Spec Sheet

Cisco UCS C420 M3 High-Performance Rack Server

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OVERVIEW

The Cisco® UCS C420 M3 High-Performance Rack Server is a high-density, four-socket, two-rack-unit (2RU) rack server designed for compute, I/O, storage and memory-intensive standalone applications.

The UCS C420 M3 server (*Figure 1*) extends the capabilities of the Cisco Unified Computing System™, using Intel's latest Xeon E5-4600 Series multi-core processors to deliver increased performance and efficiency.

Figure 1 Cisco UCS C420 M3 High-Density Rack Server

Front View

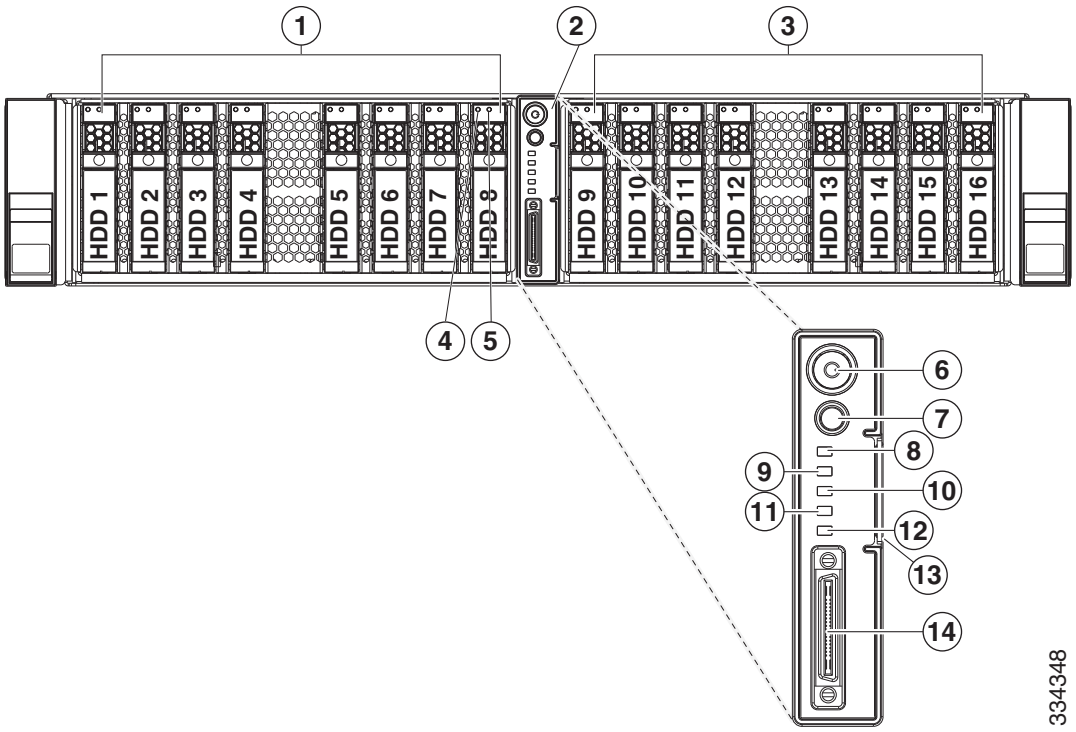
Rear View

DETAILED VIEWS

Chassis Front View

Figure 2 shows the Cisco UCS C420 M3 General-Purpose Rack Server.

Figure 2 Chassis Front View



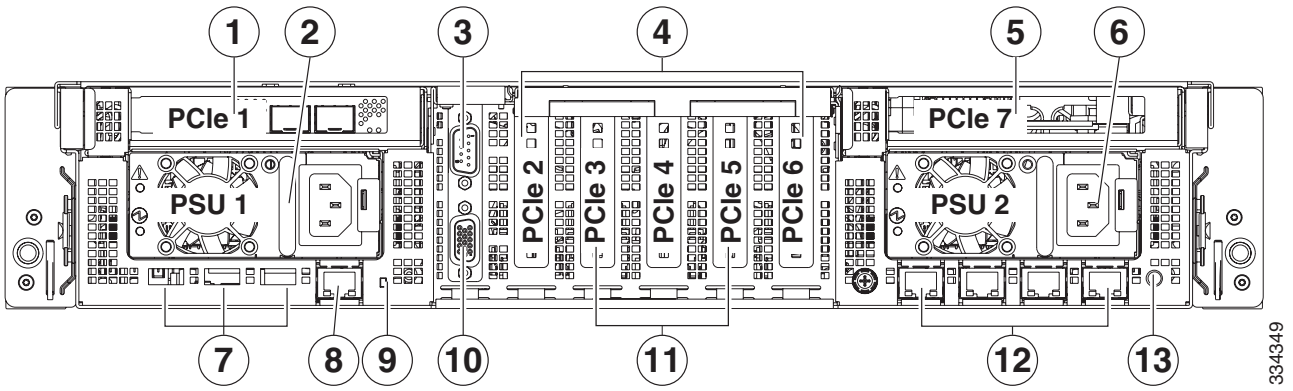
1	Modular drive bay 1	**8**	System status LED
2	Operator panel	**9**	Fan status LED
3	Modular drive bay 2	**10**	Temperature status LED
4	Hard drive fault LED	**11**	Power supply status LED
5	Hard drive activity LED	**12**	Network link activity LED
6	Power button/LED	**13**	Asset tag (serial number)
7	Identification button/LED	**14**	KVM connector (used with KVM cable that provides two USB, one VGA, and one serial connector

For more information regarding the KVM cable connection, see *KVM CABLE on page 60*.

Chassis Rear View

Figure 3 shows the external features of the rear panel.

Figure 3 Chassis Rear View



1	Horizontal PCIe slot (PCIe slot #1, standard-profile, half-length, x16, with NCSI)	**9**	Rear system fault LED
2	Power supply #1	**10**	VGA video connector
3	RS-232 serial connector	**11**	Optional RAID controller cards (up to two, supported in designated PCIe slots 3 and 5). See *Table 11 on page 26*.
4	Five PCIe slots on motherboard (five half-height, half-length, x8 slots) PCIe slot numbering is 2, 3, 4, 5, 6 (left to right) PCIe slot 4 supports NCSI	**12**	1-Gb Base-T LOM ports (four RJ-45 ports, 10/100/1000 Mbps capable)
5	Horizontal PCIe slot (PCIe slot #7, full-height, half-length, x16, with NCSI)	**13**	Rear Identification button/LED
6	Power supply #2		—
7	Three USB 2.0 ports		—
8	10/100/1000 dedicated management Ethernet ports (RJ-45)		—

BASE SERVER STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in *CONFIGURING the SERVER on page 9*.

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	Two rack unit (2RU) chassis
CPU	Either two or four Intel® Xeon® E5-4600 series processors
Chipset	Intel® Patsburg-J platform controller hub (PCH) chipset
Memory	48 slots for registered DIMMs (RDIMMs) and load-reduced DIMMs (LRDIMMs)
Expansion slots	There are seven PCIe expansion slots: ■ Four slots for PCIe x 8 vertically-mounted cards (slots 2, 3, 5, and 6) • PCIe x8, 1/2 height, 1/2 length, 16x connectors ■ One slot for an NCSI PCIe x 8 vertically mounted card (slot 4) • PCIe x 16, 1/2 height, 1/2 length ■ Two NCSI slots on separate riser cards for horizontally-mounted cards (slot 1 at left when viewed from rear and slot 7 at right when viewed from rear) • PCIe x 16, full-height, 1/2 length All cards are half-length due to internal clearance. CPU 1 controls slots 1, 2, and 3 and CPU 2 controls slots 4, 5, 6, and 7.
Storage controller	Plug-in PCIe cards: ■ LSI MegaRAID 9271CV-8i with external mount supercap and on-board 1 GB flash-backed write cache backup, supporting up to 16 internal drives and RAID levels 0, 1, 5, 6, 10, 50, or 60. ■ LSI MegaRAID 9286CV-8e with external mount supercap and on-board 1 GB flash-backed write cache backup, supporting up to 8 external drives and RAID levels 0, 1, 5, 6, 10, 50, or 60.

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Internal storage devices	■ Disk Drives • Drives are installed into configurable (one or two) drive bay modules that provide hot-pluggable front-panel access. • Each drive bay module can hold up to eight 2.5in x 0.55 in (63.5 mm x 14mm) SAS3 or SATA4 hard disk drives (HDDs) or solid state drives (SSDs), for a total of 16 drives. ■ USB Flash drive • An optional 4 GB or 8 GB USB drive can be used as a bootable drive ■ Cisco Flexible Flash internal Secure Digital (SD) cards • Up to two optional Flexible Flash SD cards can be installed ■ UCS Storage Accelerator are also available. These PCIe flash storage devices provide independent high-speed storage.
Video	The Emulex Pilot 3 Integrated Baseboard Management Controller provides video: ■ Matrox G200e video controller ■ Integrated 2D graphics core with hardware acceleration ■ Supports all display resolutions up to 1920 x 1200 x 16 bpp resolution at 60 Hz ■ 24-bit color depth for all resolutions less than 1600x1200 ■ Up to 256 MB video memory
Interfaces	■ Rear panel • One 10/100/1000 dedicated management Ethernet port • Four 1-Gigabit Base-T Ethernet LOM ports (10/100/1000 Mbps capable) • One RS232 serial connector (on I/O riser card) • One 15-pin VGA connector (on I/O riser card) • Three USB 2.0 connectors ■ Front panel • One KVM console connector. When used with the provided KVM cable, provides two USB, one VGA, and one serial connector.
Power subsystem	Two 1200 W power supplies (1:1 redundant)
Fans	Chassis: ■ Six fan modules, hot-swappable, redundant Power supply: ■ Each power supply is equipped with a fan.

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Baseboard management	Pilot-3 BMC, running Cisco Integrated Management Controller (CIMC) firmware. Depending on your CIMC settings, the CIMC can be accessed through the 10/100 dedicated management ports, the 1-Gigabit LOM ports, the optional 10-Gigabit SFP+ ports, or a Cisco P81E virtual interface card.

CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS C420 M3 General-Purpose Rack Server:

STEP 1 VERIFY BASE SKU

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

Table 2 PID of the Base C420 M3 Rack Server

Product ID (PID)	Description
UCSC-C420-M3	UCS C420 M3 without CPUs, memory DIMMs, disk drives, PCIe cards, or power supplies

The UCSC-C420-M3 base server:

- Includes a rail kit (UCSC-RAIL-2U)
- Does not include CPUs, memory DIMMs, hard disk drives (HDDs), solid-state drives (SSDs), or plug-in PCIe cards

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

STEP 2 CHOOSE CPU(S)

The standard CPU features are:

- Intel Xeon processor E5-4600 product family of CPUs
- Intel® Patsburg-J platform controller hub (PCH) chipset
- Cache size of 10, 12, 15, 16, or 20 MB

Choose CPUs

The available CPUs are listed in *Table 3*.

Table 3 Available CPUs: Intel Xeon E5-4600 Family

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR3 DIMM Clock Support (MHz)
UCS-CPU-E5-4603	E5-4603	2.00	95	10	4	6.40	1066
UCS-CPU-E5-4607	E5-4607	2.20	95	12	6	6.40	1066
UCS-CPU-E5-4610	E5-4610	2.40	95	15	6	7.20	1333
UCS-CPU-E5-4620	E5-4620	2.20	95	16	8	7.20	1333
UCS-CPU-E5-4640	E5-4640	2.40	95	20	8	8.00	1600
UCS-CPU-E5-4650	E5-4650	2.70	130	20	8	8.00	1600

Approved Configurations

(1) Two-CPU Configuration:

- Choose two identical CPUs from *Table 3*.

