# Cisco UCS C220 M5 Server (Large Form Factor Disk Drive Model)

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# OVERVIEW

The UCS C220 M5 LFF server extends the capabilities of Cisco's Unified Computing System portfolio in a 1U form factor with the addition of the 2nd Generation Intel® Xeon® Scalable Processors, 2933-MHz DDR4 memory, and the new 512GB Intel® Optane™ Persistent Memory (PMem). With this combination of features, up to 9 TB of memory is possible (12 x 256 GB DDR4 DIMMs and 12 x 512 GB PMem), two 2 PCI Express (PCIe) 3.0 slots, up to four SAS/SATA hard disk drives (HDDs) or solid state drives (SSDs), and one dedicated internal slot for a 12G SAS storage controller card.

The C220 M5 LFF server includes a dedicated internal modular LAN on motherboard (mLOM) slot for installation of a Cisco Virtual Interface Card (VIC) or third-party network interface card (NIC) without consuming a PCI slot in addition to 2 x 10 Gbase-T Intel x550 embedded (on the motherboard) LOM ports.

The Cisco UCS C220 M5 server can be used standalone, or as part of the Cisco Unified Computing System, which unifies computing, networking, management, virtualization, and storage access into a single integrated architecture, enabling end-to-end server visibility, management, and control in both bare metal and virtualized environments.

**Figure 1      Cisco C220 M5 LFF Rack Server**

**Front View**
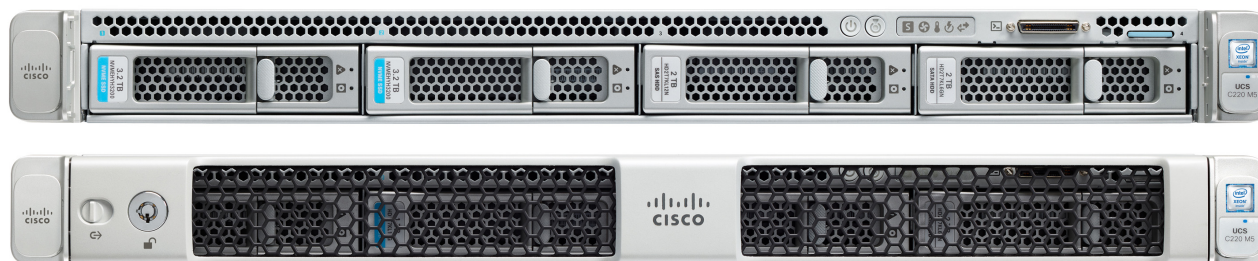


**Rear View**

# DETAILED VIEWS

## Chassis Front View

*Figure 2* shows the front view of the Cisco C220 M5 LFF Rack Server.

**Figure 2      Chassis Front View**
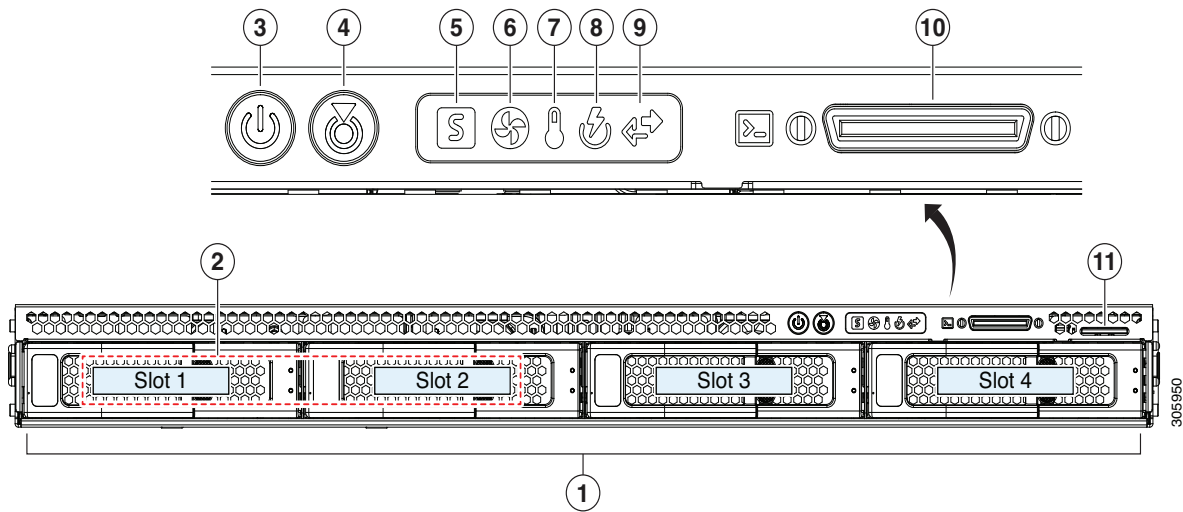


| 1 | Drive bays 1 – 4 support SAS/SATA hard drives and solid state drives (SSDs). A size-converter drive sled is required to hold 2.5-inch SSDs. | 7 | Temperature status LED |
|---|---|---|---|
| 2 | Drive bays 1 and 2 support 2.5-inch (SFF) NVMe PCIe SSDs. | 8 | Power supply status LED |
| 3 | Power button/Power status LED | 9 | Network link activity LED |
| 4 | Unit identification button/LED | 10 | KVM connector (used with KVM cable that provides two USB 2.0, one VGA, and one serial connector[1] |
| 5 | System status LED | 11 | Pull-out asset tag |
| 6 | Fan status LED | | |

**Notes:**

1. For more information about the KVM cable connection, see *KVM Cable, page 71*

## Chassis Rear View

*Figure 3* shows the external features of the rear panel.

**Figure 3      Chassis Rear View**
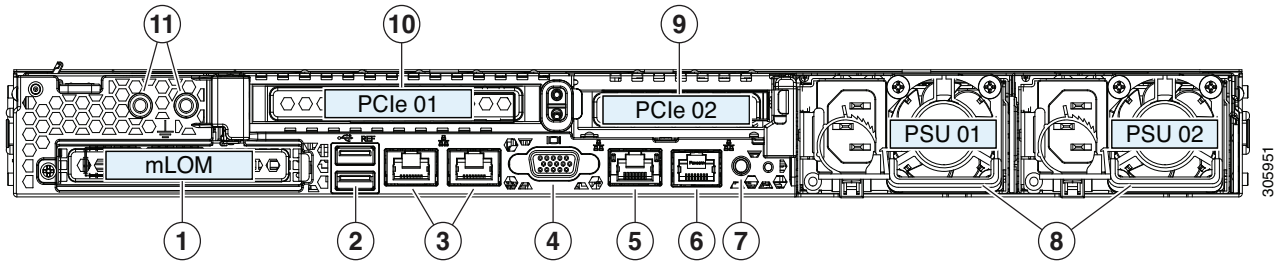


| 1 | Modular LAN-on-motherboard (mLOM) card slot | 7 | Rear Identification button/LED |
|---|---|---|---|
| 2 | USB 3.0 ports (two) | 8 | Power supplies (up to two, redundant as 1+1) |
| 3 | Two embedded (on the motherboard) Intel x550 10Gbase-T Ethernet controller ports<br><br>LAN1 is left connector, and<br><br>LAN2 is right connector | 9 | PCIe riser 2 (PCIe slot 2) (x16) includes NVMe connectors for cabling to connect up to two front-mount NVMe drives in drive bays 1 and 2. |
| 4 | VGA video port (DB-15) | 10 | PCIe riser 1/slot 1 (x16) |
| 5 | 1GE dedicated management port | 11 | Threaded holes for dual-hole grounding lug |
| 6 | Serial port (RJ-45 connector)[1] | | |

Notes:

  1. For details of the serial port pinout, see *Serial Port Details, page 70*.

# 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 9*.

**Table 1  Capabilities and Features**

| Capability/Feature | Description |
| --- | --- |
| Chassis | One rack unit (1RU) chassis |
| CPU | One or two 2nd Generation Intel® Xeon® scalable family CPUs |
| Chipset | Intel® C621 series chipset |
| Memory | 24 slots for registered DIMMs (RDIMMs), load-reduced DIMMs (LRDIMMs), or through silicon via (TSV) DIMMs and support for Intel® Optane™ Persistent Memory (PMem) |
| Multi-bit Error Protection | This server supports multi-bit error protection. |
| Video | The Cisco Integrated Management Controller (CIMC) provides video using the Matrox G200e video/graphics controller: <br><br> ■ Integrated 2D graphics core with hardware acceleration <br> ■ 512MB total DDR4 memory, with 16MB dedicated to Matrox video memory <br> ■ Supports display resolutions up to 1920 x 1200 16bpp @ 60Hz <br> ■ High-speed integrated 24-bit RAMDAC <br> ■ Single lane PCI-Express host interface running at Gen 1 speed |
| SATA Interposer Board | An optional SATA interposer board for up to four SATA-only drives. |
| Power subsystem | Up to two of the following hot-swappable power supplies: <br><br> ■ 770 W (AC) <br> ■ 1050 W (AC) <br> ■ 1050 W (DC) <br> ■ 1600 W (AC) <br> ■ 1050ELV (AC) <br><br> One power supply is mandatory; one more can be added for 1 + 1 redundancy. |
| Front Panel | A front panel controller provides status indications and control buttons |
| ACPI | This server supports the advanced configuration and power interface (ACPI) 4.0 standard. |
| Fans | Seven hot-swappable fans for front-to-rear cooling |
| Infiniband | The Infiniband architecture is supported by the PCIe slots |

**Cisco UCS C220 M5 Rack Server (Large Form Factor Disk Drive Model)**

**Table 1   Capabilities and Features**  *(continued)*

| Capability/Feature | Description |
| --- | --- |
| Expansion slots | ■ Riser 1 (controlled by CPU 1):<br><br>  • One full-height profile, 3/4-length slot with x24 connector and x16 lane.<br><br>■ Riser 2 (controlled by CPU 2):<br><br>  • One half-height profile, half-length slot with x24 connector and x16 lane.<br><br>■ Dedicated RAID controller slot (see *Figure 5 on page 66*)<br><br>  • An internal slot is reserved for use by the Cisco 12G SAS RAID controller or the Cisco 12G SAS HBA. |
| Interfaces | ■ Rear panel<br><br>  • One 1Gbase-T RJ-45 management port (Marvell 88E6176)<br><br>  • Two 10Gbase-T LOM ports (Intel X550 controller embedded on the motherboard)<br><br>  • One RS-232 serial port (RJ45 connector)<br><br>  • One DB15 VGA connector<br><br>  • Two USB 3.0 port connectors<br><br>  • One flexible modular LAN on motherboard (mLOM) slot that can accommodate various interface cards<br><br>■ Front panel<br><br>  • One KVM console connector (supplies two USB 2.0 connectors, one VGA DB15 video connector, and one serial port (RS232) RJ45 connector) |
| Internal storage devices | Drive storage:<br><br>Drives are installed into front-panel drive bays that provide hot-swappable access for SAS/SATA drives. The server accommodates up to 4 x 3.5-inch SAS and SATA HDDs and SSDs and up to 2 NVMe PCIe drives<br><br>Other storage:<br><br>■ One internal USB 3.0 port on the motherboard that you can use with an optional 16 GB USB thumb drive for additional storage.<br><br>■ A mini-storage module connector on the motherboard supports either:<br><br>  • An SD card module with two SD card slots. Mixing different capacity SD cards is not supported, or<br><br>  • An M.2 module with two SATA M.2 SSD slots. Mixing different capacity M.2 modules is not supported<br><br>**NOTE:** SD cards and M.2 SSDs cannot be mixed. See details for RAID functionality in the *4.0(4b)ORDER M.2 SATA SSDs (OPTIONAL)* section.<br><br>■ One socket for a micro-SD card on PCIe Riser 1. The micro-SD card serves as a dedicated resource for utilities such as HUU. Images can be pulled from a fileshare (NFS/CIFS) and uploaded to the cards for future use. |

**Table 1   Capabilities and Features  *(continued)***

| Capability/Feature | Description |
|---|---|
| Integrated management processor | Baseboard Management Controller (BMC) running Cisco Integrated Management Controller (CIMC) firmware.<br><br>Depending on your CIMC settings, the CIMC can be accessed through the 1GE dedicated management port, the 1GE/10GE LOM ports, or a Cisco virtual interface card (VIC).<br><br>CIMC manages certain components within the server, such as the Cisco 12G SAS HBA and the Cisco VIC |
| Storage controller | ■ Embedded RAID (software RAID)<br><br>   • Supports up to four SATA-only drives<br><br>   • Requires a SATA interposer board<br><br>■ Cisco 12G SAS RAID controller card with internal SAS connectivity.<br><br>   • Supports up to 4 internal SAS/SATA drives<br><br>   • Plugs into a dedicated RAID controller slot<br><br>   • Supports RAID 0, 1, 5, 6, 10, 50, 60, JBOD mode, and SRAID0<br><br>■ Cisco 12G 9400-8e SAS HBA<br><br>   • Supports external JBOD attach<br><br>   • Plugs into an appropriate riser slot (up to 2 supported)<br><br>   • No RAID support |
| Modular LAN on Motherboard (mLOM) slot | The dedicated mLOM slot on the motherboard can flexibly accommodate the following cards:<br><br>■ Cisco Virtual Interface Cards (VICs)<br><br>■ Quad Port Intel i350 1GE RJ45 Network Interface Card (NICs)<br><br>**NOTE:** Dedicated mLOM slot that can flexibly accommodate 1-, 10-, 25-, 40-, and 100-Gbps adapters<br><br>**NOTE:** The four Intel i350 ports are provided on an optional card that plugs into the mLOM slot, and are separate from the two embedded (on the motherboard) LAN ports |
| UCSM | Unified Computing System Manager (UCSM) runs in the Fabric Interconnect and automatically discovers and provisions some of the server components. |

# CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS C220 M5 LFF Rack Server:

## STEP 1    VERIFY SERVER SKU

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

**Table 2   PID of the C220 M5 LFF Rack Base Server**

| Product ID (PID) | Description |
|---|---|
| UCSC-C220-M5L | UCS C220 M5 LFF, no CPU, memory, HDD, power supply, SD cards, PCIe cards, or tool-less rail kit |

The Cisco C220 M5 LFF server:

■ Does not include power supply, CPU, memory, hard disk drives (HDDs), SD cards, rail kit, plug-in PCIe cards or Intel® Optane™ Persistent Memory (PMem).

> **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:

■ 2nd Generation Intel® Xeon® scalable family CPUs

■ Intel® C621 series chipset

■ Cache size of up to 38.5 MB

### Select CPUs

The available CPUs are listed in *Table 3*.

**Table 3   Available CPUs**

| Product ID (PID) | Clock Freq (GHz) | Power (W) | Cache Size (MB) | Cores | UPI[1] Links (GT/s) | Highest DDR4 DIMM Clock Support (MHz)[2] | Workload/Processor type |
|---|---|---|---|---|---|---|---|
| Cisco Recommended CPUs[3] (2nd Generation Intel® Xeon® Processors) | | | | | | | |
| UCS-CPU-I8276 | 2.2 | 165 | 38.50 | 28 | 3 x 10.4 | 2933 | Oracle, SAP |
| UCS-CPU-I8260 | 2.4 | 165 | 35.75 | 24 | 3 x 10.4 | 2933 | Microsoft Azure Stack |
| UCS-CPU-I6262V | 1.9 | 135 | 33.00 | 24 | 3 x 10.4 | 2400 | Virtual Server infrastructure or VSI |
| UCS-CPU-I6248R | 3.0 | 205 | 35.75 | 24 | 2 x 10.4 | 2933 | |
| UCS-CPU-I6248 | 2.5 | 150 | 27.50 | 20 | 3 x 10.4 | 2933 | VDI, Oracle, SQL, Microsoft Azure Stack |
| UCS-CPU-I6238R | 2.2 | 165 | 38.50 | 28 | 2 x 10.4 | 2933 | Oracle, SAP (2-Socket TDI only), Microsoft AzureStack |
| UCS-CPU-I6238 | 2.1 | 140 | 30.25 | 22 | 3 x 10.4 | 2933 | SAP |
| UCS-CPU-I6230R | 2.1 | 150 | 35.75 | 26 | 2 x 10.4 | 2933 | Virtual Server Infrastructure, Data Protection, Big Data, Splunk, Microsoft AzureStack |
| UCS-CPU-I6230 | 2.1 | 125 | 27.50 | 20 | 3 x 10.4 | 2933 | Big Data, Virtualization |
| UCS-CPU-I5220R | 2.2 | 125 | 35.75 | 24 | 2 x 10.4 | 2666 | Virtual Server Infrastructure, Splunk, Microsoft Azure Stack |
| UCS-CPU-I5220 | 2.2 | 125 | 24.75 | 18 | 2 x 10.4 | 2666 | HCI |
| UCS-CPU-I5218R | 2.1 | 125 | 27.50 | 20 | 2 x 10.4 | 2666 | Virtual Server Infrastructure, Data Protection, Big Data, Splunk, Scale-out Object Storage, Microsoft AzureStack |

**Table 3  Available CPUs**

| Product ID (PID) | Clock Freq (GHz) | Power (W) | Cache Size (MB) | Cores | UPI[1] Links (GT/s) | Highest DDR4 DIMM Clock Support (MHz)[2] | Workload/Processor type |
|---|---|---|---|---|---|---|---|
| UCS-CPU-I5218 | 2.3 | 125 | 22.00 | 16 | 2 x 10.4 | 2666 | Virtualization, Microsoft Azure Stack, Splunk, Data Protection |
| UCS-CPU-I4216 | 2.1 | 100 | 22.00 | 16 | 2 x 9.6 | 2400 | Data Protection, Scale Out Storage |
| UCS-CPU-I4214R | 2.4 | 100 | 16.50 | 12 | 2 x 9.6 | 2400 | Data Protection, Splunk, Scale-out Object Storage, Microsoft AzureStack |
| UCS-CPU-I4214 | 2.2 | 85 | 16.50 | 12 | 2 x 9.6 | 2400 | Data Protection, Scale Out Storage |
| UCS-CPU-I4210R | 2.4 | 100 | 13.75 | 10 | 2 x 9.6 | 2400 | Virtual Server Infrastructure, Data Protection, Big Data, Splunk |
| UCS-CPU-I4210 | 2.2 | 85 | 13.75 | 10 | 2 x 9.6 | 2400 | Virtualization, Big Data, Splunk |
| **8000 Series Processor** | | | | | | | |
| UCS-CPU-I8280L | 2.7 | 205 | 38.50 | 28 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8280 | 2.7 | 205 | 38.50 | 28 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8276L | 2.2 | 165 | 38.50 | 28 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8276 | 2.2 | 165 | 38.50 | 28 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8270 | 2.7 | 205 | 35.75 | 26 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8268 | 2.9 | 205 | 35.75 | 24 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8260Y | 2.4 | 165 | 35.75 | 24/20/16 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8260L | 2.3 | 165 | 35.75 | 24 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8260 | 2.4 | 165 | 35.75 | 24 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I8253 | 2.2 | 125 | 22.00 | 16 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| **6000 Series Processor** | | | | | | | |
| UCS-CPU-I6262V | 1.9 | 135 | 33.00 | 24 | 3 x 10.4 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6258R | 2.7 | 205 | 38.50 | 28 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6254 | 3.1 | 200 | 24.75 | 18 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6252N | 2.3 | 150 | 35.75 | 24 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6252 | 2.1 | 150 | 35.75 | 24 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6248R | 3.0 | 205 | 35.75 | 24 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6248 | 2.5 | 150 | 27.50 | 20 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6246R | 3.4 | 205 | 35.75 | 16 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6246 | 3.3 | 165 | 24.75 | 12 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |

**Table 3  Available CPUs**

| Product ID (PID) | Clock Freq (GHz) | Power (W) | Cache Size (MB) | Cores | UPI[1] Links (GT/s) | Highest DDR4 DIMM Clock Support (MHz)[2] | Workload/Processor type |
|---|---|---|---|---|---|---|---|
| UCS-CPU-I6244 | 3.6 | 150 | 24.75 | 8 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6242R | 3.1 | 205 | 35.75 | 20 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6242 | 2.8 | 150 | 22.00 | 16 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6240R | 2.4 | 165 | 35.75 | 24 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6240Y | 2.6 | 150 | 24.75 | 18/14/8 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6240L | 2.6 | 150 | 24.75 | 18 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6240 | 2.6 | 150 | 24.75 | 18 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6238R | 2.2 | 165 | 38.50 | 28 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6238L | 2.1 | 140 | 30.25 | 22 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6238 | 2.1 | 140 | 30.25 | 22 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6234 | 3.3 | 130 | 24.75 | 8 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6230R | 2.1 | 150 | 35.75 | 26 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6230N | 2.3 | 125 | 27.50 | 20 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6230 | 2.1 | 125 | 27.50 | 20 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6226R | 2.9 | 150 | 22.00 | 16 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6226 | 2.7 | 125 | 19.25 | 12 | 3 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I6222V | 1.8 | 115 | 27.50 | 20 | 3 x 10.4 | 2400 | 2nd Gen Intel® Xeon® |
| **5000 Series Processor** | | | | | | | |
| UCS-CPU-I5222 | 3.8 | 105 | 16.50 | 4 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5220S | 2.6 | 125 | 19.25 | 18 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5220R | 2.2 | 150 | 35.75 | 24 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5220 | 2.2 | 125 | 24.75 | 18 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5218R | 2.1 | 125 | 27.50 | 20 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5218B | 2.3 | 125 | 22.00 | 16 | 2 x 10.4 | 2933 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5218N | 2.3 | 105 | 22.00 | 16 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5218 | 2.3 | 125 | 22.00 | 16 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5217 | 3.0 | 115 | 11.00 | 8 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5215L | 2.5 | 85 | 13.75 | 10 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I5215 | 2.5 | 85 | 13.75 | 10 | 2 x 10.4 | 2666 | 2nd Gen Intel® Xeon® |
| **4000 Series Processor** | | | | | | | |
| UCS-CPU-I4216 | 2.1 | 100 | 22.00 | 16 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I4215R | 3.2 | 130 | 11.00 | 8 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I4215 | 2.5 | 85 | 11.00 | 8 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |

**Table 3   Available CPUs**

| Product ID (PID) | Clock Freq (GHz) | Power (W) | Cache Size (MB) | Cores | UPI[1] Links (GT/s) | Highest DDR4 DIMM Clock Support (MHz)[2] | Workload/Processor type |
|---|---|---|---|---|---|---|---|
| UCS-CPU-I4214R | 2.4 | 100 | 16.50 | 12 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I4214Y | 2.2 | 85 | 16.50 | 12/10/8 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I4214 | 2.2 | 85 | 16.50 | 12 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I4210R | 2.4 | 100 | 13.75 | 10 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I4210 | 2.2 | 85 | 13.75 | 10 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I4208 | 2.1 | 85 | 11.00 | 8 | 2 x 9.6 | 2400 | 2nd Gen Intel® Xeon® |
| **3000 Series Processor** | | | | | | | |
| UCS-CPU-I3206R | 1.9 | 85 | 11.00 | 8 | 2 x 9.6 | 2133 | 2nd Gen Intel® Xeon® |
| UCS-CPU-I3204 | 1.9 | 85 | 8.25 | 6 | 2 x 9.6 | 2133 | 2nd Gen Intel® Xeon® |

**Notes:**

1. UPI = Ultra Path Interconnect. 2-socket servers support only 2 UPI performance, even if the CPU supports 3 UPI.
2. If higher or lower speed DIMMs are selected than what is shown in *Table 4 on page 17* for a given CPU speed, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock.
3. For details on memory support for processor classes and CPU modes, see *SPARE PARTS, page 72*

**CAUTION:** For systems configured with 2nd Gen Intel® Xeon® 205W below R-series processors, operating above 30º C [86º F], a fan fault or executing workloads with extensive use of heavy instructions sets like Intel® Advanced Vector Extensions 512 (Intel® AVX-512), may assert thermal and/or performance faults with an associated event recorded in the System Event Log (SEL).

