Spec Sheet

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

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CONTENTS

OVERVIEW 4
DETAILED VIEWS 5
BASE SERVER STANDARD CAPABILITIES and FEATURES 7
CONFIGURING the SERVER 11
STEP 1 VERIFY SERVER SKU 12
STEP 2 SELECT CPU(s) 13
STEP 3 SELECT MEMORY 19
STEP 4 SELECT RAID CONTROLLERS 26
STEP 5 SELECT DRIVES 31
STEP 6 SELECT PCIe OPTION CARD(s) 35
STEP 7 ORDER OPTIONAL PCIe OPTION CARD ACCESSORIES 38
STEP 8 ORDER GPU CARDS (OPTIONAL) 43
STEP 9 ORDER POWER SUPPLY 44
STEP 10 SELECT POWER CORD(s) 45
STEP 11 ORDER TOOL-LESS RAIL KIT AND OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM . 48
STEP 12 SELECT MANAGEMENT CONFIGURATION (OPTIONAL) 49
STEP 13 SELECT SERVER BOOT MODE (OPTIONAL) 50
STEP 14 ORDER SECURITY DEVICES (OPTIONAL) 51
STEP 15 SELECT LOCKING SECURITY BEZEL (OPTIONAL) 52
STEP 16 ORDER CISCO SD CARD MODULE (OPTIONAL) 53
STEP 17 ORDER M.2 SATA SSDs (OPTIONAL) 54
STEP 18 ORDER INTERNAL MICRO-SD CARD MODULE (OPTIONAL) 55
STEP 19 ORDER OPTIONAL USB 3.0 DRIVE 56
STEP 20 SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE 57
STEP 21 SELECT OPERATING SYSTEM MEDIA KIT 61
STEP 22 SELECT SERVICE and SUPPORT LEVEL 62
OPTIONAL STEP - ORDER RACK(s) 69
OPTIONAL STEP - ORDER PDU 70
SUPPLEMENTAL MATERIAL 71
SPARE PARTS 80
UPGRADING or REPLACING CPUs 94
UPGRADING or REPLACING MEMORY 95
DISCONTINUED EOL PRODUCTS 97
TECHNICAL SPECIFICATIONS 102

OVERVIEW

The UCS C220 M5 SFF server extends the capabilities of Cisco's Unified Computing System portfolio in a 1U form factor with the addition of the Intel® Xeon® Processor Scalable Family, 24 DIMM slots for 2666-MHz or 2933-MHz DIMMs with capacity points up to 128 GB, 2666-MHz PMEMs with capacity points up to 512 GB, two 2 PCI Express (PCIe) 3.0 slots, and up to 10 SAS/SATA hard disk drives (HDDs) or solid state drives (SSDs). The C220 M5 SFF server also includes one dedicated internal slot for a 12G SAS storage controller card.

The latest update includes support for 2nd Generation Intel® Xeon® Scalable Processors, 2933-MHz DDR4 memory, and the new 512GB Intel® Optane™ Persistent Memory (PMEMs). With this combination of features, up to 9 TB of memory is possible (using 12 x 256 GB DDR4 DIMMs and 12 x 512 GB PMEMs).

The C220 M5 server includes one dedicated internal modular LAN on motherboard (mLOM) connector 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 10Gbase-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 UCS C220 M5 SFF Rack Server

Front View (without and with bezel

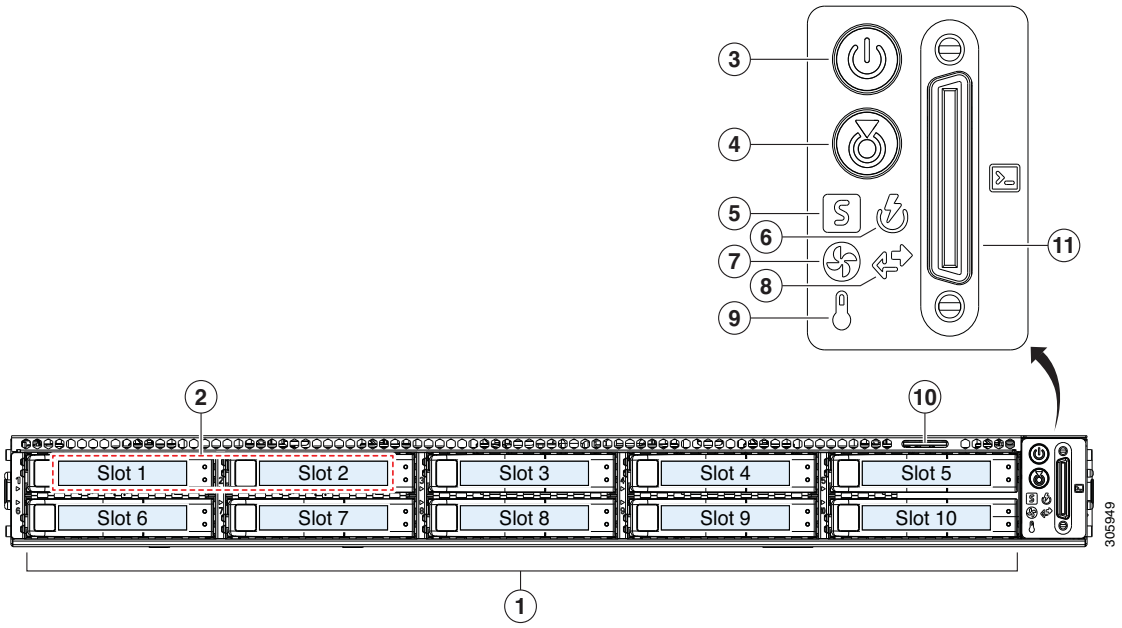
Rear View

DETAILED VIEWS

Chassis Front View

Figure 2 shows the front view of the Cisco UCS C220 M5 SFF Rack Server.

Figure 2 Chassis Front View

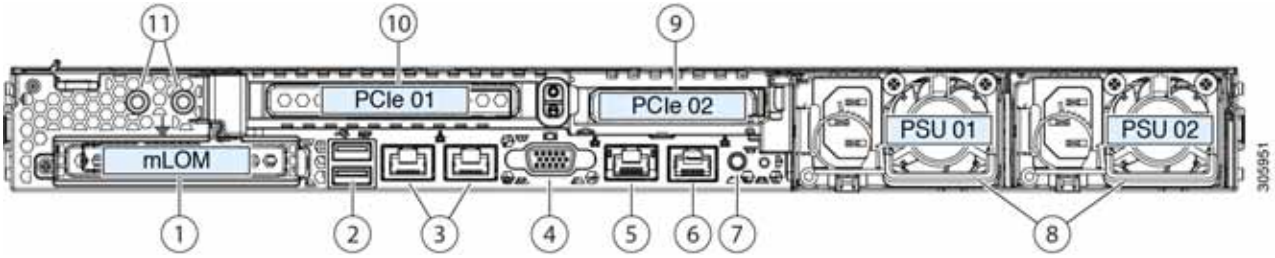


1	Drive bays 1 – 10 support SAS/SATA hard drives and solid state drives (SSDs).	**7**	Fan status LED
2	UCSC-C220-M5SX version: Drive bays 1 and 2 support SFF NVMe PCIe drives. But bays 1 and 2 can also be used for SFF SAS/SATA HDDs and SSDs. Bays 3 - 10 support only SAS/SATA HDDs and SDDs. UCSC-C220-M5SN version: Drive bays 1 – 10 support only SFF NVMe PCIe SSDs	**8**	Network link activity LED
3	Power button/Power status LED	**9**	Temperature status LED
4	Unit identification button/LED	**10**	Pull-out asset tag
5	System status LED	**11**	KVM connector (used with KVM cable that provides two USB 2.0, one VGA, and one serial connector)
6	Power supply status LED	**-**	-

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 bay (x16)	**7**	Rear unit identification button/LED
2	USB 3.0 ports (two)	**8**	Power supplies (two, redundant as 1+1)
3	Dual 1/10GE ports (LAN1 and LAN2) LAN1 is left connector and LAN2 is right connector	**9**	PCIe riser 2 (slot 2) (half-height, x16); includes NVMe connectors for cabling to connect to up to two front-mount SFF NVMe SSDs (x8)
4	VGA video port (DB-15)	**10**	PCIe riser 1 (slot 1) (full-height, x16)
5	1GE Ethernet dedicated management port	**11**	Threaded holes for dual-hole grounding lug
6	Serial port (RJ-45 connector)	**-**	-

BASE SERVER STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in *CONFIGURING the SERVER, page 11*.

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	One rack unit (1RU) chassis
CPU	One or two Intel® Xeon® scalable family CPUs or 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 (PMEMs)
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: ■ Integrated 2D graphics core with hardware acceleration ■ 512MB total DDR4 memory, with 16MB dedicated to Matrox video memory ■ Supports display resolutions up to 1920 x 1200 16bpp @ 60Hz ■ High-speed integrated 24-bit RAMDAC ■ Single lane PCI-Express host interface running at Gen 1 speed
SATA Interposer Board	An optional SATA interposer board provides for up to eight SATA-only drives.
Power subsystem	Up to two of the following hot-swappable power supplies: ■ 770 W (AC) ■ 1050 W (AC) ■ 1050 W (DC) ■ 1600 W (AC) 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 PCI slots.

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Expansion slots	■ Riser 1 (controlled by CPU 1): • One full-height profile, 3/4-length slot with x24 connector and x16 lane. ■ Riser 2 (controlled by CPU 2): • One half-height profile, half-length slot with x24 connector and x16 lane. ■ Dedicated RAID controller slot (see *Figure 5 on page 70*) • An internal slot is reserved for use by the Cisco 12G SAS RAID controller or the Cisco 12G SAS HBA.
Interfaces	■ Rear panel • One 1Gbase-T RJ-45 management port (Marvell 88E6176) • Two 10Gbase-T LOM ports (Intel X550 controller embedded on the motherboard) • One RS-232 serial port (RJ45 connector) • One DB15 VGA connector • Two USB 3.0 port connectors • One flexible modular LAN on motherboard (mLOM) slot that can accommodate various interface cards ■ Front panel • One KVM console connector (supplies two USB 2.0 connectors, one VGA DB15 video connector, and one serial port (RS232) RJ45 connector)

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Internal storage devices	Drive storage: Drives are installed into front-panel drive bays that provide hot-swappable access for SAS/SATA drives. The server is orderable in two different versions: ■ UCSC-C220-M5SX: • Up to 10 SFF SAS/SATA hard drives (HDDs) or SAS/SATA solid state drives (SSDs). • Optionally, up to two SFF NVMe PCIe SSDs (replacing SAS/SATA drives). These drives must be placed in front drive bays 1 and 2 only and are connected to riser 2. The rest of the bays (3 - 10) can be populated with SAS/SATA SSDs or HDDs. Two CPUs are required when choosing NVMe SSDs. ■ UCSC-C220-M5SN: • Up to 10 SFF NVMe PCIe SSDs only. The drives in slots 1 and 2 are connected to riser 2 and the drives in slots 3 through 10 are connected to the PCIe switch card plugged into the internal HBA slot. Two CPUs are required for the UCSC-C220-M5SN. Other storage: ■ One internal USB 3.0 port on the motherboard that you can use with an optional 16 GB USB thumb drive for additional storage. ■ A mini-storage module connector on the motherboard supports either: • An SD card module with two SD card slots. Mixing different capacity SD cards is not supported. • An M.2 module with two SATA M.2 SSD slots. Mixing different capacity M.2 modules is not supported.  **NOTE:** SD cards and M.2 SSDs cannot be mixed. See details for RAID functionality in the *ORDER M.2 SATA SSDs (OPTIONAL)* section. ■ One socket for a micro-SD card on PCIe riser 1. The micro-SD card serves as a dedicated local resource for utilities such as HUU. Images can be pulled from a file share (NFS/CIFS) and uploaded to the cards for future use.
Integrated management processor	Baseboard Management Controller (BMC) running Cisco Integrated Management Controller (CIMC) firmware. 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). CIMC manages certain components within the server, such as the Cisco 12G SAS HBA.