(2) Four-CPU Configuration:

- Choose four identical CPUs from *Table 3*

Caveats

- You must select either two or four identical processors.
- You are not allowed to select 1 or 3 processors.

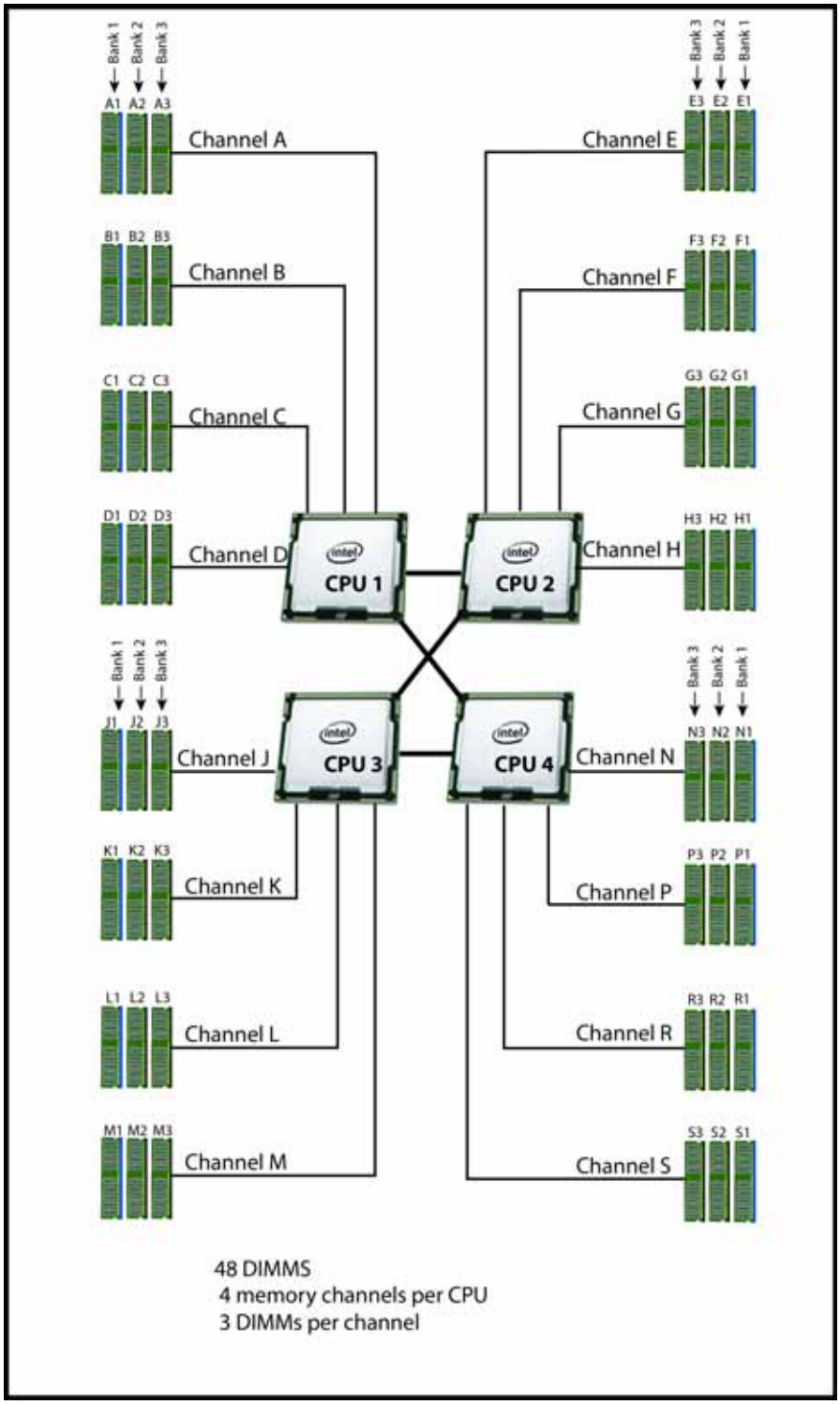
STEP 3 CHOOSE MEMORY

The standard memory features are:

- DIMMs
  - Clock speed: 1600 MHz
  - Ranks per DIMM: 1, 2, or 4
  - Operational voltage: 1.35/1.5 V
  - Registered DIMMs (RDIMMs) or load-reduced DIMMs (LRDIMMs)
- Each CPU controls four DDR3 channels, with up to three DIMMs per channel (DPC).

NOTE: Memory speeds of 1333 MHz are supported for 3 DPC configurations when using 8 GB and 16 GB RDIMMs

Figure 4 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 LRDIMM/PC3-12800/4R/x4/1.35v	1.5/1.35 V	4
UCS-MR-1X041RY-A	4 GB DDR3-1600-MHz RDIMM/PC3-12800/1R/1.35v	1.5/1.35 V	1
UCS-MR-1X082RY-A	8 GB DDR3-1600-MHz RDIMM/PC3-12800/2R/1.35v	1.5/1.35 V	2
UCS-MR-1X162RY-A	16 GB DDR3-1600-MHz RDIMM/PC3-12800/2R/1.35v	1.5/1.35 V	2
Memory Mirroring Option			
N01-MMIRROR	Memory mirroring option		

Approved Configurations

(1) 2-CPU configuration without memory mirroring:

- Select from 2 to 12 DIMMs per CPU in increments of two (2, 4, 6, 8, 10, or 12 DIMMs per CPU). Refer to *Memory Population Rules on page 54*, for more detailed information.

(2) 2-CPU configuration with memory mirroring:

- Select DIMMs in increments of 4 identical DIMMs across channels (either 4, 8, 12, 16, 20, or 24 total DIMMs). The DIMMs will be placed by the factory for memory mirroring as shown in *Table 5*.

Table 5 DIMM Placement for Memory Mirroring (for 2 CPUs)

Number of DIMMs	CPU 1 DIMM Placement in Channels (for identical DIMMs)			CPU 2 DIMM Placement in Channels (for identical DIMMs)		
	Blue Slot (Slot 1)	Black Slot (Slot 2)	Black Slot (Slot 3)	Blue Slot (Slot 1)	Black Slot (Slot 2)	Black Slot (Slot 3)
4	(A1,B1)			(E1,F1)		
8	(A1,B1); (C1,D1)	—	—	(E1,F1); (G1,H1)	—	—
12	(A1,B1); (C1,D1)	(A2,B2)	—	(E1,F1); (G1,H1)	(E2,F2)	
16	(A1,B1); (C1,D1)	(A2,B2); (C2,D2)	—	(E1,F1); (G1,H1)	(E2,F2); (G2,H2)	—
20[1]	(A1,B1); (C1,D1)	(A2,B2); (C2,D2)	(A3,B3)	(E1,F1); (G1,H1)	(E2,F2); (G2,H2)	(E3,F3)
24[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)

1. This configuration cannot be implemented with quad-rank DIMMs (the 32 GB DIMM). You can have only 1 or 2 DIMMs per channel when using quad-rank DIMMs.

- Select the memory mirroring option (N01-MMIRROR) as shown in *Table 4 on page 14*.

(3) 4-CPU configuration without memory mirroring:

- Select from 4 to 12 DIMMs per CPU in increments of 4 (4, 8, or 12 DIMMs per CPU). Refer to *Memory Population Rules on page 54*, for more detailed information.

(4) 4-CPU configuration with memory mirroring:

- Select DIMMs in increments of 8 identical DIMMs across channels (either 8, 16, 24, 32, 40, or 48 total DIMMs). The DIMMs will be placed by the factory for memory mirroring as shown in *Table 5*.

Table 6 DIMM Placement for Memory Mirroring (for 4 CPUs)

# DIMMs	CPU 1 DIMM Slot			CPU 2 DIMM Slot			CPU 3 DIMM Slot			CPU 4 DIMM Slot		
	1	2	3	1	2	3	1	2	3	1	2	3
8	C1,D1	—	—	E1,F1	—	—	J1,K1	—	—	R1,S1	—	—
16	C1,D1 A1,B1	—	—	E1,F1 G1,H1	—	—	J1,K1 L1,M1	—	—	R1,S1 N1,P1	—	—
24	C1,D1 A1,B1	C2,D2	—	E1,F1 G1,H1	E2,F2	—	J1,K1 L1,M1	J2,K2	—	R1,S1 N1,P1	R2,S2	—
32	C1,D1 A1,B1	C2,D2 A2,B2	—	E1,F1 G1,H1	E2,F2 G2,H2	—	J1,K1 L1,M1	J2,K2 L2,M2	—	R1,S1 N1,P1	R2,S2 N2,P2	—
40	C1,D1 A1,B1	C2,D2 A2,B2	C3,D3	E1,F1 G1,H1	E2,F2 G2,H2	E3,F3	J1,K1 L1,M1	J2,K2 L2,M2	J3,K3	R1,S1 N1,P1	R2,S2 N2,P2	R3,S3
48	C1,D1 A1,B1	C2,D2 A2,B2	C3,D3 A3,B3	E1,F1 G1,H1	E2,F2 G2,H2	E3,F3 G3,H3	J1,K1 L1,M1	J2,K2 L2,M2	J3,K3 L3,M3	R1,S1 N1,P1	R2,S2 N2,P2	R3,S3 N3,P3

- Select the memory mirroring option (N01-MMIRROR) as shown in *Table 4 on page 14*.

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

Caveats

- The server supports 1, 2, or 3 DIMMs per channel (DPC) for single- or dual-rank RDIMMs.
- Memory speeds of 1333 MHz are supported for 3 DPC when using 8 GB or 16 GB RDIMMs.
- The server supports only 1 or 2 DIMMs per channel for quad-rank LRDIMMs.
- The server supports registered DIMMs (RDIMMs) or load-reduced DIMMS (LRDIMMs), however, do not mix RDIMMs and LRDIMMs in a server.
- When using mirroring, DIMMs must be installed in identical pairs across paired DDR3 buses. That is, mirrored pairs in channels A and B must be identical and pairs in channels C and D must be identical. However, the DIMMs used in channels A and B and in C and D can be different.

- UDIMMs and non-ECC DIMMs are not supported.
- The minimum configuration is one DIMM installed in any of CPU1's blue sockets (A1, B1, C1, or D1).
- There is no hard requirement to install DIMMs evenly across all CPUs. However, for optimal performance, populate sockets as shown in **Table 33 on page 55**.
- A DIMM installed in a socket for an absent CPU is not accessible by other CPUs.
- When populating a channel, install to the blue socket first, then fill the black sockets inward toward the CPU.

For more information regarding memory, see *CPUs and DIMMs on page 53*.

STEP 4 CHOOSE HARD DISK DRIVES or SOLID STATE DRIVES

The standard disk drive features are:

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

Choose Drives

The available drives are listed in *Table 7*.