- **UCS-CPU-I6258R** - Intel 6258R 2.7GHz/205W 28C/38.50MB DDR4 2933MHz
- **UCS-CPU-I6248R** - Intel 6248R 3.0GHz/205W 24C/35.75MB DDR4 2933MHz
- **UCS-CPU-I6246R** - Intel 6246R 3.4GHz/205W 16C/35.75MB DDR4 2933MHz
- **UCS-CPU-I6242R** - Intel 6242R 3.1GHz/205W 20C/35.75MB DDR4 2933MHz

**Approved Configurations**

(1) **DIMM only configurations:**

■ Select one or two identical CPUs listed in *Table 3 on page 11* or *Table 4 on page 17*

(2) **DIMM/PMem Mixed Configurations:**

■ You must select two identical CPUs listed in *Table 3 on page 11* or *Table 4 on page 17*.

**Caveats**

- The selection of 1 or 2 CPUs depends on the desired server functionality. See the following sections:

    — *STEP 3 SELECT MEMORY, page 16*

    — *STEP 4 SELECT RAID CONTROLLERS, page 23*

    — *STEP 5 SELECT DRIVES, page 27*

    — *STEP 6 SELECT PCIe OPTION CARD(s), page 30*

**NOTE:** See *SELECT MEMORY, page 16* for details on the compatibility of CPUs and DIMM speeds.

# STEP 3   SELECT MEMORY

The available memory for the C220 M5 LFF is as follows:

- Clock speed: 2933 or 2666 MHz depending on CPU type

- Ranks per DIMM: 1, 2, 4, or 8

- Operational voltage: 1.2 V

- Registered ECC DDR4 DIMMS (RDIMMs), Load-reduced DIMMs (LRDIMMs), through-silicon via DIMMs (TSV DIMMs), or Intel® Optane™ Persistent Memory (PMem).

- New server purchases that include 2nd Generation Intel Scalable CPUs must use 2933-MHz DIMMs.

Memory is organized with six memory channels per CPU, with up to two DIMMs per channel, as shown in *Figure 4*.

**Figure 4      C220 M5 LFF Memory Organization**
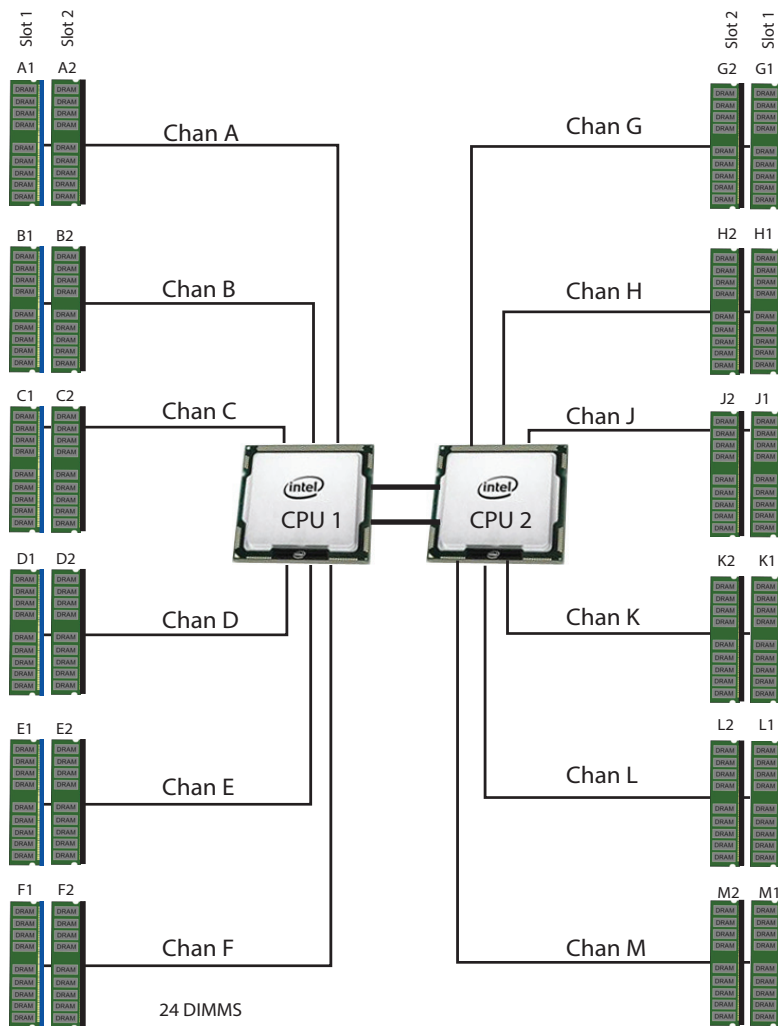


24 DIMMS

6 memory channels per CPU,
up to 2 DIMMs per channel

**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 DDR4 DIMMs**

| Product ID (PID) | PID Description | Voltage | Ranks /DIMM |
|---|---|---|---|
| **2933-MHz DIMMs** | | | |
| UCS-ML-256G8RT-H | 256 GB DDR4-2933-MHz LRDIMM/8Rx4/1.2v | 1.2 V | 8 |
| UCS-ML-128G4RT-H | 128 GB DDR4-2933-MHz LRDIMM/4Rx4 (16Gb) | 1.2 V | 4 |
| UCS-ML-X64G4RT-H | 64 GB DDR4-2933-MHz LRDIMM/4Rx4 (8Gb) | 1.2 V | 4 |
| UCS-MR-X64G2RT-H | 64 GB DDR4-2933-MHz RDIMM/2Rx4 (16Gb) | 1.2 V | 2 |
| UCS-MR-X32G2RT-H | 32GB DDR4-2933-MHz RDIMM/2Rx4 (8Gb) | 1.2 V | 2 |
| UCS-MR-X16G1RT-H | 16 GB DDR4-2933-MHz RDIMM/1Rx4 (8Gb) | 1.2 V | 1 |
| **Intel® Optane™ Persistent Memory Product** | | | |
| UCS-MP-128GS-A0 | Intel® Optane™ Persistent Memory, 128GB, 2666 MHz | | |
| UCS-MP-256GS-A0 | Intel® Optane™ Persistent Memory, 256GB, 2666 MHz | | |
| UCS-MP-512GS-A0 | Intel® Optane™ Persistent Memory, 512GB, 2666 MHz | | |
| **Intel® Optane™ Persistent Memory Product Operational Modes** | | | |
| UCS-DCPMM-AD | App Direct Mode | | |
| UCS-DCPMM-MM | Memory Mode | | |
| **Memory Mirroring Option** | | | |
| N01-MMIRROR | Memory mirroring option | | |

> **NOTE:**
>
> ■ Based on the Intel tech spec, the below DIMMs be used with the 1st Generation Intel® Xeon® scalable processor family CPUs and the 2nd Generation Intel® Xeon® scalable processor family CPUs
>
> UCS-MR-X16G1RT-H
> UCS-MR-X32G2RT-H
> UCS-ML-X64G4RT-H
>
> ■ Based on the Intel tech spec, the below DIMMs can be used only with 2nd Generation Intel® Xeon® scalable processor family CPUs, not with Intel® Xeon® scalable processor family CPUs.
>
> UCS-ML-256G8RT-H
> UCS-ML-128G4RT-H
> UCS-MR-X64G2RT-H

**Approved Configurations**

**(1) 1-CPU configuration without memory mirroring:**

■ Select from 1 to 12 DIMMs.

| CPU 1 DIMM Placement in Channels (for identically ranked DIMMs) | |
| --- | --- |
| 1 | (A1) |
| 2 | (A1, B1) |
| 3 | (A1, B1, C1) |
| 4 | (A1, B1); (D1, E1) |
| 6 | (A1, B1); (C1, D1); (E1, F1) |
| 8 | (A1, B1); (D1, E1); (A2, B2); (D2, E2) |
| 12 | (A1, B1); (C1, D1); (E1, F1); (A2, B2); (C2, D2); (E2, F2) |

**(2) 1-CPU configuration with memory mirroring:**

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

| CPU 1 DIMM Placement in Channels (for identical ranked DIMMs) | |
| --- | --- |
| 4 | (A1, B1); (D1, E1) |
| 6 | (A1, B1, C1); (D1, E1, F1) |
| 8 | (A1, A2, B1, B2); (D1, D2, E1, E2) |
| 12 | (A1, A2, B1, B2, C1, C2); (D1, D2, E1, E2, F1, F2) |

■ Select the memory mirroring option (N01-MMIRROR) as shown in *Table 4 on page 17*.

**(3) 2-CPU configuration without memory mirroring:**

- Select from 1 to 12 DIMMs per CPU.

| | CPU 1 DIMM Placement in Channels (for identical ranked DIMMs)<br><br>CPU 1 | CPU 2 DIMM Placement in Channels (for identical ranked DIMMs)<br><br>CPU 2 |
|---|---|---|
| 1 | (A1) | (G1) |
| 2 | (A1, B1) | (G1, H1) |
| 3 | (A1, B1, C1) | (G1, H1, J1) |
| 4 | (A1, B1); (D1, E1) | (G1, H1); (K1, L1) |
| 6 | (A1, B1); (C1, D1); (E1, F1) | (G1, H1); (J1, K1); (L1, M1) |
| 8 | (A1, B1); (D1, E1); (A2, B2); (D2, E2) | (G1, H1); (K1, L1); (G2, H2); (K2, L2) |
| 12 | (A1, B1); (C1, D1); (E1, F1); (A2, B2); (C2, D2); (E2, F2) | (G1, H1); (J1, K1); (L1, M1); (G2, H2); (J2, K2); (L2, M2) |

**(4) 2-CPU configuration with memory mirroring:**

- Select 8,12 16, or 24 identical DIMMs per CPU. The DIMMs will be placed by the factory as shown in the following table.

| | CPU 1 DIMM Placement in Channels (for identical ranked DIMMs)<br><br>CPU 1 | CPU 2 DIMM Placement in Channels (for identical ranked DIMMs)<br><br>CPU 2 |
|---|---|---|
| 8 | (A1,B1); (D1,E1) | (G1, H1); (K1, L1) |
| 12 | (A1, B1, C1); (D1, E1, F1) | (G1, H1, J1); (K1, L1, M1) |
| 16 | (A1, A2, B1, B2); (D1, D2, E1, E2) | (G1, G2, H1, H2); (K1, K2, L1, L2) |
| 24 | (A1, A2, B1, B2, C1, C2); (D1, D2, E1, E2, F1, F2) | (G1, G2, H1, H2, J1, J2); (K1, K2, L1, L2, M1, M2) |

- 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.

**Table 5   2933-MHz DIMM Memory Speeds with Different 2nd Generation Intel® Xeon® Scalable Processors**

| DIMM and CPU Frequencies (MHz) | DPC | LRDIMM (4Rx4)- 128 GB (MHz) | LRDIMM (4Rx4) - 64 GB (MHz) | RDIMM (2Rx4) - 64 GB (MHz) | RDIMM (2Rx4) - 32 GB (MHz) | RDIMM (1Rx4) - 16 GB (MHz) |
|---|---|---|---|---|---|---|
| | | 1.2 V | 1.2 V | 1.2 V | 1.2 V | 1.2 V |
| DIMM = 2933 CPU = 2933 | 1DPC | 2933 | 2933 | 2933 | 2933 | 2933 |
| | 2DPC | 2933 | 2933 | 2933 | 2933 | 2933 |
| DIMM = 2933 CPU = 2666 | 1DPC | 2666 | 2666 | 2666 | 2666 | 2666 |
| | 2DPC | 2666 | 2666 | 2666 | 2666 | 2666 |
| DIMM = 2933 CPU = 2400 | 1DPC | 2400 | 2400 | 2400 | 2400 | 2400 |
| | 2DPC | 2400 | 2400 | 2400 | 2400 | 2400 |
| DIMM = 2933 CPU = 2133 | 1DPC | 2133 | 2133 | 2133 | 2133 | 2133 |
| | 2DPC | 2133 | 2133 | 2133 | 2133 | 2133 |

**Table 6   2666-MHz DIMM Memory Speeds with Different Intel® Xeon® Scalable Processors**

| DIMM and CPU Frequencies (MHz) | DPC | TSV-RDIMM (8Rx4) - 128 GB (MHz) | TSV-RDIMM (4Rx4) - 64 GB (MHz) | LRDIMM (4Rx4) - 64 GB (MHz) | RDIMM (2Rx4) - 32 GB (MHz) | LRDIMM (2Rx4) - 32 GB (MHz) |
|---|---|---|---|---|---|---|
| | | 1.2 V | 1.2 V | 1.2 V | 1.2 V | 1.2 V |
| DIMM = 2666 CPU = 2666 | 1DPC | 2666 | 2666 | 2666 | 2666 | 2666 |
| | 2DPC | 2666 | 2666 | 2666 | 2666 | 2666 |
| DIMM = 2666 CPU = 2400 | 1DPC | 2400 | 2400 | 2400 | 2400 | 2400 |
| | 2DPC | 2400 | 2400 | 2400 | 2400 | 2400 |
| DIMM = 2666 CPU = 2133 | 1DPC | 2133 | 2133 | 2133 | 2133 | 2133 |
| | 2DPC | 2133 | 2133 | 2133 | 2133 | 2133 |

Cisco UCS C220 M5 Rack Server (Large Form Factor Disk Drive Model)

See *Table 7* for PMem memory modes.

**Table 7   Intel® Optane™ Persistent Memory Modes**

| Intel® Optane™ Persistent Memory | |
|---|---|
| App Direct Mode: | PMem operates as a solid-state disk storage device. Data is saved and is non-volatile. Both PMem and DIMM capacity counts towards CPU tiering (both PMem and DIMM capacities count towards the CPU capacity limit) |
| Memory Mode:[1] | PMem operates as a 100% memory module. Data is volatile and DRAM acts as a cache for PMem. Only PMem capacity counts towards CPU tiering (only the PMem capacity counts towards the CPU capacity limit). This is the factory default mode. |
| Mix Mode: | DRAM as cache. Only PMem capacity counts towards CPU tiering (only the PMem capacity counts towards the CPU capacity limit) |

**Notes:**

1. For Memory Mode, the Intel-recommended DIMM to PMem capacity ratio in the same CPU channel is from 1:2 to 1:16. So if you use a 128 GB DIMM in a channel, you could use a 512 GB PMem for a 1:6 capacity ratio. If you use a 32 GB DIMM in a channel, you could use a 512 GB PMem for a 1:16 capacity ratio. There are several other combinations possible.

**Table 8   2nd Generation Intel® Xeon® Scalable Processor DIMM and PMem[1] Physical Configuration**

| DIMM to PMem Count | CPU 1 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | iMC1 | | | | | | iMC0 | | | | | |
| | Channel 2 | | Channel 1 | | Channel 0 | | Channel 2 | | Channel 1 | | Channel 0 | |
| | F2 | F1 | E2 | E1 | D2 | D1 | C2 | C1 | B2 | B1 | A2 | A1 |
| 6 - 2 | | DIMM | | DIMM | PMem | DIMM | | DIMM | | DIMM | PMem | DIMM |
| 6 - 4 | | DIMM | PMem | DIMM | PMem | DIMM | | DIMM | PMem | DIMM | PMem | DIMM |
| 6 - 6 | PMem | DIMM | PMem | DIMM | PMem | DIMM | PMem | DIMM | PMem | DIMM | PMem | DIMM |

| DIMM to PMem Count | CPU 2 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | iMC1 | | | | | | iMC0 | | | | | |
| | Channel 2 | | Channel 1 | | Channel 0 | | Channel 2 | | Channel 1 | | Channel 0 | |
| | M2 | M1 | L2 | L1 | K2 | K1 | J2 | J1 | H2 | H1 | G2 | G1 |
| 6 - 2 | | DIMM | | DIMM | PMem | DIMM | | DIMM | | DIMM | PMem | DIMM |
| 6 - 4 | | DIMM | PMem | DIMM | PMem | DIMM | | DIMM | PMem | DIMM | PMem | DIMM |
| 6 - 6 | PMem | DIMM | PMem | DIMM | PMem | DIMM | PMem | DIMM | PMem | DIMM | PMem | DIMM |

**Notes:**

1. All systems must be fully populated with two CPUs when using PMem at this time.

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**NOTE:** There are three possible memory configurations for each CPU when combining DIMMs and PMem, and the configurations must be the same for each CPU:

- 6 DIMMs and 2 PMem, or
- 6 DIMMs and 4 PMem, or
- 6 DIMMs and 6 PMem

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For detailed Intel® PMem configurations, refer to

**Cisco UCS C220 M5 Server Installation and Service Guide**

For detailed DIMM/PMem informations, refer to

**Cisco UCS C220/C240/B200 M5 Memory Guide**

## STEP 4 SELECT RAID CONTROLLERS

# RAID Controller Options (internal HDD/SSD support)

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**NOTE:** NVMe drives are controlled directly by CPU2 and not by any RAID controller.

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### Embedded Software RAID

The default RAID configuration is embedded software RAID, which supports only SATA HDDs and enterprise value SSDs (RAID 0, 1, 10). A maximum of four SATA drives are supported with embedded software RAID. Embedded RAID requires a SATA interposer board.

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**NOTE:** The embedded software RAID is limited to Windows and Linux operating systems only. There is no VMware support for embedded software RAID.

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### Cisco 12G SAS RAID controller

You can choose a Cisco 12G SAS RAID controller, which plugs into a dedicated internal RAID controller card slot. This RAID controller includes a 1 GB cache and supports RAID 0, 1, 5, 6, 10, 50, 60, JBOD mode, and SRAID0.

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

- Embedded RAID = 8
- Cisco 12G SAS RAID controller = 64

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### SAS HBA (external JBOD support)

In addition to a RAID controller or JBOD controller for internal drives, you can choose the following SAS HBA for external JBOD drive connectivity (non-RAID):

- Cisco 9400-8e 12G SAS HBA for external JBOD attach (you can install up to two of these, one in each of the two PCIe slots in the rear panel).

### RAID Volumes and Groups

When creating each RAID volume, follow these guidelines:

- Use the same capacity for each drive in each RAID volume
- For embedded software RAID:
    - Use only SATA HDDs
    - Embedded software RAID has two ports and each port can control 4 drives.

— Each set of 4 SATA HDDs for a port must be in separate RAID volumes.

— You cannot mix drives across ports to create a RAID volume.

— For more details, see *Embedded Software RAID, page 23*.

■ For the Cisco 12G SAS RAID controller upgrade:

— Use either all SAS/SATA HDDs, or all SAS SSDs, or all SATA SSDs in each RAID volume

## Select Controller Options

Select one of the following RAID controllers:

■ Embedded software RAID (this is the default if no other selection is made), or

■ One Cisco 12G SAS RAID controller and a RAID configuration option listed in *Table 9 on page 24*.

> **NOTE:** The default RAID solution is embedded software RAID that supports a limited number of drives, operating systems, and virtualized environments. For a more comprehensive RAID solution, choose the Cisco 12G SAS RAID controller from *Table 9*.

**Table 9  Hardware Controller Options**

| Product ID (PID) | PID Description |
|---|---|
| **Controllers for Internal Drives** | |
| **Note that if the following Cisco 12G SAS RAID controller (UCSC-MRAID1GB-KIT) is selected, it is factory-installed in the dedicated internal slot.** | |
| UCSC-MRAID1GB-KIT | SAS RAID KIT for C220M5L (Avila Beach kit for C220M5L)<br><br>■ Supports up to 4 internal SAS/SATA HDDs and SAS/SATA SSDs.<br><br>■ Supports SRAID0, RAID 0, 1, 5, 6, 10, 50, 60 and JBOD Mode<br><br>■ For all self-encrypting drives (SED), standalone Management (CIMC/UCSM) is supported for configuring and managing local keys. For now, SED drives are managed with local key management only. Third-party key management will be supported (KMIP compliant). |
| **Controller for External Drives (plugs into PCIe slot)** | |
| UCSC-9400-8E | Cisco 12G 9400-8e 12G SAS HBA for external JBOD attach. You can install up to two of these, one in each rear PCIe slot. |

**Table 9   Hardware Controller Options** *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| **RAID Configuration Options (not available for embedded software RAID)** | |
| R2XX-SRAID0 | Enable Single Disk Raid 0 Setting |
| 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. |

**NOTE:**

■ Although RAID levels 50 and 60 are not orderable from the factory, they are supported for selected controllers as shown in *Table 9*.

■ For Cisco SAS 9400-8e 12G SAS HBA external drive enclosure support, see the enclosure section of the compatibility list at the following link:

https://www.broadcom.com/support/storage/interop-compatibility

Customers should contact their storage vendor for technical support related to external JBOD enclosures.

**Approved Configurations**

■ Embedded software RAID default supports up to 4 internal SATA HDDs with RAID 0, 1, 10 support.

■ The SAS RAID controller upgrade option supports up to four internal drives with RAID 0, 1, 10, 5, 6, 50, 60, and JBOD mode support.

■ Up to two Cisco 12G 9400-8e SAS HBA external drive PCIe controller cards can be installed simultaneously with the SAS RAID KIT for C220M5L (UCSC-MRAID1GB-KIT).

See *Table 10* for a summary of the supported controller configuration options.

