



Cisco UCS C220 M3 High-Density Rack Server (Large Form Factor Hard Disk Drive Model)

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OVERVIEW

The Cisco® UCS C220 M3 rack server is designed for performance and density over a wide range of business workloads from web serving to distributed database.

The enterprise-class UCS C220 M3 server extends the capabilities of Cisco's Unified Computing System portfolio in a 1U 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 C220 M3 server provides 16 DIMM slots, four 3.5-inch drives and 2 x 1 GbE LOM ports delivering outstanding levels of density and performance in a compact 1U package.

Figure 1 Cisco UCS C220 M3 High-Density LFF Rack Server

Front View



Rear View

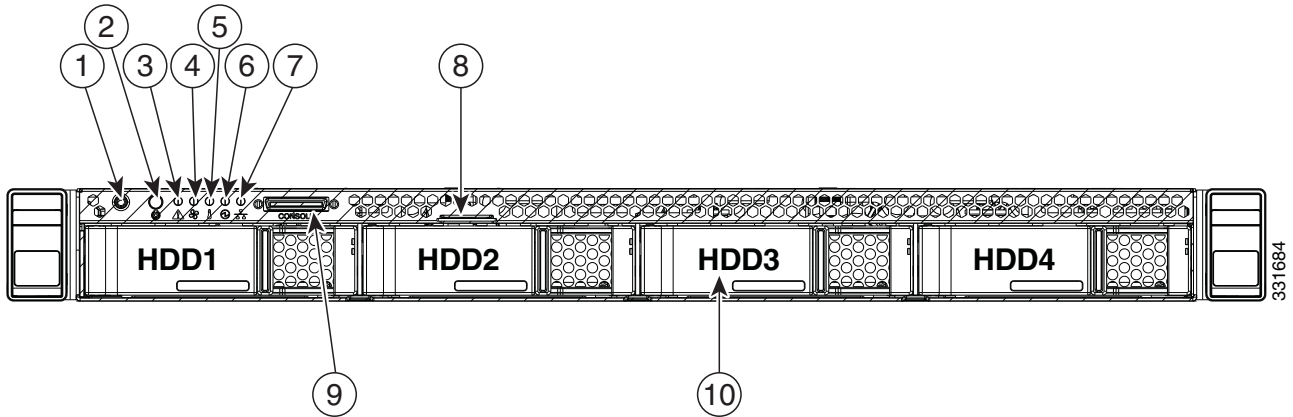


DETAILED VIEWS

Chassis Front View

Figure 2 shows the Cisco UCS C220 M3 High-Density LFF Rack Server.

Figure 2 Chassis Front View



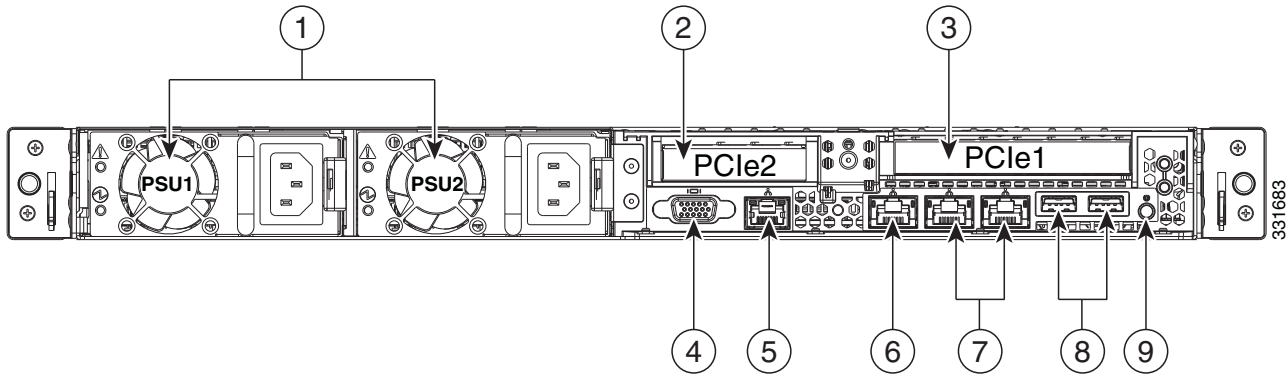
| | | | |
|---|-------------------------------|----|--|
| 1 | Power button/power status LED | 6 | Power supply status LED |
| 2 | Identification button/LED | 7 | Network link activity LED |
| 3 | System status LED | 8 | Asset tag (serial number) |
| 4 | Fan status LED | 9 | KVM connector (used with KVM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

For more information about the KVM cable connection, see [KVM CABLE, page 74](#).

Chassis Rear View

Figure 3 shows the external features of the rear panel.

Figure 3 Chassis Rear View



| | | | |
|---|--|---|--|
| 1 | Power supplies (up to two) | 6 | One 10/100/1000 Ethernet dedicated management port |
| 2 | Slot 2: Low-profile PCIe slot on riser: (half-height, half-length, x16 connector, x8 lane width) | 7 | Dual 1-GbE ports (LAN1 and LAN2) |
| 3 | Slot 1: Standard-profile PCIe slot on riser: (full-height, half-length, x24 connector, x16 lane width) (supports Cisco Virtual Interface Card (VIC)) | 8 | USB ports |
| 4 | VGA video connector | 9 | Rear Identification button/LED |
| 5 | Serial port (RJ-45 connector) ¹ | — | — |

Notes . . .

1. Serial port pinout details are given in [Serial Port Details, page 67](#).

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 | One rack unit (1RU) chassis |
| CPU | One or two Intel® Xeon E5-2600 v2 or E5-2600 series processor family CPUs |
| Chipset | Intel® C600 series chipset |
| Memory | 16 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 dual-port Intel i350 PCIe-based Gigabit Ethernet controller, supporting the following: <ul style="list-style-type: none"> ■ Pre-Execution Boot (PXE boot) ■ iSCSI boot ■ TOE offload ■ NIC teaming |
| Expansion slots | Two PCIe slots (on a riser card) <ul style="list-style-type: none"> ■ One full-height profile, half-length slot with x24 connector and x16 lane ■ One half-height profile, half-length slot with x16 connector and x8 lane |
| 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. Up to four 3.5-inch SAS or SATA hot-swappable hard disk drives (HDDs). ■ 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 Cisco Flexible Flash drives (SD cards). <ul style="list-style-type: none"> ■ The first SD card is pre-loaded with four virtual drives. The four virtual drives contain, respectively, the Cisco Server Configuration Utility, the Cisco Host Upgrade Utility, the Cisco C-Series server drivers set, and a blank virtual drive on which you can install an OS or a hypervisor. ■ 4 GB is available for general use ■ 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 |
|---------------------|--|
| Video | <p>The Emulex Pilot 3 Integrated Baseboard Management Controller provides video:</p> <ul style="list-style-type: none"> ■ 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 ■ 256 MB video memory |
| Storage controllers | <ul style="list-style-type: none"> ■ Embedded RAID (3 Gbs) <ul style="list-style-type: none"> • Embedded SATA-only RAID controller, supporting up to four SATA-only drives (RAID 0, 1, 10), or • LSI ROM1 RAID upgrade, supporting up to four SAS+SATA drives (RAID 0, 1, 10), or • LSI ROM15 RAID upgrade, supporting up to four SAS+SATA drives (RAID 0, 1, 5, 10). ■ Mezzanine Cards (6 Gbs) - two versions <ul style="list-style-type: none"> • Cisco UCSC RAID SAS 2008M-8i Mezzanine Card supports up to eight SAS+SATA drives (limited to four drives for the C220 M3 LFF chassis) supporting RAID 0, 1, 5, 10, and 50. This card has a product ID (PID) of UCSC-RAID-11-C220. • Cisco UCSC RAID SAS 2008M-8i Mezzanine Card supports up to eight SAS+SATA drives (limited to four drives for the C220 M3 LFF chassis) supporting RAID 0, 1, and 10. This card has a product ID (PID) of UCSC-RAID-MZ-220. ■ PCIe RAID Controllers (6 Gbs) <ul style="list-style-type: none"> • LSI MegaRAID SAS 9271-8i or 9271CV-8i RAID 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 eight internal SAS+SATA drives (limited to four drives for the C220 M3 LFF chassis). • LSI MegaRAID 9285CV-8e, or 9286CV-8e 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). |

| Capability/Feature | Description |
|---------------------------------|--|
| Interfaces | <ul style="list-style-type: none"> ■ Rear panel <ul style="list-style-type: none"> • One RJ45 serial port connector • Two USB 2.0 port connectors • One DB15 VGA connector • Two RJ-45 10/100/1000 Ethernet port connectors • One RJ-45 10/100/1000 Ethernet management port, using Cisco Integrated Management Controller (CIMC) firmware ■ 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 ■ Front panel <ul style="list-style-type: none"> • One KVM console connector (supplies two USB, 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 | Up to two 450 W (AC) , 650 W, (AC), or 930 W (DC) power supplies. One is mandatory; one more can be added for 1 + 1 redundancy. |
| ACPI | This server supports the advanced configuration and power interface (ACPI) 4.0 standard. |
| Fans | <p>Chassis:</p> <ul style="list-style-type: none"> ■ Five 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 C220 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 34*
- *STEP 8 ORDER POWER SUPPLY, page 38*
- *STEP 9 SELECT AC POWER CORD(s), page 39*
- *STEP 10 ORDER OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM, page 42*
- *STEP 11 ORDER A TRUSTED PLATFORM MODULE (OPTIONAL), page 43*
- *STEP 12 ORDER CISCO FLEXIBLE FLASH SD CARD MODULE (OPTIONAL), page 44*
- *STEP 13 ORDER USB 2.0 DRIVE (OPTIONAL), page 45*
- *STEP 14 SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE, page 46*
- *STEP 15 SELECT OPERATING SYSTEM MEDIA KIT, page 49*
- *STEP 16 SELECT SERVICE and SUPPORT LEVEL, page 50*
- *OPTIONAL STEP - ORDER RACK(s), page 55*
- *OPTIONAL STEP - ORDER PDU, page 56*