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Storage controller	■ Embedded RAID (software RAID) • Supports up to eight SATA-only drives • Requires a SATA interposer board ■ Cisco 12G SAS RAID controller card with internal SAS connectivity. • Supports up to 10 internal SAS/SATA drives • Plugs into a dedicated RAID controller slot • Supports RAID 0, 1, 5, 6, 10, 50, 60 and JBOD mode ■ Cisco 12G SAS HBA (JBOD/Pass-through Mode) • Supports up to 10 SAS/SATA internal drives • Plugs into the dedicated RAID controller slot ■ Cisco 12G 9400-8e SAS HBA • Supports external JBOD attach • Plugs into an appropriate riser slot (up to two supported) • No RAID support
Modular LAN on Motherboard (mLOM) slot	The dedicated mLOM slot on the motherboard can flexibly accommodate the following cards: ■ Cisco Virtual Interface Cards ■ Quad Port Intel i350 1GbE RJ45 Network Interface Card (NIC)  **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 SFF Rack Server:

- *STEP 1 VERIFY SERVER SKU, page 12*
- *STEP 2 SELECT CPU(s), page 13*
- *STEP 3 SELECT MEMORY, page 19*
- *STEP 4 SELECT RAID CONTROLLERS, page 26*
- *STEP 5 SELECT DRIVES, page 31*
- *STEP 6 SELECT PCIe OPTION CARD(s), page 35*
- *STEP 7 ORDER OPTIONAL PCIe OPTION CARD ACCESSORIES, page 39*
- *STEP 8 ORDER GPU CARDS (OPTIONAL), page 43*
- *STEP 9 ORDER POWER SUPPLY, page 44*
- *STEP 10 SELECT POWER CORD(s), page 45*
- *STEP 11 ORDER TOOL-LESS RAIL KIT AND OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM, page 48*
- *STEP 12 SELECT MANAGEMENT CONFIGURATION (OPTIONAL), page 49*
- *STEP 13 SELECT SERVER BOOT MODE (OPTIONAL), page 50*
- *STEP 14 ORDER SECURITY DEVICES (OPTIONAL), page 51*
- *STEP 15 SELECT LOCKING SECURITY BEZEL (OPTIONAL), page 52*
- *STEP 16 ORDER CISCO SD CARD MODULE (OPTIONAL), page 53*
- *STEP 17 ORDER M.2 SATA SSDs (OPTIONAL), page 54*
- *STEP 18 ORDER INTERNAL MICRO-SD CARD MODULE (OPTIONAL), page 56*
- *STEP 19 ORDER OPTIONAL USB 3.0 DRIVE, page 57*
- *STEP 20 SELECT OPERATING SYSTEM AND VALUE-ADDED SOFTWARE, page 58*
- *STEP 21 SELECT OPERATING SYSTEM MEDIA KIT, page 62*
- *STEP 22 SELECT SERVICE and SUPPORT LEVEL, page 63*

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 SFF Rack Base Server

Product ID (PID)	Description
UCSC-C220-M5SX	UCS C220 M5 - 10 SFF front drives with no CPU, memory, HDD, PCIe cards, or power supply. All drives can be SAS/SATA HDDS or SSDs or optionally bays 1 and/or 2 can be NVMe PCIe SSDs and the rest can be HDDs or SSDs.
UCSC-C220-M5SN	UCS C220 M5 - 10 SFF front drives (NVMe PCIe SSDs only) with no CPU, memory, HDD, PCIe cards, or power supply

The Cisco UCS C220 M5 SFF server:

- Does not include power supply, CPU, DIMM memory, hard disk drives (HDDs), solid-state drives (SSDs), SD cards, tool-less rail kit, plug-in PCIe cards, or Intel® Optane™ Persistent Memory.

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

STEP 2 SELECT CPU(s)

The standard CPU features are:

- Intel® Xeon® scalable family CPUs and 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®
UCS-CPU-8180M	2.5	205	38.50	28	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8176M	2.1	165	38.50	28	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8170M	2.1	165	35.75	26	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8160M	2.1	150	33.00	24	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8180	2.5	205	38.50	28	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8176	2.1	165	38.50	28	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8170	2.1	165	35.75	26	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8168	2.7	205	33.00	24	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8164	2.0	150	35.75	26	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8160	2.1	150	33.00	24	3 x 10.4	2666	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-8160T	2.1	150	33.00	24	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8158	3.0	150	24.75	12	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8156	3.6	105	16.50	4	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-8153	2.0	125	22.00	16	3 x 10.4	2666	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®
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	2.8	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®
UCS-CPU-6142M	2.6	150	22.00	16	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6140M	2.3	140	24.75	18	3 x 10.4	2666	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-6134M	3.2	130	24.75	8	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6154	3.0	200	24.75	18	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6152	2.1	140	30.25	22	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6150	2.7	165	24.75	18	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6148	2.4	150	27.50	20	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6146	3.2	165	24.75	12	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6144	3.5	150	24.75	8	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6142	2.6	150	22.00	16	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6140	2.3	140	24.75	18	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6138	2.0	125	27.50	20	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6138T	2.0	125	27.50	20	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6136	3.0	150	24.75	12	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6134	3.2	130	24.75	8	3 X 10.4	2666	Intel® Xeon®
UCS-CPU-6132	2.6	140	19.25	14	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6130	2.1	125	22.00	16	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6128	3.4	115	19.25	6	3 x 10.4	2666	Intel® Xeon®
UCS-CPU-6126	2.6	125	19.25	12	3 x 10.4	2666	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®
UCS-CPU-5122	3.6	105	16.50	4	2 x 10.4	2666	Intel® Xeon®
UCS-CPU-5120	2.2	105	19.25	14	2 x 10.4	2400	Intel® Xeon®
UCS-CPU-5118	2.3	105	16.50	12	2 x 10.4	2400	Intel® Xeon®
UCS-CPU-5117	2.0	105	19.25	14	2 x 10.4	2400	Intel® Xeon®
UCS-CPU-5115	2.4	85	13.75	10	2 x 10.4	2400	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
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®
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®
UCS-CPU-4116	2.1	85	16.50	12	2 x 9.6	2400	Intel® Xeon®
UCS-CPU-4114	2.2	85	13.75	10	2 x 9.6	2400	Intel® Xeon®
UCS-CPU-4112	2.6	85	8.25	4	2 x 9.6	2400	Intel® Xeon®
UCS-CPU-4110	2.1	85	11.00	8	2 x 9.6	2400	Intel® Xeon®
UCS-CPU-4108	1.8	85	11.00	8	2 x 9.6	2400	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®
UCS-CPU-3106	1.7	85	11.00	8	2 x 9.6	2133	Intel® Xeon®
UCS-CPU-3104	1.7	85	8.25	6	2 x 9.6	2133	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 21* 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 78*

CAUTION: For systems configured with 2nd Gen Intel® Xeon® 205W 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 13*

(2) DIMM/PMEM Mixed Configurations:

- You must select two identical CPUs listed in *Table 3 on page 13*

Caveats

- The selection of 1 or 2 CPUs depends on the desired server functionality. See the following sections:
  - *STEP 3 SELECT MEMORY, page 19*
  - *STEP 4 SELECT RAID CONTROLLERS, page 26*
  - *STEP 5 SELECT DRIVES, page 31*
  - *STEP 6 SELECT PCIe OPTION CARD(s), page 35*

NOTE: See *SELECT MEMORY, page 19* for details on the compatibility of CPUs and DIMM speeds.

STEP 3 SELECT MEMORY

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

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

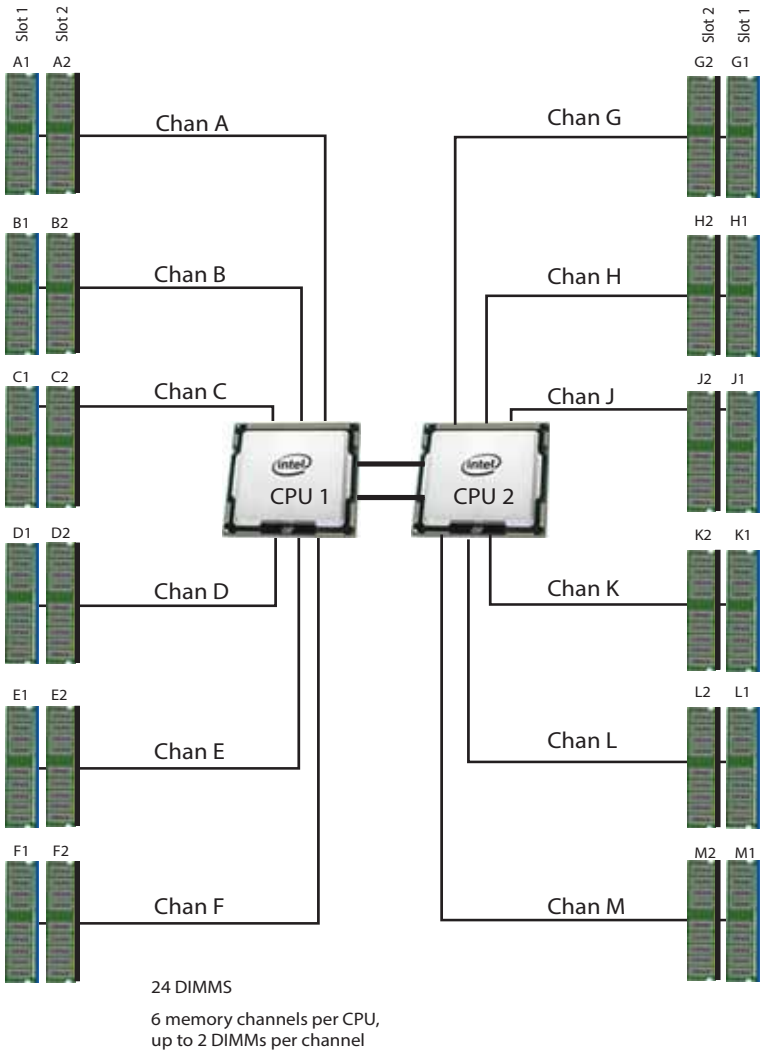
NOTE: The compatibility of Intel® Xeon® scalable processor family CPUs and 2nd Generation Intel® Xeon® Scalable CPUs with different DIMM memory speeds and production servers is as shown below:

CPU Family	DIMM Speed (MHz)	Configuration
Intel Scalable CPUs	2666	2666 MHz DIMMs are supported for all production servers
	2933	2933 MHz DIMMs are not supported for new production servers
2nd Gen Intel Scalable CPUs	2666	2666 MHz DIMMs are only supported when upgrading from Intel Scalable CPUs to 2nd Gen Intel Scalable CPUs
	2933	2933 MHz is the only DIMM speed supported for new production servers

- 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 (PMEMs).
- 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 SFF Memory Organization



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
2666-MHz DIMMs			
UCS-MR-128G8RS-H	128 GB DDR4-2666-MHz TSV-RDIMM/8R/x4	1.2 V	8
UCS-MR-X64G4RS-H	64 GB DDR4-2666-MHz TSV-RDIMM/4R/x4	1.2 V	4
UCS-ML-X64G4RS-H	64 GB DDR4-2666-MHz LRDIMM/4R/x4	1.2 V	4
UCS-MR-X32G2RS-H	32 GB DDR4-2666-MHz RDIMM/2R/x4	1.2 V	2
UCS-ML-X32G2RS-H	32 GB DDR4-2666-MHz LDIMM/2R/x4	1.2 V	2
UCS-MR-X16G1RS-H	16 GB DDR4-2666-MHz RDIMM/1R/x4	1.2 V	1
2933-MHz DIMMs			
UCS-ML-256G8RT-H[1]	256 GB DDR4-2933-MHz LRDIMM/8Rx4/1.2v	1.2 V	8
UCS-ML-128G4RT-H	128 GB DDR4-2933-MHz LRDIMM/4Rx4	1.2 V	4
UCS-ML-X64G4RT-H	64 GB DDR4-2933-MHz LRDIMM/4Rx4	1.2 V	4
UCS-MR-X64G2RT-H	64 GB DDR4-2933-MHz RDIMM/2Rx4	1.2 V	2
UCS-MR-X32G2RT-H	32GB DDR4-2933-MHz RDIMM/2Rx4	1.2 V	2
UCS-MR-X16G1RT-H	16 GB DDR4-2933-MHz RDIMM/1Rx4	1.2 V	1
Intel® Optane™ Persistent Memory Product			
UCS-MP-128GS-A0	Intel® Optane™ Persistent Memory, 128 GB, 2666 MHz		
UCS-MP-256GS-A0	Intel® Optane™ Persistent Memory, 256 GB, 2666 MHz		
UCS-MP-512GS-A0	Intel® Optane™ Persistent Memory, 512 GB, 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		

Notes:

1. The UCS-ML-256G8RT-H LRDIMM can be used only with 2nd Generation Intel® Xeon® scalable processor family CPUs, not with Intel® Xeon® scalable processor family CPUs.

Approved Configurations

(1) 1-CPU configuration without memory mirroring:

- Select from 1 to 12 DIMMs.

(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 21*.

(3) 2-CPU configuration without memory mirroring:

- Select from 1 to 12 DIMMs per CPU.

(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) CPU 1	CPU 2 DIMM Placement in Channels (for identical ranked DIMMs) 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 21*.

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

See *Table 7* for DCPMM 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 PMEMs. 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 1:4 to 1:16. So if you use a 128 GB DIMM in a channel, you could use a 512 GB PMEM for a 1:4 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 PMEMs at this time.

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

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

For detailed Intel PMEM configurations, refer to the following document:

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)

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

Embedded Software RAID

The default RAID configuration is embedded software RAID, which supports only SATA HDDs and enterprise value SATA SSDs (RAID 0, 1, 10). A maximum of 8 SATA drives are supported with embedded software RAID. Embedded RAID requires a SATA interposer board.

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

Cisco 12G SAS RAID Controller

You can choose a Cisco 12G SAS RAID controller, which plugs into a dedicated internal RAID controller card connector. This RAID controller includes a 2 GB cache and supports RAID 0, 1, 5, 6, 10, 50, 60, JBOD mode and SRAID0.

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

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

SAS HBA (internal HDD/SSD/JBOD support)

You can choose a SAS HBA for JBOD or Pass-through mode support:

- The Cisco 12G SAS HBA plugs into an internal dedicated RAID controller connector.

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 have up to two of these, one in each of the PCIe slots in the rear panel. Each one controls up to 8 external drives.

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 or SATA SSDs
  - Embedded software RAID has two ports and each port can control 4 drives, for 8 drives total.
  - 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*.
- 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 RAID Controller Options

Select one of the following:

- Embedded software RAID (this is the default if no other selection is made), or
- One Cisco 12G SAS RAID controller or Cisco 12G SAS HBA (see *Table 9*)

NOTE: The UCSC-C220-M5SN does not support embedded RAID.

