Cisco HyperFlex HX240 M5 Edge All Flash and Hybrid Server

- HX-E-240-M5SX

- HXAF-E-240-M5SX

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OVERVIEW

Cisco HyperFlex Edge Systems are optimized for remote sites, branch offices, and edge environments. As a smaller form factor of Cisco HyperFlex, Cisco HyperFlex Edge keeps the full power of a next generation hyperconverged platform even without connecting to Cisco UCS Fabric Interconnects. Cisco HyperFlex Edge Systems support a variable configuration of 2, 3, or 4 HX converged nodes and supports the scale up of CPU, memory, and storage capacity (hot-add additional capacity drives).

NOTE: HX 240 Edge (short depth and full depth) requires Intersight for cluster deployment and ongoing management.

HyperFlex Edge operates using existing top of rack 1GE or 10/25GE switching with options for both single and dual switch configurations. HyperFlex Edge is typically deployed in environments with a minimal infrastructure footprint, hence the use of UCS compute-only nodes is not supported.

The HyperFlex HXAF-E-240/HX-E-240 M5 Edge server extends the capabilities of Cisco's HyperFlex portfolio in a 2U form factor with the addition of the 2nd Gen Intel® Xeon® Scalable Processors, 12 DIMM slots per CPU for 2933-MHz DDR4 DIMMs with DIMM capacity points up to 128 GB. The maximum memory capacity for 2 CPUs is listed here:

- 3 TB (24 x 128 GB DDR4 DIMMs)

There are two options to choose from:

- **HXAF-E-240-M5SX (All Flash)** (see *Figure 1 on page 6*):
    - Up to 24 front SFF SAS/SATA SSDs.
- **HX-E-240-M5SX (Hybrid)** (see *Figure 1 on page 6*):
    - Up to 24 front SFF SAS/SATA HDDs and SSDs

The Cisco HyperFlex HX-E-240-M5SX/HXAF-E-240-M5SX Edge node front and rear view is shown on *Figure 1*.

Figure 1   Cisco HyperFlex HX240/HXAF240 M5 Edge Node

HXAF-E-240-M5SX (All Flash)

24 Front drives are SAS/SATA solid state drives (SSDs) and optionally 2 SAS/SATA rear drives

Front View, see *Figure 2 on page 7* for details.

Rear View (all slots shown unpopulated - see *Figure 3 on page 8* for details)
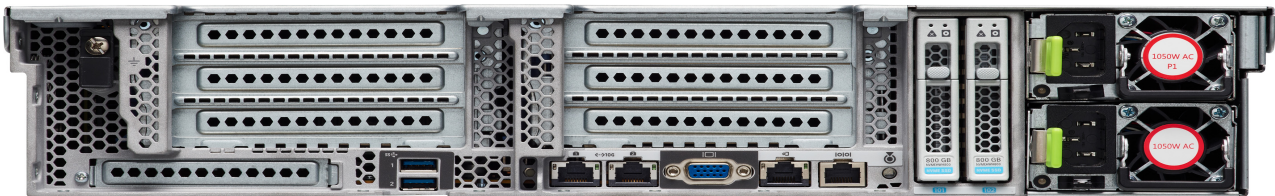
HX-E-240-M5SX (Hybrid)

24 Front drives are SAS/SATA hard drives (HDDs) and optionally 2 SAS/SATA rear drives

Front View, see *Figure 4 on page 10* for details.

Rear View (all slots shown unpopulated - see *Figure 5 on page 11* for details)

DETAILED VIEWS

Chassis Front View - HXAF-E-240-M5SX (All Flash)

Figure 2 shows the front view of the Cisco HyperFlex HX240/HXAF240 M5 Edge Node

Figure 2   Chassis Front View

1	Drive Slots:	7	Temperature status LED
	■ Drive Slot 1 supports:		
	• 1 x SATA/SAS SSD (For HyperFlex System/Log drive)		
	■ Drive Slot 2-24 supports		
	• 23 x SATA/SAS SSD (For Capacity drives)		
2	N/A	8	Power supply status LED
3	Power button/LED	9	Network link activity LED
4	Unit identification button/LED	10	Pull-out asset tag
5	System status LED	11	KVM connector
			(used with KVM cable that provides two USB 2.0, one VGA, and one serial connector)
6	Fan status LED	—	—

Chassis Rear View - HXAF-E-240-M5SX (All Flash)

Figure 3 shows the external features of the rear panel.

Figure 3   **Chassis Rear View**

1	PCIe riser 1 (1,2,3 slot)	7	USB 3.0 ports (two)
	There are two Riser 1 options:		
	Riser 1A (Default) (HX-RIS-1-240M5):		
	Supports three PCIe slots:		
	■ Slot 1 = full height, 3/4 length, x8, 230 pins, CPU1 controlled, NCSI support.		
	■ Slot 2 = full height, full length, x16, 230 pins, CPU1 controlled, NCSI and GPU support.		
	■ Slot 3 = full height, half length, x8, 164 pins, CPU2 controlled.		
	Riser 1B (HX-RIS-1B-240M5):		
	Supports three PCIe slots:		
	■ Slot 1 = full height, 3/4 length, x8, 230 pins, CPU1, NCSI support.		
	■ Slot 2 = full height, full length, x8, 230 pins, CPU1, NCSI support.		
	■ Slot 3 = full height, full length, x8, 164 pins, CPU1.		

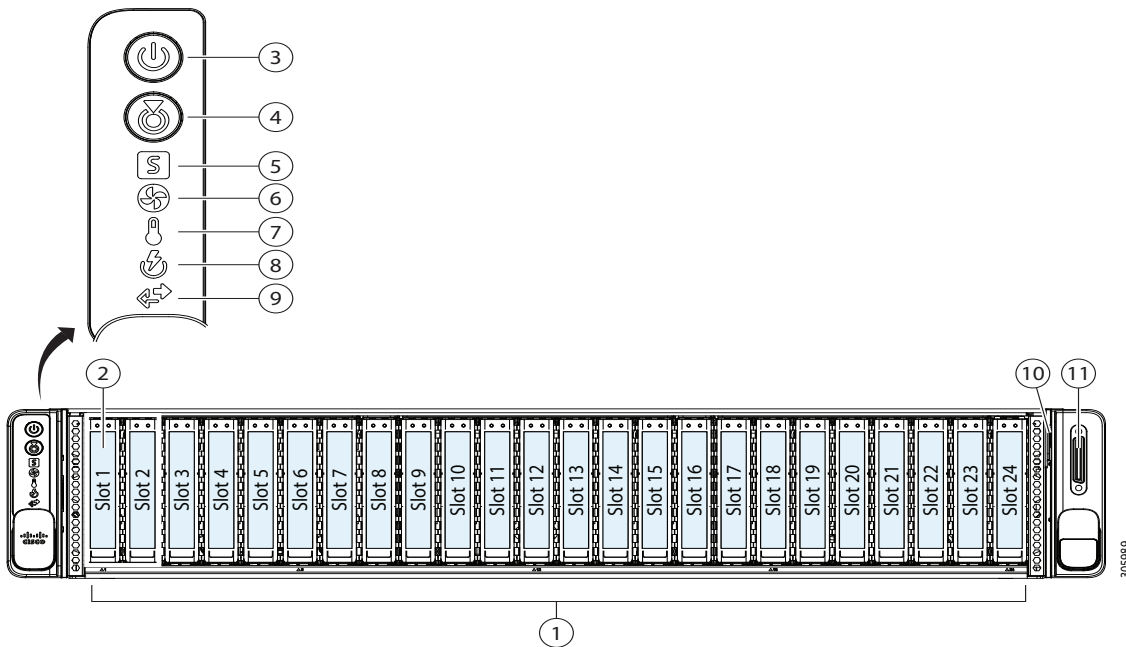| 2	PCIe riser 2 (4,5,6 slot) There is one Riser 2 option: **Riser 2B** (HX-RIS-2B-240M5): Supports three PCIe slots: - Slot 4= full height, 3/4 length, x8, 230 pins, CPU2 controlled, NCSI support. - Slot 5= full height, full length, x16, 230 pins, CPU2 controlled, NCSI and GPU support. - Slot 6= full height, half length, x8, 164 pins, CPU2 controlled. **NOTE:** NVMe drives are not supported in HX Edge configurations	8	Dual 1/10 GbE Ethernet ports (LAN1, LAN2) LAN1 is left connector, LAN2 is right connector
3	Supports up to 2 Rear 2.5-inch drive bays: - For SAS/SATA SSD drive (for Caching) - When using a hardware RAID controller card in the server, SAS/SATA drives are supported in the rear bays. **NOTE:** NVMe drives are not supported in HX Edge configurations	9	VGA video port (DB-15 connector)
4	Power supplies (two, redundant as 1+1)	10	1GE dedicated management port
5	Screw holes for dual-hole grounding lug	11	Serial port (RJ-45 connector)
6	Modular LAN-on-motherboard (mLOM) card slot (x16)	12	Rear Unit Identification button/LED

Chassis Front View - HX-E-240-M5SX (Hybrid)

Figure 2 shows the front view of the Cisco HyperFlex HX240/HXAF240 M5 Edge Node
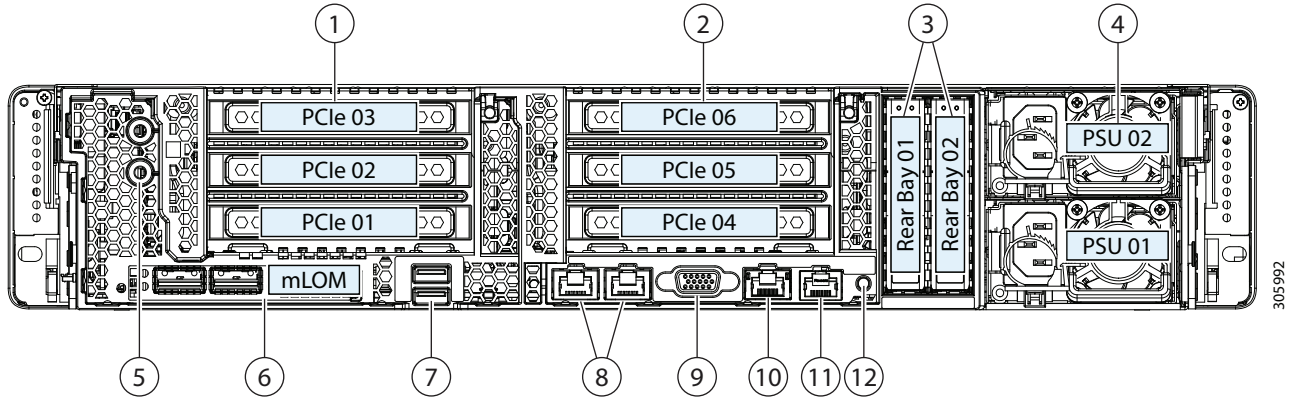
Figure 4   Chassis Front View

1	Drive Slots:	7	Temperature status LED
	■ Drive Slot 1 supports:		
	• 1 x SATA/SAS SSD (For HyperFlex System/Log drive)		
	■ Drive Slot 2-24 supports		
	• 23 x SATA/SAS HDD (For Capacity drives)		
2	N/A	8	Power supply status LED
3	Power button/LED	9	Network link activity LED
4	Unit identification button/LED	10	Pull-out asset tag
5	System status LED	11	KVM connector
			(used with KVM cable that provides two USB 2.0, one VGA, and one serial connector)
6	Fan status LED	—	—

Chassis Rear View - HX-E-240-M5SX (Hybrid)