STEP 1 VERIFY SERVER SKU

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

Table 2 PID of the C220 M3 High-Density LFF Rack Base Server

| Product ID (PID) | Description |
|------------------|---|
| UCSC-C220-M3L | UCS C220 M3 LFF, no CPU, memory, HDD, power supply, SD card, or PCIe cards, with rail kit |

The Cisco C220 M3 server:

- Includes one tool-less rail kit (UCSC-RAIL1)
- 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 size of up to 30 MB

Select CPUs

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

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

Table 3 Available Intel CPUs: E5-2600 and E5-2600 v2 Series Processor Family CPUs (*continued*)

| 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 ² | | | | | | | |
| 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.
2. 1866-MHz DIMMs cannot be used with Sandy Bridge CPUs

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

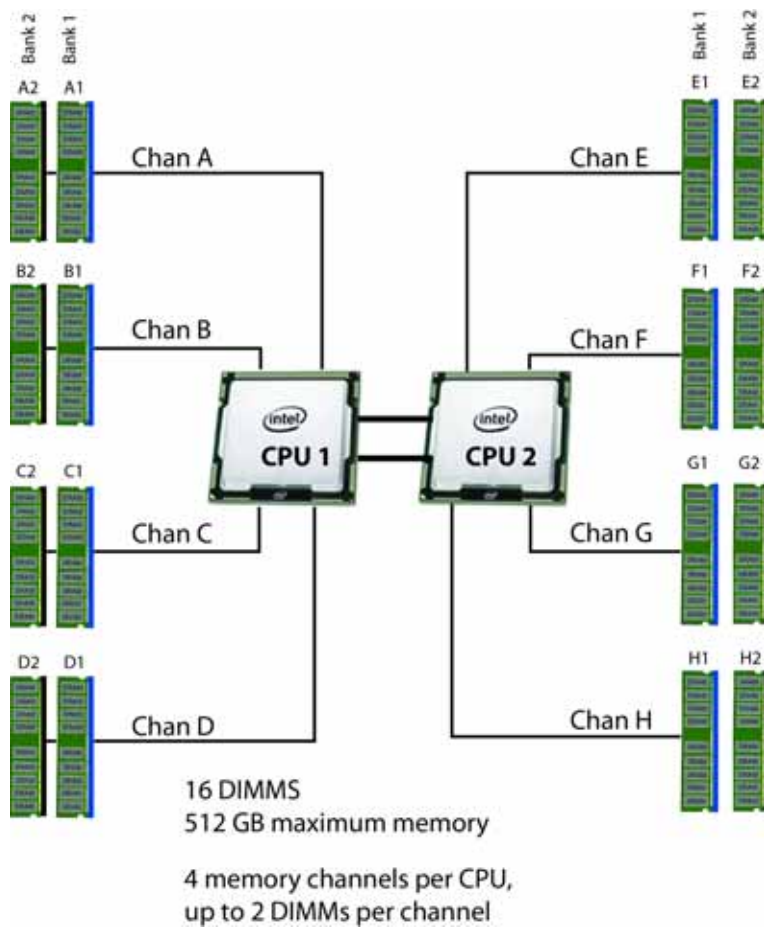
- You can select either one processor or two identical processors.
- For optimal performance, select DIMMs with the highest clock speed for a given processor (see [Table 3 on page 13](#)). If you select DIMMs whose speeds are lower or higher than that shown in the tables, suboptimal performance will result.
- For configurations that use 130 W or 135 W CPUs, the minimum power supply required is 650 W (UCSC-PSU-650W). See [STEP 8 ORDER POWER SUPPLY, page 38](#).

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 two DIMMs per channel, as shown in *Figure 4*.

Figure 4 C220 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 Options¹ | | | |
| UCS-ML-1X324RY-A | 32 GB DDR3-1600-MHz LR DIMM/PC3-12800/4R/x4/1.35v | 1.5/1.35 V ² | 4 |
| UCS-MR-1X162RY-A | 16 GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.35v | 1.5/1.35 V ² | 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 ² | 2 |
| UCS-MR-1X082RX-A ³ | 8 GB DDR3-1333-MHz RDIMM/PC3-10600/2R/x4/1.35v | 1.5/1.35 V ² | 2 |
| UCS-MR-1X082RZ-A | 8 GB DDR3-1866-MHz RDIMM/PC3-14900/2R/x4/ | 1.5 V | 2 |
| UCS-MR-1X041RY-A | 4 GB DDR3-1600-MHz RDIMM/PC3-12800/1R/x4/1.35v | 1.5/1.35 V ² | 1 |
| UCS-MR-1X041RX-A ³ | 4 GB DDR3-1333-MHz RDIMM/PC3-10600/1R/x4/1.35v | 1.35 V | 1 |
| UCS-MU-1X042RE-A ³ | 4 GB DDR3-1600-MHz ECC UDIMM/PC3-12800/2R/x8/1.35v | 1.35 V | 2 |
| Memory Mirroring Option | | | |
| N01-MMIRROR | Memory mirroring option | | |

Notes . . .

- 1866-MHz DIMMs cannot be used with Intel Xeon E5-2600 CPUs
- 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).
- No longer shipping as of November, 2013

Approved Configurations

(1) 1-CPU configuration without memory mirroring:

- Select from 1 to 8 DIMMs. Refer to [Memory Population Rules, page 60](#), for more detailed information.

(2) 1-CPU configuration with memory mirroring:

- Select 2, 4, 6, or 8 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 Slots | Black Slots |
| 2 | (A1, B1) | — |
| 4 | (A1,B1); (C1,D1) | — |
| 6 ¹ | (A1,B1, C1) | (A2, B2, C2) |
| 8 | (A1,B1); (C1,D1) | (A2,B2); (C2,D2) |

Notes . . .

1. Not recommended (for performance reasons)

- 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 8 DIMMs per CPU. Refer to [Memory Population Rules, page 60](#), for more detailed information.

(4) 2-CPU configuration with memory mirroring:

- Select 2, 4, 6, or 8 identical DIMMs per CPU. The DIMMs will be placed by the factory as shown in the following table. Notice that DIMM placement is different for single-rank and dual-rank DIMMs.

| Number of DIMMs per CPU | CPU 1 DIMM Placement in Channels (for <u>identical dual-rank</u> DIMMs) | | CPU 2 DIMM Placement in Channels (for <u>identical dual-rank</u> DIMMs) | |
|-------------------------|---|------------------|---|------------------|
| | Blue Slots | Black Slots | Blue Slots | Black Slots |
| 2 | (A1, B1) | — | (E1, F1) | — |
| 4 | (A1,B1); (C1,D1) | — | (E1,F1); (G1,H1) | — |
| 6 ¹ | (A1,B1, C1); | (A2, B2, C2) | (E1,F1, G1); | (E2, F2, G2) |
| 8 | (A1,B1); (C1,D1) | (A2,B2); (C2,D2) | (E1,F1); (G1,H1) | (E2,F2); (G2,H2) |

Notes . . .

1. Not recommended (for performance reasons)

- 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 5](#) for details.

Table 5 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) | |
| | | Voltage | | Voltage | | Voltage | | Voltage | | Voltage | | Voltage | |
| | | 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 |
| 1600 DIMM | 1333 | 1333 | 1333 | 1333 | 1600 ¹ | 1600 ² | 1333 | 1600 | 1600 ² | 1600 ² | 1333 | 1600 | 1333 |
| | 1333 | 1333 | 1333 | 1333 | 1600 ² | 1600 ² | 1333 | 1600 | 1600 ² | 1600 ² | 1333 | 1600 | 1333 |
| 1866 DIMM ² | 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 |

Notes . . .

1. 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.
2. 1866-MHz DIMMs are only offered and supported with E5-2600 v2 CPU-configured servers

- 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, LRDIMMs, or UDIMMs
- DIMMs for CPU 1 and CPU 2 (when populated) must always be configured identically.
- The server supports 1 or 2 DIMMs per channel for single- or dual-rank RDIMMs.
- The server supports 1 or 2 DIMMs per channel for quad-rank LRDIMMs.
- 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.
- Non-ECC DIMMs are not supported.
- Memory mirroring reduces the amount of available memory by 50% (quantity of DIMMs must be even for mirroring).
- When single- and dual-rank DIMMs are populated for 2DPC, always populate the dual rank DIMM in the blue DIMM slot, and the single-rank DIMM in the black DIMM slot (only the 4GB DIMMs are single-rank).

- 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.

For more information regarding memory, see [CPUs and DIMMs, page 58](#).

STEP 4 SELECT RAID CONFIGURATION



NOTE: If you do not select a mezzanine card, a PCIe RAID controller, or one of the embedded RAID upgrade options, you will have an embedded SATA-only RAID controller that supports up to four SATA-only drives (RAID 0, 1, 10)



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:

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

The RAID controller choices are:

(1) Embedded RAID (on motherboard)



NOTE: The RAID configuration options listed in [Table 8 on page 24](#) are not available if you choose embedded RAID (in this case, you must configure RAID yourself using separate software).

(2) Mezzanine RAID controller cards (not supported in 1-CPU systems)

(3) PCIe RAID controller

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 embedded RAID upgrade option for internal drives, or
- One mezzanine RAID controller for internal drives, or
- One RAID controller for external drives, or
- One RAID controller for internal drives, or
- One mezzanine RAID controller for internal drives and one RAID controller for external drives



NOTE: For all valid combinations of embedded RAID, mezzanine RAID, and internal/external RAID controller combinations, see [RAID Details, page 65](#).