**Table 10  Supported Controller Configurations for C220 M5 LFF Server**

| # CPUs | Embedded RAID | UCSC-MRAID1 GB-KIT | UCSC-9400-8E | MAX# Drives Supported | RAID Support | Internal Drive Types Allowed |
|---|---|---|---|---|---|---|
| 1 | Enabled | Not allowed | Up to two installed in rear PCIe slots | 4 internal SATA only, 8 or 16 external | 0, 1, 10 (SATA only) | SATA HDDs/Enterprise Value SSDs |
| 1 | Not allowed | Installed in a dedicated slot | Up to two installed in rear PCIe slots | 4 internal, 8 or 16 external | 0,1,10,5,6,50, 60 JBOD (UCSC-MRAID1GB-KIT) | SAS/SATA HDDs, SAS/SATA SSDs |
| 2 | Enabled | Not allowed | Up to two installed in rear PCIe slots | 4 internal SATA only, 8 or 16 external | 0, 1, 10 (SATA only) | SATA HDDs/Enterprise Value SSDs |
| 2 | Not allowed | Installed in a dedicated slot | Up to two installed in rear PCIe slots | 4 internal, 8 or 16 external | 0,1,10,5,6,50, 60 JBOD (UCSC-MRAID1GB-KIT) | SAS/SATA HDDs, SAS/SATA SSDs, LFF NVMe |

**NOTE:**  There is no RAID support for NVMe. NVMe drives are controlled directly by CPU2. In an embedded RAID configuration, only embedded software RAID (0, 1, 10) is supported. AHCI mode is not supported.

## STEP 5   SELECT DRIVES

The standard disk drive features are:

- 3.5-inch large form factor
- Hot-pluggable
- Drives come mounted in sleds

### Select Drives

The available drives are listed in *Table 11*.

**Table 11  Available Hot-Pluggable Sled-Mounted Drives**

| Product ID (PID) | PID Description | Drive Type | Capacity |
|---|---|---|---|
| **HDDs** | | | |
| **HDDs (10K RPM)** | | | |
| UCS-HY18TB10K4KN[1] | 1.8 TB 12G SAS 10K RPM LFF HDD (4K) | SAS | 1.8 TB |
| UCS-HY12TB10K12N | 1.2 TB 12G SAS 10K RPM LFF HDD | SAS | 1.2 TB |
| **HDDs (7.2K RPM)** | | | |
| UCS-HD1T7KL12N | 1 TB 12G SAS 7.2K RPM LFF HDD | SAS | 1 TB |
| UCS-HD2T7KL12N | 2 TB 12G SAS 7.2K RPM LFF HDD | SAS | 2 TB |
| UCS-HD4T7KL12N | 4 TB 12G SAS 7.2K RPM LFF HDD | SAS | 4 TB |
| UCS-HD6T7KL4KN | 6 TB 12G SAS 7.2K RPM LFF HDD (4K) | SAS | 6 TB |
| UCS-HD8T7K4KAN | 8 TB 12G SAS 7.2K RPM LFF HDD (4K) | SAS | 8 TB |
| UCS-HD10T7KL4KN | 10 TB 12G SAS 7.2K RPM LFF HDD (4K) | SAS | 10 TB |
| UCS-HD10T7KLEM | 10 TB 12G SAS 7.2K RPM LFF HDD (512e) | SAS | 10 TB |
| UCS-HD10T7K4KAN | 10 TB 12G SAS 7.2K RPM LFF HDD (4K) | SAS | 10 TB |
| UCS-HD12T7KL4KN | 12 TB 12G SAS 7.2K RPM LFF HDD (4K) | SAS | 12 TB |
| UCS-HD14T7KL4KN | 14 TB 12G SAS 7.2K RPM LFF HDD(4K) | SAS | 14 TB |
| UCS-HD14TT7KL4KN | 14 TB 12G SAS 7.2K RPM LFF HDD(4K) | SAS | 14 TB |
| UCS-HD16TW7KL4KN | 16TB 12G SAS 7.2K RPM LFF HDD(4K) | SAS | 16 TB |
| UCS-HD16T7KL4KN | 16 TB 12G SAS 7.2K RPM LFF HDD(4K) | SAS | 16 TB |
| UCS-HD18TW7KL4KN | 18TB 12G SAS 7.2K RPM LFF HDD(4K) | SAS | 18 TB |
| UCS-HD1T7KL6GN | 1 TB 6G SATA 7.2K RPM LFF HDD | SATA | 1 TB |
| UCS-HD2T7KL6GN | 2 TB 6G SATA 7.2K RPM LFF HDD | SATA | 2 TB |
| UCS-HD4T7KL6GN | 4 TB 6G SATA 7.2K RPM LFF HDD | SATA | 4 TB |
| UCS-HD8T7K6GAN | 8 TB 6G SATA 7.2K RPM LFF HDD (512e) | SATA | 8 TB |

**Table 11  Available Hot-Pluggable Sled-Mounted Drives**

| Product ID (PID) | PID Description | Drive Type | Capacity |
|---|---|---|---|
| UCS-HD6T7KL6GN | 6 TB 6G SATA 7.2K RPM LFF HDD (512e) | SATA | 6 TB |
| UCS-HD10T7K6GAN | 10TB 6G SATA 7.2K RPM LFF HDD (512e) | SATA | 10 TB |
| UCS-HD12T7KL6GN | 12 TB 6G SATA 7.2K RPM LFF HDD (512e) | SATA | 12 TB |
| **SAS/SATA SSDs[2]** | | | |
| **Enterprise Performance SSDs (High endurance, supports up to 10X or 3X DWPD (drive writes per day))[3]** | | | |
| **SAS SSDs** | | | |
| UCS-HY800GK3X-EP | 800GB 3.5in Enterprise Performance 12G SAS SSD(3X endurance) | SAS | 800 GB |
| UCS-HY16TK3X-EP | 1.6TB 3.5in Enterprise Performance 12G SAS SSD(3X endurance) | SAS | 1.6 TB |
| **SATA SSDs** | | | |
| UCS-HY480G63X-EP | 480GB 3.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610) | SATA | 480 GB |
| UCS-HY960G63X-EP | 960GB 3.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610) | SATA | 960 GB |
| UCS-HY19T63X-EP | 1.9TB 3.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610) | SATA | 1.9 TB |
| **Enterprise Value SATA SSDs (Low endurance, supports up to 1X DWPD (drive writes per day))[4]** | | | |
| UCS-HY240G61X-EV | 240 GB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863a/PM883) | SATA | 240 GB |
| UCS-HY480G61X-EV | 480 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3520) | SATA | 480 GB |
| UCS-HY960G61X-EV | 960 GB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863a/PM883) | SATA | 960 GB |
| UCS-HY19TM1X-EV | 1.9TB 3.5 inch Enterprise Value 6G SATA SSD | SATA | 1.9 TB |
| **Self-Encrypted Drives (SED)** | | | |
| **HDDs** | | | |
| UCS-HY600G15NK9 | 600 GB 12G SAS 15K RPM LFF HDD (SED) | SAS | 600 GB |
| UCS-HD4T12GNK9 | 4 TB 7.2k RPM LFF HDD (SED) | SAS | 4 TB |
| UCS-HD6T12GANK9 | 6 TB 7.2k RPM LFF HDD (4K format, SED) | SAS | 6 TB |
| UCS-HD12T7KL4NK9 | 12 TB 7.2 K RPM LFF HDD (4K format SED) | SAS | 12 TB |
| **PCIe/NVMe LFF 2.5" drives [2]** | | | |
| UCSC-NVMEHY-H800 | 800 GB HGST SN200 NVMe High Perf. High Endurance (HGST) | NVMe | 800 GB |
| UCS-NVMEHY-W1600 | 1.6TB 3.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance | NVMe | 1.6 TB |
| UCS-NVMEHY-W3200 | 3.2TB 3.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance | NVMe | 3.2 TB |
| **NOTE:** Cisco uses solid state drives (SSDs) from a number of vendors. All solid state drives (SSDs) are subject to physical write limits and have varying maximum usage limitation specifications set by the manufacturer. Cisco will not replace any solid state drives (SSDs) that have exceeded any maximum usage specifications set by Cisco or the manufacturer, as determined solely by Cisco. | | | |

**Notes:**

1. Operating Systems supported on 4k sector size drives is as follows:

   - Windows: Minimum release Win2012 and later

   - Linux: Minimum release RHEL 6.5 and later

   - VMware ESXI 6.5 and later is needed for 512E drive support; VMware ESXI 6.7 and later is needed for 4KN drive support

   - UEFI Mode must be used when booting from 4K sector size drives, legacy mode is not supported. Ensure that 4K sector size and 512 byte sector size drives are not mixed in the same RAID volume.

2. Two CPUs must be installed in order to include any number of SFF NVMe PCIe SSDs. If you choose one or two SFF PCIe SSD or SFF NVMe drives, drive slots 1 and 2 at the front of the chassis are reserved for these drives (see *Figure 2 on page 4* for drive slot numbering).

3. Targeted for write centric IO applications. Supports endurance of 10 or 3 DWPD (drive writes per day). Target App app are caching, online transaction processing (OLTP), data warehousing, and virtual desktop infrastructure (VDI).

4. Targeted for read centric IO applications. Supports endurance of 1 DWPD (drive write per day). Target applications are boot, streaming media, and collaboration.

---

**NOTE:** When configuring front facing drives with spare NVMe drives, you must order an NVMe cable (PID = CBL-NVME -220FF) along with the spare drives.

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**Caveats**

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- You can choose only SATA HDDs when using embedded software RAID.

- 2.5-inch SFF NVMe drives are connected directly to the CPU, and not managed by the RAID controller.

- You can mix HDDs and SSDs as long as you keep all HDDs in their own RAID volume and all SSDs in their own RAID volume.

- You can mix SAS/SATA HDDs and SAS/SATA SSDs when using the Cisco 12G SAS RAID Controller or Cisco 12G SAS HBA.

- If you order any SFF NVMe drives, you must also order two CPUs.

- SFF NVMe drives are bootable only in standalone mode with IMC software and in UEFI mode only.

- NVMe HHHL drives are not bootable (see *Table 12 on page 30*).

- SED drives can be mixed with the non-SED drives in *Table 11 on page 27*

# STEP 6  SELECT PCIe OPTION CARD(s)

The standard PCIe card offerings are:

■ Modular LAN on Motherboard (mLOM)

■ Virtual Interface Cards (VICs)

■ Network Interface Cards (NICs)

■ PCIe - Accelerators/Smart NICs

■ Host Bus Adapters and (HBAs)

■ UCS NVMe/PCIe Add in Cards

**Select PCIe Option Cards**

The available PCIe option cards are listed in *Table 12*.

**Table 12  Available PCIe Option Cards**

| Product ID (PID) | PID Description | Location | Electrical slot | Card Height[1] |
|---|---|---|---|---|
| **Modular LAN on Motherboard (mLOM)** | | | | |
| UCSC-MLOM-C100-04 | Cisco UCS VIC 1497 Dual Port 40/100G QSFP28 CNA mLOM | mLOM | x 16 | N/A |
| UCSC-MLOM-C25Q-04 | Cisco UCS VIC 1457 Quad Port 10/25G SFP28 mLOM | mLOM | x 16 | N/A |
| UCSC-MLOM-C40Q-03 | Cisco UCS VIC 1387 Dual Port 40Gb QSFP+ CNA | mLOM | x 8 | N/A |
| UCSC-MLOM-IRJ45 | Intel i350 Quad Port 1GBase-T NIC | mLOM | x 8 | N/A |
| **Virtual Interface Card (VICs)** | | | | |
| UCSC-PCIE-C100-04 | Cisco UCS VIC 1495 Dual Port 40/100G QSFP28 CNA PCIe | Riser 1 or 2 | x 16 | HHHL |
| UCSC-PCIE-C40Q-03 | Cisco VIC 1385 Dual Port 40Gb QSFP+ CNA w/RDMA | Riser 1 or 2 | x 16 | HHHL |
| UCSC-PCIE-C25Q-04 | Cisco VIC 1455 VIC PCIE – Quad Port 10/25G SFP28 | Riser 1 or 2 | x 16 | HHHL |
| **Network Interface Cards (NICs)** | | | | |
| **1 Gb NICs** | | | | |
| UCSC-PCIE-IRJ45 | Intel i350 Quad Port 1GBase-T NIC | Riser 1 or 2 | x 8 | HHHL |
| **10 Gb NICs** | | | | |
| N2XX-AIPCI01 | Intel X520 Dual Port 10Gb SFP+ NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-ID10GC | Intel X550-T2 Dual Port 10GBase-T NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-ID10GF | Intel X710-DA2 Dual Port 10Gb SFP+ NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-IQ10GF | Intel X710 Quad Port 10Gb SFP+ NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-IQ10GC | Intel X710 Quad Port 10GBase-T NIC | Riser 1 or 2 | x 8 | HHHL |

**Table 12  Available PCIe Option Cards** *(continued)*

| Product ID (PID) | PID Description | Location | Electrical slot | Card Height[1] |
|---|---|---|---|---|
| **25 Gb NICs** | | | | |
| UCSC-PCIE-QD25GF | Qlogic QL41212H Dual Port 25Gb NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-ID25GF | Intel XXV710 Dual Port 25Gb SFP28 NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-P-M4D25GF | Mellanox MCX4121A-ACAT dual port 10/25G SFP28 NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-P-M5D25GF | Mellanox CX-5 EN MCX512A-ACAT 2x25/10GbE SFP PCIe NIC | Riser 1 or 2 | x 16 | HHHL |
| **40 Gb NICs** | | | | |
| UCSC-PCIE-QD40GF | Qlogic QL45412H Dual Port 40Gb NIC | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-ID40GF | Intel XL710 Dual Port 40Gb QSFP+ NIC | Riser 1 or 2 | x 8 | HHHL |
| **100 Gb NICs** | | | | |
| UCSC-PCIE-QS100GF | Qlogic QLE45611HLCU single port 100G NIC | Riser 1 or 2 | x 16 | HHHL |
| UCSC-P-M5D100GF | Mellanox CX-5 MCX516A-CDAT 2x100GbE QSFP PCIe NIC | Riser 1 or 2 | x 16 | HHHL |
| UCSC-P-M5S100GF | Mellanox CX-5 MCX515A-CCAT 1x100GbE QSFP PCIe NIC | Riser 1 or 2 | x 16 | HHHL |
| **PCIe - Accelerators/Smart NICs** | | | | |
| UCSC-P-IQAT8970 | Cisco-Intel 8970 QAT Offload PCIe Adapter | Riser 1 or 2 | x 16 | HHHL |
| **Host Bus Adapters (HBAs)** | | | | |
| UCSC-PCIE-QD16GF | Qlogic QLE2692 Dual Port 16G Fibre Channel HBA | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-BD16GF | Emulex LPe31002 Dual Port 16G Fibre Channel HBA | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-QD32GF | Qlogic QLE2742 Dual Port 32G Fibre Channel HBA | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-BS32GF | Emulex LPe32000-M2 Single Port 32G Fibre Channel HBA | Riser 1 or 2 | x 8 | HHHL |
| UCSC-PCIE-BD32GF | Emulex LPe32002-M2 Dual Port 32G Fibre Channel HBA | Riser 1 or 2 | x 8 | HHHL |
| **UCS NVMe/PCIe Add in Cards[2]** | | | | |
| UCSC-NVME-H64003 | Cisco AIC 6.4TB HGST SN260 NVMe Extreme Performance High Endurance | Riser 1 or 2 | x 8 | HHHL |
| UCSC-NVME-H38401 | Cisco AIC 3.8TB HGST SN260 NVMe Extreme Performance High Endurance | Riser 1 or 2 | x 8 | HHHL |
| UCSC-NVME-H76801 | Cisco AIC 7.7TB HGST SN260 NVMe Extreme Performance Value Endurance[3] | Riser 1 or 2 | x 8 | HHHL |

**Notes:**

1. HHHL = Half Height Half Length
2. HHHL PCIe NVMe cards are not bootable.
3. Qlogic/Emulex HBAs ship with FC optics installed in the HBA.

**Approved Configurations**

**(1) 1-CPU Systems**

■ You can select up to one PCIe option card (slot 1 for 1-CPU systems) listed in *Table 12*.

**(2) 2-CPU Systems**

■ You can select up to two PCIe option cards (slots 1 and 2 for 2-CPU systems) listed in *Table 12*.

**Caveats**

■ For 1-CPU systems:

— Only the full-height PCIe slot on riser 1 (slot 1) is supported

— Only a single plug-in PCIe VIC card is supported and must be installed in slot 1 (the full-height slot). However, in addition to the one PCIe VIC card, you can also choose to install an mLOM VIC card in the mLOM slot at the rear of the chassis.

■ For 2-CPU systems:

— Both PCIe slots (slots 1 and 2) are supported

— Two plug-in PCIe VIC cards can be installed in 2-CPU systems, using slots 1 and 2. In addition, you can order an mLOM VIC card, which is installed in the mLOM slot at the rear of the chassis and thus have three VIC cards in operation at the same time. See *Table 12 on page 30* for the selection of plug-in and mLOM VIC cards. See also *Table 1 on page 6*.

■ To help ensure that your operating system is compatible with the card you have selected, or to see additional cards that have been qualified to work with the UCS C220 M5 server, but are not sold on the Cisco pricelist, check the Hardware Compatibility List at this URL:

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

**NOTE:** Mixing 1300 and 1400 series VIC and MLOMs configurations is not supported.

## PCIe Card Configuration with 2 CPU

Below table helps in finding the right slot for the selected PCIe cards.

**Table 13  PCIe Card Configuration with 2 CPU**

| PCIe Card Type | Primary Slot | Secondary Slot | Alternate Slot |
|---|---|---|---|
| Cisco12G Modular RAID controller | Midplane Slot | None | |
| Cisco 12G 9460-8i Raid controller | 10 | None | |
| PCIe Switch card | 10 | None | |
| Cisco x16 VIC (Cisco VIC 1385) | 1 | 2 | 8, 5 |
| Nvidia and AMD GPUs | 2 | 8 | 10, 1 |
| Other 16x PCIe I/O card | 8 | 10 | 2, 1 |
| Other 8x PCIe I/O card | 9 | 5 | 8, 2, 10, 1 |
| Cisco x16 VIC | 1 | 2 | 8 |

**NOTE:**

- Slot 1 only if no VIC present
- When no VIC presents in the configuration, GPU primary slot could be 1
- First VIC has the highest priority, then GPUs, then others.
- Primary Slots are first priorities
- Secondary slots are for additional card of the same type, follow the order listed
- Alternate slots can be used but may be with reduced functionality

# STEP 7   ORDER OPTIONAL PCIe OPTION CARD ACCESSORIES

- For list of supported optics and cables for VIC1385, VIC 1387, VIC 1440, VIC 1455, VIC 1457, VIC 1495 and VIC 1497 refer to VIC 1300 and VIC 1400 series data sheet at the following links:

  - https://www.cisco.com/c/en/us/products/collateral/interfaces-modules/unified-computing-system-adapters/datasheet-c78-741130.html
  - https://www.cisco.com/c/en/us/products/interfaces-modules/ucs-virtual-interface-card-1387/index.html
  - https://www.cisco.com/c/en/us/products/collateral/interfaces-modules/unified-computing-system-adapters/datasheet-c78-734727.html

## Select

- NIC Interoperability with Cisco Cables/Optics. (Table 14 to 17)
- NIC Interoperability with Intel Cables/Optics. (Table 18)

**Table 14  10G NIC Interoperability with Cables/Optics**

| Cisco Product ID (PID) | UCSC- PCIE-ID10GF | UCSC- PCIE-IQ10GF | UCSC-PCIE-ID10GC | UCSC-PCIE-IQ10GC | N2XX-AIPCI01 |
|---|---|---|---|---|---|
| **Cisco Direct Attach Cables (DAC)** | | | | | |
| SFP-H10GB-CU1M | ✓ | ✓ | | | |
| SFP-H10GB-CU3M | ✓ | ✓ | | | |
| SFP-H10GB-CU5M | ✓ | ✓ | | | |
| SFP-H10GB-ACU7M | ✓ | ✓ | | | |
| SFP-H10GB-ACU10M | ✓ | ✓ | | | |
| SFP-10G-AOC1M | ✓ | ✓ | | | |
| SFP-10G-AOC2M | ✓ | ✓ | | | |
| SFP-10G-AOC3M | ✓ | ✓ | | | |
| SFP-10G-AOC5M | ✓ | ✓ | | | |
| SFP-10G-AOC7M | ✓ | ✓ | | | |
| SFP-10G-AOC10M | ✓ | ✓ | | | |
| UTP/RJ45 | | | | ✓ | |
| **Cisco Optical Transceivers** | | | | | |
| SFP-10G-SR | ✓ | ✓ | | | |

**Table 14  10G NIC Interoperability with Cables/Optics**

| Cisco Product ID (PID) | UCSC- PCIE-ID10GF | UCSC- PCIE-IQ10GF | UCSC-PCIE-ID10GC | UCSC-PCIE-IQ10GC | N2XX-AIPCI01 |
|---|---|---|---|---|---|
| SFP-10G-SR-S | ✓ | ✓ | | | |
| SFP-10G-LR | ✓ | ✓ | | | |
| SFP-10G-LR-S | ✓ | ✓ | | | |
| UCS-SFP-1WSR | | | | | ✓ |
| UCS-SFP-1WLR | | | | | ✓ |
| GLC-LH-SMD | | | | ✓ | |
| GLC-SX-MMD | ✓ | ✓ | | | |

**Table 15  25G NIC Interoperability with Cables/Optics**

| Cisco Product ID (PID) | UCSC-PCIE-ID25GF | UCSC-P-M5D25GF | UCSC-PCIE-QD25GF | UCSC-P-M4D25GF |
|---|---|---|---|---|
| **Cisco Direct Attach Cables (DAC)** | | | | |
| SFP-H10GB-CU1M | ✓ | ✓ | ✓ | ✓ |
| SFP-H10GB-CU3M | ✓ | ✓ | ✓ | |
| SFP-H10GB-CU4M | | ✓ | | |
| SFP-H10GB-CU5M | ✓ | ✓ | ✓ | ✓ |
| SFP-H10GB-ACU7M | ✓ | ✓ | ✓ | |
| SFP-H10GB-ACU10M | ✓ | ✓ | ✓ | ✓ |
| SFP-10G-AOC1M | ✓ | | ✓ | |
| SFP-10G-AOC2M | ✓ | | ✓ | |
| SFP-10G-AOC3M | ✓ | | ✓ | |
| SFP-10G-AOC5M | ✓ | | ✓ | |
| SFP-10G-AOC7M | ✓ | | ✓ | |
| SFP-10G-AOC10M | ✓ | ✓ | ✓ | |
| SFP-H25G-AOC10M | | ✓ | | |
| SFP-25G-AOC1M | ✓ | | ✓ | |
| SFP-25G-AOC2M | ✓ | | ✓ | |
| SFP-25G-AOC3M | ✓ | | ✓ | |
| SFP-25G-AOC4M | ✓ | | ✓ | |