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 a 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 or Cisco 12G SAS HBA controller is selected, it is factory-installed in the dedicated internal slot.	
UCSC-RAID-M5	Cisco 12G SAS RAID Controller with 2GB FBWC ■ Supports up to 10 internal SAS/SATA HDDs and SAS/SATA SSDs. ■ Supports RAID 0, 1, 5, 6, 10, 50, 60, and JBOD mode. Supports running mixed RAID and JBOD mode. ■ 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).
UCSC-SAS-M5	Cisco 12G SAS HBA ■ Supports up to 10 internal SAS HDDs and SAS/SATA SSDs ■ Supports JBOD mode only (no RAID functionality). Ideal for SDS (Software Defined Storage) applications. It is also ideal for environments demanding the highest IOPs (for external SSD attach), where a RAID controller can be an I/O bottleneck. ■ No SED drive support
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 and place them in the rear PCIe slots.
RAID Configuration Options (not available for Cisco 12G SAS HBA or 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 (the default) supports up to 8 internal SATA HDDs with RAID 0, 1, 10 support.
- The Cisco 12G SAS RAID controller upgrade option supports up to 10 internal drives with up to RAID 0, 1, 10, 5, 6, 50, 60 and JBOD mode support.
- The Cisco 12G SAS HBA upgrade option supports up to 10 internal drives with JBOD support.
- Up to two Cisco 12G 9400-8e SAS HBA external drive PCIe controller cards can be installed simultaneously with the Cisco 12G SAS Modular RAID controller card (UCSC-RAID-M5) or Cisco 12 Gbps Modular SAS HBA (UCSC-SAS-M5).

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

Table 10 Supported Controller Configurations for C220 M5 SFF Server

# CPUs	Embedded RAID	Cisco 12G SAS RAID Controller or Cisco 12G SAS HBA (only one can be installed at a time)		Cisco 12G 9400-8e 12G SAS HBA	MAX# Drives Supported	RAID Support	Internal Drive Types Allowed
		Cisco 12G SAS RAID Controller	Cisco 12G SAS HBA				
1	Enabled	Not allowed	Not allowed	Up to two installed in rear PCIe slots	8 internal SATA only, 8 or 16 external	0, 1, 10 (SATA only)	SATA HDDs/Enterprise Value SATA SSDs
1	Not allowed	Installed in dedicated slot	Installed in dedicated slot	Up to two installed in rear PCIe slots	10 internal, 8 or 16 external	0,1,10,5,6,50, 60 JBOD (12G SAS RAID), JBOD (SAS HBA)	SAS/SATA HDDs, SAS/SATA SSDs
		Only one of the above can be installed at a time					
2	Enabled	Not allowed	Not allowed	Up to two installed in rear PCIe slots	8 internal SATA only, 8 or 16 external	0, 1, 10 (SATA only)	SATA HDDs/Enterprise Value SATA SSDs

Table 10 Supported Controller Configurations for C220 M5 SFF Server *(continued)*

# CPUs	Embedded RAID	Cisco 12G SAS RAID Controller or Cisco 12G SAS HBA (only one can be installed at a time)		Cisco 12G 9400-8e 12G SAS HBA	MAX# Drives Supported	RAID Support	Internal Drive Types Allowed
		Cisco 12G SAS RAID Controller	Cisco 12G SAS HBA				
2	Not allowed	Installed in dedicated slot	Installed in dedicated slot	Up to two installed in rear PCIe slots	10 internal, 8 or 16 external	0,1,10,5,6,50, 60 JBOD (12G SAS RAID), JBOD (SAS HBA)	SAS/SATA HDDs, SAS/SATA SSDs, NVMe SSDs
		Only one of the above can be installed at a time					

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, and AHCI mode is not supported.

STEP 5 SELECT DRIVES

The standard disk drive features are:

- 2.5-inch small 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 (UCSC-C220-M5S (10-drive system) and UCSC-C220-M5SN (10-drive NVMe only system)

Product ID (PID)	PID Description	Drive Type	Capacity
HDDs			
HDDs (15K RPM)			
UCS-HD300G15K12N	300 GB 12G SAS 15K RPM SFF HDD	SAS	300 GB
UCS-HD600G15K12N	600 GB 12G SAS 15K RPM SFF HDD	SAS	600 GB
UCS-HD900G15K12N	900 GB 12G SAS 15K RPM SFF HDD	SAS	900 GB
HDDs (10K RPM)			
UCS-HD300G10K12N	300 GB 12G SAS 10K RPM SFF HDD	SAS	300 GB
UCS-HD600G10K12N	600 GB 12G SAS 10K RPM SFF HDD	SAS	600 GB
UCS-HD12TB10K12N	1.2 TB 12G SAS 10K RPM SFF HDD	SAS	1.2 TB
UCS-HD18TB10K4KN[1]	1.8 TB 12G SAS 10K RPM SFF HDD (4K)	SAS	1.8 TB
UCS-HD24TB10K4KN[1]	2.4 TB 12G SAS 10K RPM SFF HDD (4K)	SAS	2.4 TB
HDDs (7.2K RPM)			
UCS-HD1T7K12N	1 TB 12G SAS 7.2K RPM SFF HDD	SAS	1 TB
UCS-HD2T7K12N	2 TB 12G SAS 7.2K RPM SFF HDD	SAS	2 TB
UCS-HD1T7K6GAN	1 TB 6G SATA 7.2K RPM SFF HDD	SAS	1 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-SD400G123X-EP	400 GB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)	SAS	400 GB
UCS-SD800G123X-EP	800 GB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)	SAS	800 GB
UCS-SD16T123X-EP	1.6 TB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)	SAS	1.6 TB
UCS-SD32T123X-EP	3.2 TB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)	SAS	3.2 TB
UCS-SD16H123X-EP	1.6TB 2.5in Enterprise performance 12G SAS SSD(3X endurance)	SAS	1.6 TB
UCS-SD800H123X-EP	800GB 2.5in Enterprise performance 12G SAS SSD(3X endurance)	SAS	800 GB
SATA SSDs			

Table 11 Available Hot-Pluggable Sled-Mounted Drives *(continued)*
(UCSC-C220-M5S (10-drive system) and UCSC-C220-M5SN (10-drive NVMe only system)

Product ID (PID)	PID Description	Drive Type	Capacity
UCS-SD480G63X-EP	480GB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600/S4610)	SATA	480 GB
UCS-SD960G63X-EP	960GB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600/S4610)	SATA	960 GB
UCS-SD19T63X-EP	1.9TB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600/S4610)	SATA	1.9 TB
UCS-SD19TM3X-EP	1.9TB 2.5in Enterprise performance 6G SATA SSD(3X endurance)	SATA	480 GB
UCS-SD480GM3X-EP	480GB 2.5in Enterprise Performance 6G SATA SSD(3X endurance)	SATA	960 GB
UCS-SD960GM3X-EP	960GB 2.5in Enterprise performance 6G SATA SSD(3X endurance)	SATA	1.9 TB
Enterprise Value SSDs (Low endurance, supports up to 1X DWPD (drive writes per day))[4]			
SAS SSDs			
UCS-SD480G121X-EV	480 GB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)	SAS	480 GB
UCS-SD960G121X-EV	960 GB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)	SAS	960 GB
UCS-SD19TB121X-EV	1.9 TB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)	SAS	1.9 TB
UCS-SD38TB121X-EV	3.8 TB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)	SAS	3.8 TB
UCS-SD960GH61X-EV	960 GB 2.5 inch Enterprise Value 12G SAS SSD	SAS	960 GB
UCS-SD38TH61X-EV	3.8 TB 2.5 inch Enterprise Value 12G SAS SSD	SAS	3.8 TB
SATA SSDs			
UCS-SD120GM1X-EV	120 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100 /5200)	SATA	120 GB
UCS-SD240GM1X-EV	240 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	240 GB
UCS-SD480GM1X-EV	480 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	480 GB
UCS-SD960G61X-EV	960 GB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863A/PM883)	SATA	960 GB
UCS-SD960GM1X-EV	960 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	960 GB
UCS-SD16TM1X-EV	1.6 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	1.6 TB
UCS-SD19T61X-EV	1.9 TB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863A/PM883)	SATA	1.9 TB
UCS-SD19TM1X-EV	1.9 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	1.9 TB
UCS-SD38T61X-EV	3.8 TB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863A/PM883)	SATA	3.8 TB
UCS-SD38TM1X-EV	3.8 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	3.8 TB
UCS-SD76TM1X-EV	7.6 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	7.6 TB
UCS-SD76T61X-EV	7.6TB 2.5 inch Enterprise Value 6G SATA SSD	SATA	7.6 TB
UCS-SD480G6I1X-EV	480GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)	SATA	480 GB
UCS-SD960G6I1X-EV	960GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)	SATA	960 GB
UCS-SD38T6I1X-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)	SATA	3.8 TB
Self-Encrypted Drives (SED)			
SAS HDD			
UCS-HD600G15NK9	600 GB 12G SAS 15K RPM SFF HDD (SED) **FIPS140-2**	SAS	600 GB

Table 11 Available Hot-Pluggable Sled-Mounted Drives *(continued)*
(UCSC-C220-M5S (10-drive system) and UCSC-C220-M5SN (10-drive NVMe only system)

Product ID (PID)	PID Description	Drive Type	Capacity
UCS-HD24T10NK9	2.4 TB 12G SAS 10K RPM SFF HDD (4K) (SED) **FIPS140-2**	SAS	2.4 TB
UCS-HD18T10NK9	1.8 TB 12G SAS 10K RPM SFF HDD (4K format, SED) **FIPS140-2**	SAS	1.8 TB
UCS-HD12T10NK9	1.2 TB 12G SAS 10K RPM SFF HDD (SED) **FIPS140-2**	SAS	1.2 TB
SAS SSD			
Enterprise performance			
UCS-SD400GBENK9	400 GB Enterprise performance SAS SSD (10X FWPD, SED) **FIPS140-2**	SAS	400 GB
UCS-SD400GBHNK9	400 GB Enterprise performance SAS SSD (10X FWPD, SED) **FIPS140-2**	SAS	400 GB
UCS-SD800GBHNK9	800 GB Enterprise performance SAS SSD (10X FWPD, SED) **FIPS140-2**	SAS	800 GB
Enterprise value			
UCS-SD38T2HTNK9	3.8TB Enterprise value SAS SSD (1X FWPD, SED) **FIPS140-2**	SAS	3.8 TB
SATA SSD			
UCS-SD960GBE1NK9	960 GB Enterprise value SATA SSD (1X FWPD, SED) **Non FIPS**	SATA	960 GB
UCS-SD38TBE1NK9	3.8 TB Enterprise value SATA SSD (1X FWPD, SED) **Non FIPS**	SATA	3.8 TB
UCS-SD76TBEM2NK9	7.6TB Enterprise value SATA SSD (1X, SED) **Non FIPS**	SATA	7.6 TB
PCIe/NVMe SFF (2.5-inch) drives[2]			
UCSC-NVMEHW-H800	Cisco 2.5" U.2 800GB HGST SN200 NVMe High Perf. High Endurance	NVMe	800 GB
UCSC-NVMEHW-H1600	Cisco 2.5" U.2 1.6TB HGST SN200 NVMe High Perf. High Endurance	NVMe	1.6 TB
UCSC-NVMEHW-H3200	Cisco 2.5" U.2 3.2TB HGST SN200 NVMe High Perf. High Endurance	NVMe	3.2 TB
UCSC-NVMEHW-H6400	Cisco 2.5" U.2 6.4TB HGST SN200 NVMe High Perf. High Endurance	NVMe	6.4 TB
UCSC-NVMEHW-H7680	Cisco 2.5" U.2 7.7TB HGST SN200 NVMe High Perf. Value Endurance	NVMe	7.7 TB
UCSC-NVME2H-I2TBV	Cisco 2.5" U.2 2.0TB Intel P4510 NVMe High Perf. Value Endurance	NVMe	2.0 TB
UCSC-NVMEHW-I8000	Cisco 2.5" U.2 8TB Intel P4510 NVMe High Perf. Value Endurance	NVMe	8.0 TB
UCSC-NVMEXPB-I375	Cisco 375GB 2.5in Intel Optane NVMe Extreme Performance SSD	NVMe	375 GB
UCSC-NVMEXP-I750	Cisco 750GB 2.5in Intel Optane NVMe Extreme Performance	NVMe	750 GB
UCSC-NVME2H-I1000	Cisco 2.5" U.2 1.0 TB Intel P4510 NVMe High Perf. Value Endurance	NVMe	1.0 TB
UCSC-NVME2H-I1600	Cisco 2.5" U.2 1.6TB Intel P4610 NVMe High Perf. High Endurance	NVMe	1.6 TB
UCSC-NVME2H-I3200	Cisco 2.5" U.2 3.2 TB Intel P4610 NVMe High Perf. High Endurance	NVMe	3.2 TB
UCSC-NVME2H-I4000	Cisco 2.5" U.2 4.0 TB Intel P4510 NVMe High Perf. Value Endurance	NVMe	4.0 TB

NOTE: Cisco uses solid state drives from a number of vendors. All solid state drives 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 that have exceeded any maximum usage specifications set by Cisco or the manufacturer, as determined solely by Cisco.

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.

Notes:

1. Operating Systems supported on 4k sector size drives are as follows:
   - Windows: Win2012, Win2012R2 and Win2016.
   - Linux: RHEL 6.5/6.6/6.7/7.0/7.2/SLES 11 SP3 and SLES 12
   - 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 PCIe NVMe drives, drive slots 1 and 2 at the front of the chassis are reserved for these drives (see *Figure 2 on page 5* for drive slot numbering). With the C220 M5SN, you can ONLY have NVMe PCIe SSDs (up to 10).
3. Targeted for write centric IO applications. Supports endurance of 10 or 3 DWPD (drive writes per day). Target applications 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.