Figure 3 shows the external features of the rear panel.
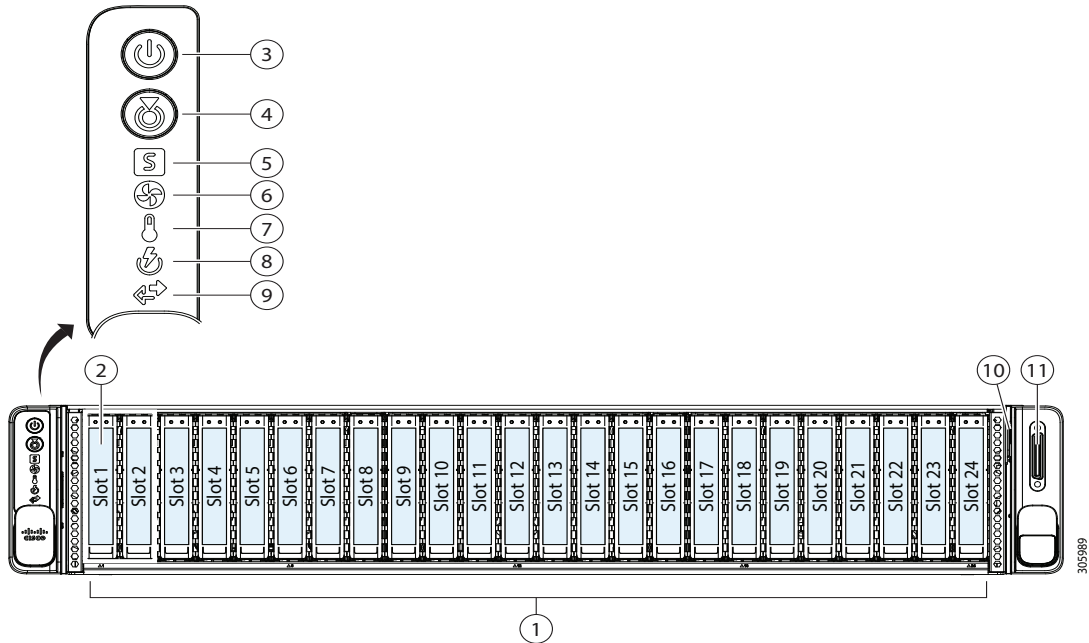
Figure 5   Chassis Rear View

1	PCIe riser 1 (1,2,3 slot)	7	USB 3.0 ports (two)
	There are two Riser 1 options:		
	Riser 1A (Default) (HX-RIS-1-240M5):		
	Supports three PCIe slots:		
	■ Slot 1 = full height, 3/4 length, x8, 230 pins, CPU1 controlled, NCSI support.		
	■ Slot 2 = full height, full length, x16, 230 pins, CPU1 controlled, NCSI and GPU support.		
	■ Slot 3 = full height, half length, x8, 164 pins, CPU2 controlled.		
	Riser 1B (HX-RIS-1B-240M5):		
	Supports three PCIe slots:		
	■ Slot 1 = full height, 3/4 length, x8, 230 pins, CPU1, NCSI support.		
	■ Slot 2 = full height, full length, x8, 230 pins, CPU1, NCSI support.		
	■ Slot 3 = full height, full length, x8, 164 pins, CPU1.		

2	PCIe riser 2 (4,5,6 slot) There is one Riser 2 option: **Riser 2B** (HX-RIS-2B-240M5): Supports three PCIe slots: ■ Slot 4= full height, 3/4 length, x8, 230 pins, CPU2 controlled, NCSI support. ■ Slot 5= full height, full length, x16, 230 pins, CPU2 controlled, NCSI and GPU support. ■ Slot 6= full height, half length, x8, 164 pins, CPU2 controlled. **NOTE:** NVMe drives are not supported in HX Edge configurations	8	Dual 1/10 GbE Ethernet ports (LAN1, LAN2) LAN1 is left connector, LAN2 is right connector
3	Supports up to 2 Rear 2.5-inch drive bays: ■ For SAS/SATA SSD drive (for Caching) ■ When using a hardware RAID controller card in the server, SAS/SATA drives are supported in the rear bays. **NOTE:** NVMe drives are not supported in HX Edge configurations	9	VGA video port (DB-15 connector)
4	Power supplies (two, redundant as 1+1)	10	1GE dedicated management port
5	Screw holes for dual-hole grounding lug	11	Serial port (RJ-45 connector)
6	Modular LAN-on-motherboard (mLOM) card slot (x16)	12	Rear Unit Identification button/LED

BASE NODE 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 HyperFlex HX240/HXAF240 M5 Edge Node, page 16*.

Table 1   Capabilities and Features

Capability/Feature	Description
Chassis	Two rack unit (2RU) chassis
CPU	2nd Generation Intel® Xeon® scalable family CPUs
Chipset	Intel® C621 series chipset
Memory	24 slots for registered ECC DIMMs (RDIMMs), load-reduced DIMMs (LRDIMMs), or through silicon via (TSV) DIMMs
Multi-bit Error Protection	This server supports multi-bit error protection.
Video	The Cisco Integrated Management Controller (CIMC) provides video using the Matrox G200e video/graphics controller: ■ Integrated 2D graphics core with hardware acceleration ■ 512MB total DDR4 memory, with 16MB dedicated to Matrox video memory ■ Supports all display resolutions up to 1920 x 1200 x 32bpp resolution at 60Hz ■ High speed Integrated 24-bit RAMDAC ■ Single lane PCI-Express Gen2 host interface ■ eSPI processor to BMC support
Power subsystem	One or two of the following hot-swappable power supplies: ■ 1050 W (AC) ■ 1050 W (DC) ■ 1600 W (AC) ■ 1050 W (AC) ELV One power supply is mandatory; one more can be added for 1 + 1 redundancy.
Front Panel	A front panel controller provides status indications and control buttons.
ACPI	This server supports the advanced configuration and power interface (ACPI) 6.2
Fans	■ Six hot-swappable fans for front-to-rear cooling

Expansion slots	■ Dedicated RAID/JBOD controller slot (see *Figure 12 on page 60*)
	  • An internal slot is reserved for the Cisco 12G SAS HBA.
	■ Up to six PCIe slots (on two riser card options)
	  • For more details on riser 1 and riser 2 see the *Riser Card Configuration and Options, page 62*

Table 1   Capabilities and Features *(continued)*

Capability/Feature	Description
Internal storage devices	<u>Drive storage:</u> Drives are installed into front-panel drive bays, which provide hot-swappable access for SAS/SATA drives. The server is orderable in two different nodes: **HXAF-E-240-M5SX (All Flash):** ■ Up to 24 front SFF solid state drives (SSDs). 24 Drives are used as below: 　• Three to twenty-three SAS/SATA SSD (for capacity) 　• One SAS/SATA SSD (System drive for HXDP Operations) ■ Up to 2 SFF rear-facing SAS/SATA drives (Optional) 　• One SAS/SATA SSD (for caching) **HX-E-240-M5SX (Hybrid):** ■ Up to 24 front SFF hard drives (HDDs) **or** solid state drives (SSDs). 24 Drives are used as below: 　• Three to twenty-three SAS HDD (for capacity) 　• One SAS/SATA SSD (System drive for HXDP Operations) ■ Up to 2 SFF rear-facing SAS/SATA drives (Optional) 　• One SAS/SATA SSD (for caching) <u>Other storage:</u> ■ A mini-storage module connector on the motherboard for M.2 module for one M.2 SATA SSDs for following usage: 　• ESXi hypervisor boot and HyperFlex storage controller VM ■ One slot for a micro-SD card on PCIe Riser 1 (Option 1 and 1B). The micro-SD card serves as a dedicated local resource for utilities such as host upgrade utility (HUU). Images can be pulled from a file share (NFS/CIFS) and uploaded to the cards for future use.
I/O Interfaces	■ Rear panel 　• One 1Gbase-T RJ-45 management port (Marvell 88E6176) 　• Two 10Gbase-T LOM ports (Intel X550 controller embedded on the motherboard) 　• One RS-232 serial port (RJ45 connector) 　• One DB15 VGA connector 　• Two USB 3.0 port connectors 　• One flexible modular LAN on motherboard (mLOM) slot that can accommodate various interface cards ■ Front panel 　• One KVM console connector (supplies two USB 2.0 connectors, one VGA DB15 video connector, and one serial port (RS232)

Table 1   Capabilities and Features *(continued)*

Capability/Feature	Description
mLOM Slot	The mLOM slot on the motherboard can flexibly accommodate the follow card: ■ Cisco 1457 Quad Port Virtual Interface Card (10GE/25GE) **NOTE:** VIC 1457 supports 10GE interface speeds (HyperFlex Release 4.0(1a) and later) or 25GE interfaces speeds (HyperFlex Release 4.0(2a) and later).
(optional) Additional NICs	PCIe slot 1 and PCIe slot 2 on the motherboard can flexibly accommodate the following cards: ■ Intel X550-T2 dual port 10Gbase-T ■ Intel XXV710-DA2 dual port 25GE NIC ■ Intel i350 quad port 1Gbase-T ■ Intel X710-DA2 dual port 10GE NIC
Integrated management processor	Baseboard Management Controller (BMC) running Cisco Integrated Management Controller (CIMC) firmware. Depending on your CIMC settings, the CIMC can be accessed through the 1GE dedicated management port, the 1/10 GE LOM ports, or a Cisco virtual interface card (VIC). CIMC manages certain components within the server, such as the Cisco 12G SAS HBA.
Intersight	Intersight provides server management capabilities

CONFIGURING the HyperFlex HX240/HXAF240 M5 Edge Node

Follow these steps to configure the Cisco HyperFlex HX240/HXAF240 M5 Edge Node

STEP 1   VERIFY SERVER SKU

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

Table 2   PID of the HX240/HXAF240 M5 Edge Node

Product ID (PID)	Description
HX-E-M5S-HXDP	This major line bundle (MLB) consists of the Server Nodes (HXAF-E-240-M5SX and HX-E-240-M5SX) with HXDP software PIDs. Use this PID to begin a new configuration
HXAF-E-240-M5SX[1]	HXAF240 M5 All-Flash Edge Node with configurable options.
HX-E-240M5SX[1]	HX240 M5 Hybrid Edge Node with configurable options.

Notes:

1. This product may not be purchased outside of the approved bundles (must be ordered under the MLB).

HX240/HXAF240 M5 Edge Clusters:

■ HyperFlex Edge clusters can be configured in 2, 3 or 4 node configurations. Single node clusters and clusters larger than 4 nodes are not supported with HyperFlex Edge.

■ HyperFlex Data Platform software version 4.5(1a) or later is required to install Edge 240 clusters.

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

STEP   2   SELECT RISER CARDS

There are two riser cards per server, riser card 1 and 2. Order one riser card 1 and one riser 2 card from *Table 3*. Riser card 1 is the one on the left when viewed from the back of the server and riser card 2 is on the right.

Table 3   Riser 1 Options

Product ID (PID)	Description
PCIe Riser 1	
HX-RIS-1B-240M5	Riser 1B 3PCIe slots (x8, x8, x8); all from CPU1, For T4
HX-RIS-1-240M5	Riser 1 3PCIe slots (x8, x16, x8); slot 3 req CPU2, For T4, RTX
PCIe Riser 2 options (all slots controlled with CPU2)	
HX-RIS-2B-240M5	Riser 2B 3PCIe slot(x8,x16,x8) supports GPU+rear NVMe, For T4, RTX

For additional details, see *Riser Card Configuration and Options, page 62*

STEP 3   SELECT CPU(s)

The standard CPU features are:

■ 2nd Generation Intel®Xeon® scalable family CPUs

■ Intel C621 series chipset

■ Cache size of up to 38.5 MB

Select CPUs

The available CPUs are listed in *Table 4*.

