs)		
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-ITG	Intel X540 Dual Port 10GBase-T 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
Host Bus Adapters (HBAs)		
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-AQPCI05	Qlogic QLE2562 Dual Port 8Gb Fibre Channel HBA	Half
UCSC-PCIE-Q2672	Qlogic QLE2672-CSC, 16Gb Fibre Channel HBA with SR Optics	Half
UCSC-PCIE-E16002	Emulex LPe16002-M6, 16Gb Fibre Channel HBA with SR Optics	Half

Table 11 Available PCIe Option Cards (*continued*)

Product ID (PID)	PID Description	Card Height
UCS Storage Accelerators		
UCSC-F-FIO-5200MP	UCS 5200 GB Fusion ioMemory3 PX Performance line for C-Series	Full
UCSC-F-FIO-2600MP	UCS 2600 GB Fusion ioMemory3 PX Performance line for C-Series	Half
UCSC-F-FIO-1300MP	UCS 1300 GB Fusion ioMemory3 PX Performance line for C-Series	Half
UCSC-F-FIO-1000MP	UCS 1000 GB Fusion ioMemory3 PX Performance line for C-Series	Half
UCSC-F-FIO-3000M	Cisco UCS 3.0 TB MLC Fusion ioDrive2 for C-Series Servers	Full
UCSC-F-FIO-1205M	Cisco UCS 1205 GB MLC Fusion ioDrive2 for C-Series Servers	Half
UCSC-F-FIO-785M	Cisco UCS 785 GB MLC Fusion ioDrive2 for C-Series Servers	Half
UCSC-F-FIO-365M	Cisco UCS 365GB MLC Fusion ioDrive2 for C-Series Servers	Half

Approved Configurations

(1) No RAID controller

- If you did not choose a RAID controller (for example, you are using the mezzanine RAID controller), you can select up to three PCIe option cards listed in [Table 11](#) for a 1-CPU system or up to five for a 2-CPU system.

(2) One PCIe RAID controller

- If you selected a PCIe RAID controller, you can select up to two of the optional PCIe cards listed in [Table 11](#) for a 1-CPU system or up to four for a 2-CPU system.

Caveats

- Do not mix Fusion io storage accelerator families (do not mix “MP” family cards with “M” family cards).
- For 1-CPU systems:
 - Only the three PCIe slots on PCIe riser 1 (slots 1, 2, and 3) are available (see [Figure 3 on page 7](#)). 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 (the Cisco VIC 1225 or 1285 PCIe card) is supported and it must be installed in slot 2 (a full-height slot). See [Table 1 on page 8](#) for the slot descriptions.
 - Fusion ioDrive2 cards can be installed in slots 1, 2, or 3. Note that only the Cisco UCS 3.0 TB MLC Fusion ioDrive2 and Cisco UCS 5200 GB Fusion ioMemory3 cards are

full-height; all other Fusion io cards are half-height and therefore may need an adapter to hold them securely in the full-height slot.

- 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.
 - Two VIC cards may be installed in 2-CPU systems, using slots 2 or 5. See [Table 1 on page 8](#) for the slot descriptions.
 - Up to four Cisco UCS 3.0 TB MLC Fusion ioDrive2 full-height cards are supported and can be installed in slots 1, 2, 3, or 5.
 - Up to five of the other Fusion io cards are supported and can be installed in slots 1, 2, 3, 4, and 5, although an adapter may be needed when installing one of these half-height cards in slots 1, 2, 3, or 5 (the full-height slots).
- Additional considerations for the Cisco VIC 1225 and 1285:
 - Supports 10G SFP+ optical and copper twinax connections.
 - The server supports installation of up to two Cisco VIC cards and they are supported only in PCIe slots 2 and 5.
 - The primary slot for the Cisco VIC is PCIe slot 2. If there is only one card, it must be installed in PCIe slot 2.
 - To use the Cisco Card NIC mode, this card must be installed in PCIe slot 2. Slot 2 can operate while the server is in standby power mode.
 - Requires that the server has CIMC firmware version 1.4(6) or later installed. There is a heartbeat LED on the top of the card that indicates when firmware is active.
 - To use this card for UCS integration (Cisco UCS Manager mode) with Cisco UCS Manager 2.1(0) or later, the minimum card-firmware and uboot image level is 2.1(0.306).
- To help ensure that your operating system is compatible with the card you have selected, or to see additional cards that have been qualified to work with the UCS C240 M3 server, but are not sold on the Cisco pricelist, check the Hardware Compatibility List at this URL:

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

STEP 7 ORDER OPTIONAL 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 12 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 12 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)

Approved Configurations

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

- You may choose one or two twinax cables for each compatible PCIe 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.

Choose Optional SFP Modules

Optical Cisco SFP+ modules are listed in *Table 13*.

Table 13 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
SFP-10G-LR	10GBASE-LR SFP+ Module 1310 nm, single mode, LR, 3.3 V, 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 compatible PCIe 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 the [Figure 5 on page 38](#) for typical SFP+ and twinax connections to the network cards.

Caveats

Check the table on the following page for compatibility between the PCIe network cards and SFPs or twinax cables.



NOTE: The table shows all PCIe network cards for all C-series servers. Not all of the cards shown in the table are supported in this server. The intent of the table is to show compatibility between cards and twinax cables or SFPs.

Table 14 PCIe Card Compatibility

PCIe Cards	Twinax Cables	Cisco SFP Modules		
		SFP-10G-SR	SFP-10G-LR	DS-SFP-FC8G-SW
Converged Network Adapters (CNAs)				
UCSC-PCIE-BSFP (Broadcom 57712 Dual Port 10Gb SFP+ w/TOE iSCSI)	Yes	Yes	No	
UCSC-PCIE-CSC-02 (Cisco VIC 1225 Dual Port 10Gb SFP+ CNA)	Yes	Yes	Yes	No
UCSC-PCIE-C10T-02 (Cisco VIC 1225T Dual Port 10GBaseT CNA)	No	No	No	No
UCSC-MLOM-CSC-02 (Cisco UCS VIC1227 VIC MLOM - Dual Port 10Gb SFP+)	Yes	Yes	Yes	No
UCSC-MLOM-C10T-02 (Cisco UCS VIC1227T VIC MLOM - Dual Port 10GBaseT)	No	No	No	No
UCSC-PCIE-C40Q-02 (Cisco VIC 1285 Dual Port 40Gb QSFP CNA)	Yes	No ¹	No	
UCSC-PCIE-C40Q-03 (Cisco VIC 1385 Dual Port 40Gb QSFP+ CNA w/RDMA)	Yes	No ¹	No	
UCSC-PCIE-ESFP (Emulex OCe11102-FX dual-port 10 GbE FCoE CNA (Gen 3 CNA))	Yes	Yes	No	
UCSC-PCIE-QSFP (QLogic QLE8242-CU dual-port 10 GbE FCoE CNA)	Yes	Use Qlogic SFP		
UCSC-PCIE-B3SFP (Broadcom 57810 10Gb A-FEX SFP+)	Yes	Yes	No	
UCSC-PCIE-Q8362 (Qlogic QLE8362 dual-port 10 GbE FCoE CNA)	Yes	Use Qlogic SFP		
UCSC-PCIE-E14102 (Emulex OCe14102-UX dual-port 10 GbE FCoE CNA)	Yes	Yes	No	
Network Interface Cards (NICs)				
N2XX-ABPCI01-M3 (Broadcom 5709 Dual-Port Ethernet PCIe Adapter for M3 Servers)	Use RJ45 Ethernet cable			
N2XX-ABPCI03-M3 (Broadcom 5709 Quad Port 10/100/1Gb NIC w/TOE iSCSI for M3 Servers)	Use RJ45 Ethernet cable			
N2XX-AIPCI01 (Intel X520 Dual Port 10Gb SFP+ Adapter)	Yes	Use Intel SFP CDE2-SFP-1WLR or CDE2-SFP-1WSR		
UCSC-PCIE-ITG (Intel X540 Dual Port 10GBase-T Adapter)	Use RJ45 Ethernet cable			
UCSC-PCIE-IRJ45 (Intel i350 Quad Port 1Gb Adapter)	Use RJ45 Ethernet cable			

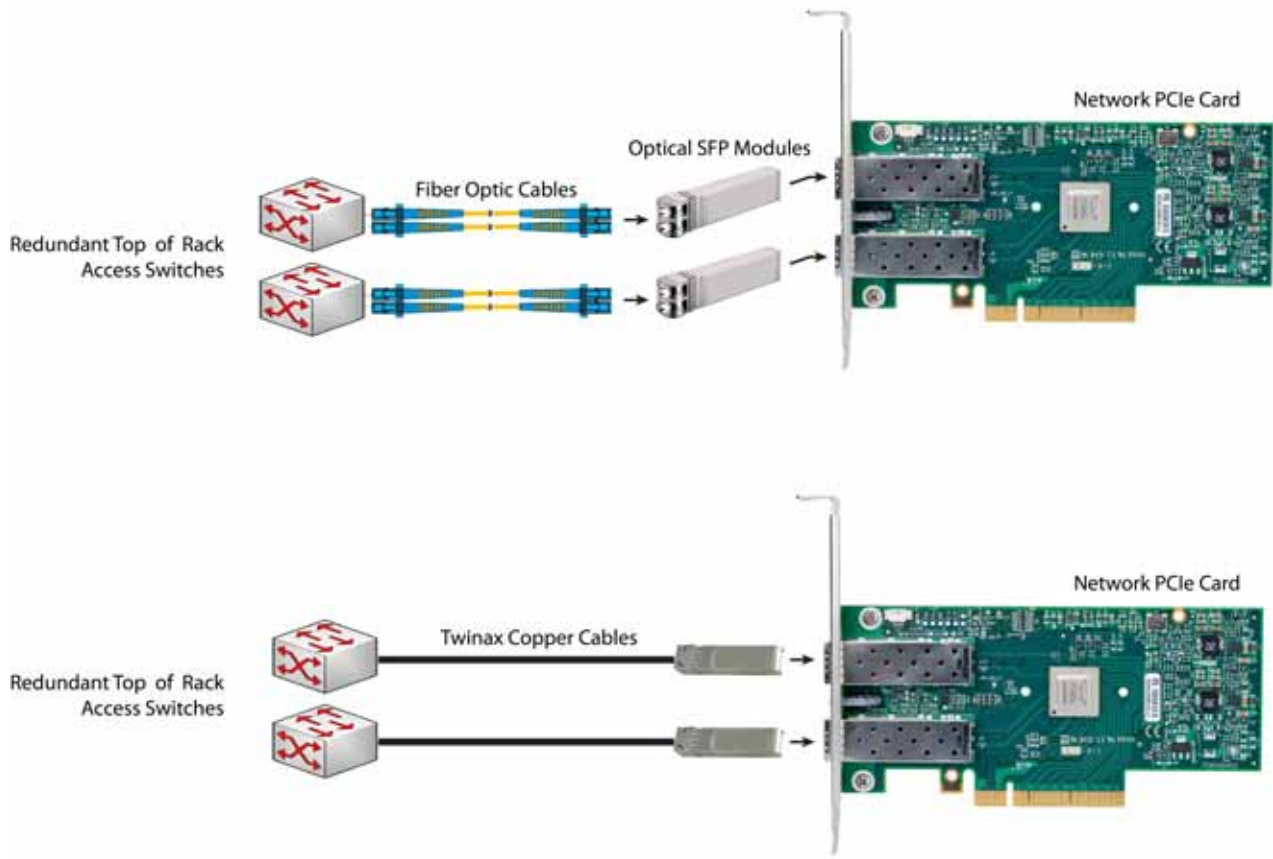
Table 14 PCIe Card Compatibility (*continued*)

PCIe Cards	Twinax Cables	Cisco SFP Modules		
		SFP-10G-SR	SFP-10G-LR	DS-SFP-FC8G-SW
UCSC-PCIE-BTG (Broadcom 57712 Dual Port 10GBASE-T w/TOE iSCSI)	Yes	No	No	
Host Bus Adapters (HBAs)				
N2XX-AEPCI03 (Emulex LPe 11002 Dual Port 4Gb Fibre Channel HBA)	No	Preinstalled - do not change SFP		
N2XX-AEPCI05 (Emulex LPe 12002 Dual Port 8Gb Fibre Channel HBA)	No	Preinstalled - do not change SFP		
N2XX-AQPCI03 (QLogic QLE2462 Dual Port 4Gb Fibre Channel HBA)	No	Preinstalled - do not change SFP		
N2XX-AQPCI05 (QLogic QLE2562 Dual Port 8Gb Fibre Channel HBA)	No	Preinstalled - do not change SFP		
UCSC-PCIE-Q2672 (QLogic QLE2672-CSC, 16Gb Fibre Channel HBA with SR Optics)	No	Preinstalled - do not change SFP		
UCSC-PCIE-E16002 (Emulex LPe16002-M6, 16Gb Fibre Channel HBA with SR Optics)	No	Preinstalled - do not change SFP		

Notes . . .