Table 6 Available Embedded RAID Options

| Product ID (PID) | PID Description |
|------------------|--|
| RAID Controllers | |
| UCSC-RAID-ROM1 | Onboard RAID, consisting of a plug-in storage controller unit (SCU), supporting up to 8 internal SAS +SATA drives. SAS and SATA drives can be mixed. This option supports RAID 0, 1, and 10, and operates at 3 Gb/s. Operating systems supported are Windows and Linux only (no VMware support). |
| UCSC-RAID-ROM15 | Onboard RAID, consisting of two plug-in modules (an SCU plus a software key module) supporting up to 8 internal SAS+SATA drives. SAS and SATA drives can be mixed. This option supports RAID 0, 1, 5, and 10 and operates at 3 Gb/s. Operating systems supported are Windows and Linux only (no VMware support). |



NOTE: VMware ESX/ESXi or any other virtualized environments are not supported for use with the embedded MegaRAID controller. Hypervisors such as Hyper-V, Xen, or KVM are also not supported for use with the embedded MegaRAID controller

Table 7 Available Mezzanine Card RAID Options

| Product ID (PID) | PID Description |
|---|-----------------|
| Mezzanine RAID Controllers (not supported in 1-CPU systems) | |

Table 7 Available Mezzanine Card RAID Options (*continued*)

| Product ID (PID) | PID Description |
|-------------------|---|
| UCSC-RAID-11-C220 | <p>Cisco UCSC RAID SAS 2008M-8i Mezzanine Card (RAID 0, 1, 5, 10, and 50 supported), operating at 6 Gbs.</p> <ul style="list-style-type: none"> ■ Supports up to eight internal SAS+SATA drives (limited to four drives for the C220 M3 LFF chassis). 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-220 | <p>Cisco UCSC RAID SAS 2008M-8i Mezzanine Card (RAID 0, 1, 10 supported), operating at 6 Gbs.</p> <ul style="list-style-type: none"> ■ Supports up to eight internal SAS+SATA drives (limited to four drives for the C220 M3 LFF chassis). 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 |
|---|--|
| <p>RAID Controllers¹ Note that PCIe RAID controllers are installed by default in slot 1 for 1-CPU systems and slot 2 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, 10, 5, 6, 50, 60), operating at 6 Gbs.</p> <ul style="list-style-type: none"> ■ Supports up to eight internal SAS+SATA drives (limited to four drives for the C220 M3 LFF chassis). SAS and SATA drives can be mixed. ■ Includes a 1 GB Transportable Flash Module (TFM) 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) |

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


| Product ID (PID) | PID Description |
|--|--|
| UCS-RAID-9285CV-E or UCS-RAID9286CV-8E | LSI MegaRAID SAS 9285CV-8e or 9286CV-8e (RAID 0, 1, 5, 6, 10) <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. <hr/> | |

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

| Product ID (PID) | PID Description |
|---|---|
| Super Capacitor 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 (not available for embedded RAID) | |
| 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-C220 ■ UCSC-RAID-MZ-220 |
| 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 2.0 x8 and the 9271-8i, 9271CV-8i, and 9286CV-8e are compatible with PCI Express 3.0 x8.



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 6](#)

Approved Configurations

The C220 M3 LFF server has a 4-drive backplane.

- LSI ROM1 and LSI ROM15 embedded RAID upgrade options support up to 4 drives.
- Mezzanine card (UCSC-RAID-11-C220) supports up to 4 drives.
- Mezzanine card (UCSC-RAID-MZ-220) supports up to 4 drives.
- SAS 9271-8i and 9271CV-8i PCIe cards support up to 4 drives.
- LSI MegaRAID SAS 9285CV-8e and 9286CV-8e PCIe cards support up to 8 external SAS ports (240 external drives).



NOTE: If you do not select a mezzanine card, a PCIe RAID controller, or one of the embedded RAID upgrade options, you will have an embedded SATA-only RAID controller that supports up to four SATA-only drives (RAID 0, 1, 10)

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

Table 9 Supported RAID Configurations

| Server | # CPUs | Embedded RAID | Mezz RAID ¹ | Internal PCIe RAID #1 ² | Internal PCIe RAID #2 ³ | External PCIe RAID ⁴ | # Drives Supported | PCIe Slots ⁵ | |
|-------------|--------|---------------|--------------------------|------------------------------------|------------------------------------|---------------------------------|----------------------------|-------------------------|---|
| | | | | | | | | 1 | 2 |
| C220 M3 LFF | 1 | Enabled | Not allowed ⁶ | Not allowed | Not allowed | Not allowed | 4 internal | A | U |
| C220 M3 LFF | 1 | Not allowed | Not allowed | Installed slot 1 (default) | Not allowed | Not allowed | 4 internal | O | U |
| C220 M3 LFF | 1 | Not allowed | Not allowed | Not allowed | Not allowed | Installed slot 1 | 240 external | O | U |
| C220 M3 LFF | 2 | Enabled | Not allowed | Not allowed | Not allowed | Not allowed | 4 internal | A | A |
| C220 M3 LFF | 2 | Not allowed | Installed | Not allowed | Not allowed | Card absent | 4 internal | A | A |
| C220 M3 LFF | 2 | Not allowed | Not allowed | Installed slot 2 (default) | Not allowed | Not allowed | 4 internal | A | O |
| C220 M3 LFF | 2 | Not allowed | Card absent | Not allowed | Not allowed | Installed slot 1 or slot 2 | 240 external | A | A |
| C220 M3 LFF | 2 | Not allowed | Installed | Not allowed | Not allowed | Installed slot 1 or slot 2 | 4 internal 240 external | A | A |

Notes . . .

1. 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, embedded RAID, 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.
2. 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.
3. Dual RAID controllers are not supported in this server
4. External RAID card is the 9285CV-8e or 9286CV-8e. Any of these cards can be installed simultaneously with one mezzanine RAID controller card. It cannot be used simultaneously with an internal RAID controller card (9271-8i or 9271CV-8i) because of mounting space limitations for the supercap (there is space to mount only one supercap).
5. A = available slot, O = occupied slot, U = unsupported slot (slot 2 is not supported in 1-CPU systems)
6. The mezzanine slot is not supported in 1-CPU systems

Caveats

- Note that only a single Cisco VIC card (the half-height Cisco VIC 1225 PCIe card) is supported and it must be installed in the full-height PCIe slot (slot 1) on riser 1. So take this into account when populating RAID controller cards.
- 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 65](#) and [RAID Option ROM \(OPROM\) Settings, page 66](#).

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-HD4T7KS3-E | 4 TB SAS 7.2K RPM 3.5 inch HDD | SAS | 4 TB |
| UCS-HDD3T12F214 | 3 TB SAS 7.2K RPM 3.5 inch HDD | SAS | 3 TB |
| UCS-HDD2T12F213 | 2 TB SAS 7.2K RPM 3.5 inch HDD | SAS | 2 TB |
| UCS-HDD1T12F212 | 1 TB SAS 7.2K RPM 3.5 inch HDD | SAS | 1 TB |
| UCS-HDD600G12F210 | 600 GB SAS 15K RPM 3.5 inch HDD | SAS | 600 GB |
| UCS-HDD450G12F209 | 450 GB SAS 15K RPM 3.5 inch HDD | SAS | 450 GB |
| UCS-HDD300G12F208 | 300 GB SAS 15K RPM 3.5 inch HDD | SAS | 300 GB |



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) Onboard RAID, mezzanine cards, and internal drive PCIe RAID controllers

- If you have not selected an onboard RAID upgrade option (LSI ROM1 or LSI ROM15), a mezzanine card, or a PCIe RAID controller for internal drives (LSI MegaRAID SAS 9271-8i or 9271CV-8i), you may select up to 4 SATA-only drives, which will be controlled with the embedded SATA-only RAID controller.
- Otherwise, select up to four SAS+SATA drives listed in [Table 10](#). You can mix SAS and SATA drives.

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-BSFP | Broadcom 57712 Dual Port 10Gb SFP+ w/TOE iSCSI | Half |
| 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-ESFP | Emulex OCe11102-FX dual-port 10 GbE FCoE CNA (Gen 3 CNA) | Half |
| UCSC-PCIE-QSFP | Qlogic QLE8242-CU dual-port 10 GbE FCoE 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-AQPCI03 | Qlogic QLE2462 Dual Port 4Gb Fibre Channel HBA | Half |

Table 11 Available PCIe Option Cards (*continued*)

| Product ID (PID) | PID Description | Card Height |
|---------------------------------|--|-------------|
| 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 |
| 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) No PCIe RAID controller

- If you did not choose a PCIe RAID controller (for example, you are using embedded RAID or a mezzanine RAID controller), you can select up to one PCIe option card (for 1-CPU systems) or two PCIe option cards (for 2-CPU systems) listed in [Table 11 on page 31](#).

(2) One PCIe RAID controller

- If you selected a PCIe RAID controller, you can select none of the optional PCIe cards (for 1-CPU systems) or one of the optional PCIe cards (for 2-CPU systems) listed in [Table 11 on page 31](#).



NOTE: If a PCIe RAID controller card is installed, any optional PCIe card you select will be installed in the full-height slot. RAID controllers are always installed in the half-height slot.

Caveats

- For 1-CPU systems:
 - Only the full-height PCIe slot (slot 1) is supported
 - Neither PCIe slot 2 nor the mezzanine card slot are supported
 - Only a single VIC card (the Cisco VIC 1225 PCIe card) is supported and it must be installed in slot 1 (the full-height slot).
 - If any of the Fusion ioDrive2 cards are installed, they must be plugged into slot 1. Note that the only the Cisco UCS 3.0 TB MLC Fusion ioDrive2 card is full-height; all other Fusion ioDrive2 cards are half-height and therefore may need an adapter to hold them securely in the full-height slot.

