Cisco UCS B480 M5 Blade Server

CONTENTS

OVERVIEW

Designed for demanding virtualization and database workloads, the UCS B480 M5 combines a large memory footprint with four-socket scalability, leveraging the 2nd Generation Intel® Xeon® Scalable Processors. higher density 256G DDR4 DIMMs, new second-generation Intel® Xeon® Scalable processors, and the new Intel® Optane DC Persistent Memory. Additionally, these B480 M5 servers offer up to 12 terabytes (TB) of DDR4 memory or 18 TB using 24x256G DDR4 DIMMs and 24x512G Intel® Optane DC Persistent Memory; four SAS, SATA, and NVMe drives; M.2 storage; up to four GPUs and 160 Gigabit Ethernet connectivity for I/O throughput, all leading to exceptional performance, flexibility, and I/O throughput to run your most demanding applications. Up to four UCS B480 M5 Blade Servers can be installed in the UCS 5108 Blade Server Chassis.

The Cisco B480 M5 includes support for the following:

■ 2nd Generation Intel® Xeon® Scalable Processors.

■ DDR4-2933MHz memory DIMMs.

■ 128 GB, 256 GB, and 512 GB Intel® Optane™ Persistent Memory (PMem).

■ Up to 18 TB of memory is available if the memory slots are populated as follows:

— 24 x 256 GB DDR4 DIMMs

— 24 x 512 GB PMem

The UCS B480 M5 Blade Server is centrally managed using Cisco UCS Manager. Cisco UCSM provides a single management interface for all hardware and software components of a UCS domain. Cisco UCSM manages up to 160 servers, using **Single Connect Technology** to consolidate network, storage, and management traffic. With **Cisco UCS Central**, management can be extended globally to 'of servers in multiple domains.

Figure 1   Cisco UCS B480 M5 Blade Server

DETAILED VIEWS

Blade Server Front View

Figure 2 is a detailed front view of the Cisco UCS B480 M5 Blade Server.

Figure 2   Blade Server Front View
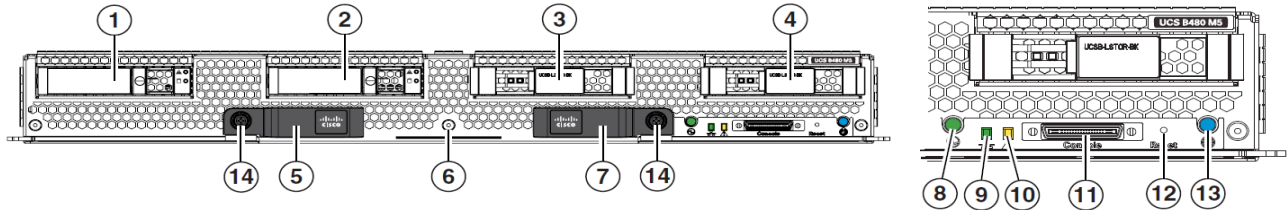
1	Drive bay 1 (populated)	8	Power button and LED
2	Drive bay 2 (populated)	9	Network link status and LED
3	Drive bay 3	10	Blade health LED
4	Drive bay 4	11	Local console connection[1]
5	Left ejector handle	12	Reset button
6	Asset pull handle (a blank asset tag is provided on which you can add your own label or sticker or you can use a marker to write your asset information on the tag)	13	Locate (identify) button and LED
7	Right ejector handle	14	Ejector thumb screw

Notes

1. For information about the KVM local I/O cable that plugs into the console connector (a cable is included with every Cisco UCS 5108 blade server chassis accessory kit), see *CHOOSE LOCAL KVM I/O CABLE (OPTIONAL) on page 51*.

BASE SERVER STANDARD CAPABILITIES and FEATURES

Table 1 lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in *CONFIGURING the SERVER on page 6*.

> **NOTE:** The B480 M5 blade server requires UCS Manager (UCSM) to operate as part of the UCS system.
>
> ■ The B480 M5 with the Intel® Xeon® Scalable processor family of CPUs requires UCSM 3.2(2) or later release, and with the 2nd Generation Intel Scalable Processors, UCSM 4.0(4b) is required.

Table 1   Capabilities and Features

Capability/Feature	Description
Blade server chassis	The full-width UCS B480 M5 Blade Server mounts in a Cisco UCS 5108 series blade server chassis.
CPU	Two or four 2nd Generation Intel® Xeon® Scalable family CPUs
Chipset	Intel C621 series chipset (Lewisburg)
Memory	48 total DIMM slots ■ Support for Advanced ECC ■ Support for registered ECC DIMMs (RDIMMs) ■ Support for load-reduced DIMMs (LRDIMMs) ■ Support for Intel® Optane™ Persistent Memory (PMem)
I/O	Five configurable mezzanine slots: ■ One rear mLOM slot supports the Cisco VIC 1440 only. > **NOTE:** The Cisco VIC 1400 Series (1440 and 1480) is compatible with 6200, 6300, 6400 and 6536 Series Fabric Interconnects as well as the 2204XP, 2208XP, 2304V2, and 2408XP Fabric Extenders. ■ Two rear mezzanine slots support Cisco adapters and Cisco UCS Storage Accelerator or GPUs. ■ Two front mezzanine slots support GPUs, FlexStorage RAID controllers, and the FlexStorage Passthrough module.

Table 1 Capabilities and Features *(continued)*

Capability/Feature	Description
Storage controller	■ Diskless system (no drive bays or RAID controller), or ■ Cisco FlexStorage 12G SAS RAID controller with HDD cage, providing up to 12 Gbps SAS connectivity, or ■ Cisco FlexStorage 12G SAS RAID controller with 2GB Flash-Backed Write Cache (FBWC), and HDD cage, providing up to 12 Gbps SAS connectivity, or ■ Cisco FlexStorage NVMe/Passthrough module with HDD cage

Storage devices	■ Up to four optional, front-accessible, hot-swappable 2.5-inch small form factor (SFF) SAS or SATA solid-state disks (SSDs), NVMe SFF 2.5" drives, or hard disk drives (HDDs).
	
	■ An internal USB 3.0 port that supports the Cisco 16 GB USB.
	
	■ An internal mini-storage slot that can accommodate one of two module options:
	  • Module supporting up to two SD devices (32 GB, 64 GB, or 128 GB), supporting RAID 1, or
	  • Module supporting up to two M.2 SATA Drives (240 GB or 960 GB), supporting software RAID.

Interfaces	One KVM console connector on the front panel (see *STEP 13 CHOOSE LOCAL KVM I/O CABLE (OPTIONAL), page 51*)
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
Power subsystem	Integrated in the Cisco UCS 5108 blade server chassis.
Fans	Integrated in the Cisco UCS 5108 blade server chassis.
Integrated management processor	The built-in Cisco Integrated Management Controller (CIMC) GUI or CLI interface enables you to monitor the server inventory, health, and system event logs.
ACPI	Advanced Configuration and Power Interface (ACPI) 4.0 Standard supported.

Cisco UCS B480 M5 Blade Server

CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS B480 M5 Blade Server:

STEP 1 CHOOSE SERVER SKU

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

Table 2   PID of the Base UCS B480 M5 Blade Server

Product ID (PID)	Description
UCSB-B480-M5	UCS B480 M5 Blade Server with no CPU, memory, HDD, SSD, or adapter cards
UCSB-B480-M5-U	UCS B480 M5 Blade Server without CPU, memory, drive bays, HDD, VIC adapter, or mezzanine adapters (UPG) (ordered standalone)
UCSB-B480-M5-CH	DISTI: UCS B480 M5 Blade Server without CPU, memory, drive bays, HDD, VIC adapter, or mezzanine adapters

The base Cisco UCS B480 M5 blade server does not include the following components. They must be selected during product ordering:

— CPUs

— DIMM memory

— Intel® Optane™ Persistent Memory

— Cisco FlexStorage RAID controller with drive bays, FlexStorage Passthrough, or blank (for no local drive support)

— Disk drives

— Cisco adapters (such as the VIC 1340, VIC 1380, VIC 1440, VIC 1480 and Port Expander)

— Cisco UCS Storage Accelerators or GPUs

NOTE: Use the steps on the following pages to order servers with the configurable components that you want configured in your servers.

STEP 2   CHOOSE CPU(S)

- 2nd Generation Intel® Xeon® scalable processor family CPUs.
- Intel C621 series chipset
- Up to 28 cores per processor, for a total of up to 112 cores per server
- If you choose any CPU that dissipates greater than 165 W, you cannot choose GPU for the front connector due to heat concerns.

Select CPUs

The available CPUs are listed in *Table 3*.

Table 3   Available Intel 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]	Front GPU[3]	Workload/ Processor Type
Cisco Recommended Processors[4] (2nd Generation Intel® Xeon® Processors)								
UCS-CPU-I8276	2.2	165	38.50	28	10.4	2933	Y	Oracle, SAP
UCS-CPU-I8260	2.4	165	35.75	24	10.4	2933	Y	Microsoft Azure Stack
UCS-CPU-I6248	2.5	150	27.50	20	10.4	2933	Y	VDI, Oracle, SQL, Microsoft Azure Stack
UCS-CPU-I6238	2.1	140	30.25	22	10.4	2933	Y	SAP
UCS-CPU-I6234	3.3	130	24.75	8	10.4	2933	Y	Oracle, SAP
UCS-CPU-I6230	2.1	125	27.50	20	10.4	2933	Y	Big Data, Virtualization
UCS-CPU-I5220	2.2	125	24.75	18	10.4	2666	Y	HCI
UCS-CPU-I5218	2.3	125	22.00	16	10.4	2666	Y	Virtualization, Microsoft Azure Stack, Splunk, Data Protection
8000 Series Processor								
UCS-CPU-I8280L	2.7	205	38.50	28	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I8280	2.7	205	38.50	28	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I8276L	2.2	165	38.50	28	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I8276	2.2	165	38.50	28	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I8270	2.7	205	35.75	26	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I8268	2.9	205	35.75	24	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I8260Y	2.4	165	35.75	24/20/16	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I8260L	2.4	165	35.75	24	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I8260	2.4	165	35.75	24	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I8253	2.2	125	22.00	16	10.4	2933	Y	2nd Gen Intel® Xeon®
6000 Series Processor								

Table 3 Available Intel CPUs *(continued)*

Product ID (PID)	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	UPI[1] Links (GT/s)	Highest DDR4 DIMM Clock Support (MHz)[2]	Front GPU[3]	Workload/ Processor Type
UCS-CPU-I6254	3.1	200	24.75	18	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I6248	2.5	150	27.50	20	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6246	3.3	165	24.75	12	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I6244	3.6	150	24.75	8	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I6242	2.8	150	22.00	16	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6240Y	2.6	150	24.75	18/14/8	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I6240L	2.6	150	24.75	18	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6240	2.6	150	24.75	18	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6238L	2.1	140	30.25	22	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6238	2.1	140	30.25	22	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6234	3.3	130	24.75	8	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6230N	2.3	125	27.5	20	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I6230	2.1	125	27.50	20	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6226	2.7	125	19.25	12	10.4	2933	Y	2nd Gen Intel® Xeon®
UCS-CPU-I6222V	1.8	115	27.5	20	10.4	2400	Y	2nd Gen Intel® Xeon®
5000 Series Processor								
UCS-CPU-I5222	3.8	125	16.50	4	10.4	2933	N	2nd Gen Intel® Xeon®
UCS-CPU-I5220S	2.6	125	19.25	18	10.4	2666	Y	2nd Gen Intel® Xeon®
UCS-CPU-I5220	2.2	125	24.75	18	10.4	2666	Y	2nd Gen Intel® Xeon®
UCS-CPU-I5218B	2.3	125	22	16	10.4	2666	Y	2nd Gen Intel® Xeon®
UCS-CPU-I5218	2.3	125	22.00	16	10.4	2666	Y	2nd Gen Intel® Xeon®
UCS-CPU-I5217	3.0	115	11.00	8	10.4	2666	Y	2nd Gen Intel® Xeon®
UCS-CPU-I5215L	2.5	85	13.75	10	10.4	2666	Y	2nd Gen Intel® Xeon®
UCS-CPU-I5215	2.5	85	13.75	10	10.4	2666	Y	2nd Gen Intel® Xeon®

Notes

1. UPI = Ultra Path Interconnect.
2. If higher or lower speed DIMMs are selected than what is shown in the table for a given CPU, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock.
3. System performance may be reduced for greater than 165 W total dissipation power (TDP) processors if operating with a fan fault or above 32°C (89.6°F) system air inlet temperature, depending upon the application load. No front GPU is allowed when using CPUs that dissipate greater than 165 W.
4. For details on memory support for processor classes and CPU modes, see *Memory Support for CPU Classes and CPU Modes on page 57*.

CAUTION: In *Table 4*, systems configured with the processors shown must adhere to the ambient inlet temperature thresholds specified. If not, a fan fault or executing workloads with extensive use of heavy instructions sets such as 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). *Table 4* lists ambient temperature limitations below 35° C (95° F) and configuration restrictions to ensure proper cooling and avoid excessive processor throttling, which may impact system performance.

Table 4 Ambient Temperature and Configuration Restrictions

Processor Thermal Design Power (TDP)	CPU PID	Blade Slot	Ambient Temperature Limitation	Configuration Restriction
Any Y or N SKUs	UCS-CPU-I8260Y UCS-CPU-I6240Y UCS-CPU-I6230N	Any	32ºC (90º F)	Front Mezzanine GPU
200 W or 205 W	UCS-CPU-I8280L UCS-CPU-I8280 UCS-CPU-I8270 UCS-CPU-I8268 UCS-CPU-8180M UCS-CPU-8180 UCS-CPU-8168 UCS-CPU-I6254 UCS-CPU-6154	Any		
Frequency Optimized 150/165/125 W	UCS-CPU-I6246 UCS-CPU-I6244 UCS-CPU-I5222	Any		

Supported Configurations

(1) Two-CPU Configuration

- Choose two identical CPUs from any one of the rows of *Table 3 on page 8*. CPU1 and CPU2 will be populated.

(2) Four-CPU Configuration

- Choose four identical CPUs from any one of the rows of *Table 3 on page 8*. CPU1, CPU2, CPU3, and CPU4 will be populated.

Notes

- For 2-CPU systems, 24 DIMM slots are functional. When 2 CPUs are installed, rear mezzanine connectors 1 (slot 2) and 2 (slot 3) are not active.
- For 2-CPU systems, only 24 DIMM slots are functional (channels A - F for CPU1 and G - N for CPU2).
- See *Table 9 on page 23* for supported adapter combinations in 2-CPU systems.
- For 4-CPU systems, all 48 DIMM slots are functional (channels A - F for CPU1, G - M for CPU2, N - T for CPU3, and U - Z for CPU4).

> **NOTE:** See *CHOOSE MEMORY on page 12* for details on the compatibility of CPUs and DIMM speeds.

STEP 3   CHOOSE MEMORY

The standard memory features are:

■ Clock speed: Up to 2933 MHz; See available CPUs and their associated DDR4 DIMM maximum clock support in *Table 3*.

■ Rank per DIMM: 1, 2, 4, or 8

■ Operational voltage: 1.2 V

■ Registered ECC DDR4 DIMMS (RDIMMs), Load-reduced DIMMs (LRDIMMs), or Intel® Optane™ Persistent Memory Modules (PMem)

Memory is organized with six memory channels per CPU, with up to two DIMMs per channel, as shown in *Figure 3*.