**Table 15  25G NIC Interoperability with Cables/Optics**

| Cisco Product ID (PID) | UCSC-PCIE-ID25GF | UCSC-P-M5D25GF | UCSC-PCIE-QD25GF | UCSC-P-M4D25GF |
|---|:---:|:---:|:---:|:---:|
| SFP-25G-AOC5M | ✓ | ✓ | ✓ | |
| SFP-25G-AOC7M | ✓ | ✓ | ✓ | |
| SFP-25G-AOC10M | ✓ | | ✓ | ✓ |
| QSFP-4SFP25G-CU3M | ✓ | | | |
| SFP-H25G-CU1M | ✓ | ✓ | ✓ | ✓ |
| SFP-H25G-CU2M | ✓ | ✓ | ✓ | |
| SFP-H25G-CU2.5M | | ✓ | | |
| SFP-H25G-CU3M | ✓ | ✓ | ✓ | ✓ |
| SFP-H25G-CU4M | | ✓ | | |
| SFP-H25G-CU5M | ✓ | ✓ | | ✓ |
| **Cisco Optical Transceivers** | | | | |
| SFP-10G-SR | ✓ | ✓ | ✓ | ✓ |
| SFP-10G-SR-S | ✓ | | ✓ | ✓ |
| SFP-10G-LR | ✓ | ✓ | ✓ | ✓ |
| SFP-10G-LR-S | ✓ | | ✓ | ✓ |
| SFP-25G-SR-S | ✓ | ✓ | | ✓ |
| SFP-10/25G-LR-S | | ✓ | | |
| SFP-10/25G-CSR-S | | | | ✓ |

**Table 16  40G NIC Interoperability with Cables/Optics**

| Cisco Product ID (PID) | UCSC-PCIE-QD40GF | UCSC-PCIE-ID40GF |
|---|:---:|:---:|
| **Cisco Direct Attach Cables (DAC)** | | |
| QSFP-H40G-CU5M | ✓ | ✓ |
| QSFP-H40G-CU3M | ✓ | ✓ |
| QSFP-H40G-CU1M | ✓ | ✓ |
| QSFP-H40G-ACU7M | ✓ | ✓ |
| QSFP-H40G-AOC1M | ✓ | ✓ |
| QSFP-H40G-AOC2M | ✓ | ✓ |
| QSFP-H40G-AOC3M | ✓ | ✓ |

**Table 16  40G NIC Interoperability with Cables/Optics**

| | | |
|---|---|---|
| QSFP-H40G-AOC5M | ✓ | ✓ |
| QSFP-H40G-AOC7M | ✓ | ✓ |
| QSFP-H40G-AOC10M | ✓ | ✓ |
| **Cisco Optical Transceivers** | | |
| QSFP-40G-SR4 | ✓ | |
| QSFP-40G-SR4-S | ✓ | ✓ |
| QSFP-40G-SR-BD | | ✓ |

**Table 17  100G NIC Interoperability with Cables/Optics**

| Cisco Product ID (PID) | UCSC-PCIE-QS100GF | UCSC-P-M5S100GF | UCSC-P-M5D100GF |
|---|---|---|---|
| **Cisco Direct Attach Cables (DAC)** | | | |
| QSFP-100G-AOC5M | | ✓ | ✓ |
| QSFP-100G-AOC7M | | ✓ | ✓ |
| QSFP-100G-AOC10M | | ✓ | ✓ |
| QSFP-100G-CU3M | | ✓ | ✓ |
| QSFP-100G-CU5M | | ✓ | ✓ |
| **Cisco Optical Transceivers** | | | |
| QSFP-100G-LR4-S | | ✓ | ✓ |
| QSFP-100G-SR4-S | | ✓ | ✓ |
| QSFP-40/100-SRBD | | ✓ | ✓ |

**Table 18  NIC Interoperability with Intel Cables/Optics**

| Intel Product ID (PID) | N2XX-AIPCI01 | UCSC-PCIE-ID10GF | UCSC-PCIE-IQ10GF |
|---|---|---|---|
| **Intel DACs** | | | |
| XDACBL1M | ✓ | ✓ | ✓ |
| XDACBL3M | ✓ | ✓ | ✓ |
| XDACBL5M | ✓ | ✓ | ✓ |
| **Intel Optical Transceivers** | | | |

**Table 18  NIC Interoperability with Intel Cables/Optics**

| Intel Product ID (PID) | N2XX-AIPCI01 | UCSC-PCIE-ID10GF | UCSC-PCIE-IQ10GF |
|---|:---:|:---:|:---:|
| E10GSFPSR | ✓ | ✓ | ✓ |
| E10GSFPLR | ✓ | ✓ | ✓ |

a. *: Compiled from testing conducted by Cisco TMG and Vendors.
b. Refer to the these links for additional Connectivity Options.

| Intel: | Marvell/Qlogic: | Mellanox: |
|---|---|---|
| Product Guide | 41000 series Interoperability Matrix | Firmware Release Notes |
| Speed White Paper | 45000 series Interoperability Matrix | |

# STEP 8   ORDER GPU CARDS (OPTIONAL)

### Select GPU Options

The available GPU PCIe options are listed in *Table 19*

**Table 19  Available PCIe GPU Cards** [1]

| Product ID (PID) | PID Description | Card Size | Maximum cards Per node |
|---|---|---|---|
| **GPU PCIe Cards** | | | |
| UCSC-GPU-P4 | NVIDIA P4 | Low Profile Single-Width | 2 |
| UCSC-GPU-T4-16 | NVIDIA T4 16GB | Low Profile Single-Width | 2 |

**Notes:**

1. Refer to **C220 M5 GPU Card Installation** for more details.

> **NOTE:**
> ■ All GPU cards must be procured from Cisco as there is a unique SBIOS ID required by CIMC and UCSM

### Caveats

■ GPUs cannot be mixed.

■ A GPU can be installed in either PCIe slot 1 or 2; however, for 1-CPU systems, only slot 1 is available. In 2-CPU systems, matching GPUs can be installed in both slots. for the additional information related to GPU card slots, refer to *PCIe Card Configuration with 2 CPU, page 33*.

■ The NVIDIA P4 GPU is not supported with 2nd Generation Intel® Xeon® Processors.

## STEP 9   ORDER POWER SUPPLY

Power supplies share a common electrical and physical design that allows for hot-plug and tool-less installation into M5 C-series servers. Each power supply is certified for high-efficiency operation and offers multiple power output options. This allows users to "right-size" based on server configuration, which improves power efficiency, lowers overall energy costs and avoids stranded capacity in the data center. Use the power calculator at the following link to determine the needed power based on the options chosen (CPUs, drives, memory, and so on):

http://ucspowercalc.cisco.com

**Table 20   Power Supply**

| Product ID (PID) | PID Description |
|---|---|
| UCSC-PSU1-770W | 770W AC power supply for C-Series Servers |
| UCSC-PSU1-1050W | 1050W AC power supply for C-Series servers |
| UCSC-PSUV2-1050DC | 1050W DC power supply for C-Series servers |
| UCSC-PSU1-1600W | 1600W AC power supply for C-Series servers |
| UCSC-PSU1-1050ELV | 1050W AC Power Supply for Rack Server Low Line |

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

## STEP 10  SELECT POWER CORD(s)

Using *Table 21*, 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.
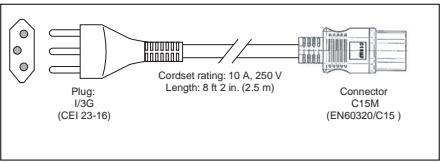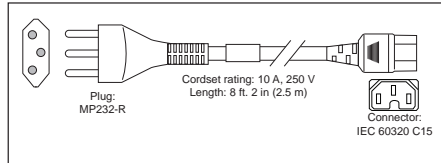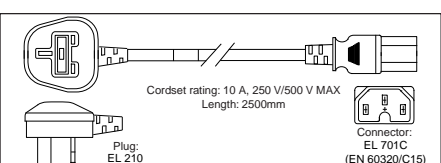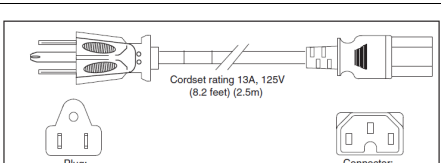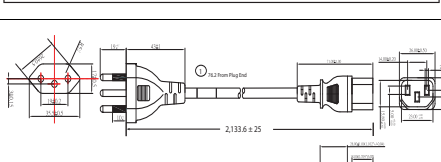
**Table 21  Available Power Cords**

| Product ID (PID) | PID Description | Images |
|---|---|---|
| R2XX-DMYMPWRCORD | No power cord (dummy PID to allow for a no power cord option) | Not applicable |
| NO-POWER-CORD | ECO friendly green option, no power cable will be shipped | Not applicable |
| CAB-48DC-40A-8AWG | C-Series -48VDC PSU Power Cord, 3.5M, 3 Wire, 8AWG, 40A |  |
| 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 |  |

**Table 21  Available Power Cords**

| Product ID (PID) | PID Description | Images |
|---|---|---|
| CAB-C13-C14-AC | CORD,PWR,JMP,IEC60320/C14,IEC60320/C13, 3.0M |  |
| CAB-250V-10A-AR | Power Cord, 250V, 10A, Argentina |  |
| CAB-9K10A-AU | Power Cord, 250VAC 10A 3112 Plug, Australia |  |
| CAB-250V-10A-CN | AC Power Cord - 250V, 10A - PRC |  |
| CAB-9K10A-EU | Power Cord, 250VAC 10A CEE 7/7 Plug, EU |  |
| CAB-250V-10A-ID | Power Cord, SFS, 250V, 10A, India |  |
| CAB-250V-10A-IS | Power Cord, SFS, 250V, 10A, Israel |  |

**Table 21  Available Power Cords**

| Product ID (PID) | PID Description | Images |
|---|---|---|
| CAB-9K10A-IT | Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy |  |
| CAB-9K10A-SW | Power Cord, 250VAC 10A MP232 Plug, Switzerland |  |
| CAB-9K10A-UK | Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK |  |
| CAB-9K12A-NA[1] | Power Cord, 125VAC 13A NEMA 5-15 Plug, North America |  |
| CAB-250V-10A-BR | Power Cord - 250V, 10A - Brazil |  |
| CAB-C13-C14-2M-JP | Power Cord C13-C14, 2M/6.5ft Japan PSE mark | Image not available |
| CAB-9K10A-KOR[1] | Power Cord, 125VAC 13A KSC8305 Plug, Korea | Image not available |
| CAB-ACTW | AC Power Cord (Taiwan), C13, EL 302, 2.3M | Image Not available |
| CAB-JPN-3PIN | Japan, 90-125VAC 12A NEMA 5-15 Plug, 2.4m | Image Not available |
| CAB-48DC-40A-INT | -48VDC PSU PWR Cord, 3.5M, 3 Wire, 8AWG, 40A (INT) | Image Not available |
| CAB-48DC-40A-AS | -48VDC PSU PWR Cord, 3.5M, 3Wire, 8AWG, 40A (AS/NZ) | Image Not available |
| CAB-C13-C14-IN | Power Cord Jumper,C13-C14 Connectors,1.4 Meter Length, India | Image Not available |
| CAB-C13-C14-3M-IN | Power Cord Jumper, C13-C14 Connectors, 3 Meter Length, India | Image Not available |

**Notes:**

1. This power cord is rated to 125V and only supported for PSU rated at 1050W or less.

## STEP 11 ORDER TOOL-LESS RAIL KIT AND OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM

**Select a Tool-less Rail Kit**

Select a tool-less rail kit from *Table 22*.

**Table 22  Tool-less Rail Kit Options**

| Product ID (PID) | PID Description |
|---|---|
| UCSC-RAILF-M4 | Friction Rail Kit for C220 M4 and M5 Servers |
| UCSC-RAILB-M4 | Ball Bearing Rail Kit for C220 and C240 M4/M5 Rack Servers |

**Select an 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 23* to order a cable management arm.

**Table 23  Cable Management Arm**

| Product ID (PID) | PID Description |
|---|---|
| UCSC-CMAF-M4 | Reversible CMA for C220 M4 and M5 rack servers |

For more information about the tool-less rail kit and cable management arm, see the *Cisco UCS C220 M5 Installation and Service Guide* at this URL:

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C220M5/install/C220M5.html

> **NOTE:** If you plan to rackmount your UCS C220 M5 server, you must order a tool-less rail kit. The same rail kits and CMAs are used for used for C220 M4 and C220 M5 servers.

## STEP 12  SELECT MANAGEMENT CONFIGURATION (OPTIONAL)

By default, the C220 M5 server NIC mode is configured to be Shared LOM Extended. This NIC mode allows any LOM port or adapter card port to be used to access the Cisco Integrated Management Controller (CIMC). The Cisco VIC card must be installed in a slot with NCSI support.

To change the default NIC mode to Dedicated, select the UCSC-DLOM-01 PID shown in *Table 24*. In Dedicated NIC mode, the CIMC can be accessed only through the dedicated management port. See *Chassis Rear View, page 5* for the location of the management port.

To change the default NIC mode to Cisco Card Mode, select the UCSC-CCARD-01 PID shown in *Table 24*. In this mode, you can assign an IP address to the CIMC using DHCP and from there you can fully automate your deployment.

For more details on all the NIC mode settings, see

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C480M5/install/C480M5/C480M5_chapter_010.html#concept_rqj_vsr_fz

**Table 24    Management Configuration Ordering Information**

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

# STEP 13 SELECT SERVER BOOT MODE (OPTIONAL)

By default, the C220 M5 server ships with UEFI as the default boot mode. To have a server shipped with the Legacy BIOS mode (which was standard on M4 and previous generation servers), select the Legacy BIOS PID from *Table 25*.

**Table 25 Server Boot Mode Ordering Information**

| Product ID (PID) | PID Description |
| --- | --- |
| UCSC-LBIOS-01 | Legacy Boot Mode BIOS setting for C-Series Servers |

## STEP 14 ORDER SECURITY DEVICES (OPTIONAL)

A 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.

A chassis intrusion switch gives a notification of any unauthorized mechanical access into the server.

The security device ordering information is listed in *Table 26*.

**Table 26  Security Devices**

| Product ID (PID) | PID Description |
|---|---|
| UCSX-TPM2-001 | Trusted Platform Module 1.2 SPI-based for UCS Servers |
| UCSX-TPM2-002 | Trusted Platform Module 2.0 for UCS servers |
| UCSX-TPM2-002B | Trusted Platform Module 2.0 M5 UCS Servers (FIPS 140-2 Compliant) |
| UCSC-INT-SW01 | C220 M5 and C240 M5 Chassis Intrusion Switch |

**NOTE:**

■ The TPM module used in this system conforms to TPM v1.2 and 2.0, as defined by the Trusted Computing Group (TCG). It is also SPI-based.

■ TPM installation is supported after-factory. However, a TPM installs with a one-way screw and cannot be replaced, upgraded, or moved to another server. If a server with a TPM is returned, the replacement server must be ordered with a new TPM.

## STEP 15   SELECT LOCKING SECURITY BEZEL (OPTIONAL)

An optional locking bezel can be mounted to the front of the chassis to prevent unauthorized access to the drives.

Select the locking bezel from *Table 27*.

**Table 27  Locking Bezel Option**

| Product ID (PID) | Description |
|---|---|
| UCSC-BZL-C220M5 | C220 M5 Security Bezel |

## STEP 16 ORDER CISCO SD CARD MODULE (OPTIONAL)

Order one or two matching SD cards. See *Figure 5 on page 66* for the location of the mini storage module connector, which accommodates an SD module. Each SD module accommodates two SD cards.

**Table 28 Secure Digital (SD) Card (blank)**

| Product ID (PID) | PID Description |
|---|---|
| UCS-SD-128G | 128 GB SD Card for UCS Servers |
| UCS-SD-64G-S | 64 GB SD Card for UCS Servers |
| UCS-SD-32G-S | 32 GB SD Card for UCS Servers |

**NOTE:** Starting from vSphere 8.0, SD cards/USB media as a standalone boot device will not be supported by VMware. For more information please refer to the VMware KB article: **https://kb.vmware.com/s/article/85685**

**Caveats**

■ Install either one or two SD cards

■ Do not mix SD card sizes

■ You cannot mix SD cards with an internal M.2 SATA SSD (see *4.0(4b)ORDER M.2 SATA SSDs (OPTIONAL), page 50*).

## STEP 17  4.0(4b)ORDER M.2 SATA SSDs (OPTIONAL)

Order one or two matching M.2 SATA SSDs (see *Table 29*) along with a mini storage carrier or a boot-optimized RAID controller (see *Table 30*).

> **NOTE:**  It is recommended that M.2 SATA SSDs be used as boot-only devices.

Each mini storage carrier or boot-optimized RAID controller can accommodate up to two SATA M.2 SSDs shown in *Table 29*.

**Table 29  M.2 SATA SSDs**

| Product ID (PID) | PID Description |
|---|---|
| UCS-M2-240GB | 240 GB M.2 SATA SSD |
| UCS-M2-960GB | 960 GB M.2 SATA SSD |

**Table 30  Mini Storage Carrier/Boot-Optimized RAID Controller**

| Product ID (PID) | PID Description |
|---|---|
| UCS-MSTOR-M2 | Mini Storage Carrier for M.2 SATA (holds up to 2 M.2 SATA SSDs) |
| UCS-M2-HWRAID | Cisco Boot optimized M.2 RAID controller (holds up to 2 M.2 SATA SSDs) |

> **NOTE:**
> - The UCS-M2-HWRAID boot-optimized RAID controller supports RAID 1 and JBOD mode
> - The UCS-M2-HWRAID controller is available only with 240 GB and 960 GB M.2 SSDs.
> - (CIMC/UCSM) is supported for configuring of volumes and monitoring of the controller and installed SATA M.2 drives
> - The minimum version of Cisco IMC and Cisco UCS Manager that support this controller is 4.0(4b) and later. The name of the controller in the software is MSTOR-RAID
> - The SATA M.2 drives can boot in UEFI mode only. Legacy boot mode is not supported
> - Hot-plug replacement is not supported. The server must be powered off.
> - The boot-optimized RAID controller is not supported when the server is used as a compute node in HyperFlex configurations

- Order either the Mini Storage carrier or the Boot-Optimized RAID controller from *Table 30*.
  - Choose the UCS-MSTOR-M2 mini storage carrier for controlling the M.2 SATA drives with no RAID control.
  - Choose the UCS-M2-HWRAID Boot-Optimized RAID controller for hardware RAID across the two internal SATA M.2 drives. The Boot-Optimized RAID controller holds up to 2 matching M.2 SATA drives.

■ Order up to two matching M.2 SATA SSDs from *Table 29*.

---

**NOTE:** The Boot-Optimized RAID controller supports VMWare, Windows and Linux Operating Systems

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**Caveats**

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■ You cannot mix M.2 SATA SSDs with SD cards.

■ Order either one or two identical M.2 SATA SSDs for the mini-storage carrier or boot-optimized RAID controller. You cannot mix M.2 SATA SSD capacities.

■ When ordering two M.2 SATA drives with embedded software RAID, the maximum number of internal SATA drives supported is six. To support greater than six internal drives, a Cisco 12G Raid Controller or a Cisco 12G SAS HBA must be ordered

## STEP 18  ORDER INTERNAL MICRO-SD CARD MODULE (OPTIONAL)

Order a 32 GB micro-SD card. The micro-SD card serves as a dedicated local resource for utilities such as a Host Upgrade Utility (HUU). Images can be pulled from a file share (NFS/CIFS) and uploaded to the card for future use.

**Table 31  32 GB Secure Digital (SD) Card**

| Product ID (PID) | PID Description |
|---|---|
| UCS-MSD-32G | 32GB Micro-SD Card for UCS servers |

**Caveats**

■ The micro-SD card mounts internally on riser 1.

■ The Flexutil user partition does not support OS installation. The user partition must be used for storage only.

## STEP 19  ORDER OPTIONAL USB 3.0 DRIVE

You can order one optional USB 3.0 drive. The USB drive ordering information is listed in *Table 32*.

**Table 32  USB 3.0 Drive**

| Product ID (PID) | PID Description |
|---|---|
| UCS-USBFLSHB-16GB | UCS Servers 16 GB Flash USB Drive |

See *Figure 5 on page 66* for the location of the USB connector

## STEP 20  SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE

For more details on supported operating systems and software for this server, see the Hardware and Software Compatibility List (HCL).

**Note:** PIDs tagged with an asterisk (*) are Resell of an OEM Vendor's Support. They are required to be added to the associated Product License PID.