- For 2-CPU systems:
 - Both PCIe slots (slots 1 and 2) and the mezzanine card slot are supported
 - Only a single VIC card (the half-height Cisco VIC 1225 PCIe card) is supported and it must be installed in slot 1 (the full height slot).
 - Only a single Cisco UCS 3.0 TB MLC Fusion ioDrive2 card is supported and it must be installed in slot 1 (the full height slot).
 - Up to two of the other Fusion ioDrive2 cards (1205-, 785- and 365-GB versions) are supported and can be installed in either slot 1 or 2, although an adapter may be needed when installing one of these half-height cards in slot 1 (the full-height slot).
- Other considerations for the Cisco VIC 1225:
 - Supports 10G SFP+ optical and copper twinax connections
 - The server supports installation of one Cisco VIC 1225 card and it is supported only in PCIe slot 1.
 - 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, 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) |
| 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 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 |
| 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 5 on page 37](#) for typical SFP+ and twinax connections to the network cards.

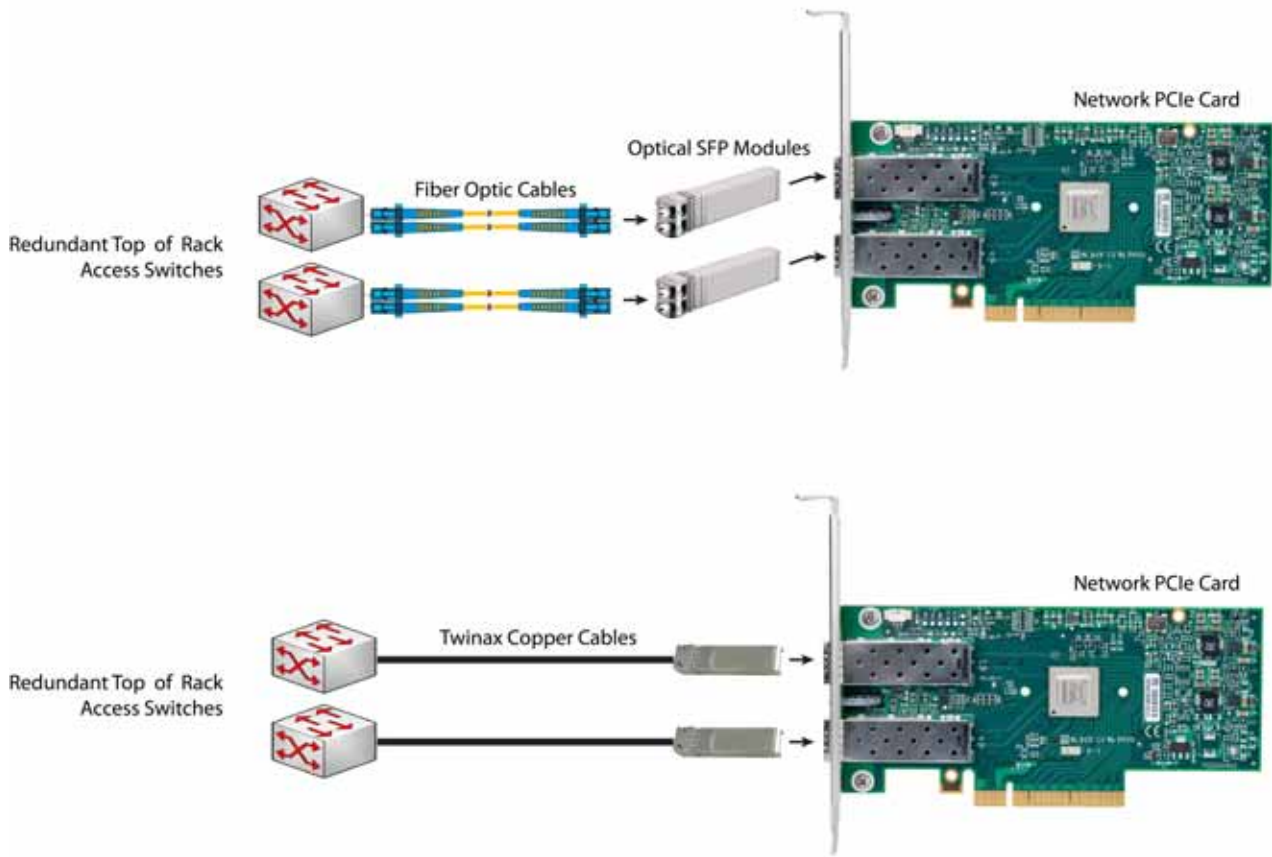
Caveats

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

Table 14 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-M3 (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 5 Network Card Connections



STEP 8 ORDER POWER SUPPLY

The C220 M3 LFF server accommodates two power supplies. A lightly loaded server can operate from one 650 W power supply. A fully loaded server might need to be powered with two 450 W or two 650 W power supplies (see [Table 15](#)).



NOTE: For configurations that use 130 W or 135 W CPUs, the minimum power supply required is 650 W (UCSC-PSU-650W). See [STEP 2 SELECT CPU\(s\), page 13](#).

Use the power calculator at the following link to determine the needed power based on the options chosen (CPUs, drives, memory, and so on):

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

Table 15 Power Supply PIDs

| Product ID (PID) | PID Description |
|------------------|----------------------------|
| UCSC-PSU-450W | 450 W power supply |
| UCSC-PSU-650W | 650 W power supply |
| UCSC-PSU-930WDC | 930 W -48V DC power supply |



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

STEP 9 SELECT AC POWER CORD(S)

Using [Table 16](#), 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.

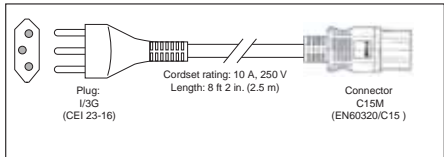
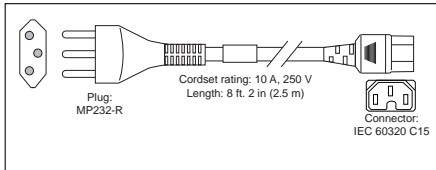
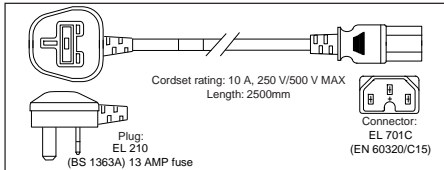
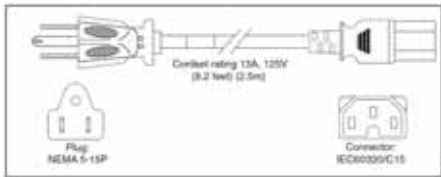
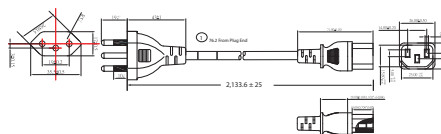
Table 16 Available Power Cords

| 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 16 Available Power Cords

| Product ID (PID) | PID Description | Images |
|------------------|---|--------|
| 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 | |
| SFS-250V-10A-ID | Power Cord, SFS, 250V, 10A, India | |
| SFS-250V-10A-IS | Power Cord, SFS, 250V, 10A, Israel | |

Table 16 Available Power Cords

| Product ID (PID) | PID Description | Images |
|------------------|--|---|
| CAB-9K10A-IT | Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy |  <p>Plug: 1/3G (CEI 23-16)</p> <p>Cordset rating: 10 A, 250 V Length: 8 ft. 2 in. (2.5 m)</p> <p>Connector: C15M (EN60320/C15)</p> |
| CAB-9K10A-SW | Power Cord, 250VAC 10A MP232 Plug, Switzerland |  <p>Plug: MP232-R</p> <p>Cordset rating: 10 A, 250 V Length: 8 ft. 2 in. (2.5 m)</p> <p>Connector: IEC 60320 C15</p> |
| CAB-9K10A-UK | Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK |  <p>Cordset rating: 10 A, 250 V/500 V MAX Length: 2500mm</p> <p>Plug: EL 210 (BS 1363A) 13 AMP fuse</p> <p>Connector: EL 701 C (EN 60320/C15)</p> |
| CAB-9K12A-NA | Power Cord, 125VAC 13A NEMA 5-15 Plug, North America |  <p>Cordset rating: 13A, 125V (8.2 Nm) (2.5m)</p> <p>Plug: NEMA 5-15P</p> <p>Connector: IEC60320/C15</p> |
| CAB-250V-10A-BR | Power Cord - 250V, 10A - Brazil |  |
| CAB-JPN-3PIN | Power Cord 3PIN, Japan | Image not available |

STEP 10 ORDER OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM

The reversible cable management arm mounts on either the right or left slide rails at the rear of the server and is used for cable management. Use [Table 17](#) to order a cable management arm.

Table 17 Cable Management Arm

| Product ID (PID) | PID Description |
|------------------|--|
| UCSC-CMA1 | Cable Management Arm for C220 rack servers |

For more information about the cable management arm, see the *Cisco UCS C220 M3 Installation and Service Guide* at this URL:

http://www.cisco.com/en/US/docs/unified_computing/ucs/c/hw/C220/install/C220.pdf



NOTE: All UCS C220 M3 servers ship with a tool-less rail kit.

STEP 11 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 18](#).

Table 18 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 12 ORDER CISCO FLEXIBLE FLASH SD CARD MODULE (OPTIONAL)

You can order up to two optional preloaded 16 GB Cisco Flexible Flash secure digital (SD) cards. The first SD card contains preloaded software for simplified server operation. The ordering information is listed in [Table 19](#).

Table 19 Secure Digital (SD) Card (preloaded with software)

| Product ID (PID) | PID Description |
|------------------|-------------------------------|
| UCSC-SD-16G-C220 | 16GB SD Card for C220 servers |

See [Figure 6 on page 57](#) for the location of the SD cards. There are two locations, SD1 and SD2.



NOTE: You can order an optional second blank SD card. The PID for the second SD (blank) card is shown in [Table 20](#). The second SD card can be used to mirror the first SD card.

Table 20 Second Secure Digital (SD) Card (blank)

| Product ID (PID) | PID Description |
|------------------|-------------------------|
| UCS-SD-16G | 16GB SD Card (optional) |

STEP 13 ORDER USB 2.0 DRIVE (OPTIONAL)

You can order one optional USB 2.0 drive. The USB drive ordering information is listed in [Table 21](#).