Figure 3   B480 M5 Memory Organization
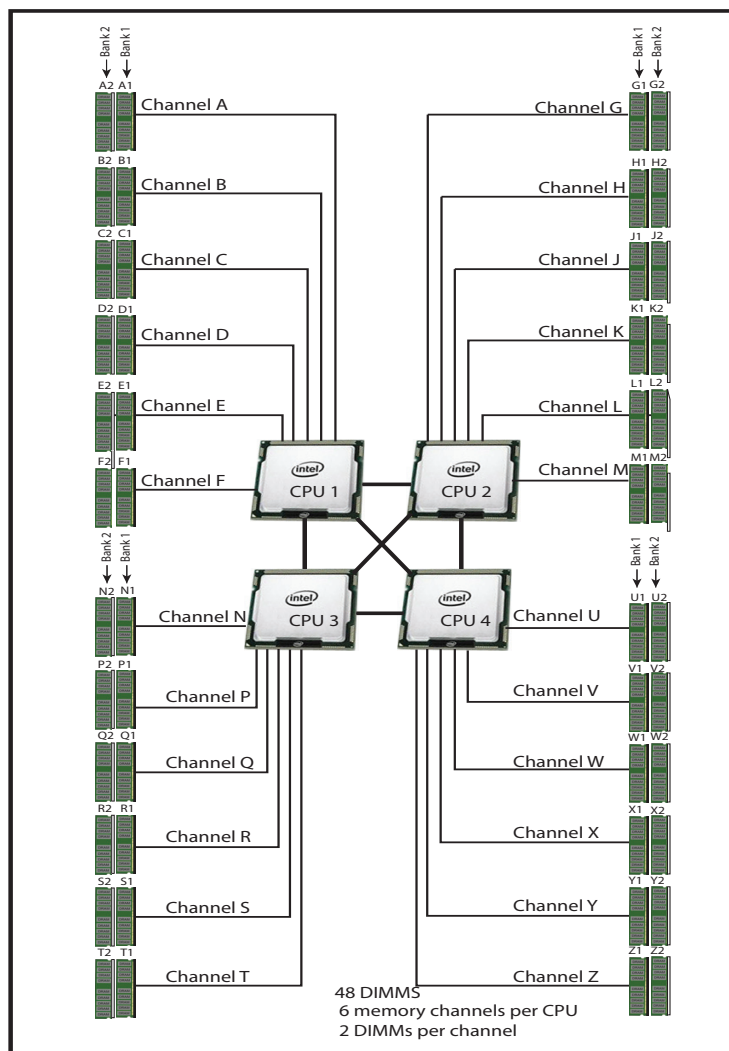
Select DIMMs and Memory Mirroring

Select the memory configuration and whether or not you want the memory mirroring option. The available memory DIMMs and mirroring option are listed in *Table 5*.

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 5   Available DDR4 DIMMs

Product ID (PID)	PID Description	Voltage	Ranks /DIMM
UCS-ML-256G8RW[1]	256 GB DDR4-3200MHz LRDIMM 8Rx4 (16Gb) (3DS)	1.2 V	8
UCS-ML-128G4RW[1]	128 GB DDR4-3200MHz LRDIMM 4Rx4 (16Gb) (non-3DS)	1.2 V	4
UCS-MR-X64G2RW[1]	64 GB DDR4-3200MHz RDIMM 2Rx4 (16Gb)	1.2 V	2
UCS-MR-X32G2RW[1]	32 GB DDR4-3200MHz RDIMM 2Rx4 (8Gb)	1.2 V	2
UCS-MR-X16G1RW[1]	16 GB DDR4-3200MHz RDIMM 1Rx4 (8Gb)	1.2 V	1
Intel® Optane™ Persistent Memory Product			
UCS-MP-128GS-A0	Intel® Optane™ Persistent Memory, 128GB, 2666 MHz		
UCS-MP-256GS-A0	Intel® Optane™ Persistent Memory, 256GB, 2666 MHz		
UCS-MP-512GS-A0	Intel® Optane™ Persistent Memory, 512GB, 2666 MHz		
Intel® Optane™ Persistent Memory Product Operational Modes			
UCS-DCPMM-AD	App Direct Mode		
UCS-DCPMM-MM	Memory Mode		
Memory Mirroring Option			
N01-MMIRROR	Memory mirroring option		

Notes

1. DDR4-3200MHz replacement part numbers will operate at the maximum speed of the Intel 2nd generation Xeon Scalable processor memory interface, ranging from 2133 MHz to 2933 MHz.

Cisco UCS B480 M5 Blade Server

DIMM Memory Mirroring

When memory mirroring is enabled, the memory subsystem simultaneously writes identical data to two adjacent 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.

CPU/Memory Configuration With Memory Mirroring

Select from 4, 6, 8, or 12 DIMMs per CPU (DIMMs for all four CPUs must be configured identically). In addition, the memory mirroring option (N01-MMIRROR) as shown in *Table 5 on page 13* must be selected.

The DIMMs will be placed by the factory as shown in the following tables.

#DIMMs	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)

#DIMMs	CPU 3 DIMM Placement in Channels (for identical ranked DIMMs) CPU 3	CPU 4 DIMM Placement in Channels (for identical ranked DIMMs) CPU 4
8	(N1,P1); (R1,S1)	(U1, V1); (X1, Y1)
12	(N1, P1, Q1); (R1, S1, T1)	(U1, V1, W1); (X1, Y1, Z1)
16	(N1, N2, P1, P2); (R1, R2, S1, S2)	(U1, U2, V1, V2); (X1, X2, Y1, Y2)
24	(N1, N2, P1, P2, Q1, Q2); (R1, R2, S1, S2, T1, T2)	(U1, U2, V1, V2, W1, W2); (X1, X2, Y1, Y2, Z1, Z2)

> **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.

Normal CPU/Memory Configuration (no memory mirroring)

Select from 4, 6, 8, or 12 DIMMs per CPU (DIMMs for all four CPUs must be configured identically). The DIMMs will be placed by the factory as shown in the following tables.

#DIMMs	CPU 1 DIMM Placement in Channels (for identically 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)

#DIMMs	CPU 2 DIMM Placement in Channels (for identically ranked DIMMs)
4	(G1, H1); (K1, L1)
6	(G1, H1, J1); (K1, L1, M1)
8	(G1, G2, H1, H2); (K1, K2, L1, L2)
12	(G1, G2, H1, H2, J1, J2); (K1, K2, L1, L2, M1, M2)

#DIMMs	CPU 3 DIMM Placement in Channels (for identically ranked DIMMs)
4	(N1, P1); (R1, S1)
6	(N1, P1, Q1); (R1, S1, T1)
8	(N1, N2, P1, P2); (R1, R2, S1, S2)
12	(N1, N2, P1, P2, Q1, Q2); (R1, R2, S1, S2, T1, T2)

#DIMMs	CPU 4 DIMM Placement in Channels (for identically ranked DIMMs)
4	(U1, V1); (X1, Y1)
6	(U1, V1, W1); (X1, Y1, Z1)
8	(U1, U2, V1, V2); (Y1, Y2, Z1, Z2)
12	(U1, U2, V1, V2, W1, W2); (X1, X2, Y1, Y2, Z1, Z2)

System Speeds

Memory will operate at the maximum speed of the Intel Xeon Scalable processor memory controller, ranging from 2133 MHz to 2933 MHz for M5 servers. Check CPU specifications for supported speeds.

Memory Configurations and Modes

DIMM Guidelines

■ System speed is dependent on the CPU DIMM speed support. Refer to *Table 5 on page 13* for DIMM Speeds

■ The B480 M5 server supports four different memory reliability, availability, and serviceability (RAS) modes:

— Independent Channel Mode

— Mirrored Channel Mode

— Lockstep Channel Mode

— Rank Sparing Mode

> **NOTE:** Mixing of Non-Mirrored and Mirrored mode is not allowed.

■ 3DS and non-3DS DIMMs cannot be mixed.

■ Single-rank DIMMs can be mixed with dual-rank DIMMs in the same channel

■ For best performance, observe the following:

— DIMMs with different timing parameters can be installed on different slots within the same channel, but only timings that support the slowest DIMM will be applied to all. As a consequence, faster DIMMs will be operated at timings supported by the slowest DIMM populated.

— When one DIMM is used, it must be populated in DIMM slot 1 (farthest away from the CPU) of a given channel.

— When single or dual rank DIMMs are populated for 2DPC, always populate the higher number rank DIMM first (starting from the farthest slot). For a 2DPC example, first populate with dual rank DIMMs in the DIMM slot 1. Then single-rank DIMMs in the DIMM 2 slot.

■ DIMMs for all four CPUs must always be configured identically.

■ Cisco memory from previous generation servers (DDR3 and DDR4) is not compatible with UCS B480 M5 Blade.

> **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.

■ Memory can be configured in any number of DIMMs as pairs, though for optimal performance, refer to the B480 Memory Guide at Cisco.com.

PMem Guidelines

■ PMem require second generation Intel Xeon Scalable Family processors. First generation Xeon Scalable processors do not support PMem.

■ All installed PMem must be the same size. Mixing PMem of different capacities is not supported.

■ The use of 1Rx8 DIMMs with PMem is not supported.

■ PMem and DIMMs must be populated as shown in *Table 6* (6 DIMMs per CPU with 2, 4, or 6 PMem per CPU, as shown).

Table 6   2nd Generation Intel® Xeon® Scalable Processor DIMM and PMem Physical Configurations (quad socket)

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 to 2		DIMM		DIMM	PMem	DIMM		DIMM		DIMM	PMem	DIMM
6 to 4		DIMM	PMem	DIMM	PMem	DIMM		DIMM	PMem	DIMM	PMem	DIMM
6 to 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 to 2		DIMM		DIMM	PMem	DIMM		DIMM		DIMM	PMem	DIMM
6 to 4		DIMM	PMem	DIMM	PMem	DIMM		DIMM	PMem	DIMM	PMem	DIMM
6 to 6	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM

Table 6   2nd Generation Intel® Xeon® Scalable Processor DIMM and PMem Physical Configurations (quad socket)

DIMM to PMem Count	CPU 3											
	iMC1						iMC0					
	Channel 2		Channel 1		Channel 0		Channel 2		Channel 1		Channel 0	
	T2	T1	S2	S1	R2	R1	Q2	Q1	P2	P1	N2	N1
6 to 2		DIMM		DIMM	PMem	DIMM		DIMM		DIMM	PMem	DIMM
6 to 4		DIMM	PMem	DIMM	PMem	DIMM		DIMM	PMem	DIMM	PMem	DIMM
6 to 6	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM

Table 6 2nd Generation Intel® Xeon® Scalable Processor DIMM and PMem Physical Configurations (quad socket)

DIMM to PMem Count	CPU 4											
	iMC1						iMC0					
	Channel 2		Channel 1		Channel 0		Channel 2		Channel 1		Channel 0	
	Z2	Z1	Y2	Y1	X2	X	W2	W1	V2	V1	U2	U1
6 to 2		DIMM		DIMM	PMem	DIMM		DIMM		DIMM	PMem	DIMM
6 to 4		DIMM	PMem	DIMM	PMem	DIMM		DIMM	PMem	DIMM	PMem	DIMM
6 to 6	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM	PMem	DIMM

- Either two or four CPUs may be installed when using PMem.

- For Memory Mode, install a minimum 2 PMem and 6 DIMMs per CPU

- For App Direct Mode, install a minimum 2 PMem and 6 DIMMs per CPU

- When either Memory Mode or Mixed Mode is used, the ratio of DIMM capacity to PMem capacity per CPU must be between 1:16 and 1:2, and the recommended ratio is 1:4 for the best performance. For example, 6x 16GB DIMMs + 2x 256GB PMem is a ratio of 1:5.33 (96GB:512GB). In Mixed Mode, the ratio is between memory and only the volatile portion of the PMem. This ratio requirement does not apply to App Direct mode. See *Table 7* for PMem memory modes.

Table 7 Intel® Optane™ Persistent Memory Modes

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

Notes

1. For Memory Mode, the Intel-recommended DIMM to PMem capacity ratio in the same CPU socket is from 1:2 to 1:16.

- For each memory channel with both a PMem and a DIMM installed, the PMem is installed in channel slot 2 (closest) and the DIMM is installed in channel slot 1.

- To maximize performance, balance all memory channels

- In configurations with PMem installed, memory mirroring is supported, with two restrictions:

- Mirroring is only enabled on the DIMMs installed in the server; the PMem themselves do not support mirroring.
- Only App Direct mode is supported. Memory mirroring cannot be enabled when PMem are in Memory Mode or Mixed Mode.

■ Memory sparing is not supported with PMem installed

For detailed Intel PMem configurations, refer to the following link:

Cisco UCS B480 M5 Server Installation Guide

For detailed DIMM/PMem informations, refer to

Cisco UCS B480 M5 Memory Guide

STEP 4 CHOOSE OPTIONAL FRONT MEZZANINE: Storage Controller or GPU

The UCS B480 M5 supports two front mezzanine slots. The front mezzanine slots can accommodate a storage controller with drive bays, NVMe Passthrough, or GPU. Refer to *Table 8* for available front mezzanine cards and *Table 9* for supported configurations.
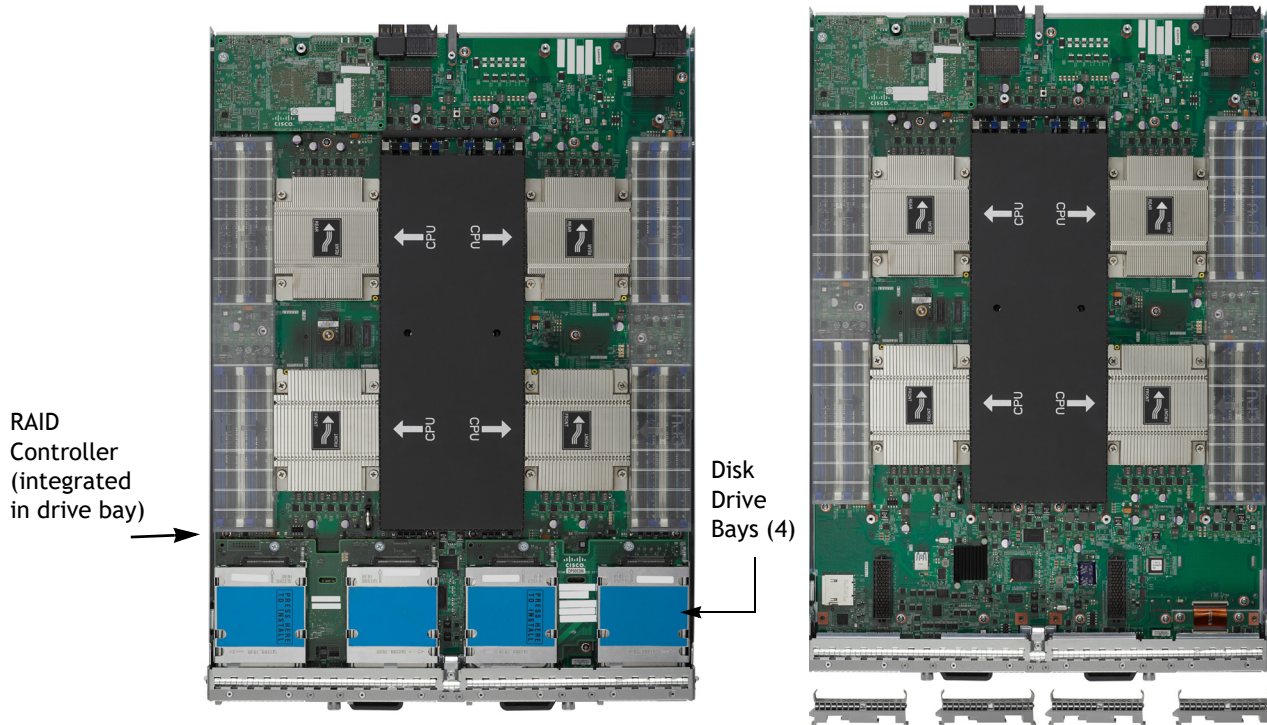
Table 8 Front Mezzanine Cards

Product ID (PID)	PID Description
Storage Controller[1,2,3]	
UCSB-MRAID12G[1,4]	Cisco FlexStorage 12G SAS RAID controller with drive bays
UCSB-MRAID12G-HE[1,5]	Cisco FlexStorage 12G SAS RAID controller with 2 GB flash-backed write cache and drive bays
UCSB-LSTOR-PT[1,2]	Cisco FlexStorage Passthrough module w/drive bays
UCSB-LSTOR-BK[6]	Cisco FlexStorage blanking panel w/o controller, w/o drive bays

Notes

1. To support a minimum of two hard disk drives (HDD) or solid-state drives (SSD), a Cisco FlexStorage 12G SAS RAID controller or Cisco FlexStorage 12G SAS RAID controller with 2 GB flash-backed write cache with drive bays is required. If support for four HDD or SSD drives is required, select a Cisco FlexStorage 12G SAS RAID controller and a Cisco FlexStorage Passthrough module.
2. To support a minimum of two NVMe drives, a Cisco FlexStorage Passthrough module with drive bays is required. To support four NVMe drives, select two Cisco FlexStorage Passthrough modules.
3. The two RAID cards and Passthrough are three different cards and cannot be upgraded or downgraded.
4. The Cisco FlexStorage 12G SAS RAID Controller is based on the LSI 3108 ROC and runs the iMegaRAID software stack. It provides 12 Gbps RAID functionality for SAS/SATA SSD/HDD and has RAID 0, 1, and JBOD support. If supercapacitor needs to be replaced, it can be done so by ordering UCSB-MRAID-SC=. See Installation Document for instructions
5. The Cisco FlexStorage 12G SAS RAID controller with 2 GB Flash-backed write cache is based on the LSI 3108 ROC and runs the LSI MegaRAID Software Stack. It provides 12 Gbps RAID Functionality for SAS/SATA HDD/SSD and has RAID 0, 1, 5 and 6 support.