Table 7 Available Hot-Pluggable Sled-Mounted HDDs and SSDs

Product ID (PID)	PID Description	Drive Type	Capacity
HDDs			
A03-D146GC2	146 GB 6 Gb SAS 15K RPM SFF HDD	SAS	146 GB
A03-D1TBSATA	1 TB 6 Gb SATA 7.2K RPM SFF HDD	SATA	1 TB
A03-D300GA2	300 GB 6 Gb SAS 10K RPM SFF HDD	SAS	300 GB
A03-D500GC3	500 GB 6 Gb SATA 7.2K RPM SFF	SATA	500 GB
A03-D600GA2	600 GB 6 Gb SAS 10K RPM SFF HDD	SAS	600 GB
UCS-HDD300GI2F105	300 GB 6Gb SAS 15K RPM SFF HDD	SAS	300 GB
UCS-HDD900GI2F106	900 GB 6Gb SAS 10K RPM SFF HDD	SAS	900 GB
SSDs			
UCS-SD100G0KA2-E	100 GB Std 15mm Z SATA SSD	SATA	100 GB
UCS-SD100G0KA2-G	100 GB 2.5 inch Enterprise Value SSD	SATA	100 GB
UCS-SD200G0KA2-E	200 GB Std Height 15mm SATA SSD	SATA	200 GB
UCS-SD200G0KS2-EP	200 GB 2.5 inch Enterprise Performance SAS SSD	SAS	200 GB
UCS-SD300G0KA2-E	300 GB Std Height 15mm SATA SSD	SATA	300 GB
UCS-SD400G0KA2-G	400 GB 2.5 inch Enterprise Value SSD	SATA	400 GB
UCS-SD400G0KS2-EP	400 GB 2.5 inch Enterprise Performance SAS SSD	SAS	400 GB
UCS-SD800G0KS2-EP	800 GB 2.5 inch Enterprise Performance SAS SSD	SAS	800 GB

Approved Configurations

(1) One Drive Bay

- If you select one drive bay (see *STEP 5 CHOOSE MODULAR DRIVE BAYS, page 20*), you may select up to eight drives. You can mix SAS and SATA drives.

(1) Two Drive Bay

- If you select two drive bays (see *STEP 5 CHOOSE MODULAR DRIVE BAYS, page 20*), you may select up to sixteen drives. You can mix SAS and SATA drives.

Caveats

- You can mix hard drives and SSDs in the same server. However, You cannot configure a logical volume (virtual drive) that contains a mix of hard drives and SSDs. That is, when you create a logical volume, it must contain all hard drives or all SSDs.

STEP 5 CHOOSE MODULAR DRIVE BAYS

The C420 M3 server accommodates two drive bays, with each bay holding up to eight drives. You should choose the number of drive bays based on the number of drives you selected in *STEP 4 CHOOSE HARD DISK DRIVES or SOLID STATE DRIVES, page 18*.

The modular drive bays each come with a backplane and transition card installed. The transition card connects the drive bay backplane to the motherboard. There are two types of transition cards:

- Nonexpander (default): Two internal cables from the transition card to a plug-in RAID controller card are required to control eight drives. One of the connectors allows control of drives 1 through 4 on the backplane. The other connector allows control of drives 5 through 8 on the backplane.
- Expander (optional): One internal cable from the transition card to a plug-in RAID controller card is required to control eight drives. This one connector allows control of drives 1 through 8 on the backplane

Choose Drive Bays

Choose one or two of the drive bays listed in *Table 8*.

Table 8 Available Drive Bays

Product ID (PID)	PID Description
Drive Bay Options	
UCSC-DBKP-08D	8 Drive Backplane For C-Series
UCSC-DBKP-08E	8 Drive Backplane W/ Expander For C-Series

Approved Configurations

(1) One Standard Drive Bay with Nonexpander Transition Card

- This option accommodate a maximum of eight drives. All eight drives can be controlled with two cables connected from the transition card to a single RAID controller.

(2) Two Standard Drive Bays with Nonexpander Transition Cards

- This option accommodates a maximum of sixteen drives. Two RAID controllers are required to control all sixteen drives. Two cables must be connected to each RAID controller from each transition card.

(3) Two Standard Drive Bays with Expander Transition Cards

- This option accommodates a maximum of sixteen drives. One RAID controller is required to control all sixteen drives. One cable must be connected to the RAID controller from each transition card.

NOTE: With this configuration, two RAID controllers can also be installed, with one cable from each transition card to each RAID controller.

Caveats

- You cannot mix drive bay types. You must order either one or two identical drive bay types listed in *Table 8 on page 20*.

STEP 6 CHOOSE RAID CONFIGURATION

The C420 M3 server accommodates either one or two RAID controllers. The RAID controllers available are:

- LSI MegaRAID 9271CV-8i. Provides 2 x4 SAS ports for controlling internal drives.
- LSI MegaRAID 9286CV-8e. Provides 2 x4 SAS ports for controlling external drives.

The C420 M3 contains two drive bays, each housing up to eight HDDs or SSDs. Each RAID controller for internal drives connects to a transition card that connects the drive bay backplane to the motherboard. Each RAID controller for external drives has two rear mini-SAS SFF-8088 x4 connectors for cabling to external drives. Cisco can provide factory-configured RAID 0, 1, 5, 6, and 10 systems depending on the RAID implementation chosen and the number of drives ordered. Note that factory-configured RAID is not available for RAID controllers that control external storage arrays. Factory-configured RAID options are listed at the end of *Table 9*. Note that RAID levels 50 and 60 are supported on the RAID controllers, but are not factory configurable.

Choose RAID Options

Choose one or two RAID controllers, and one RAID configuration option listed in *Table 9*.

Table 9 Available RAID Options

Product ID (PID)	PID Description
RAID Controllers	
UCS-RAID9271CV-8i	LSI MegaRAID SAS 9271CV-i (RAID 0, 1, 5, 6, 10) ■ Each controller takes up one PCIe slot (slots 3 and 5 are used for RAID controllers). ■ Supports from one to sixteen internal SAS or SATA drives, depending on the type of transition board installed: • One drive bay with nonexpander transition board: up to eight drives supported with one RAID controller having two cables connected to the transition card. • Two drive bays with nonexpander transition boards: up to sixteen drives supported with one RAID controller having two cables connected to one transition card and a second RAID controller having two cables connected to the second transition card • One drive bay with expander transition board: up to eight drives supported with one RAID controller having one cable connected to the transition card. • Two drive bays with expander transition boards: up to sixteen drives supported with one RAID controller having one cable connected to one transition card and a second cable connected to the second transition card ■ Includes a external mount 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)

Table 9 Available RAID Options *(continued)*

Product ID (PID)	PID Description
UCS-RAID9286CV-8e	LSI MegaRAID SAS 9286CV-e (RAID 0, 1, 5, 6, 10) ■ Each controller takes up one PCIe slot (slots 3 and 5 are used for RAID controllers). ■ Supports from one to eight external SAS or SATA drives. ■ Includes a external mount supercapacitor to power on-board 1 GB flash-backed write cache. ■ 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 this controller, because the factory does not control the storage array attached to the 9286CV-e RAID controller.
RAID Configuration	
R2XX-RAID0	Factory pre-configured RAID striping option Enable RAID 0 Setting. Requires a minimum of 1 hard drive.
R2XX-RAID1	Factory pre-configured RAID mirroring option Enable RAID 1 Setting. Requires exactly 2 drives, with same size, speed, capacity.
R2XX-RAID5	Factory pre-configured RAID option Enable RAID 5 Setting. Requires minimum 3 drives of same size, speed, capacity.
R2XX-RAID6	Factory pre-configured RAID option Enable RAID 6 Setting. Requires minimum 4 drives of same size, speed, capacity.
R2XX-RAID10	Factory pre-configured RAID option Enable RAID 10 Setting. Requires an even number of drives with a minimum of 4 drives of same size, speed, capacity.

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

- A mix of SAS and SATA drives
- No drives

Approved Configurations

(1) One Controller Card for Internal Drives

- Choose one LSI MegaRAID SAS 9271CV-i RAID controller. You will be able to control from one to sixteen internal drives with the 9271CV-i controller, depending on the drive bay(s) selected and the type of installed transition card.

(2) One Controller Card for External Drives

- Choose one LSI MegaRAID SAS 9286CV-e RAID controller. You will be able to control up to eight external drives.

(3) One Controller Card for Internal Drives and One Controller Card for External Drives

- Choose one LSI MegaRAID SAS 9271CV-i RAID controller and one LSI MegaRAID SAS 9286CV-e RAID controller. You will be able to control:
  - From one to sixteen internal drives with the 9271CV-i controller, depending on the drive bay(s) selected and the type of installed transition card.
  - From one to eight external drives with the 9286CV-e controller

(4) Two Controller Cards for Internal Drives

- Choose two LSI MegaRAID SAS 9271CV-i RAID controllers. You will be able to control eight drives on each backplane with each RAID controller, for maximum throughput.

(5) Two Controller Cards for External Drives

- Choose two LSI MegaRAID SAS 9286CV-e RAID controllers. You will be able to control up to eight external drives from each RAID controller.

Caveats

- See *Table 11 on page 26* for information on the slot numbers where the RAID controllers are installed.
- If you selected two drive bays with nonexpander transition cards, you will need two RAID controllers to control the maximum number of drives (16). All other drive bay configurations require only one RAID controller card to control the maximum number of drives that can be installed in the drive bays.
- You can choose an optional RAID configuration (RAID 0, 1, 5, 6, or 10), which is pre-configured at the factory. If you do not choose a RAID configuration, the disks will be configured as a JBOD.

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

STEP 7 CHOOSE PCIe OPTION CARD(S)

The standard PCIe card offerings are:

- Converged Network Adapters (CNA)
- Network Interface Cards (NICs)
- Host Bus Adapters (HBAs)
- UCS Storage Accelerators

Choose PCIe Option Cards

The available PCIe option cards are listed in *Table 10*.

Table 10 Available PCIe Option Cards

Product ID (PID)	PID Description	Card Height
Converged Network Adapters (CNA)		
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-BSFP	Broadcom 57712 Dual Port 10Gb SFP+ w/TOE iSCSI	Half
UCSC-PCIE-B3SFP	Broadcom 57810 10Gb AFEX SFP+	Half
UCSC-PCIE-BTG	Broadcom 57712 Dual Port 10GBASE-T w/TOE iSCSI	Half
UCSC-PCIE-ESFP	Emulex OCe11102-FX Dual Port 10Gb SFP+ CNA	Half
UCSC-PCIE-QSFP	Qlogic QLE8242-CU Dual Port 10 GbE FCoE CNA	Half
UCSC-PCIE-Q8362	Qlogic QLE8362 dual-port 10 GbE FCoE CNA	Half
Network Interface Cards (NICs)		
N2XX-ABPCI03-M3	Broadcom 5709 Quad Port 1Gb w/TOE iSCSI for M3 Servers	Half
N2XX-AIPCI01	Intel Dual Port 10 GbE Ethernet X520 Server Adapter	Half
UCSC-PCIE-IRJ45	Intel i350 Quad Port 1Gb Adapter	Half
UCSC-PCIE-ITG	Intel X520 Dual Port 10GBase-T Adapter	Half
Host Bus Adapters (HBAs)		
N2XX-AEPCI03	Emulex LPe 11002, 4Gb Fibre Channel PCIe Dual Channel HBA	Half
N2XX-AEPCI05	Emulex LPe 12002, 8Gb dual port Fibre Channel HBA	Half
N2XX-AQPCI03	Qlogic QLE2462, 4Gb dual port Fibre Channel HBA	Half
N2XX-AQPCI05	Qlogic QLE2562, 8Gb dual port Fibre Channel HBA	Half

Table 10 Available PCIe Option Cards *(continued)*

Product ID (PID)	PID Description	Card Height
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
UCS Storage Accelerators		
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) Slot Usage Guidelines

- For the best performance, populate the PCIe slots in the order shown in *Table 11* for each type of add-on card. For each card type, populate the primary slot first, followed by the secondary slot, then any alternate slots. See *Figure 5* for the slot locations.