Table 21 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 6 on page 57](#) for the location of the USB connector.

STEP 14 SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

Several operating systems and value-added software programs are available. Select as desired from [Table 22](#).

Table 22 OSs and Value-Added Software (for 2-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-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 | |
| SLES-SVR-2S-1G-1A | SUSE Linux Enterprise Svr (1-2 CPU,1 Phys);1yr Support Reqd |
| SLES-SVR-2S-1G-3A | SUSE Linux Enterprise Svr (1-2 CPU,1 Phys);3yr Support Reqd |
| SLES-SVR-2S-1G-5A | SUSE Linux Enterprise Svr (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-SHA-2S-1A | SUSE Linux High Availability Ext (1-2 CPU); 1yr Support Reqd |
| SLES-SHA-2S-3A | SUSE Linux High Availability Ext (1-2 CPU); 3yr Support Reqd |
| SLES-SHA-2S-5A | SUSE Linux High Availability Ext (1-2 CPU); 5yr Support Reqd |
| SLES-HGC-2S-1A | SUSE Linux GEO Clustering for HA (1-2 CPU); 1yr Support Reqd |
| SLES-HGC-2S-3A | SUSE Linux GEO Clustering for HA (1-2 CPU); 3yr Support Reqd |
| SLES-HGC-2S-5A | SUSE Linux GEO Clustering for HA (1-2 CPU); 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 |

Table 22 OSs and Value-Added Software (for 2-CPU servers) (continued)

| PID Description | Product ID (PID) |
|--|--|
| 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-HA-2S-1A | RHEL Option/High-Availability/2 Socket/1Yr Svcs Required |
| RHEL-HA-2S-3A | RHEL Option/High-Availability/2 Socket/3Yr Svcs Required |
| RHEL-RS-2S-1A | RHEL Option/Resilient w/Ha /2 Socket/1 Yr Svcs Required |
| RHEL-RS-2S-3A | RHEL Option/Resilient Storage w/ HA /2 Socket/3 Yr Svcs Req |
| 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 |
| 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 |
| 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 |

Table 22 OSs and Value-Added Software (for 2-CPU servers) *(continued)*

| PID Description | Product ID (PID) |
|-----------------|--|
| 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 |
| 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 |
| UCS-VMW-TERMS | Acceptance of Terms, Standalone VMW License for UCS Servers |

STEP 15 SELECT OPERATING SYSTEM MEDIA KIT

Select the optional operating system media listed in [Table 23](#).

Table 23 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 |

STEP 16 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 24](#).

Table 24 Cisco SMARTnet for UCS Service

| Product ID (PID) | On Site? | Description |
|-------------------|----------|---|
| CON-PREM-C220M3LF | Yes | ONSITE 24X7X2 UCS C220 M3 Server - LFF |
| CON-OSP-C220M3LF | Yes | ONSITE 24X7X4 UCS C220 M3 Server - LFF |
| CON-OSE-C220M3LF | Yes | ONSITE 8X5X4 UCS C220 M3 Server - LFF |
| CON-OS-C220M3LF | Yes | ONSITE 8X5XNBD UCS C220 M3 Server - LFF |
| CON-S2P-C220M3LF | No | SMARTNET 24X7X2 UCS C220 M3 Server - LFF |
| CON-SNTP-C220M3LF | No | SMARTNET 24X7X4 UCS C220 M3 Server - LFF |
| CON-SNTE-C220M3LF | No | SMARTNET 8X5X4 UCS C220 M3 Server - LFF |
| CON-SNT-C220M3LF | No | SMARTNET 8X5XNBD UCS C220 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 25](#).

Table 25 SMARTnet for UCS Hardware Only Service

| Product ID (PID) | Service Level GSP | On Site? | Description |
|-------------------|-------------------|----------|--|
| CON-UCW7-C220M3LF | UCW7 | Yes | UC PLUS 24X7X40S UCS C220 M3 Server - LFF |
| CON-UCW5-C220M3LF | UCW5 | Yes | UC PLUS 8X5XNBDOS UCS C220 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 26](#).

Table 26 Partner Support Service for UCS

| Product ID (PID) | Service Level GSP | On Site? | Description |
|-------------------|-------------------|----------|---|
| CON-PSJ1-C220M3LF | PSJ1 | No | UCS SUPP PSS 8X5XNBD UCS C220 M3 Server - LFF |
| CON-PSJ2-C220M3LF | PSJ2 | No | UCS SUPP PSS 8X5X4 UCS C220 M3 Server - LFF |
| CON-PSJ3-C220M3LF | PSJ3 | No | UCS SUPP PSS 24X7X4 UCS C220 M3 Server - LFF |
| CON-PSJ4-C220M3LF | PSJ4 | No | UCS SUPP PSS 24X7X2 UCS C220 M3 Server - LFF |

Partner Support Service for UCS Hardware Only provides customers with replacement parts in as little as two hours. See [Table 27](#).

Table 27 Partner Support Service for UCS (Hardware Only)

| Product ID (PID) | Service Level GSP | On Site? | Description |
|-------------------|-------------------|----------|--|
| CON-PSW2-C220M3LF | PSW2 | No | UCS W PL PSS 8X5X4 UCS C220 M3 Server - LFF |
| CON-PSW3-C220M3LF | PSW3 | No | UCS W PL PSS 24X7X4 UCS C220 M3 Server - LFF |
| CON-PSW4-C220M3LF | PSW4 | No | UCS W PL PSS 24X7X2 UCS C220 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 28](#).

Table 28 UCS Computing Combined Support Service

| Product ID (PID) | Service Level GSP | On Site? | Description |
|--------------------|-------------------|----------|--|
| CON-NCF2-C220M3LF | NCF2 | No | CMB SPT SVC 24X7X2 UCS C220 M3 Server - LFF |
| CON-NCF2P-C220M3LF | NCF2P | Yes | CMB SPT SVC 24X7X2OS UCS C220 M3 Server - LFF |
| CON-NCF4P-C220M3LF | NCF4P | Yes | CMB SPT SVC 24X7X4OS UCS C220 M3 Server - LFF |
| CON-NCF4S-C220M3LF | NCF4S | Yes | CMB SPT SVC 8X5X4OS UCS C220 M3 Server - LFF |
| CON-NCFCS-C220M3LF | NCFCS | Yes | CMB SPT SVC 8X5XNBDOS UCS C220 M3 Server - LFF |
| CON-NCFE-C220M3LF | NCFE | No | CMB SPT SVC 8X5X4 UCS C220 M3 Server - LFF |
| CON-NCFP-C220M3LF | NCFP | No | CMB SPT SVC 24X7X4 UCS C220 M3 Server - LFF |
| CON-NCFT-C220M3LF | NCFT | No | CMB SPT SVC 8X5XNBD UCS C220 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 29](#).



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

Table 29 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-C220M3LF |
| | | UCSD7 | 8x5xNBD Onsite | CON-UCSD5-C220M3LF |
| SMARTnet for UCS HW ONLY+Drive Retention | UCS HW+DR | UCWD7 | 24x7x4 Onsite | CON-UCWD7-C220M3LF |
| | | UCWD5 | 8x5xNBD Onsite | CON-UCWD5-C220M3LF |

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 R42610 rack is available from Cisco for the C-Series servers, including the C220 M3 LFF server. This rack is a standard 19-inch rack and can be ordered with a variety of options, as listed in [Table 30](#). Racks are shipped separately from the C220 M3 LFF server.

Table 30 Racks and Rack Options

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

Notes . . .

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

For more information about the R42610 rack, see [RACKS, page 71](#).

OPTIONAL STEP - ORDER PDU

An optional power distribution unit (PDU) is available from Cisco for the C-Series rack servers, including the C220 M3 server. This PDU is available in a zero rack unit (RU) style (see [Table 30](#)).

Table 31 PDU Options

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

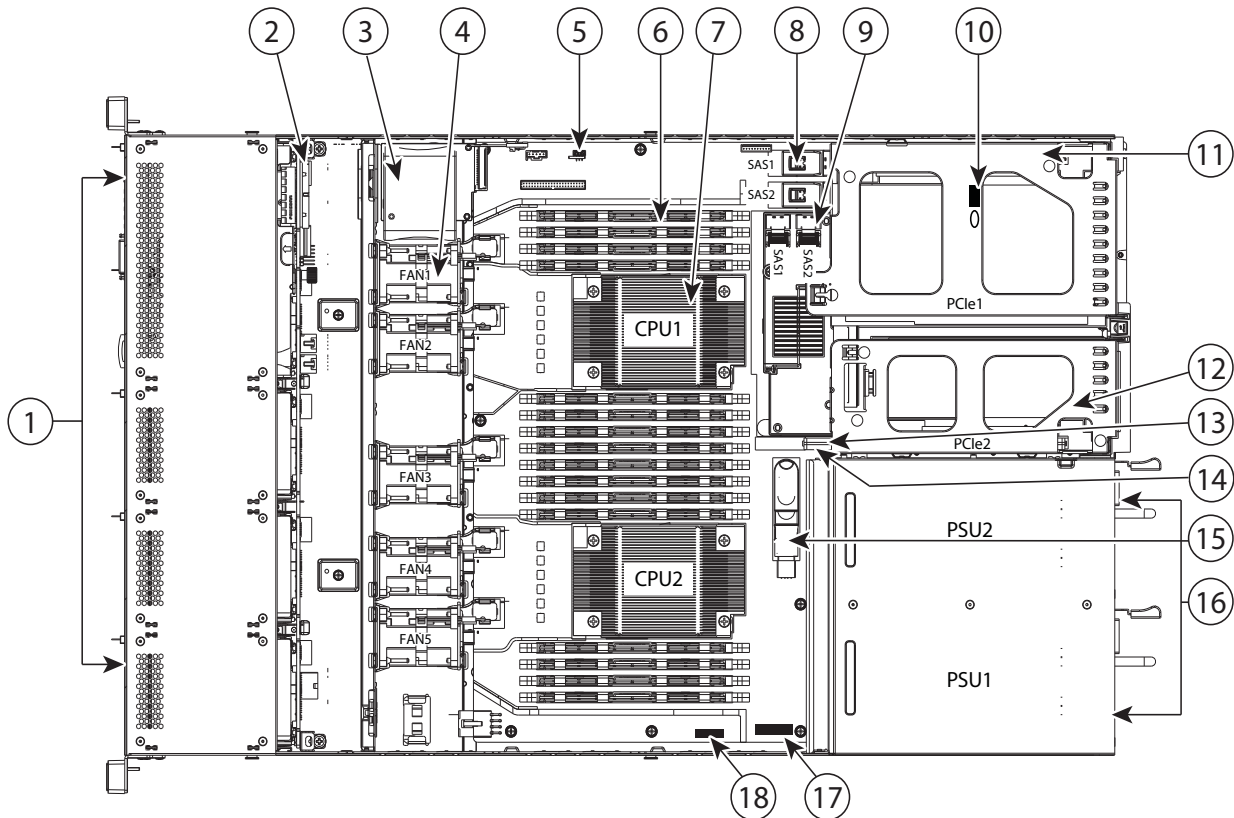
For more information about the PDU, see [PDUs, page 73](#).