   The flash-backed write cache provides RAID controller cache protection using NAND flash memory and a supercapacitor. In the event of a power or server failure, cached data is automatically transferred from the RAID controller DRAM write cache to flash. Once power is restored, the data in the NAND flash is copied back into the DRAM write cache until it can be flushed to the disk drives.
6. For servers that do not need local storage, and where no storage controllers are included, storage blanking panels are auto-populated as a part of configuration rules. To ensure proper airflow drive blanks must be installed when no drive bays and when GPUs are installed.

See *Figure 4 on page 22* for a top view of the B480 M5 server with and without the Cisco FlexStorage SAS RAID controller and drive bays. See *Figure 5 on page 22* for a front view of these configurations. When no drive bays are installed, blanking panels must be installed.

Figure 4   UCS B480 M5 With and Without Drive Bays (Top View)

RAID
Controller
(integrated
in drive bay)

Disk
Drive
Bays (4)

(a) Server with four drive bays

(b) Server with no drive bays

Figure 5   UCS B480 M5 With and Without Drive Bays (Front View)

Blanking Panels

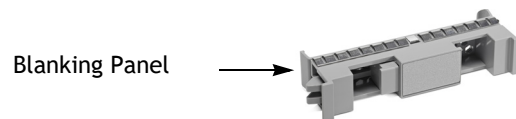(a) Server with four drive bays

(b) Server with no drive bays

Blanking Panel

Table 9   Supported Front Mezzanine Configurations[1]

Front Mezzanine Slot 1	Front Mezzanine Slot 2	Drives Supported	RAID Level
Cisco FlexStorage 12G SAS RAID controller	Not populated	2 x HDD/SSD	0, 1
Cisco FlexStorage 12G SAS RAID controller	Cisco FlexStorage Passthrough Module	4 x HDD/SSD or 2 x HDD/SSD and 2 x NVMe	0, 1, 10, 5, 6, 50, 60 (depending on number of drives in RAID set)
Cisco FlexStorage Passthrough Module	Not populated	2 x NVMe	None
Cisco FlexStorage Passthrough Module	Cisco FlexStorage Passthrough Module	4 x NVMe	None
GPU or not populated	GPU or not populated	None	None
Cisco FlexStorage 12G SAS RAID controller	GPU	2 x HDD/SSD	0, 1
Cisco FlexStorage Passthrough Module	GPU	2 x NVMe	None

Notes

1. Any empty drive bays must be fitted with blanking panels to maintain proper cooling airflow.

> **NOTE:** For supported rear mezzanine configurations, see *STEP 6 CHOOSE REAR MEZZANINE CARDS, page 29*.

STEP 5   CHOOSE HARD DISK DRIVES or SOLID-STATE DRIVES (OPTIONAL)

The UCS B480 M5 can be ordered with or without drives. If you ordered one of the RAID controller with drive bay options in *CHOOSE OPTIONAL FRONT MEZZANINE: Storage Controller or GPU on page 21* (UCSB-MRAID12G or UCSB-MRAID12G-HE for drive bays one and two, and optionally UCSB-LSTOR-PT for drive bays three and four), you can order drives listed in this section. The B480 M5 provides up to four hot plug 2.5" SFF drive bays.

Choose Drives

The drives supported on the UCS B480 M5 are listed in *Table 10*.

Table 10 Available Drive Options

Product ID (PID)	Description	Drive Type	Speed	Endurance	Size
HDD[1]					
UCS-HD900G15K12G	900 GB 12G SAS 15K RPM SFF HDD	SAS	15K RPM	N/A	900 GB
UCS-HD600G15K12G	600 GB 12G SAS 15K RPM SFF HDD	SAS	15K RPM	N/A	600 GB
UCS-HD300G15K12G	300 GB 12G SAS 15K RPM SFF HDD	SAS	15K RPM	N/A	300 GB
UCS-HD24TB10KS4K	2.4 TB 12G SAS 10K RPM SFF HDD (4K)[2]	SAS	10K RPM	N/A	2.4 TB
UCS-HD18TB10KS4K	1.8 TB 12G SAS 10K RPM SFF HDD (4K)[2]	SAS	10K RPM	N/A	1.8 TB
UCS-HD12TB10K12G	1.2 TB 12G SAS 10K RPM SFF HDD	SAS	10K RPM	N/A	1.2 TB
UCS-HD600G10K12G	600 GB 12G SAS 10K RPM SFF HDD	SAS	10K RPM	N/A	600 GB
UCS-HD300G10K12G	300 GB 12G SAS 10K RPM SFF HDD	SAS	10K RPM	N/A	300 GB
SSD[1]					
Enterprise Performance SSDs					
UCS-SD800GKB3X-EP	800GB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)	SAS	12G	Ent. Perf 3X	800 GB
UCS-SD16TKB3X-EP	1.6TB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)	SAS	12G	Ent. Perf 3X	1600 GB
UCS-SD480GIS3-EP	480GB 2.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610)	SATA	6G	Ent. Perf 3X	480 GB
UCS-SD960GIS3-EP	960GB 2.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610)	SATA	6G	Ent. Perf 3X	960 GB
UCS-SD19TIS3-EP	1.9TB 2.5in Enterprise performance 6G SATA SSD(3X endurance) (Intel S4600/S4610)	SATA	6G	Ent. Perf 3X	1.9 TB

Table 10 Available Drive Options

UCS-SD19TBMB3X-EP	1.9TB 2.5in Enterprise performance 6GSATA SSD(3X endurance)	SATA	6G	Ent. Perf 3X	1.9 TB
UCS-SD480GBMB3XEP	480GB 2.5in Enterprise performance 6GSATA SSD(3X endurance)	SATA	6G	Ent. Perf 3X	480 GB
UCS-SD960GBMB3XEP	960GB 2.5in Enterprise performance 6GSATA SSD(3X endurance)	SATA	6G	Ent. Perf 3X	960 GB
Enterprise Value SSDs					
UCS-SD960GKB1X-EV	960GB 2.5 inch Enterprise Value 12G SAS SSD	SAS	12G	Ent. Value	960 GB
UCS-SD19TKB1X-EV	1.9TB 2.5 inch Enterprise Value 12G SAS SSD	SAS	12G	Ent. Value	1900 GB
UCS-SD38TBKS4-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (Samsung SATA PM863A/PM883)	SATA	6G	Ent. Value	3.8 TB
UCS-SD120GBMS4-EV	120 GB 2.5 inch Enterprise Value 6G SATA SSD (Micron 5100/5200)	SATA	6G	Ent. Value	120 GB
UCS-SD480GBIS6-EV	480GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)	SATA	6G	Ent. Value	480 GB
UCS-SD960GBIS6-EV	960GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)	SATA	6G	Ent. Value	960 GB
UCS-SD38TBIS6-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)	SATA	6G	Ent. Value	3.8 TB
UCS-SD960G6SB-EV	960GB 2.5 inch Enterprise Value 6G SATA SSD	SATA	6G	Ent. Value	960 GB
UCS-SD19T6SB-EV	1.9TB 2.5 inch Enterprise Value 6G SATA SSD	SATA	6G	Ent. Value	1900 GB
UCS-SD38T6SB-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD	SATA	6G	Ent. Value	3800 GB
UCS-SD78T6SB-EV	7.6TB 2.5 inch Enterprise Value 6G SATA SSD	SATA	6G	Ent. Value	7600 GB
UCS-SD76TMS4-EV	7.6TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)	SATA	6G	Ent. Value	7600 GB
UCS-SD38TMS4-EV	3.8TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)	SATA	6G	Ent. Value	3800 GB
UCS-SD19TMS4-EV	1.9TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)	SATA	6G	Ent. Value	1900 GB
UCS-SD16TMS4-EV	1.6TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)	SATA	6G	Ent. Value	1600 GB
UCS-SD960GMS4-EV	960GB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)	SATA	6G	Ent. Value	960 GB

Table 10 Available Drive Options

UCS-SD480GMS4-EV	480GB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)	SATA	6G	Ent. Value	480 GB
UCS-SD240GMS4-EV	240GB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)	SATA	6G	Ent. Value	240 GB
Self-Encrypted Drives (SEDs)					
UCS-HD600G15K9	600GB 12G SAS 15K RPM SFF HDD (SED)	SAS	15K RPM	N/A	600 GB
UCS-HD18G10K9	1.8TB 12G SAS 10K RPM SFF HDD (4K format, SED)	SAS	10K RPM	N/A	1.8 TB
UCS-HD24T10BNK9	2.4 TB 12G SAS 10K RPM SFF HDD (SED)	SAS	10K RPM	N/A	2.4 TB
UCS-SD800GBKBNK9	800GB 2.5" Enterprise performance 12GSAS SSD(3DWPD,SED-FIPS)	SAS		Ent. Perf 3X	800 GB
UCS-SD960GBKBNK9	960GB 2.5" Enterprise value 12G SAS SSD (1X endurance, FIPS)	SAS		Ent. Value 1X	960 GB
UCS-SD38TBKBNK9	3.8TB 2.5" Enterprise value 12G SAS SSD (1DWPD, SED-FIPS)	SAS		Ent. Value 1X	3.8 TB
UCS-SD16TBKBNK9	1.6TB 2.5" Enterprise performance 12GSAS SSD(3DWPD,SED-FIPS)	SAS		Ent. Perf 3X	1.6 TB
UCS-SD960GM6NK9	960GB Enterprise Value SATA SSD (1X , SED)	SATA		Ent. Value 1X	960 GB
UCS-SD76TM6NK9	7.6TB Enterprise Value SATA SSD (1X, SED)	SATA		Ent. Value 1X	7.6 TB
UCS-SD19TM6NK9	1.9TB 2.5in Enterprise performance 6GSATA SSD(3X endurance)	SATA		Ent. Perf 3X	1.9 TB
NVMe Drives [3],[4],[5]					
UCSB-NVMEXPB-I375	Cisco 2.5in U.2 375GB Intel P4800 NVMe Med. Perf	NVMe	Med Perf	Med Perf	375 GB
UCSB-NVMEXP-I750	750GB 2.5in Intel Optane NVMe Extreme Perf	NVMe	Extrm Perf	Extrm Perf	750 GB
UCSB-NVME2H-I1000	Cisco 2.5" U.2 1,0 TB Intel P4510 NVMe High Perf. Value Endurance	NVMe	High Perf	High Perf	1.0 TB
UCSB-NVMHG-W3200	3.2TB 2.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance	NVMe	Extrm Perf	Extrm Perf/High Endurance	3.2 TB
UCSB-NVMHG-W7600	7.6TB 2.5in U.2 WD SN840 NVMe Extreme Perf. Value Endurance	NVMe	Extrm Perf	Extrm Perf/High Endurance	7.6 TB
UCSB-NVMHG-W15300	15.3TB 2.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance	NVMe	Extrm Perf	Extrm Perf/High Endurance	15.3 TB

Table 10 Available Drive Options

> **NOTE:** Cisco uses solid state drives (SSDs) from a number of vendors. All solid state drives (SSDs) are subject to physical write limits and have varying maximum usage limitation specifications set by the manufacturer. Cisco will not replace any solid state drives (SSDs) that have exceeded any maximum usage specifications set by Cisco or the manufacturer, as determined solely by Cisco.

Notes

1. HDDs and SSDs require either of the following storage controllers in the front mezzanine slot

    UCSB-MRAID12G

    UCSB-MRAID12G-HE

2. For 4K native (4Kn) drives:

    VMWare ESXi 6.0 does not support 4Kn Drives. 4Kn drive support with VMWare is available in release 6.7 and later.

    4K native drives require UEFI Boot

3. NVMe drives require the following storage controller in the front mezzanine slot: UCSB-LSTOR-PT.

4. If HDDs or SSDs are going to be in a RAID group, two identical drives are required.

5. If HDD or SSD are in JBOD Mode, drives can be different.

Supported Configurations

■ Select up to 4 of the drives listed in *Table 10*. Selection is dependent on the number of drive bays selected in *CHOOSE OPTIONAL FRONT MEZZANINE: Storage Controller or GPU on page 21*.

Notes

■ When creating a RAID volume, mixing different capacity drives causes the system to use the lowest-capacity drive.

■ Mixing of drive types is supported, but performance may be impacted.

■ Multiple RAID volumes are supported. RAID volumes should use the same media type.

Intel® Virtual RAID on CPU (Intel® VROC)

The server supports Intel® Virtual RAID on CPU (Intel® VROC). VROC is an enterprise RAID solution used with Intel NVMe SSDs (see *Table 10* for supported Intel NVMe SSDs). The Intel® Volume Management Device (Intel® VMD) is a controller integrated into the CPU PCIe root complex. Intel® VMD NVMe SSDs are connected to the CPU, which allows the full performance potential of fast Intel® Optane™ SSDs to be realized. Intel® VROC, when implemented, replaces traditional hardware RAID host bus adapter (HBA) cards placed between the drives and the CPU.

> **NOTE:**
> - Intel® VROC is only supported with Intel drives
> - Intel® VROC enablement key factory pre-provisioned to BIOS - no additional licensing required.

VROC has the following features:

- Small Form Factor (SFF) drive support (only)
- No battery backup (BBU) or external SuperCap needed
- Software-based solution utilizing Intel SFF NVMe direct connected to Intel CPU
- RAID 0/1/5/10 support
- Windows, Linux, VMware OS support.
- Host Tools- Windows GUI/CLI, Linux CLI.
- UEFI Support- HII Utility, OBSE.
- Intel VROC NVMe operates in UEFI mode only

See the **instructions on setting up and managing VROC for Intel NVMe SSDs** for more information.

STEP 6 CHOOSE REAR MEZZANINE CARDS

NOTE: The mezzanine cards listed in this section are installed in the three rear mezzanine connectors.

- Mezzanine slot 1 the rear mLOM connector
- Mezzanine slot 2 is rear mezzanine connector 1
- Mezzanine slot 2 is rear mezzanine connector 2

See *System Board on page 52* for the locations of these connectors.

The mezzanine card offerings are:

■ Cisco Virtual Interface Cards (VICs)

Cisco has developed 1300 and1400 series Virtual Interface Cards (VICs) to provide flexibility to create multiple NIC and HBA devices.The VIC features are listed here:

— 1300 and 1400 Series VICs include enhancements including network overlay offload support for NVGRE and VXLAN, and RoCE services.1300 Series VICs support PCIe Gen 3.0 for greater bandwidth.

— Two Converged Network Adapter (CNA) ports, supporting both Ethernet and FCoE.

— Delivers up to 80 Gbps total I/O throughput to the server.

— VICs support either a maximum of dual 4x10Gbps Unified I/O ports or 2x40 (native) Gbps Unified I/O ports.

— Supports up to 256 fully functional unique and independent PCIe adapters and interfaces.

— Provides virtual machine visibility from the physical network and a consistent network operations model for physical and virtual servers.

— Supports customer requirements for a wide range of operating systems and hypervisors.

For additional capabilities please refer to the following VIC data sheets link:

https://www.cisco.com/c/en/us/support/servers-unified-computing/ucs-virtual-interface-card/tsd-products-support-series-home.html?dtid=osscdc000283

■ Cisco UCS Storage Accelerator

Cisco UCS Storage Accelerators are designed specifically for the Cisco UCS B-series M5 blade servers and integrate seamlessly to allow improvement in performance and relief of I/O bottlenecks.

■ GPUs

NVIDIA GPUs are designed specifically for the Cisco UCS B Series M5 blade servers and provide outstanding processing power to offload the CPUs.

Table 11 shows the supported mezzanine cards.

To help ensure that your operating system is compatible with the cards you have selected, please check the Hardware Compatibility List at this link:

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

Choose a Rear Mezzanine Adapter

The supported rear mezzanine adapters in the UCS B480 M5 are listed in *Table 11*.