Table 11 Recommended PCIe Slot Population

PCIe Card Type[1]	Primary Slot	Secondary Slot	Alternate Slots
RAID Controller for internal drives	3	5	
RAID Controller for external drives	2	6	
Low-profile NIC	6	3	1, 2, 5, or 7
Cisco VIC 1225 Dual Port 10Gb SFP+ CNA[2]	4	7[3]	1
UCS Storage Accelerators			
UCSC-F-FIO-3000M[4]	—	—	1, 7
UCSC-F-FIO-1205M[5]	—	—	1, 2, 3, 5, 6, 7
UCSC-F-FIO-785M[5]	—	—	1, 2, 3, 5, 6, 7
UCSC-F-FIO-365M[5]	—	—	1, 2, 3, 5, 6, 7

1. The maximum number of PCIe cards that can be installed is 6.
2. This card 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). The card is a half-height, half-length, dual-port, 10-Gb PCIe card supporting 10G SFP+ optical and copper twinax connections.

3. To use the Cisco Card NIC mode, this card must be installed in PCIe slot 7. Slot 7 can operate while the server is in standby power mode.
4. The UCSC-F-FIO-3000M is a full-height card and must be installed only in slots 1 or 7
5. Not supported in slot 4

Figure 5 PCIe Slot Locations

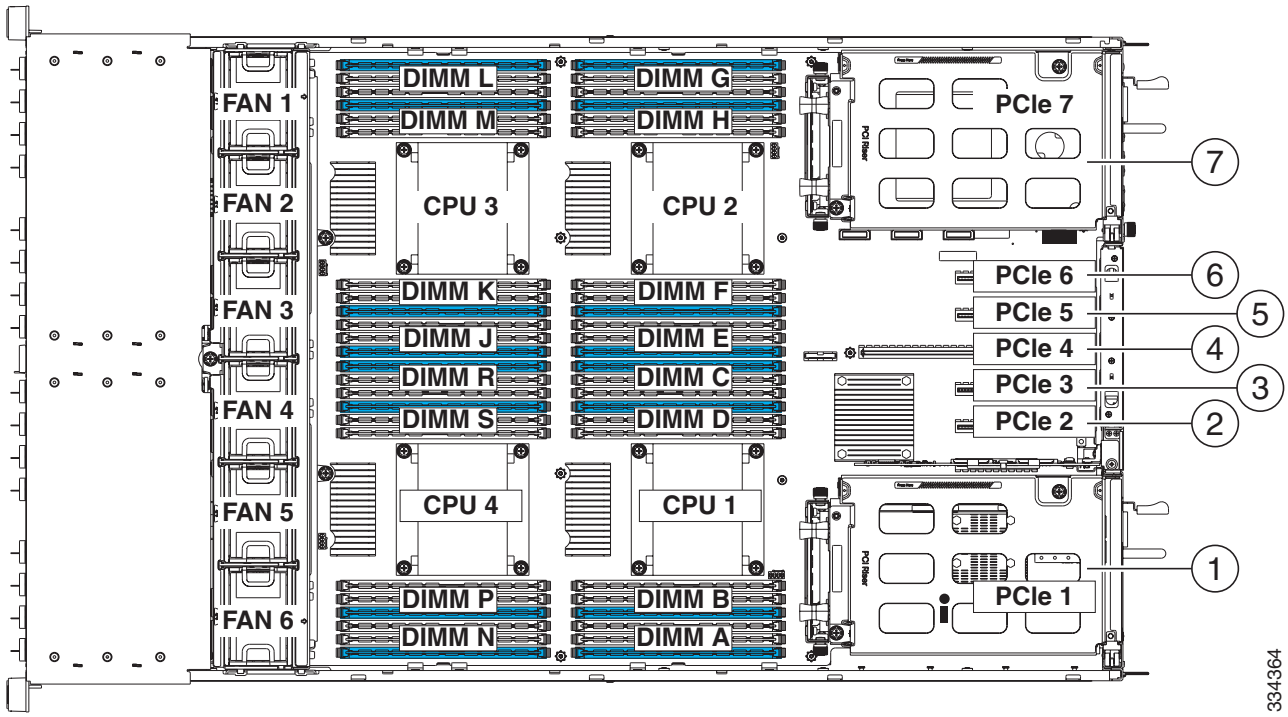


Table 12 PCIe Expansion Slot Numbering

Slot Number	Slot Characteristics
7 (on riser card)	PCI-Express Gen-3x16, x16 connector, half-length, full-height, NCSI[1] support
6	PCI-Express Gen-3x8, x8 connector, half-length, half-height
5	PCI-Express Gen-3x8, x8 connector, half-length, half-height
4	PCI-Express Gen-3x8, x16 connector, half-length, half-height, NCSI support
3	PCI-Express Gen-3x8, x8 connector, half-length, half-height
2	PCI-Express Gen-3x8, x8 connector, half-length, half-height
1 (on riser card)	PCI-Express Gen-3x16, x16 connector, half-length, full-height, NCSI support

1. NCSI = Network Communications Services Interface protocol. An NCSI slot is powered even when the server is in standby power mode.

Caveats

- Slots 1 and 7 accommodate standard profile (full-height) cards. To use a low-profile card in one of these slots, you must have a standard-profile rear panel attached to the card. Slots 2, 3, 4, 5, and 6 are accommodate only half-height PCIe cards.
- The Cisco VIC 1225 Dual Port 10Gb SFP+ CNA card may be installed in slot 1, 4, or 7, and up to three cards can be installed at the same time.
- Slot 4 is reserved for the VIC card. No other card is to be installed in slot 4.
- To help ensure that your operating system is compatible with the cards you have selected, please check the Hardware Compatibility List at this URL:

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

STEP 8 CHOOSE CISCO FLEXIBLE FLASH INTERNAL SD CARD(S)

A 16 GB secure digital (SD) flash memory card can be optionally inserted into a dedicated I/O riser card that comes standard on the C420 M3 motherboard (see *Figure 7 on page 52*). The SD card comes preloaded with multiple drive partitions and provides access to utilities and drivers without the use of virtual media (vMedia) or an optical drive. In addition, 3.2 GB is available for user read/write space, such as a bootable hypervisor image. A second SD card can be installed for a mirrored boot image configuration. Select one or two SD cards as desired from *Table 13*.

Table 13 Available SD Card

Product ID (PID)	PID Description
UCSC-SD-16G-C420	16GB SD card for C420 M3

For more information on Cisco FlexFlash, see the following link:

http://www.cisco.com/en/US/solutions/collateral/ns340/ns517/ns224/ns944/white_paper_c11-718938.html

STEP 9 CHOOSE POWER SUPPLIES

Two 1200 W power supplies are required. Select a quantity of two power supplies from *Table 14*.

Table 14 Available Power Supplies

Product ID (PID)	PID Description
UCSC-PSU2-1200	1200W 2U Power Supply For UCS

NOTE: It is recommended that the C420 M3 server always be operated with two 1200 W power supplies, which can be operated in a 1+1 redundancy configuration.

STEP 10 SELECT AC POWER CORD(s)

Select the appropriate AC power cords listed in *Table 15*. You may select a minimum of no power cords and a maximum of two power cords. If you select the option R2XX-DMYMPWRCORD, no power cord is shipped with the server.

Table 15 Available Power Cords

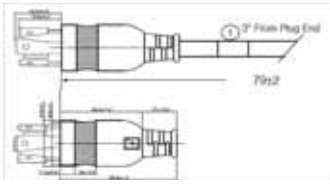
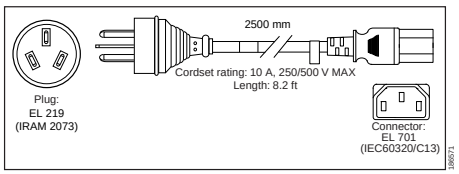
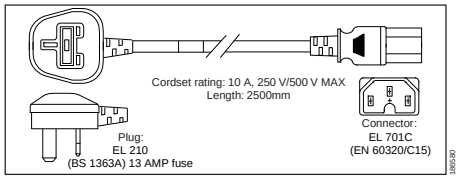
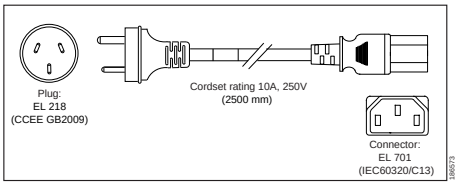
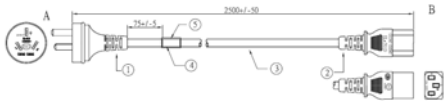
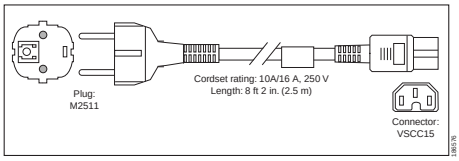
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-AC-L620-C13	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft	
SFS-250V-10A-AR	Power Cord, SFS, 250V, 10A, Argentina	
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	
SFS-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	

Table 15 Available Power Cords *(continued)*

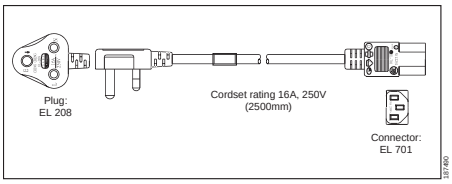
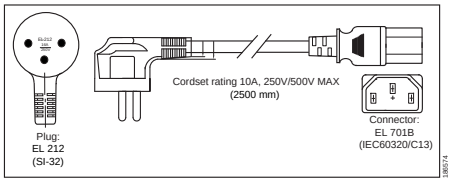
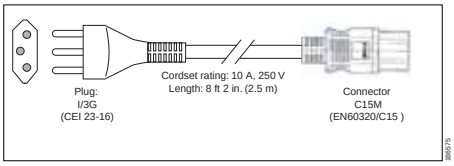
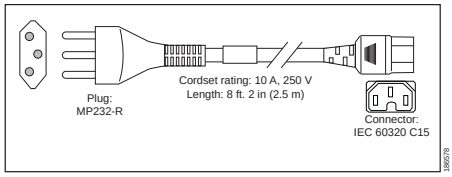
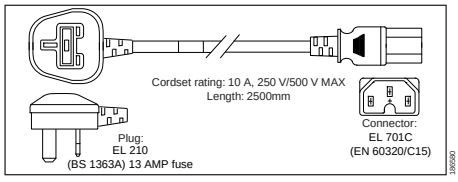
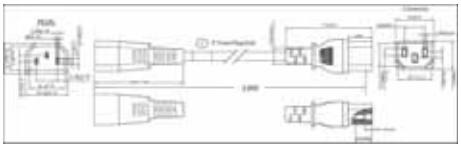
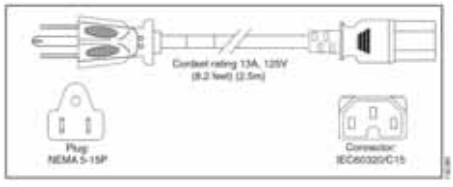
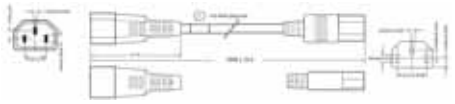
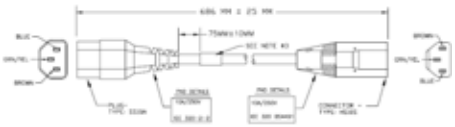
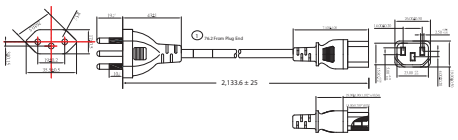
Product ID (PID)	PID Description	Images
SFS-250V-10A-ID	Power Cord, SFS, 250V, 10A, India	
SFS-250V-10A-IS	Power Cord, SFS, 250V, 10A, Israel	
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK	
CAB-C13-C14-2M	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V	
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America	

Table 15 Available Power Cords *(continued)*

Product ID (PID)	PID Description	Images
CAB-C13-C14-AC	Power cord, C13 to C14 (recessed receptacle), 10A	
CAB-C13-CBN	CABASY,WIRE,JUMPER CORD, 27" L, C13/C14, 10A/250V	
CAB-250V-10A-BR	Power Cord - 250V, 10A - Brazil	
CAB-JPN-3PIN	Power Cord 3PIN, Japan	Image not available

STEP 11 ORDER TOOL-LESS SLIDE RAIL KIT

A tool-less slide rail kit (PID UCSC-RAIL-2U) is available for the C420 M3 server. The slide rail is adjustable from 26 inches (660 mm) to 36 inches (914 mm). Order one slide rail kit listed in *Table 16*.