Caveats

- With the UCSC-C220-M5SX you can choose only SATA HDDs when using embedded software RAID. The UCSC-C220-M5SN does not support embedded RAID.
- SFF NVMe drives are connected directly to CPU2 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 HDDs and SAS/SATA SSDs when using the Cisco 12G SAS RAID Controller or Cisco 12G SAS HBA.
- If you order any NVMe SFF drives, you must also order two CPUs.
- Mixing of HGST and Intel P45XX/P46XX NVMe drives are NOT supported. However, Intel P48XX (Optane) can be mixed with the HGST NVMe drives as long as customers are able to get the performance they are looking for.
- SFF NVMe drives are bootable in UEFI mode only.
- NVMe HHHL drives are not bootable (see *Table 12 on page 35*).
- SED drives can be mixed with the non-SED drives in *Table 11 on page 31*.

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 (HBAs)
- UCS NVMe/PCIe Add-in Storage 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 100G QSFP28 CNA mLOM	mLOM	x 16	N/A
UCSC-MLOM-C25Q-04	Cisco UCS VIC 1457 Quad Port 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 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	
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 8	HHHL
40 Gb NICs				
UCSC-PCIE-QD40GF	Qlogic QL45412H Dual Port 40Gb NIC	Riser 1 or 2	x 16	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-F-H16003	Cisco AIC 1.6TB HGST SN250 NVMe Extreme Performance High Endurance	Riser 1 or 2	x 8	HHHL
UCSC-NVME-H32003	Cisco AIC 3.2TB HGST SN260 NVMe Extreme Performance High Endurance	Riser 1 or 2	x 8	HHHL
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 of the PCIe option cards (slot 1) listed in *Table 12*.

(2) 2-CPU Systems

- You can select up to two of the PCIe option cards (slots 1 and 2) 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 35* for the selection of plug-in and mLOM VIC cards. See also *Table 1 on page 7*.
- 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 13.0 to 13.0.c)**
- **NIC Interoperability with Intel Cables/Optics. (Table 13.1)**

Table 14.0 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	✓	✓			
SFP-10G-SR-S	✓	✓			
SFP-10G-LR	✓	✓			
SFP-10G-LR-S	✓	✓			
UCS-SFP-1WSR					✓

Table 14.0 10G NIC Interoperability with Cables/Optics

Cisco Product ID (PID)	UCSC- PCIE-ID10GF	UCSC- PCIE-IQ10GF	UCSC-PCIE-ID10GC	UCSC-PCIE-IQ10GC	N2XX-AIPCI01
UCS-SFP-1WLR					✓
GLC-LH-SMD		✓			

Table 14.0.a 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	✓		✓	
SFP-25G-AOC5M	✓	✓	✓	
SFP-25G-AOC7M	✓	✓	✓	
SFP-25G-AOC10M	✓		✓	✓
QSFP-4SFP25G-CU3M	✓			
SFP-H25G-CU1M	✓	✓	✓	✓

Table 14.0.a 25G NIC Interoperability with Cables/Optics

Cisco Product ID (PID)	UCSC-PCIE-ID25GF	UCSC-P-M5D25GF	UCSC-PCIE-QD25GF	UCSC-P-M4D25GF
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 14.0.b 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	✓	✓
QSFP-H40G-AOC5M	✓	✓
QSFP-H40G-AOC7M	✓	✓
QSFP-H40G-AOC10M	✓	✓
Cisco Optical Transceivers		
QSFP-40G-SR4	✓	

Table 14.0.b 40G NIC Interoperability with Cables/Optics

QSFP-40G-SR4-S	✓	✓
QSFP-40G-SR-BD		✓

Table 14.0.c 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 14.1 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			
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 15*.

Table 15 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 38*.
- 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 16 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

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

STEP 10 SELECT POWER CORD(s)

Using *Table 17*, 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 17 Available Power Cords

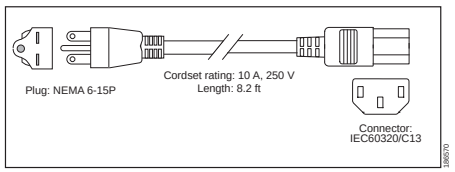
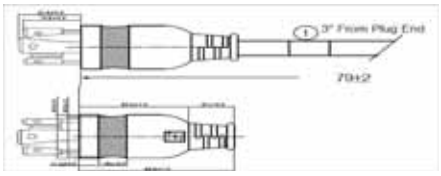
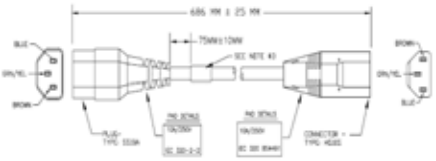
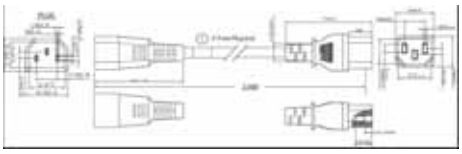
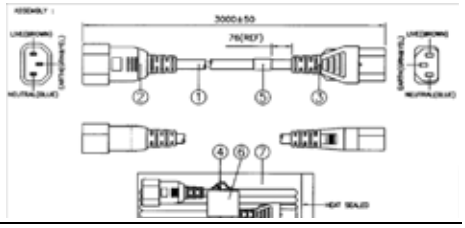
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-48DC-40A-8AWG	C-Series -48VDC PSU Power Cord, 3.5M, 3 Wire, 8AWG, 40A	
CAB-N5K6A-NA	Power Cord, 200/240V 6A, North America	
CAB-AC-L620-C13	AC Power Cord, NEMA L6-20 - 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,IEC60320/C13, 3.0M	

Table 17 Available Power Cords

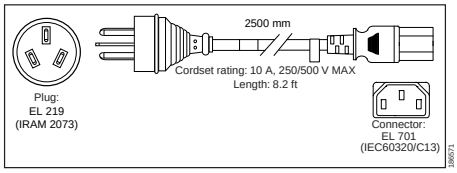
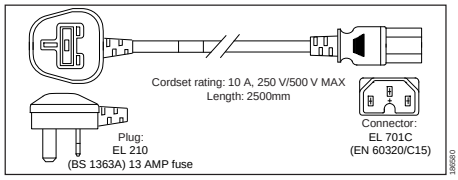
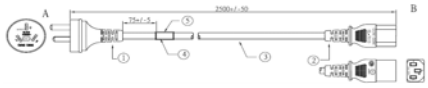
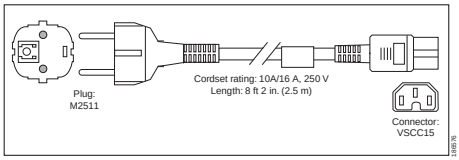
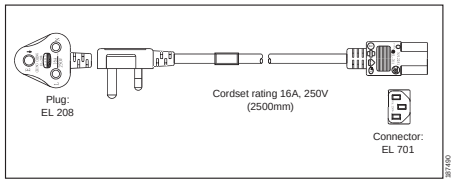
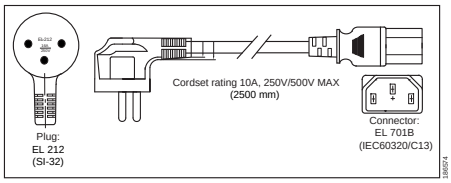
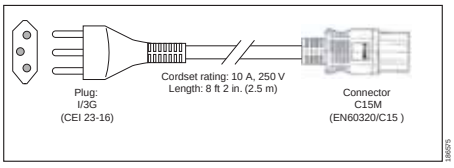
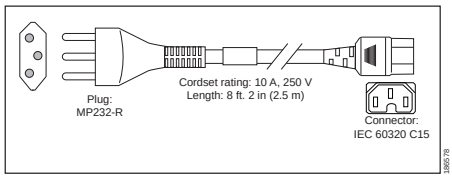
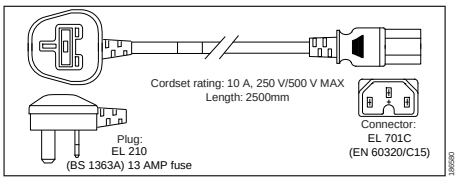
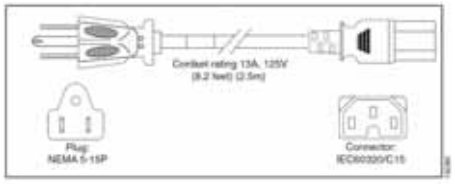
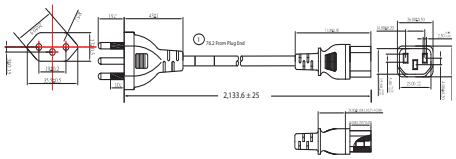
Product ID (PID)	PID Description	Images
CAB-250V-10A-AR	Power Cord, 250V, 10A, Argentina	
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	
CAB-250V-10A-CN	AC Power Cord - 250V, 10A - PRC	
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU	
CAB-250V-10A-ID	Power Cord, 250V, 10A, India	
CAB-250V-10A-IS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

Table 17 Available Power Cords

Product ID (PID)	PID Description	Images
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 18*.

Table 18 Tool-less Rail Kit Options

Product ID (PID)	PID Description
UCSC-RAILF-M4	Friction Rail Kit for C220 M4 and C220 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 19* to order a cable management arm.

Table 19 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 M4 and 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 20*. In Dedicated NIC mode, the CIMC can be accessed only through the dedicated management port. See *Chassis Rear View, page 6* 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 20*. 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 20 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 21*.

Table 21 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 22*.

Table 22 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 23*.

Table 23 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 70* for the location of the mini storage module connector, which accommodates an SD module. Each SD module accommodates two SD cards.

Table 24 Secure Digital (SD) Card

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

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 *ORDER M.2 SATA SSDs (OPTIONAL), page 54*).

STEP 17 ORDER M.2 SATA SSDs (OPTIONAL)

Order one or two matching M.2 SATA SSDs (see *Table 25*) along with a mini storage carrier or a boot-optimized RAID controller (see *Table 26*).

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 25*.

Table 25 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 26 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 4.2(1) 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 26*.
  - 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 25*.

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

Caveats

- 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 27 32 GB Secure Digital (SD) Card (blank)

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 28*.

Table 28 USB 3.0 Drive

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

See *Figure 5 on page 70* 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 29*)
- OEM Software (*Table 30*)
- Operating System (*Table 31*)

Table 29 Cisco Software

Product ID (PID)	PID Description
UCS Director	
CUIC-PHY-SERV-BM-U	Cisco UCS Director Resource Lic - 1 Phy Server node bare metal
CUIC-PHY-SERV-U	Cisco UCS Director Resource Lic - One physical Server node
CUIC-TERM	Acceptance of Cisco UCS Director License Terms
Nexus 1000V for Hyper-V and vSphere	
N1K-VSG-UCS-BUN	Nexus 1000V Adv Edition for vSphere Paper License Qty 1
IMC Supervisor	
CIMC-SUP-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 250 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 30 OEM Software

Product ID (PID)	PID Description
VMware vCenter	
VMW-VCS-STD-1A	VMware vCenter 6 Server Standard, 1 yr support required
VMW-VCS-STD-3A	VMware vCenter 6 Server Standard, 3 yr support required
VMW-VCS-STD-5A	VMware vCenter 6 Server Standard, 5 yr support required
VMW-VCS-FND-1A	VMware vCenter 6 Server Foundation (4 Host), 1 yr supp reqd
VMW-VCS-FND-3A	VMware vCenter 6 Server Foundation (4 Host), 3 yr supp reqd
VMW-VCS-FND-5A	VMware vCenter 6 Server Foundation (4 Host), 5 yr supp reqd

Table 31 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
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
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

Table 31 *(continued)* **Operating System**

Product ID (PID)	PID Description
RHEL-2S-SFS-1S	RHEL Scalable File System (1-2 CPU); Premium 1-yr SnS
RHEL-2S-SFS-3S	RHEL Scalable File System (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
RHEL-SAP-2S2V-3S	RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 3-Yr SnS
RHEL-SAPH-2S2V-1S	RHEL for SAP Hana (1-2 CPU, 1-2 VN); Prem 1-Yr SnS
RHEL-SAPH-2S2V-3S	RHEL for SAP Hana (1-2 CPU, 1-2 VN); Prem 3-Yr SnS
RHEL-SAPHHAS2S-1S	RHEL for SAP Hana,HA,SmartM (1-2 CPU & VN); Std 1Yr SnS Reqd
RHEL-SAPHHAS2S-3S	RHEL for SAP Hana,HA,SmartM (1-2 CPU & VN); Std 3Yr SnS Reqd
RHEL-SAPHHAP2S-1S	RHEL for SAP Hana,HA,SmartM (1-2 CPU &VN); Prem 1Yr SnS Reqd
RHEL-SAPHHAP2S-3S	RHEL for SAP Hana,HA,SmartM (1-2 CPU &VN); Prem 3Yr SnS Reqd
VMware	
VMW-VSP-STD-1A	VMware vSphere 6 Standard (1 CPU), 1-yr, Support Required
VMW-VSP-STD-3A	VMware vSphere 6 Standard (1 CPU), 3-yr, Support Required
VMW-VSP-STD-5A	VMware vSphere 6 Standard (1 CPU), 5-yr, Support Required
VMW-VSP-EPL-3A	VMware vSphere 6 Ent Plus (1 CPU), 3-yr, Support Required
VMW-VSP-EPL-1A	VMware vSphere 6 Ent Plus (1 CPU), 1-yr, Support Required
VMW-VSP-EPL-5A	VMware vSphere 6 Ent Plus (1 CPU), 5-yr, Support Required
SUSE	
SLES-2S2V-1A	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 1-Yr Support Req
SLES-2SUV-1A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 1-Yr Support Req
SLES-2S2V-3A	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 3-Yr Support Req
SLES-2SUV-3A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 3-Yr Support Req
SLES-2S2V-5A	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 5-Yr Support Req
SLES-2SUV-5A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 5-Yr Support Req
SLES-2S2V-1S	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); Prio 1-Yr SnS
SLES-2SUV-1S	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 1-Yr SnS

Table 31 *(continued)* **Operating System**

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

STEP 21 SELECT OPERATING SYSTEM MEDIA KIT

Select the optional operating system media listed in *Table 32*.