Table 11 Supported Mezzanine Cards

Product ID (PID)	PID Description	Connector
Virtual Interface Cards (VICs)		
UCSB-MLOM-40G-04[1]	UCS VIC 1440 modular LOM for blade servers	mLOM
UCSB-MLOM-40G-03[1]	UCS VIC 1340 modular LOM for blade servers	mLOM
UCSB-VIC-M84-4P	Cisco UCS VIC 1480 mezzanine adapter	Rear Mezzanine
UCSB-VIC-M83-8P	Cisco UCS VIC 1380 mezzanine adapter	Rear Mezzanine
Port Expander Card for VIC Option		
UCSB-MLOM-PT-01[2]	Cisco UCS Port Expander Card for VIC. This is a hardware option to enable an additional 4 ports of the VIC 1340 or 1440, bringing the total capability of the VIC 1340 or 1440 to a dual native 40G interface or a dual 4x10GbE port-channeled interface.	Rear Mezzanine

Notes

1. The VIC 1440/1480 are supported with the 6200/6300/6400/6536 Series Fabric Interconnects and 1300 series VIC supported with 6536 series FI from 4.2(3) UCS release.
2. The Port Expander (only VIC 1440) is supported with the 2408XP Fabric Extender from 4.1(2) release and later.

Supported Configurations

Table 12 and *Table 13 on page 32* show the supported adapter combinations. The configuration rules are summarized as follows:

■ You must select at least one VIC.

■ Mezzanine slot 1(MLOM) is dedicated for the VIC 1340 or 1440 only. No other mezzanine card can be placed in mezzanine slot 1.

■ The Port Expander requires an mLOM card and can only be placed in mezzanine slot 2.

■ You can select up to two Storage Acceleration mezzanine cards.

■ You cannot mix VIC 1440 mezzanine cards with 1380 mezzanine cards or VIC 1340 cards with 1480 cards.

Select a mezzanine card combination according to the following tables.

> **NOTE:** CPU1 controls mezzanine slot 1 (mLOM), CPU 3 controls mezzanine slot 2, and CPU 4 controls mezzanine slot 3.

Table 12 Supported Rear Mezzanine Card Combinations for 2 CPUs Installed

Adapter Configurations			IO Module Aggregate Bandwidth (Gb/s)				Fabric Inter-connects
Mezzanine Slot 1[1]	Mezzanine Slot 2[2]	Mezzanine Slot 3[3]	2 x 2408XP	2 x 2304V2	2 x 2208XP	2 x 2204XP	
VIC 1340	Not Populated	Not Populated	40	40[4]	40[2]	20	62xx, 63xx or 6454[5],6536[11]
	Port Expander Card[6]	Not Populated	80	80[7,8]	80[9]	40[2]	
VIC 1440	Not Populated	Not Populated	40	40[2]	40[2]	20	62xx, 63xx or 6454[3]or 6536[10],[11]
	Port Expander Card	Not Populated	80	80[5]	Not Supported	Not Supported	

Notes

1. Rear mLOM connector (see *System Board on page 52*)
2. Rear mezzanine connector 1 (see *System Board on page 52*)
3. Rear mezzanine connector 2 (see *System Board on page 52*)
4. This is two 2x10Gbps port-channeled.
5. FI-6454 and/or VIC 1400 requires UCSM 4.0(1) or greater.
6. The Port Expander is enabled by a passthrough and does not require CPU 3 to be installed.
7. This is a dual native 40G interface.
8. When operating in 4x10Gbps mode, bandwidth drops to 40 Gbps.
9. This is two 4x10Gbps port-channeled.

10. The Cisco UCS 6536 Fabric Interconnect and/or VIC 1440 is supported only in Intersight Managed Mode from 4.2(2) or greater.
11. Cisco UCS 6536 Fabric Interconnect support was first made available in IMM mode from 4.2(2) UCS release. The UCS 6536 Fabric Interconnect from 4.2(3) UCS release enabled the following additional support - UCSM support, IOM 2304 support in IMM/UCSM, VIC 1300 series support in IMM/UCSM and Nexus FEX 2348UPQ in UCSM. Cisco UCS M4 B-series and C-series servers with UCS 6536 Fabric Interconnect are supported only in UCSM.

Table 13 Supported Rear Mezzanine Card Combinations for 4 CPUs Installed

Adapter Configurations			IO Module Aggregate Bandwidth (Gb/s)				Fabric Inter-connects
Mezzanine Slot 1[1]	Mezzanine Slot 2[2]	Mezzanine Slot 3[3]	2 x 2408XP	2 x 2304V2[4]	2 x 2208XP	2 x 2204XP	
VIC 1340	GPU or Not Populated	GPU or Not Populated	40	40[5]	40[2]	20	62xx, 63xx, 6454[6], 6536[22]
	Port Expander	GPU or Not Populated	80	80[7]	80[8]	80[2]	
	GPU or Not Populated	1380	120	120[9]	120[10]	60[11]	
	Port Expander	1380	160	160[12]	160[13]	80[14]	
	1380	1380	160	160	160	80	
	Cisco UCS Storage Accelerator	GPU or Not Populated	40	80[15]	80[12]	40[16]	
	GPU or Not Populated	Cisco UCS Storage Accelerator	40	40[2]	40[2]	20	
VIC 1440	GPU or Not Populated	GPU or Not Populated	40	40[2]	40[2]	20	62xx,6332, 6332-16UP, 6454[6] or 6536[21,22]
	Port Expander	GPU or Not Populated	80	80[4,17]	Not supported	Not supported	
	GPU or Not Populated	1480[3]	120[18]	120[6]	80[14]	40[8]	
	Port Expander	1480[3]	160[18]	160[9,19]	Not supported	Not supported	
	1480	1480	160[18]	160	120	60	
	Cisco UCS Storage Accelerator	GPU or Not Populated	40	80[20]	40[2]	20	
	GPU or Not Populated	Cisco UCS Storage Accelerator	40	40[2]	40[2]	20	
Note: for the configuration in the following rows, slot 2 and 3 must have identical types of storage cards.							
VIC 1340	Cisco UCS Storage Accelerator	Cisco UCS Storage Accelerator	40	80[12]	80[12]	40	62xx, 63xx, 6454[6] or 6536[22]
VIC 1440[3]	Cisco UCS Storage Accelerator	Cisco UCS Storage Accelerator	40	80[16]	40[2]	20	62xx, 6332,6332-16 UP or 6454[6] or 6536[21,22]

Notes

1. Rear mLOM connector (see *System Board on page 52*)
2. Rear mezzanine connector 1 (see *System Board on page 52*)
3. Rear mezzanine connector 2 (see *System Board on page 52*)
4. The 2304V2 is only supported with the FI-6300.
5. This is two 2x10Gbps port-channeled.
6. The FI-6454 and/or VIC 1400 requires UCSM 4.0(1) or greater.
7. This is a dual native 40G interface.

8. This is four 4x10Gbps port-channeled.

9. Mezz slot 1 (mLOM) is two 2x10Gbps port-channeled, and VIC 1x80 is a dual native 40G interface.

10. This is six 2x10Gbps port-channeled.

11. Mezz slot 1 (mLOM) is dual 10Gbps and the VIC 1x80 is two 2x10 port-channeled

12. This four native 40G interface

13. This is two 4x10Gbps port-channeled

14. This is four 2x10Gbps port-channeled

15. If running 3.2(1) or greater and equipped with either storage accelerator or SKU UCSB-F-FIO-1300MP (EOL) or UCSB-F-FIO-1600MS (EOL), then there is a dual 40G (4x10G port-channeled) interface for the 2008 or a dual native 40G interface for the 2304V2. Otherwise the bandwidth is 20G (2x10Gbps port-channeled) per FI.

16. If running 3.2(1) or greater and equipped with either storage accelerator or SKU UCSB-F-FIO-1300MP (EOL) or UCSB-F-FIO-1600MS (EOL), then there is a dual 20G (2x10Gbps port-channeled)

17. When operating in 4x10 Gbps mode, the bandwidth drops to 40Gbps (two 2x10Gbps port-channeled).

18. Supported starting with UCSM 4.1(2) and 1440+PE or 1480 can have 40G towards IOM-2408. The maximum single-flow is 25 Gbps with an aggregate of 40 Gbps. To avoid IOM transient drops due to a speed mismatch of 40 Gbps towards the server and 25 Gbps towards the fabric interconnect (FI), vNIC rate-limiting to 25 Gbps is recommended.

19. When operating in 4x10 Gbps mode, then BW drops to 40 Gbps

20. If running 3.2(1) or greater and equipped with the either storage accelerator or SKU UCSB-F-FIO-1300MP or UCSB-F-FIO-1600MS, then there is a dual native 40G interface for the 2304V2. If operating in 4x10Gbps mode, then the bandwidth drops to 40G (two 2x10Gbps port-channeled)

21. The Cisco UCS 6536 Fabric Interconnect and/or VIC 1440 is supported only in Intersight Managed Mode from 4.2(2) or greater.

22. Cisco UCS 6536 Fabric Interconnect support was first made available in IMM mode from 4.2(2) UCS release. The UCS 6536 Fabric Interconnect from 4.2(3) UCS release enabled the following additional support - UCSM support, IOM 2304 support in IMM/UCSM, VIC 1300 series support in IMM/UCSM and Nexus FEX 2348UPQ in UCSM. Cisco UCS M4 B-series and C-series servers with UCS 6536 Fabric Interconnect are supported only in UCSM.

STEP 7   ORDER A TRUSTED PLATFORM MODULE (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.

The TPM ordering information is listed in *Table 14*.

Table 14 Trusted Platform Module

Product ID (PID)	PID Description
UCSX-TPM2-001	Trusted Platform Module for UCS (SPI-based)
UCSX-TPM2-002	Trusted Platform Module 2.0 for UCS servers
UCSX-TPM2-002B	Trusted Platform Module2.0 M5 UCS svr (FIPS 140-2 Compliant)

NOTE: 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. If there is no existing TPM in the server, you can install TPM 2.0.

STEP 8 CHOOSE OPTIONAL SECURE DIGITAL CARDS or M.2 DEVICES

A mini-storage connector is provided on the motherboard. There are two choices of mini-storage modular adapters that fit in the connector on the motherboard.

1. Adapter with two SD HC sockets that accommodate up to two SDHC cards
2. Adapter with two M.2 sockets that accommodate up to two M.2 devices

SD Cards and Modular Adapter

The SDHC card ordering information is listed in *Table 15*.

Table 15 PIDs for Secure Digital High-Capacity Card(s) and Modular Adapter

Product ID (PID)	PID Description
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
UCS-MSTOR-SD[1]	Modular adapter for SD card

Notes

1. The SD modular adapter (PID UCS-MSTOR-SD) is auto-included in CCW and is not selectable.

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

Supported Configurations

(1) **Select one or two Cisco secure digital cards**

■   Select up to two 32, 64, or 128 GB SD cards

(2) **Do not mix SD cards**

(3) **If you select SDHC cards, you cannot select any M.2 SATA SSD drive.**

M.2 SATA Cards and Modular Adapter

Order one or two matching M.2 SATA SSDs (see *Table 16*) along with a mini storage carrier or a boot-optimized RAID controller (see *Table 17*).

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 16*.

Table 16 M.2 SATA SSDs

Product ID (PID)	PID Description
UCS-M2-I240GB	240 GB M.2 SATA SSD
UCS-M2-I480GB	480 GB M.2 SATA SSD
UCS-M2-240G	240GB SATA M.2
UCS-M2-480G	480GB M.2 SATA SSD
UCS-M2-960G	960GB SATA M.2

Table 17 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

■ (CIMC/UCSM) is supported for configuring of volumes and monitoring of the controller and installed SATA M.2 drives

■ The minimum version of Cisco IMC and Cisco UCS Manager that support this controller is 4.0(B) 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

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■ Order either the Mini Storage carrier or the Boot-Optimized RAID controller from *Table 17*.

— 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 16*.

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.

STEP 9   ORDER INTERNAL USB 3.0 DRIVE (OPTIONAL)

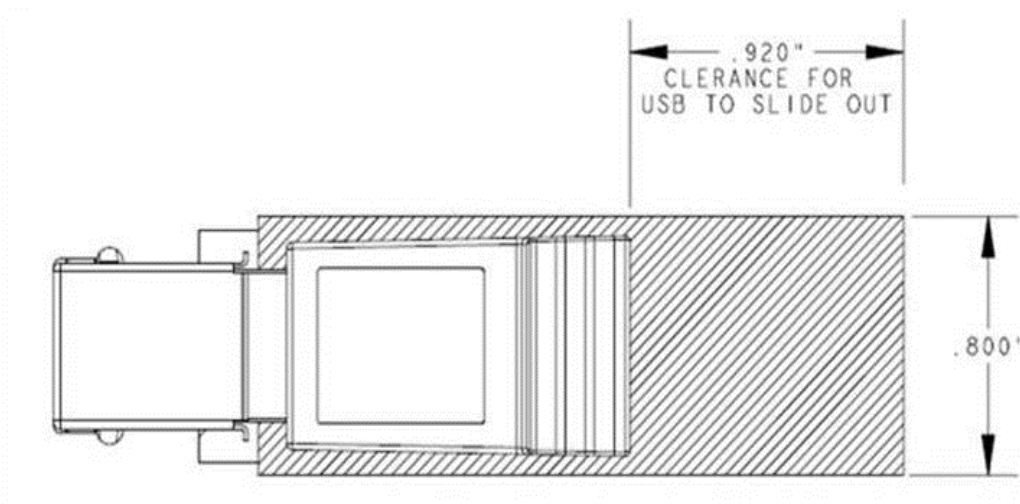You can order one optional internal USB 3.0 drive. The USB drive ordering information is listed in *Table 18*.

Table 18 USB 3.0 Drive

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

NOTE: A clearance of 0.950 inches (24.1 mm) is required for the USB device to be inserted and removed (see Figure 6)

Figure 6   USB Clearance

STEP 10 CHOOSE OPERATING SYSTEM AND VALUE-ADDED SOFTWARE.

> **NOTE:** VMware is on Compliance Hold. Contact the Compute-Vmware-Hold@cisco.com mailer to see if you are allowed to receive VMware Licenses

Select

- Cisco Software (*Table 19*)
- OEM Software (*Table 20*)
- Operating System (*Table 21*)

Table 19 Cisco Software

Product ID (PID)	PID Description
UCS B-Series Firmware Package	
N20-FW017[1]	UCS 5108 Blade Chassis FW Package 4.1
N20-FW018	UCS 5108 Blade Chassis FW Package 4.2
Nexus 1000V for Hyper-V and vSphere	
N1K-VSG-UCS-BUN	Nexus 1000V Adv Edition for vSphere Paper License Qty 1
UCS Multi-Domain Manager	
UCS-MDMGR-1S	UCS Multi-Domain Manager (Central) Per Server License

Notes

1. If selected cannot select with DIMM PID UCS-ML-128G4RT-H

Table 20 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 21   Operating System

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

Table 21 *(continued)*Operating System

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

Cisco UCS B480 M5 Blade Server

Table 21 *(continued)*Operating System

Product ID (PID)	PID Description
SLES-SAP-2S2V-3A	SLES for SAP Apps (1-2 CPU, 1-2 VM); 3-Yr Support Reqd
SLES-SAP-2S2V-5A	SLES for SAP Apps (1-2 CPU, 1-2 VM); 5-Yr Support Reqd
SLES-SAP-2S2V-1S	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 1-Yr SnS
SLES-SAP-2S2V-3S	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 3-Yr SnS
SLES-SAP-2S2V-5S	SLES for SAP Apps (1-2 CPU, 1-2 VM); Priority 5-Yr SnS

STEP 11 CHOOSE OPERATING SYSTEM MEDIA KIT (OPTIONAL)

Choose the optional operating system media listed in *Table 22*.

Table 22 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 12 CHOOSE SERVICE and SUPPORT LEVEL

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

Unified Computing Warranty, No Contract

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

- Three-year parts coverage.

- Next business day (NBD) onsite parts replacement eight hours a day, five days a week.

- 90-day software warranty on media.

- Ongoing downloads of BIOS, drivers, and firmware updates.

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

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 23*.