### Select

- Cisco Software (*Table 33*)
- OEM Software (*Table 34*)
- Operating System (*Table 35*)

**Table 33  Cisco Software**

| Product ID (PID) | PID Description |
|---|---|
| **IMC Supervisor** | |
| CIMC-SUP-BASE-K9 | IMC Supervisor One-time Site Installation License |
| CIMC-SUP-B01 | IMC Supervisor-Branch Mgt SW for C-Series & E-Series up to 100 Svrs |
| CIMC-SUP-B02 | IMC Supervisor- Branch Mgt SW for C and E-Series up to 250 Svrs |
| CIMC-SUP-B10 | IMC Supervisor- Branch Mgt SW for C and E-Series up to 1K Svrs |
| CIMC-SUP-B25 | IMC Supervisor Branch Mgt SW for C and E-Series 25 Svrs |
| CIMC-SUP-A01 | IMC Supervisor Adv-Branch Mgt SW for C and E-Series 100 Svrs |
| CIMC-SUP-A02 | IMC Supervisor Adv-Branch Mgt SW for C and E-Series 250 Svrs |
| CIMC-SUP-A10 | IMC Supervisor Adv-Branch Mgt SW for C and E-Series 1000 Svrs |
| CIMC-SUP-A25 | IMC Supervisor Adv-Branch Mgt SW for C and E-Series 25 Svrs |
| EVAL-CIMC-SUP-BAS | EVAL: IMC Supervisor One-time Site Installation License |
| EVAL-CIMC-SUP | EVAL: IMC Supervisor-Branch Mgt SW for C/E-Series - 50 Svrs |
| **UCS Multi-Domain Manager** | |
| UCS-MDMGR-1S | UCS Central Per Server License |
| **NOTE:**   IF you must order quantity greater than 1 of UCS-MDMGR-1S, you need to reference the UCS Central Per Server Data Sheet to order the standalone PIDs: UCS-MDMGR-LIC= or UCS-MDMGR-1DMN= | |

**Table 34  OEM Software**

| Product ID (PID) | PID Description |
|---|---|
| **VMware vCenter** | |

**Table 34** *(continued)*OEM Software

| Product ID (PID) | PID Description |
|---|---|
| VMW-VCS-STD-1A | VMware vCenter 7 Server Standard, 1 yr support require |
| VMW-VCS-STD-3A | VMware vCenter 7 Server Standard, 3 yr support required |
| VMW-VCS-STD-5A | VMware vCenter 7 Server Standard, 5 yr support required |
| VMW-VCS-FND-1A | VMware vCenter 7 Server Foundation (4 Host), 1 yr supp reqd |
| VMW-VCS-FND-3A | VMware vCenter 7 Server Foundation (4 Host), 3 yr supp reqd |
| VMW-VCS-FND-5A | VMware vCenter 7 Server Foundation (4 Host), 5 yr supp reqd |

**Table 35   Operating System**

| Product ID (PID) | PID Description |
|---|---|
| **Microsoft Windows Server** | |
| MSWS-19-DC16C | Windows Server 2019 Data Center (16 Cores/Unlimited VMs) |
| MSWS-19-DC16C-NS | Windows Server 2019 DC (16 Cores/Unlim VMs) - No Cisco SVC |
| MSWS-19-ST16C | Windows Server 2019 Standard (16 Cores/2 VMs) |
| MSWS-19-ST16C-NS | Windows Server 2019 Standard (16 Cores/2 VMs) - No Cisco SVC |
| MSWS-22-ST16C | Windows Server 2022 Standard (16 Cores/2 VMs) |
| MSWS-22-ST16C-NS | Windows Server 2022 Standard (16 Cores/2 VMs) - No Cisco SVC |
| MSWS-22-DC16C | Windows Server 2022 Data Center (16 Cores/Unlimited VMs) |
| MSWS-22-DC16C-NS | Windows Server 2022 DC (16 Cores/Unlim VMs) - No Cisco SVC |
| **Red Hat** | |
| RHEL-2S2V-1A | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 1-Yr Support Req |
| RHEL-2S2V-3A | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 3-Yr Support Req |
| RHEL-2S2V-5A | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 5-Yr Support Req |
| RHEL-VDC-2SUV-1A | RHEL for Virt Datacenters (1-2 CPU, Unlim VN) 1 Yr Supp Req |
| RHEL-VDC-2SUV-3A | RHEL for Virt Datacenters (1-2 CPU, Unlim VN) 3 Yr Supp Req |
| RHEL-VDC-2SUV-5A | RHEL for Virt Datacenters (1-2 CPU, Unlim VN) 5 Yr Supp Req |
| **Red Hat Ent Linux/ High Avail/ Res Strg/ Scal** | |
| RHEL-2S2V-1S | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); Prem 1-Yr SnS |
| RHEL-2S2V-3S | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); Prem 3-Yr SnS |
| RHEL-2S-HA-1S | RHEL High Availability (1-2 CPU); Premium 1-yr SnS |

**Table 35** *(continued)*Operating System

| Product ID (PID) | PID Description |
|---|---|
| RHEL-2S-HA-3S | RHEL High Availability (1-2 CPU); Premium 3-yr SnS |
| RHEL-2S-RS-1S | RHEL Resilent Storage (1-2 CPU); Premium 1-yr SnS |
| RHEL-2S-RS-3S | RHEL Resilent Storage (1-2 CPU); Premium 3-yr SnS |
| RHEL-VDC-2SUV-1S | RHEL for Virt Datacenters (1-2 CPU, Unlim VN) 1 Yr SnS Reqd |
| RHEL-VDC-2SUV-3S | RHEL for Virt Datacenters (1-2 CPU, Unlim VN) 3 Yr SnS Reqd |
| **Red Hat SAP** | |
| RHEL-SAP-2S2V-1S | RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 1-Yr SnS Reqd |
| RHEL-SAP-2S2V-3S | RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 3-Yr SnS Reqd |
| RHEL-SAPSP-3S | RHEL SAP Solutions Premium - License with 3 Years of SnS |
| RHEL-SAPSS-3S | RHEL SAP Solutions Standard - License with 3 Years of SnS |
| **VMware** | |
| VMW-VSP-STD-1A | VMware vSphere 7 Std (1 CPU, 32 Core) 1-yr, Support Required |
| VMW-VSP-STD-3A | VMware vSphere 7 Std (1 CPU, 32 Core) 3-yr, Support Required |
| VMW-VSP-STD-5A | VMware vSphere 7 Std (1 CPU, 32 Core) 5-yr, Support Required |
| VMW-VSP-EPL-3A | VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 1Yr, Support Reqd |
| VMW-VSP-EPL-1A | VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 3Yr, Support Reqd |
| VMW-VSP-EPL-5A | VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 5Yr, Support Reqd |
| **SUSE** | |
| SLES-2S2V-1A | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 1-Yr Support Req |
| SLES-2S2V-3A | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 3-Yr Support Req |
| SLES-2S2V-5A | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 5-Yr Support Req4.0(4b)4.0(4b) |
| SLES-2S2V-1S | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 1-Yr SnS |
| SLES-2SUV-3S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 3-Yr SnS |
| SLES-2SUV-5S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 5-Yr SnS |
| SLES-2S-HA-1S | SUSE Linux High Availability Ext (1-2 CPU); 1yr SnS |
| SLES-2S-HA-3S | SUSE Linux High Availability Ext (1-2 CPU); 3yr SnS |
| SLES-2S-HA-5S | SUSE Linux High Availability Ext (1-2 CPU); 5yr SnS |
| SLES-2S-GC-1S | SUSE Linux GEO Clustering for HA (1-2 CPU); 1yr Sns |
| SLES-2S-GC-3S | SUSE Linux GEO Clustering for HA (1-2 CPU); 3yr SnS |

**Table 35** *(continued)*Operating System

| Product ID (PID) | PID Description |
|---|---|
| SLES-2S-GC-5S | SUSE Linux GEO Clustering for HA (1-2 CPU); 5yr SnS |
| SLES-2S-LP-1S | SUSE Linux Live Patching Add-on (1-2 CPU); 1yr SnS Required |
| SLES-2S-LP-3S | SUSE Linux Live Patching Add-on (1-2 CPU); 3yr SnS Required |
| SLES-2S-LP-1A | SUSE Linux Live Patching Add-on (1-2 CPU); 1yr Support Req |
| SLES-2S-LP-3A | SUSE Linux Live Patching Add-on (1-2 CPU); 3yr Support Req |
| **SLES and SAP** | |
| SLES-SAP-2S2V-1A | SLES for SAP Apps (1-2 CPU, 1-2 VM); 1-Yr Support Reqd |
| SLES-SAP-2S2V-3A | SLES for SAP Apps (1-2 CPU, 1-2 VM); 3-Yr Support Reqd |
| SLES-SAP-2S2V-5A | SLES for SAP Apps (1-2 CPU, 1-2 VM); 5-Yr Support Reqd |
| SLES-SAP-2S2V-1S | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 1-Yr SnS |
| SLES-SAP-2S2V-3S | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 3-Yr SnS |
| SLES-SAP-2S2V-5S | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 5-Yr SnS |

## STEP 21  SELECT OPERATING SYSTEM MEDIA KIT

Select the optional operating system media listed in *Table 36*.

**Table 36  OS Media**

| Product ID (PID) | PID Description |
|---|---|
| MSWS-19-ST16C-RM | Windows Server 2019 Stan (16 Cores/2 VMs) Rec Media DVD Only |
| MSWS-19-DC16C-RM | Windows Server 2019 DC (16Cores/Unlim VM) Rec Media DVD Only |

## STEP 22  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) parts replacement eight hours a day, five days a week.

■ 90-day software warranty on media.

■ Downloads of BIOS, drivers, and firmware updates.

■ UCSM updates for systems with Unified Computing System Manager. These updates include minor enhancements and bug fixes that are designed to maintain the compliance of UCSM with published specifications, release notes, and industry standards.

# Smart Net Total Care (SNTC) for UCS

For support of the entire Unified Computing System, Cisco offers the Cisco Smart Net Total Care 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 systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Cisco Smart Net Total Care 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. For more information please refer to the following url: http://www.cisco.com/c/en/us/services/technical/smart-net-total-care.html?stickynav=1

You can choose a desired service  listed in *Table 37*.

**Table 37  Cisco SNTC for UCS Service (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-PREM-CC220M5L | C2P | Yes | SNTC 24X7X2OS |
| CON-UCSD8-CC220M5L | UCSD8 | Yes | UC SUPP DR 24X7X2OS* |
| CON-C2PL-CC220M5L | C2PL | Yes | LL 24X7X2OS** |
| CON-OSP-CC220M5L | C4P | Yes | SNTC 24X7X4OS |
| CON-UCSD7-CC220M5L | UCSD7 | Yes | UCS DR 24X7X4OS* |
| CON-C4PL-CC220M5L | C4PL | Yes | LL 24X7X4OS** |
| CON-USD7L-CC220M5L | USD7L | Yes | LLUCS HW DR 24X7X4OS*** |
| CON-OSE-CC220M5L | C4S | Yes | SNTC 8X5X4OS |
| CON-UCSD6-CC220M5L | UCSD6 | Yes | UC SUPP DR 8X5X4OS* |
| CON-SNCO-CC220M5L | SNCO | Yes | SNTC 8x7xNCDOS**** |

**Table 37  Cisco SNTC for UCS Service (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-OS-CC220M5L | CS | Yes | SNTC 8X5XNBDOS |
| CON-UCSD5-CC220M5L | UCSD5 | Yes | UCS DR 8X5XNBDOS* |
| CON-S2P-CC220M5L | S2P | No | SNTC 24X7X2 |
| CON-S2PL-CC220M5L | S2PL | No | LL 24X7X2** |
| CON-SNTP-CC220M5L | SNTP | No | SNTC 24X7X4 |
| CON-SNTPL-CC220M5L | SNTPL | No | LL 24X7X4** |
| CON-SNTE-CC220M5L | SNTE | No | SNTC 8X5X4 |
| CON-SNC-CC220M5L | SNC | No | SNTC 8x7xNCD**** |
| CON-SNT-CC220M5L | SNT | No | SNTC 8X5XNBD |
| CON-SW-CC220M5L | SW | No | SNTC NO RMA |

*Includes Drive Retention (see *UCS Drive Retention Service, page 64*)

**Includes Local Language Support (see *Local Language Technical Support for UCS, page 65*) – Only available in China and Japan

***Includes Local Language Support and Drive Retention – Only available in China and Japan

****Available in China Only

# Smart Net Total Care for Cisco UCS Onsite Troubleshooting Service

An enhanced offer over traditional Smart Net Total Care which provides onsite-troubleshooting expertise to aid in the diagnostics and isolation of hardware issue within our customers' Cisco Unified Computing System (UCS) environment. It is delivered by a Cisco Certified field engineer (FE) in collaboration with remote TAC engineer and Virtual Internet-working Support Engineer (VISE). You can choose a desired service listed in *Table 38*

**Table 38  SNTC for Cisco UCS Onsite Troubleshooting Service (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-OSPT-CC220M5L | OSPT | Yes | 24X7X4OS Trblshtg |
| CON-OSPTD-CC220M5L | OSPTD | Yes | 24X7X4OS TrblshtgDR* |
| CON-OSPTL-CC220M5L | OSPTL | Yes | 24X7X4OS TrblshtgLL** |
| CON-OPTLD-CC220M5L | OPTLD | Yes | 24X7X4OS TrblshtgLLD*** |

*Includes Drive Retention (see *UCS Drive Retention Service, page 64*)

**Includes Local Language Support (see *Local Language Technical Support for UCS, page 65*) – Only available in China and Japan

***Includes Local Language Support and Drive Retention – Only available in China and Japan

## Solution Support for UCS

Solution Support includes both Cisco product support and solution-level support, resolving complex issues in multivendor environments, on average, 43% more quickly than product support alone. Solution Support is a critical element in data center administration, to help rapidly resolve any issue encountered, while maintaining performance, reliability, and return on investment.

This service centralizes support across your multivendor Cisco environment for both our products and solution partner products you've deployed in your ecosystem. Whether there is an issue with a Cisco or solution partner product, just call us. Our experts are the primary point of contact and own the case from first call to resolution. For more information please refer to the following url:
http://www.cisco.com/c/en/us/services/technical/solution-support.html?stickynav=1
You can choose a desired service listed in *Table 39*

**Table 39  Solution Support for UCS Service (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-SSC2P-CC220M5L | SSC2P | Yes | SOLN SUPP 24X7X2OS |
| CON-SSC4P-CC220M5L | SSC4P | Yes | SOLN SUPP 24X7X4OS |
| CON-SSC4S-CC220M5L | SSC4S | Yes | SOLN SUPP 8X5X4OS |
| CON-SSCS-CC220M5L | SSCS | Yes | SOLN SUPP 8X5XNBDOS |
| CON-SSDR7-CC220M5L | SSDR7 | Yes | SSPT DR 24X7X4OS* |
| CON-SSDR5-CC220M5L | SSDR5 | Yes | SSPT DR 8X5XNBDOS* |
| CON-SSS2P-CC220M5L | SSS2P | No | SOLN SUPP 24X7X2 |
| CON-SSSNP-CC220M5L | SSSNP | No | SOLN SUPP 24X7X4 |
| CON-SSSNE-CC220M5L | SSSNE | No | SOLN SUPP 8X5X4 |
| CON-SSSNC-CC220M5L | SSSNC | No | SOLN SUPP NCD** |
| CON-SSSNT-CC220M5L | SSSNT | No | SOLN SUPP 8X5XNBD |

Includes Drive Retention (see *UCS Drive Retention Service, page 64*)

**Available in China only

## Smart Net Total Care for UCS Hardware Only Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco Smart Net Total Care for UCS Hardware Only Service. You can choose from two levels of advanced onsite parts replacement coverage in as little as four hours. Smart Net Total Care 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 desired service listed in *Table 40*

**Table 40  SNTC for UCS Hardware Only Service (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-UCW7-CC220M5L | UCW7 | Yes | UCS HW 24X7X4OS |
| CON-UCWD7-CC220M5L | UCWD7 | Yes | UCS HW+DR 24X7X4OS* |
| CON-UCW7L-CC220M5L | UCW7L | Yes | LL UCS 24X7X4OS** |
| CON-UWD7L-CC220M5L | UWD7L | Yes | LL UCS DR 24X7X4OS*** |
| CON-UCW5-CC220M5L | UCW5 | Yes | UCS HW 8X5XNBDOS |
| CON-UCWD5-CC220M5L | UCWD5 | Yes | UCS HW+DR 8X5XNBDOS* |

 *Includes Drive Retention (see *UCS Drive Retention Service, page 64*)

**Includes Local Language Support (see *Local Language Technical Support for UCS, page 65*) – Only available in China and Japan

***Includes Local Language Support and Drive Retention – Only available in China and Japan

# Partner Support Service for UCS

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

PSS 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.**

The two Partner Unified Computing Support Options include:

■ Partner Support Service for UCS

■ Partner Support Service for UCS Hardware Only

PSS for UCS provides hardware and software support, including triage support for third party software, backed by Cisco technical resources and level three support. You can choose a desired service listed in *Table 41*.

**Table 41   PSS for UCS (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-PSJ8-CC220M5L | PSJ8 | Yes | UCS PSS 24X7X2 OS |
| CON-PSJ7-CC220M5L | PSJ7 | Yes | UCS PSS 24X7X4 OS |
| CON-PSJD7-CC220M5L | PSJD7 | Yes | UCS PSS 24X7X4 DR* |
| CON-PSJ6-CC220M5L | PSJ6 | Yes | UCS PSS 8X5X4 OS |
| CON-PSJD6-CC220M5L | PSJD6 | Yes | UCS PSS 8X5X4 DR* |
| CON-PSJ4-CC220M5L | PSJ4 | No | UCS SUPP PSS 24X7X2 |
| CON-PSJ3-CC220M5L | PSJ3 | No | UCS SUPP PSS 24X7X4 |
| CON-PSJ2-CC220M5L | PSJ2 | No | UCS SUPP PSS 8X5X4 |
| CON-PSJ1-CC220M5L | PSJ1 | No | UCS SUPP PSS 8X5XNBD |
| *Includes Drive Retention (see *UCS Drive Retention Service, page 64*) | | | |

## PSS for UCS Hardware Only

PSS for UCS Hardware Only provides customers with replacement parts in as little as two hours and provides remote access any time to Partner Support professionals who can determine if a return materials authorization (RMA) is required. See *Table 42*

**Table 42  PSS for UCS Hardware Only (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-PSW7-CC220M5L | PSW7 | Yes | UCS W PSS 24X7X4 OS |
| CON-PSWD7-CC220M5L | PSWD7 | Yes | UCS W PSS 24X7X4 DR* |
| CON-PSW6-CC220M5L | PSW6 | Yes | UCS W PSS 8X5X4 OS |
| CON-PSWD6-CC220M5L | PSWD6 | Yes | UCS W PSS 8X5X4 DR* |
| CON-PSW4-CC220M5L | PSW4 | No | UCS W PL PSS 24X7X2 |
| CON-PSW3-CC220M5L | PSW3 | No | UCS W PL PSS 24X7X4 |
| CON-PSW2-CC220M5L | PSW2 | No | UCS W PL PSS 8X5X4 |
| *Includes Drive Retention (see *UCS Drive Retention Service, page 64*) | | | |

# Unified Computing Combined Support Service

Combined Services makes it easier to purchase and manage required services under one contract. SNTC 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 desired service listed in *Table 43*

**Table 43  Combined Support Service for UCS (PID UCSC-C220-M5L)**

| Service SKU | Service Level GSP | On Site? | Description |
|---|---|---|---|
| CON-NCF2P-CC220M5L | NCF2P | Yes | CMB SVC 24X7X2OS |
| CON-NCF4P-CC220M5L | NCF4P | Yes | CMB SVC 24X7X4OS |
| CON-NCF4S-CC220M5L | NCF4S | Yes | CMB SVC 8X5X4OS |
| CON-NCFCS-CC220M5L | NCFCS | Yes | CMB SVC 8X5XNBDOS |
| CON-NCF2-CC220M5L | NCF2 | No | CMB SVC 24X7X2 |
| CON-NCFP-CC220M5L | NCFP | No | CMB SVC 24X7X4 |
| CON-NCFE-CC220M5L | NCFE | No | CMB SVC 8X5X4 |
| CON-NCFT-CC220M5L | NCFT | No | CMB SVC 8X5XNBD |
| CON-NCFW-CC220M5L | NCFW | No | CMB SVC SW |

# UCS Drive Retention Service

With the Cisco Unified Computing Drive Retention Service, you can obtain a new disk drive in exchange for a faulty drive without returning the faulty drive.

Sophisticated data recovery techniques have made classified, proprietary, and confidential information vulnerable, even on malfunctioning disk drives. The Drive Retention 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 the above tables (where available)

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

## Local Language Technical Support for UCS

Where available, and subject to an additional fee, local language support for calls on all assigned severity levels may be available for specific product(s) – see tables above.

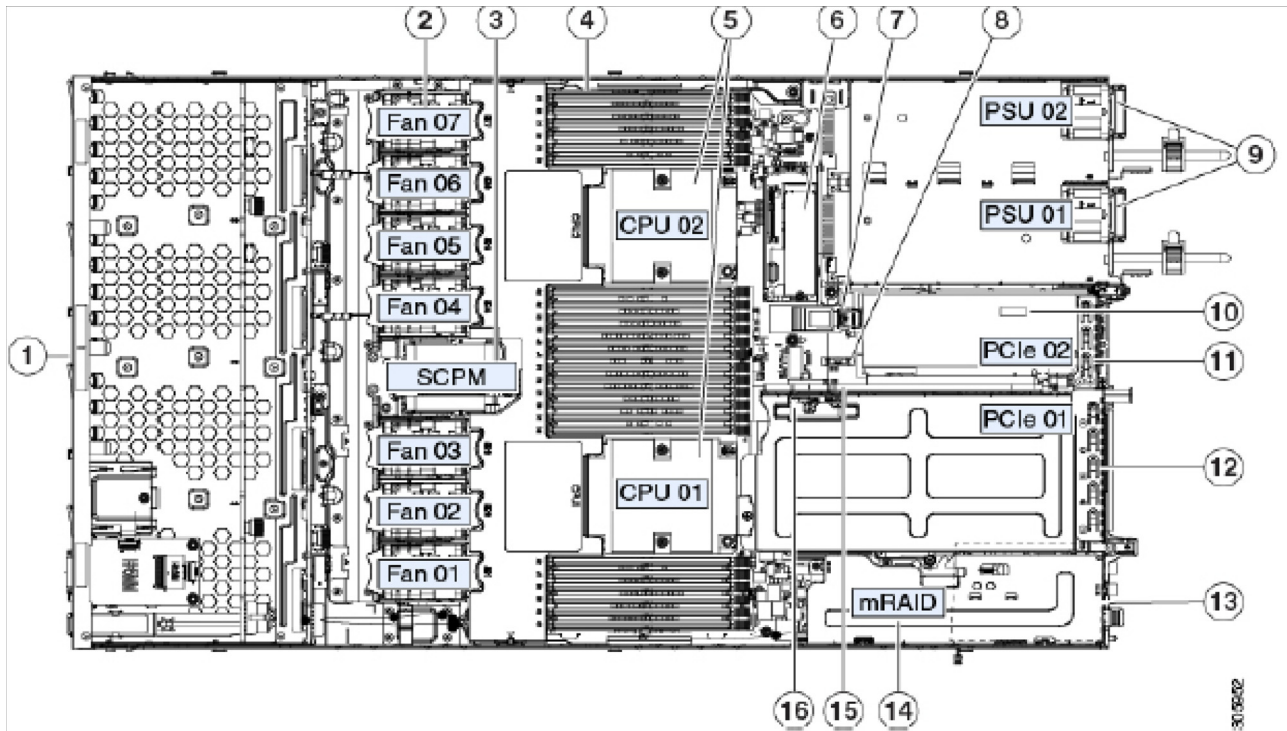For a complete listing of available services for Cisco Unified Computing System, see the following URL:

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

# SUPPLEMENTAL MATERIAL

## Chassis

An internal view of the C220 M5 LFF chassis with the top cover removed is shown in *Figure 5*.