1. This card supports a 4x10 Gbps QSFP to SFP breakout fiber cable.

Figure 5 Network Card Connections



STEP 8 ORDER GPU CARDS and ACCESSORIES (OPTIONAL)

The GPU offerings are:

- GPU upgrade kit
- GPU PCIe cards
- GPU power cables

Select GPU Options

The available GPU PCIe options are listed in [Table 15](#).

Table 15 Available PCIe Options

Product ID (PID)	PID Description	Card Size
GPU Kit		
UCSC-GPUKIT1-C240	C240 GPU upgrade kit for NVIDIA GPU with two PCIe replacement risers, brace, a “Y” power cable (for dual GPUs), a “straight” power cable (for single GPU), and an adapter cable for the power cables ¹	N/A
GPU PCIe Cards		
UCSC-GPU-VGXX1	NVIDIA GRID K1	Full-height, double wide
UCSC-GPU-VGXX2	NVIDIA GRID K2	Full-height, double wide
UCSC-GPU-K40 ²	NVIDIA Tesla K40	Full-height, double wide
GPU Individual Power Cables³		
UCSC-GPUCBL-88Y=	8-to-8 pin “Y” GPU power cable for dual K1 or dual K2 in the C240 M3 server	
UCSC-GPUCBL-88S=	8-to-8 pin “straight” GPU power cable for single K1 or K2 in the C240 M3 server	
UCSC-GPUCBL-KIT=	GPU power cable kit, containing 8-to-8 pin “Y” and “straight” cables	

Notes . . .

1. The upgrade kit is not needed for the v02 and later chassis. It is only required for the older v01 C240 M3 chassis version.
2. The K40 requires the server to have E5-2600 v2 CPUs and a minimum CIMC firmware level of 1.5.7.
3. These cables are for the v02 and later chassis version.

Approved Configurations

(1) GPU Kit

- Select a GPU kit to prepare the C240 M3 chassis (v01 chassis version only) for GPU capability. If you have a newer v02 and later chassis, you do not need a GPU kit.

(2) GPU Power Cables

- When you order one or two GPUs for a v02 or later chassis version, you also need to order one or two power cables. Order the “Y” power cable (UCSC-GPUCBL-88Y=) for 2 GPUs and the “straight” power cable (UCSC-GPUCBL-88S=) for a single GPU.

(3) NVIDIA GRID GPU Slot Population Rules

Table 16 shows the rules for populating NVIDIA GRID K1 or K2 GPU cards in the server.



CAUTION: When using *dual* NVIDIA GRID K2 GPU cards, you must preserve at least 10 mm of space between servers to ensure adequate airflow and cooling. NVIDIA GRID K1 GPU cards do not require this gap.



CAUTION: When using GRID GPU cards, the operating temperature range is 32° to 95°F (0° to 35°C).

Table 16 NVIDIA GRID GPU Population Rules by Server Version

C240 M3 Server Version	Single K1 GPU	Dual K1 GPUs	Single K2 GPU	Dual K2 GPUs
Server version v01	Slot 5	Slots 2 ¹ and 5	Slot 5	Not supported
Server version v02 and later	Slot 5	Slots 2 ¹ and 5	Slot 5	Slots 2 ¹ and 5

Notes . . .

1. When a GPU is installed in slot 2, slot 1 is blocked and unavailable for use.

(4) NVIDIA Tesla GPU Slot Population Rules

Table 17 shows the rules for populating NVIDIA Tesla K20 or K20X GPU cards (if used) in the server.



CAUTION: When using *dual* NVIDIA Tesla GPU cards, you must preserve at least 10 mm of space between servers to ensure adequate airflow and cooling.



CAUTION: When using NVIDIA Tesla GPU cards, the operating temperature range is 32° to 95°F (0° to 35°C).

Table 17 NVIDIA Tesla GPU Population Rules by Server Version

C240 M3 Server Version	Single Tesla GPU	Dual Tesla GPUs
Server version v01	Slot 5	Not supported
Server version v02 and later	Slot 5	Slots 2 and 5

Caveats

- The v01 server version requires ordering a GPU upgrade kit (two PCIe risers, brace, “Y” power cable, straight power cable, and power cable adapter). The v02 or later server version requires ordering a “Y” power cable to support two GPUs or a straight power cable to support a single GPU. The power cable plugs into the motherboard GPU power connector and to the appropriate GPU(s).
- Slot 5 is the preferred slot for the first GPU.
- NVIDIA GRID K1 and K2 GPUs can be mixed. No other GPU mixing is allowed.
- If two GPUs are installed, a VIC card cannot be selected because a VIC card can only be plugged into either slot 2 or slot 5 in a 2-CPU system.

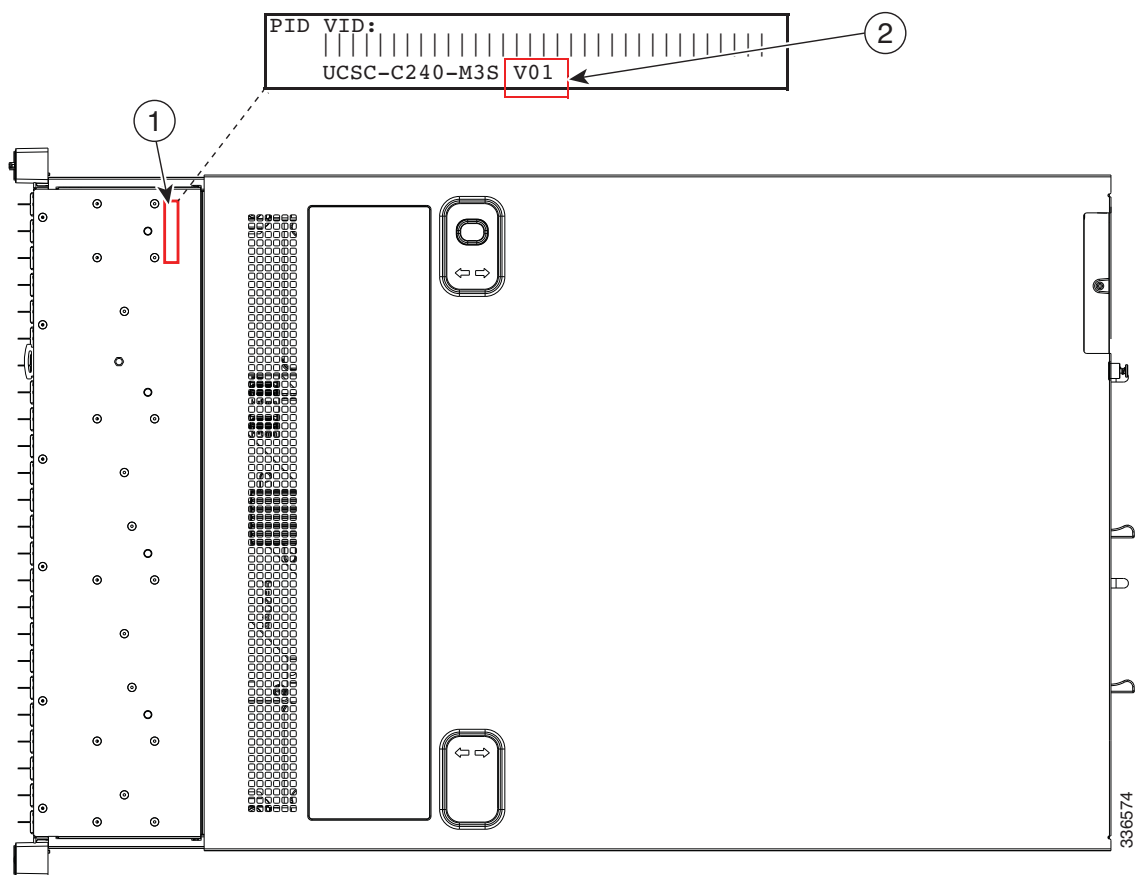


NOTE: To discover your chassis version (v01 or v02 and later), look at the label on the top left side of the chassis (see [Figure 6 on page 42](#)). The version number (v01 or v02 and later) is shown in the label.



NOTE: See [Figure 7 on page 63](#) for the location of the 8-pin GPU power connector on the motherboard. Connect cable(s) as appropriate from this connector to the power connector on the GPU(s).

Figure 6 Serial Number Label and Chassis Version ID



1	PID/VID label on top of server	2	Version ID on label
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STEP 9 ORDER POWER SUPPLY

The C240 M3 server requires at least one power supply. A lightly loaded server may require one or two 650 W power supplies. A fully loaded server might need to be powered with two 1200 W power supplies. A server with one or two GPUs always requires two 1200 W power supplies. Use the power calculator at the following link to determine the needed power based on the options chosen (CPUs, drives, memory, and so on):

<http://ucspowercalc.cisco.com>

Table 18 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)
UCSC-PSU2V2-930DC	930 W - 48V V2 DC Power Supply for 2U C-Series Servers
UCSC-PSU-930WDC	930 W -48V DC power supply



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

STEP 10 SELECT AC POWER CORD(S)

Using [Table 19](#), 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 19 Available Power Cords

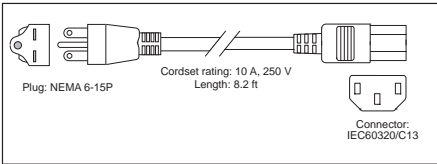
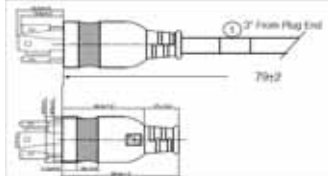
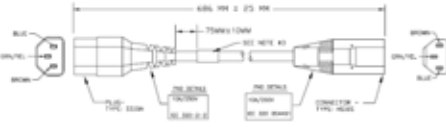
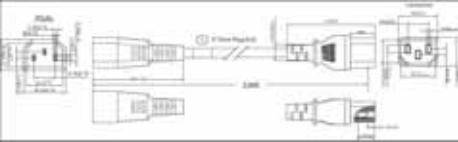
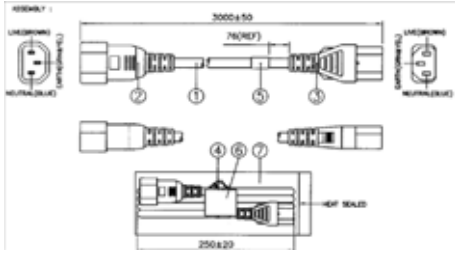
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-N5K6A-NA	Power Cord, 200/240V 6A, North America	
CAB-AC-L620-C13	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft	
CAB-C13-CBN	CABASY,WIRE,JUMPER CORD, 27" L, C13/C14, 10A/250V	
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 19 Available Power Cords