Table 16 Cable Management Arm

Product ID (PID)	PID Description
UCSC-RAIL-2U	2U Rail Kit for UCS C-Series servers

STEP 12 ORDER OPTIONAL CABLE MANAGEMENT ARM

The cable management arm attaches to the left slide rail at the rear of the server and is used for cable management. You can order one of the cable management arms listed in *Table 17*.

Table 17 Cable Management Arm

Product ID (PID)	PID Description
UCSC-CMA-0002	Cable Management Arm - 2U For C-Series

STEP 13 ORDER OPTIONAL USB BOOT DRIVE

An optional 4 GB or 8 GB USB drive may be ordered and used as a boot drive. The USB drive plugs into a vertical USB slot on the motherboard. You can order one USB boot drive listed in *Table 18*.

Table 18 Available USB Drive

Product ID (PID)	PID Description	Drive Type	Capacity
UCS-USBFLSH-S-4GB	4GB USB Drive	USB	4 GB
UCS-USBFLSHA-8GB	8 GB USB Drive	USB	8 GB

Approved Configurations

- Select one USB drive from *Table 18*.

Caveats

None

STEP 14 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 19 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 19 Available Twinax Cables

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

Approved Configurations

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

- You may choose one or two twinax cables for each 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 20*.

Table 20 Available SFP Modules

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

Approved Configurations

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

- You may choose one or two SFP+ optical modules cables for each 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 *Figure 6 on page 38* for typical SFP+ and twinax connections to the network cards.

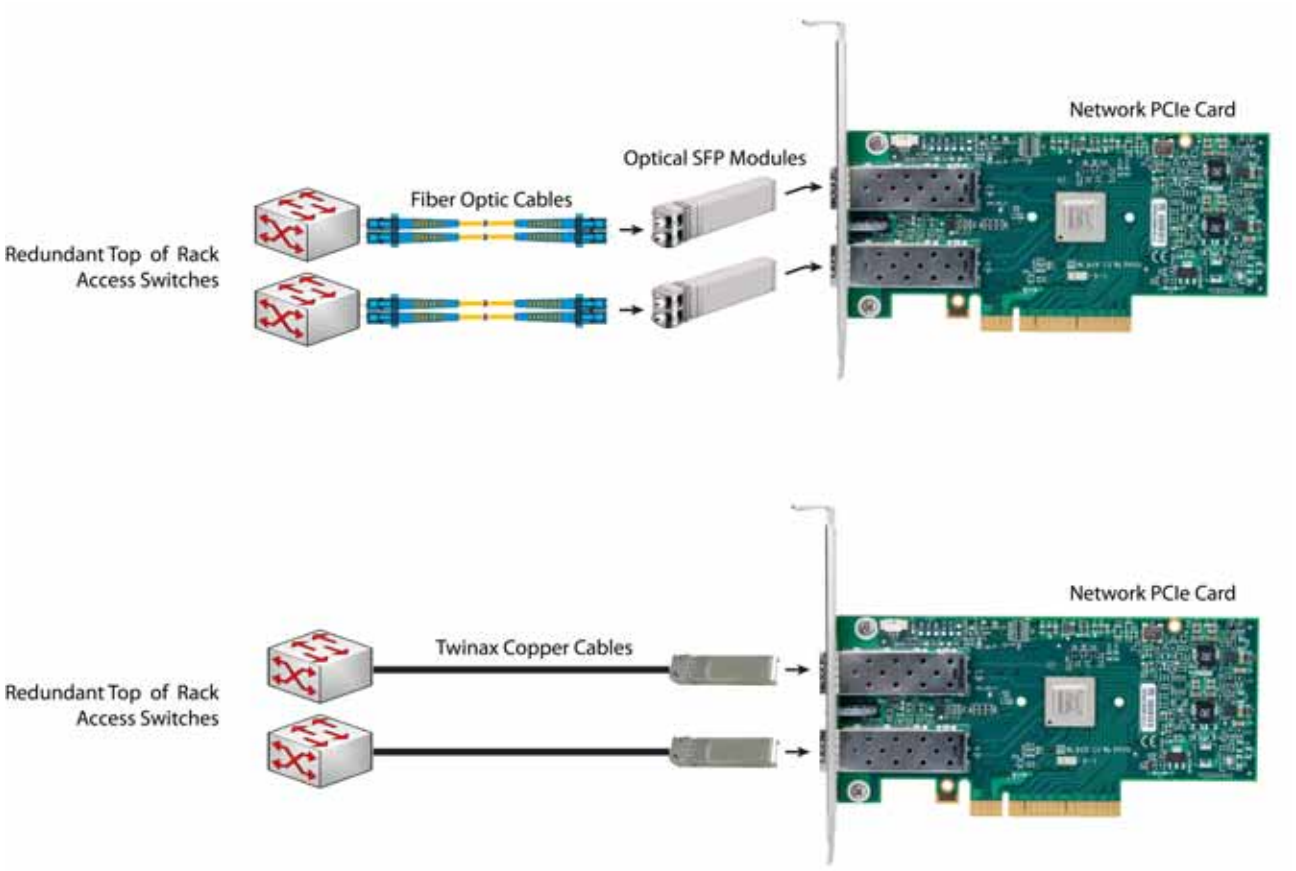
Caveats

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

Table 21 PCIe Card Compatibility

PCIe Cards	Twinax Cables	Cisco SFP Modules	
		SFP-10G-SR	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	No
UCSC-PCIE-C10T-02 (Cisco VIC 1225T Dual Port 10GBaseT CNA)	Yes	No	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	
Network Interface Cards (NICs)			
N2XX-ABPCI01 (Broadcom 5709 Dual-Port Ethernet PCIe Adapter for M3 Servers)	Yes	No	No
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	
UCSC-PCIE-ITG (Intel X540 Dual Port 10GBase-T Adapter)	Yes	No	No
UCSC-PCIE-IRJ45 (Intel i350 Quad Port 1Gb Adapter	Use RJ45 Ethernet cable		
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	

Figure 6 Network Card Connections



STEP 15 ORDER A TRUSTED PLATFORM MODULE

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

The TPM ordering information is listed in *Table 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 v1.3, as defined by the Trusted Computing Group (TCG).

STEP 16 CHOOSE OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

Several operating systems and value-added software programs are available. Select as desired from *Table 23*.

Table 23 OSs and Value-Added Software (for 4-CPU servers)

PID Description	Product ID (PID)
Microsoft Windows Server	
MSWS-08R2-STHV	Windows Svr 2008 ST media R2 ST (1-4CPU, 5CAL)
MSWS-08R2-ENHV	Windows Svr 2008 EN media R2 EN (1-8CPU, 25CAL)
MSWS-08R2-DCHV2S	Windows Svr 2008 R2-2 CPU-Data Center
MSWS-08R2-DCHV4	Windows Svr 2008 R2-4 CPU-Data Center
MSWS-12-ST2S	Windows Server 2012 Standard (2 CPU/2 VMs)
MSWS-12-DC2S	Windows Server 2012 Datacenter (2 CPU/Unlimited VMs)
MSWS-12-ST2S-NS	Windows Server 2012 Standard (2 CPU/2 VMs) No Cisco Svc
MSWS-12-DC2S-NS	Windows Server 2012 Datacenter (2 CPU/Unlim VM) No Cisco Svc
SUSE Linux Enterprise Server	
SLES-SVR-2S-1G-1A	SUSE Linux Enterprise Srvr (1-2 CPU,1 Phys);1yr Support Reqd
SLES-SVR-2S-1G-3A	SUSE Linux Enterprise Srvr (1-2 CPU,1 Phys);3yr Support Reqd
SLES-SVR-2S-1G-5A	SUSE Linux Enterprise Srvr (1-2 CPU,1 Phys);5yr Support Reqd
SLES-SVR-2S-UG-1A	SUSE Linux Enterprise Svr (1-2 CPU,Unl Vrt);1yr Support Reqd
SLES-SVR-2S-UG-3A	SUSE Linux Enterprise Svr (1-2 CPU,Unl Vrt);3yr Support Reqd
SLES-SVR-2S-UG-5A	SUSE Linux Enterprise Svr (1-2 CPU,Unl Vrt);5yr Support Reqd
SLES-SVR-4S-1G-1A	SUSE Linux Enterprise Srvr (4 CPU,1 Phys); 1yr Support Reqd
SLES-SVR-4S-1G-3A	SUSE Linux Enterprise Srvr (4 CPU,1 Phys); 3yr Support Reqd
SLES-SVR-4S-1G-5A	SUSE Linux Enterprise Srvr (4 CPU,1 Phys); 5yr Support Reqd
SLES-SVR-4S-UG-1A	SUSE Linux Enterprise Srvr (4 CPU,Unl Vrt); 1yr Support Reqd

Table 23 OSs and Value-Added Software (for 4-CPU servers) *(continued)*

PID Description	Product ID (PID)
SLES-SVR-4S-UG-3A	SUSE Linux Enterprise Srvr (4 CPU,Unl Vrt); 3yr Support Reqd
SLES-SVR-4S-UG-5A	SUSE Linux Enterprise Srvr (4 CPU,Unl Vrt); 5yr Support Reqd
SLES-SAP-2S-1G-1A	SLES for SAP Applications (1-2 CPU,1 Phys); 1yr Support Reqd
SLES-SAP-2S-1G-3A	SLES for SAP Applications (1-2 CPU,1 Phys); 3yr Support Reqd
SLES-SAP-2S-1G-5A	SLES for SAP Applications (1-2 CPU,1 Phys); 5yr Support Reqd
SLES-SAP-2S-UG-1A	SLES for SAP Applications (1-2 CPU,Unl Vrt);1yr Support Reqd
SLES-SAP-2S-UG-3A	SLES for SAP Applications (1-2 CPU,Unl Vrt);3yr Support Reqd
SLES-SAP-2S-UG-5A	SLES for SAP Applications (1-2 CPU,Unl Vrt);5yr Support Reqd
SLES-SAP-4S-1G-1A	SLES for SAP Applications (4 CPU,1 Phys); 1yr Support Reqd
SLES-SAP-4S-1G-3A	SLES for SAP Applications (4 CPU,1 Phys); 3yr Support Reqd
SLES-SAP-4S-1G-5A	SLES for SAP Applications (4 CPU,1 Phys); 5yr Support Reqd
SLES-SAP-4S-UG-1A	SLES for SAP Applications (4 CPU,Unl Vrt); 1yr Support Reqd
SLES-SAP-4S-UG-3A	SLES for SAP Applications (4 CPU,Unl Vrt); 3yr Support Reqd
SLES-SAP-4S-UG-5A	SLES for SAP Applications (4 CPU,Unl Vrt); 5yr Support Reqd
UCS-SLES-TERMS	Acceptance of Terms, Standalone SLES License for UCS Servers
Red Hat Enterprise Linux	
RHEL-2S-1G-1A	RHEL/2 Socket/1 Guest/1Yr Svcs Required
RHEL-2S-1G-3A	RHEL/2 Socket/1 Guest/3Yr Svcs Required
RHEL-2S-4G-1A	RHEL/2 Socket/4 Guest/1Yr Svcs Required
RHEL-2S-4G-3A	RHEL/2 Socket/4 Guest/3Yr Svcs Required
RHEL-2S-UG-1A	RHEL/2 Socket/U Guest/1Yr Svcs Required
RHEL-2S-UG-3A	RHEL/2 Socket/U Guest/3Yr Svcs Required
RHEL-4S-1G-1A	RHEL/4 Socket/1 Guest/1Yr Svcs Required
RHEL-4S-1G-3A	RHEL/4 Socket/1 Guest/3Yr Svcs Required
RHEL-4S-4G-1A	RHEL/4 Socket/4 Guest/1Yr Svcs Required
RHEL-4S-4G-3A	RHEL/4 Socket/4 Guest/3Yr Svcs Required
RHEL-4S-UG-1A	RHEL/4 Socket/U Guest/1Yr Svcs Required
RHEL-4S-UG-3A	RHEL/4 Socket/U Guest/3Yr Svcs Required
RHEL-HA-2S-1A	RHEL Option/High-Availability/2 Socket/1Yr Svcs Required
RHEL-HA-2S-3A	RHEL Option/High-Availability/2 Socket/3Yr Svcs Required