Table 23 Cisco SNTC for UCS Service (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-PREM-SBB480M5	C2P	Yes	SNTC 24X7X2OS
CON-UCSD8-SBB480M5	UCSD8	Yes	UC SUPP DR 24X7X2OS*
CON-C2PL-SBB480M5	C2PL	Yes	LL 24X7X2OS**
CON-OSP-SBB480M5	C4P	Yes	SNTC 24X7X4OS
CON-UCSD7-SBB480M5	UCSD7	Yes	UCS DR 24X7X4OS*
CON-C4PL-SBB480M5	C4PL	Yes	LL 24X7X4OS**
CON-USD7L-SBB480M5	USD7L	Yes	LLUCS HW DR 24X7X4OS***

Table 23 Cisco SNTC for UCS Service (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-OSE-SBB480M5	C4S	Yes	SNTC 8X5X4OS
CON-UCSD6-SBB480M5	UCSD6	Yes	UC SUPP DR 8X5X4OS*
CON-SNCO-SBB480M5	SNCO	Yes	SNTC 8x7xNCDOS****
CON-OS-SBB480M5	CS	Yes	SNTC 8X5XNBDOS
CON-UCSD5-SBB480M5	UCSD5	Yes	UCS DR 8X5XNBDOS*
CON-S2P-SBB480M5	S2P	No	SNTC 24X7X2
CON-S2PL-SBB480M5	S2PL	No	LL 24X7X2**
CON-SNTP-SBB480M5	SNTP	No	SNTC 24X7X4
CON-SNTPL-SBB480M5	SNTPL	No	LL 24X7X4**
CON-SNTE-SBB480M5	SNTE	No	SNTC 8X5X4
CON-SNC-SBB480M5	SNC	No	SNTC 8x7xNCD****
CON-SNT-SBB480M5	SNT	No	SNTC 8X5XNBD
CON-SW-SBB480M5	SW	No	SNTC NO RMA
Note: For PID UCSB-B480-M5-U, select Service SKU with BB480M5U suffix (Example: CON-PREM- BB480M5U)			
For PID UCSB-B480-M5-CH, select Service SKU with B480M5CH suffix (Example: CON-PREM- B480M5CH)			
*Includes Drive Retention (see *UCS Drive Retention Service on page 50*)			
**Includes Local Language Support (see *Local Language Technical Support for UCS on page 50*) – 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 24*

Table 24 SNTC for Cisco UCS Onsite Troubleshooting Service (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-OSPT-SBB480M5	OSPT	Yes	24X7X4OS Trblshtg

Table 24 SNTC for Cisco UCS Onsite Troubleshooting Service (PID UCSB-B480-M5)

CON-OSPTD-SBB480M5	OSPTD	Yes	24X7X4OS TrblshtgDR*
CON-OSPTL-SBB480M5	OSPTL	Yes	24X7X4OS TrblshtgLL**
CON-OPTLD-SBB480M5	OPTLD	Yes	24X7X4OS TrblshtgLLD***

Note: For PID UCSB-B480-M5-U, select Service SKU with BB480M5U suffix (Example: CON-PREM- BB480M5U)

 For PID UCSB-B480-M5-CH, select Service SKU with B480M5CH suffix (Example: CON-PREM- B480M5CH)

*Includes Drive Retention (see *UCS Drive Retention Service on page 50*)

**Includes Local Language Support (see *Local Language Technical Support for UCS on page 50*) – Only

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

Solution Support for UCS

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

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

You can choose a desired service listed in\ *Table 25*.

Table 25 Solution Support for UCS Service (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-SSC2P-SBB480M5	SSC2P	Yes	SOLN SUPP 24X7X2OS
CON-SSC4P-SBB480M5	SSC4P	Yes	SOLN SUPP 24X7X4OS
CON-SSC4S-SBB480M5	SSC4S	Yes	SOLN SUPP 8X5X4OS
CON-SSCS-SBB480M5	SSCS	Yes	SOLN SUPP 8X5XNBDOS
CON-SSDR7-SBB480M5	SSDR7	Yes	SSPT DR 24X7X4OS*
CON-SSDR5-SBB480M5	SSDR5	Yes	SSPT DR 8X5XNBDOS*
CON-SSS2P-SBB480M5	SSS2P	No	SOLN SUPP 24X7X2
CON-SSSNP-SBB480M5	SSSNP	No	SOLN SUPP 24X7X4
CON-SSSNE-SBB480M5	SSSNE	No	SOLN SUPP 8X5X4

Table 25 Solution Support for UCS Service (PID UCSB-B480-M5) *(continued)*

Service SKU	Service Level GSP	On Site?	Description
CON-SSSNC-SBB480M5	SSSNC	No	SOLN SUPP NCD**
CON-SSSNT-SBB480M5	SSSNT	No	SOLN SUPP 8X5XNBD
Note: For PID UCSB-B480-M5-U, select Service SKU with BB480M5U suffix (Example: CON-PREM- BB480M5U)			
For PID UCSB-B480-M5-CH, select Service SKU with B480M5CH suffix (Example: CON-PREM- B480M5CH)			
*Includes Drive Retention (see *UCS Drive Retention Service on page 50*)			
**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 26*

Table 26 SNTC for UCS Hardware Only Service (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-UCW7-SBB480M5	UCW7	Yes	UCS HW 24X7X4OS
CON-UCWD7-SBB480M5	UCWD7	Yes	UCS HW+DR 24X7X4OS*
CON-UCW7L-SBB480M5	UCW7L	Yes	LL UCS 24X7X4OS**
CON-UWD7L-SBB480M5	UWD7L	Yes	LL UCS DR 24X7X4OS***
CON-UCW5-SBB480M5	UCW5	Yes	UCS HW 8X5XNBDOS
CON-UCWD5-SBB480M5	UCWD5	Yes	UCS HW+DR 8X5XNBDOS*

Note: For PID UCSB-B480-M5-U, select Service SKU with BB480M5U suffix (Example: CON-PREM-B480M5U)

For PID UCSB-B480-M5-CH, select Service SKU with B480M5CH suffix (Example: CON-PREM- B480M5CH)

*Includes Drive Retention (see *UCS Drive Retention Service on page 50*)

**Includes Local Language Support (see *Local Language Technical Support for UCS on page 50*) – Only

***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 27*.

Table 27 PSS for UCS (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-PSJ8-SBB480M5	PSJ8	Yes	UCS PSS 24X7X2 OS
CON-PSJ7-SBB480M5	PSJ7	Yes	UCS PSS 24X7X4 OS
CON-PSJD7-SBB480M5	PSJD7	Yes	UCS PSS 24X7X4 DR*
CON-PSJ6-SBB480M5	PSJ6	Yes	UCS PSS 8X5X4 OS
CON-PSJD6-SBB480M5	PSJD6	Yes	UCS PSS 8X5X4 DR*
CON-PSJ4-SBB480M5	PSJ4	No	UCS SUPP PSS 24X7X2
CON-PSJ3-SBB480M5	PSJ3	No	UCS SUPP PSS 24X7X4
CON-PSJ2-SBB480M5	PSJ2	No	UCS SUPP PSS 8X5X4
CON-PSJ1-SBB480M5	PSJ1	No	UCS SUPP PSS 8X5XNBD

Note: For PID UCSB-B480-M5-U, select Service SKU with BB480M5U suffix (Example: CON-PREM- BB480M5U)

 For PID UCSB-B480-M5-CH, select Service SKU with B480M5CH suffix (Example: CON-PREM- B480M5CH)

*Includes Drive Retention (see *UCS Drive Retention Service on page 50*)

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 28*

Table 28 PSS for UCS Hardware Only (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-PSW7-SBB480M5	PSW7	Yes	UCS W PSS 24X7X4 OS
CON-PSWD7-SBB480M5	PSWD7	Yes	UCS W PSS 24X7X4 DR*
CON-PSW6-SBB480M5	PSW6	Yes	UCS W PSS 8X5X4 OS
CON-PSWD6-SBB480M5	PSWD6	Yes	UCS W PSS 8X5X4 DR*
CON-PSW4-SBB480M5	PSW4	No	UCS W PL PSS 24X7X2
CON-PSW3-SBB480M5	PSW3	No	UCS W PL PSS 24X7X4
CON-PSW2-SBB480M5	PSW2	No	UCS W PL PSS 8X5X4

Note: For PID UCSB-B480-M5-U, select Service SKU with BB480M5U suffix (Example: CON-PREM- BB480M5U)

For PID UCSB-B480-M5-CH, select Service SKU with B480M5CH suffix (Example: CON-PREM- B480M5CH)

*Includes Drive Retention (see *UCS Drive Retention Service on page 50*)

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 29*.

Table 29 Combined Support Service for UCS (PID UCSB-B480-M5)

Service SKU	Service Level GSP	On Site?	Description
CON-NCF2P-SBB480M5	NCF2P	Yes	CMB SVC 24X7X2OS

Table 29 Combined Support Service for UCS (PID UCSB-B480-M5)

CON-NCF4P-SBB480M5	NCF4P	Yes	CMB SVC 24X7X4OS
CON-NCF4S-SBB480M5	NCF4S	Yes	CMB SVC 8X5X4OS
CON-NCFCS-SBB480M5	NCFCS	Yes	CMB SVC 8X5XNBDOS
CON-NCF2-SBB480M5	NCF2	No	CMB SVC 24X7X2
CON-NCFP-SBB480M5	NCFP	No	CMB SVC 24X7X4
CON-NCFE-SBB480M5	NCFE	No	CMB SVC 8X5X4
CON-NCFT-SBB480M5	NCFT	No	CMB SVC 8X5XNBD
CON-NCFW-SBB480M5	NCFW	No	CMB SVC SW

Note: For PID UCSB-B480-M5-U, select Service SKU with BB480M5U suffix (Example: CON-PREM- BB480M5U)

For PID UCSB-B480-M5-CH, select Service SKU with B480M5CH suffix (Example: CON-PREM- B480M5CH)

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

## STEP 13 CHOOSE LOCAL KVM I/O CABLE (OPTIONAL)

The local KVM I/O cable ships with every UCS 5108 blade chassis accessory kit. The 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 local KVM I/O cable ordering information is listed in *Table 30*.

Table 30 Local KVM I/O Cable

Product ID (PID)	PID Description
N20-BKVM=	Local KVM I/O cable for UCS servers console port

Figure 7   Local KVM I/O Cable
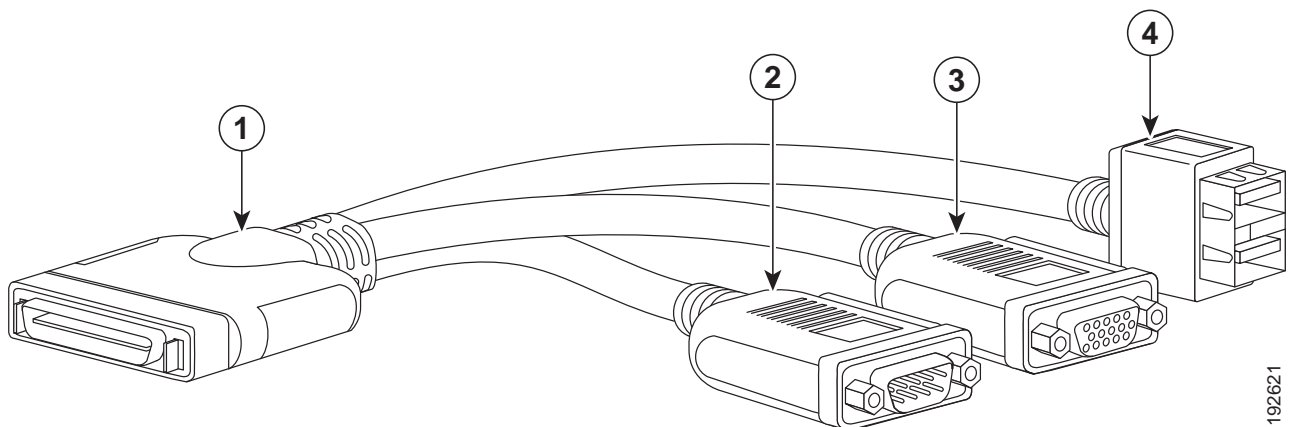
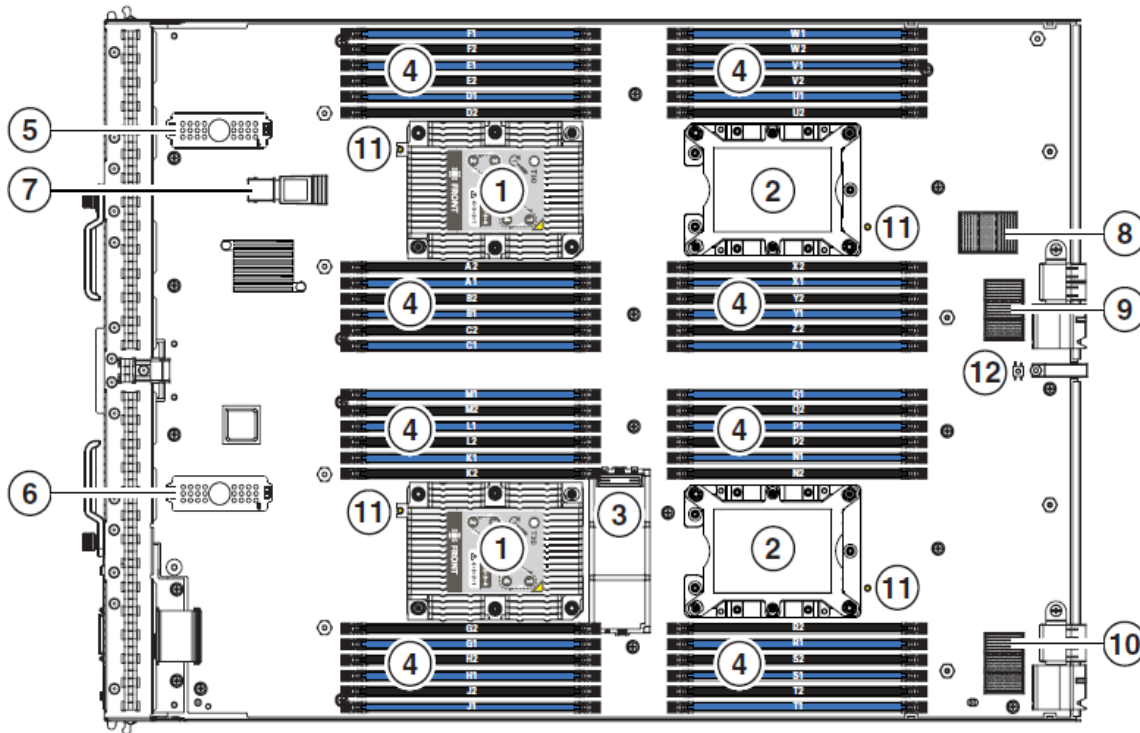| 1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB connector (for a mouse and keyboard)

> **NOTE:** The blade chassis ships with the local KVM I/O cable.

SUPPLEMENTAL MATERIAL

System Board

A top view of the UCS B480 M5 system board is shown in *Figure 8*.

Figure 8   UCS B480 M5 System Board

1	Front CPUs (CPU1 and CPU2) sockets (populated)	7	USB connector (populated)
2	Rear CPUs (CPU3 and CPU4) sockets (not populated)	8	mLOM connector (rear mezzanine slot 1)
3	Mini storage connector	9	Rear mezzanine connector 1 (rear mezzanine slot 2)
4	DIMM slots	10	Rear mezzanine connector 2 (rear mezzanine slot 3)
5	Front mezzanine connector 1	11	CPU heat sink install guide pins
6	Front mezzanine connector 2	12	Diagnostic button

DIMM Physical Layout

The overall DIMM and CPU physical layout is shown in *Figure 9*.