**Figure 5     C220 M5 LFF With Top Cover Off**



| 1 | Drive bays 1–4 support SAS/SATA drives and drive bays 1 and 2 also support SFF NVMe PCIe SSDs. | 9 | Power supplies (Hot-swappable when redundant as 1+1) |
|---|---|---|---|
| 2 | Cooling fan modules (seven) | 10 | Trusted platform module (TPM) socket on motherboard (not visible in this view) |
| 3 | Supercap Power Module (RAID backup) mounting bracket | 11 | PCIe slot 2 (half-height, x16); includes PCIe cable connector for SFF NVMe SSDs (x8) |
| 4 | DIMM sockets on motherboard (up to 12 per CPU; total 24) | 12 | PCIe slot 1 (full-height, x16); includes socket for Micro-SD card |
| 5 | CPUs and heatsinks (up to two) | 13 | Modular LOM (mLOM) card bay on chassis floor (x16) (not visible in this view) |
| 6 | Mini storage module connector<br><br>Supports either an SD card module with two SD cards or an M.2 module with two PCIe/SATA M.2 SSD slots | 14 | Modular RAID (mRAID) riser, can optionally be a riser that supports either:<br><br>■ Hardware RAID controller card<br><br>■ Interposer card for embedded SATA RAID |

| 7 | Internal USB 3.0 port on motherboard | 15 | PCIe cable connectors for front-panel SFF NVMe SSDs on PCIe riser 2 |
|---|---|---|---|
| 8 | RTC battery vertical socket on motherboard | 16 | Micro-SD card socket on PCIe riser 1 |

# Block Diagram

A simplified block diagram of the C220 M5 server is shown in *Figure 6*.

**Figure 6**     **C220 M5 LFF Block Diagram (simplified)**
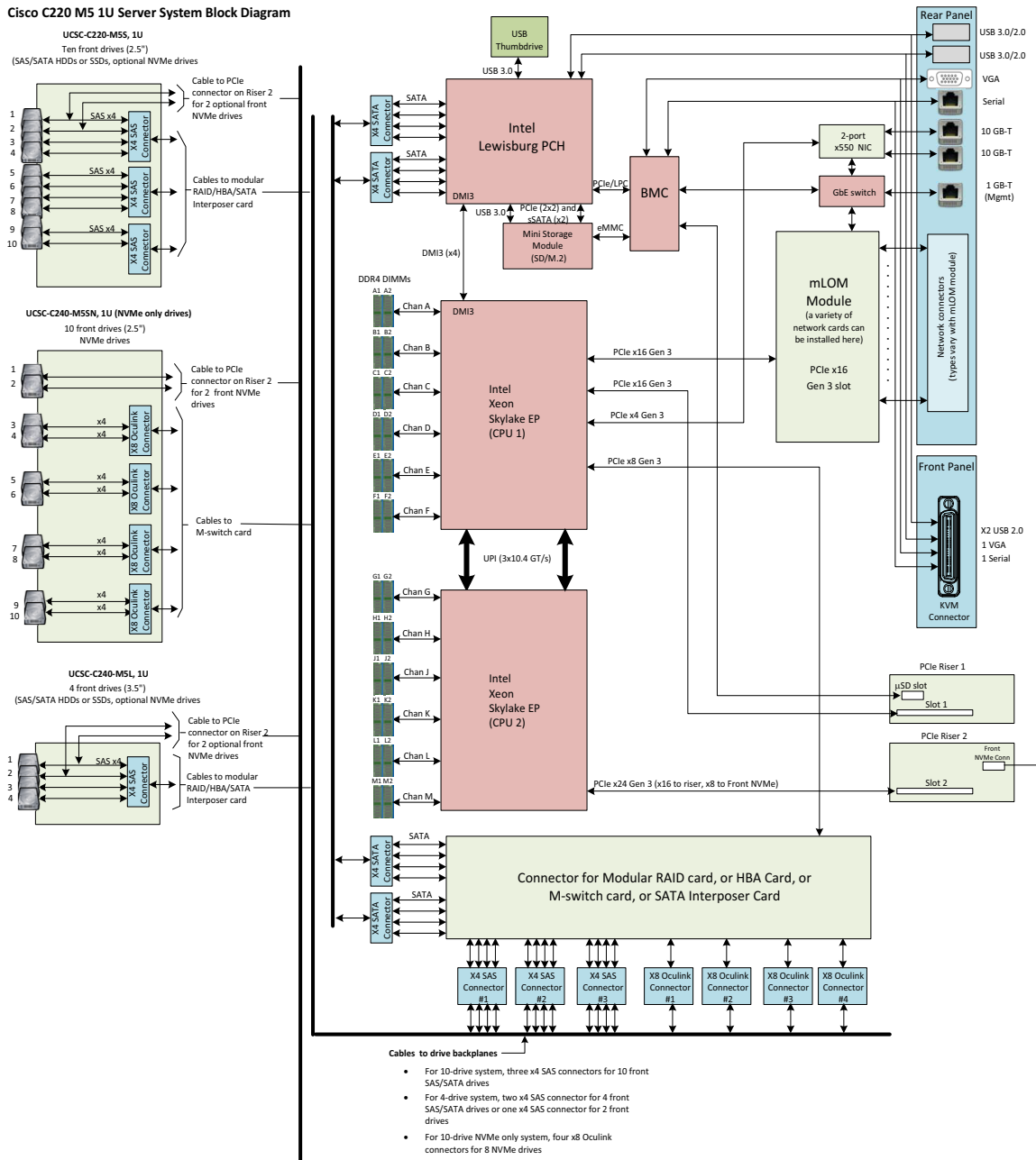
# RAID Option ROM (OPROM) Settings

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 7*.

**Figure 7      Example BIOS Screen for OPROM**



**Cisco UCS C220 M5 Rack Server (Large Form Factor Disk Drive Model)**
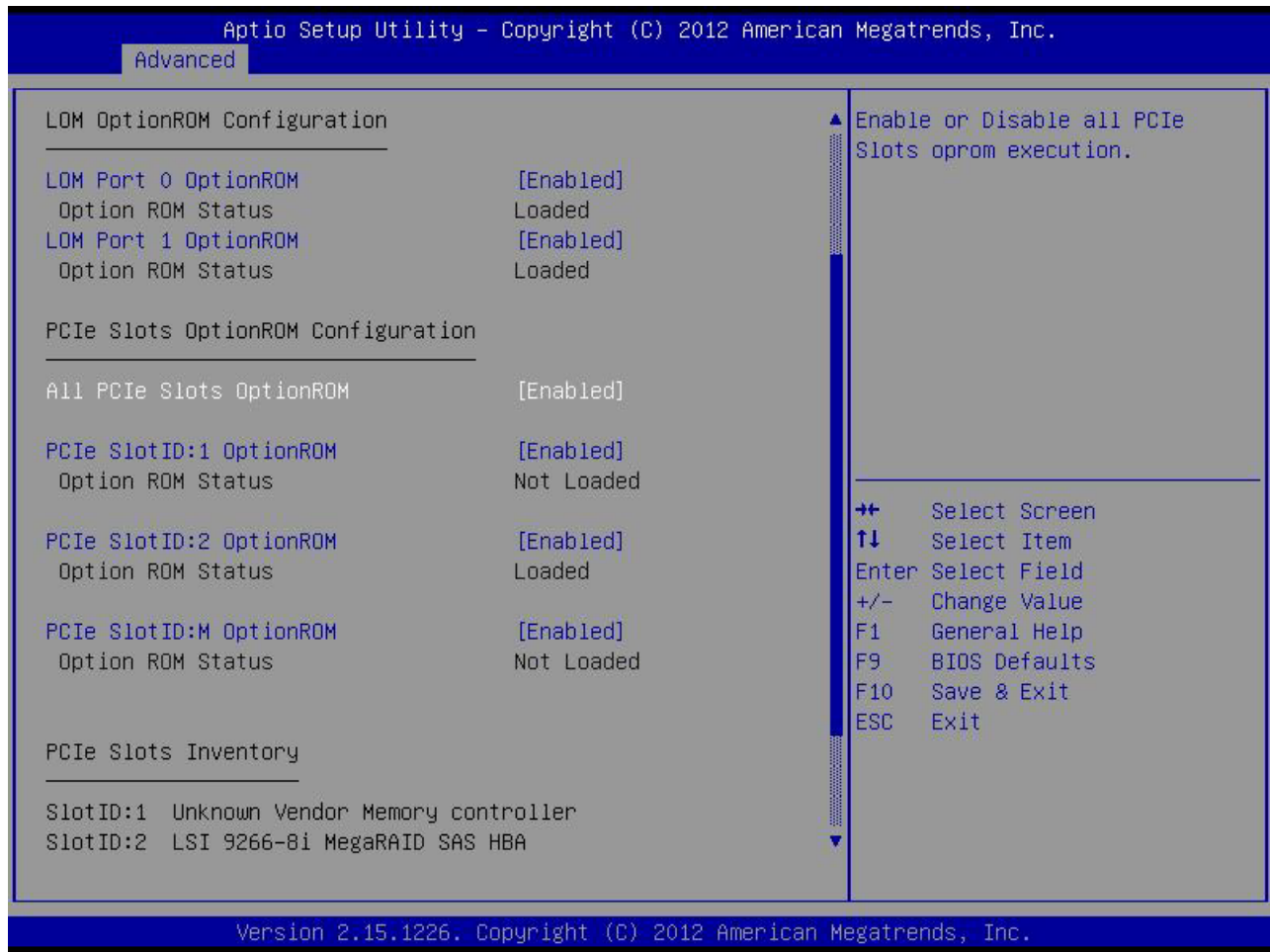
# Serial Port Details

The pinout details of the rear RJ-45 serial port connector are shown in *Figure 8*.

**Figure 8** **Serial Port (Female RJ-45 Connector) Pinout**

Serial Port (RJ-45 Female Connector)

| Pin | Signal |
|-----|--------|
| 1 | RTS (Request to Send) |
| 2 | DTR (Data Terminal Ready) |
| 3 | TxD (Transmit Data) |
| 4 | GND (Signal Ground) |
| 5 | GND (Signal Ground) |
| 6 | RxD (Receive Data) |
| 7 | DSR (Data Set Ready) |
| 8 | CTS (Clear to Send) |
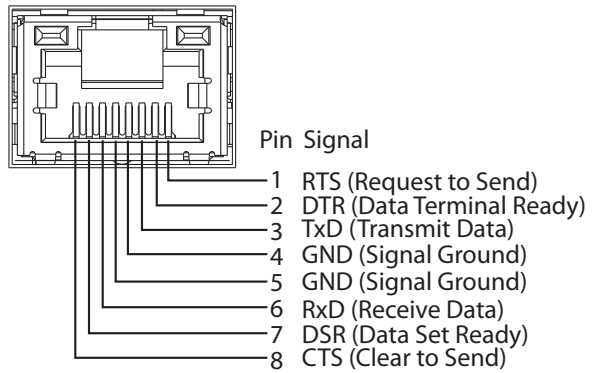
# KVM Cable

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 44*.

**Table 44  KVM Cable**

| Product ID (PID) | PID Description |
|---|---|
| N20-BKVM= | KVM cable for UCS Server console port |

**Figure 9    KVM Cable**
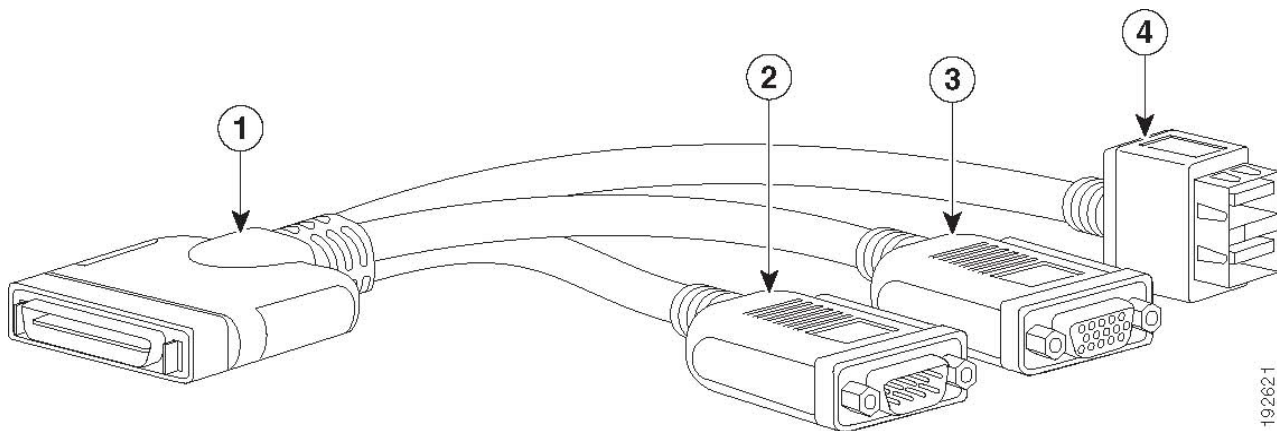


| 1 | Connector (to server front panel) | 3 | VGA connector (for a monitor) |
|---|---|---|---|
| 2 | DB-9 serial connector | 4 | Two-port USB connector (for a mouse and keyboard) |

# SPARE PARTS

This section lists the upgrade and service-related parts for the UCS C220 M5 server. Some of these parts are configured with every server.

**Table 45  Spare Parts**

| Product ID (PID) | PID Description |
|---|---|
| **KVM Cable** | |
| N20-BKVM= | KVM local IO cable for UCS servers console port |
| **CPU Accessories** | |
| UCSC-HS-C220M5= | Heat sink for UCS C220 M5 rack servers 150W CPUs & below |
| UCSC-HS2-C220M5= | Heat sink for UCS C220 M5 rack servers CPUs above 150W |
| UCS-CPU-TIM= | Single CPU thermal interface material syringe for M5 server HS seal[1] |
| UCSX-HSCK= | UCS Processor Heat Sink Cleaning Kit (when replacing a CPU)[2] |
| UCS-CPUAT= | CPU Assembly Tool for M5 Servers |
| UCS-M5-CPU-CAR= | UCS M5 CPU Carrier |
| UCSC-FAN-C220M5= | C220 M5 Fan Module (one) |
| **M.2 SATA SSD** | |
| UCS-MSTOR-SD= | SD module (holds up to 2 SD cards) |
| UCS-MSTOR-M2= | M.2 module (holds up to 2 M.2 SATA drives) |
| UCS-M2-HWRAID = | Cisco Boot optimized M.2 RAID controller (holds up to 2 M.2 SATA SSDs) |
| **Memory** | |
| UCS-ML-X64G4RT-H= | 64 GB DDR4-2933-MHz LRDIMM/4Rx4 (8Gb) 1.2v |
| UCS-MR-X64G2RT-H= | 64 GB DDR4-2933-MHz RDIMM/2Rx4 (16Gb) 1.2v |
| **HDDs** | |
| **HDDs (10K RPM)** | |
| UCS-HY18TB10K4KN= | 1.8 TB 12G SAS 10K RPM LFF HDD (4K) |
| UCS-HY12TB10K12N= | 1.2 TB 12G SAS 10K RPM LFF HDD |
| **HDDs (7.2K RPM)** | |
| UCS-HD1T7KL12N= | 1TB 12G SAS 7.2K RPM LFF HDD |
| UCS-HD2T7KL12N= | 2 TB 12G SAS 7.2K RPM LFF HDD |
| UCS-HD4T7KL12N= | 4 TB 12G SAS 7.2K RPM LFF HDD |

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| UCS-HD6T7KL4KN= | 6 TB 12G SAS 7.2K RPM LFF HDD (4K) |
| UCS-HD8T7K4KAN= | 8 TB 12G SAS 7.2K RPM LFF HDD (4K) |
| UCS-HD12T7KL4KN= | 12 TB 12G SAS 7.2K RPM LFF HDD (4K) |
| UCS-HD1T7KL6GN= | 1 TB 6G SATA 7.2K RPM LFF HDD |
| UCS-HD2T7KL6GN= | 2 TB 6G SATA 7.2K RPM LFF HDD |
| UCS-HD4T7KL6GN= | 4 TB 6G SATA 7.2K RPM LFF HDD |
| UCS-HD8T7K6GAN= | 8 TB 6G SATA 7.2K RPM LFF HDD (512e) |
| UCS-HD6T7KL6GN= | 6TB 6G SATA 7.2K RPM LFF HDD (512e) |
| UCS-HD12T7KL6GN= | 12 TB 6G SATA 7.2K RPM LFF HDD (512e) |
| UCS-HD10T7K6GAN= | 10TB 6G SATA 7.2K RPM LFF HDD (512e) |
| **SAS/SATA SSDs** | |
| **Enterprise Performance SSDs (High endurance, supports up to 10X or 3X DWPD (drive writes per day))** | |
| **SAS SSDs** | |
| UCS-HY16TB12TX-EP= | 1.6 TB 3.5 inch Enterprise performance 12G SAS SSD (10X DWPD) (Toshiba PM4) |
| UCS-HY800GK3X-EP= | 800GB 3.5in Enterprise Performance 12G SAS SSD(3X endurance) |
| UCS-HY16TK3X-EP= | 1.6TB 3.5in Enterprise Performance 12G SAS SSD(3X endurance) |
| **SATA SSDs** | |
| UCS-HY480G63X-EP= | 480GB 3.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610) |
| UCS-HY960G63X-EP= | 960GB 3.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610) |
| UCS-HY19T63X-EP= | 1.9TB 3.5in Enterprise performance 6G SATA SSD (3X endurance) (Intel S4600/S4610) |
| UCSC-SATA-KIT-M5= | C220 M5 (2) SATA/SW RAID cables for up to 8-drives |
| **Enterprise Value SATA SSDs (Low endurance, supports up to 1X DWPD (drive writes per day))** | |
| UCS-HY240G61X-EV= | 240 GB 2.5 inch Enterprise Value 6G SATA SSD |
| UCS-HY480G61X-EV= | 480 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3520) |
| **Self-Encrypted Drives (SED)** | |
| **HDDs** | |

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| UCS-HY600G15NK9= | 600 GB 12G SAS 15K RPM LFF HDD (SED) |
| UCS-HD4T12GNK9= | 4 TB 7.2k RPM LFF HDD (SED) |
| UCS-HD6T12GANK9= | 6 TB 7.2k RPM LFF HDD (4K format, SED) |
| UCS-HD12T7KL4NK9= | 12 TB 7.2 K RPM LFF HDD (4K format SED) |
| **PCIe/NVMe LFF 2.5" drives** | |
| UCSC-NVMEHY-H800= | 800 GB HGST SN200 NVMe High Perf. High Endurance (HGST) |
| UCSC-NVMEHY-H1600= | 1.6 TB HGST SN200 NVMe High Perf. High Endurance (HGST) |
| UCSC-NVMEHY-H3200= | 3.2 TB HGST SN200 NVMe High Perf. High Endurance (HGST) |
| UCS-NVMEHY-W1600= | 1.6TB 3.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance |
| UCS-NVMEHY-W3200= | 3.2TB 3.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance |
| CBL-NVME-C220FF= | C220 M5L/M5S PCIe SSD cable (1) for SFF & LFF chassis |
| **RAID Controllers** | |
| UCSC-9400-8E= | Cisco 9400-8E 12G SAS HBA for external JBOD attach |
| **Modular LAN on Motherboard (mLOM)** | |
| UCSC-MLOM-C100-04= | Cisco UCS VIC 1497 Dual Port 40/100G QSFP28 CNA mLOM |
| UCSC-MLOM-C25Q-04= | Cisco UCS VIC 1457 Quad Port 10/25G SFP28 mLOM |
| UCSC-MLOM-C40Q-03= | Cisco UCS VIC 1387 Dual Port 40Gb QSFP+ CNA |
| UCSC-MLOM-IRJ45= | Intel i350 Quad Port 1GBase-T NIC |
| **Converged Network Adapters (CNAs)** | |
| UCSC-PCIE-C100-04= | Cisco UCS VIC 1495 Dual Port 40/100G QSFP28 CNA PCIe |
| UCSC-PCIE-C40Q-03= | Cisco UCS VIC 1385 Dual Port 40Gb QSFP+ CNA w/RDMA |
| UCSC-PCIE-C25Q-04= | Cisco UCS VIC 1455 Quad Port 10/25G SFP28 CNA PCIE |
| **Network Interface Cards (NICs)** | |
| **1 Gb NICs** | |
| UCSC-PCIE-IRJ45= | Intel i350 Quad Port 1GBase-T NIC |
| **10 Gb NICs** | |
| N2XX-AIPCI01= | Intel X520 Dual Port 10Gb SFP+ NIC |
| UCSC-PCIE-ID10GC= | Intel X550-T2 Dual Port 10GBase-T NIC |
| UCSC-PCIE-ID10GF= | Intel X710-DA2 Dual Port 10Gb SFP+ NIC |

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| UCSC-PCIE-IQ10GF= | Intel X710 Quad Port 10Gb SFP+ NIC |
| UCSC-PCIE-IQ10GC= | Intel X710 Quad Port 10GBase-T NIC |
| **25 Gb NICs** | |
| UCSC-PCIE-QD25GF= | Qlogic QL41212H Dual Port 25Gb NIC |
| UCSC-PCIE-ID25GF= | Intel XXV710 Dual Port 25Gb SFP28 NIC |
| UCSC-P-M4D25GF= | Mellanox MCX4121A-ACAT dual port 10/25G SFP28 NIC |
| **40 Gb NICs** | |
| UCSC-PCIE-QD40GF= | Qlogic QL45412H Dual Port 40Gb NIC |
| UCSC-PCIE-ID40GF= | Intel XL710 Dual Port 40Gb QSFP+ NIC |
| **100 Gb NICs** | |
| UCSC-PCIE-QS100GF= | Qlogic QLE45611HLCU single port 100G NIC |
| PACK-QSFP-SFP= | Packaging for QSFP 40G and SFP 10G |
| UCSC-LPBRKT-C40Q= | Low Profile Bracket VIC 1385 Dual Port 40Gb QSFP+ CNA w/RDMA |
| UCSC-LP-C25-1485= | Low profile bracket for VIC |
| UCSC-LP-C40-1485= | Low profile bracket for VIC1495 |
| **Host Bus Adapters (HBAs)** | |
| UCSC-PCIE-QD16GF= | Qlogic QLE2692 Dual Port 16G Fibre Channel HBA |
| UCSC-PCIE-BD16GF= | Emulex LPe31002 Dual Port 16G Fibre Channel HBA |
| UCSC-PCIE-QD32GF= | Qlogic QLE2742 Dual Port 32G Fibre Channel HBA |
| UCSC-PCIE-BS32GF= | Emulex LPe32000-M2 Single Port 32G Fibre Channel HBA |
| UCSC-PCIE-BD32GF= | Emulex LPe32002-M2 Dual Port 32G Fibre Channel HBA |
| **UCS NVMe/PCIe Add in Cards** | |
| UCSC-NVME-H64003= | Cisco HHHL AIC 6.4TB HGST SN260 NVMe Extreme Performance High Endurance |
| UCSC-NVME-H38401= | Cisco HHHL AIC 3.8TB HGST SN260 NVMe Extreme Performance High Endurance |
| UCSC-NVME-H76801= | Cisco HHHL AIC 7.7TB HGST SN260 NVMeExtreme Performance Value Endurance |
| **SD Cards** | |
| UCS-SD-32G-S= | 32 GB SD Card for UCS servers |