Table 32 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 33*.

Table 33 Cisco SNTC for UCS Service (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-PREM-C220M5SX	C2P	Yes	SNTC 24X7X2OS
CON-UCSD8-C220M5SX	UCSD8	Yes	UC SUPP DR 24X7X2OS*
CON-C2PL-C220M5SX	C2PL	Yes	LL 24X7X2OS**
CON-OSP-C220M5SX	C4P	Yes	SNTC 24X7X4OS
CON-UCSD7-C220M5SX	UCSD7	Yes	UCS DR 24X7X4OS*
CON-C4PL-C220M5SX	C4PL	Yes	LL 24X7X4OS**
CON-USD7L-C220M5SX	USD7L	Yes	LLUCS HW DR 24X7X4OS***
CON-OSE-C220M5SX	C4S	Yes	SNTC 8X5X4OS
CON-UCSD6-C220M5SX	UCSD6	Yes	UC SUPP DR 8X5X4OS*
CON-SNCO-C220M5SX	SNCO	Yes	SNTC 8x7xNCDOS****
CON-OS-C220M5SX	CS	Yes	SNTC 8X5XNBDOS

Table 33 Cisco SNTC for UCS Service (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-UCSD5-C220M5SX	UCSD5	Yes	UCS DR 8X5XNBDOS*
CON-S2P-C220M5SX	S2P	No	SNTC 24X7X2
CON-S2PL-C220M5SX	S2PL	No	LL 24X7X2**
CON-SNTP-C220M5SX	SNTP	No	SNTC 24X7X4
CON-SNTPL-C220M5SX	SNTPL	No	LL 24X7X4**
CON-SNTE-C220M5SX	SNTE	No	SNTC 8X5X4
CON-SNC-C220M5SX	SNC	No	SNTC 8x7xNCD****
CON-SNT-C220M5SX	SNT	No	SNTC 8X5XNBD
CON-SW-C220M5SX	SW	No	SNTC NO RMA

Note: For PID UCSC-C220-M5SN, select a Service SKU with a C220M5SN suffix (Example: CON-PREM-C220M5SN)

*Includes Drive Retention (see *UCS Drive Retention Service, page 68*)

**Includes Local Language Support (see *Local Language Technical Support for UCS, page 69*) - 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 34*

Table 34 SNTC for Cisco UCS Onsite Troubleshooting Service (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-OSPT-C220M5SX	OSPT	Yes	24X7X4OS Trblshtg
CON-OSPTD-C220M5S	OSPTD	Yes	24X7X4OS TrblshtgDR*
CON-OSPTL-C220M5SX	OSPTL	Yes	24X7X4OS TrblshtgLL**
CON-OPTLD-C220M5S	OPTLD	Yes	24X7X4OS TrblshtgLLD***

*Includes Drive Retention (see *UCS Drive Retention Service, page 68*)

**Includes Local Language Support (see *Local Language Technical Support for UCS, page 69*) - 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 multi-vendor 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 multi-vendor 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 35*.

Table 35 Solution Support for UCS Service (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-SSC2P-C220M5SX	SSC2P	Yes	SOLN SUPP 24X7X2OS
CON-SSC4P-C220M5SX	SSC4P	Yes	SOLN SUPP 24X7X4OS
CON-SSC4S-C220M5SX	SSC4S	Yes	SOLN SUPP 8X5X4OS
CON-SSCS-C220M5SX	SSCS	Yes	SOLN SUPP 8X5XNBDOS
CON-SSDR7-C220M5SX	SSDR7	Yes	SSPT DR 24X7X4OS*
CON-SSDR5-C220M5SX	SSDR5	Yes	SSPT DR 8X5XNBDOS*
CON-SSS2P-C220M5SX	SSS2P	No	SOLN SUPP 24X7X2
CON-SSSNP-C220M5SX	SSSNP	No	SOLN SUPP 24X7X4
CON-SSSNE-C220M5SX	SSSNE	No	SOLN SUPP 8X5X4
CON-SSSNC-C220M5SX	SSSNC	No	SOLN SUPP NCD**
CON-SSSNT-C220M5SX	SSSNT	No	SOLN SUPP 8X5XNBD

*Includes Drive Retention (see *UCS Drive Retention Service, page 68*)

**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 36*

Table 36 SNTC for UCS Hardware Only Service (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-UCW7-C220M5SX	UCW7	Yes	UCS HW 24X7X4OS
CON-UCWD7-C220M5SX	UCWD7	Yes	UCS HW+DR 24X7X4OS*
CON-UCW7L-C220M5SX	UCW7L	Yes	LL UCS 24X7X4OS**
CON-UWD7L-C220M5SX	UWD7L	Yes	LL UCS DR 24X7X4OS***
CON-UCW5-C220M5SX	UCW5	Yes	UCS HW 8X5XNBDOS
CON-UCWD5-C220M5SX	UCWD5	Yes	UCS HW+DR 8X5XNBDOS*

Note: For PID UCSC-C220-M5SN, select Service SKU with C220M5SN suffix (Example: CON-UCW7-C220M5SN)

*Includes Drive Retention (see *UCS Drive Retention Service, page 68*)

**Includes Local Language Support (see *Local Language Technical Support for UCS, page 69*) – 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 37*.

Table 37 PSS for UCS (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-PSJ8-C220M5SX	PSJ8	Yes	UCS PSS 24X7X2 OS
CON-PSJ7-C220M5SX	PSJ7	Yes	UCS PSS 24X7X4 OS
CON-PSJD7-C220M5SX	PSJD7	Yes	UCS PSS 24X7X4 DR*
CON-PSJ6-C220M5SX	PSJ6	Yes	UCS PSS 8X5X4 OS
CON-PSJD6-C220M5SX	PSJD6	Yes	UCS PSS 8X5X4 DR*
CON-PSJ4-C220M5SX	PSJ4	No	UCS SUPP PSS 24X7X2
CON-PSJ3-C220M5SX	PSJ3	No	UCS SUPP PSS 24X7X4
CON-PSJ2-C220M5SX	PSJ2	No	UCS SUPP PSS 8X5X4
CON-PSJ1-C220M5SX	PSJ1	No	UCS SUPP PSS 8X5XNBD

Note: For PID UCSC-C220-M5SN, select Service SKU with C220M5SN suffix (Example: CON-PSJ1-C220M5SN)

*Includes Drive Retention (see *UCS Drive Retention Service, page 68*)

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. You can choose a desired service listed in *Table 38*

Table 38 PSS for UCS Hardware Only (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-PSW7-C220M5SX	PSW7	Yes	UCS W PSS 24X7X4 OS
CON-PSWD7-C220M5SX	PSWD7	Yes	UCS W PSS 24X7X4 DR*
CON-PSW6-C220M5SX	PSW6	Yes	UCS W PSS 8X5X4 OS
CON-PSWD6-C220M5SX	PSWD6	Yes	UCS W PSS 8X5X4 DR*
CON-PSW4-C220M5SX	PSW4	No	UCS W PL PSS 24X7X2
CON-PSW3-C220M5SX	PSW3	No	UCS W PL PSS 24X7X4
CON-PSW2-C220M5SX	PSW2	No	UCS W PL PSS 8X5X4

Note: For PID UCSC-C220-M5SN, select Service SKU with C220M5SN suffix (Example: CON-PSW2-C220M5SN)

*Includes Drive Retention (see *UCS Drive Retention Service, page 68*)

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 39*

Table 39 Combined Support Service for UCS (PID UCSC-C220-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-NCF2P-C220M5SX	NCF2P	Yes	CMB SVC 24X7X2OS
CON-NCF4P-C220M5SX	NCF4P	Yes	CMB SVC 24X7X4OS
CON-NCF4S-C220M5SX	NCF4S	Yes	CMB SVC 8X5X4OS
CON-NCFCS-C220M5SX	NCFCS	Yes	CMB SVC 8X5XNBDOS
CON-NCF2-C220M5SX	NCF2	No	CMB SVC 24X7X2
CON-NCFP-C220M5SX	NCFP	No	CMB SVC 24X7X4
CON-NCFE-C220M5SX	NCFE	No	CMB SVC 8X5X4
CON-NCFT-C220M5SX	NCFT	No	CMB SVC 8X5XNBD
CON-NCFW-C220M5SX	NCFW	No	CMB SVC SW
Note: For PID UCSC-C220-M5SN, select Service SKU with C220M5SN suffix (Example: CON-NCF2P-C220M5SN)			

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:

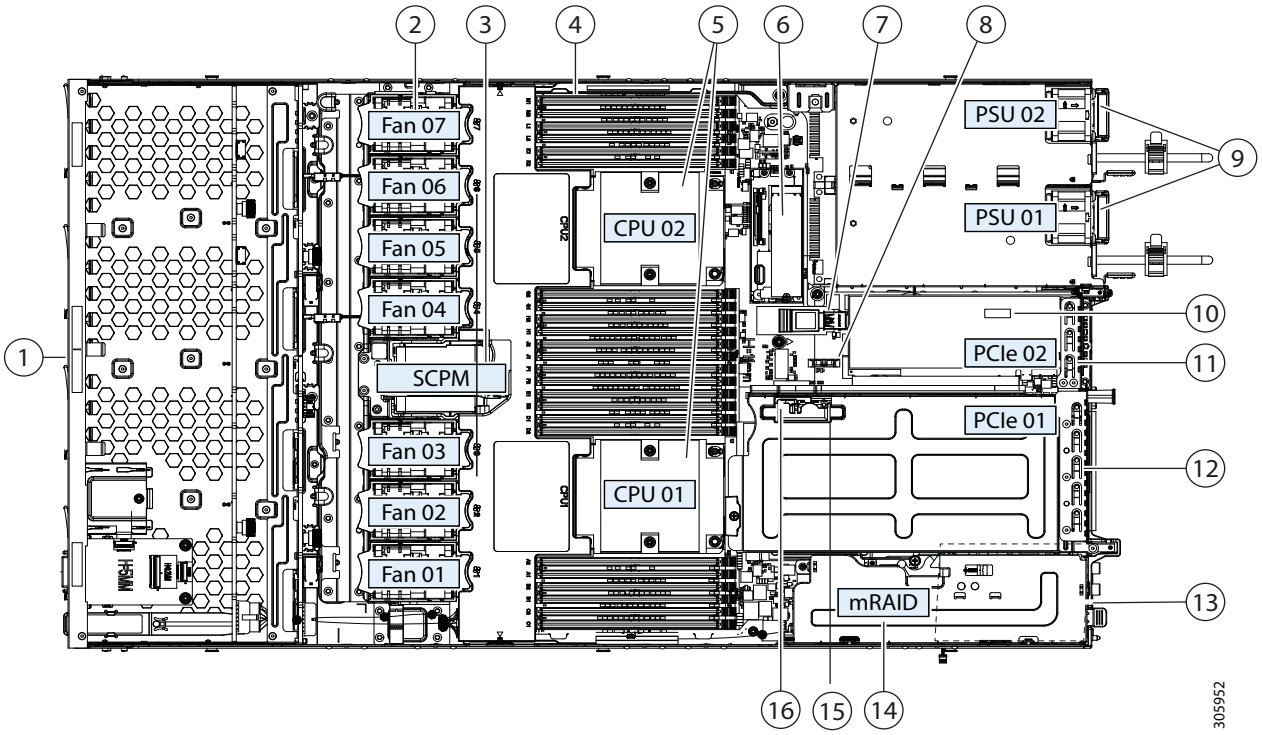
http://www.cisco.com/en/US/products/ps10312/serv_group_home.html