Table 23 OSs and Value-Added Software (for 4-CPU servers) *(continued)*

PID Description	Product ID (PID)
RHEL-HA-4S-1A	RHEL Option/High-Availability/4 Socket/1Yr Svcs Required
RHEL-HA-4S-3A	RHEL Option/High-Availability/4 Socket/3Yr Svcs Required
RHEL-RS-2S-1A	RHEL Option/Resilient Storage w/HA /2 Socket/1 Yr Svcs Reqd
RHEL-RS-2S-3A	RHEL Option/Resilient Storage w/HA /2 Socket/3 Yr Svcs Reqd
RHEL-RS-4S-1A	RHEL Option/Resilient Storage w/HA /4 Socket/1 Yr Svcs Reqd
RHEL-RS-4S-3A	RHEL Option/Resilient Storage w/HA /4 Socket/3 Yr Svcs Reqd
RHEL-SFS-2S-1A	RHEL Option/Scalable File System/2 Socket/1 Yr Svcs Required
RHEL-SFS-2S-3A	RHEL Option/Scalable File System/2 Socket/1 Yr Svcs Required
RHEL-SFS-4S-1A	RHEL Option/Scalable File System/4 Socket/1 Yr Svcs Required
RHEL-SFS-4S-3A	RHEL Option/Scalable File System/4 Socket/3 Yr Svcs Required
BMC	
BMC-012	BMC BPPM Per Server
BMC-SE-4C	BMC BladeLogic Standard Edition, 4 Cores, Support Required
BMC-SE-6C	BMC BladeLogic Standard Edition, 6 Cores, Support Required
BMC-SE-8C	BMC BladeLogic Standard Edition, 8 Cores, Support Required
BMC-SE-10C	BMC BladeLogic Standard Edition, 10 Cores, Support Required
BMC-AE-4C	BMC BladeLogic Advanced Edition, 4 Cores, Support Required
BMC-AE-6C	BMC BladeLogic Advanced Edition, 6 Cores, Support Required
BMC-AE-8C	BMC BladeLogic Advanced Edition, 8 Cores, Support Required
BMC-AE-10C	BMC BladeLogic Standard Edition, 10 Cores, Support Required
UCS-BMC-TERMS	Acceptance of Terms, Standalone BMC License for UCS Servers
VMWare 5	
VMW-VS5-STD-1A	VMware vSphere 5 Standard for 1 Processor, 1 Year, Support Rqd
VMW-VS5-STD-2A	VMware vSphere 5 Standard for 1 Processor, 2 Year, Support Rqd
VMW-VS5-STD-3A	VMware vSphere 5 Standard for 1 Processor, 3 Year, Support Rqd
VMW-VS5-STD-4A	VMware vSphere 5 Standard for 1 Processor, 4 Year, Support Rqd
VMW-VS5-STD-5A	VMware vSphere 5 Standard for 1 Processor, 5 Year, Support Rqd
VMW-VS5-ENT-1A	VMware vSphere 5 Enterprise for 1 Processor, 1 Year Support Rqd

Table 23 OSs and Value-Added Software (for 4-CPU servers) *(continued)*

PID Description	Product ID (PID)
VMW-VS5-ENT-2A	VMware vSphere 5 Enterprise for 1 CPU, 2 Yr Support Rqd
VMW-VS5-ENT-3A	VMware vSphere 5 Enterprise for 1 CPU, 3 Yr Support Rqd
VMW-VS5-ENT-4A	VMware vSphere 5 Enterprise for 1 Processor, 4 Year Support Rqd
VMW-VS5-ENT-5A	VMware vSphere 5 Enterprise for 1 CPU, 5 Yr Support Rqd
VMW-VS5-ENTP-1A	VMware vSphere 5 Enterprise Plus for 1 Processor, 1 Year Support Rqd
VMW-VS5-ENTP-2A	VMware vSphere 5 Enterprise Plus for 1 CPU, 2 Yr Support Rqd
VMW-VS5-ENTP-3A	VMware vSphere 5 Enterprise Plus for 1 Processor, 3 Year Support Rqd
VMW-VS5-ENTP-4A	VMware vSphere 5 Enterprise Plus for 1 Processor, 4 Year Support Rqd
VMW-VS5-ENTP-5A	VMware vSphere 5 Enterprise Plus for 1 Processor, 5 Year Support Rqd
VMW-VC5-STD-1A	VMware vCenter 5 Server Standard, 1 yr support required
VMW-VC5-STD-2A	VMware vCenter 5 Server Standard, 2 yr support required
VMW-VC5-STD-3A	VMware vCenter 5 Server Standard, 3 yr support required
VMW-VC5-STD-4A	VMware vCenter 5 Server Standard, 4 yr support required
VMW-VC5-STD-5A	VMware vCenter 5 Server Standard, 5 yr support required
Nexus 1000V for Hyper-V and vSphere	
N1K-CSK9-UCS-404	Nexus 1000V VSM Virtual Appliance Software On UCS
N1K-VSG-UCS-BUN	Over half off N1K and VSG w/ purchase of UCS B/C Series
N1K-M-VSG-UCS-BUN	Nexus 1000V Adv Edition for Hyper-V Paper License Qty 1
UCS Director	
CUIC-PHY-SERV-BM-U	Cisco Cloupia Resource Lic - One Phy Server node bare metal
CUIC-PHY-SERV-U	Cisco Cloupia Resource Lic - One physical Server node
CUIC-TERM	Acceptance of Cisco Cloupia License Terms

STEP 17 CHOOSE OPERATING SYSTEM MEDIA KIT

Choose the optional operating system media listed in *Table 24*.

Table 24 OS Media

Product ID (PID)	PID Description
RHEL-6	RHEL 6 Recovery Media Only (Multilingual)
MSWS-08R2-STHV-RM	Windows Svr 2008 R2 ST (1-4CPU, 5CAL), Media
MSWS-08RS-ENHV-RM	Windows Svr 2008 R2 EN (1-8CPU, 25CAL), Media
MSWS-08R2-DCHV-RM	Windows Svr 2008 R2 DC (1-8CPU, 25CAL), Media
MSWS-12-ST2S-RM	Windows Server 2012 Standard (2 CPU/2 VMs) Recovery Media
MSWS-12-DC2S-RM	Windows Server 2012 Datacenter (2 CPU/Unlimited VM) Rec Media
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 CHOOSE SERVICE and SUPPORT LEVEL

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

Unified Computing Warranty, No Contract

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

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

Unified Computing Support Service

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

For UCS blade servers, there is Smart Call Home, which provides proactive, embedded diagnostics and real-time alerts. For systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Unified Computing Support Service includes flexible hardware replacement options, including replacement in as little as two hours. There is also access to Cisco's extensive online technical resources to help maintain optimal efficiency and uptime of the unified computing environment. You can choose a desired service listed in *Table 25*.

Table 25 Unified Computing Support Service

Product ID (PID)	On Site?	Description
CON-PREM-C420M3	Yes	ONSITE 24X7X2 UCS C420 M3 Server
CON-OSP-C420M3	Yes	ONSITE 24X7X4 UCS C420 M3 Server
CON-OSE-C420M3	Yes	ONSITE 8X5X4 UCS C420 M3 Server
CON-OS-C420M3	Yes	ONSITE 8X5XNBD UCS C420 M3 Server
CON-SNT-C420M3	No	SMARTNET 8X5XNBD UCS C420 M3 Server
CON-SNTE-C420M3	No	SMARTNET 8X5X4 UCS C420 M3 Server
CON-SNTP-C420M3	No	SMARTNET 24X7X4 UCS C420 M3 Server
CON-S2P-C420M3	No	SMARTNET 24X7X2 UCS C420 M3 Server

Unified Computing Warranty Plus Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco Unified Computing Warranty Plus Service. You can choose from several levels of advanced parts replacement coverage, including onsite parts replacement in as little as four hours. Warranty Plus provides remote access any time to Cisco support professionals who can determine if a return materials authorization (RMA) is required. You can choose a service listed in *Table 26*.

Table 26 UCS Computing Warranty Plus Service

Product ID (PID)	Service Level GSP	On Site?	Description
CON-UCW5-C420M3	UCW5	Yes	UCS HW 8X5XNBDOS UCS C420 M3 Server
CON-UCW7-C420M3	UCW7	Yes	UCS HW 24X7X4OS UCS C420 M3 Server

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 27*.

Table 27 Partner Support Service for UCS

Product ID (PID)	Service Level GSP	On Site?	Description
CON-PSJ1-C420M3	PSJ1	No	UCS SUPP PSS 8X5XNBD UCS C420 M3 Server
CON-PSJ2-C420M3	PSJ2	No	UCS SUPP PSS 8X5X4 UCS C420 M3 Server
CON-PSJ3-C420M3	PSJ3	No	UCS SUPP PSS 24X7X4 UCS C420 M3 Server
CON-PSJ4-C420M3	PSJ4	No	UCS SUPP PSS 24X7X2 UCS C420 M3 Server

Partner Support Service for UCS Hardware Only provides customers with replacement parts in as little as two hours. See *Table 28*.

Table 28 Partner Support Service for UCS (Hardware Only)

Product ID (PID)	Service Level GSP	On Site?	Description
CON-PSW2-C420M3	PSW2	No	UCS W PL PSS 8X5X4 UCS C420 M3 Server
CON-PSW3-C420M3	PSW3	No	UCS W PL PSS 24X7X4 UCS C420 M3 Server
CON-PSW4-C420M3	PSW4	No	UCS W PL PSS 24X7X2 UCS C420 M3 Server

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 29*.