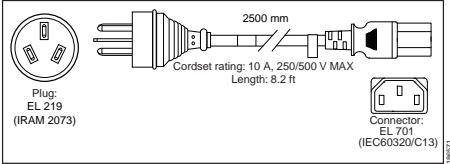
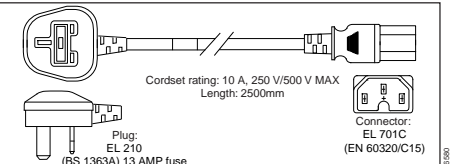
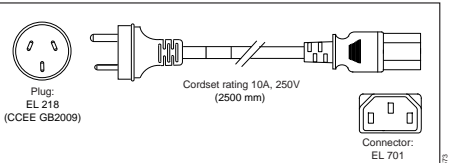
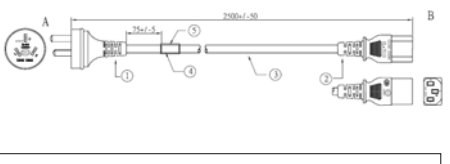
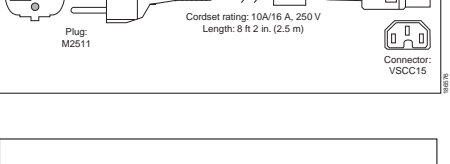
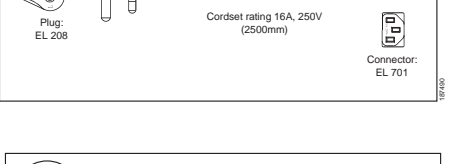
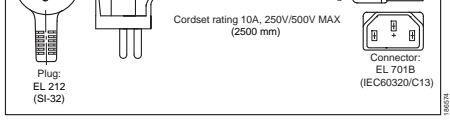
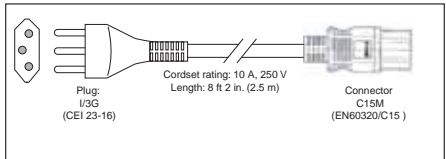
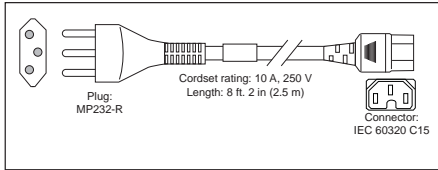
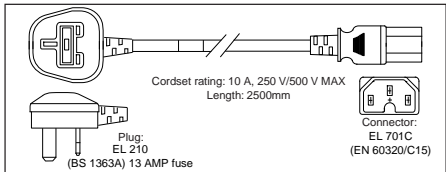
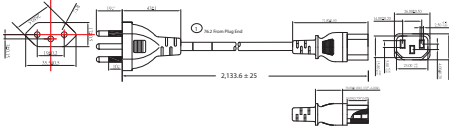
Product ID (PID)	PID Description	Images
CAB-250V-10A-AR	Power Cord, SFS, 250V, 10A, Argentina	
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	
CAB-250V-10A-CN	Power Cord, SFS, 250V, 10A, China	
CAB-250V-10A-CN	AC Power Cord - 250V, 10A - PRC	
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU	
CAB-250V-10A-ID	Power Cord, SFS, 250V, 10A, India	
CAB-250V-10A-IS	Power Cord, SFS, 250V, 10A, Israel	

Table 19 Available Power Cords

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-250V-10A-BR	Power Cord - 250V, 10A - Brazil	
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

STEP 11 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 20](#) to order a cable management arm.

Table 20 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



NOTE: All UCS C240 M3 servers ship with a tool-less rail kit.

STEP 12 SELECT NIC MODE (OPTIONAL)

By default, the C240 M3 server NIC mode is configured to be Shared LOM Extended. This NIC mode allows any LOM port or adapter card port to be used to access the Cisco Integrated Management Controller (CIMC). The Cisco adapter card must be installed in a slot with NCSI support.

To change the default NIC mode to Dedicated, select the PID shown in *Table 21*. In Dedicated NIC mode, the CIMC can be accessed only through the dedicated management port. See *Chassis Rear View, page 7* for the location of the management port.

For more details on all the NIC mode settings, see

http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/sw/gui/config/guide/2-0/b_Cisco_UCS_C-series_GUI_Configuration_Guide_201.pdf

Table 21 Dedicated NIC Mode Ordering Information

Product ID (PID)	PID Description
UCSC-DLOM-01	Dedicated Mode BIOS setting for C-Series Servers

STEP 13 ORDER A TRUSTED PLATFORM MODULE (OPTIONAL)

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 22](#).

Table 22 Trusted Platform Module

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



NOTE: The module used in this server conforms to TPM v1.2/1.3, as defined by the Trusted Computing Group (TCG).

STEP 14 ORDER CISCO FLEXIBLE FLASH SD CARD MODULE (OPTIONAL)

You can order either one or two 32 GB SD cards. See [Figure 7 on page 63](#) for the location of the SD cards. There are two locations, SD1 and SD2.

Table 23 32 GB Secure Digital (SD) Card

Product ID (PID)	PID Description
UCS-SD-32G-S	32 GB SD Card for UCS servers

Caveats

- The following configurations are valid:
 - One 32 GB SD card
 - Two 32 GB cards

STEP 15 ORDER USB 2.0 DRIVE (OPTIONAL)

You can order one optional USB 2.0 drive. The USB drive ordering information is listed in [Table 24](#).

Table 24 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 7 on page 63](#) for the location of the USB connector.

STEP 16 SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

Several software programs are available. Select as desired from [Table 25](#).

Table 25 Software (for 2-CPU servers)

PID Description	Product ID (PID)
Cisco One	
C1F2PUCSK9	Cisco ONE Foundation Perpetual UCS
C1A1PUCSK9	Cisco ONE Enterprise Cloud Perpetual UCS
C1UCS-OPT-OUT	Cisco One Data Center Compute Opt Out Option
Energy Management (JouleX)	
CEM-DC-PER	Perpetual License Key for Cisco Energy Management for DC
UCS Director	
CUIC-PHY-SERV-BM-U	Cisco UCS Director Resource Lic - 1 Phy Sevr node bare metal
CUIC-PHY-SERV-U	Cisco UCS Director Resource Lic - One physical Server node
CUIC-TERM	Acceptance of Cisco UCS Director License Terms
UCS Performance Manager	
UCS-PM-IE	UCS Performance Manager
UCS-PM-EE	UCS Performance Manager Express
EVAL-UCS-PM-IE	UCS Performance Manager - 90 days evaluation
EVAL-UCS-PM-EE	UCS Performance Manager Express - 90 days evaluation
Nexus 1000V for Hyper-V and vSphere	
N1K-VSG-UCS-BUN	Nexus 1000V Adv Edition for vSphere Paper License Qty 1
IMC Supervisor	
CIMC-SUP-B10	IMC Supervisor- Branch Mgt SW for C & E-Series up to 1K Svrs
CIMC-SUP-B02	IMC Supervisor- Branch Mgt SW for C & E-Series up to 250 Svrs
UCS Multi-Domain Manager	
UCS-MDMGR-100S	UCS Multi-Domain Manager (Central) Per Server License (100+)
UCS-MDMGR-50S	UCS Multi-Domain Manager (Central) Per Server License (50+)
UCS-MDMGR-1S	UCS Multi-Domain Manager (Central) Per Server License
UCS-MDMGR-10S	UCS Multi-Domain Manager (Central) Per Server License (10+)
UCS-MDMGR-1DMN	UCS Multi-Domain Manager (Central) Per Domain License
VMware vCenter	
VMW-VCS-STD-1A	VMware vCenter 6 Server Standard, 1 yr support required
VMW-VCS-STD-3A	VMware vCenter 6 Server Standard, 3 yr support required
VMW-VCS-STD-5A	VMware vCenter 6 Server Standard, 5 yr support required
VMW-VCS-FND-1A	VMware vCenter 6 Server Foundation (3 Host), 1 yr supp reqd
VMW-VCS-FND-3A	VMware vCenter 6 Server Foundation (3 Host), 3 yr supp reqd
VMW-VCS-FND-5A	VMware vCenter 6 Server Foundation (3 Host), 5 yr supp reqd
Microsoft Windows Server	
MSWS-12R2-DC2S	Windows Server 2012 R2 Datacenter (2 CPU/Unlimited VMs)

Table 25 Software (for 2-CPU servers) (continued)

PID Description	Product ID (PID)
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-12R2-DC2S-NS	Windows Server 2012 R2 Datacen (2 CPU/Unlim VM) No Cisco Svc
MSWS-12R2-ST2S	Windows Server 2012 R2 Standard (2 CPU/2 VMs)
MSWS-12-DC2S-NS	Windows Server 2012 Datacenter (2 CPU/Unlim VM) No Cisco Svc
MSWS-12R2-ST2S-NS	Windows Server 2012 R2 Standard (2 CPU/2 VMs) No Cisco SVC
Red Hat	
RHEL-2S2V-3A	Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 3-Yr Support Req
RHEL-2S2V-1A	Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 1-Yr Support Req
VMware	
VMW-VSP-EPL-5A	VMware vSphere 6 Ent Plus (1 CPU), 5-yr, Support Required
VMW-VSP-STD-1A	VMware vSphere 6 Standard (1 CPU), 1-yr, Support Required
VMW-VSP-STD-3A	VMware vSphere 6 Standard (1 CPU), 3-yr, Support Required
VMW-VSP-EPL-3A	VMware vSphere 6 Ent Plus (1 CPU), 3-yr, Support Required
VMW-VSP-EPL-1A	VMware vSphere 6 Ent Plus (1 CPU), 1-yr, Support Required
VMW-VSP-STD-5A	VMware vSphere 6 Standard (1 CPU), 5-yr, Support Required
SLES SAP	
SLES-SAP-2S2V-1S	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 1-Yr SnS
SLES-SAP-2SUV-1S	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 1-Yr SnS
SLES-SAP-2S2V-3S	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 3-Yr SnS
SLES-SAP-2SUV-3S	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 3-Yr SnS
SLES-SAP-2S2V-5S	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 5-Yr SnS
SLES-SAP-2SUV-5S	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 5-Yr SnS
SLES-SAP-2S2V-5A	SLES for SAP Apps (1-2 CPU, 1-2 VM); 5-Yr Support Reqd
SLES-SAP-2SUV-3A	SLES for SAP Apps (1-2 CPU, Unl VM); 3-Yr Support Reqd
SLES-SAP-2S2V-3A	SLES for SAP Apps (1-2 CPU, 1-2 VM); 3-Yr Support Reqd
SLES-SAP-2SUV-5A	SLES for SAP Apps (1-2 CPU, Unl VM); 5-Yr Support Reqd
SLES-SAP-2S2V-1A	SLES for SAP Apps (1-2 CPU, 1-2 VM); 1-Yr Support Reqd
SLES-SAP-2SUV-1A	SLES for SAP Apps (1-2 CPU, Unl VM); 1-Yr Support Reqd
SUSE	
SLES-2S2V-1A	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 1-Yr Support Req
SLES-2SUV-1A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 1-Yr Support Req
SLES-2S2V-3A	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 3-Yr Support Req
SLES-2SUV-3A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 3-Yr Support Req
SLES-2S2V-5A	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 5-Yr Support Req
SLES-2SUV-5A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 5-Yr Support Req
SLES-2S2V-1S	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 1-Yr SnS

Table 25 Software (for 2-CPU servers) *(continued)*

PID Description	Product ID (PID)
SLES-2SUV-1S	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 1-Yr SnS
SLES-2S2V-3S	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 3-Yr SnS
SLES-2SUV-3S	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 3-Yr SnS
SLES-2S2V-5S	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 5-Yr SnS
SLES-2SUV-5S	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 5-Yr SnS
SLES-2S-HA-1S	SUSE Linux High Availability Ext (1-2 CPU); 1yr SnS
SLES-2S-HA-3S	SUSE Linux High Availability Ext (1-2 CPU); 3yr SnS
SLES-2S-HA-5S	SUSE Linux High Availability Ext (1-2 CPU); 5yr SnS
SLES-2S-GC-1S	SUSE Linux GEO Clustering for HA (1-2 CPU); 1yr Sns
SLES-2S-GC-3S	SUSE Linux GEO Clustering for HA (1-2 CPU); 3yr SnS
SLES-2S-GC-5S	SUSE Linux GEO Clustering for HA (1-2 CPU); 5yr SnS

STEP 17 SELECT OPERATING SYSTEM MEDIA KIT

Select the optional operating system media listed in [Table 26](#).