Figure 9   DIMM and CPU Layout
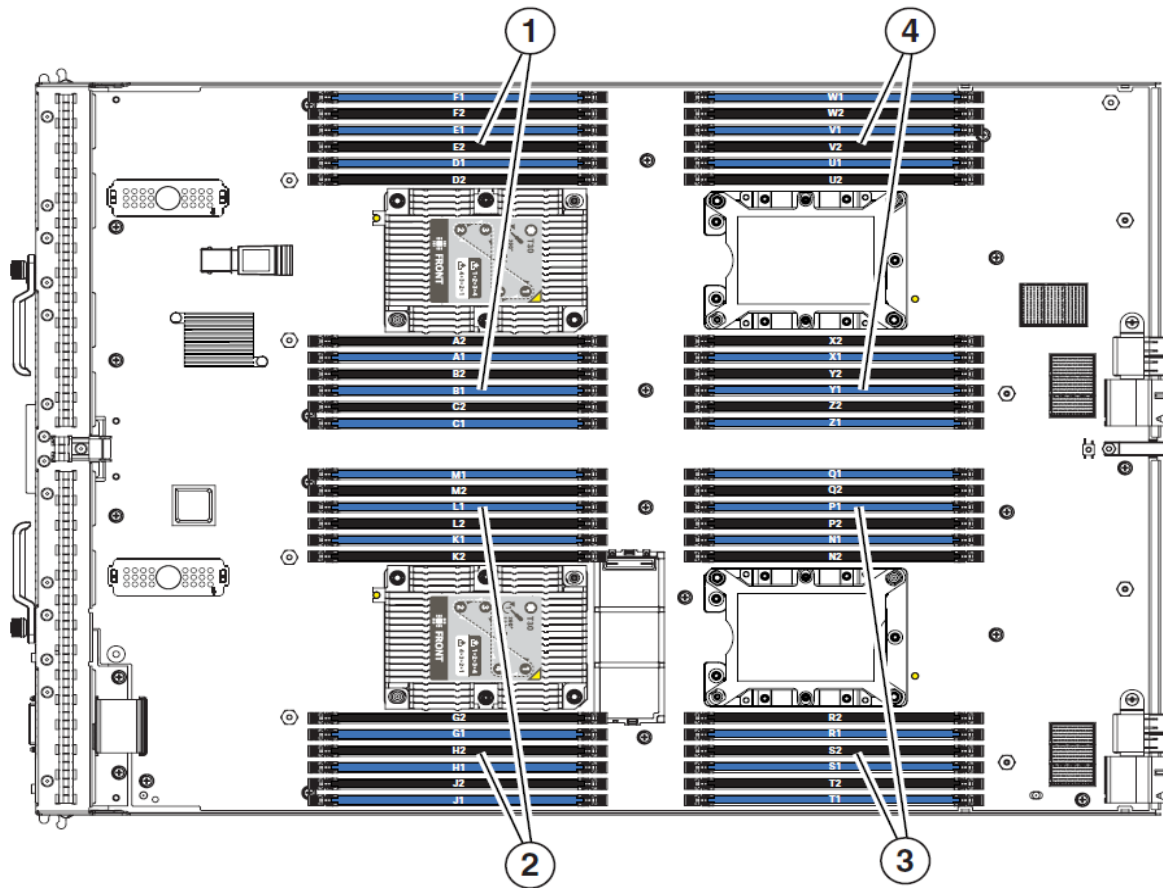
1	Channel A - F DIMMs for CPU 1	3	Channel N - T DIMMs for CPU 3
2	Channel G - L DIMMs for CPU 2	4	Channels U - Z DIMMs for CPU 4

Figure 10 shows how channels are physically laid out on the blade server. The DIMM slots are contiguous to their associated CPU.
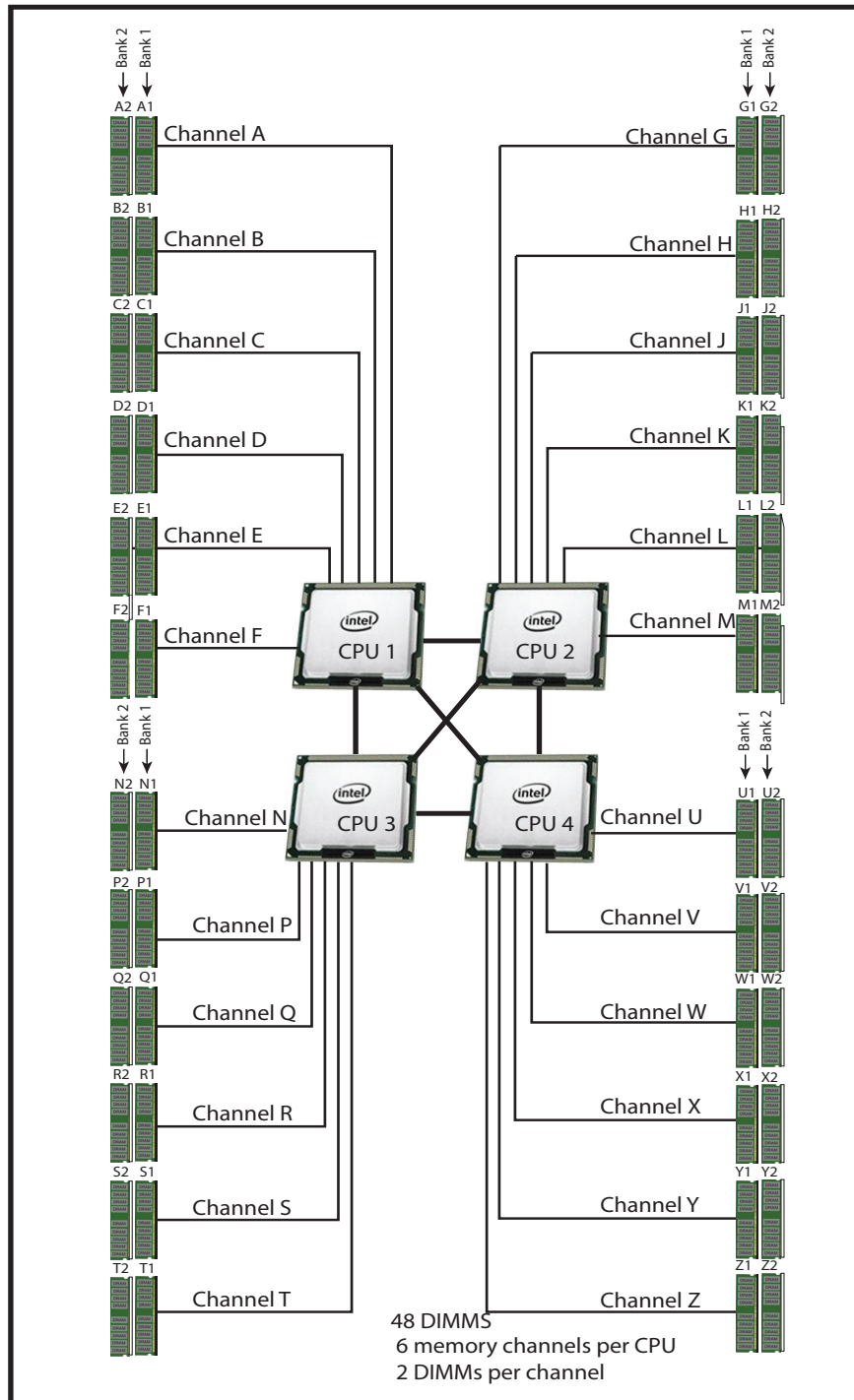
Figure 10   Physical Representation of DIMMs and CPUs
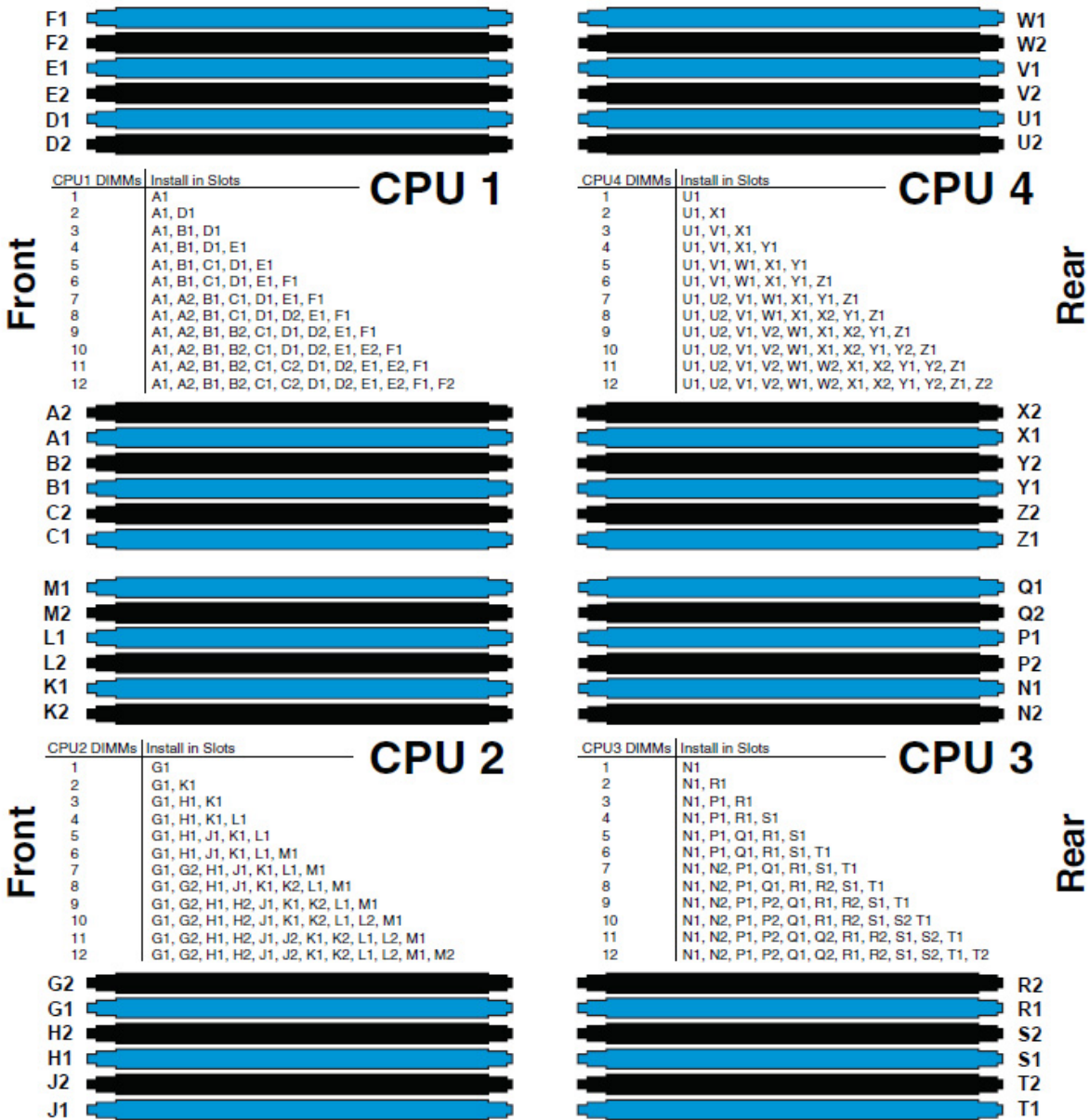
DIMM and CPU Logical Layout

Memory is organized as shown in *Figure 11*.

Figure 11   UCS B480 M5 Memory Organization

48 DIMMS
6 memory channels per CPU
2 DIMMs per channel

> **NOTE:** All non-populated DIMM slots must have a DIMM blank (UCS-DIMM-BLK) installed.

Each CPU controls six memory channels and 12 DIMM slots, as follows:

- CPU1: Channels A, B, C, D, E, and F
    - Bank 1 - A1, B1, C1, D1, E1, and F1 (blue DIMM slots)
    - Bank 2 - A2, B2, C2, D2, E2, and F2 (black DIMM slots)
- CPU2: Channels G, H, J, K, L, and M
    - Bank 1 - G1, H1, J1, K1, L1, and M1 (blue DIMM slots)
    - Bank 2 - G2, H2, J2, K2, L2, and M2 (black DIMM slots)
- CPU3: Channels N, P, Q, R, S, and T
    - Bank 1 - N1, P1, Q1, R1, S1, and T1 (blue DIMM slots)
    - Bank 2 - N2, P2, Q2, R2, S2, and T2 (black DIMM slots)
- CPU4: Channels U, V, W, X, Y, and Z
    - Bank 1 - U1, V1, W1, X1, Y1, and Z1 (blue DIMM slots)
    - Bank 2 - U2, V2, W2, X2, Y2, and Z2 (black DIMM slots)

For more details, see the document titled "*Cisco UCS B480 M5 Memory Guide,*" available at

https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-b-series-blade-servers/datasheet-listing.html

Memory Support for CPU Classes and CPU Modes

For 2nd Generation Intel® Xeon® Scalable Processors:

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

For Configurations Using Only DIMMs

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

For Configurations Using DIMMs and PMem in App Direct Mode

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

For Configurations Using DIMMs and PMem in Memory or Mixed Mode

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

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

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

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

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

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

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

NETWORK CONNECTIVITY

For network connectivity, details please review the **Cisco UCS 5108 Blade Server Chassis Spec Sheet.**

SPARE PARTS

This section lists the upgrade and service-related parts for the UCS B480 M5 server. Some of these parts are configured with every server or with every UCS 5108 blade server chassis.

Table 31 Spare Parts

Product ID (PID)	PID Description
Rack	
RACK-BLANK-001=	Blanking panels (qty 12), 1U, plastic, toolless.Recommended to ensure proper airflow. Fill all empty RU spaces in the front of the rack. Because each blanking panel PID includes 12 panels, use the following calculation: 42RU - occupied RU = available RU. Divide available RU by 12 to determine PID order quantity.
RACK-CBLMGT-001=	Cable mgt D rings (qty 10), metal.Use the D rings to bundle system cables to ensure proper airflow.
RACK-CBLMGT-003=	Brush strip (qty 1), 1 U.The brush strip promotes proper airflow while allowing cables to be passed from the front to the rear of the rack.
RACK-CBLMGT-011=	Cable mgt straps (qty 10), Velcro.Use the Velcro straps to bundle system cables to ensure proper airflow.
RACK2-JOIN-001=	Rack joining kit.Use the kit to connect adjacent racks within a row. Order 1 unit less than the number of racks in the row.
RACK2-GRND-001=	Cisco R42612 grounding kit
Local KVM I/O Cable	
N20-BKVM=	KVM local IO cable for UCS servers console port
CPU Accessories	
UCSB-HS-M5-F	CPU Heat Sink for UCS B-Series M5 CPU socket (Front)
UCSB-HS-M5-R	CPU Heat Sink for UCS B-Series M5 CPU socket (Rear)
UCS-CPU-TIM=	Single CPU thermal interface material syringe for M5 server HS seal
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
Memory	
UCS-DIMM-BLK=	UCS DIMM Blanks
UCS-ML-128G4RW=	128GB DDR4-3200MHz LRDIMM 4Rx4 (16Gb)
UCS-MR-X64G2RW=	64GB DDR4-3200MHz RDIMM 2Rx4 (16Gb)
UCS-MR-X32G2RW=	32GB DDR4-3200MHz RDIMM 2Rx4 (8Gb)

Table 31 Spare Parts

UCS-MR-X16G1RW=	16GB DDR4-3200MHz RDIMM 1Rx4 (8Gb)
Storage Controller	
UCSB-MRAID-SC=	Supercap for FlexStorage 12G SAS RAID controller w/1GB FBWC
UCSB-MRAID12G=	Cisco FlexStorage 12G SAS RAID controller with drive bays
UCSB-MRAID12G-HE=	Cisco FlexStorage 12G SAS RAID controller with 2 GB flash-backed write cache and drive bays
UCSB-LSTOR-PT=	Cisco FlexStorage Passthrough module w/drive bays
UCSB-LSTOR-BK=	Cisco FlexStorage blanking panel w/o controller, w/o drive bays
Drives	
HDDs	
HDDs (15K RPM)	
UCS-HD300G15K12G=	300 GB 12G SAS 15K RPM SFF HDD
UCS-HD600G15K12G=	600 GB 12G SAS 15K RPM SFF HDD
UCS-HD900G15K12G=	900 GB 12G SAS 15K RPM SFF HDD
HDDs (10K RPM)	
UCS-HD300G10K12G=	300 GB 12G SAS 10K RPM SFF HDD
UCS-HD600G10K12G=	600 GB 12G SAS 10K RPM SFF HDD
UCS-HD12TB10K12G=	1.2 TB 12G SAS 10K RPM SFF HDD
UCS-HD18TB10KS4K=	1.8 TB 12G SAS 10K RPM SFF HDD (4K)
UCS-HD24TB10KS4K=	2.4 TB 12G SAS 10K RPM SFF HDD (4K)
Enterprise Performance SSDs (High endurance, supports up to 10X or 3X DWPD (drive writes per day))	
SAS SSDs	
UCS-SD800GKB3X-EP=	800GB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)
UCS-SD16TKB3X-EP=	1.6TB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)
SATA SSDs	
UCS-SD480GIS3-EP=	480GB 2.5in Enterprise performance 6G SATA SSD(3X endurance) (IntelS4600/S4610)
UCS-SD960GIS3-EP=	960GB 2.5in Enterprise performance 6G SATA SSD(3X endurance) (IntelS4600/S4610)
UCS-SD19TIS3-EP=	1.9TB 2.5in Enterprise performance 6G SATA SSD(3X endurance) (IntelS4600/S4610)
UCS-SD19TBMB3X-EP=	1.9TB 2.5in Enterprise performance 6GSATA SSD(3X endurance)