SUPPLEMENTAL MATERIAL

CHASSIS

An internal view of the C220 M3 chassis with the top cover removed is shown in *Figure 6*.

Figure 6 C220 M3 LFF With Top Cover Off



| | | | |
|---|---|----|--|
| 1 | Drives (hot-swappable, accessed through front panel) | 10 | Trusted platform module socket on motherboard |
| 2 | Drive backplane | 11 | Standard-profile PCIe riser (PCIe slot 1) |
| 3 | SuperCap data cache power backup unit mounting location | 12 | Low-profile PCIe riser (PCIe slot 2) |
| 4 | Cooling fans (five) | 13 | Cisco Flexible Flash SD socket SD2 on PCIe riser 2 |
| 5 | SCU upgrade ROM header (RAID key). | 14 | Cisco Flexible Flash SD socket SD1 on PCIe riser 2 |
| 6 | DIMM slots on motherboard (16) | 15 | Internal USB port |

| | | | |
|---|---|----|---|
| 7 | CPUs and heatsinks (two) | 16 | Power supplies (two, hot-swappable access through rear panel) |
| 8 | Integrated RAID on motherboard, and mini-SAS connectors | 17 | RTC battery on motherboard |
| 9 | Mezzanine RAID card, mini-SAS connectors SAS1 and SAS2 | 18 | Software RAID 5 header (RAID key). |

CPUs and DIMMs

Physical Layout

Each CPU has four DIMM channels:

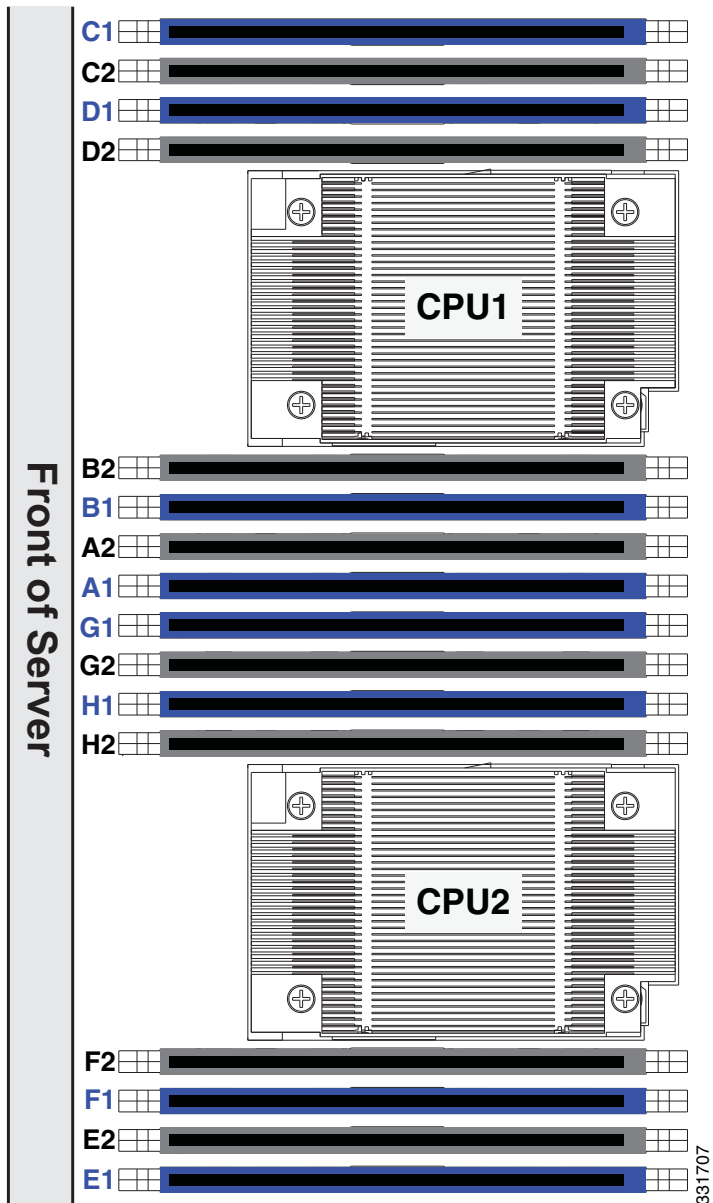
- CPU1 has channels A, B, C, and D
- CPU2 has channels E, F, G, and H

Each DIMM channel has two banks: bank 1 and bank 2. The blue-colored DIMM slots are for bank 1 and the black-colored are for bank 2.

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 7 shows how banks and channels are physically laid out on the motherboard. The DIMM slots on the right (channels A, B, C, and D) are associated with CPU1, while the DIMM slots on the left (channels E, F, G, and H) are associated with CPU2. The bank 1 (blue) DIMM slots are always located farther away from a CPU than the corresponding bank 2 (black) slots. Bank 1 slots (blue) are populated before bank 2 slots (black).

Figure 7 Physical Layout of CPU DIMM Channels and Banks



Memory Population Rules

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

- Each channel has two DIMM slots (for example, channel A = slots A1 and A2).
 - A channel can operate with one or two DIMMs installed.
 - If a channel has only one DIMM, populate slot 1 first (the blue slot).
- When both CPUs are installed, populate the DIMM slots of each CPU identically.
 - Fill blue slots in the channels first: A1, E1, B1, F1, C1, G1, D1, H1
 - Fill black slots in the channels second: A2, E2, B2, F2, C2, G2, D2, H2
- Any DIMM installed in a DIMM socket for which the CPU is absent is not recognized.
- Observe the DIMM mixing rules shown in [Table 32](#)

Table 32 DIMM Rules for C220 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 and A2) 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 LRIMM | You cannot mix 4 GB UDIMMs with any RDIMM or LRIMM |
| <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 5 on page 20 for valid LRDIMM and RDIMM 1 DPC and 2 DPC memory configurations UDIMMs run at 1066 MHz at 1.35 V and 1333 MHz at 1.5 V | 3 DPC is not supported |

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 C220 M3 server.

DIMM Population Order

Populate the DIMMs for a CPU according to [Table 33](#).

Table 33 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 |
| 6 ¹ | A1, B1, C1, A2, B2, C2 | E1, F1, G1, E2, F2, G2 |
| 8 | A1, B1, C1, D1, A2, B2, C2, D2 | E1, F1, G1, H1, E2, F2, G2, H2 |

Notes . . .

1. Not recommended (for performance reasons)

Recommended Memory Configuration

This section explains the recommended DIMM population order rules for the C220 M3 server.

- All DIMMs must be DDR3 DIMMs.
- Do not mix:
 - DIMMs with different sizes or 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 34](#) when populating DIMMs.

Table 34 Recommended Memory Configurations¹

| Total System Memory Size | CPU 1 DIMMs | | CPU 2 DIMMs | | DIMM Max Operating Speed (MHz) | Total DIMMs in the System |
|--------------------------|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|--------------------------------|---------------------------|
| | Blue Slots Bank 1 (A1, B1, C1, D1) | Black Slots Bank 2 (A2, B2, C2, D2) | Blue Slots Bank 1 (E1, F1, G1, H1) | Black Slots Bank 2 (E2, F2, G2, H2) | | |
| 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 |
| 96 GB | 4x8 GB | 2x8 GB | 4x8 GB | 2x8 GB | 1600 | 12 |
| | 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 | 4x16 GB | 2x16 GB | 4x16 GB | 2x16 GB | 1600 | 12 |
| | 4x16 GB | 4x8 GB | 4x16 GB | 4x8 GB | 1600 | 16 |
| 256 GB | 4x16 GB | 4x16 GB | 4x16 GB | 4x16 GB | 1600 | 16 |
| 512 GB | 4x32 GB | 4x32 GB | 4x32 GB | 4x32 GB | 1333 ² | 16 |

Notes . . .

1. Rows marked in yellow indicate best performance.
2. 32 GB LRDIMMs in some cases run at a maximum speed of 1333 MHz in 2DPC configurations, even though the specified DIMM speed is higher.

Supported DIMM Populations

The supported DIMM populations are listed in [Table 35](#).