Table 26 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
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
MSWS-12R2-ST2S-RM	Windows Server 2012 R2 Standard (2 CPU/2 VMs) Recovery Media
MSWS-12R2-DC2S-RM	Windows Server 2012 R2 Datacen(2 CPU/Unlimited VM) Rec Media

STEP 18 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 to have no service contract, the following coverage is supplied:

- Three-year parts coverage.
- Next business day (NBD) onsite parts replacement eight hours a day, five days a week.
- 90-day software warranty on media.
- Ongoing 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.

SMARTnet for UCS

For support of the entire Unified Computing System, Cisco offers the Cisco SMARTnet for UCS Service. This service provides expert software and hardware support to help sustain performance and high availability of the unified computing environment. Access to 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 Cisco SMARTnet for UCS 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 27](#).

Table 27 Cisco SMARTnet for UCS Service

Product ID (PID)	On Site?	Description
CON-PREM-C240M3LF	Yes	ONSITE 24X7X2 UCS C240 M3 Server - LFF
CON-OSP-C240M3LF	Yes	ONSITE 24X7X4 UCS C240 M3 Server - LFF
CON-OSE-C240M3LF	Yes	ONSITE 8X5X4 UCS C240 M3 Server - LFF
CON-OS-C240M3LF	Yes	ONSITE 8X5XNBD UCS C240 M3 Server - LFF
CON-S2P-C240M3LF	No	SMARTNET 24X7X2 UCS C240 M3 Server - LFF
CON-SNTP-C240M3LF	No	SMARTNET 24X7X4 UCS C240 M3 Server - LFF
CON-SNTE-C240M3LF	No	SMARTNET 8X5X4 UCS C240 M3 Server - LFF
CON-SNT-C240M3LF	No	SMARTNET 8X5XNBD UCS C240 M3 Server - LFF

SMARTnet for UCS Hardware Only Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco SMARTnet for UCS Hardware Only Service. You can choose from two levels of advanced onsite parts replacement coverage in as little as four hours. SMARTnet for UCS Hardware Only Service 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 28](#).

Table 28 SMARTnet for UCS Hardware Only Service

Product ID (PID)	Service Level GSP	On Site?	Description
CON-UCW7-C240M3LF	UCW7	Yes	UC PLUS 24X7X40S UCS C240 M3 Server - LFF
CON-UCW5-C240M3LF	UCW5	Yes	UC PLUS 8X5XNBDOS UCS C240 M3 Server - LFF

Unified Computing Partner Support Service

Cisco Partner Support Service (PSS) is a Cisco Collaborative Services service offering that is designed for partners to deliver their own branded support and managed services to enterprise customers. Cisco PSS provides partners with access to Cisco's support infrastructure and assets to help them:

- Expand their service portfolios to support the most complex network environments
- Lower delivery costs
- Deliver services that increase customer loyalty

Partner Unified Computing Support Options enable eligible Cisco partners to develop and consistently deliver high-value technical support that capitalizes on Cisco intellectual assets. This helps partners to realize higher margins and expand their practice.

PSS is available to all Cisco PSS partners, but requires additional specializations and requirements. For additional information, see the following URL:

www.cisco.com/go/partnerucssupport

The two Partner Unified Computing Support Options include:

- Partner Support Service for UCS
- Partner Support Service for UCS Hardware Only

Partner Support Service for UCS provides hardware and software support, including triage support for third party software, backed by Cisco technical resources and level three support.

See [Table 29](#).

Table 29 Partner Support Service for UCS

Product ID (PID)	Service Level GSP	On Site?	Description
CON-PSJ1-C240M3LF	PSJ1	No	UCS SUPP PSS 8X5XNBD UCS C240 M3 Server - LFF
CON-PSJ2-C240M3LF	PSJ2	No	UCS SUPP PSS 8X5X4 UCS C240 M3 Server - LFF
CON-PSJ3-C240M3LF	PSJ3	No	UCS SUPP PSS 24X7X4 UCS C240 M3 Server - LFF
CON-PSJ4-C240M3LF	PSJ4	No	UCS SUPP PSS 24X7X2 UCS C240 M3 Server - LFF

Partner Support Service for UCS Hardware Only provides customers with replacement parts in as little as two hours. See [Table 30](#).

Table 30 Partner Support Service for UCS (Hardware Only)

Product ID (PID)	Service Level GSP	On Site?	Description
CON-PSW2-C240M3LF	PSW2	No	UCS W PL PSS 8X5X4 UCS C240 M3 Server - LFF
CON-PSW3-C240M3LF	PSW3	No	UCS W PL PSS 24X7X4 UCS C240 M3 Server - LFF
CON-PSW4-C240M3LF	PSW4	No	UCS W PL PSS 24X7X2 UCS C240 M3 Server - LFF

Unified Computing Combined Support Service

Combined Services makes it easier to purchase and manage required services under one contract. SMARTnet services for UCS help increase the availability of your vital data center infrastructure and realize the most value from your unified computing investment. The more benefits you realize from the Cisco Unified Computing System (Cisco UCS), the more important the technology becomes to your business. These services allow you to:

- Optimize the uptime, performance, and efficiency of your UCS
- Protect your vital business applications by rapidly identifying and addressing issues
- Strengthen in-house expertise through knowledge transfer and mentoring
- Improve operational efficiency by allowing UCS experts to augment your internal staff resources
- Enhance business agility by diagnosing potential issues before they affect your operations

You can choose a service listed in [Table 31](#).

Table 31 UCS Computing Combined Support Service

Product ID (PID)	Service Level GSP	On Site?	Description
CON-NCF2-C240M3LF	NCF2	No	CMB SPT SVC 24X7X2 UCS C240 M3 Server - LFF
CON-NCF2P-C240M3LF	NCF2P	Yes	CMB SPT SVC 24X7X2OS UCS C240 M3 Server - LFF
CON-NCF4P-C240M3LF	NCF4P	Yes	CMB SPT SVC 24X7X4OS UCS C240 M3 Server - LFF
CON-NCF4S-C240M3LF	NCF4S	Yes	CMB SPT SVC 8X5X4OS UCS C240 M3 Server - LFF
CON-NCFCS-C240M3LF	NCFCS	Yes	CMB SPT SVC 8X5XNBDOS UCS C240 M3 Server - LFF
CON-NCFE-C240M3LF	NCFE	No	CMB SPT SVC 8X5X4 UCS C240 M3 Server - LFF
CON-NCFP-C240M3LF	NCFP	No	CMB SPT SVC 24X7X4 UCS C240 M3 Server - LFF
CON-NCFT-C240M3LF	NCFT	No	CMB SPT SVC 8X5XNBD UCS C240 M3 Server - LFF

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 32](#).



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

Table 32 Drive Retention Service Options

Service Description	Service Program Name	Service Level GSP	Service Level	Product ID (PID)
SMARTnet for UCS Service with Drive Retention	UCS DR	UCSD7	24x7x4 Onsite	CON-UCSD7-C240M3LF
		UCSD7	8x5xNBD Onsite	CON-UCSD5-C240M3LF
SMARTnet for UCS HW ONLY+Drive Retention	UCS HW+DR	UCWD7	24x7x4 Onsite	CON-UCWD7-C240M3LF
		UCWD5	8x5xNBD Onsite	CON-UCWD5-C240M3LF

For more service and support information, see the following URL:

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

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

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

OPTIONAL STEP - ORDER RACK(S)

The optional R42612 rack is available from Cisco for the C-Series servers, including the C240 M4 SFF server. This rack is a standard 19-inch rack and can be ordered with a variety of options, as listed in [Table 33](#). Racks are shipped separately from the C240 M4 SFF server.

Table 33 Racks and Rack Options

Product ID (PID)	PID Description
RACK2-UCS	Cisco R42612 expansion rack, no side panels. This type of rack is used for multiple-rack deployments.
RACK2-UCS2	Cisco R42612 static (standard) rack, with side panels. This type of rack is used for single-rack and end of row deployments. Side panels are needed for racks at the ends of multiple-rack deployments. For example, when configuring a row of 5 racks, order 1 standard rack plus 4 expansion racks. Apply the side panels from the standard rack to the racks at each end of the row.
RACK-BLANK-001	Blanking panels (qty 12), 1U, plastic, toolless. Recommended to ensure proper airflow. Fill all empty RU spaces in the front of the rack. Because each blanking panel PID includes 12 panels, use the following calculation: 42RU - occupied RU = available RU. Divide available RU by 12 to determine PID order quantity.
RACK-CBLMGT-001	Cable mgt D rings (qty 10), metal. Use the D rings to bundle system cables to ensure proper airflow.
RACK-CBLMGT-003	Brush strip (qty 1), 1 U. The brush strip promotes proper airflow while allowing cables to be passed from the front to the rear of the rack.
RACK-CBLMGT-011	Cable mgt straps (qty 10), Velcro. Use the Velcro straps to bundle system cables to ensure proper airflow.
RACK-FASTEN-001	Mounting screws (qty 100), M6. The rack ships with nuts and screws, but extras may be ordered.
RACK-FASTEN-002	Cage nuts (qty 50), M6. The rack ships with nuts and screws, but extras may be ordered.
RACK2-JOIN-001	Rack joining kit. Use the kit to connect adjacent racks within a row. Order 1 unit less than the number of racks in the row.
RACK2-GRND-001	Cisco R42612 grounding kit

For more information about the R42612 rack, see [RACKS, page 80](#).

OPTIONAL STEP - ORDER PDU

An optional power distribution unit (PDU) is available from Cisco for the C-Series rack servers, including the C240 M4 server. This PDU is available in a zero rack unit (RU) style or horizontal PDU style (see [Table 34](#)). For more information about the PDU, see [PDUs, page 82](#).