Table 4 Available CPUs

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

Table 4   Available CPUs

Product ID (PID)	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	UPI[1] Links (GT/s)	Highest DDR4 DIMM Clock Support (MHz)	Workload/Processor type[2]
HX-CPU-I5218	2.3	125	22.00	16	2 x 10.4	2666	Virtualization, Microsoft Azure Stack, Splunk, Data Protection
HX-CPU-I4216	2.1	100	22.00	16	2 x 9.6	2400	Data Protection, Scale Out Storage
HX-CPU-I4214R	2.4	100	16.50	12	2 x 9.6	2400	Data Protection, Splunk, Scale-out Object Storage, Microsoft AzureStack
HX-CPU-I4214	2.2	85	16.50	12	2 x 9.6	2400	Data Protection, Scale Out Storage
HX-CPU-I4210R	2.4	100	13.75	10	2 x 9.6	2400	Virtual Server Infrastructure, Data Protection, Big Data, Splunk
HX-CPU-I4210	2.2	85	13.75	10	2 x 9.6	2400	Virtualization, Big Data, Splunk
8000 Series Processor							
HX-CPU-I8280L	2.7	205	38.50	28	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8280	2.7	205	38.50	28	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8276L	2.2	165	38.50	28	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8276	2.2	165	38.50	28	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8270	2.7	205	35.75	26	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8268	2.9	205	35.75	24	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8260Y	2.4	165	35.75	24/20/16	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8260L	2.4	165	35.75	24	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I8260	2.4	165	35.75	24	3 x 10.4	2933	2nd Gen Intel® Xeon®
6000 Series Processor							
HX-CPU-I6262V	1.9	135	33.00	24	3 x 10.4	2400	2nd Gen Intel® Xeon®
HX-CPU-I6258R	2.7	205	35.75	28	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6256	3.6	205	33.00	12	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6254	3.1	200	24.75	18	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6252N	2.3	150	35.75	24	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6252	2.1	150	35.75	24	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6250	3.9	185	35.75	8	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6248R	3.0	205	35.75	24	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6248	2.5	150	27.50	20	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6246R	3.4	205	35.75	16	2 x 10.4	2933	2nd Gen Intel® Xeon®

Table 4   Available CPUs

Product ID (PID)	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	UPI[1] Links (GT/s)	Highest DDR4 DIMM Clock Support (MHz)	Workload/Processor type[2]
HX-CPU-I6246	3.3	165	24.75	12	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6244	3.6	150	24.75	8	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6242R	3.1	205	35.75	20	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6242	2.8	150	22.00	16	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6240R	2.4	165	35.75	24	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6240Y	2.6	150	24.75	18/14/8	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6240L	2.6	150	24.75	18	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6240	2.6	150	24.75	18	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6238R	2.2	165	38.50	28	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6238L	2.1	140	30.25	22	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6238	2.1	140	30.25	22	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6234	3.3	130	24.75	8	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6230R	2.1	150	35.75	26	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6230N	2.3	125	27.50	20	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6230	2.1	125	27.50	20	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6226R	2.9	150	22.00	16	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6226	2.7	125	19.25	12	3 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I6222V	1.8	115	27.50	20	3 x 10.4	2400	2nd Gen Intel® Xeon®
HX-CPU-6126	2.6	125	19.25	12	3 x 10.4	2666	Intel® Xeon®
5000 Series Processor							
HX-CPU-I5220S	2.6	125	19.25	18	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5220R	2.2	150	35.75	24	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5220	2.2	125	24.75	18	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5218R	2.1	125	27.50	20	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5218B	2.3	125	22.00	16	2 x 10.4	2933	2nd Gen Intel® Xeon®
HX-CPU-I5218N	2.3	105	22.00	16	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5218	2.3	125	22.00	16	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5217	3.0	115	11.00	8	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5215L	2.5	85	13.75	10	2 x 10.4	2666	2nd Gen Intel® Xeon®
HX-CPU-I5215	2.5	85	13.75	10	2 x 10.4	2666	2nd Gen Intel® Xeon®
4000 Series Processor							
HX-CPU-I4216	2.1	100	22.00	16	2 x 9.6	2400	2nd Gen Intel® Xeon®
HX-CPU-I4215R	3.2	130	11.00	8	2 x 9.6	2400	2nd Gen Intel® Xeon®

Table 4   Available CPUs

Product ID (PID)	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	UPI[1] Links (GT/s)	Highest DDR4 DIMM Clock Support (MHz)	Workload/Processor type[2]
HX-CPU-I4215	2.5	85	11.00	8	2 x 9.6	2400	2nd Gen Intel® Xeon®
HX-CPU-I4214R	2.4	100	16.50	12	2 x 9.6	2400	2nd Gen Intel® Xeon®
HX-CPU-I4214Y	2.2	85	16.50	12/10/8	2 x 9.6	2400	2nd Gen Intel® Xeon®
HX-CPU-I4214	2.2	85	16.50	12	2 x 9.6	2400	2nd Gen Intel® Xeon®
HX-CPU-I4210R	2.4	100	13.75	10	2 x 9.6	2400	2nd Gen Intel® Xeon®
HX-CPU-I4210	2.2	85	13.75	10	2 x 9.6	2400	2nd Gen Intel® Xeon®
HX-CPU-I4208	2.1	85	11.00	8	2 x 9.6	2400	2nd Gen Intel® Xeon®
3000 Series Processor							
HX-CPU-I3206R	1.9	85	11.00	8	2 x 9.6	2133	2nd Gen Intel® Xeon®

Notes:

1. UPI = Ultra Path Interconnect. 2-socket servers support only 2 UPI performance, even if the CPU supports 3 UPI.
2. HyperFlex Data Platform reserves CPU cycle for each controller VM. Refer to the <**Install Guide**> for reservation details.

CAUTION: For systems configured with 2nd Gen Intel® Xeon® 205W R-series processors, operating above 32º C [89.6º F], a fan fault or executing workloads with extensive use of heavy instructions sets like Intel® Advanced Vector Extensions 512 (Intel® AVX-512), may assert thermal and/or performance faults with an associated event recorded in the System Event Log (SEL).

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

Approved Configurations

(1) 1-CPU Configuration:

- Select any one CPU listed in *Table 4 on page 19*
- Requires 10 Core and above CPUs

(2) 2-CPU Configuration:

- Select two identical CPUs from any one of the rows of *Table 4 on page 19*.

STEP 4 SELECT 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 4*.

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

- Operational voltage: 1.2 V

- Registered ECC DDR4 DIMMS (RDIMMs), Load-reduced DIMMs (LRDIMMs)

Memory is organized with six memory channels per CPU, with up to two DIMMs per channel, as shown in *Figure 6*.

Figure 6   HX240/HXAF240 M5 Edge Node Memory Organization
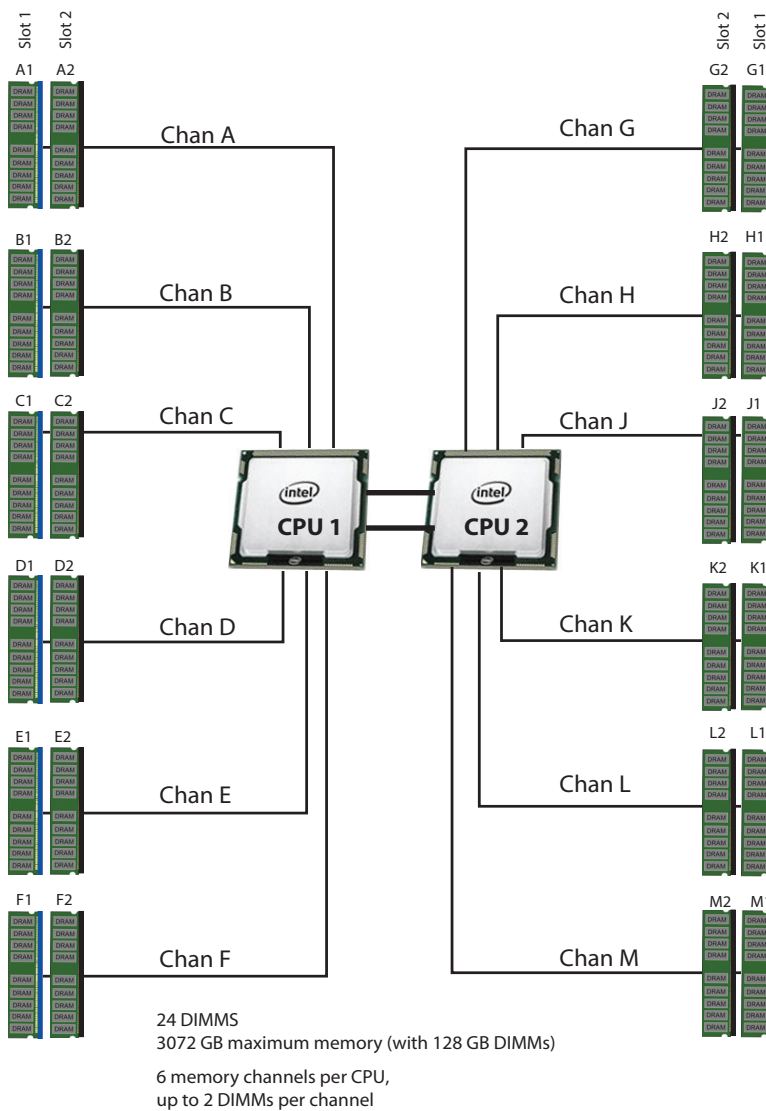
Select DIMMs

Select the memory configuration. The available memory DIMMs are listed in *Table 5*

> **NOTE:** The memory mirroring feature is not supported with HyperFlex nodes.

Table 5   Available DDR4 DIMMs

Product ID (PID)	PID Description	Voltage	Ranks/DIMM
HX-ML-128G4RT-H[1]	128 GB DDR4-2933MHz LRDIMM/4Rx4 (16Gb)	1.2 V	4
HX-ML-X64G4RT-H[1]	64 GB DDR4-2933MHz LRDIMM/4Rx4 (8Gb)	1.2 V	4
HX-MR-X64G2RT-H[1]	64 GB DDR4-2933MHz RDIMM/2Rx4 (16Gb)	1.2 V	2
HX-MR-X32G2RT-H[1]	32GB DDR4-2933MHz RDIMM/2Rx4 (8Gb)	1.2 V	2
HX-MR-X16G1RT-H[1]	16 GB DDR4-2933MHz RDIMM/1Rx4 (8Gb)	1.2 V	1
HX-ML-128G4RW[2]	128GB DDR4-3200MHz LRDIMM 4Rx4 (16Gb)	1.2 V	1
HX-MR-X64G2RW[2]	64GB DDR4-3200MHz RDIMM 2Rx4 (16Gb)	1.2 V	1
HX-MR-X32G2RW[2]	32GB DDR4-3200MHz RDIMM 2Rx4 (8Gb)	1.2 V	1
HX-MR-X16G1RW[2]	16GB DDR4-3200MHz RDIMM 1Rx4 (8Gb)	1.2 V	1

Notes:

1. Cisco announced the End-of-sale of the DDR4-2933MHz Memory DIMM products: **EOL14611** lists the product part numbers affected by this announcement. *Table 6* describes the replacement Memory DIMM product Part Numbers.
2. 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.