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| UCS-SD-64G-S= | 64 GB SD Card for UCS servers |
| UCS-SD-128G= | 128GB SD Card for UCS servers |
| **GPU PCIe Cards** | |
| UCSC-GPU-P4= | NVIDIA P4 |
| UCSC-GPU-T4-16= | NVIDIA T4 16GB |
| **Power Supply** | |
| UCSC-PSU1-770W= | 770W AC power supply for C-Series Servers |
| UCSC-PSU1-1050W= | 1050W AC power supply for C-Series servers |
| UCSC-PSUV2-1050DC= | 1050W DC power supply for C-Series servers |
| UCSC-PSU1-1600W= | 1600W AC power supply for C-Series servers |
| UCSC-PSU-M5BLK= | Power Supply Blanking Panel for M5 servers |
| UCSC-BBLKD-L2= | C-Series M5 LFF drive blanking panel |
| **Power Cables** | |
| CAB-48DC-40A-8AWG= | C-Series -48VDC PSU Power Cord, 3.5M, 3 Wire, 8AWG, 40A |
| 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,IEC6 0320/C13, 3.0M |
| CAB-250V-10A-AR= | Power Cord, 250V, 10A, Argentina |
| CAB-9K10A-AU= | Power Cord, 250VAC 10A 3112 Plug, Australia |
| CAB-250V-10A-CN= | AC Power Cord - 250V, 10A - PRC |
| CAB-9K10A-EU= | Power Cord, 250VAC 10A CEE 7/7 Plug, EU |
| CAB-250V-10A-ID= | Power Cord, SFS, 250V, 10A, India |
| CAB-250V-10A-IS= | Power Cord, SFS, 250V, 10A, Israel |
| CAB-9K10A-IT= | Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy |
| CAB-9K10A-SW= | Power Cord, 250VAC 10A MP232 Plug, Switzerland |
| CAB-9K10A-UK= | Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK |
| CAB-9K12A-NA= | Power Cord, 125VAC 13A NEMA 5-15 Plug, North America |

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| CAB-250V-10A-BR= | Power Cord - 250V, 10A - Brazil |
| CAB-C13-C14-2M-JP= | Power Cord C13-C14, 2M/6.5ft Japan PSE mark |
| CAB-9K10A-KOR= | Power Cord, 125VAC 13A KSC8305 Plug, Korea |
| CAB-ACTW= | AC Power Cord (Taiwan), C13, EL 302, 2.3M |
| CAB-JPN-3PIN= | Japan, 90-125VAC 12A NEMA 5-15 Plug, 2.4m |
| CAB-C13-C14-IN= | Power Cord Jumper,C13-C14 Connectors,1.4 Meter Length, India |
| CAB-C13-C14-3M-IN= | Power Cord Jumper, C13-C14 Connectors, 3 Meter Length, India |
| **CMA** | |
| UCSC-CMA-M5= | Reversible CMA for C220 M4 and M5 rack servers |
| **USB Drive** | |
| UCS-USBFLSHB-16GB= | UCS Servers 16 GB Flash USB Drive (optional) |
| **TPM** | |
| UCSX-TPM2-001= | Trusted Platform Module 1.2 for UCS Servers |
| UCSX-TPM2-002= | Trusted Platform Module 2.0 for UCS servers |
| UCSC-INT-SW01= | C220 M5 and C240 M5 Chassis Intrusion Switch |
| **Bezel** | |
| UCSC-BZL-C220M5= | C220 M5 Security Bezel |
| **Software/Firmware** | |
| **IMC Supervisor** | |
| CIMC-SUP-BASE-K9= | IMC Supervisor One-time Site Installation License |
| CIMC-SUP-B01= | IMC Supervisor-Branch Mgt SW for C-Series & E-Series up to 100 Svrs |
| CIMC-SUP-B02= | IMC Supervisor- Branch Mgt SW for C & E-Series up to 250 Svrs |
| CIMC-SUP-B10= | IMC Supervisor- Branch Mgt SW for C & E-Series up to 1K Svrs |
| CIMC-SUP-B25= | IMC Supervisor Branch Mgt SW for C & E-Series 25 Svrs |
| CIMC-SUP-A01= | IMC Supervisor Adv-Branch Mgt SW for C & E-Series 100 Svrs |
| CIMC-SUP-A02= | IMC Supervisor Adv-Branch Mgt SW for C & E-Series 250 Svrs |
| CIMC-SUP-A10= | IMC Supervisor Adv-Branch Mgt SW for C & E-Series 1000 Svrs |
| CIMC-SUP-A25= | IMC Supervisor Adv-Branch Mgt SW for C & E-Series 250 Svrs |
| EVAL-CIMC-SUP= | EVAL: IMC Supervisor-Branch Mgt SW for C/E-Series - 50 Svrs |

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| EVAL-CIMC-SUP-BAS= | EVAL: IMC Supervisor One-time Site Installation License |
| **UCS Multi-Domain Manager** | |
| UCS-MDMGR-1S= | UCS Central Per Server License<br>**NOTE**: IF you must order quantity greater than 1 of UCS-MDMGR-1S, you need to reference the UCS Central Per Server Data Sheet to order the standalone PIDs: UCS-MDMGR-LIC= or UCS-MDMGR-1DMN= |
| **Red Hat** | |
| RHEL-2S2V-1A= | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 1-Yr Support Req |
| RHEL-2S2V-3A= | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 3-Yr Support Req |
| RHEL-2S2V-1S= | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); Prem 1-Yr SnS |
| RHEL-2S2V-3S= | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); Prem 3-Yr SnS |
| RHEL-2S-HA-1S= | RHEL High Availability (1-2 CPU); Premium 1-yr SnS |
| RHEL-2S-HA-3S= | RHEL High Availability (1-2 CPU); Premium 3-yr SnS |
| RHEL-2S-RS-1S= | RHEL Resilient Storage (1-2 CPU); Premium 1-yr SnS |
| RHEL-2S-RS-3S= | RHEL Resilient Storage (1-2 CPU); Premium 3-yr SnS |
| RHEL-2S2V-5A= | Red Hat Enterprise Linux (1-2 CPU,1-2 VN); 5-Yr Support Req |
| RHEL-2S-HA-1A= | RHEL High Availability (1-2 CPU); 1-Yr Support Reqd |
| RHEL-2S-HA-3A= | RHEL High Availability (1-2 CPU); 3-Yr Support Reqd |
| RHEL-2S-HA-5A= | RHEL High Availability (1-2 CPU); 5-Yr Support Reqd |
| RHEL-2S-RS-1A= | RHEL Resilent Storage (1-2 CPU); Premium 1-yr SnS Reqd |
| RHEL-2S-RS-3A= | RHEL Resilent Storage (1-2 CPU); Premium 3-yr SnS Reqd |
| RHEL-2S-RS-5A= | RHEL Resilent Storage (1-2 CPU); Premium 5-yr SnS Reqd |
| **Red Hat SAP** | |
| RHEL-SAP-2S2V-1S= | RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 1-Yr SnS Reqd |
| RHEL-SAP-2S2V-3S= | RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 3-Yr SnS Reqd |
| RHEL-SAPSP-3S= | RHEL SAP Solutions Premium - License with 3 Years of SnS |
| RHEL-SAPSS-3S= | RHEL SAP Solutions Standard - License with 3 Years of SnS |
| **VMware** | |
| VMW-VSP-STD-1A= | VMware vSphere 7 Std (1 CPU, 32 Core) 1-yr, Support Required |
| VMW-VSP-STD-3A= | VMware vSphere 7 Std (1 CPU, 32 Core) 3-yr, Support Required |

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| VMW-VSP-STD-5A= | VMware vSphere 7 Std (1 CPU, 32 Core) 5-yr, Support Required |
| VMW-VSP-EPL-1A= | VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 1Yr, Support Reqd |
| VMW-VSP-EPL-3A= | VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 3Yr, Support Reqd |
| VMW-VSP-EPL-5A= | VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 5Yr, Support Reqd |
| **SLES and SAP** | |
| SLES-SAP-2S2V-1A= | SLES for SAP Apps (1-2 CPU, 1-2 VM); 1-Yr Support Reqd |
| SLES-SAP-2S2V-3A= | SLES for SAP Apps (1-2 CPU, 1-2 VM); 3-Yr Support Reqd |
| SLES-SAP-2S2V-5A= | SLES for SAP Apps (1-2 CPU, 1-2 VM); 5-Yr Support Reqd |
| SLES-SAP-2S2V-1S= | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 1-Yr SnS |
| SLES-SAP-2S2V-3S= | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 3-Yr SnS |
| SLES-SAP-2S2V-5S= | SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 5-Yr SnS |
| **SUSE** | |
| SLES-2S2V-1A= | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 1-Yr Support Req |
| SLES-2S2V-3A= | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 3-Yr Support Req |
| SLES-2S2V-5A= | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 5-Yr Support Req |
| SLES-2S2V-1S= | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 1-Yr SnS |
| SLES-2S2V-3S= | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 3-Yr SnS |
| SLES-2S2V-5S= | SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 5-Yr SnS |
| SLES-2S-HA-1S= | SUSE Linux High Availability Ext (1-2 CPU); 1yr SnS |
| SLES-2S-HA-3S= | SUSE Linux High Availability Ext (1-2 CPU); 3yr SnS |
| SLES-2S-HA-5S= | SUSE Linux High Availability Ext (1-2 CPU); 5yr SnS |
| SLES-2S-GC-1S= | SUSE Linux GEO Clustering for HA (1-2 CPU); 1yr Sns |
| SLES-2S-GC-3S= | SUSE Linux GEO Clustering for HA (1-2 CPU); 3yr SnS |
| SLES-2S-GC-5S= | SUSE Linux GEO Clustering for HA (1-2 CPU); 5yr SnS |
| SLES-2S-LP-1S= | SUSE Linux Live Patching Add-on (1-2 CPU); 1yr SnS Required |
| SLES-2S-LP-3S= | SUSE Linux Live Patching Add-on (1-2 CPU); 3yr SnS Required |
| **Microsoft** | |
| MSWS-19-DC16C= | Windows Server 2019 Data Center (16 Cores/Unlimited VMs) |
| MSWS-19-DC16C-NS= | Windows Server 2019 DC (16 Cores/Unlim VMs) - No Cisco SVC |

**Cisco UCS C220 M5 Rack Server (Large Form Factor Disk Drive Model)**

**Table 45  Spare Parts**  *(continued)*

| Product ID (PID) | PID Description |
|---|---|
| MSWS-19-ST16C= | Windows Server 2019 Standard (16 Cores/2 VMs) |
| MSWS-19-ST16C-NS= | Windows Server 2019 Standard (16 Cores/2 VMs) - No Cisco SVC |
| MSWS-22-ST16C= | Windows Server 2022 Standard (16 Cores/2 VMs) |
| MSWS-22-ST16C-NS= | Windows Server 2022 Standard (16 Cores/2 VMs) - No Cisco SVC |
| MSWS-22-DC16C= | Windows Server 2022 Data Center (16 Cores/Unlimited VMs) |
| MSWS-22-DC16C-NS= | Windows Server 2022 DC (16 Cores/Unlim VMs) - No Cisco SVC |

**Notes:**

1. This part is included with the purchase of option or spare CPU or CPU processor kits.

Please refer to "Cisco UCS C220 M5 Server Installation and Service Guide" for installation procedures. See this link:

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C220M5/install/C220M5.html

SPARE PARTS

# Memory Support for CPU Classes and CPU Modes

## For 2nd Generation Intel® Xeon® Scalable Processors:

- DIMMs and PMem are supported
- CPU PIDs ending in "M" support up to a limit of 2048 GB per CPU
- CPU PIDs ending in "L" support up to a limit of 4608 GB per CPU
- All other CPU PIDs support up to a limit of 1024 GB per CPU
- For the App Direct Mode, both PMem and DIMM capacities count towards the CPU capacity limit
- For the Memory Mode and Mixed Mode only the PMem capacity counts towards the CPU capacity limit

### For Configurations Using Only DIMMs

- CPU PIDs ending in "M" support DIMM capacities up to 1536 GB per CPU (using 12 x 128 GB DIMMs) and DIMM capacities up to 2048 GB per CPU (using 8 x 256 GB DIMMs).
- CPU PIDs ending in "L" support DIMM capacities up to 1536 GB per CPU (using 12 x 128 GB DIMMs) and DIMM capacities up to 3072 GB per CPU (using 12 x 256 GB DIMMs). The 4608 GB limit cannot be reached with these capacity DIMMs.
- CPU PIDs not ending in "L" or "M" support DIMM capacities up to 1024 GB per CPU (using 8 x 128 GB DIMMs or 4 x 256 GB DIMMs).

### For Configurations Using DIMMs and PMem in App Direct Mode

- CPU PIDs ending in "M" support capacities up to 1792 GB per CPU (using 6 x 128 GB DIMMS and 2 x 512 GB PMem or 4 x 256 GB PMem) or up to 2048 GB per CPU (using 6 x 256 GB DIMMs and 2 x 256 GB PMem or 6 x 256 GB DIMMs and 4 x 128 GB PMem)
- CPU PIDs ending in "L" support capacities up to 3840 GB per CPU (using 6 x 128 GB DIMMs and 6 x 512 GB PMem) or up to 4608 GB per CPU (using 6 x 256 GB DIMMs and 6 x 512 GB PMem)
- CPU PIDs not ending in "L" or "M" support capacities up to 1024 GB per CPU (using 6 x 128 GB DIMMs and 2 x 128 GB PMem).

### For Configurations Using DIMMs and PMem in Memory or Mixed Mode

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**NOTE:** For Memory and Mixed Modes, DIMMs are used as cache and do not factor into CPU capacity.

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- CPU PIDs ending in "M" support capacities up to 2048 GB per CPU using:
    - 6 x 128 GB DIMMs as cache and 4 x 512 GB PMem as memory, or
    - 6x 256 GB DIMMs as cache and 4 x 512 GB PMem as memory
- CPU PIDs ending in "L" support capacities up to 3072 GB using:
    - 6 x 128 GB DIMMs as cache and 6 x 512 GB PMem as memory, or

82                              Cisco UCS C220 M5 Rack Server (Large Form Factor Disk Drive Model)

— 6 x 256 GB DIMMs as cache and 6 x 512 GB PMem as memory

The allowable 4608 limit for PMem capacity is not reached in this case.

■ CPU PIDs not ending in "L" or "M" support capacities up to 1024 GB per CPU using:

— 6 x 128 GB DIMMs as cache and 2 x 512 GB PMem as memory, or

— 6 x 256 GB DIMMs as cache and 2 x 512 GB PMem as memory

## For Intel® Xeon® Scalable Processors:

■ DIMMs are supported; PMem are not supported

■ CPU PIDs ending in "M' support DIMM capacities up to 1536 GB per CPU (using 12 x 128 GB DIMMs).

All other CPU PIDs support DIMM capacities up to 768 GB per CPU (using 6 x 128 GB DIMMs or 12 x 64 GB DIMMs)

# UPGRADING or REPLACING CPUs

> **NOTE:**  Before servicing any CPU, do the following:
>
> - Decommission and power off the server.
> - Slide the C220 M5 LFF server out from the rack.
> - Remove the top cover.

**To replace an <u>existing CPU</u>, follow these steps:**

**(1) Have the following tools and materials available for the procedure:**

- T-30 Torx driver—Supplied with replacement CPU.
- #1 flat-head screwdriver—Supplied with replacement CPU.
- CPU assembly tool—Supplied with replacement CPU. Can be ordered separately as Cisco PID UCS-CPUAT=.
- Heatsink cleaning kit—Supplied with replacement CPU. Can be ordered separately as Cisco PID UCSX-HSCK=.
- Thermal interface material (TIM)—Syringe supplied with replacement CPU. Can be ordered separately as Cisco PID UCS-CPU-TIM=.

**(2) Order the appropriate replacement CPU from** *Table 3 on page 11*

**(3) Carefully remove and replace the CPU and heatsink in accordance with the instructions found in "Cisco UCS C220 M5 Server Installation and Service Guide," found at:**
**https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C220M5/install/C220M5/C220M5_chapter_010.html#concept_bfk_kwp_hz.**

**To add a <u>new CPU</u>, follow these steps:**

**(1) Have the following tools and materials available for the procedure:**

- T-30 Torx driver—Supplied with new CPU.
- #1 flat-head screwdriver—Supplied with new CPU
- CPU assembly tool—Supplied with new CPU.Can be ordered separately as Cisco PID UCS-CPUAT=
- Thermal interface material (TIM)—Syringe supplied with replacement CPU.Can be ordered separately as Cisco PID UCS-CPU-TIM=

**(2) Order the appropriate new CPU from** *Table 3 on page 11*.

**(3) Order one heat sink for each new CPU. Order PID UCSC-HS-C220M5= for CPUs that dissipate 150 W or less. Order PID UCSC-HS2-C220M5= for CPUs that dissipate more than 150 W.**

**(4) Carefully install the CPU and heatsink in accordance with the instructions found in "Cisco UCS C220 M5 Server Installation and Service Guide," found at:**
https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C220M5/install/C220M5/C220M5_chapter_010.html#concept_bfk_kwp_hz.

# UPGRADING or REPLACING MEMORY

**NOTE:** Before servicing any DIMM or PMem, do the following:

- Decommission and power off the server.
- Remove the top cover from the server
- Slide the server out the front of the chassis.

**To add or replace DIMMs or PMem, follow these steps:**

**(1) Order new DIMMs or PMem as needed from *Table 4 on page 17*.**

**(2) Open both connector latches and remove and replace the DIMM/PMem as needed.**

**Figure 10  Replacing Memory**
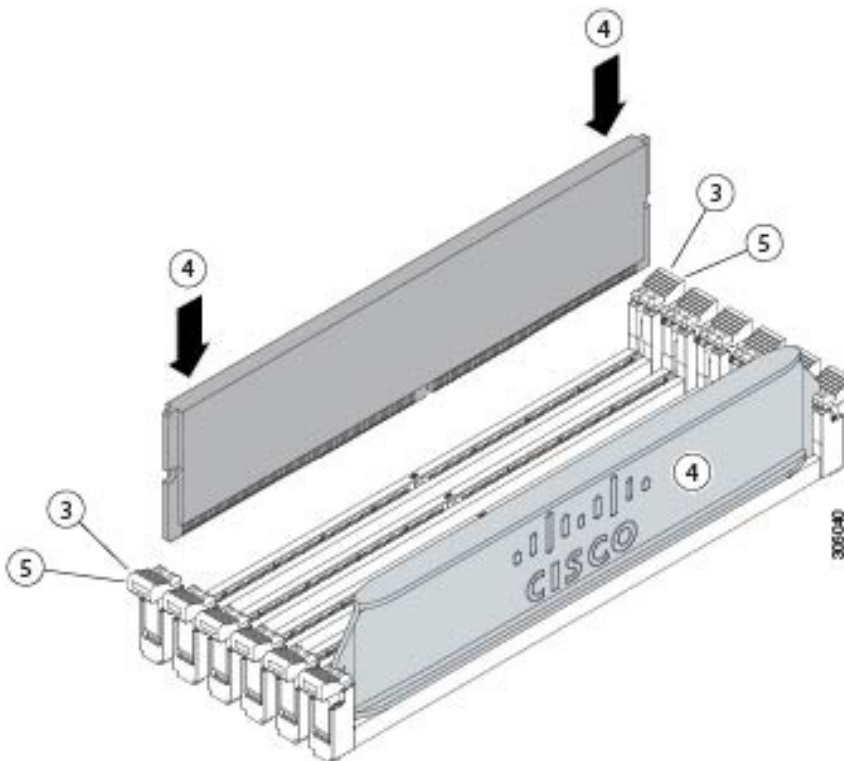
**(3) Press evenly on both ends of the DIMM/PMem until it clicks into place in its slot.**

> **NOTE:** Ensure that the notch in the DIMM/PMem aligns with the slot. If the notch is misaligned, it is possible to damage the DIMM/PMem, the slot, or both.

**(4) Press the connector latches inward slightly to seat them fully.**

For additional details on replacing or upgrading DIMMs and PMem, see "Cisco UCS C220 M5 Server Installation and Service Guide," found at these links:

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C220M5/install/C220M5/C220M5_chapter_010.html#concept_c53_tbp_hz

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C220M5/install/C220M5/C220M5_chapter_010.html#concept_b1k_mbt_tgb

# DISCONTINUED EOL PRODUCTS

Below is the list of parts were previously available for this product and are no longer sold. Please refer to the EOL Bulletin Links via the *Table 46* below to determine, if still supported.