Table 34 Available PDUs

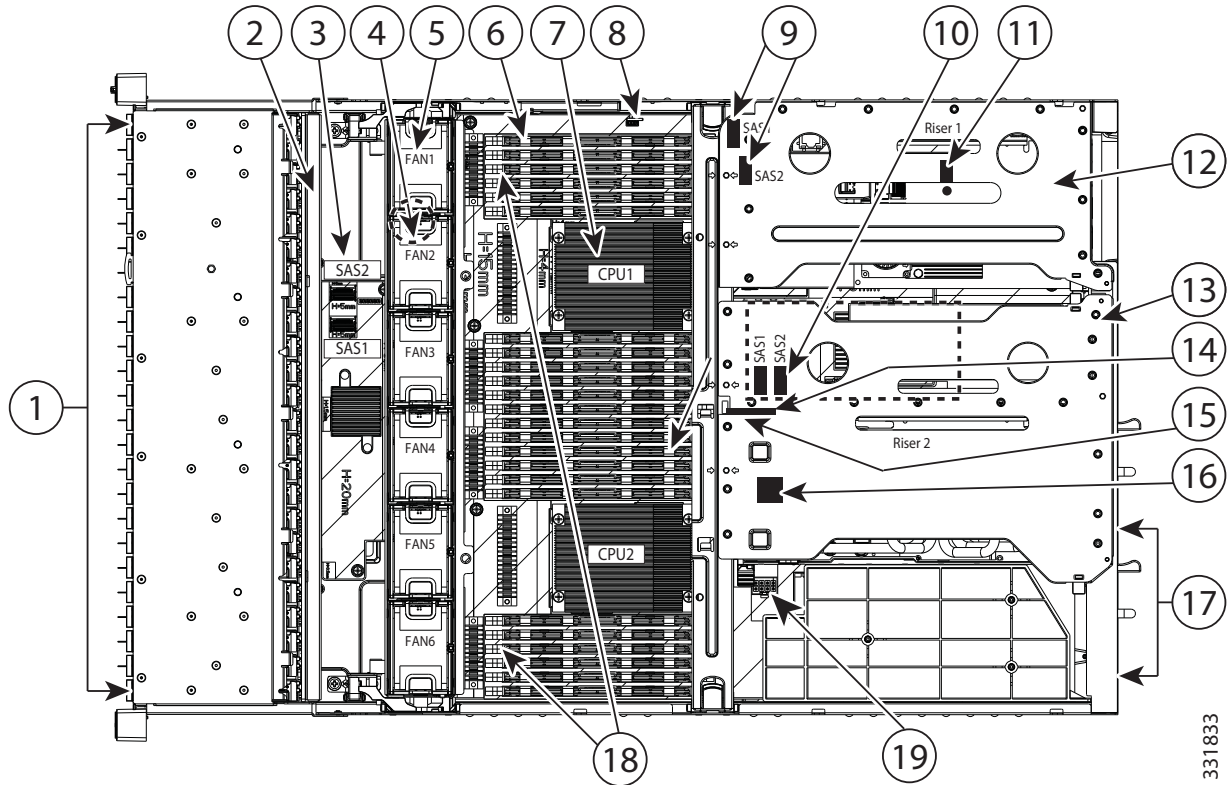
Product ID (PID)	Description	Plug	Country
Zero-RU PDUs			
RP208-30M1P-6-36	30 A, single-phase, vertical-mount PDU with 6 C19 and 36 C13 connectors	L6-30P	North America
RP208-30M3P-6-30	30 A, three-phase, vertical-mount PDU with 6 C19 and 30 C13 connectors	L15-30P	North America
RP208-60M3P-12-9	60 A, three-phase, vertical-mount PDU with 12 C19 and 9 C13 connectors	IEC60309 460P9	North America
RP230-32M1P-6-36	32 A, single-phase, button-mount (rear and sides) PDU with 6 C19 and 36 C13 connectors	IEC60309 332P6	International
RP230-32M3P-12-12	32 A, single-phase, button-mount (rear and sides) PDU with 12 C19 and 12 C13 connectors	IEC60309 532P6	International
Horizontal PDUs (occupy RU space)			
RP208-30M1P-4-8 (1 RU space)	30 A, single-phase, horizontal-mount PDU with 4 C19 and 8 C13 connectors	L6-30P	North America
RP208-60M3P-12 (2 RU spaces)	48 A, three-phase, horizontal-mount PDU with 12 C19 connectors	L15-30P	North America

SUPPLEMENTAL MATERIAL

CHASSIS

An internal view of the C240 M3 chassis with the top cover removed is shown in *Figure 7*.

Figure 7 C240 M3 LFF With Top Cover Off



331833

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

8	SCU upgrade ROM header	18	Supercap RAID backup unit mounting locations (two, on air baffle not shown in this view)
9	Integrated RAID on motherboard, and mini-SAS connectors	19	GPU-ready power connector
10	Optional mezzanine RAID controller, mini-SAS connectors SAS1 and SAS2	—	—

CPUs and DIMMs

Physical Layout

Each CPU has four DIMM channels:

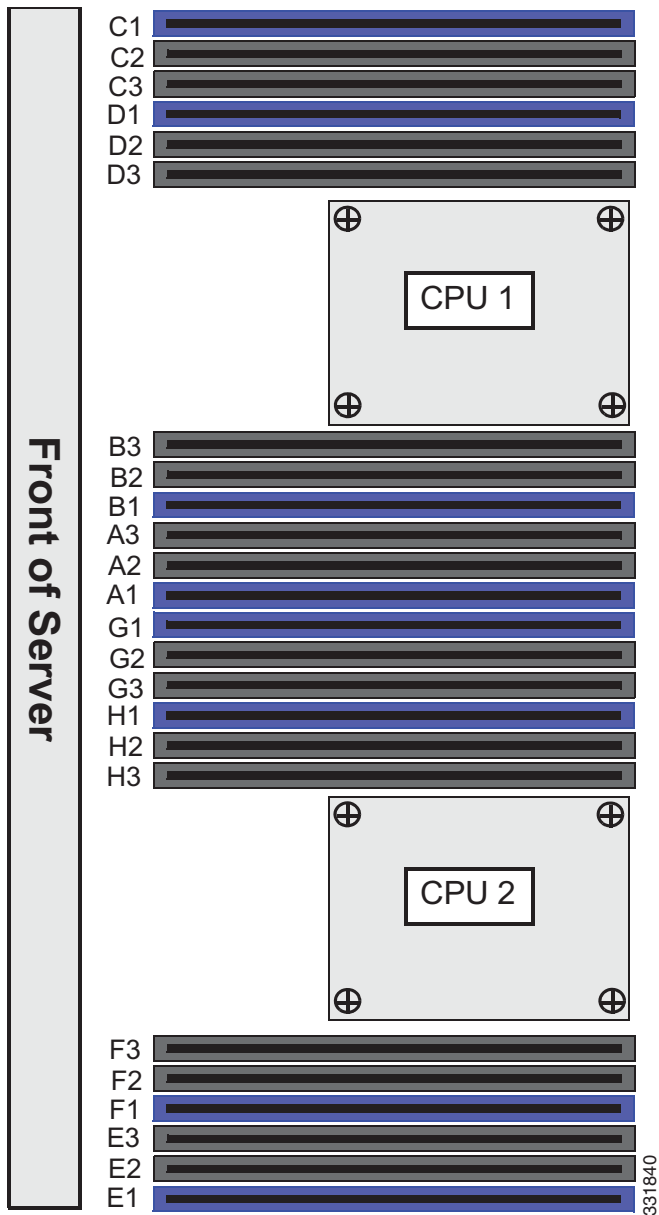
- CPU1 has channels A, B, C, and D
- CPU2 has channels E, F, G, and H

Each DIMM channel has three banks: bank 1, 2, and 3. The blue-colored DIMM slots 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 8 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 8 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:

- Each channel has three DIMM slots (for example, channel A = slots A1, A2, and A3).
 - A channel can operate with one, two, or three 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 third: 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 35](#)

Table 35 DIMM Rules for C240 M3 Servers

DIMM Parameter	DIMMs in the Same Channel	DIMM in the Same Bank ¹
<u>DIMM Capacity</u>		
RDIMM = 4, 8, or 16 GB	DIMMs in the same channel (for example, A1, A2, A3) can have different capacities.	For best performance, DIMMs in the same bank (for example, A1, B1, C1, D1) should have the same capacity.
LRDIMM = 32 GB	You cannot mix 32 GB LRDIMMs with any RDIMM or UDIMM	You cannot mix 32 GB LRDIMMs with any RDIMM or UDIMM
UDIMM = 4 GB	You cannot mix 4 GB UDIMMs with any RDIMM or LRDIMM	You cannot mix 4 GB UDIMMs with any RDIMM or LRDIMM
<u>DIMM Speed</u>		
1866-, 1600-, or 1333-MHz ²	DIMMs will run at the lowest speed of the DIMMs/CPUs installed	DIMMs will run at the lowest speed of the DIMMs/CPUs installed
<u>DIMM Type</u>		
RDIMMs, LRDIMMs, or UDIMMs	You cannot mix DIMM types in a channel	You cannot mix DIMM types in a bank
DIMMs per Channel (DPC)	1 DPC or 2 DPC	3 DPC
	See Table 6 on page 20 for valid LRDIMM and RDIMM 1 DPC and 2 DPC memory configurations	See Table 6 on page 20 for valid LRDIMM and RDIMM 3 DPC configurations
	UDIMMs run at 1066 MHz at 1.35 V and 1333 MHz at 1.5 V	3 DPC is not supported for UDIMMs

Notes . . .

1. Although you can have different DIMM capacities in the same bank, this will result in less than optimal performance. For optimal performance, all DIMMs in the same bank should be identical.
2. Only 1866-, 1600-, and 1333-MHz DIMMs are currently available for the C240 M3 server.

DIMM Population Order

Populate the DIMMs for a CPU according to [Table 36](#).

Table 36 DIMM Population Order per CPU

DIMMs per CPU	Populate CPU 1 Slots	Populate CPU 2 Slots
1	A1	E1
2	A1, B1	E1, F1
3	A1, B1, C1	E1, F1, G1
4	A1, B1, C1, D1	E1, F1, G1, H1
8	A1, B1, C1, D1, A2, B2, C2, D2	E1, F1, G1, H1, E2, F2, G2, H2
12	A1, B1, C1, D1, A2, B2, C2, D2 A3, B3, C3, D3	E1, F1, G1, H1, E2, F2, G2, H2 E3, F3, G3, H3

Recommended Memory Configuration

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

- All DIMMs must be DDR3 DIMMs.
- Do not mix:
 - DIMMs with different clock rates in a channel
 - RDIMMs and LRDIMMs
 - ECC and non-ECC DIMMs
- There are blue and black DIMM slots. Populate blue slots first.
- When single- and dual-rank DIMMs are populated for 2DPC, always populate the dual-rank DIMM in the blue DIMM slot and the single-rank DIMM in the black DIMM slot.

Many memory configurations are possible. For best results, follow [Table 37](#) when populating 1600- and 1866-MHz DIMMs for Intel Xeon E5-2600 v2 CPUs and [Table 38](#) when populating 1600-MHz DIMMs for Intel Xeon E5-2600 CPUs.



NOTE: These tables list only some recommended and suggested configurations. There are numerous other possible configurations supported by Cisco. Cisco supports all mixing and population configurations of the Cisco DIMMs as long as the mixing does not violate the few fundamental rules noted in this document.