Table 6 lists the EOL Memory DIMM product part numbers and their replacement PIDs.

Table 6   EOL14611 Memory DIMM Product Part Numbers and their replacement PIDs

EOS Product Part Number (PID)	PID Description	Replacement Product PID	Replacement Product Description
HX-MR-X16G1RT-H	16GB DDR4-2933MHz RDIMM 1Rx4 (8Gb)/1.2v	HX-MR-X16G1RW	16GB DDR4-3200MHz RDIMM 1Rx4 (8Gb)/1.2v
HX-MR-X32G2RT-H	32GB DDR4-2933MHz RDIMM 2Rx4 (8Gb)/1.2v	HX-MR-X32G2RW	32GB DDR4-3200MHz RDIMM 2Rx4 (8Gb)/1.2v
HX-MR-X64G2RT-H	64GB DDR4-2933MHz RDIMM 2Rx4 (16Gb)/1.2v	HX-MR-X64G2RW	64GB DDR4-3200MHz RDIMM 2Rx4 (16Gb)/1.2v
HX-ML-X64G4RT-H	64GB DDR4-2933MHz LRDIMM 4Rx4 (8Gb)/1.2v	HX-MR-X64G2RW[1]	64GB DDR4-3200MHz RDIMM 2Rx4 (16Gb)/1.2v
HX-ML-128G4RT-H	128GB DDR4-2933MHz LRDIMM 4Rx4 (16Gb)/1.2v	HX-ML-128G4RW	128GB DDR4-3200MHz LRDIMM 4Rx4 (16Gb)/1.2v

NOTE: **(1)** Cisco doesn't support a Load Reduce DIMM (LRDIMM) 64GB Memory PID as a replacement PID of existing UCS-ML-x64G4RT-H and recommends migrating to the Registered DIMM (RDIMM) instead, delivering the best balance in performance and price.

CPU DIMM Configuration Table

Approved Configurations

(1) 1-CPU configuration

■ Select from 1 to 12 DIMMs.

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

(2) 2-CPU configuration

■ Select from 1 to 12 DIMMs per CPU.

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

NOTE:

- The selected DIMMs must be all of same type and number of DIMMs must be equal for both CPUs

- Even though 128GB of DRAM is supported, It is recommended to have a minimum of 192GB of DRAM configured for maximum performance

- HyperFlex Data Platform reserves memory for each controller VM. Refer to the <*Install Guide*> for reservation details.

- Recommended 6 or 12 DIMMs per CPU.

- Refer to "*CPU DIMM Configuration Table*" for the configuration details

System Speed

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

NOTE: Detailed mixing DIMM configurations are described in Cisco UCS *M5 Memory Guide*

STEP 5 SELECT RAID CONTROLLER

SAS HBA (internal HDD/SSD/JBOD support)

Choose the following SAS HBA for internal drive connectivity (non-RAID):

■ The Cisco 12G SAS HBA, which plugs into a dedicated RAID controller slot.

Select Controller Options

Select the following:

- Cisco 12 Gbps Modular SAS HBA (see *Table 7*)

Table 7   Hardware Controller Options

Product ID (PID)	PID Description
Controllers for Internal Drives	
Note that the following Cisco 12G SAS HBA controller is factory-installed in the dedicated internal slot.	
HX-SAS-M5HD	Cisco 12G SAS HBA ■ Supports up to 26 internal SAS HDDs and SAS/SATA SSDs ■ Supports JBOD mode only (no RAID functionality. Ideal for SDS (Software Defined Storage) applications. It is also ideal for environments demanding the highest IOPs (for external SSD attach), where a RAID controller can be an I/O bottleneck.

Approved Configurations

The Cisco 12 Gbps Modular SAS HBA supports up to 26 internal drives with non-RAID support.

STEP 6 SELECT DRIVES

The standard disk drive features are:

- 2.5-inch small form factor
- Hot-pluggable
- Drives come mounted in sleds

Select Drives - HXAF-E-240-M5SX (All Flash)

The available drives are listed in *Table 8*

Table 8   Available Hot-Pluggable Sled-Mounted drives

Product ID (PID)	PID Description	Drive Type	Capacity
Front Capacity Drive			
HX-SD960G61X-EV	960GB 2.5 Inch Enterprise Value 6G SATA SSD (1X endurance)	SATA	960 GB
HX-SD38T61X-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance)	SATA	3.8 TB
HX-SD76T61X-EV	7.6TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.0(2a) and later)**	SATA	7.6 TB
HX-SD960G6S1X-EV	960GB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) and later)**	SATA	960 GB
HX-SD19T6S1X-EV	1.9TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) and later)**	SATA	1.9 TB
HX-SD38T6S1X-EV	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) and later)**	SATA	3.8 TB
HX-SD76T6S1X-EV	7.6TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) and later)**	SATA	7.6 TB
Rear Cache Drive			
HX-SD800GK3X-EP	800GB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)	SAS	800 GB
HX-SD16TK3X-EP	1.6TB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)	SAS	1.6 TB
Front System / Log Drive			
HX-SD240GM1X-EV	240GB 2.5 inch Enterprise Value 6G SATA SSD	SATA	240 GB
Boot Drives			
HX-M2-240GB	240GB SATA M.2 SSD	SATA	240 GB
HX-M2-HWRAID[1]	Cisco Boot optimized M.2 Raid controller		

Table 8   Available Hot-Pluggable Sled-Mounted drives

Product ID (PID)	PID Description	Drive Type	Capacity
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. A maximum of one HX-M2-240GB or HX-M2-960GB is allowed when HX-M2-HWRAID is not selected. Either reduce Qty of HX-M2-240GB or HX-M2-960GB to 1 or add HX-M2-HWRAID

Approved Configurations

Select the following drives:

■ **capacity drives** -

- — For 2 Node Edge clusters:
  - 3 to 16 capacity drives

- — For 3 Node and 4 Node Edge clusters:
  - 3 to 23 capacity drives

> **NOTE:**
>
> ■ For cluster scale related information please see the product **release notes**

■ **One cache drive**

> **NOTE:**
>
> ■ Although the two cache drive options have different capacities, they provide equivalent functionality when used with HyperFlex. There is no advantage to select a higher capacity cache drive for all flash configurations.

■ **One system drive**

■ **One boot drive**

NOTE:

- It is recommended that M.2 SATA SSDs be used as boot-only devices.
- 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 supports this controller is 4.2(1) and later. The name of the controller in the software is MSTOR-RAID
- The SATA M.2 drives can boot in UEFI mode only. Legacy boot mode is not supported.
- Hot-plug replacement is not supported. The server must be powered off.
- **RAID Support for Boot Drives**: Support for Hardware RAID M.2 boot drives in HyperFlex converged and compute-only nodes. Requires optional HX-M2-HWRAID controller with two boot drives. Existing single boot drive option remains supported.
- This is supported starting from 4.5 (1a) version and later. please check the **release notes** for the further information

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Caveats

— You must choose from 3-16 capacity drives (2-node clusters)/3-23 capacity drives (3+ node clusters), one caching drive, one system drive and one boot drive.

— Self Encrypting Drives (SEDs) are not supported for HX Edge configurations.

— NVMe and Optane cache drives are not supported for HX Edge configurations.

Select Drives - HX-E-240-M5SX (Hybrid)

The available drives are listed in *Table 9*

Table 9   Available Hot-Pluggable Sled-Mounted drives

Product ID (PID)	PID Description	Drive Type	Capacity
Front Capacity Drive			
HX-HD12TB10K12N	1.2TB 2.5 inch 12G SAS 10K RPM HDD	SAS	1.2 TB
HX-HD18TB10K4KN	1.8TB 2.5 inch 12G SAS 10K RPM HDD	SAS	1.8 TB
HX-HD24TB10K4KN	2.4TB 12G SAS 10K RPM SFF HDD (4K)	SAS	2.4 TB
Rear Cache Drive			
HX-SD16TK3X-EP	1.6TB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)	SAS	1.6 TB
Front System / Log Drive			
HX-SD240GM1X-EV	240GB 2.5 inch Enterprise Value 6G SATA SSD	SATA	240GB
Boot Drives			
HX-M2-240GB	240GB SATA M.2 SSD	SATA	240 GB
HX-M2-HWRAID[1]	Cisco Boot optimized M.2 Raid controller		
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. A maximum of one HX-M2-240GB or HX-M2-960GB is allowed when HX-M2-HWRAID is not selected. Either reduce Qty of HX-M2-240GB or HX-M2-960GB to 1 or add HX-M2-HWRAID

Approved Configurations

Select the following drives:

- **capacity drives:**

  — For 2 Node Edge clusters:
    - 3 to 16 capacity drives

  — For 3 Node and 4 Node Edge clusters:
    - 3 to 23 capacity drives

> **NOTE:**
> - A minimum of 3 capacity drives is supported for HX Edge configuration.
> - For cluster scale related information please see the product **release notes**

- **One cache drive**
- **One system drive**
- **One boot drive**

> **NOTE:**
> - It is recommended that M.2 SATA SSDs be used as boot-only devices.
> - 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 supports this controller is 4.2(1) and later. The name of the controller in the software is MSTOR-RAID
> - The SATA M.2 drives can boot in UEFI mode only. Legacy boot mode is not supported.
> - Hot-plug replacement is not supported. The server must be powered off.
> - **RAID Support for Boot Drives**: Support for Hardware RAID M.2 boot drives in HyperFlex converged and compute-only nodes. Requires optional HX-M2-HWRAID controller with two boot drives. Existing single boot drive option remains supported.
> - This is supported starting from 4.5 (1a) version and later. please check the **release notes** for the further information

Caveats

You must choose from 3-16 capacity drives (2-node clusters)/3-23 capacity drives (3+ node clusters), one caching drive, one system drive and one boot drive.

— You must choose from 3-16 capacity drives (2-node clusters)/3-23 capacity drives (3+ node clusters), one caching drive, one system drive and one boot drive.

— Self Encrypting Drives (SEDs) are not supported for HX Edge configurations.

— NVMe and Optane cache drives are not supported for HX Edge configurations.

STEP 7   SELECT HYPERFLEX EDGE NETWORK TOPOLOGY

HyperFlex Edge utilizes the existing top of rack (ToR) switches available in the customer environment.

Many topologies are supported to ensure the right fit for many environments. HyperFlex Edge supports single and dual switch topologies, depending on the level of high availability required. See the *SUPPLEMENTAL MATERIAL, page 53* for more details on each topology option.

Select one network topology from the options listed in *Table 10***.**

Table 10 Edge network category

Product ID (PID)	PID Description
HX-E-TOPO1	10/25 GE Single or Dual Switch (2, 3, or 4 node)
HX-E-TOPO2	1 GE Dual Switch (3 or 4 node), 1GbE Dual or Single (2 node)
HX-E-TOPO3	1 GE Single Switch (3 or 4 node only)

NOTE:

- A topology selection is required. Optional Intel NIC adapters in Step 7 are used by guest VMs/applications only. These adapters may not be substituted for the adapters automatically included when selecting a topology.

- Selecting **HX-E-TOPO1** will include the VIC 1457 mLOM card for 10/25GE topologies. Two ports on the 10GE are used for HyperFlex functions. The remaining two ports may be used by applications after the HyperFlex deployment is completed.

- Selecting **HX-E-TOPO2** will include the Intel i350 quad port PCIe NIC for 1GE topologies. Two ports on the NIC are used for HyperFlex functions. The remaining two ports may be used by applications after the HyperFlex deployment is completed.