SUPPLEMENTAL MATERIAL

Chassis

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

Figure 5 C220 M5 SFF With Top Cover Off

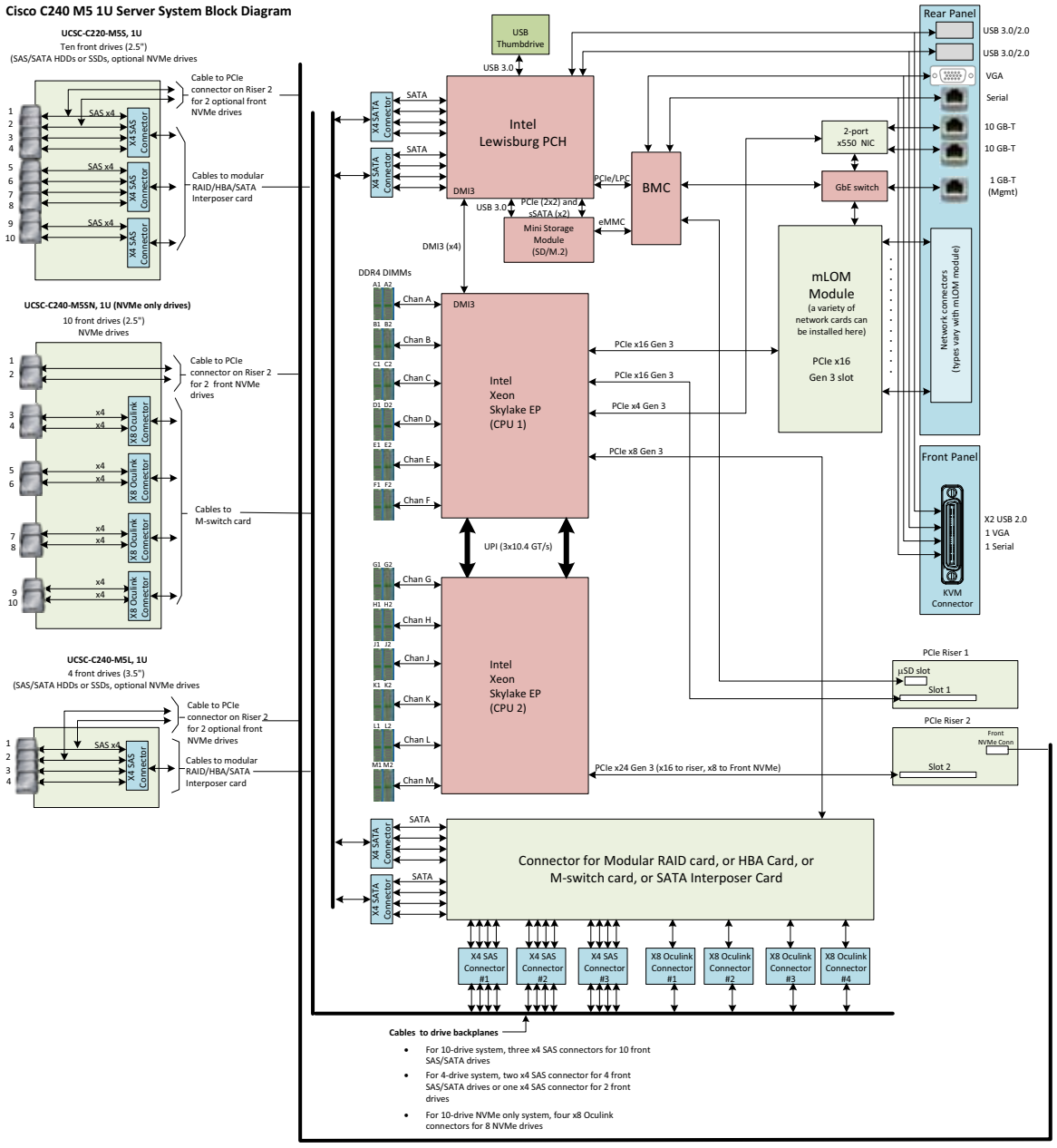


1	For UCSC-C220-M5SX: Drive bays 1–10 support SAS/SATA drives and drive bays 1 and 2 also support SFF NVMe PCIe SSDs. Two CPUs are required if NVMe SSDs are implemented. For UCSC-C220-M5SN: Drive bays 1–10 support SFF NVMe PCIe SSDs (only). Two CPUs are required.	9	Power supplies (Hot-swappable when 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 (12 per CPU; 24 total)	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 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, which supports any of the following: ■ Hardware RAID controller card ■ Interposer card for embedded SATA RAID ■ PCIe switch card for SFF NVMe drives in slots 3 through 10 (for UCSC-C220-M5SN only)
7	Internal USB 3.0 port on motherboard	15	PCIe cable connectors for front-panel NVMe SSDs on PCIe riser 2
8	RTC battery vertical socket on motherboard	16	Micro-SD card socket on PCIe riser 1

Block Diagram

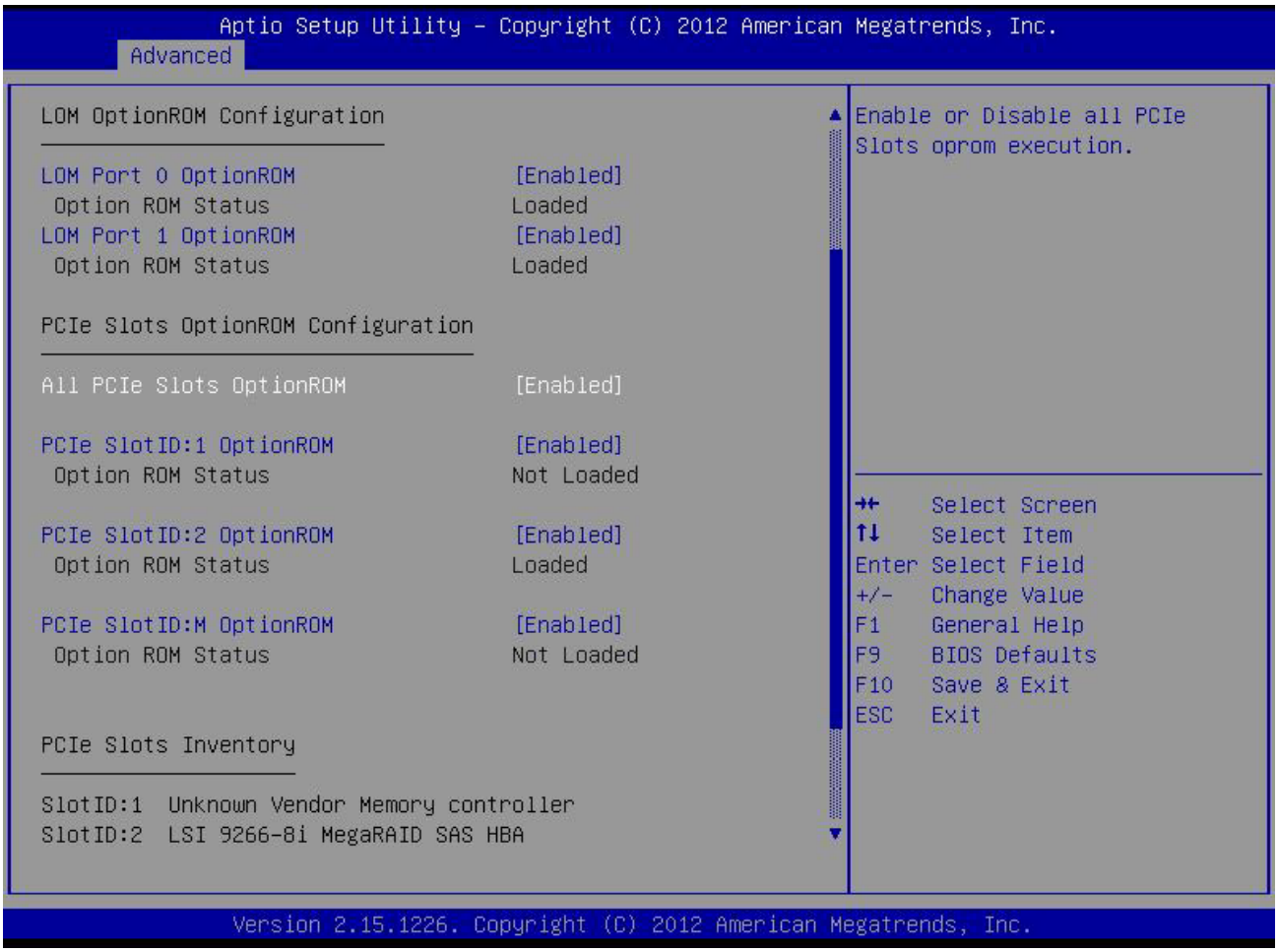
Figure 6 C220 M5 SFF Block Diagram



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



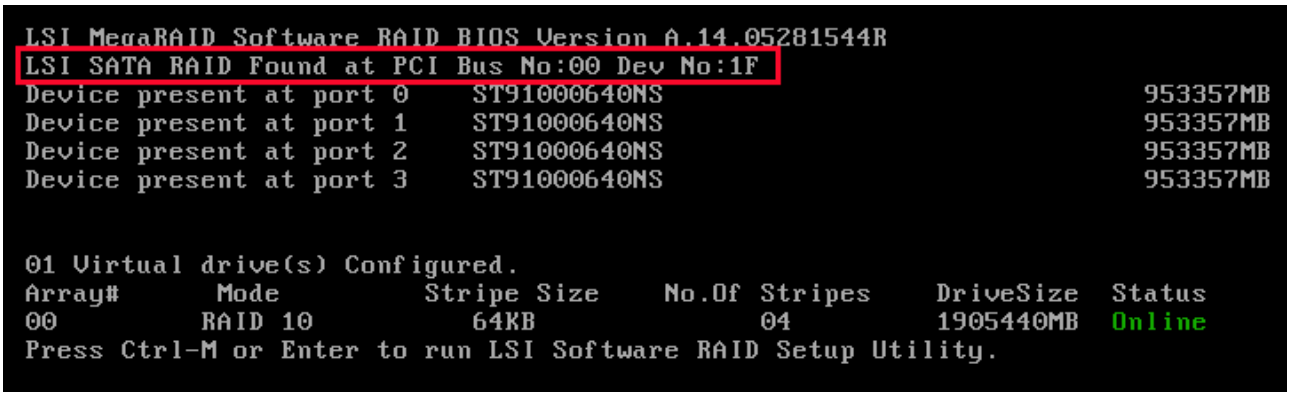
To Create a RAID Group

(1) While the server is booting, wait for the prompt and press function key F2 as shown in *Figure 8*.

Figure 8 Function Key F2 Prompt

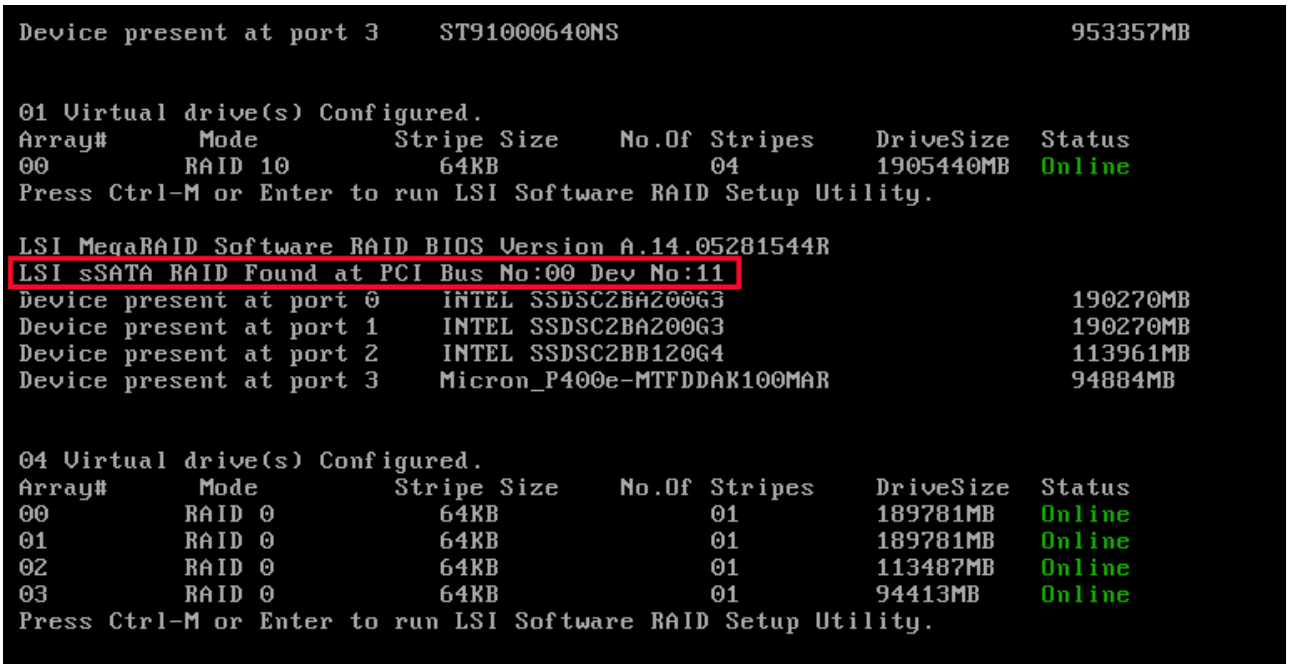
In a few seconds, you will see the screen that allows you to set up a RAID group for the primary SATA controller (see *Figure 9*).

Figure 9 Screen to Configure Primary SATA RAID Group



(2) Press Ctrl+M to start the RAID group creation process for the primary SATA controller (for drives 1-4, as shown in *Figure 9 on page 74*). Or, do nothing and wait for the next screen, which allows you to create a RAID group for the secondary SATA (sSATA) controller see *Figure 10*).

Figure 10 Screen to Configure Secondary SATA (sSATA) RAID Group

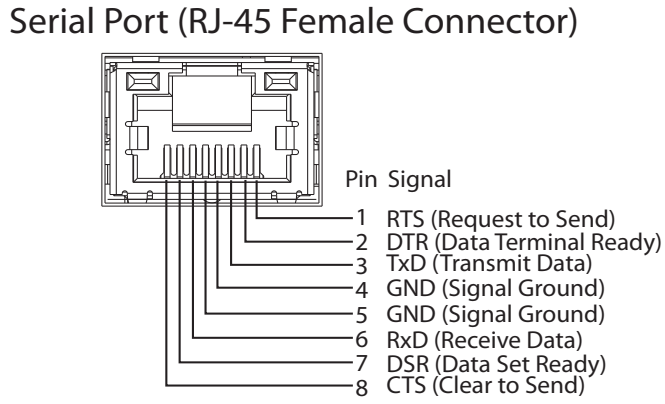


(3) Press Ctrl+M to start the RAID group creation process for the secondary SATA (sSATA) controller (for drives 5-8, as shown in *Figure 7 on page 73*).

Serial Port Details

The pinout details of the rear RJ-45 serial port connector are shown in *Figure 11*.