Table 35 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 |
| 6 x 4 GB | 6 | 24 GB | 6 x 4 GB | 6 | 24 GB | 48 GB |
| 8 x 4 GB | 8 | 32 GB | 8 x 4 GB | 8 | 32 GB | 64 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 |
| 5 x 8 GB | 5 | 40 GB | 5 x 8 GB | 5 | 40 GB | 80 GB |
| 3 x 16 GB | 3 | 48 GB | 3 x 16 GB | 3 | 48 GB | 96 GB |
| 6 x 8 GB | 6 | 48 GB | 6 x 8 GB | 6 | 48 GB | 96 GB |
| 4x8 GB + 4x4 GB | 8 | 48 GB | 4x8 GB + 4x4 GB | 8 | 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 |
| 5 x 16 | 5 | 80 GB | 5 x 16 | 5 | 80 GB | 160 GB |
| 4x16 GB + 4x4 GB | 8 | 80 GB | 4x16 GB + 4x4 GB | 8 | 80 GB | 160 GB |
| 6 x 16 GB | 6 | 96 GB | 6 x 16 GB | 6 | 96 GB | 192 GB |
| 4x8 GB + 4x16 GB | 8 | 96 GB | 4x8 GB + 4x16 GB | 8 | 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 |
| 8 x 32 GB | 8 | 256 GB | 8 x 32 GB | 8 | 256 GB | 512 GB |

Low-Voltage DIMM Considerations

The C220 M3 server can be ordered with dual-voltage (1.5/1.35 V) DIMMs only. 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, only the following RAID controllers are supported for single-CPU configurations. Select one of these:

- An embedded RAID controller (on motherboard) from [Table 6 on page 23](#)
- One internal drive RAID controller (slot 1 only) from [Table 8 on page 24](#)
- One external drive RAID controller (slot 1 only) from [Table 8 on page 24](#)



NOTE: PCIe slot 2 is not supported for 1-CPU configurations



NOTE: In 1-CPU configurations, PCIe slot 1 is the default slot supported for an internal drive RAID controller. PCIe slots 1 or 2 can be used for one external drive RAID controller 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.

You may also select an appropriate optional RAID configuration listed in [Table 8 on page 24](#)

(2) 2-CPU Configurations

Select one of the following:

- An embedded RAID controller (on motherboard) from [Table 6 on page 23](#)
- One mezzanine RAID controller from [Table 7 on page 23](#)
- One internal drive RAID controller (slot 2) from [Table 8 on page 24](#)
- One external drive RAID controller (slot 1 or 2) from [Table 8 on page 24](#)
- One mezzanine RAID controller from [Table 7 on page 23](#) and one external drive RAID controller (slot 1 or 2) from [Table 7 on page 23](#)



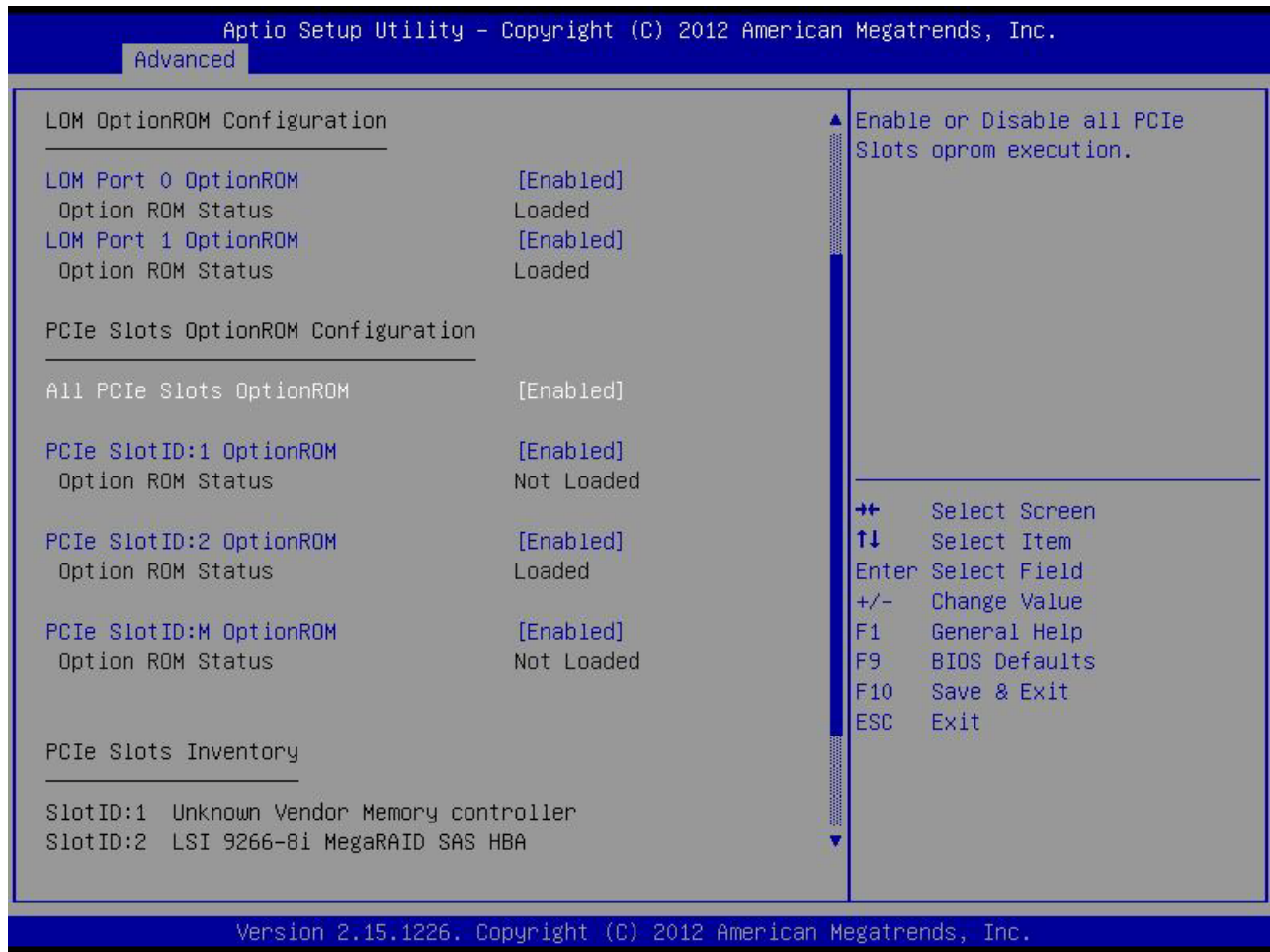
NOTE: In 2-CPU configurations, PCIe slot 2 is the default slot supported for an internal drive RAID controller. Slot 1 or slot 2 can be used for one external drive RAID controller or PCIe expansion cards. You can change the default card slot for a RAID controller to a different slot by going into the BIOS and reconfiguring the option ROM (OPROM) settings.

You may also select an appropriate optional RAID configuration listed in [Table 8 on page 24](#)

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 8*.

Figure 8 Example BIOS Screen for OPROM

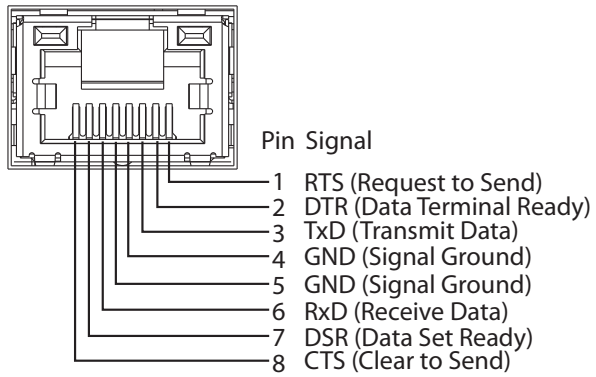


Serial Port Details

The pinout details of the rear port RJ-45 serial port connector are shown in [Figure 9](#).

Figure 9 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 36](#).

Table 36 Upgrade and Servicing-related Parts for UCS C220 M3 LFF Server

| Spare Product ID (PID) | Description |
|------------------------|--|
| UCSC-BBLKD-L= | 3.5-inch HDD Blanking Panel ¹ |
| UCSC-CABLE3= | Spare SAS/SATA Cable (1) for C220 M3 LFF (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-C220M3= | Heat Sink for UCS C220 M3 Rack Server ¹ |
| UCSC-AIRBAF-C220= | Air Baffle Replacement Kit for C220 M3 Server ¹ |
| N20-MBLIBATT= | Replacement Lithium Battery for Server Motherboard (CR2032) ¹ |
| UCS-RAID-BBU= | Battery Back-Up for 9266 ² |
| 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-CMA1= | Reversible Cable Management Arm for C220 rack servers |
| UCSC-RAIL1= | Rail Kit for C220 rack servers |
| UCSC-RAIL1-I= | Inner rail spare for C220 ⁴ |
| UCSC-SD-16G-C220= | 16GB SD Card for C220 Servers ⁵ |
| UCS-SD-16G= | Blank SD Card for UCS servers ⁶ |
| 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 ⁷ |
| UCS-CPU-EP-PNP= | Pick n place CPU tools for M3/EP 10/8/6/4/2 core CPUs (Green) ⁸ |
| UCS-CPU-EP2-PNP= | Pick n place CPU tools for M3/EP v2 12 core CPUs (Purple) ⁹ |
| 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 |

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 preloaded with an image specific to the C220 server.
6. This SD card is blank. The required image for the C220 server can be downloaded to the card.
7. This part is included/configured with the server chassis.
8. This part is included with the purchase of each optional or spare Intel Xeon E5-2600 CPU processor kit.
9. 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/C220/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/C220/install/replace.html#wp1235772

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/C220/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/C220/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 C220 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/C220/install/replace.html#wp1233864



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

RACKS

The Cisco R42610 rack (see [Figure 10](#)) 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 37](#).