Table 31 Spare Parts

UCS-SD480GBMB3XEP=	480GB 2.5in Enterprise performance 6GSATA SSD(3X endurance)
UCS-SD960GBMB3XEP=	960GB 2.5in Enterprise performance 6GSATA SSD(3X endurance)
Enterprise Value	
UCS-SD480GBIS6-EV=	480GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)
UCS-SD960GBIS6-EV=	960GB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)
UCS-SD38TBIS6-EV=	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (Intel S4500/S4150)
UCS-SD960GKB1X-EV=	960GB 2.5 inch Enterprise Value 12G SAS SSD
UCS-SD19TKB1X-EV=	1.9TB 2.5 inch Enterprise Value 12G SAS SSD
UCS-SD960G6SB-EV=	960GB 2.5 inch Enterprise Value 6G SATA SSD
UCS-SD19T6SB-EV=	1.9TB 2.5 inch Enterprise Value 6G SATA SSD
UCS-SD38T6SB-EV=	3.8TB 2.5 inch Enterprise Value 6G SATA SSD
UCS-SD78T6SB-EV=	7.6TB 2.5 inch Enterprise Value 6G SATA SSD
UCS-SD76TMS4-EV=	7.6TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)
UCS-SD38TMS4-EV=	3.8TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)
UCS-SD19TMS4-EV=	1.9TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)
UCS-SD16TMS4-EV=	1.6TB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)
UCS-SD960GMS4-EV=	960GB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)
UCS-SD480GMS4-EV=	480GB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)
UCS-SD240GMS4-EV=	240GB 2.5in Enter Value 6GSATA Micron SSD(1X endurance)
Self-Encrypted Drives (SED)	
UCS-HD600G15K9=	600GB 12G SAS 15K RPM SFF HDD (SED)
UCS-HD18G10K9=	1.8TB 12G SAS 10K RPM SFF HDD (4K format, SED)
UCS-HD24T10BNK9=	2.4 TB 12G SAS 10K RPM SFF HDD (4K) SED
UCS-SD800GBKBNK9=	800GB 2.5" Enterprise performance 12GSAS SSD(3DWPD,SED-FIPS)
UCS-SD960GBKBNK9=	960GB 2.5" Enterprise value 12G SAS SSD (1X endurance, FIPS)
UCS-SD38TBKBNK9=	3.8TB 2.5" Enterprise value 12G SAS SSD (1DWPD, SED-FIPS)
UCS-SD16TBKBNK9=	1.6TB 2.5" Enterprise performance 12GSAS SSD(3DWPD,SED-FIPS)
UCS-SD960GM6NK9=	960GB Enterprise Value SATA SSD (1X , SED)
UCS-SD76TM6NK9=	7.6TB Enterprise Value SATA SSD (1X, SED)
UCS-SD19TM6NK9=	1.9TB 2.5in Enterprise performance 6GSATA SSD(3X endurance)

Table 31 Spare Parts

NVMe	
UCSB-NVMEHW-I2000=	Cisco 2.5" U.2 2TB Intel P4600 NVMe High Perf. High Endurance
UCSB-NVMEXPB-I375=	Cisco 2.5in U.2 375GB Intel P4800 NVMe Med. Perf
UCSB-NVME2H-I1000=	Cisco 2.5" U.2 1,0 TB Intel P4510 NVMe High Perf. Value Endu
UCSB-NVMHG-W3200=	3.2TB 2.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance
UCSB-NVMHG-W7600=	7.6TB 2.5in U.2 WD SN840 NVMe Extreme Perf. Value Endurance
UCSB-NVMHG-W15300=	15.3TB 2.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance
Supported Mezzanine cards	
UCSB-MLOM-40G-04=	UCS VIC 1440 modular LOM for blade servers mLOM
UCSB-MLOM-40G-03=	UCS VIC 1340 modular LOM for blade servers mLOM
UCSB-VIC-M84-4P=	Cisco UCS VIC 1480 mezzanine adapter Rear Mezzanine
UCSB-VIC-M83-8P=	Cisco UCS VIC 1380 mezzanine adapter
Port Expander Card for VIC option	
UCSB-MLOM-PT-01=	Cisco UCS Port Expander Card for VIC.
Trusted Platform Module	
UCSX-TPM2-001=	Trusted Platform Module for UCS (SPI-based)
UCSX-TPM2-002=	Trusted Platform Module 2.0 for UCS servers
UCSX-TPM2-002B=	Trusted Platform Module2.0 M5 UCS svr (FIPS 140-2 Compliant)
Secure Digital Cards	
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
UCS-MSTOR-SD=	SD module card (holds up to 2)
M.2 SATA SSD and Raid controller	
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)
UCS-M2-I240GB=	240 GB M.2 SATA SSD
UCS-M2-I480GB=	480 GB M.2 SATA SSD
UCS-M2-240G=	240GB SATA M.2
UCS-M2-480G=	480GB M.2 SATA SSD

Table 31 Spare Parts

UCS-M2-960G=	960GB SATA M.2
USB 3.0 Drive	
UCS-USBFLSHB-16GB=	UCS Servers 16 GB Flash USB Drive
Power Cables	
CAB-C13-C14-2M=	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V
CAB-250V-10A-AR=	Power Cord, SFS, 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-AC-L620-C13=	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft
CAB-250V-10A-BR=	Power Cord - 250V, 10A - Brazil
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	

Table 31 Spare Parts

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=	
Microsoft Windows Server	
MSWS-19-DC16C=	Windows Server 2019 Data Center (16 Cores/Unlimited VMs)
MSWS-19-DC16C-NS=	Windows Server 2019 DC (16 Cores/Unlim VMs) - No Cisco SVC
MSWS-19-ST16C=	Windows Server 2019 Standard (16 Cores/2 VMs)
MSWS-19-ST16C-NS=	Windows Server 2019 Standard (16 Cores/2 VMs) - No Cisco SVC
MSWS-22-ST16C =	Windows Server 2022 Standard (16 Cores/2 VMs)
MSWS-22-ST16C-NS =	Windows Server 2022 Standard (16 Cores/2 VMs) - No Cisco SVC
MSWS-22-DC16C=	Windows Server 2022 Data Center (16 Cores/Unlimited VMs)
MSWS-22-DC16C-NS=	Windows Server 2022 DC (16 Cores/Unlim VMs) - No Cisco SVC
VMware vCenter	
VMW-VCS-STD-1A=	VMware vCenter 6 Server Standard, 1 yr support required
VMW-VCS-STD-3A=	VMware vCenter 6 Server Standard, 3 yr support required
VMW-VCS-STD-5A=	VMware vCenter 6 Server Standard, 5 yr support required
VMW-VCS-FND-1A=	VMware vCenter 6 Server Foundation (3 Host), 1 yr supp reqd
VMW-VCS-FND-3A=	VMware vCenter 6 Server Foundation (3 Host), 3 yr supp reqd
VMW-VCS-FND-5A=	VMware vCenter 6 Server Foundation (3 Host), 5 yr supp reqd
Red Hat	
RHEL-2S2V-1A=	Red Hat Enterprise Linux (1-2 CPU,1-2 VN)
RHEL-2S2V-3A=	Red Hat Enterprise Linux (1-2 CPU,1-2 VN)
RHEL-2S2V-1S=	Red Hat Enterprise Linux (1-2 CPU,1-2 VN)
RHEL-2S2V-3S=	Red Hat Enterprise Linux (1-2 CPU,1-2 VN)
RHEL-2S-HA-1S=	RHEL High Availability (1-2 CPU)
RHEL-2S-HA-3S=	RHEL High Availability (1-2 CPU)
RHEL-2S-RS-1S=	RHEL Resilient Storage (1-2 CPU)
RHEL-2S-RS-3S=	RHEL Resilient Storage (1-2 CPU)
RHEL-2S2V-5A=	Red Hat Enterprise Linux (1-2 CPU,1-2 VN)
RHEL-2S-HA-1A=	RHEL High Availability (1-2 CPU)
RHEL-2S-HA-3A=	RHEL High Availability (1-2 CPU)

Table 31 Spare Parts

RHEL-2S-HA-5A=	RHEL High Availability (1-2 CPU)
RHEL-2S-RS-1A=	RHEL Resilent Storage (1-2 CPU)
RHEL-2S-RS-3A=	RHEL Resilent Storage (1-2 CPU)
RHEL-2S-RS-5A=	RHEL Resilent Storage (1-2 CPU)
Red Hat SAP	
RHEL-SAP-2S2V-1S=	RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 1-Yr SnS Reqd
RHEL-SAP-2S2V-3S=	RHEL for SAP Apps (1-2 CPU, 1-2 VN); Prem 3-Yr SnS Reqd
RHEL-SAPSP-3S=	RHEL SAP Solutions Premium - License with 3 Years of SnS
RHEL-SAPSS-3S=	RHEL SAP Solutions Standard - License with 3 Years of SnS
VMware	
VMW-VSP-STD-1A=	VMware vSphere 7 Std (1 CPU, 32 Core) 1-yr, Support Required
VMW-VSP-STD-3A=	VMware vSphere 7 Std (1 CPU, 32 Core) 3-yr, Support Required
VMW-VSP-STD-5A=	VMware vSphere 7 Std (1 CPU, 32 Core) 5-yr, Support Required
VMW-VSP-EPL-1A=	VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 1Yr, Support Reqd
VMW-VSP-EPL-3A=	VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 3Yr, Support Reqd
VMW-VSP-EPL-5A=	VMware vSphere 7 Ent Plus (1 CPU, 32 Core) 5Yr, Support Reqd
SLES and SAP	
SLES-SAP-2S2V-1A=	SLES for SAP Apps (1-2 CPU, 1-2 VM)
SLES-SAP-2S2V-3A=	SLES for SAP Apps (1-2 CPU, 1-2 VM)
SLES-SAP-2S2V-5A=	SLES for SAP Apps (1-2 CPU, 1-2 VM)
SLES-SAP-2S2V-1S=	SLES for SAP Apps (1-2 CPU, 1-2 VM)
SLES-SAP-2S2V-3S=	SLES for SAP Apps (1-2 CPU, 1-2 VM)
SLES-SAP-2S2V-5S=	SLES for SAP Apps (1-2 CPU, 1-2 VM)
SUSE	
SLES-2S2V-1A=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM)
SLES-2S2V-3A=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM)
SLES-2S2V-5A=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM)
SLES-2S2V-1S=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM)
SLES-2S2V-3S=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM)
SLES-2S2V-5S=	SUSE Linux Enterprise Svr (1-2 CPU,1-2 VM)

Table 31 Spare Parts

SLES-2S-HA-1S=	SUSE Linux High Availability Ext (1-2 CPU)
SLES-2S-HA-3S=	SUSE Linux High Availability Ext (1-2 CPU)
SLES-2S-HA-5S=	SUSE Linux High Availability Ext (1-2 CPU)
SLES-2S-GC-1S=	SUSE Linux GEO Clustering for HA (1-2 CPU)
SLES-2S-GC-3S=	SUSE Linux GEO Clustering for HA (1-2 CPU)
SLES-2S-GC-5S=	SUSE Linux GEO Clustering for HA (1-2 CPU)
SLES-2S-LP-1S=	SUSE Linux Live Patching Add-on (1-2 CPU)
SLES-2S-LP-3S=	SUSE Linux Live Patching Add-on (1-2 CPU)

UPGRADING or REPLACING CPUs

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

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

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

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

(2) Order the appropriate replacement CPU from *Table 3 on page 8*.

(3) Carefully remove and replace the CPU and heatsink in accordance with the instructions found in "Cisco UCS B480 M5 Blade Server Installation and Service Note," found at:

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B480M5/B480M5_chapter_011.html#task_xhs_hcz_tz.

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

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

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

(2) Order the appropriate new CPU from *Table 3 on page 8*.

(3) Order one heat sink for each new CPU. Order PID UCSB-HS-M5-F= for front CPUs and PID UCSB-HS-M5-R= for rear CPUs.

(4) Carefully install the CPU and heatsink in accordance with the instructions found in "Cisco UCS B480 M5 Blade Server Installation and Service Note," found at:

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B480M5/B480M5_chapter_011.html#task_xhs_hcz_tz.

(5) UPGRADING or REPLACING MEMORY

> **NOTE:** Before servicing any DIMM or PMem, do the following:
> - Decommission and power off the server.
> - Remove the top cover from the server
> - Slide the server out the front of the chassis.

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

(1) Order new DIMMs or PMem as needed from *Table 5 on page 13*.

(2) Order DIMM/PMem blanks as needed (PID UCS-DIMM-BLK=)

(3) Open both connector latches and remove and replace the DIMM/PMem or blank as needed.

Figure 12 Replacing Memory

Cisco UCS B480 M5 Blade Server
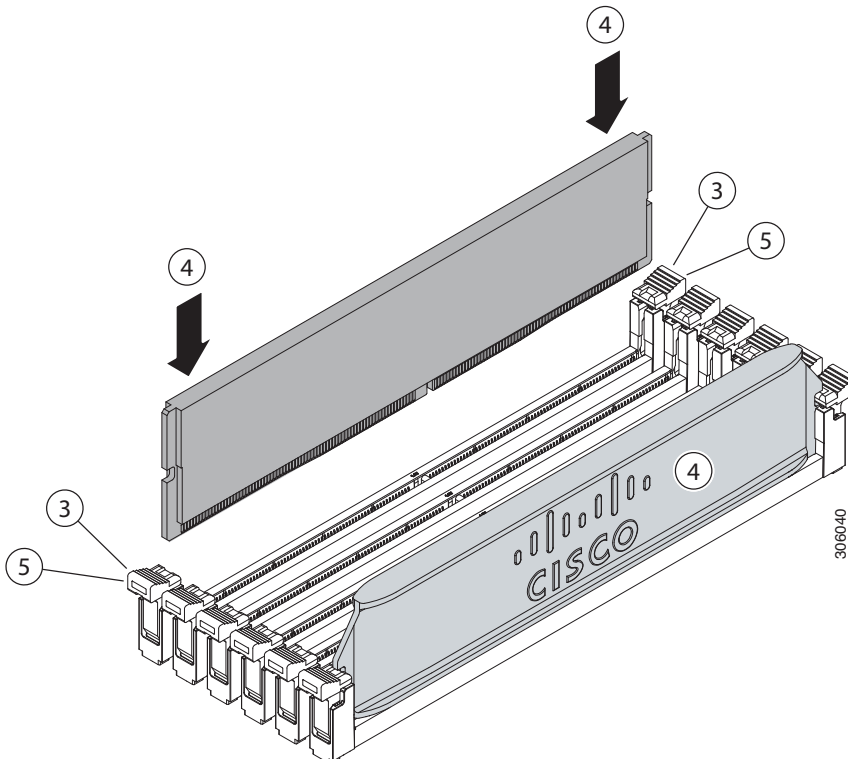
(4) Press evenly on both ends of the DIMM/PMem until it clicks into place in its slot.

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.

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

(6) Populate all slots with a DIMM, PMem, or DIMM blank. A slot cannot be empty.

For additional details on replacing or upgrading DIMMs and PMem, see "Cisco UCS C240 M5 Server Installation and Service Guide," found at these links:

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B480M5/B480M5_chapter_011.html#concept_a3p_vfl_kz

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/hw/blade-servers/B480M5/B480M5_chapter_011.html#concept_qtr_4xh_zgb

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 32* to determine if still supported.