Figure 11 Serial Port (Female RJ-45 Connector) Pinout



KVM Cable

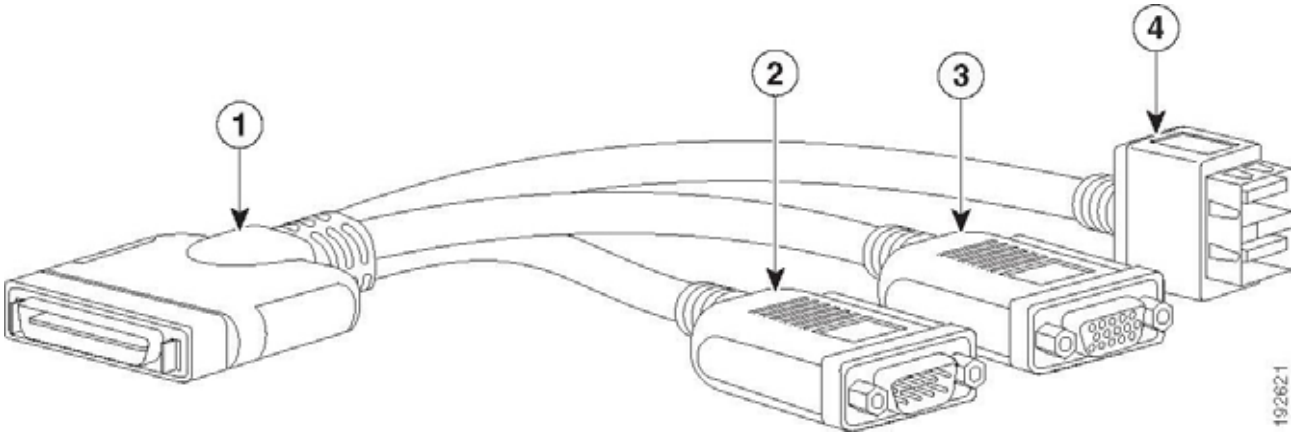
The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in *Table 40*.

Table 40 KVM Cable

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

Figure 12 KVM Cable



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

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 41 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-MR-128G8RS-H=	128 GB DDR4-2666-MHz TSV-RDIMM/8R/x4
UCS-MR-X64G4RS-H=	64 GB DDR4-2666-MHz TSV-RDIMM/4R/x4
UCS-ML-X64G4RS-H=	64 GB DDR4-2666-MHz LRDIMM/4R/x4
UCS-MR-X32G2RS-H=	32 GB DDR4-2666-MHz RDIMM/2R/x4
UCS-ML-X32G2RS-H=	32 GB DDR4-2666-MHz LDIMM/2R/x4
UCS-MR-X16G1RS-H=	16 GB DDR4-2666-MHz RDIMM/1R/x4
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
DRIVES	
HDDs	

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
HDDs (15K RPM)	
UCS-HD300G15K12N=	300 GB 12G SAS 15K RPM SFF HDD
UCS-HD600G15K12N=	600 GB 12G SAS 15K RPM SFF HDD
UCS-HD900G15K12N=	900 GB 12G SAS 15K RPM SFF HDD
HDDs (10K RPM)	
UCS-HD300G10K12N=	300 GB 12G SAS 10K RPM SFF HDD
UCS-HD600G10K12N=	600 GB 12G SAS 10K RPM SFF HDD
UCS-HD12TB10K12N=	1.2 TB 12G SAS 10K RPM SFF HDD
UCS-HD18TB10K4KN=	1.8 TB 12G SAS 10K RPM SFF HDD (4K)
UCS-HD24TB10K4KN=	2.4 TB 12G SAS 10K RPM SFF HDD (4K)
HDDs (7.2K RPM)	
UCS-HD1T7K12N=	1 TB 12G SAS 7.2K RPM SFF HDD
UCS-HD2T7K12N=	2 TB 12G SAS 7.2K RPM SFF HDD
UCS-HD1T7K6GAN=	1 TB 6G SATA 7.2K RPM SFF HDD
SAS/SATA SSDs	
Enterprise Performance SSDs(High endurance, supports up to 10X or 3X DWPD (drive writes per day))	
SAS SSDs	
UCS-SD400G123X-EP=	400 GB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)
UCS-SD800G123X-EP=	800 GB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)
UCS-SD16T123X-EP=	1.6 TB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)
UCS-SD32T123X-EP=	3.2 TB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)
UCS-SD16H123X-EP=	1.6TB 2.5in Enterprise performance 12G SAS SSD(3X endurance)
UCS-SD800H123X-EP=	800GB 2.5in Enterprise performance 12G SAS SSD(3X endurance)
SATA SSDs	
UCS-SD480G63X-EP=	480GB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600/S4610)
UCS-SD960G63X-EP=	960GB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600/S4610)
UCS-SD19T63X-EP=	1.9TB 2.5in Enterprise performance 6GSATA SSD(3X endurance) (Intel S4600/S4610)

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
UCS-SD19TM3X-EP=	1.9TB 2.5in Enterprise performance 6G SATA SSD(3X endurance)
UCS-SD480GM3X-EP=	480GB 2.5in Enterprise Performance 6G SATA SSD(3X endurance)
UCS-SD960GM3X-EP=	960GB 2.5in Enterprise performance 6G SATA SSD(3X endurance)
Enterprise Value SSDs (Low endurance, supports up to 1X DWPD (drive writes per day))	
SAS SSDs	
UCS-SD480G121X-EV=	480 GB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)
UCS-SD960G121X-EV=	960 GB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)
UCS-SD19TB121X-EV=	1.9 TB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)
UCS-SD38TB121X-EV=	3.8 TB 2.5 inch Enterprise Value 12G SAS SSD (Toshiba PM4)
UCS-SD960GH61X-EV=	960 GB 2.5 inch Enterprise Value 12G SAS SSD
UCS-SD38TH61X-EV=	3.8 TB 2.5 inch Enterprise Value 12G SAS SSD
SATA SSDs	
UCS-SD120GM1X-EV=	120 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100 /5200)
UCS-SD240GM1X-EV=	240 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)
UCS-SD480GM1X-EV=	480 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)
UCS-SD960G61X-EV=	960 GB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863A/PM883)
UCS-SD960GM1X-EV=	960 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)
UCS-SD16TM1X-EV=	1.6 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)
UCS-SD19T61X-EV=	1.9 TB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863A/PM883)
UCS-SD19TM1X-EV=	1.9 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)
UCS-SD38T61X-EV=	3.8 TB 2.5 inch Enterprise Value 6G SATA SSD (Samsung PM863A/PM883)
UCS-SD38TM1X-EV=	3.8 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)
UCS-SD76TM1X-EV=	7.6 TB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)
UCS-SD480G6I1X-EV=	480GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)
UCS-SD960G6I1X-EV=	960GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)
UCS-SD38T6I1X-EV=	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500)
UCSC-SATAIN-220M5=	C220 M5 (8-drive) SATA Interposer board

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
Self-Encrypted Drives (SED)	
HDDs	
UCS-HD600G15NK9=	600 GB 12G SAS 15K RPM SFF HDD (SED) **FIPS140-2**
UCS-HD12T10NK9=	1.2 TB 12G SAS 10K RPM SFF HDD (SED) **FIPS140-2**
UCS-HD18T10NK9=	1.8TB 12G SAS 10K RPM SFF HDD (4K format, SED) **FIPS140-2**
UCS-HD24T10NK9=	2.4 TB 12G SAS 10K RPM SFF HDD (4K) SED **FIPS140-2**
SSDs	
UCS-SD400GBHNK9=	400GB Enterprise performance SAS SSD (10X FWPD, SED) **FIPS140-2**
UCS-SD800GBHNK9=	800GB Enterprise performance SAS SSD (10X FWPD, SED) **FIPS140-2**
SATA SSDs	
UCS-SD38TBE1NK9=	3.8TB Enterprise Value SSD (SATA) (1X FWPD, SED) **Non FIPS**
PCIe/NVMe SFF (2.5-inch) drives	
UCSC-NVMEHW-H800=	800 GB HGST SN200 NVMe High Perf. High Endurance (HGST)
UCSC-NVMEHW-H1600=	1.6 TB HGST SN200 NVMe High Perf. High Endurance (HGST)
UCSC-NVMEHW-H3200=	3.2 TB HGST SN200 NVMe High Perf. High Endurance (HGST)
UCSC-NVMEHW-H6400=	6.4TB HGST SN200 NVMe High Perf. High Endurance (HGST)
UCSC-NVMEHW-H7680=	7.7 TB HGST SN200 NVMe High Perf. Value Endurance (HGST)
UCSC-NVMEHW-I8000=	Cisco 2.5" U.2 8TB Intel P4510 NVMe High Perf. Value Endurance
UCSC-NVMEXPB-I375=	Cisco 375GB 2.5in Intel Optane NVMe Extreme Performance SSD
UCSC-NVMEXP-I750=	Cisco 750GB 2.5in Intel Optane NVMe Extreme Perf
UCSC-NVME2H-I1000=	Cisco 2.5" U.2 1.0 TB Intel P4510 NVMe High Perf. Value Endurance
UCSC-NVME2H-I1600=	Cisco 2.5" U.2 1.6TB Intel P4610 NVMe High Perf. High Endurance
UCSC-NVME2H-I3200=	Cisco 2.5" U.2 3.2 TB Intel P4610 NVMe High Perf. High Endurance
UCSC-NVME2H-I4000=	Cisco 2.5" U.2 4.0 TB Intel P4510 NVMe High Perf. Value Endurance
RAID Controllers	
UCSC-9400-8E=	Cisco 9400-8E 12G SAS HBA for external JBOD attach
CBL-SC-MR12GM52=	Super Cap cable for UCSC-RAID-M5 on C240 M5 Servers
UCSC-SCAP-M5=	Super Cap for UCSC-RAID-M5, UCSC-MRAID1GB-KIT
Modular LAN on Motherboard (mLOM)	

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
UCSC-MLOM-C100-04=	Cisco UCS VIC 1497 Dual Port 100G QSFP28 CNA mLOM
UCSC-MLOM-C25Q-04=	Cisco UCS VIC 1457 Quad Port 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 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
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

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
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-F-H16003=	Cisco HHHL AIC 1.6TB HGST SN250 NVMe Extreme Performance High Endurance
UCSC-NVME-H32003=	Cisco HHHL AIC 3.2TB HGST SN260 NVMe Extreme Performance High Endurance
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 NVMe Extreme Performance Value Endurance
CBL-NVME-C220FF	C220 M5L/M5S PCIe SSD cable (1) for SFF & LFF chassis
SD Cards	
UCS-SD-32G-S=	32 GB SD Card for UCS servers
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

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
UCSC-BBLKD-S2=	C-Series M5 SFF drive blanking panel
UCSC-PSU-M5BLK=	Power Supply Blanking Panel for M5 servers
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
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	

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
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
EVAL-CIMC-SUP-BAS=	EVAL: IMC Supervisor One-time Site Installation License
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=
VMware vCenter	
VMW-VCS-STD-1A=	VMware vCenter 6 Server Standard, 1 yr support required
VMW-VCS-STD-3A=	VMware vCenter 6 Server Standard, 3 yr support required
VMW-VCS-STD-5A=	VMware vCenter 6 Server Standard, 5 yr support required
VMW-VCS-FND-1A=	VMware vCenter 6 Server Foundation (3 Host), 1 yr supp reqd

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
VMW-VCS-FND-3A=	VMware vCenter 6 Server Foundation (3 Host), 3 yr supp reqd
VMW-VCS-FND-5A=	VMware vCenter 6 Server Foundation (3 Host), 5 yr supp reqd
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-2S-SFS-1S=	RHEL Scalable File System (1-2 CPU); Premium 1-yr SnS
RHEL-2S-SFS-3S=	RHEL Scalable File System (1-
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
RHEL-2S-SFS-1A=	RHEL Scalable File System (1-2 CPU); 1-Yr Support Reqd
RHEL-2S-SFS-3A=	RHEL Scalable File System (1-2 CPU); 1-Yr Support Reqd
RHEL-2S-SFS-5A=	RHEL Scalable File System (1-2 CPU); 1-Yr Support Reqd
Red Hat SAP	
RHEL-SAP-2S2V-1S=	RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 1-Yr SnS
RHEL-SAP-2S2V-3S=	RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 3-Yr SnS
RHEL-SAPH-2S2V-1S=	RHEL for SAP Hana (1-2 CPU, 1-2 VN); Prem 1-Yr SnS
RHEL-SAPH-2S2V-3S=	RHEL for SAP Hana (1-2 CPU, 1-2 VN); Prem 3-Yr SnS
RHEL-SAPHHAP2S-1S=	RHEL for SAP Hana,HA,SmartM (1-2 CPU &VN); Prem 1Yr SnS Reqd

Table 41 Spare Parts *(continued)*

Product ID (PID)	PID Description
RHEL-SAPHHAP2S-3S=	RHEL for SAP Hana,HA,SmartM (1-2 CPU &VN); Prem 3Yr SnS Reqd
VMware	
VMW-VSP-STD-1S=	VMware vSphere 6 Standard (1 CPU), 1-yr Vmware SnS Reqd
VMW-VSP-STD-3S=	VMware vSphere 6 Standard (1 CPU), 3-yr Vmware SnS Reqd
VMW-VSP-EPL-1S=	VMware vSphere 6 Ent Plus (1 CPU), 1-yr Vmware SnS Reqd
VMW-VSP-EPL-3S=	VMware vSphere 6 Ent Plus (1 CPU), 3-yr Vmware SnS Reqd
VMW-VSP-STD-1A=	VMware vSphere 6 Standard (1 CPU), 1-yr, Support Required
VMW-VSP-STD-3A=	VMware vSphere 6 Standard (1 CPU), 3-yr, Support Required
VMW-VSP-STD-5A=	VMware vSphere 6 Standard (1 CPU), 5-yr, Support Required
VMW-VSP-EPL-3A=	VMware vSphere 6 Ent Plus (1 CPU), 3-yr, Support Required
VMW-VSP-EPL-1A=	VMware vSphere 6 Ent Plus (1 CPU), 1-yr, Support Required
VMW-VSP-EPL-5A=	VMware vSphere 6 Ent Plus (1 CPU), 5-yr, Support Required
SLES and SAP	
SLES-SAP-2S2V-1A=	SLES for SAP Apps (1-2 CPU, 1-2 VM); 1-Yr Support Reqd
SLES-SAP-2SUV-1A=	SLES for SAP Apps (1-2 CPU, Unl VM); 1-Yr Support Reqd
SLES-SAP-2S2V-3A=	SLES for SAP Apps (1-2 CPU, 1-2 VM); 3-Yr Support Reqd
SLES-SAP-2SUV-3A=	SLES for SAP Apps (1-2 CPU, Unl 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-2SUV-5A=	SLES for SAP Apps (1-2 CPU, Unl 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-2SUV-1S=	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 1-Yr SnS
SLES-SAP-2S2V-3S=	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 3-Yr SnS
SLES-SAP-2SUV-3S=	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 3-Yr SnS
SLES-SAP-2S2V-5S=	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 5-Yr SnS
SLES-SAP-2SUV-5S=	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 5-Yr SnS
SUSE	
SLES-2S2V-1A=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 1-Yr Support Req
SLES-2SUV-1A=	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 1-Yr Support Req
SLES-2S2V-3A=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM); 3-Yr Support Req

Table 41 Spare Parts *(continued)*

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

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

Memory Support for CPU Classes and CPU Modes

For 2nd Generation Intel® Xeon® Scalable Processors:

- DIMMs and PMEMs 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 PMEMs 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 PMEMs or 4 x 256 GB PMEMs) or up to 2048 GB per CPU (using 6 x 256 GB DIMMs and 2 x 256 GB PMEMs or 6 x 256 GB DIMMs and 4 x 128 GB PMEMs)
- CPU PIDs ending in “L” support capacities up to 3840 GB per CPU (using 6 x 128 GB DIMMs and 6 x 512 GB PMEMs) or up to 4608 GB per CPU (using 6 x 256 GB DIMMs and 6 x 512 GB PMEMs)
- 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 PMEMs).