Table 29 UCS Computing Combined Support Service

Product ID (PID)	Service Level GSP	On Site?	Description
CON-NCF2-C420M3	NCF2	No	CMB SPT SVC 24X7X2 UCS C420 M3 Server
CON-NCF2P-C420M3	NCF2P	Yes	CMB SPT SVC 24X7X2OS UCS C420 M3 Server
CON-NCF4P-C420M3	NCF4P	Yes	CMB SPT SVC 24X7X4OS UCS C420 M3 Server
CON-NCF4S-C420M3	NCF4S	Yes	CMB SPT SVC 8X5X4OS UCS C420 M3 Server
CON-NCFCS-C420M3	NCFCS	Yes	CMB SPT SVC 8X5XNBDOS UCS C420 M3 Server
CON-NCFE-C420M3	NCFE	No	CMB SPT SVC 8X5X4 UCS C420 M3 Server
CON-NCFP-C420M3	NCFP	No	CMB SPT SVC 24X7X4 UCS C420 M3 Server
CON-NCFT-C420M3	NCFT	No	CMB SPT SVC 8X5XNBD UCS C420 M3 Server

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, thereby reducing 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 30*.

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

Table 30 Drive Retention Service Options

Service Description	Service Level GSP	Service Level	Product ID (PID)
UCS Support Service With Drive Retention	UCSD5	8x5xNBD Onsite	CON-UCSD5-C420M3

Table 30 Drive Retention Service Options *(continued)*

Service Description	Service Level GSP	Service Level	Product ID (PID)
	UCSD7	24x7x4 Onsite	CON-UCSD7-C420M3
UCS Warranty Plus With Drive Retention	UCWD5	8x5xNBD Onsite	CON-UCWD5-C420M3
	UCWD7	24x7x4 Onsite	CON-UCWD7-C420M3

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

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

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

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

OPTIONAL STEP - ORDER RACK(s)

The optional R42610 rack is available from Cisco for the C-Series servers, including the C420 M3 server. This rack is a standard 19-inch rack and can be ordered with a variety of options, as listed in *Table 31*. Racks are shipped separately from the C420 M3 server.

Table 31 Racks and Rack Options

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

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

For more information about the R42610 rack, see *RACKS on page 57*.

OPTIONAL STEP - ORDER PDU

An optional power distribution unit (PDU) is available from Cisco for the C-Series rack servers, including theC420 M3 server. This PDU is available in a zero rack unit (RU) style (see *Table 31*).

Table 32 PDU Options

Product ID (PID)	PID Description
RP208-30-1P-U-1	Cisco Single-Phase PDU 2x C13, 4x C19
RP208-30-1P-U-2	Cisco Single-Phase PDU 20x C13, 4x C19

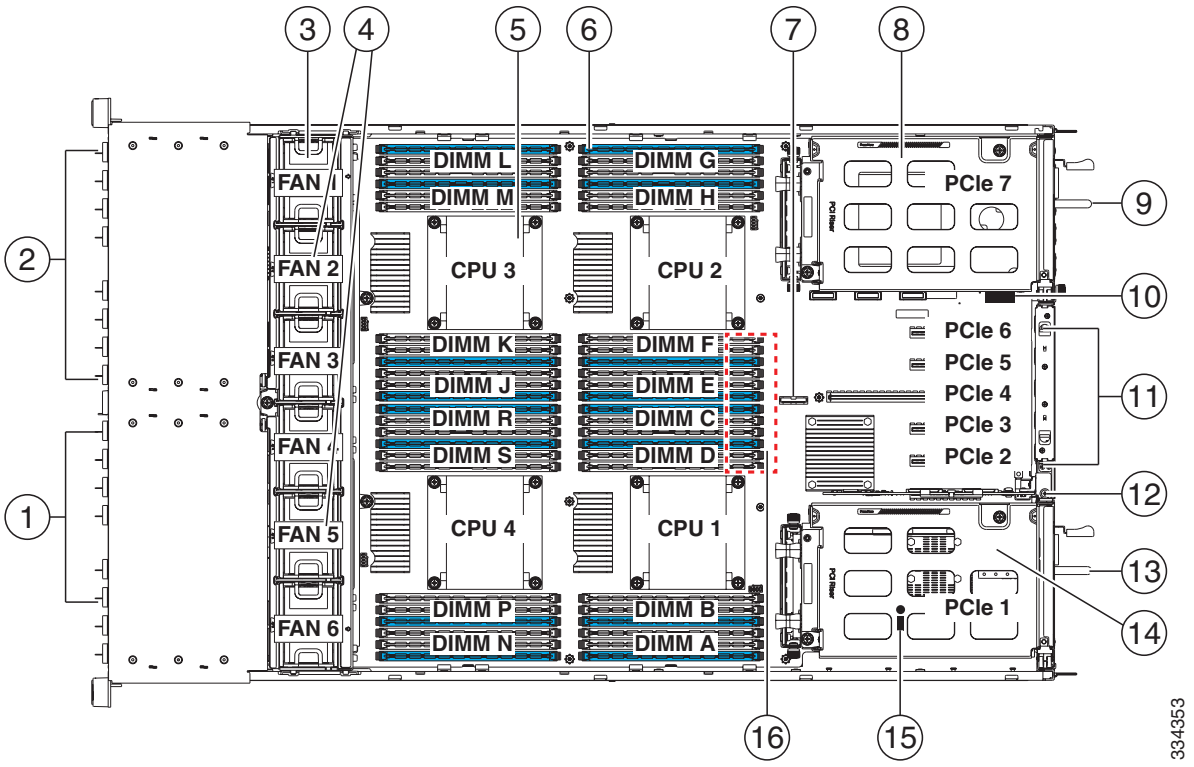
For more information about the PDU, see *PDUs on page 59*.

SUPPLEMENTAL MATERIAL

CHASSIS

An internal view of the C420 M3 chassis with the top cover removed is shown in *Figure 7*.

Figure 7 C420 M3 With Top Cover Removed



1	Drive bay module 2 (up to eight 2.5-inch drives, hot-pluggable)	**9**	Power supply 2 (hot-pluggable)
2	Drive bay module 1 (up to eight 2.5-inch drives, hot-pluggable)	**10**	USB 2.0 slot on motherboard
3	Fan tray, with six hot-pluggable fan modules	**11**	PCIe slots 2—6 on motherboard
4	Drive backplane transition cards (up to two on chassis floor, not visible under fan tray in this view)	**12**	I/O riser (includes two sockets for Cisco Flexible Flash internal SD cards)
5	CPUs and heatsinks (two or four)	**13**	Power supply 1 (hot-pluggable)
6	DIMM sockets on motherboard (up to 48)	**14**	PCIe riser 2 (horizontal PCIe slot 1)
7	RTC battery on motherboard	**15**	TPM socket (on motherboard, not visible under power supply in this view)
8	PCIe riser 1 (horizontal PCIe slot 7)	**16**	RAID backup unit (SuperCap power module) mounting location

CPUs and DIMMs

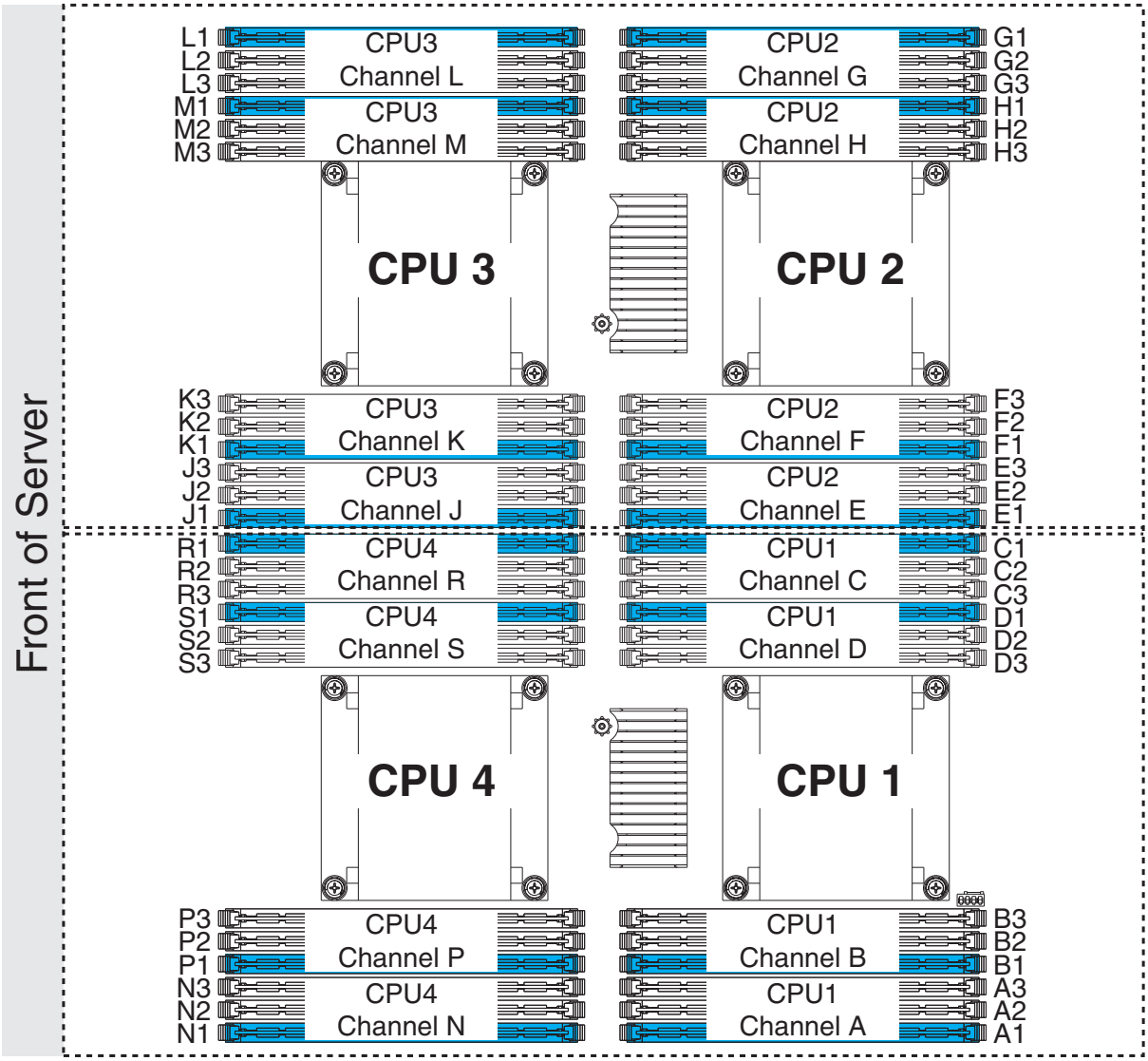
Physical Layout

Each CPU controls four DDR3 channels, with up to three DIMMs per channel (DPC). The channels are organized as follows:

- CPU1: channels A, B, C, D
- CPU2: channels E, F, G, H
- CPU3: channels J, K, L, M
- CPU4: channels N, P, R, S

The physical layout of the CPUs, memory risers, and memory riser channels is shown in *Figure 8*.

Figure 8 Physical Layout



Memory Population Rules

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

- The server supports 1, 2, or 3 DIMMs per channel for single- or dual-rank DIMMs.
- The server supports 1 or 2 DIMMs per channel for quad-rank DIMMs.
- The server supports registered DIMMs (RDIMMs) or load-reduced DIMMS (LRDIMMs). However, do not mix RDIMMs and LRDIMMs in a server.
- The DRAM controller for each channel can operate independently, or in lockstep-pair mode for mirroring. When using mirroring, DIMMs must be installed in identical pairs across paired DDR3 buses. That is, mirrored pairs in channels A and B must be identical and pairs in channels C and D must be identical. However, the DIMMs used in channels A/B and in C/D can be different.
- UDIMMs and non-ECC DIMMs are not supported.
- The minimum configuration is one DIMM installed in any of CPU1's blue sockets (A1, B1, C1, or D1).
- For lockstep-pair mode, minimum configuration is an identical pair installed in any of CPU1's A and B channel blue sockets; or in any of CPU1's C and D channel blue sockets.
- There is no hard requirement to install DIMMs evenly across all CPUs. However, for optimal performance, populate sockets as shown in the table below.
- A DIMM installed in a socket for an absent CPU is not accessible by other CPUs.
- When populating a channel, install to the blue socket first, then fill the black sockets inward toward the CPU.