- Cisco strongly recommends **HX-E-TOPO1** for all new deployments for the following reasons:
  - Higher storage performance
  - Expansion ready - Ability to support node expansion in a future HyperFlex Data Platform software release.
  - Investment protection provides up to 100GE of theoretical throughput per server.
  - Leaves PCIe slots free for accessories

STEP 8   SELECT OPTIONAL ADDITIONAL NICs

HyperFlex Edge supports the use of additional PCIe NIC cards for use by guest VMs or applications running on top of HyperFlex. For full details see the **HyperFlex Networking Topologies Tech Note.**

Select PCIe Option Card

The available PCIe option card are listed in *Table 11*.

Table 11 Available PCIe Option Cards

Product ID (PID)	PID Description	Card Height
Network Interface Card (NIC)		
HX-PCIE-IRJ45	Intel i350 Quad Port 1Gb Adapter	Half
HX-PCIE-ID10GF	Intel X710-DA2 dual-port 10G SFP+ NIC	*HHHL
HX-PCIE-ID10GC	Intel X550-T2 dual-port 10GBase-T NIC	*HHHL
HX-PCIE-ID25GF	Intel XXV710-DA2 10-dual-port 25G NIC	*HHHL
* HHHL= Half Height Half length		

NOTE:

- The number of additional NICs supported depends on the HyperFlex network topology selected and the number of physical CPUs configured.
- These additional adapters are optional and may not be substituted for an HX Edge network topology selection.
- This list is non-exhaustive. For a complete list of compatible NICs, refer to the UCS HCL tool and search for the C240-M5SX to determine adapter compatibility.
- Connections to optional NIC adapters must be in a link-down or disconnected state during HyperFlex deployment.

The number of supported optional adapters depends on the number of CPUs configured and the HyperFlex Edge network topology selected:

Single CPU

— Up to three additional PCIe cards may be added with HX-E-TOPO1 or HX-E-TOPO3 selections.

— Up to two additional PCIe cards may be added with HX-E-TOPO2 selection.

Dual CPU

— Up to six additional PCIe cards may be added with HX-E-TOPO1 or HX-E-TOPO3 selections.

— Up to five additional PCIe card may be added with HX-E-TOPO2 selection

STEP 9 ORDER GPU CARDS (OPTIONAL)

Select GPU Options

The available GPU PCIe options are listed in *Table 12*

Table 12 Available PCIe Option Cards

Product ID (PID)	PID Description	Card Height	Max cards per node
GPU PCIe Cards			
HX-GPU-M10	NVIDIA M10 GPU	Double Wide (consumes 2 slots)	2
HX-GPU-T4-16	NVIDIA T4 PCIE 75W 16GB	Low Profile Single-Width	6
HX-GPU-RTX6000	NVIDIA QUADRO RTX 6000, PASSIVE, 250W TGP, 24GB	Double Wide (consumes 2 slots)	2
HX-GPU-RTX8000	NVIDIA QUADRO RTX 8000, PASSIVE, 250W TGP, 48GB	Double Wide (consumes 2 slots)	2

NOTE:

- All GPU cards must be procured from Cisco as there is a unique SBIOS ID required by CIMC and UCSM

- All GPU cards require two CPUs and a minimum of two power supplies in the server. 1600 W power supplies are recommended. Use the power calculator at the following link to determine the needed power based on the options chosen (CPUs, drives, memory, and so on):

- Only T4 supported with 1 CPU, max 3 with HX-RIS-1B-240M5, Riser 1B 3PCIe slots (x8, x8, x8); all from CPU1, For T4

- HX-GPU-T4-16 require special riser cards (HX-RIS-1-240M5 and HX-RIS-2B-240M5) for full configuration of 5 or 6 cards.

http://ucspowercalc.cisco.com

Caveats

- NVIDIA M10 GPUs can support only less than 1 TB of total memory in the server. Do not install more than fourteen 64-GB DIMMs when using an NVIDIA GPU card in this server.
- GPUs cannot be mixed.
- **Slot 5** on **riser card 2** is the required slot for the first GPU.
- **Slot 2** on **riser card 1** is the secondary slot for a second GPU.

STEP 10 SELECT ACCESSORIES

Select

- Internal micro SD Card Module HX-MSD-32G from *Table 13*

Table 13   Internal microSD Card Module

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

NOTE:

- This is a required component.
- The micro-SD card mounts internally on riser 1.
- The micro-SD card serves as a dedicated local resource for utilities such as HUU. Images can be pulled from a file share (NFS/CIFS) and uploaded to the cards for future use.

STEP 11 ORDER SECURITY DEVICES (OPTIONAL)

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

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

The security device ordering information is listed in *Table 14*.

Table 14 Security Devices

Product ID (PID)	PID Description
HX-TPM2-002	Trusted Platform Module 2.0 for UCS servers
HX-TPM2-002B	Trusted Platform Module2.0 M5 UCS servers (FIPS 140-2 Compliant)
HX-INT-SW01	C220 M5 and C240 M5 Chassis Intrusion Switch

NOTE:

- The TPM module used in this system conforms to TPM v2.0, as defined by the Trusted Computing Group (TCG). It is also SPI-based.

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

STEP 12 ORDER POWER SUPPLY

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

http://ucspowercalc.cisco.com

Table 15 Power Supply

Product ID (PID)	PID Description
HX-PSU1-1050W	1050W AC power supply for C-Series servers
HX-PSUV2-1050DC	1050W DC power supply for C-Series servers
HX-PSU1-1600W[1]	1600W AC power supply for C-Series servers
HX-PSU1-1050ELV	Cisco UCS 1050W AC Power Supply for Rack Server Low Line

Notes:

1. PSU supported on C220/C240/HX

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

STEP 13 SELECT POWER CORD(s)

Using *Table 16*, select the appropriate AC power cords. You can select zero to two power cords. If you select the option R2XX-DMYMPWRCORD, no power cord is shipped with the server.

Table 16 Available Power Cords
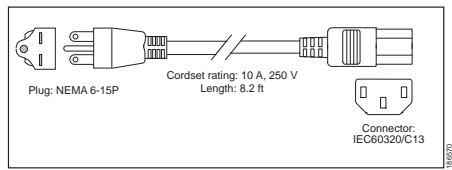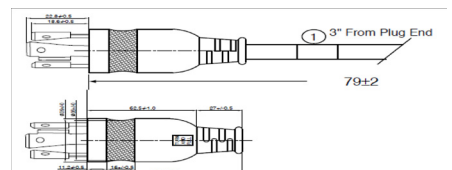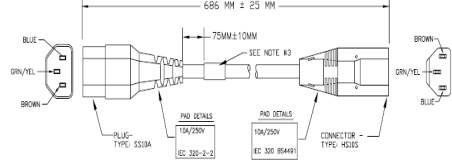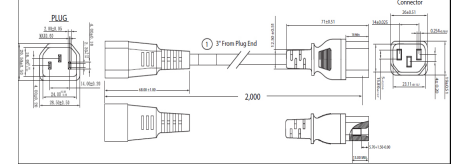
Product ID (PID)	PID Description	Images
R2XX-DMYMPWRCORD	No power cord (dummy PID to allow for a no power cord option)	Not applicable
CAB-48DC-40A-8AWG	C-Series -48VDC PSU Power Cord, 3.5M, 3 Wire, 8AWG, 40A	
CAB-N5K6A-NA	Power Cord, 200/240V 6A, North America	
CAB-AC-L620-C13	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft	
CAB-C13-CBN	CABASY,WIRE,JUMPER CORD, 27" L, C13/C14, 10A/250V	
CAB-C13-C14-2M	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V	
CAB-C13-C14-AC	CORD,PWR,JMP,IEC60320/C14,IEC60320/C13, 3.0M	

Table 16 Available Power Cords
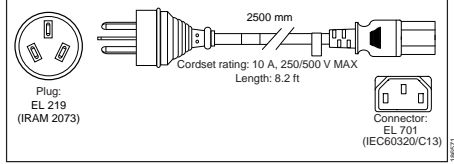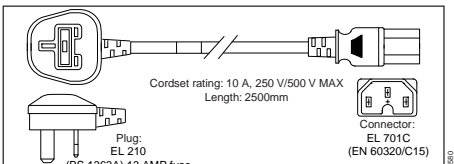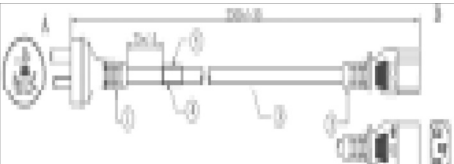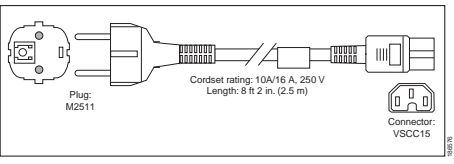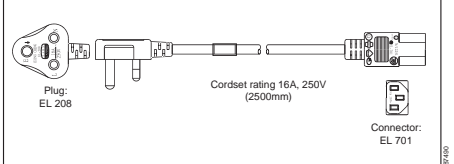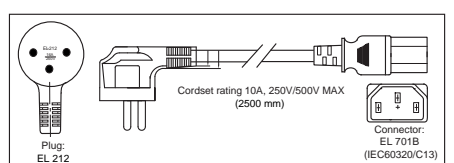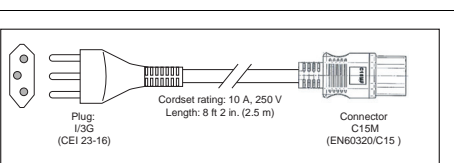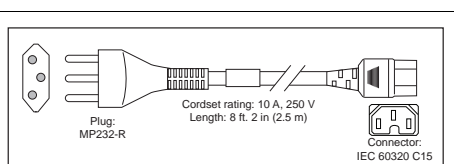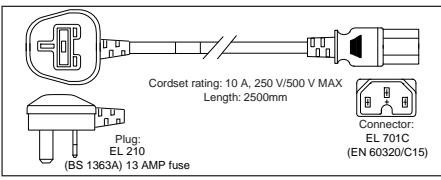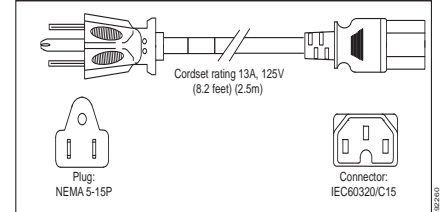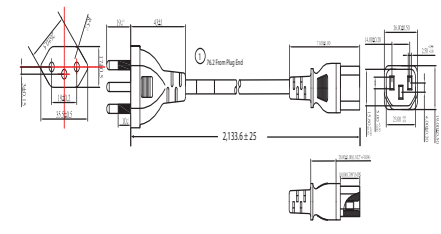
Product ID (PID)	PID Description	Images
CAB-250V-10A-AR	Power Cord, 250V, 10A, Argentina	
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia	
CAB-250V-10A-CN	AC Power Cord - 250V, 10A - PRC	
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU	
CAB-250V-10A-ID	Power Cord, 250V, 10A, India	
CAB-250V-10A-IS	Power Cord, SFS, 250V, 10A, Israel	
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy	
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, Switzerland	

Table 16 Available Power Cords

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

Notes:

1. This power cord is rated to 125V and only supported for PSU rated at 1050W or less
2. These new replacement parts for cards in compliance with the Dec 1st, 2020 Bureau of Indian Standards (BIS) regulatory standard for lower-power consumption products.