For Configurations Using DIMMs and PMEMs in Memory or Mixed Mode

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

- 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 PMEMs as memory, or
  - 6x 256 GB DIMMs as cache and 4 x 512 GB PMEMs 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 PMEMs as memory, or

- 6 x 256 GB DIMMs as cache and 6 x 512 GB PMEMs 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 PMEMs as memory, or
  - 6 x 256 GB DIMMs as cache and 2 x 512 GB PMEMs as memory

For Intel® Xeon® Scalable Processors:

- DIMMs are supported; PMEMs 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 SFF server out from the rack.
- Remove the top cover.

To replace an existing CPU, 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 13*

(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 new CPU, 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 13*

(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:

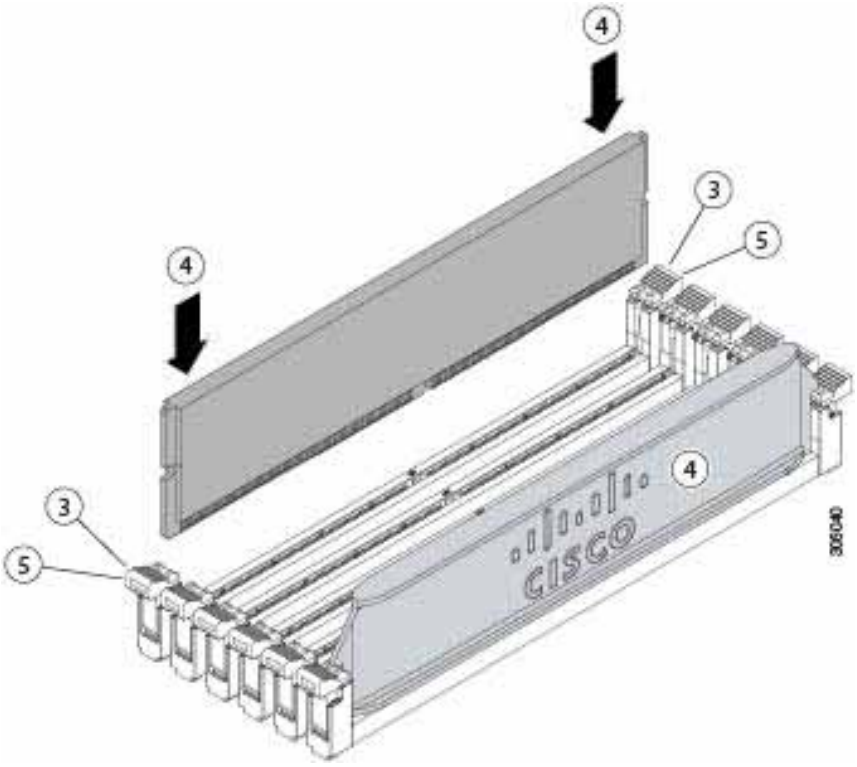
- Decommission and power off the server.
- Remove the top cover from the server
- Slide the server out the front of the chassis.

To add or replace DIMMs or PMEMs, follow these steps:

(1) Order new DIMMs or PMEMs as needed from *Table 4 on page 21***.**

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

Figure 13 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 PMEMs, 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 42* below to determine if still supported.

Table 42 EOL Products

EOS option PID	Description	EOL bulletin link
DRIVES		
HDDs		
UCS-HD300G10NK9	300GB 12G SAS 10K RPM SFF HDD (SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740779.html
Enterprise Value SSDs		
UCS-SD16T61X-EV	1.6TB 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-c51-741895.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-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-SD240GBE1NK9	240GB Enterprise Value SSD (SATA) (1X FWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html
UCS-SD150G61X-EV	150 GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S3520)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html
UCS-SD32H123X-EP	3.2TB 2.5in Enterprise performance 12G SAS SSD(3X endurance)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
Self-Encrypted Drives (SED)		
UCS-SD800GBENK9	800 GB Enterprise performance SAS SSD (10X FWPD, SED) (Micron S650DC) **FIPS140-2**	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740779.html
UCS-SD480GBHTNK9	480GB Enterprise Value SAS SSD (1X FWPD, SED) **FIPS140-2**	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html

Table 42 EOL Products

EOS option PID	Description	EOL bulletin link
UCS-SD38TBHTNK9	3.8TB Enterprise value SAS SSD (1X FWPD, SED) **FIPS140-2**	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html
UCS-SD16TBHNK9	1.6 TB Enterprise performance SAS SSD (10X FWPD, SED) FIPS140-2	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD960GBHTNK9	960GB Enterprise value SAS SSD (1X FWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.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-NVMEXP-I375	375GB 2.5in Intel Optane NVMe Extreme Perf.	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html
UCSC-NVMELW-I1000	Cisco 2.5" U.2 1TB Intel P4501 NVMe Med. Perf. Value Endur (Intel)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html
UCSC-NVMEHW-I1000	Cisco 2.5" U.2 1.0 TB Intel P4500 NVMe High Perf. Value Endur (Intel)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html
UCSC-NVMEHW-I1600	Cisco 2.5" U.2 1.6TB Intel P4600 NVMe High Perf. High Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html
UCSC-NVMELW-I2000	Cisco 2.5" U.2 2TB Intel P4501 NVMe Perf. Value Endur (Intel)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html
UCSC-NVMEHW-I2000	Cisco 2.5" U.2 2.0 TB Intel P4600 NVMe High Perf. High Endur (Intel)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html
UCSC-NVMEHW-I4000	Cisco 2.5" U.2 4.0 TB Intel P4500 NVMe High Perf. Value Endur (Intel)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html
UCSC-NVMEHW-I2TBV	2TB 2.5in U.2 Intel P4500 NVMe High Perf. Value Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html

Table 42 EOL Products

EOS option PID	Description	EOL bulletin link
UCSC-NVMEHW-I3200	3.2TB 2.5in U.2 Intel P4600 NVMe High Perf. High Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html
Enterprise Performance SSDs		
UCS-SD400GBENK9	400GB Enterprise performance SAS SSD (10X FWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740779.html
UCS-SD600GBE3NK9	600GB Enterprise performance SATA SSD (3X FWPD, SED) **Non FIPS**	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html
UCS-SD400G12TX-EP	400 GB 2.5 inch Enterprise performance 12G SAS SSD (10X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/eos-eol-notice-c51-742066.html
UCS-SD400H123X-EP	400GB 2.5in Enterprise performance 12G SAS 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-SD480GH61X-EV	480 GB 2.5 inch Enterprise Value 12G SAS SSD	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-server s/eos-eol-notice-c51-743832.html
UCS-SD19TH61X-EV	1.9 TB 2.5 inch Enterprise Value 12G SAS SSD	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD480G2HNK9	480GB Enterprise value SAS SSD (1X FWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-server s/eos-eol-notice-c51-743832.html
UCS-SD16TBENK9	1.6TB Enterprise performance SAS SSD (10XFWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740779.html
UCS-SD800G12TX-EP	800 GB 2.5 inch Enterprise performance 12G SAS SSD (10X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740779.html
UCS-SD16TB12TX-EP	1.6TB 2.5 inch Enterprise performance 12G SAS SSD(10X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.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

Table 42 EOL Products

EOS option PID	Description	EOL bulletin link
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
MEMORY		
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
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
PCIe OPTION CARD		
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

Table 42 EOL Products

EOS option PID	Description	EOL bulletin link
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
SPARES		
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-c51-742012.html
GPU		
UCSC-GPU-P100-12G	NVIDIA P100 12GB	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741579.html
UCSC-GPU-P100-16G	NVIDIA P100 16GB	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741579.html

NEBS Compliance

When configured with choices from the specific set of components shown in *Table 43*, 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 43 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
	3.8TB 2.5 inch Enterprise Value 12G SAS SSD	UCS-SD38TB121X-EV
	1.9TB 2.5 inch Enterprise Value 12G SAS SSD	UCS-SD19TB121X-EV
	960GB 2.5 inch Enterprise Value 12G SAS SSD	UCS-SD960G121X-EV
	480 GB 2.5 inch Enterprise Value 12G SAS SSD	UCS-SD480G121X-EV
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 44 UCS C220 M5 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 (10 HDDs, 2 CPUs, 24 DIMMs, two power supplies)	60.0 lbs (27.2 kg)
Minimum (1 HDD, 1 CPU, 1 DIMM, one power supply)	29.0 lbs (13.2 kg)
Bare (0 HDD, 0 CPU, 0 DIMM, one power supply)	26.7 lbs (12.1 kg)

Power Specifications

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

- 770 W (AC) power supply (see *Table 45*).
- 1050 W (AC) power supply (see *Table 46*).
- 1050 W V2 (DC) power supply (see *Table 47*)
- 1600 W (AC) power supply (see *Table 48*)

Table 45 UCS C220 M5 SFF Power Specifications (770 W AC power supply)

Parameter	Specification			
Input Connector	IEC320 C14			
Input Voltage Range (Vrms)	100 to 240			
Maximum Allowable Input Voltage Range (Vrms)	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 (Vrms)	100	120	208	230
Nominal Input Current (Arms)	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 46 UCS C220 M5 1050 W (AC) Power Supply Specifications

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

Table 46 UCS C220 M5 1050 W (AC) Power Supply Specifications

Maximum Rated Standby Output (W)			36	
Nominal Input Voltage (Vrms)	100	120	208	230
Nominal Input Current (Arms)	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 47 UCS C220 M5 1050 W (DC) Power Supply Specifications

Parameter	Specification
Input Connector	Molex 42820
Input Voltage Range (Vrms)	-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 (Vrms)	-48
Nominal Input Current (Arms)	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 48 UCS C220 M5 1600 W (AC) Power Supply Specifications

Parameter	Specification			
Input Connector	IEC320 C14			
Input Voltage Range (Vrms)	200 to 240			
Maximum Allowable Input Voltage Range (Vrms)	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 (Vrms)	100	120	208	230
Nominal Input Current (Arms)	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 49*.

Table 49 UCS C220 M5 SFF Environmental Specifications

Parameter	Minimum
Operating Temperature	10ºC to 35ºC (50ºF to 95ºF) with no direct sunlight Maximum allowable operating temperature derated 1ºC/300 m (1ºF/547 ft) above 950 m (3117 ft)
Extended Operating Temperature	5ºC to 40ºC (41ºF to 104ºF) with no direct sunlight Maximum allowable operating temperature derated 1ºC/175 m (1ºF/319 ft) above 950 m (3117 ft) 5ºC to 45ºC (41ºF to 113ºF) with no direct sunlight Maximum allowable operating temperature derated 1ºC/125 m (1ºF/228 ft) above 950 m (3117 ft) System performance may be impacted when operating in the extended operating temperature range. Operation above 40C is limited to less than 1% of annual operating hours. Hardware configuration limits apply to extended operating temperature range.
Non-Operating Temperature	-40ºC to 65ºC (-40ºF to 149ºF) Maximum rate of change (operating and non-operating) 20ºC/hr (36ºF/hr)
Operating Relative Humidity	8% to 90% and 24ºC (75ºF) maximum dew-point temperature, non-condensing environment
Non-Operating Relative Humidity	5% to 95% and 33ºC (91ºF) maximum dew-point temperature, non-condensing environment
Operating Altitude	0 m to 3050 m {10,000 ft)
Non-Operating Relative Humidity	5% to 95% and 33oC (91oF) maximum dew-point temperature, non-condensing environment
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 50 Cisco UCS C220 M5 Extended Operating Temperature Hardware Configuration Limits

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

Compliance Requirements

The regulatory compliance requirements for C-Series servers are listed in *Table 51*.

Table 51 UCS C-Series Regulatory Compliance Requirements

Parameter	Description
Regulatory Compliance	Products should comply with CE Markings per directives 2014/30/EU and 2014/35/EU
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1 GB4943 2001
EMC - Emissions	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR32 Class A CISPR32 Class A EN55032 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN32 Class A CNS13438 Class A
EMC - Immunity	EN55024 CISPR24 EN300386 KN35