Table 37 Recommended Memory Configurations for Intel Xeon E5-2600 v2 CPUs (with 1600- and 1866-MHz DIMMs)¹

Total System Memory Size	CPU 1 DIMMs			CPU 2 DIMMs			DIMM Max Speed (MHz)	Total DIMMs
	Blue Slots Bank 1 (A1,B1, C1,D1)	Black Slots Bank 2 (A2,B2, C2,D2)	Black Slots Bank 3 (A3,B3, C3,D3)	Blue Slots Bank 1 (E1,F1, G1,H1)	Black Slots Bank 2 (E2,F2, G2,H2)	Black Slots Bank 3 (E3,F3, G3,H3)		
32 GB	4x4 GB	–	–	4x4 GB	–	–	N/A ²	8
	2x8 GB	–	–	2x8 GB	–	–	1866	4
64 GB	4x4 GB	4x4 GB	–	4x4 GB	4x4 GB	–	N/A ²	16
	4x8 GB	–	–	4x8 GB	–	–	1866	8
96 GB	4x4 GB	4x4 GB	4x4 GB	4x4 GB	4x4 GB	4x4 GB	N/A ²	24
	3x16 GB	–	–	3x16 GB	–	–	1866	6
	4x8 GB	4x4 GB	–	4x8 GB	4x4 GB	–	N/A ²	16

Table 37 Recommended Memory Configurations for Intel Xeon E5-2600 v2 CPUs (with 1600- and 1866-MHz DIMMs)¹

Total System Memory Size	CPU 1 DIMMs			CPU 2 DIMMs			DIMM Max Speed (MHz)	Total DIMMs
	Blue Slots Bank 1 (A1,B1, C1,D1)	Black Slots Bank 2 (A2,B2, C2,D2)	Black Slots Bank 3 (A3,B3, C3,D3)	Blue Slots Bank 1 (E1,F1, G1,H1)	Black Slots Bank 2 (E2,F2, G2,H2)	Black Slots Bank 3 (E3,F3, G3,H3)		
128 GB	4x8 GB	4x8 GB	—	4x8 GB	4x8 GB	—	1866	16
	4x16 GB	—	—	4x16 GB	—	—	1866	8
192 GB	4x8 GB	4x8 GB	4x8 GB	4x8 GB	4x8 GB	4x8 GB	1333	24
	4x16 GB	4x8 GB	—	4x16 GB	4x8 GB	—	1866	16
256 GB	4x16 GB	4x16 GB	—	4x16 GB	4x16 GB	—	1866	16
	4x32 GB	—	—	4x32 GB	—	—	1866	8
384 GB	4x16 GB	4x16 GB	4x16 GB	4x16 GB	4x16 GB	4x16 GB	1333	24
512 GB	4x32 GB	4x32 GB	—	4x32 GB	4x32 GB	—	1866	16
768 GB	4x32 GB	4x32 GB	4x32 GB	4x32 GB	4x32 GB	4x32 GB	1333	24

Notes . . .

1. Rows marked in yellow indicate best performance.
2. 1866-MHz 4 GB DIMMs are not offered.

Table 38 Recommended Memory Configurations for Intel Xeon E5-2600 CPUs (with 1600-MHz DIMMs).¹

Total System Memory Size	CPU 1 DIMMs			CPU 2 DIMMs			DIMM Max Speed (MHz)	Total DIMMs
	Blue Slots Bank 1 (A1,B1, C1,D1)	Black Slots Bank 2 (A2,B2, C2,D2)	Black Slots Bank 3 (A3,B3, C3,D3)	Blue Slots Bank 1 (E1,F1, G1,H1)	Black Slots Bank 2 (E2,F2, G2,H2)	Black Slots Bank 3 (E3,F3, G3,H3)		
32 GB	4x4 GB	—	—	4x4 GB	—	—	1600	8
	2x8 GB	—	—	2x8 GB	—	—	1600	4
64 GB	4x4 GB	4x4 GB	—	4x4 GB	4x4 GB	—	1600	16
	4x8 GB	—	—	4x8 GB	—	—	1600	8

Table 38 Recommended Memory Configurations for Intel Xeon E5-2600 CPUs (with 1600-MHz DIMMs).¹

Total System Memory Size	CPU 1 DIMMs			CPU 2 DIMMs			DIMM Max Speed (MHz)	Total DIMMs
	Blue Slots Bank 1 (A1,B1, C1,D1)	Black Slots Bank 2 (A2,B2, C2,D2)	Black Slots Bank 3 (A3,B3, C3,D3)	Blue Slots Bank 1 (E1,F1, G1,H1)	Black Slots Bank 2 (E2,F2, G2,H2)	Black Slots Bank 3 (E3,F3, G3,H3)		
96 GB	4x4 GB	4x4 GB	4x4 GB	4x4 GB	4x4 GB	4x4 GB	1066	24
	3x16 GB	—	—	3x16 GB	—	—	1600	6
	4x8 GB	4x4 GB	—	4x8 GB	4x4 GB	—	1600	16
128 GB	4x8 GB	4x8 GB	—	4x8 GB	4x8 GB	—	1600	16
	4x16 GB	—	—	4x16 GB	—	—	1600	8
192 GB	4x8 GB	4x8 GB	4x8 GB	4x8 GB	4x8 GB	4x8 GB	1333	24
	4x16 GB	4x8 GB	—	4x16 GB	4x8 GB	—	1600	16
256 GB	4x16 GB	4x16 GB	—	4x16 GB	4x16 GB	—	1600	16
	4 x 32 GB	—	—	4 x 32 GB	—	—	1600	8
384 GB	4x16 GB	4x16 GB	4x16 GB	4x16 GB	4x16 GB	4x16 GB	1333	24
512 GB	4x32 GB	4x32 GB	—	4x32 GB	4x32 GB	—	1333	16
768 GB	4x32 GB	4x32 GB	4x32 GB	4x32 GB	4x32 GB	4x32 GB	1066	24

Notes . . .

1. Rows marked in yellow indicate best performance.

Additional DIMM Populations

The list in [Table 39](#) is not a complete list of all supported DIMM populations, but highlights common configuration options.

Table 39 Supported DIMM Configurations

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
1 x 8 GB	1	8 GB	1 x 8 GB	1	8 GB	16 GB
1 x 16 GB	1	16 GB	1 x 16 GB	1	16 GB	32 GB
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
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
1 x 32 GB	1	32 GB	1 x 32 GB	1	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
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
2 x 32 GB	2	64 GB	2 x 32 GB	2	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
4x8GB + 4x16GB	8	96 GB	4x8GB + 4x16GB	8	96 GB	192 GB

Table 39 Supported DIMM Configurations (*continued*)

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
12 x 8 GB	12	96 GB	12 x 8 GB	12	96 GB	192 GB
3 x 32 GB	3	96 GB	3 x 32 GB	3	96 GB	192 GB
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
4 x 32 GB	4	128 GB	4 x 32 GB	4	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
8 x 32 GB	8	256 GB	8 x 32 GB	8	256 GB	512 GB
12 x 32 GB	12	384 GB	12 x 32 GB	12	384 GB	768 GB

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 Details

The available RAID configurations are shown in this section.

(1) 1-CPU Configurations

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

- One internal drive RAID controller from [Table 8 on page 23](#) (LSI MegaRAID SAS 9271-8i or 9271CV-8i)
- One external drive RAID controller from [Table 8 on page 23](#) (LSI MegaRAID SAS 9285CV-8e or 9286CV-8e)



NOTE: In 1-CPU configurations, PCIe slot 3 is the default slot supported for an internal drive RAID controller. PCIe slots 1 and 2 can be used for one external drive RAID controller if an internal drive PCIe RAID controller is not installed or for PCIe expansion cards. PCIe slots 4 and 5 are not supported for 1-CPU systems. You can change the default card slot for a RAID controller to a different slot by going into the BIOS and reconfiguring the option ROM (OPROM) settings.

(2) 2-CPU Configurations

Select a mezzanine card RAID option from [Table 7 on page 23](#) or an internal RAID controller, an external RAID controller, or one of each if desired from [Table 8 on page 23](#). You may also select an appropriate optional RAID configuration listed in [Table 8 on page 23](#). Choose one of the following:

- One mezzanine internal drive RAID controller from [Table 8 on page 23](#).
- One internal drive RAID controller from [Table 8 on page 23](#) (LSI MegaRAID SAS 9271-8i or 9271CV-8i)
- One external drive RAID controller from [Table 8 on page 23](#) (LSI MegaRAID SAS 9285CV-8e or 9286CV-8e)
- One external drive RAID controller and one internal drive RAID controller from [Table 8 on page 23](#).
- One mezzanine internal drive RAID controller from [Table 8 on page 23](#) and one external drive RAID controller from [Table 8 on page 23](#).

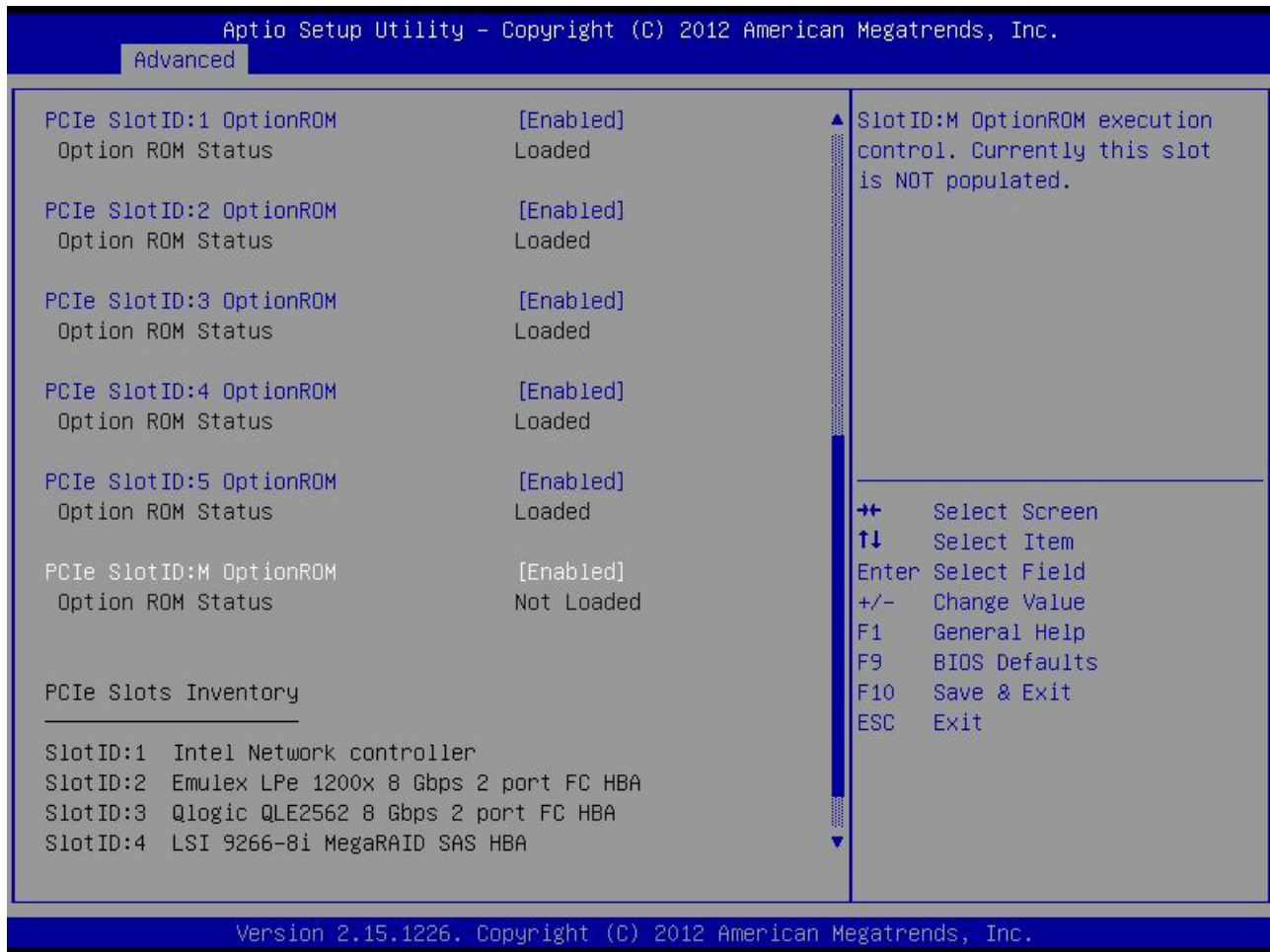


NOTE: In 2-CPU configurations, PCIe slot 4 is the default slot supported for an internal drive RAID controller. The remaining slots can be used for one external drive RAID controller if an internal drive PCIe RAID controller is not installed or for PCIe expansion cards. You can change the default card slot for a RAID controller to a different slot by going into the BIOS and reconfiguring the option ROM (OPROM) settings.