STEP 14 ORDER TOOL-LESS RAIL KIT AND OPTIONAL REVERSIBLE CABLE MANAGEMENT ARM

Select a Tool-Less Rail Kit

Select a tool-less rail kit from *Table 17*.

Table 17 Tool-less Rail Kit Options

Product ID (PID)	PID Description
HX-RAILB-M4	Friction Rail Kit for C220 M4 rack servers
HX-RAILF-M4	Ball Bearing Rail Kit for C220 M4 and C240 M4 rack servers
HX-RAIL-NONE	No rail kit option

Select an Optional Reversible Cable Management Arm

The reversible cable management arm mounts on either the right or left slide rails at the rear of the server and is used for cable management. Use *Table 18* to order a cable management arm.

Table 18 Cable Management Arm

Product ID (PID)	PID Description
HX-CMAF-M4	Reversible CMA for C220 M4 friction & ball bearing rail kits

For more information about the tool-less rail kit and cable management arm, see the Cisco UCS C240 M5 Installation and Service Guide at this URL:

https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/c/hw/C240M5/install/C240M5.html

> **NOTE:** If you plan to rackmount your HyperFlex HXAF240c Node, you must order a tool-less rail kit. The same rail kits and CMA's are used for M4 and M5 servers.

STEP 15 SELECT OPERATING SYSTEM VERSION

Several operating system versions and license types are available to choose from. HyperFlex comes conveniently pre-installed with the ESXi hypervisor of your choice, reducing the time needed to deploy a HyperFlex cluster on-site.

Select one VMware license from the VMware section to indicate the vSphere version to install. Optionally select a VMware PAC license to purchase a vSphere license from Cisco.

Select Operating Systems from *Table 19*

Table 19 Operating Systems

Product ID (PID)	PID Description
VMware	
HX-VSP-7-0-FND-D	Factory Installed vSphere SW 7.0 1-CPU Enduser provides License **(HyperFlex Release 4.5(1a) and later)**
HX-VSP-7-0-FND2-D	Factory Installed vSphere SW 7.0 2-CPU Enduser provides License **(HyperFlex Release 4.5(1a) and later)**
VMware PAC Licenses[1]	
HX-VSP-ROBO1-STD	VMware vSphere 7.x ROBO Standard (25 VM pack)
HX-VSP-ROBO2-STD	VMware vSphere 7.x ROBO Standard (100 VM pack)
HX-VSP-ROBO3-STD	VMware vSphere 7.x ROBO Standard (500 VM pack)
HX-VSP-ROBO1-ADV	VMware vSphere 7.x ROBO Advanced (25 VM pack)
HX-VSP-ROBO2-ADV	VMware vSphere 7.x ROBO Advanced (100 VM pack)
HX-VSP-ROBO3-ADV	VMware vSphere 7.x ROBO Advanced (500 VM pack)
HX-VSP-ROBO1-ENT	VMware vSphere 7.x ROBO Enterprise (25 VM pack)
HX-VSP-ROBO2-ENT	VMware vSphere 7.x ROBO Enterprise (100 VM pack)
HX-VSP-ROBO3-ENT	VMware vSphere 7.x ROBO Enterprise (500 VM pack)
HX-VSP-EPL-1A	VMware vSphere 7.x Ent Plus (1 CPU), 1-yr, Support Required Cisco
HX-VSP-EPL-3A	VMware vSphere 7.x Ent Plus (1 CPU), 3-yr, Support Required Cisco
HX-VSP-EPL-5A	VMware vSphere 7.x Ent Plus (1 CPU), 5-yr, Support Required Cisco
HX-VSP-STD-1A	VMware vSphere 7.x Standard (1 CPU), 1-yr, Support Required Cisco
HX-VSP-STD-3A	VMware vSphere 7.x Standard (1 CPU), 3-yr, Support Required Cisco
HX-VSP-STD-5A	VMware vSphere 7.x Standard (1 CPU), 5-yr, Support Required Cisco
Guest Operating system[2]	

Table 19 Operating Systems

Microsoft Windows Server	
MSWS-19-DC16C-NS	Windows Server 2019 Data Center (16 Cores/Unlimited VMs) - No Cisco SVC
MSWS-19-ST16C-NS	Windows Server 2019 Standard (16 Cores/2 VMs) - No Cisco SVC
HX-MSWS-19-DC16C	Windows Server 2019 Data Center (16 Cores/Unlimited VMs)
HX-MSWS-19-ST16C	Windows Server 2019 Standard (16 Cores/2 VMs)

Notes:

1. For non-ROBO licenses: Choose a quantity of two PAC licenses for dual CPU systems.
2. Optional guest OS licenses that may be purchased to run on top of the hypervisor

STEP 16 SELECT HX DATA PLATFORM SOFTWARE

HyperFlex Data Platform Edition & Subscription Period options are available as follows. Select one HX Data Platform Software license as required from *Table 20*

Table 20 HX Data Platform Software

Product ID (PID)	PID Description
HXDP-EP001-1YR to HXDP-EP001-5YR	HyperFlex Data Platform Edge Premier (1 to 5) Yr
HXDP-EP-SLR	HyperFlex Data Platform Edge Premier SLR 1 to 10 Years
HXDP-S001-1YR to HXDP-S001-5YR	HyperFlex Data Platform Datacenter Advantage (1 to 5) Yr
HXDP-S-SLR	HyperFlex Data Platform Datacenter Advantage SLR 1 to 10 Years

NOTE: HyperFlex Data Platform Edge Advantage is not supported with Edge 240 nodes.

STEP 17 SELECT INSTALLATION SERVICE

To ensure the best possible Day 0 Installation experience, mandatory Installation Services are required with all Hyper-V orders. Customers can purchase Cisco Advanced Services (AS) or Cisco Learning partner mentored Services. Select as desired from *Table 21*

Table 21 Installation services

Product ID (PID)	PID Description
Cisco Advanced Services	
ASF-ULT2-HPF-QSS	Quick Start Services - 1 Week
ASF-ULT2-HPF-ADS	Accelerated Deployment Services - 2 Weeks
AS-DCN-CNSLT	Advanced Services Consulting

STEP 18 SELECT SERVICE and SUPPORT LEVEL

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

Smart Net Total Care (SNTC)

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 22*.

Table 22 Cisco SNTC Service (PID HX-E-240-M5SX/HXAF-E-240-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-PREM-AF240CSX	C2P	Yes	SNTC 24X7X2OS
CON-UCSD8-AF240CSX	UCSD8	Yes	UC SUPP DR 24X7X2OS*
CON-C2PL-AF240CSX	C2PL	Yes	LL 24X7X2OS**
CON-OSP-AF240CSX	C4P	Yes	SNTC 24X7X4OS
CON-UCSD7-AF240CSX	UCSD7	Yes	UCS DR 24X7X4OS*
CON-C4PL-AF240CSX	C4PL	Yes	LL 24X7X4OS**
CON-USD7L-AF240CSX	USD7L	Yes	LLUCS HW DR 24X7X4OS***
CON-OSE-AF240CSX	C4S	Yes	SNTC 8X5X4OS
CON-UCSD6-AF240CSX	UCSD6	Yes	UC SUPP DR 8X5X4OS*
CON-SNCO-AF240CSX	SNCO	Yes	SNTC 8x7xNCDOS****
CON-OS-AF240CSX	CS	Yes	SNTC 8X5XNBDOS
CON-UCSD5-AF240CSX	UCSD5	Yes	UCS DR 8X5XNBDOS*
CON-S2P-AF240CSX	S2P	No	SNTC 24X7X2
CON-S2PL-AF240CSX	S2PL	No	LL 24X7X2**
CON-SNTP-AF240CSX	SNTP	No	SNTC 24X7X4
CON-SNTPL-AF240CSX	SNTPL	No	LL 24X7X4**
CON-SNTE-AF240CSX	SNTE	No	SNTC 8X5X4
CON-SNC-AF240CSX	SNC	No	SNTC 8x7xNCD****
CON-SNT-AF240CSX	SNT	No	SNTC 8X5XNBD
CON-SW-AF240CSX	SW	No	SNTC NO RMA

*Includes Drive Retention (see below for full description)

**Includes Local Language Support (see below for full description) – 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 with 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 Hyper-Converged 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 23*

Table 23 SNTC with UCS Onsite Troubleshooting Service (PID HX-E-240-M5SX/HXAF-E-240-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-OSPT- AF240CSX	OSPT	Yes	24X7X4OS Trblshtg
CON-OSPTD-AF240CSX	OSPTD	Yes	24X7X4OS TrblshtgDR*
CON-OSPTL-AF240CSX	OSPTL	Yes	24X7X4OS TrblshtgLL**
CON-OPTLD-AF240CSX	OPTLD	Yes	24X7X4OS TrblshtgLLD***

*Includes Drive Retention (see below for full description)

**Includes Local Language Support (see below for full description) – Only available in China and Japan

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

Solution Support

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 *Table 24*

Table 24 Solution Support Service (PID HX-E-240-M5SX/HXAF-E-240-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-SSC2P-AF240CSX	SSC2P	Yes	SOLN SUPP 24X7X2OS
CON-SSC4P-AF240CSX	SSC4P	Yes	SOLN SUPP 24X7X4OS
CON-SSC4S-AF240CSX	SSC4S	Yes	SOLN SUPP 8X5X4OS

Table 24 Solution Support Service (PID HX-E-240-M5SX/HXAF-E-240-M5SX)

CON-SSCS-AF240CSX	SSCS	Yes	SOLN SUPP 8X5XNBDOS
CON-SSDR7-AF240CSX	SSDR7	Yes	SSPT DR 24X7X4OS*
CON-SSDR5-AF240CSX	SSDR5	Yes	SSPT DR 8X5XNBDOS*
CON-SSS2P-AF240CSX	SSS2P	No	SOLN SUPP 24X7X2
CON-SSSNP-AF240CSX	SSSNP	No	SOLN SUPP 24X7X4
CON-SSSNE-AF240CSX	SSSNE	No	SOLN SUPP 8X5X4
CON-SSSNC-AF240CSX	SSSNC	No	SOLN SUPP NCD**
CON-SSSNT-AF240CSX	SSSNT	No	SOLN SUPP 8X5XNBD

Includes Drive Retention (see below for description)

**Available in China only

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.

PSS 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 25*.