**Table 46  EOL Products**

| EOS option PID | Description | EOL bulletin link |
|---|---|---|
| **DRIVES** | | |
| **HDD** | | |
| UCS-HD8T7KL4KN | 8 TB 12G SAS 7.2K RPM LFF HDD (4K) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743558.html |
| UCS-HD8T7KL6GN | 8 TB 6G SATA 7.2K RPM LFF HDD (512e) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html |
| UCS-HD10T7KL6GN | 10 TB 6G SATA 7.2K RPM LFF HDD (512e) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html |
| **Enterprise Value SSDs** | | |
| UCS-HY16T61X-EV | 1.6TB 3.5 inch Enterprise Value 6G SATA SSD | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741895.html |
| UCS-SD240G61X-EV | 240GB 2.5 inch Enterprise Value 6G SATA SSD | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/eos-eol-notice-c51-742066.html |
| UCS-SD480G61X-EV | 480 GB 2.5 inch Enterprise Value  6G SATA SSD | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.html |
| UCS-HY150G61X-EV | 150 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel 3520) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.html |
| **NVMe** | | |
| UCSC-NVMELW-I500 | 500GB 2.5in U.2 Intel P4501 NVMe Med. Perf. Value Endurance | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html |
| UCSC-NVMEHY-H1600 | 1.6 TB HGST SN200 NVMe High Perf. High Endurance (HGST) | https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html |
| UCSC-NVMEHY-H3200 | 3.2 TB HGST SN200 NVMe High Perf. High Endurance (HGST) | https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html |
| UCSC-NVME-H32003 | Cisco HHHL AIC 3.2T HGST SN260 NVMe Extreme Perf High Endrnc | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html |
| **Enterprise Performance SSDs** | | |

**Table 46  EOL Products**

| EOS option PID | Description | EOL bulletin link |
|---|---|---|
| UCS-HY16T63X-EP | 1.6TB 3.5in Enterprise Performance 6GSATA SSD(3X endurance) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/eos-eol-notice-c51-742066.html |
| UCS-HY400G12TX-EP | 400 GB 3.5 inch Enterprise performance 12G SAS SSD (10X DWPD) (Toshiba PM4) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/eos-eol-notice-c51-742066.html |
| UCS-HY800G12TX-EP | 800 GB 3.5 inch Enterprise performance 12G SAS SSD (10X DWPD) (Toshiba PM4) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.html |
| UCS-HY16TB12TX-EP | 1.6 TB 3.5 inch Enterprise performance 12G SAS SSD (10X DWPD) (Toshiba PM4) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.html |
| UCS-SD400GBCNK9 | 400 GB Enterprise performance SAS LFF SSD (10X FWPD, SED) (Micron 650DC) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol.html |
| UCS-HY16T123X-EP | 1.6 TB 3.5in Enterprise performance 12G SAS SSD (3X endurance) | https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html |
| UCS-HY400G123X-EP | 400GB 3.5in Enterprise performance 12G SAS SSD(3X endurance) | https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html |
| UCS-SD800GBCNK9 | 800 GB Enterprise performance SAS LFF SSD (10X FWPD, SED) (Micron 650DC) | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol.html |
| UCS-HY800G123X-EP | 800GB 3.5in Enterprise performance 12G SAS SSD(3X endurance) | https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html |
| **CPU** | | |
| UCS-CPU-I8280M | Intel 8280M 2.7GHz/205W 28C/38.50MB 3DX DDR4 2TB 2933 MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html |
| UCS-CPU-I8276M | Intel 8276M 2.2GHz/165W 28C/38.50MB 3DX DDR4 2TB 2933 MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html |
| UCS-CPU-I8260M | Intel 8260M 2.4GHz/165W 24C/35.75MB 3DX DDR4 2TB 2933 MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html |
| UCS-CPU-I6240M | Intel 6240M 2.6GHz/150W 18C/24.75MB 3DX DDR4 2TB 2933 MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html |
| UCS-CPU-I6238M | Intel 6238M 2.1GHz/140W 22C/30.25MB 3DX DDR4 2TB 2933 MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html |
| UCS-CPU-I5215M | Intel 5215M 2.5GHz/85W 10C/13.75MB 3DX DDR4 2TB 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html |

**Table 46  EOL Products**

| EOS option PID | Description | EOL bulletin link |
|---|---|---|
| UCS-CPU-8180M | 2.5 GHz 8180M/205W 28C/38.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8176M | 2.1 GHz 8176M/165W 28C/38.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8170M | 2.1 GHz 8170M/165W 26C/35.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8160M | 2.1 GHz 8160M/150W 24C/33MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8180 | 2.5 GHz 8180/205W 28C/38.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8176 | 2.1 GHz 8176/165W 28C/38.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8170 | 2.1 GHz 8170/165W 26C/35.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8168 | 2.7 GHz 8168/205W 24C/33MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8164 | 2.0 GHz 8164/150W 26C/35.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8160T | 2.1 GHz 8160/150W 24C/33MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8160 | 2.1 GHz 8160/150W 24C/33MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8158 | 3.0 GHz 8158/150W 12C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8156 | 3.6 GHz 8156/105W 4C/16.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-8153 | 2.0 GHz 8153/125W 16C/22MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6142M | 2.6 GHz 6142M/150W 16C/22MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6140M | 2.3 GHz 6140M/140W 18C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |

**Table 46  EOL Products**

| EOS option PID | Description | EOL bulletin link |
|---|---|---|
| UCS-CPU-6134M | 3.2 GHz 6134M/130W 8C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6154 | 3.0 GHz 6154/**200W** 18C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6152 | 2.1 GHz 6152/140W 22C/30.25MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6150 | 2.7 GHz 6150/**165W** 18C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6148 | 2.4 GHz 6148/150W 20C/27.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6144 | 3.5 GHz 6144/150W 8C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6142 | 2.6 GHz 6142/150W 16C/22MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6140 | 2.3 GHz 6140/140W 18C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6138T | 2.0 GHz 6138T/125W 20C/27.5MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6138 | 2.0 GHz 6138/125W 20C/27.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6136 | 3.0 GHz 6136/150W 12C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6134 | 3.2 GHz 6134/130W 8C/24.75MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6132 | 2.6 GHz 6132/140W 14C/19.25MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6130 | 2.1 GHz 6130/125W 16C/22MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6128 | 3.4 GHz 6128/115W 6C/19.25MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-6126 | 2.6 GHz 6126/125W 12C/19.25MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |

**Table 46  EOL Products**

| EOS option PID | Description | EOL bulletin link |
|---|---|---|
| UCS-CPU-5122 | 3.6 GHz 5122/105W 4C/16.50MB Cache/DDR4 2666MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-5120 | 2.2 GHz 5120/105W 14C/19.25MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-5118 | 2.3 GHz 5118/105W 12C/16.50MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-5117 | 2.0 GHz 5117/105W 14C/19.25MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-5115 | 2.4 GHz 5115/85W 10C/13.75MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-4116 | 2.1 GHz 4116/85W 12C/16.50MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-4114 | 2.2 GHz 4114/85W 10C/13.75MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-4112 | 2.6 GHz 4112/85W 4C/8.25MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-4110 | 2.1 GHz 4110/85W 8C/11MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-4108 | 1.8 GHz 4108/85W 8C/11MB Cache/DDR4 2400MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-3106 | 1.7 GHz 3106/85W 8C/11MB Cache/DDR4 2133MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| UCS-CPU-3104 | 1.7 GHz 3104/85W 6C/8.25MB Cache/DDR4 2133MHz | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html |
| **MEMORY** | | |
| UCS-MR-X16G2RS-H | 16GB DDR4-2666-MHz RDIMM/PC4-21300/dual rank/x4/1.2v | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740780.html |
| UCS-MR-X8G1RS-H | 8GB DDR4-2666-MHz RDIMM/PC4-21300/single rank/x4/1.2v | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740780.html |
| **PCIe OPTION CARD** | | |
| UCSC-PCIE-E16002 | Emulex LPe16002 Dual-Port 16Gb Fibre Channel HBA w/SR Optics | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741234.html |

**Table 46  EOL Products**

| EOS option PID | Description | EOL bulletin link |
|---|---|---|
| UCSC-PCIE-Q2672 | Qlogic QLE2672-CSC, 16Gb Fibre Channel HBA with SR Optics | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741234.html |
| **Microsoft Windows server** | | |
| MSWS-16-ST16C | Windows Server 2016 Standard (16 Cores/2 VMs) | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-ST24C | Windows Server 2016 Standard (24 Cores/2 VMs) | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-ST16C-NS | Windows Server 2016 Standard (16 Cores/2 VMs) - No Cisco SVC | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-ST24C-NS | Windows Server 2016 Standard (24 Cores/2 VMs) - No Cisco SVC | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-DC16C | Windows Server 2016 Data Center (16 Cores/Unlimited VMs) | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-DC24C | Windows Server 2016 Data Center (24 Cores/Unlimited VMs) | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-DC16C-NS | Windows Server 2016 DC (16 Cores/Unlim VMs) - No Cisco SVC | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-DC24C-NS | Windows Server 2016 DC (24 Cores/Unlim VMs) - No Cisco SVC | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| **OS Media** | | |
| MSWS-16-ST16C-RM | Windows Server 2016 Std (16 Cores/2 VMs) - Recovery Media | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-ST24C-RM | Windows Server 2016 Std (24 Cores/2 VMs) - Recovery Media | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-DC16C-RM | Windows Server 2016 DC (16 Cores/Unlim VMs) - Recovery Media | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| MSWS-16-DC24C-RM | Windows Server 2016 DC (24 Cores/Unlim VMs) - Recovery Media | https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html |
| **Operating system** | | |
| SLES-2SUV-1A | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 1-Yr Support Req | |
| SLES-2SUV-1S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 1-Yr SnS | |

**Table 46  EOL Products**

| EOS option PID | Description | EOL bulletin link |
|---|---|---|
| SLES-2SUV-3A | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 3-Yr Support Req | |
| SLES-2SUV-3S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 3-Yr SnS | |
| SLES-2SUV-5A | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 5-Yr Support Req | |
| SLES-2SUV-5S | SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 5-Yr SnS | |
| SLES-SAP-2SUV-1A | SLES for SAP Apps w/ HA (1-2 CPU, Unl VM); 1-Yr Support Reqd | |
| SLES-SAP-2SUV-1S | SLES for SAP Apps (1-2 CPU, Unl VM); Priority 1-Yr SnS | |
| SLES-SAP-2SUV-3A | SLES for SAP Apps w/ HA (1-2 CPU, Unl VM); 3-Yr Support Reqd | |
| SLES-SAP-2SUV-3S | SLES for SAP Apps (1-2 CPU, Unl VM); Priority 3-Yr SnS | |
| SLES-SAP-2SUV-5A | SLES for SAP Apps w/ HA (1-2 CPU, Unl VM); 5-Yr Support Reqd | |
| SLES-SAP-2SUV-5S | SLES for SAP Apps (1-2 CPU, Unl VM); Priority 5-Yr SnS | |
| **SPARE** | | |
| UCSC-MLOM-BLK= | MLOM Blanking Panel | https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741234.html |

# NEBS Compliance

When configured with choices from the specific set of components shown in *Table 47*, the UCS C220 M5 server meets Network Equipment Building Standards (NEBS) Level 1 and Level 3 compliance. For specific configuration rules, see the applicable sections of this document.

**Table 47  C220 M5 NEBS Compliant Components**

| Component Category | Description | Product ID (PID) |
|---|---|---|
| CPUs | 2.1 GHz 8160T/150W 24C/33.00MB Cache/DDR4 2666MHz | UCS-CPU-8160T |
| | 2.0 GHz 6138T/125W 20C/27.50MB Cache/DDR4 2666MHz | UCS-CPU-6138T |
| Memory | 16GB DDR4-2666-MHz RDIMM/PC4-23100/single rank/x4/1.2v | UCS-MR-X16G1RS-H |
| | 32GB DDR4-2666-MHz RDIMM/PC4-23100/dual rank/x4/1.2v | UCS-MR-X32G2RS-H |
| Drive | 1.2 TB 12G SAS 10K RPM SFF HDD | UCS-HD12TB10K12N |
| | 900GB 12G SAS 15K RPM SFF HDD | UCS-HD900G15K12N |
| | 600GB 12G SAS 15K RPM SFF HDD | UCS-HD600G15K12N |
| | 600GB 12G SAS 10K RPM SFF HDD | UCS-HD600G10K12N |
| | 300GB 12G SAS 10K RPM SFF HDD | UCS-HD300G10K12N |
| NVMe | 1TB 2.5in U.2 Intel P4501 NVMe Med. Perf. Value Endurance | UCSC-NVMELW-I1000 |
| RAID Controller | Cisco 12G Modular RAID controller with 2GB cache (supports max 16 drives) (Laguna Beach) | UCSC-RAID-M5 |
| PCIe Cards | Cisco VIC 1387 Dual Port 40Gb QSFP CNA MLOM (Claremont) | UCSC-MLOM-C40Q-03 |
| | Intel i350 quad-port 1G copper MLOM | UCSC-MLOM-IRJ45 |
| | Cisco VIC 1385 Dual Port 40Gb QSFP+ CNA w/RDMA (Clearlake) | UCSC-PCIE-C40Q-03 |
| | Intel X520 dual-port 10G SFP+ | N2XX-AIPCI01 |
| | Qlogic QLE2692 dual port 16G FC | UCSC-PCIE-QD16GF |
| | Intel XXV710-DA2 10-dual-port 25G NIC | UCSC-PCIE-ID25GF |
| TPM | Trusted Platform Module 2.0 for UCS servers | UCSX-TPM2-002 |
| Power Supply | 1050W AC power supply for C-Series servers | UCSC-PSU1-1050W |
| | 1050W DC power supply for C-Series servers | UCSC-PSUV2-1050DC |

# TECHNICAL SPECIFICATIONS

## Dimensions and Weight

**Table 48  UCS C220 M5 LFF Dimensions and Weight**

| Parameter | Value |
|---|---|
| Height | 1.7 in. (4.32 cm) |
| Width | 16.89 in. (43.0 cm) including handles: 18.98 in. (48.2 cm) |
| Depth | 29.8 in. (75.6 cm) including handles: 30.98 in. (78.7 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, 24 DIMMs, two power supplies) | 37.5 lbs (17.0 kg) |
| Minimum (1 HDD, 1 CPU, 1 DIMM, one power supply) | 30.5 lbs (13.8 kg) |
| Bare (0 HDD, 0 CPU, 0 DIMM, one power supply) | 28.3 lbs (12.8 kg) |

# Power Specifications

The server is available with the following types of power supplies:

- 770 W (AC) power supply (see *Table 49*).
- 1050 W (AC) power supply (see *Table 50*).
- 1050 W V2 (DC) power supply (see *Table 51*)
- 1600 W (AC) power supply (see *Table 52*)

**Table 49  UCS C220 M5 Power Specifications (770 W AC power supply)**

| Parameter | Specification | | | |
|---|---|---|---|---|
| Input Connector | IEC320 C14 | | | |
| Input Voltage Range (V rms) | 100 to 240 | | | |
| Maximum Allowable Input Voltage Range (V rms) | 90 to 264 | | | |
| Frequency Range (Hz) | 50 to 60 | | | |
| Maximum Allowable Frequency Range (Hz) | 47 to 63 | | | |
| Maximum Rated Output (W) | 770 | | | |
| Maximum Rated Standby Output (W) | 36 | | | |
| Nominal Input Voltage (V rms) | 100 | 120 | 208 | 230 |
| Nominal Input Current (A rms) | 8.8 | 7.4 | 4.2 | 3.8 |
| Maximum Input at Nominal Input Voltage (W) | 855 | 855 | 855 | 846 |
| Maximum Input at Nominal Input Voltage (VA) | 882 | 882 | 882 | 872 |
| Minimum Rated Efficiency (%)[1] | 90 | 90 | 90 | 91 |
| Minimum Rated Power Factor[1] | 0.97 | 0.97 | 0.97 | 0.97 |
| Maximum Inrush Current (A peak) | 15 | | | |
| Maximum Inrush Current (ms) | 0.2 | | | |
| Minimum Ride-Through Time (ms)[2] | 12 | | | |

**Notes:**

1. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at http://www.80plus.org/ for certified values
2. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

**Table 50  UCS C220 M5 1050 W (AC) Power Supply Specifications**

| Parameter | Specification | |
|---|---|---|
| Input Connector | IEC320 C14 | |
| Input Voltage Range (V rms) | 100 to 240 | |
| Maximum Allowable Input Voltage Range (V rms) | 90 to 264 | |
| Frequency Range (Hz) | 50 to 60 | |
| Maximum Allowable Frequency Range (Hz) | 47 to 63 | |
| Maximum Rated Output (W)[1] | 800 | 1050 |

**Cisco UCS C220 M5 Rack Server (Large Form Factor Disk Drive Model)**

**Table 50  UCS C220 M5 1050 W (AC) Power Supply Specifications**

| Maximum Rated Standby Output (W) | 36 | | | |
|---|---|---|---|---|
| Nominal Input Voltage (V rms) | 100 | 120 | 208 | 230 |
| Nominal Input Current (A rms) | 9.2 | 7.6 | 5.8 | 5.2 |
| Maximum Input at Nominal Input Voltage (W) | 889 | 889 | 1167 | 1154 |
| Maximum Input at Nominal Input Voltage (VA) | 916 | 916 | 1203 | 1190 |
| Minimum Rated Efficiency (%)[2] | 90 | 90 | 90 | 91 |
| Minimum Rated Power Factor[2] | 0.97 | 0.97 | 0.97 | 0.97 |
| Maximum Inrush Current (A peak) | 15 | | | |
| Maximum Inrush Current (ms) | 0.2 | | | |
| Minimum Ride-Through Time (ms)[3] | 12 | | | |

**Notes:**

1. Maximum rated output is limited to 800W when operating at low-line input voltage (100-127V)
2. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at http://www.80plus.org/ for certified values
3. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

**Table 51  UCS C220 M5 1050 W (DC) Power Supply Specifications**

| Parameter | Specification |
|---|---|
| Input Connector | Molex 42820 |
| Input Voltage Range (V rms) | -48 |
| Maximum Allowable Input Voltage Range (V rms) | -40 to -72 |
| Frequency Range (Hz) | NA |
| Maximum Allowable Frequency Range (Hz) | NA |
| Maximum Rated Output (W) | 1050 |
| Maximum Rated Standby Output (W) | 36 |
| Nominal Input Voltage (V rms) | -48 |
| Nominal Input Current (A rms) | 24 |
| Maximum Input at Nominal Input Voltage (W) | 1154 |
| Maximum Input at Nominal Input Voltage (VA) | 1154 |
| Minimum Rated Efficiency (%)[1] | 91 |
| Minimum Rated Power Factor[1] | NA |
| Maximum Inrush Current (A peak) | 15 |
| Maximum Inrush Current (ms) | 0.2 |
| Minimum Ride-Through Time (ms)[2] | 5 |

**Notes:**

1. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at http://www.80plus.org/ for certified values
2. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

**Table 52  UCS C220 M5 1600 W (AC) Power Supply Specifications**

| Parameter | Specification | | | |
|---|---|---|---|---|
| Input Connector | IEC320 C14 | | | |
| Input Voltage Range (V rms) | 200 to 240 | | | |
| Maximum Allowable Input Voltage Range (V rms) | 180 to 264 | | | |
| Frequency Range (Hz) | 50 to 60 | | | |
| Maximum Allowable Frequency Range (Hz) | 47 to 63 | | | |
| Maximum Rated Output (W)[1] | 1600 | | | |
| Maximum Rated Standby Output (W) | 36 | | | |
| Nominal Input Voltage (V rms) | 100 | 120 | 208 | 230 |
| Nominal Input Current (A rms) | NA | NA | 8.8 | 7.9 |
| Maximum Input at Nominal Input Voltage (W) | NA | NA | 1778 | 1758 |
| Maximum Input at Nominal Input Voltage (VA) | NA | NA | 1833 | 1813 |
| Minimum Rated Efficiency (%)[2] | NA | NA | 90 | 91 |
| Minimum Rated Power Factor[2] | NA | NA | 0.97 | 0.97 |
| Maximum Inrush Current (A peak) | 30 | | | |
| Maximum Inrush Current (ms) | 0.2 | | | |
| Minimum Ride-Through Time (ms)[3] | 12 | | | |

**Notes:**

1. Maximum rated output is limited to 800W when operating at low-line input voltage (100-127V)
2. This is the minimum rating required to achieve 80 PLUS Platinum certification, see test reports published at http://www.80plus.org/ for certified values
3. Time output voltage remains within regulation limits at 100% load, during input voltage dropout

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

http://ucspowercalc.cisco.com

# Environmental Specifications

The environmental specifications for the C220 M5 server are listed in *Table 53*.

**Table 53  UCS C220 M5 LFF Environmental Specifications**

| Parameter | Minimum |
|---|---|
| Operating Temperature | 10°C to 35°C (50°F to 95°F) with no direct sunlight<br>Maximum allowable operating temperature derated<br>1°C/300 m (1°F/547 ft) above 950 m (3117 ft) |
| Extended Operating Temperature | 5°C to 40°C (41°F to 104°F) with no direct sunlight<br>Maximum allowable operating temperature derated<br>1°C/175 m (1°F/319 ft) above 950 m (3117 ft)<br>5°C to 45°C (41°F to 113°F) with no direct sunlight<br>Maximum allowable operating temperature derated<br>1°C/125 m (1°F/228 ft) above 950 m (3117 ft)<br>System performance may be impacted when operating in the extended operating temperature range.<br>Operation above 40C is limited to less than 1% of annual operating hours.<br>Hardware configuration limits apply to extended operating temperature range. |
| Non-Operating Temperature | -40°C to 65°C (-40°F to 149°F)<br>Maximum rate of change (operating and non-operating)<br>20°C/hr (36°F/hr) |
| Operating Relative Humidity | 8% to 90% and 24°C (82.4°F) maximum dew-point temperature, non-condensing environment |
| Non-Operating Relative Humidity | 5% to 95% and 33°C (82.4°F) maximum dew-point temperature, non-condensing environment |
| Operating Altitude | 0 m to 3050 m {10,000 ft) |
| Non-Operating Altitude | 0 m to 12,000 m (39,370 ft) |
| Sound Power level, Measure A-weighted per ISO7779 LWAd (Bels) Operation at 73°F (23°C) | 5.8 |
| Sound Pressure level, Measure A-weighted per ISO7779 LpAm (dBA) Operation at 73°F (23°C) | 43 |

# Extended Operating Temperature Hardware Configuration Limits

**Table 54    Cisco UCS C220 M5 Extended Operating Temperature Hardware Configuration Limits**

| Platform[1] | ASHRAE A3 (5°C to 40°C)[2] | ASHRAE A4 (5°C to 45°C)[3] |
|---|---|---|
| Processors: | 155W+ | 155W+ and 105W+ (4 or 6 Cores) |
| Memory: | LRDIMMs | LRDIMMs |
| Storage: | M.2 SATA SSDs<br><br>NVMe SSDs | M.2 SATA SSDs<br><br>NVMe SSDs |
| Peripherals: | PCIe NVMe SSDs<br><br>GPUs | MRAID<br><br>PCIe NVMe SSDs<br><br>GPUs<br><br>mLOMs<br><br>VICs<br><br>NICs<br><br>HBAs |

**Notes:**

1. Two PSUs are required and PSU failure is not supported
2. Non-Cisco UCS qualified peripherals and/or peripherals that consume more than 25W are not supported
3. High power or maximum power fan control policy must be applied

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