Recommended Configuration

- For optimal performance, populate DIMMs in the order shown in *Table 33* (for 2 CPUs) or *Table 34* (for 4 CPUs) and refer to *Figure 8 on page 53*.

Table 33 Recommended 2-CPU DIMM Installation Order

# DIMMs Installed	CPU Number	DIMM Socket	DIMM Socket Color
1	CPU1	C1	Blue
2	CPU2	E1	Blue
3	CPU1	D1	Blue
4	CPU2	F1	Blue
5	CPU1	B1	Blue
6	CPU2	H1	Blue
7	CPU1	A1	Blue
8	CPU2	G1	Blue
9	CPU1	C2	Black
10	CPU2	E2	Black
11	CPU1	D2	Black
12	CPU2	F2	Black
13	CPU1	B2	Black
14	CPU2	H2	Black
15	CPU1	A2	Black
16	CPU2	G2	Black
17	CPU1	C3	Black
18	CPU2	E3	Black
19	CPU1	D3	Black
20	CPU2	F3	Black
21	CPU1	B3	Black
22	CPU2	H3	Black
23	CPU1	A3	Black
24	CPU2	G3	Black

Table 34 Recommended 4-CPU DIMM Installation Order

# DIMMs Installed	CPU Number	DIMM Socket	DIMM Socket Color	# DIMMs Installed	CPU Number	DIMM Socket	DIMM Socket Color
1	CPU1	C1	Blue	25	CPU1	B2	Black
2	CPU2	E1	Blue	26	CPU2	H2	Black
3	CPU3	J1	Blue	27	CPU3	M2	Black
4	CPU4	R1	Blue	28	CPU4	P2	Black
5	CPU1	D1	Blue	29	CPU1	A2	Black
6	CPU2	F1	Blue	30	CPU2	G2	Black
7	CPU3	K1	Blue	31	CPU3	L2	Black
8	CPU4	S1	Blue	32	CPU4	N2	Black
9	CPU1	B1	Blue	33	CPU1	C3	Black
10	CPU2	H1	Blue	34	CPU2	E3	Black
11	CPU3	M1	Blue	35	CPU3	J3	Black
12	CPU4	P1	Blue	36	CPU4	R3	Black
13	CPU1	A1	Blue	37	CPU1	D3	Black
14	CPU2	G1	Blue	38	CPU2	F3	Black
15	CPU3	L1	Blue	39	CPU3	K3	Black
16	CPU4	N1	Blue	40	CPU4	S3	Black
17	CPU1	C2	Black	41	CPU1	B3	Black
18	CPU2	E2	Black	42	CPU2	H3	Black
19	CPU3	J2	Black	43	CPU3	M3	Black
20	CPU4	R2	Black	44	CPU4	P3	Black
21	CPU1	D2	Black	45	CPU1	A3	Black
22	CPU2	F2	Black	46	CPU2	G3	Black
23	CPU3	K2	Black	47	CPU3	L3	Black
24	CPU4	S2	Black	48	CPU4	N3	Black

RACKS

The Cisco R42610 rack (see *Figure 9*) is certified for Cisco UCS installation at customer sites and is suitable for the following equipment:

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

The rack is compatible with hardware designed for EIA-standard 19-inch racks. Rack specifications are listed in *Table 35*.

Table 35 Cisco R42610 Rack Specifications

Parameter	Standard Rack	Expansion Rack
Dimensions (H x W x D)	78.74 x 24 x 43.38 in. (2000 x 610 x 1102 mm)	78.74 x 23.58 x 43.38 in. (2000 x 599 x 1102 mm)
Dimensions (H x W x D) with packaging	89 x 33 x 47 in. (2261 x 838 x 1194 mm)	89 x 33 x 47 in. (2261 x 838 x 1194 mm)
Distance from front mounting rail to rear mounting rail	29.2 in. (741 mm)	29.2 in. (741 mm)
Weight	299.83 lb (136 kg)	231. 49 lb (105 kg)
Weight with packaging	354 lb (161 kg)	284 lb (129 kg)
Side panels included	Yes	No
Equipment mounting capacity	42RU	42RU
Static load capacity	2100 lb (954 kg)	2100 lb (954 kg)
Dynamic load capacity	Not applicable	Not applicable

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

Figure 9 Cisco R42610 Rack

Front view - door closed | Front view - door open | Front view - door removed

PDUs

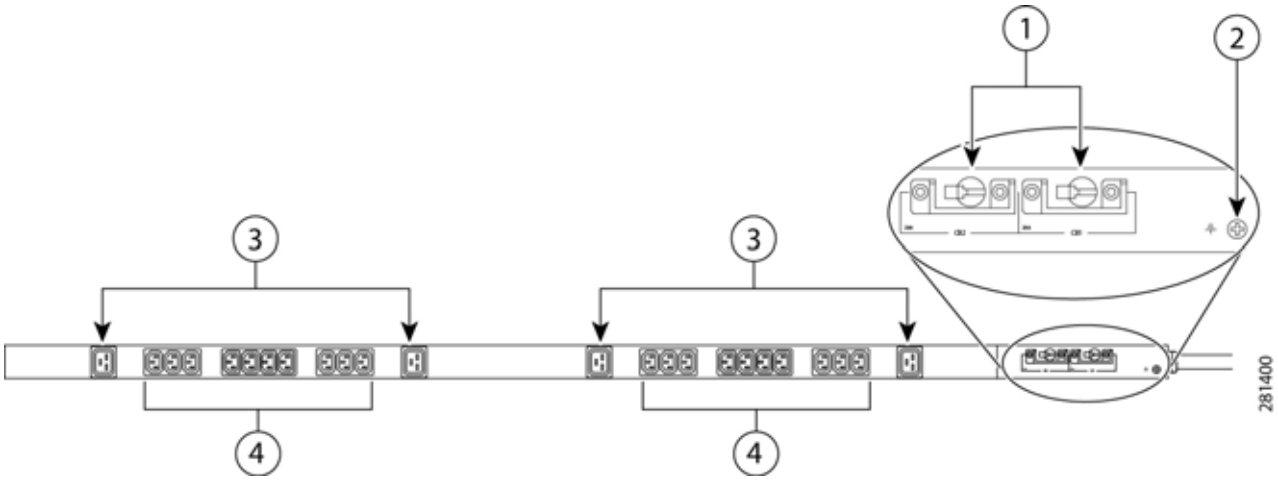
Cisco RP Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

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

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

The C-series severs accept the zero-rack-unit (0RU) PDU. See *Figure 10*).

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



1	Breakers	**3**	C19 plugs
2	Ground connection	**4**	C13 plugs

Cisco RP Series PDU models provide two 20-ampere (A) circuit breakers for groups of receptacles. The effects of a tripped circuit are limited to a receptacle group. Simply press a button to reset that circuit.

KVM CABLE

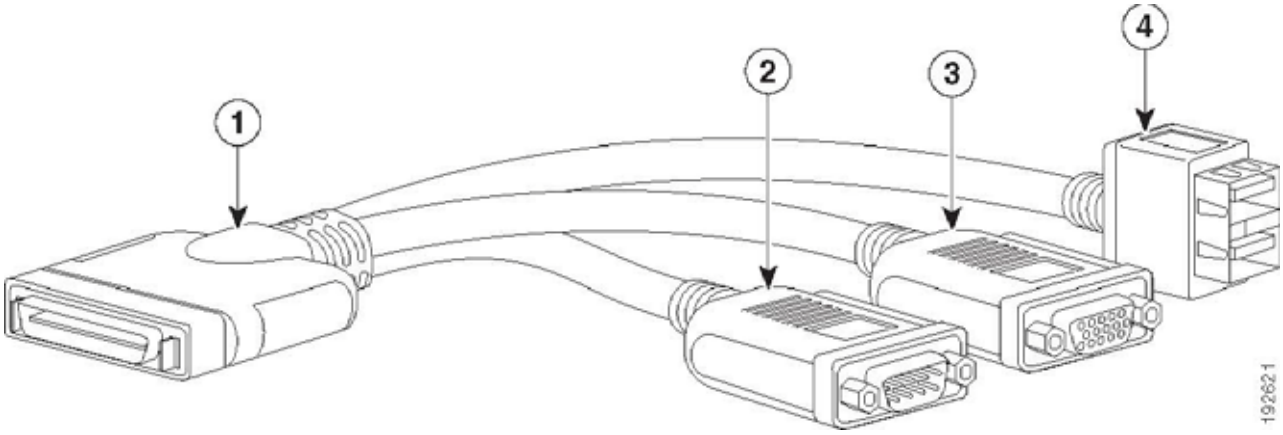
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in *Table 36*.

Table 36 KVM Cable

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

Figure 11 KVM Cable



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

TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 37 UCS C420 M3 Dimensions and Weight[1]

Parameter	Value
Height	3.5 in. (8.9 cm)
Width (including rack-mount flanges)	18.95 in.(48.1 cm)
Depth (including slide-rail brackets)	31.5 in. (80 cm)
Front Clearance	3 in. (7.62 cm)
Side Clearance	1 in. (2.54 cm)
Rear Clearance	6 in. (15.24 cm)
Weight (maximum configuration, including slide rail brackets and cable management arm)	86 lbs (39 kg)*

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

Power Specifications

The general power specifications for the C420 M3 server are listed in *Table 38*.

Table 38 UCS C420 M3 Power Specifications[1]

Description	Specification
AC input voltage	100 to 127 VAC nominal (Range: 90 to 264 VAC)
AC input frequency	50 to 60 Hz nominal (Range: 47 to 63 Hz)
Maximum AC input current	10 A at 100 VAC
Maximum AC inrush current	30 A peak sub-cycle duration
Maximum output power for each power supply	1200 W
Power supply output voltage	Main power: 12 VDC Standby Power: 5 VDC
Power supply efficiency	94% Peak, complies with 80Plus Gold Standard

1. The C420 M3 server consumes 1100 W when configured as follows: 48 LRDIMMs (1.35 V), 16 drives, two RAID cards, mix of five networking cards, and four 130 W CPUs.

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

Environmental Specifications

The power specifications for the C420 M3 server are listed in *Table 39*.

Table 39 UCS C420 M3 Environmental Specifications

Parameter	Minimum
Temperature operating	10°C to 35°C (50°F to 95°F)
Temperature nonoperating	-40°C to 65°C (-40°F to 149°F)
Altitude operating	0 to 3,000 m (0 to 10,000 ft.); maximum ambient temperature decreases by 1° per 300 m
Humidity nonoperating	5 to 93%, noncondensing
Vibration nonoperating	2.2 Grms, 10 minutes per axis on each of the three axes
Shock operating	Half-sine 2 G, 11 ms pulse, 100 pulses in each direction, on each of the three axes
Shock nonoperating	Trapezoidal, 25 G, two drops on each of six faces Velocity = 175 inches per second on bottom face drop Velocity = 90 inches per second on the other five faces
Electrostatic discharge	Tested to ESD levels up to 15 kilovolts (kV) air discharge and up to 8 kV contact discharge without physical damage
Acoustic	Sound power: 54.7 dBA (5.7 Bels) at ambient temperature 23°C measured using the Dome Method GOST MsanPiN 001-96

Compliance Requirements

The regulatory compliance requirements for C-Series servers are listed in *Table 40*.

Table 40 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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