Table 37 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 10 Cisco R42610 Rack



Front view - door closed



Front view - door open



Front view - door removed

PDU

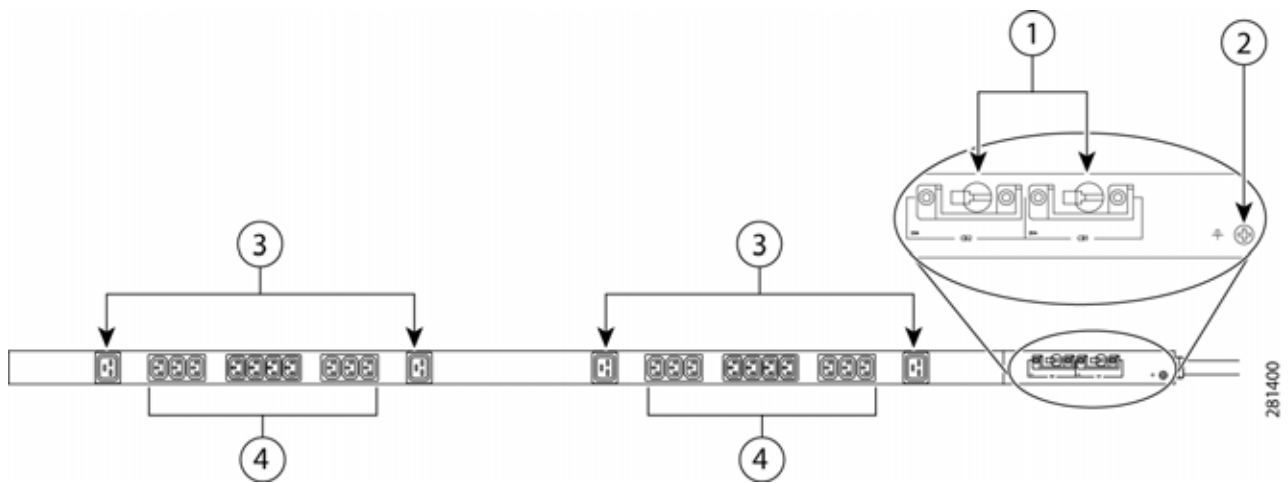
Cisco RP Series Power Distribution Units (PDUs) offer power distribution with branch circuit protection.

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

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

The C-series severs accept the zero-rack-unit (ORU) PDU. See [Figure 11](#)).

Figure 11 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

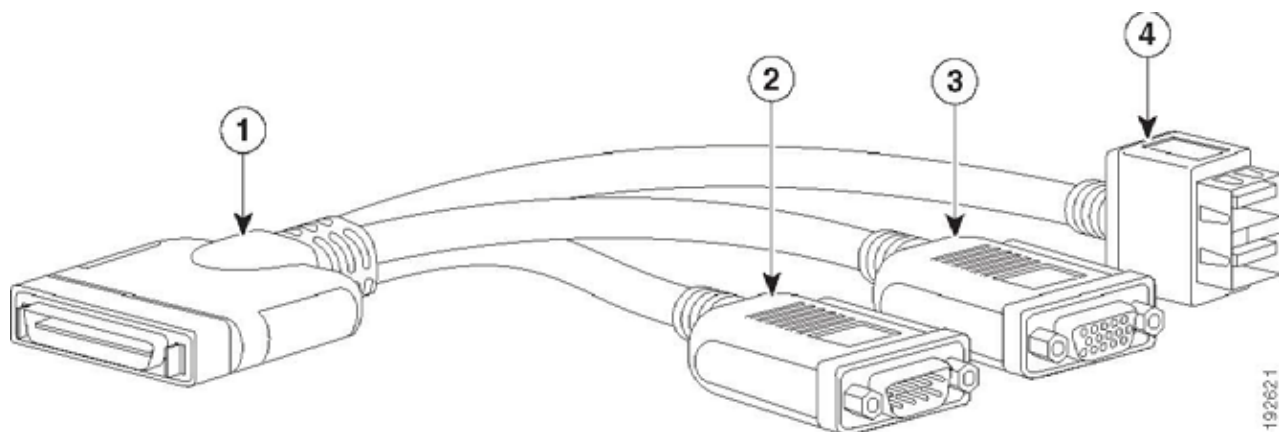
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in [Table 38](#).

Table 38 KVM Cable

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

Figure 12 KVM Cable

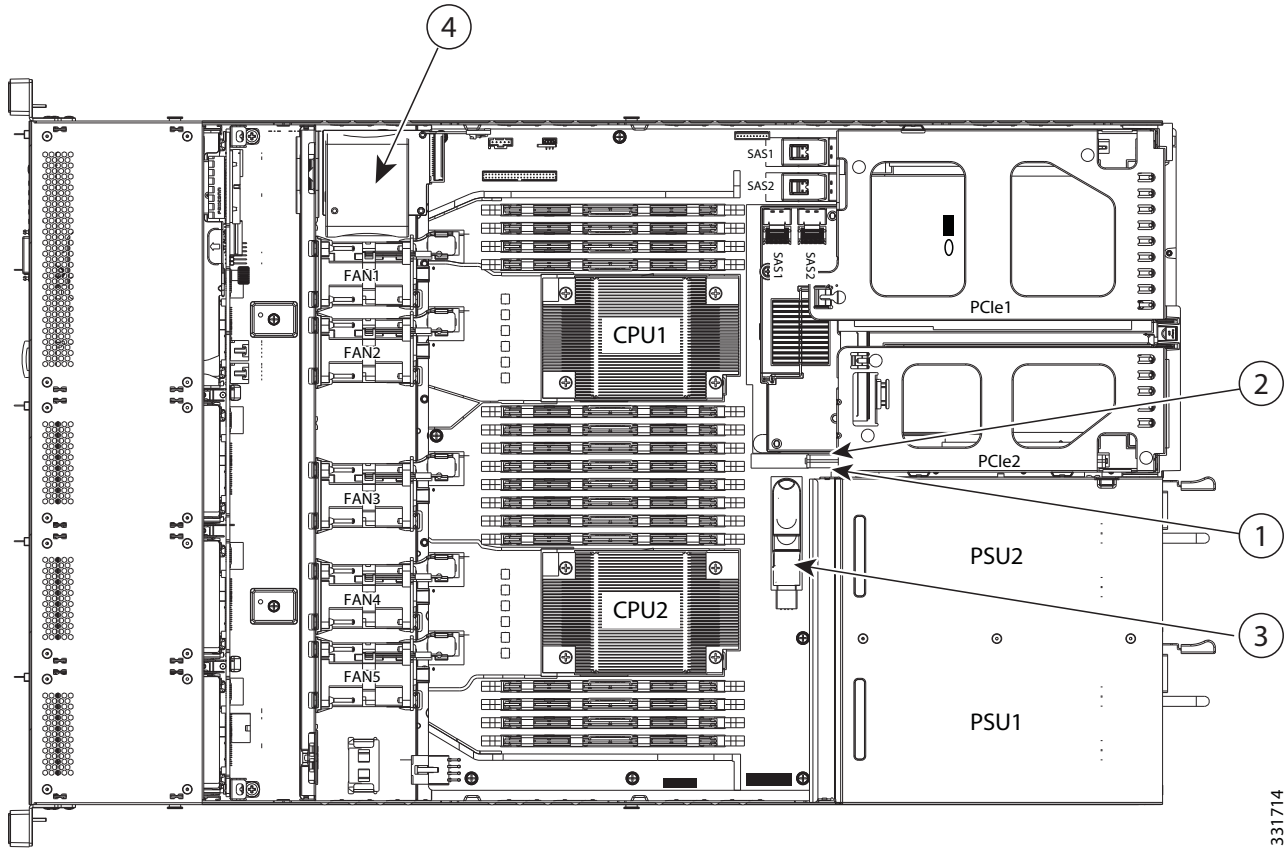


| | | | |
|---|-----------------------------------|---|---|
| 1 | Connector (to server front panel) | 3 | VGA connector (for a monitor) |
| 2 | DB-9 serial connector | 4 | Two-port USB connector (for a mouse and keyboard) |

Motherboard USB and SD Ports, and RAID Card Backup Location

The C220 M3 LFF motherboard has a general-purpose USB socket, and two SD sockets as shown in *Figure 13*. The mounting location for the RAID SuperCap data cache power backup module is also shown.

Figure 13 Motherboard USB and SD Ports and RAID Card Backup Location



331714

| | | | |
|---|------------|---|-----------------------------------|
| 1 | SD1 socket | 3 | USB connector |
| 2 | SD2 socket | 4 | SuperCap module mounting location |

TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 39 UCS C220 M3 LFF Dimensions and Weight

| Parameter | Value |
|--|---------------------|
| Height | 1.7 in. (4.32 cm) |
| Width | 16.92 in. (43.0 cm) |
| Depth | 29.7 in. (75.5 cm) |
| Front Clearance | 3 in. (76 mm) |
| Side Clearance | 1 in. (25 mm) |
| Rear Clearance | 6 in. (152 mm) |
| Weight | |
| Maximum (4 HDDs, 2 CPUs, 16 DIMMs, 2 power supplies) | 37.1 lbs (16.8 kg) |
| Minimum (1 HDD, 1 CPU, 1 DIMM, 1 power supply) | 28.5 lbs (12.9 kg) |
| Bare (0 HDD, 0 CPU, 0 DIMM, 1 power supply) | 23.4 lbs (10.6 kg) |

Power Specifications

The general power specifications for the C220 M3 LFF server 450 W (AC) power supply are listed in [Table 40](#).

Table 40 UCS C220 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 @ 35° C, 208 VAC |
| Maximum output power for the power supply | 450 W |

Table 40 UCS C220 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 C220 M3 LFF server 650 W (AC) power supply are listed in [Table 40](#).

Table 41 UCS C220 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 @ 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 C220 M3 SFF server 930 W (DC) power supply are listed in [Table 42](#)

Table 42 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) |

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

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

Environmental Specifications

The power specifications for the C220 M3 server are listed in [Table 43](#).

Table 43 UCS C220 M3 Environmental Specifications

| Parameter | Minimum |
|---|--|
| Temperature operating | 41 to 104° F (5 to 40° C) derate the maximum temperature by 1° C per every 305m of altitude above sea level |
| Temperature nonoperating | -40 to 149° F (-40 to 65° C) |
| Humidity (RH) nonoperating, 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) | 5.4 |
| Sound Pressure level, Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73° F (23° C) | 37 |

Compliance Requirements

The regulatory compliance requirements for C-Series servers are listed in [Table 44](#).

Table 44 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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