RAID Option ROM (OPROM) Settings

The server contains an Option ROM (OPROM) for the PCIe slots. The server has a finite amount of option ROM with which it can boot up devices. Go into the BIOS and disable the OPROM on the PCIe slots not used for booting so that resources are available for the slots that are used for booting. An example OPROM BIOS screen is shown in *Figure 9*.

Figure 9 Example BIOS Screen for OPROM

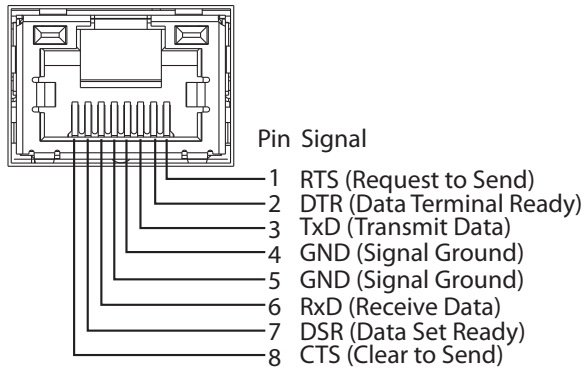


Serial Port Details

The pinout details of the rear RJ-45 serial port connector are shown in [Figure 10](#).

Figure 10 Serial Port (Female RJ-45 Connector) Pinout

Serial Port (RJ-45 Female Connector)



Upgrade and Servicing-Related Parts

This section lists the upgrade and servicing-related parts you may need during the life of your server. Some of these parts are configured with every server, and some may be ordered when needed or may be ordered and kept on hand as spares for future use. See [Table 40](#).

Table 40 Upgrade and Servicing-related Parts for UCS C240 M3 LFF Server


Spare Product ID (PID)	Description
UCSC-BBLKD-L=	3.5-inch HDD Blanking Panel ¹
UCSC-CABLE4=	Set of two spare SAS/SATA Cables for C240 M3 LFF w/ expander (3.5-in)
UCSC-PCIF-01H=	PCIe Low Profile blanking panel for UCS C-Series Server
UCSC-PCIF-01F=	PCIe Full Height blanking panel for UCS C-Series Server
UCSC-HS-C240M3=	Heat Sink for UCS C240 M3 Rack Server ¹
UCS-CPU-LPCVR=	CPU load plate dust cover (for unpopulated CPU sockets)
UCSC-AIRBAF-C240=	Air Baffle Replacement Kit for C240 M3 Server ¹
N20-MBLIBATT=	Replacement Lithium Battery for Server Motherboard (CR2032) ¹
UCS-RAID-BBU=	Battery Back-Up for 9266 ²
 CAUTION: If one of your RAID cards is equipped with a battery backup unit (BBU), be aware that hot swapping the BBU is not supported. Please perform a graceful shutdown of the server prior to replacing the BBU.	
UCS-RAID-CV-SC=	LSI CacheVault Power Module for 9266CV-8i, 9271CV-8i, 9285CV-8e and 9286CV-8e ³
UCSC-PSU-BLKP=	Power supply blanking panel/filler for C-Series Servers
UCSC-RAIL-2UB=	Ball bearing rail kit for C240 rack servers
UCSC-CMA2B	Reversible cable management arm for C240 ball bearing rail kit
UCSC-RAIL-2U=	Friction Rail Kit for C240, C260 rack servers
UCSC-CMA2=	Reversible Cable Management Arm for C240 & C260 friction rail kit
UCSC-RAIL-2U-I=	Inner rail spare for C240 and C260 friction rail kit ⁴
UCS-SD-32G-S=	Blank SD Card for UCS servers ⁵
UCS-USBFLSH-S-4GB=	4GB SLC Flash USB Drive (shorter) for all servers except C260
N20-BKVM=	KVM local IO cable for UCS servers console port ⁶

Table 40 Upgrade and Servicing-related Parts for UCS C240 M3 LFF Server

Spare Product ID (PID)	Description
UCS-CPU-EP-PNP=	Pick n place CPU tools for M3/EP 10/8/6/4/2 core CPUs (Green) ⁷
UCS-CPU-EP2-PNP=	Pick n place CPU tools for M3/EP v2 12 core CPUs (Purple) ⁸
UCS-CPU-GREASE2=	Thermal grease-for 2 CPUs-only for C220/C240-Red tip syringe ⁸
UCSX-HSCK=	UCS Processor Heat Sink Cleaning Kit (when replacing a CPU) ⁸
UCSC-CPL-C240L=	UCS C240 Control Panel/Slam Latch Kit (right & left) for 2.5-inch chassis
C260-FAN-001=	Fan assembly for C260 and C240 servers
UCSC-GPUKIT1-C240=	C240 GPU Upgrade Kit for NVIDIA GPU w/ two PCIe risers, mid-brace & power cables
UCSC-GPUCBL-88Y=	8 TO 8 PIN Y GPU PWR CABLE DUAL K1-K2 C240 NEW MB
UCSC-GPUCBL-88S=	8 TO 8 PIN STRAIGHT GPU PWR CABLE K1-K2 C240 NEW MB
UCSC-GPUCBL-KIT=	GPU power cable kit with adapter cable plus 8 to 8 pin Y and straight cables
UCSC-AIRBAF-C240=	Air Baffle Replacement Kit for C240 M3 Server (services spare only)

Notes . . .

1. This part is included/configured with your UCS server (in some cases, as determined by the configuration of your server).
2. If your server contains an LSI MegaRAID SAS 9266-8i RAID controller card with battery backup (UCS-RAID-9266), the card contains a battery backup unit (UCS-RAID-BBU), which can be replaced. If your server contains an LSI MegaRAID SAS 9266-8i RAID controller card without a battery backup unit (UCS-RAID-9266NB), the card does not contain a battery backup unit (UCS-RAID-BBU); however, you can retrofit the card with a battery backup if desired. Note that you *cannot* retrofit a UCS-RAID-9266NB or UCS-RAID-9266 RAID card with an LSI Cachevault Power Module (also known as a Supercap).
3. You can order a replacement only for the RAID cards listed. You cannot retrofit a UCS-RAID-9266NB or UCS-RAID-9266 RAID card with an LSI Cachevault Power Module (also known as a Supercap)
4. The server is shipped with the inner rail attached to the chassis.
5. This SD card is blank. The required image for the C240 server can be downloaded to the card.
6. This part is included/configured with the server chassis.
7. This part is included with the purchase of each optional or spare Intel Xeon E5-2600 CPU processor kit.
8. This part is included with the purchase of each optional or spare Intel Xeon E5-2600 v2 CPU processor kit.

Drive Blanking Panels

A drive blanking panel (UCSC-BBLKD-L=) must be installed if you remove a disk drive from a UCS server. These panels are required to maintain system temperatures at safe operating levels, and to keep dust away from system components.

Upgrading your Server from Intel Xeon E5-2600 to Intel Xeon E5-2600 v2 CPUs (or downgrading from Intel Xeon E5-2600 v2 to Intel Xeon E5-2600 CPUs)

See the following link:

http://www.cisco.com/en/US/docs/unified_computing/ucs/hw/CPU/IVB/install/IVB-B.html

Adding an Additional CPU (with CPU heat sink)

All Cisco UCS two CPU socket-capable servers can be upgraded from having one to having two CPUs configured. You will need to order and install a heat sink when adding any additional CPU to a server. Instructions for installing the new CPU and heat sink can be found at the following link:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C240/install/replace.html#wp1233864

Motherboard Lithium Battery

You can order a replacement motherboard battery. Installation instructions are found at this link:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C240/install/replace.html#wp1307315

CPU Removal and Installation (“pick n place”) Tool Set

The Pick n Place tool set includes two tools:

- Pick and pull cap tool - used to pull off the plastic protective cap covering an empty CPU socket and to remove or lift a CPU processor without touching it
- Pick and place tool - used to install a CPU in its socket without damage. Must be used each time a CPU is installed in a UCS “M3” server.

Instructions for using this tool set are found at the following link:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C240/install/replace.html#wp1233864



NOTE: When you purchase a spare CPU, the Pick n Place Toolkit is included.

Thermal Grease (with syringe applicator) for CPU to Heatsink Seal

Thermal grease must be applied to the top of the CPU where it comes in contact with the heat sink. Instructions for applying thermal grease are found at:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C240/install/replace.html#wp1233864



CAUTION: Use only the thermal grease specified for this server (UCS-CPU-GREASE2=). This thermal grease comes in a red-tipped syringe and is to be used only in the C220 M3 and C240 M3 servers. Other servers use thermal grease in a blue-tipped syringe (UCS-CPU-GREASE=).

Thermal grease for other systems may have different thermal conductivity properties and may cause overheating if used in the C220 M3 or C240 M3 servers.

DO NOT use thermal grease available for purchase at any commercial electronics store. If these instructions are not followed, the CPU may overheat and be destroyed.

CAUTION:



NOTE: When you purchase a spare CPU, the thermal grease with syringe applicator is included.

Air Baffle Replacement Kit

Air baffles are designed to direct airflow through the server to maintain server temperature at a safe operating level. These baffles must always remain installed during server operation. The Air Baffle Replacement Kit includes the air baffles needed for one UCS C240 M3 server.

CPU Heat Sink Cleaning Kit

The cleaning kit is used to remove the existing thermal compound from the bottom of the heat sink during a CPU replacement process. Instructions for cleaning are found at the following link:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C240/install/replace.html#wp1233864



NOTE: When you purchase a spare CPU, the CPU cleaning kit is included.

RACKS

The Cisco R42612 rack (see [Figure 11 on page 81](#)) is certified for Cisco UCS installation at customer sites and is suitable for the following equipment:

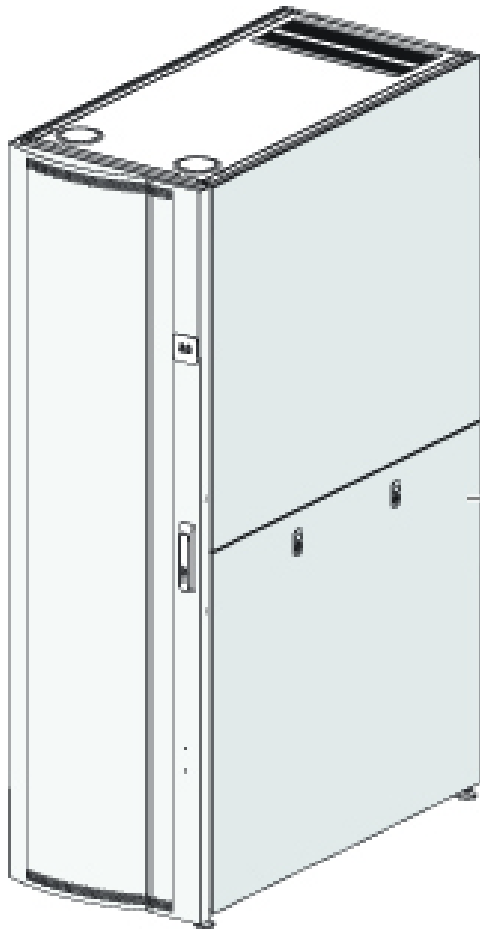
- Cisco UCS B-Series servers and fabric interconnects
- Cisco UCS C-Series and select Nexus switches

The rack is compatible with hardware designed for EIA-standard 19-inch racks. Rack specifications are listed in [Table 41](#).