Table 25 PSS (PID HX-E-240-M5SX/HXAF-E-240-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-PSJ8-AF240CSX	PSJ8	Yes	UCS PSS 24X7X2 OS
CON-PSJ7-AF240CSX	PSJ7	Yes	UCS PSS 24X7X4 OS
CON-PSJD7-AF240CSX	PSJD7	Yes	UCS PSS 24X7X4 DR*
CON-PSJ6-AF240CSX	PSJ6	Yes	UCS PSS 8X5X4 OS
CON-PSJD6-AF240CSX	PSJD6	Yes	UCS PSS 8X5X4 DR*

Table 25 PSS (PID HX-E-240-M5SX/HXAF-E-240-M5SX)

CON-PSJ4-AF240CSX	PSJ4	No	UCS SUPP PSS 24X7X2
CON-PSJ3-AF240CSX	PSJ3	No	UCS SUPP PSS 24X7X4
CON-PSJ2-AF240CSX	PSJ2	No	UCS SUPP PSS 8X5X4
CON-PSJ1-AF240CSX	PSJ1	No	UCS SUPP PSS 8X5XNBD
*Includes Drive Retention (see below for description)			

Combined Support Service

Combined Services makes it easier to purchase and manage required services under one contract. The more benefits you realize from the Cisco HyperFlex System, the more important the technology becomes to your business. These services allow you to:

■ Optimize the uptime, performance, and efficiency of your HyperFlex System

■   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 HyperFlex 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 26*

Table 26 Combined Support Service (PID HX-E-240-M5SX/HXAF-E-240-M5SX)

Service SKU	Service Level GSP	On Site?	Description
CON-NCF2P-AF240CSX	NCF2P	Yes	CMB SVC 24X7X2OS
CON-NCF4P-AF240CSX	NCF4P	Yes	CMB SVC 24X7X4OS
CON-NCF4S-AF240CSX	NCF4S	Yes	CMB SVC 8X5X4OS
CON-NCFCS-AF240CSX	NCFCS	Yes	CMB SVC 8X5XNBDOS
CON-NCF2-AF240CSX	NCF2	No	CMB SVC 24X7X2
CON-NCFP-AF240CSX	NCFP	No	CMB SVC 24X7X4
CON-NCFE-AF240CSX	NCFE	No	CMB SVC 8X5X4
CON-NCFT-AF240CSX	NCFT	No	CMB SVC 8X5XNBD
CON-NCFW-AF240CSX	NCFW	No	CMB SVC SW

UCS Drive Retention Service

With the Cisco 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 HyperFlex System, see the following URL: https://www.cisco.com/c/en/us/services/technical.html?stickynav=1

SUPPLEMENTAL MATERIAL

Supported Network Topologies for HyperFlex Edge 2 Node Deployments

Cisco HyperFlex Edge offers both a 1 Gigabit Ethernet (GE) and a 10/25GE installation option. Both topologies support single top-of-rack (ToR) and dual ToR switch options for ultimate network flexibility and redundancy.

Consider the following when determining the best topology for your cluster:

■   Cisco highly recommends the 10/25GE topology for higher performance and future node expansion capabilities.

■   The 1GE topology is reserved for clusters that will never require node expansion, and instances where the ToR switch does not have 10GE or 25GE ports available.

NOTE: A network topology is chosen during initial deployment and cannot be changed or upgraded without a full reinstallation. Choose your network topology carefully and with future needs in mind.

Below is a summary of the supported topologies, refer to the **Cisco HyperFlex Edge Deployment Guide, Pre-installation Checklist chapter**, for full details.

10/25 Gigabit Ethernet Topology

The 10/25 Gigabit Ethernet (GE) switch topology provides a fully redundant design that protects against switch (if using dual or stacked switches), link and port failures. The 10/25GE switch may be one or two standalone switches or may be formed as a switch stack.

> **To deploy this topology, select HX-E-TOPO1 in Step 6.**

Figure 7 **Physical cabling for the 10/25GE Dual Switch topology. Detailed diagrams for other topologies can be found in the pre-installation checklist. The figure below is applicable for both HX Edge 220 and HX Edge 240 nodes.**

2 Node Edge – Dual 10/25GE ToR Switches

Dual 10/25GE ToR Switches
(standalone or stacked)

2x 10GE or 2x 25GE Uplink per server (VIC 1457 MLOM)
Copper Twinax Cables (SFP+ or SFP28)
(Connect both port #1 to the same ToR)
(Connect both port #2 to the other ToR)

No LOM Crossover
No PCIe NIC Required

1x Dedicated 1GE CIMC Connection per server
Cat6 Ethernet Cables (RJ45)
(Connect to any open ports on either switch)

1 Gigabit Ethernet Topology

The 1 Gigabit Ethernet (GE) switch topology provides a fully redundant design that protects against switch (if using dual or stacked switches), link and port failures. The 1GE switch may be one or two standalone switches or may be formed as a switch stack.

To deploy this topology, select HX-E-TOPO2 in Step 6.

Figure 8 **Physical cabling for the 1GE Dual Switch topology. Detailed diagrams for other topologies can be found in the pre-installation checklist. The figure below is applicable for both HX Edge 220 and HX Edge 240 nodes.**

2 Node Edge – Dual 1GE ToR Switches

Dual 1GE ToR Switches
(standalone or stacked)

2x 1G Uplink per server (Intel i350 NIC)
Cat6 Ethernet Cables (RJ45)
(Connect both port #1 to the same ToR)
(Connect both port #2 to the other ToR)

No MLOM Card

1x Dedicated 1GE CIMC Connection per server
Cat6 Ethernet Cables (RJ45)
(Connect to any open ports on either switch)

2x 10GE LOM Direct-Connect per server
Cat6 Ethernet Cables (RJ45)

Supported Network Topologies for HyperFlex Edge 3 and 4 Node Deployments

Cisco HyperFlex Edge offers both a 1 Gigabit Ethernet (GE) and a 10/25GE installation option. Both topologies support single top-of-rack (ToR) and dual ToR switch options for ultimate network flexibility and redundancy.

Consider the following when determining the best topology for your cluster:

■ Cisco highly recommends the 10/25GE topology for higher performance and future node expansion capabilities.

■ The 1GE topology is reserved for clusters that will never require node expansion, and instances where the ToR switch does not have 10GE or 25GE ports available.

NOTE: A network topology is chosen during initial deployment and cannot be changed or upgraded without a full reinstallation. Choose your network topology carefully and with future needs in mind.
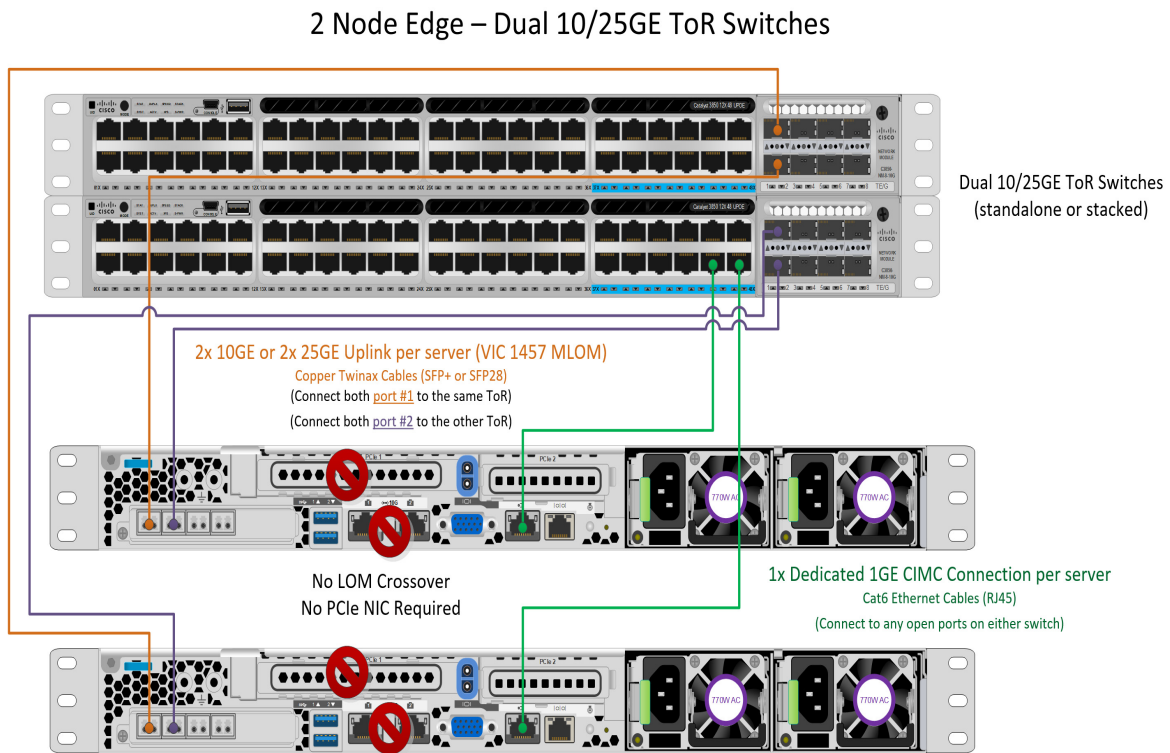
Below is a summary of the supported topologies, refer to the **Cisco HyperFlex Edge Deployment Guide, Pre-installation Checklist chapter**, for full details.

10/25 Gigabit Ethernet Topology

The 10/25 Gigabit Ethernet (GE) switch topology provides a fully redundant design that protects against switch (if using dual or stacked switches), link and port failures. The 10/25GE switch may be one or two standalone switches or may be formed as a switch stack.

To deploy this topology, select HX-E-TOPO1 in Step 6.

Figure 9   Physical cabling for the 10/25GE Dual Switch topology. Detailed diagrams for other topologies can be found in the pre-installation checklist. The figure below is applicable for both HX Edge 220 and HX Edge 240 nodes.

3 & 4 Node Edge – Dual 10/25GE ToR Switches

Dual 10/25GE ToR Switches (standalone or stacked)

2x 10GE or 2x 25GE Uplink per server (VIC 1457 MLOM)
Copper Twinax Cables (SFP+ or SFP28)
(Connect all port #1 to the same ToR)
(Connect all port #2 to the other ToR)

x3 or x4

1x Dedicated 1GE CIMC Connection per server
Cat6 Ethernet Cables (RJ45)
(Connect to any open port on either switch)
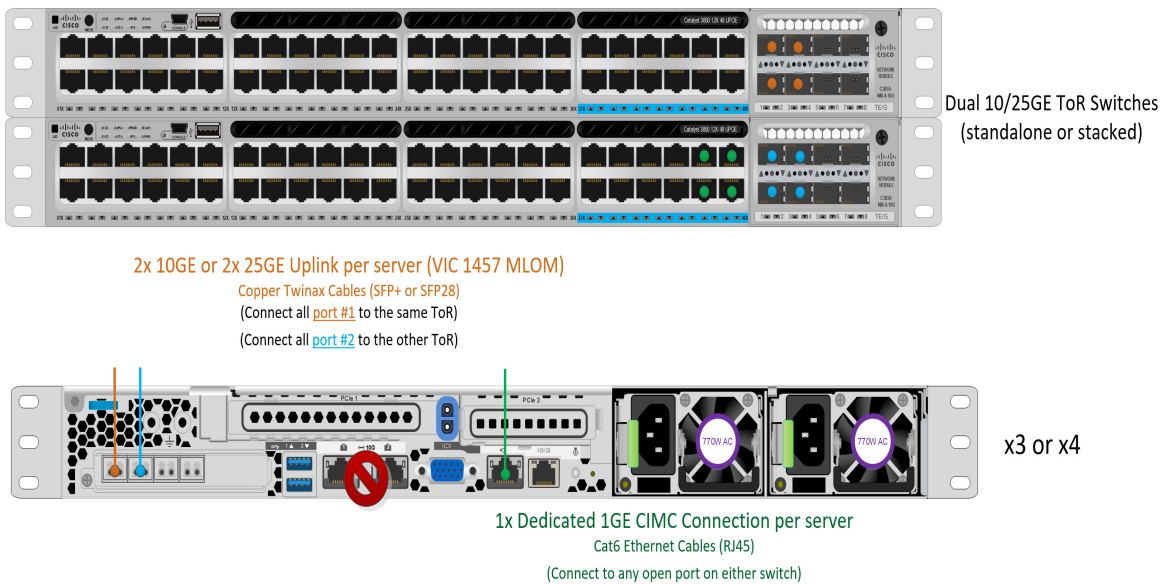
1 Gigabit Ethernet Dual Switch Topology

Dual switch configuration provides a slightly more complex topology with full redundancy that protects against: switch failure, link and port failure, and LOM/PCIe NIC HW failures. It requires two switches that may be standalone or stacked, and four 1GbE ports and one additional PCIe NIC per server. Trunk ports are the only supported network port configuration.