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
DRIVES		
UCS-SD150GBKS4-EV	150 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-c51-740779.html
UCS-SD480GBKS4-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-c51-740779.html
UCS-SD960GIKS4-EV	960GB 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-c51-740779.html
UCS-SD16TBKS4-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-c51-740779.html
UCS-SD150GBKS4-EV	150 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-c51-740779.html
HX-SD480GBKSS-EV	480GB 2.5 in Enterprise Value 6G SATA SSD(1DWPD)-PM86	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/eos-eol-notice-c51-742066.html
UCS-SD240GBKS4-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-SD480GBKSS-EV	480GB 2.5 in Enterprise Value 6G SATA SSD(1DWPD)-PM86	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/eos-eol-notice-c51-742066.html
UCS-SD16TBKS4-EV	1.6TB 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-SD480GH1-EV	480GB 2.5 inch Enterprise Value 12G SAS SSD (1X endurance)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD19TH1-EV	1.9TB 2.5 inch Enterprise Value 12G SAS SSD (1X endurance)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD960GBHBNK9	960GB Enterprise value SAS SSD (1X DWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD38TH1-EV	3.8TB 2.5 inch Enterprise Value 12G SAS SSD (1X endurance)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCS-SD19TSAS-EV	1.9TB 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-SD960GSAS-EV	960GB 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-SD480GSAS-EV	480 GB 2.5 inch Enterprise Value 12G SAS SSD	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html
UCS-SD480GBMS4-EV	480GB 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/unified-computing-accessories-eol.html
UCS-SD76TSB61X-EV	7.6TB 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/select-ucs-hyperflex-accessories-eol2.html
UCS-SD400G12S4-EP	400 GB 2.5 inch Ent Performance 12G SAS SSD (10X endurance) (SanDisk Lightning II)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.html
UCSB-NVMEHW-H1600	1.6TB 2.5in U.2 HGST SN200 NVMe High Perf. High Endurance	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html
UCS-SD960GH1-EV	960GB 2.5 inch Enterprise Value 12G SAS SSD (1X endurance)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD16TBMS4-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/unified-computing-accessories-eol.html
UCS-SD38TBMS4-EV	3.8TB 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/unified-computing-accessories-eol.html
UCS-SD960GBKS4-EV	960GB 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/select-ucs-hyperflex-accessories-eol2.html
UCS-SD200G12S3-EP	200GB 2.5 inch Enterprise performance 6G SATA SSD(3 DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-739513.html
UCS-SD480G12S3-EP	480GB 2.5 inch Ent. Performance 6GSATA SSD(3X endurance)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-739513.html
UCS-SD800G12S3-EP	800GB 2.5 inch Enterprise performance 6G SATA SSD(3 DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-739513.html
UCS-SD16TB12S3-EP	1.6TB 2.5 inch Ent. Performance 6GSATA SSD(3X endurance)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-739513.html
UCS-SD400GH3-EP	400GB 2.5 inch Enterprise performance 12G SAS SSD (3X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-739513.html

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCS-SD800G12S4-EP	800 GB 2.5 inch Ent. Performance 12G SAS SSD (10X endurance) (Samsung 1635)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.html
UCS-SD16TB12S4-EP	1.6 TB 2.5 inch Ent. Performance 12G SAS SSD (10X endurance) (SanDisk Lightning II)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-741644.html
UCS-SD800GH3-EP	800GB 2.5 inch Enterprise performance 12G SAS SSD (3X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD400GSAS3-EP	400GB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD16TH3-EP	1.6TB 2.5 inch Enterprise performance 12G SAS SSD (3X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD32TSASS3-EP	3.2TB 2.5 inch Enterprise performance 12G SAS SSD(3X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD16TSASS3-EP	1.6TB 2.5 inch Enterprise performance 12G SAS SSD(3X endurance) (Toshiba PX05)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-SD800GSAS3-EP	800GB 2.5 inch Enterprise performance 12G SAS SSD(3X endurance) (Toshiba PX05)	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html
UCS-SD32TH3-EP	3.2TB 2.5in Enterprise performance 12G SAS SSD (3X DWPD)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-HD900G10K12G	900GB 12G SAS 10K RPM SFF HDD	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740779.html
UCS-SD38TBHBNK9	3.8TB Enterprise value SAS SSD (1X DWPD, SED),FIPS 140-2	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html
UCS-SD480GBHBNK9	480GB Enterprise value SAS SSD (1X DWPD, SED),FIPS 140-2	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742823.html
UCS-SD480G2HBNK9	480GB Enterprise value SAS SSD (1X DWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743832.html
UCS-HD12G10K9	1.2 TB 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-c51-743832.html
UCSB-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
UCSB-NVMEXP-I375	375GB 2.5in Intel Optane NVMe Extreme	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742509.html

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCSB-NVMELW-I1000	Cisco 2.5" U.2 1 TB 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
UCSB-NVMEHW-I1000	Cisco 2.5" U.2 1TB 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-c51-742509.html
UCSB-NVME2H-I4000	Cisco 2.5" U.2 4.0TB Intel P4510 NVMe High Perf. Value Endu	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/select-ucs-hyperflex-accessories-eol3.html
UCSB-NVMELW-I2000	Cisco 2.5" U.2 2 TB 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
UCSB-NVMEHW-I4000	Cisco 2.5" U.2 4TB 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-c51-742509.html
UCSB-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
UCSB-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
UCSB-NVMEHW-I2000	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
UCSB-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
UCSB-NVMELW-I500	Cisco 2.5" U.2 500GB Intel P4501 NVMe Med. Perf. Value Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/eos-eol-notice-c51-742066.html
UCSB-NVMEHW-H3200	Cisco 2.5" U.2 3.2TB HGST SN200 NVMe High Perf. High Endurance	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html
UCSB-NVMEHW-H6400	6.4TB 2.5in U.2 HGST SN200 NVMe High Perf. High Endurance	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html
UCSB-NVMEHW-H7680	7.7TB 2.5in U.2 HGST SN200 NVMe High Perf. Value Endurance	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html
UCSB-NVMEHW-H800	800GB 2.5in U.2 HGST SN200 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-c51-2412151.html
UCS-SD960G2HBNK9	960GB Enterprise value SAS SSD (1X FWPD, SED)	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html
UCSB-NVME2H-I1600	Cisco 2.5" U.2 1.6TB Intel P4610 NVMe High Perf. High Endu	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCSB-NVME2H-I2TBV	Cisco 2.5" U.2 2.0TB Intel P4510 NVMe High Perf. Value Endu	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/select-ucs-hyperflex-accessories-eol3.html
UCSB-NVME2H-I3200	Cisco 2.5" U.2 3.2TB Intel P4610 NVMe High Perf. High Endu	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/select-ucs-hyperflex-accessories-eol3.html
UCSB-NVMEHW-I8000	8TB 2.5in U.2 Intel P4510 NVMe High Perf Value Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/select-ucs-hyperflex-accessories-eol3.html
UCSB-NVMHG-W6400	6.4TB 2.5in U.2 WD SN840 NVMe Extreme Perf. High Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/select-ucs-hyperflex-accessories-eol3.html
UCS-M2-240GB	240GB M.2 SATA Micron G1 SSD	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/unified-computing-accessories-eol.html
UCS-M2-960GB	960GB M.2 SATA Micron G1 SSD	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/unified-computing-accessories-eol.html
UCS-SD15TKB1X-EV	15.3TB 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/select-ucs-accessories-eol.html
UCS-SD19TS6-EV	1.9TB 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/select-ucs-hyperflex-accessories-eol2.html
UCS-SD32TKB3X-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-b-series-blade-servers/select-ucs-accessories-eol.html
UCS-SD38TKB1X-EV	3.8TB 2.5 inch Enterprise Value 12G SAS SSD	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/select-ucs-accessories-eol.html
UCS-SD76TKB1X-EV	7.6TB 2.5 inch Enterprise Value 12G SAS SSD	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/select-ucs-accessories-eol.html
CPU		
UCS-CPU-I6252	Intel 6252 2.1GHz/150W 24C/35.75MB DCP DDR4 2933 MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/select-ucs-accessories-eol.html
UCS-CPU-I6262V	Intel 6262V 1.9GHz/135W 24C/ 33MB DCP DDR4 2400 MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/select-ucs-accessories-eol.html
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 32 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-I5215M	Intel 5215M 2.5GHz/85W 10C/13.75MB DCP 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
UCS-CPU-I6238M	Intel 6238M 2.1GHz/140W 22C/30.25MB DCP 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 DCP 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-8180M	2.5 GHz 8180M/205W 28C/38.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8176M	2.1 GHz 8176M/165W 28C/38.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8170M	2.1 GHz 8170M/165W 26C/35.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8160M	2.1 GHz 8160M/150W 24C/33MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8180	2.5 GHz 8180/205W 28C/38.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8176	2.1 GHz 8176/165W 28C/38.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8170	2.1 GHz 8170/165W 26C/35.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8168	2.7 GHz 8168/205W 24C/33MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8164	2.0 GHz 8164/150W 26C/35.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8160T	2.1 GHz 8160/150W 24C/33MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8160	2.1 GHz 8160/150W 24C/33MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8158	3.0 GHz 8158/150W 12C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCS-CPU-8156	3.6 GHz 8156/105W 4C/16.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-8153	2.0 GHz 8153/125W 16C/22MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6142M	2.6 GHz 6142M/150W 16C/22MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6140M	2.3 GHz 6140M/140W 18C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6134M	3.2 GHz 6134M/130W 8C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6154	3.0 GHz 6154/**200W** 18C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6152	2.1 GHz 6152/140W 22C/30.25MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6150	2.7 GHz 6150/**165W** 18C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6148	2.4 GHz 6148/150W 20C/27.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6144	3.5 GHz 6144/150W 8C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6142	2.6 GHz 6142/150W 16C/22MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6140	2.3 GHz 6140/140W 18C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6138T	2.0 GHz 6138T/125W 20C/27.5MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6138	2.0 GHz 6138/125W 20C/27.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6136	3.0 GHz 6136/150W 12C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6134	3.2 GHz 6134/130W 8C/24.75MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html

Cisco UCS B480 M5 Blade Server

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCS-CPU-6132	2.6 GHz 6132/140W 14C/19.25MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6130	2.1 GHz 6130/125W 16C/22MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6128	3.4 GHz 6128/115W 6C/19.25MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-6126	2.6 GHz 6126/125W 12C/19.25MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-5122	3.6 GHz 5122/105W 4C/16.50MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-5120	2.2 GHz 5120/105W 14C/19.25MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-5118	2.3 GHz 5118/105W 12C/16.50MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-5117	2.0 GHz 5117/105W 14C/19.25MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
UCS-CPU-5115	2.4 GHz 5115/85W 10C/13.75MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
MEMORY		
UCS-MR-X16G2RS-H	16GB DDR4-2666-MHz RDIMM/PC4-21300/dual rank/x4/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-740780.html
UCS-MR-X16G1RT-H	16GB DDR4-2933MHz RDIMM 1Rx4 (8Gb)/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol14611.html
UCS-MR-X32G2RT-H	32GB DDR4-2933MHz RDIMM 2Rx4 (8Gb)/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol14611.html
UCS-MR-X64G2RT-H	64GB DDR4-2933MHz RDIMM 2Rx4 (16Gb)/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol14611.html
UCS-ML-X64G4RT-H	64GB DDR4-2933MHz LRDIMM 4Rx4 (8Gb)/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol14611.html

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCS-ML-128G4RT-H	128GB DDR4-2933MHz LRDIMM 4Rx4 (16Gb)/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol14611.html
UCS-ML-X32G2RS-H	32GB DDR4-2666-MHz LRDIMM/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-c51-2412151.html
UCS-ML-X32G2RSHM	32GB DDR4-2666-MHz LRDIMM/dual rank/x4/1.2v. Micron only	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-ML-X64G4RS-H	64GB DDR4-2666-MHz LRDIMM/PC4-21300/quad rank/x4/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-ML-X64G4RSHM	64GB DDR4-2666-MHz LRDIMM/quad rank/x4/1.2v. Micron only	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-ML-X64G4RSHS	64GB DDR4-2666-MHz LRDIMM/quad rank/x4/1.2v. Samsung only	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-MR-128G8RS-H	128GB DDR4-2666-MHz TSV-RDIMM/PC4-21300/octal rank/x4/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-MR-X16G1RS-H	16GB 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-c51-2412151.html
UCS-MR-X16G1RSHM	16GB DDR4-2666-MHz RDIMM/single rank/x4/1.2v. Micron only	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-MR-X32G2RS-H	32GB 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-c51-2412151.html
UCS-MR-X32G2RSHM	32GB DDR4-2666-MHz RDIMM/dual rank/x4/1.2v. Micron only	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-MR-X32G2RSHS	32GB DDR4-2666-MHz RDIMM/dual rank/x4/1.2v. Samsung only	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-MR-X64G4RS-H	64GB DDR4-2666-MHz TSV-RDIMM/PC4-21300/quad	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
UCS-ML-256G8RT-H	256GB DDR4-2933-MHz LRDIMM/8Rx4/1.2v	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-b-series-blade-servers/select-ucs-accessories-eol.html
MEZZANINE ADAPTERS		
UCSB-F-H32003	UCS Blade PCIe/NVMe Storage Mezz 3200GB Medium Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-739513.html

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
UCSB-F-H5607	UCS Blade PCIe/NVMe Storage Mezz 560GB High Endurance	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-739513.html
Microsoft Windows server		
MSWS-16-ST16C	Windows Server 2016 Standard (16 Cores/2 VMs)	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-ST24C	Windows Server 2016 Standard (24 Cores/2 VMs)	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-ST16C-NS	Windows Server 2016 Standard (16 Cores/2 VMs) - No Cisco SVC	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-ST24C-NS	Windows Server 2016 Standard (24 Cores/2 VMs) - No Cisco SVC	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-DC16C	Windows Server 2016 Data Center (16 Cores/Unlimited VMs)	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-DC24C	Windows Server 2016 Data Center (24 Cores/Unlimited VMs)	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-DC16C-NS	Windows Server 2016 DC (16 Cores/Unlim VMs) - No Cisco SVC	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-DC24C-NS	Windows Server 2016 DC (24 Cores/Unlim VMs) - No Cisco SVC	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
OS Media		
MSWS-16-ST16C-RM	Windows Server 2016 Std (16 Cores/2 VMs) - Recovery Media	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-ST24C-RM	Windows Server 2016 Std (24 Cores/2 VMs) - Recovery Media	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-DC16C-RM	Windows Server 2016 DC (16 Cores/Unlim VMs) - Recovery Media	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
MSWS-16-DC24C-RM	Windows Server 2016 DC (24 Cores/Unlim VMs) - Recovery Media	https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-743145.html
Operating system		
SLES-2SUV-1A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 1-Yr Support Req	
SLES-2SUV-1S	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 1-Yr SnS	

Table 32 EOL Products

EOS option PID	Description	EOL bulletin link
SLES-2SUV-3A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 3-Yr Support Req	
SLES-2SUV-3S	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 3-Yr SnS	
SLES-2SUV-5A	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); 5-Yr Support Req	
SLES-2SUV-5S	SUSE Linux Enterprise Svr (1-2 CPU,Unl VM); Prio 5-Yr SnS	
SLES-SAP-2SUV-1A	SLES for SAP Apps w/ HA (1-2 CPU, Unl VM); 1-Yr Support Reqd	
SLES-SAP-2SUV-1S	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 1-Yr SnS	
SLES-SAP-2SUV-3A	SLES for SAP Apps w/ HA (1-2 CPU, Unl VM); 3-Yr Support Reqd	
SLES-SAP-2SUV-3S	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 3-Yr SnS	
SLES-SAP-2SUV-5A	SLES for SAP Apps w/ HA (1-2 CPU, Unl VM); 5-Yr Support Reqd	
SLES-SAP-2SUV-5S	SLES for SAP Apps (1-2 CPU, Unl VM); Priority 5-Yr SnS	
UCSM Software		
N20-FW015	UCS 5108 Blade Chassis FW Package 3.2	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-manager/eos-eol-notice-c51-743144.html
N20-FW016	UCS 5108 Blade Chassis FW Package 4.0	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-manager/ucs-manager-release-4-0-eol.html
GPUs		
UCSB-GPU-P6-F	NVIDIA GRID P6 Front Mezzanine	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/hyperflex-accessories-eol.html
UCSB-GPU-P6-R	NVIDIA GRID P6 Rear Mezzanine	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/hyperflex-accessories-eol.html

TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 33 UCS B480 M5 Dimensions and Weight

Parameter	Value
Height	1.95 in. (50 mm)
Width	16.5 in.(419 mm)
Depth	24.4 in. (620 mm)
Weight	■ Base server weight = 17.780 lb (8.1 kg) ■ Minimally configured server with 2 CPUs, 2 heatsinks, 2 RDIMMs, 1 Mezz, 4 HDD blank) = 21.098 lb (9.57 kg) ■ Minimally configured server with 2 CPUs, 2 heatsinks, 2 LRDIMMs, 1 Mezz, 4 HDD blank) = 21.206 lb (9.62 kg) ■ Fully configured server with 4 CPU, 4 heatsinks, 48 RDIMMs, 3 Mezz, 2 RAID, 4 HDD) = 30.704 lb (13.93 kg) ■ Fully configured server with 4 CPU, 4 heatsinks, 48 LRDIMMs, 3 Mezz, 2 RAID, 4 HDD) = 33.296 lb (15.10 kg)

Power Specifications

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

http://ucspowercalc.cisco.com

NOTE: When using 256 GB DDR DIMMs (UCS-ML-256G8RT-H) in this server, the blade-level power capping must be set to 1300 W. For information about blade-level power capping, see the Power Capping and Power Management chapter in the Cisco UCS Manager Server Management Guide for your release: Cisco UCS Manager Configuration Guides.