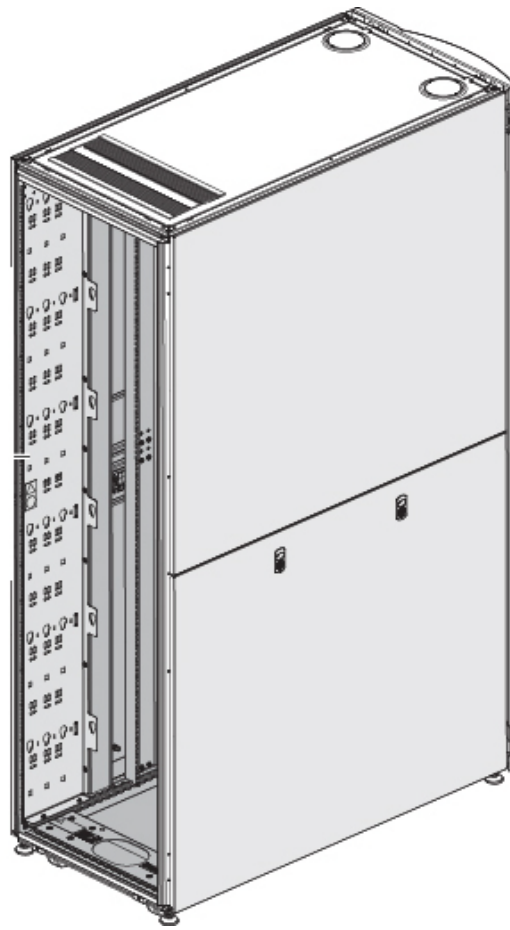
Table 41 R42612 Specifications

Cisco R42612 Rack	Standard (Static with side panels)	Expansion (Static without Side Panels)
Dimensions (H x W x D)	79.25 x 23.50 x 49.84 in. (2013 x 597 x 1266 mm)	79.25 x 23.50 x 49.84 in. (2013 x 597 x 1266 mm)
Dimensions (H x W x D) with packaging	84.25 x 32 x 54.84 in. (2140 x 813 x 1393 mm)	84.25 x 32 x 54.84 in. (2140 x 813 x 1393 mm)
Distance from front mounting rail to rear mounting rail	29.19 in. (741.5 mm)	29.19 in. (741.5 mm)
Weight	339.51 lb (154 kg)	264.55 lb (120 kg)
Weight with packaging	410.06 lb (186 kg)	335.10 lb (152 kg)
Side panels included	Yes	No
Equipment mounting capacity	42 RU	42 RU
Static load capacity	2700 lb (1224.7 kg)	2700 lb (1224.7 kg)
Dynamic load capacity	N/A	N/A

Figure 11 Cisco R42612 Rack



Front View



Rear View

PDU

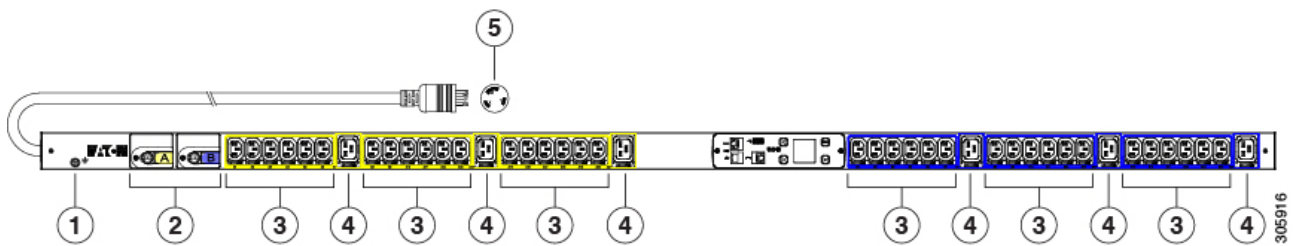
Cisco RP Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

Cisco RP Series PDU models distribute power to up to 42 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) or horizontal PDU. See [Figure 12](#) for one example of a zero rack unit PDU.

Figure 12 RP208-30M1P-6-36 PDU



- 1 = Ground
- 2 = 20 A circuit breakers
- 3 = IEC 60320 C13 outlets
- 4 = EC 60320 C19 outlets
- 5 = NEMA L6-30P plug

KVM CABLE

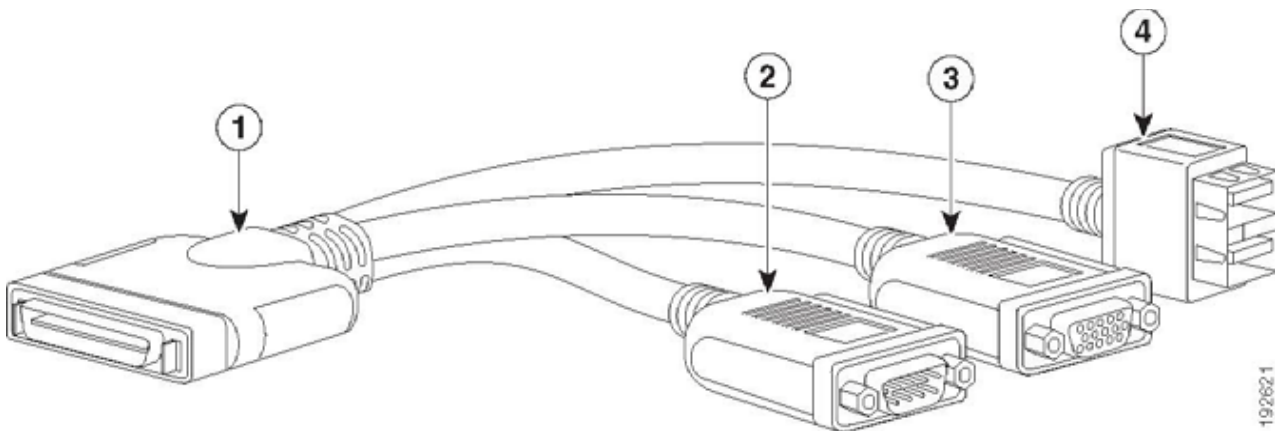
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB 2.0 ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in [Table 42](#).

Table 42 KVM Cable

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

Figure 13 KVM Cable

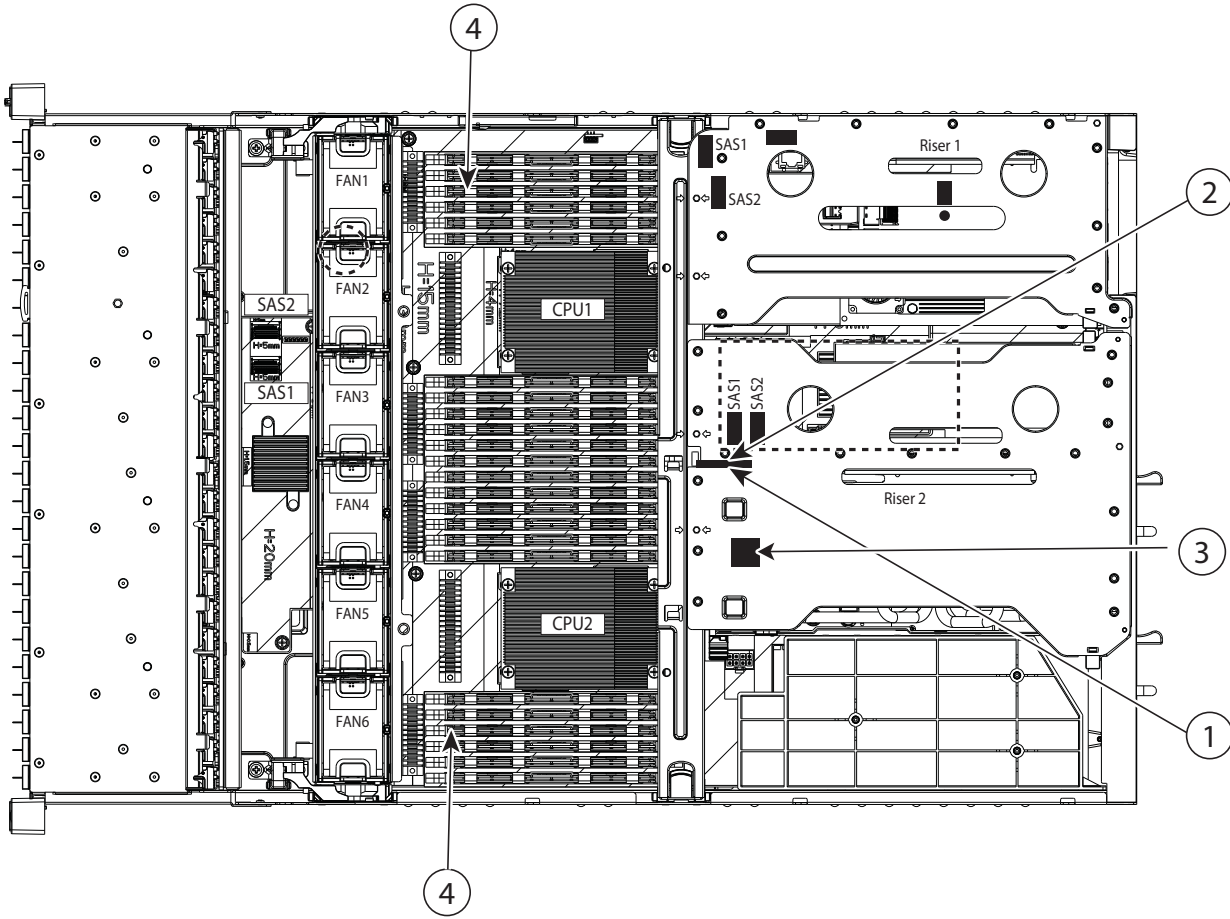


1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB 2.0 connector (for a mouse and keyboard)

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 14*. The mounting locations for RAID SuperCap data cache power backup are also shown

Figure 14 Motherboard USB and SD Ports and RAID Super Capacitor 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 43 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 ¹	
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)

Notes . . .

1. Weight includes inner rail, which is attached to the server. Weight does not include outer rail, which is attached to the rack.

Power Specifications

The general power specifications for the C240 M3 LF server 450 W (AC) power supply are listed in [Table 44](#).

Table 44 UCS C240 M3 LFF 450 W AC 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

Table 44 UCS C240 M3 LFF 450 W AC Power Supply Specifications *(continued)*

Description	Specification
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.

The general power specifications for the C240 M3 LFF server 650 W (AC)m power supply are listed in [Table 44](#).

Table 45 UCS C240 M3 LFF 650 W AC 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.

The general power specifications for the C240 M3 LFF server 930 W (DC) power supply are listed in [Table 46](#)

Table 46 UCS C240 M3 SFF Power Specifications (930 W DC power supply)

Description	Specification
Class	■ RSP1
Input	
DC input voltage range	■ 40 to 72 VDC (self-ranging, 48 to 60 VDC nominal)
DC line input current (steady state)	■ 23 A peak at 48 VDC
Output	
12 V main power output	■ 930 W
12 V standby power output	■ 30 W
Power supply output voltage	■ Main power: 12 VDC ■ Standby power: 12 VDC
Rated output load	■ 2.5 A minimum (within 40 - 72 VDC range)

Table 47 UCS C240 M3 LFF Power Specifications (930 W DC V2 power supply)

Description	Specification
AC input voltage	Voltage Range: -48 to -60 VDC nominal (range: -40 to -60 VDC)
Max DC Input current	23 A at -48 VDC
Maximum Input Power	1104 W at -48 VDC
Maximum output power per power supply	930 W
Maximum inrush current	35 A (sub cycle duration)
Maximum hold up time	4 ms @ 930 W
Power supply output voltage	12 VDC
Power supply standby voltage	12 VDC
Efficiency rating	> 92% at 50% Load
Form Factor	RSP1

Table 47 UCS C240 M3 LFF Power Specifications (930 W DC V2 power supply) *(continued)*

Description	Specification
Input connector	3 wire Connector (Molex MINIFIT SR. R/A)

For configuration-specific power specifications, use the Cisco UCS Power Calculator at this URL:

<http://ucspowercalc.cisco.com>

Environmental Specifications

The power specifications for the C240 M3 server are listed in *Table 48*.

Table 48 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 49](#).

Table 49 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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