Figure 10   **Physical cabling for the 1GE Dual Switch topology. Detailed diagrams for other topologies can be found in the pre-installation checklist. The figure below is applicable for both HX Edge 220 and HX Edge 240 nodes.**
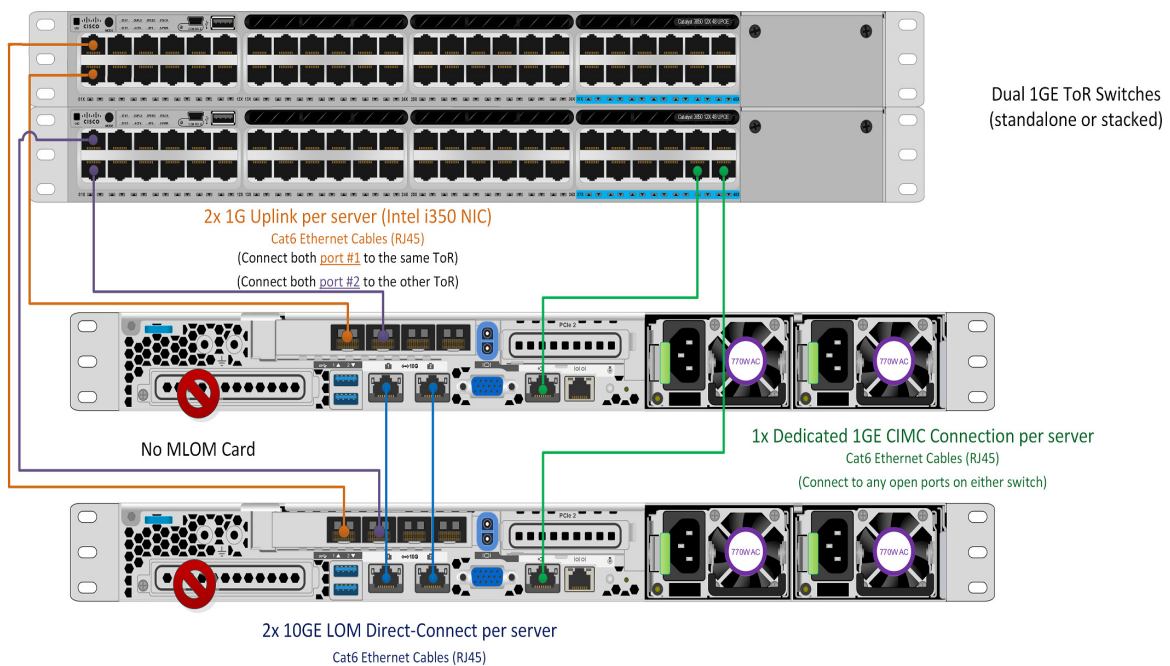
3 & 4 Node Edge – Dual 1GE ToR Switches

Dual 1GE ToR Switches (standalone or stacked)

2x 1G Uplink per server (Intel i350 NIC)
Cat6 Ethernet Cables (RJ45)
(Connect all port #1 to the same ToR)
(Connect all port #2 to the other ToR)

1x Dedicated 1GE CIMC Connection per server
Cat6 Ethernet Cables (RJ45)
(Recommended. Shared LOM mode may also be used.)

x3 or x4

No MLOM Card

2x 1GE Uplink per server (Intel x550 LOM)
Cat6 Ethernet Cables (RJ45)
(Connect all port #1 to the same ToR)
(Connect all port #2 to the other ToR)

1 Gigabit Ethernet Single Switch Topology

Single switch configuration provides a simple topology requiring only a single switch, and two 1GbE ports per server. Link or switch redundancy is not provided. Access ports and trunk ports are the two supported network port configurations.

Figure 11   Physical cabling for the 1GE Single Switch topology. Detailed diagrams for other topologies can be found in the pre-installation checklist. The figure below is applicable for both HX Edge 220 and HX Edge 240 nodes.

3 & 4 Node Edge – Single 1GE ToR Switch

Single 1GE ToR Switch

1x Dedicated 1GE CIMC Connection per server
Cat6 Ethernet Cables (RJ45)
(Recommended. Shared LOM mode may also be used.)

x3 or x4

No MLOM Card

2x 1GE Uplink per server (Intel x550 LOM)
Cat6 Ethernet Cables (RJ45)
(Connect all ports to the same ToR)
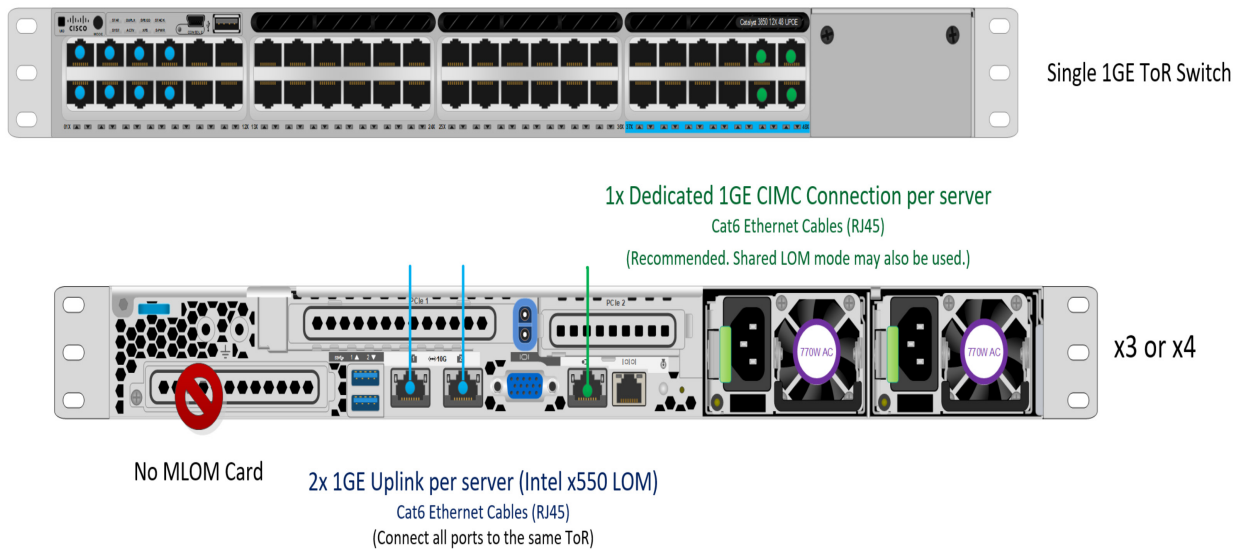
CHASSIS

An internal view of the HX240/HXAF240 M5 Edge Node chassis with the top cover removed is shown in *Figure 12*.

Figure 12   HX240/HXAF240 M5 Edge With Top Cover Off
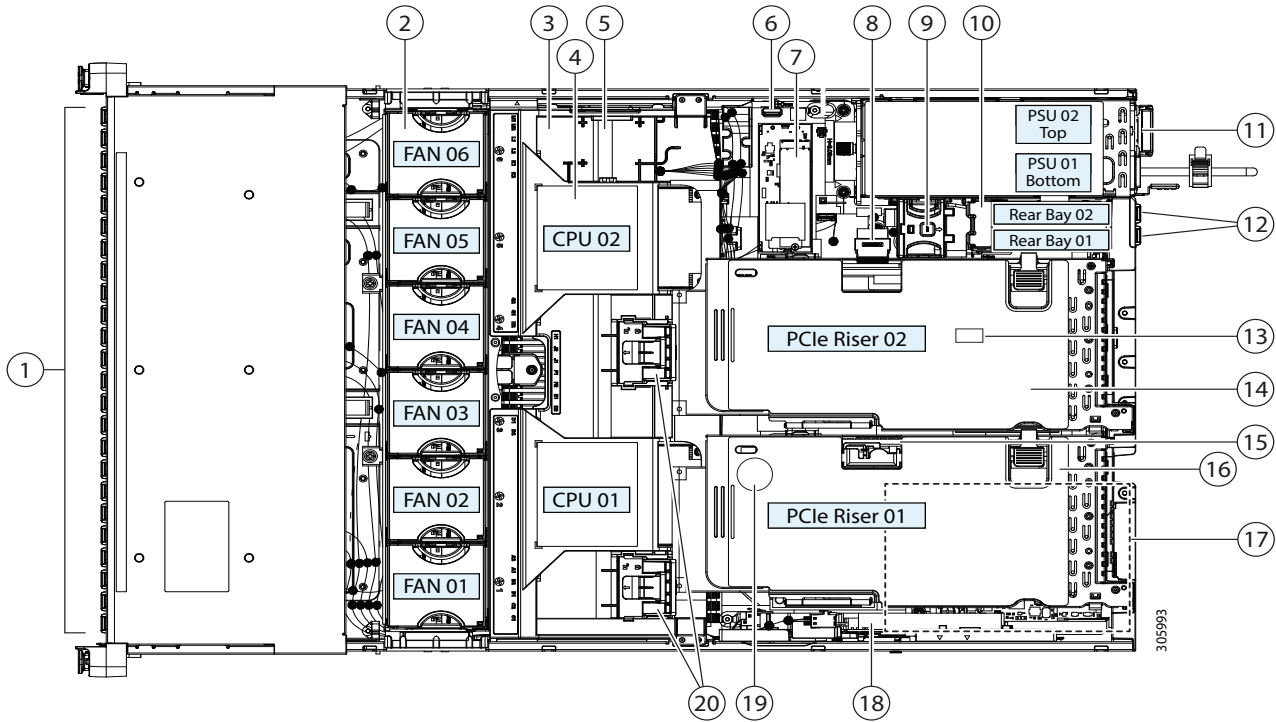
1	Front-Facing drive bays. All drive bays support SAS/SATA SSDs.	11	Power supplies (hot-swappable, redundant as 1+1).
2	Fan modules (six, hot-swappable)	12	Rear 2.5-inch drive bays: ■ Choice of SAS/SATA SSD **NOTE:** HyperFlex Edge does not support NVMe drives.
3	DIMM sockets on motherboard (up to 12 per CPU; total 24). Not visible under air baffle in this view.	13	Trusted platform module (TPM) socket on motherboard (not visible in this view)
4	CPUs and heatsinks (one or two). Not visible under air baffle in this view	14	PCIe riser 2 (PCIe slots 4, 5, 6), ■ 2B—With slots 4 (x8), 5 (x16), and 6 (x8); includes one PCIe cable connector for rear NVMe SSDs.
5	N/A	15	Micro-SD card socket on PCIe riser 1

6	USB 3.0 slot on motherboard	16	PCIe riser 1 (PCIe slot 1, 2, 3), with the following options: ■ RIS-1: Slots 1 (x8), 2 (x16), 3 (x8); slot 2 requires CPU2. ■ RIS-1B: Slots 1 (x8), 2 (x8), 3 (x8); slot 2 requires CPU2.
7	Mini-storage module connector. Supports M.2 module with SATA M.2 SSD slots	17	mLOM card socket (x16) on motherboard (not visible in this view)
8	PCIe cable connectors for NVMe SSDs, with PCIe riser 2: ■ One connector for rear SFF NVMe SSDs **NOTE:** HyperFlex Edge does not support NVMe drives.	18	Cisco modular RAID controller PCIe slot (dedicated slot)
9	Rear-drive fan module	19	RTC battery on motherboard (not visible in this view)
10	Rear-drive backplane assembly	20	Securing clips for GPU cards on air baffle

Riser Card Configuration and Options
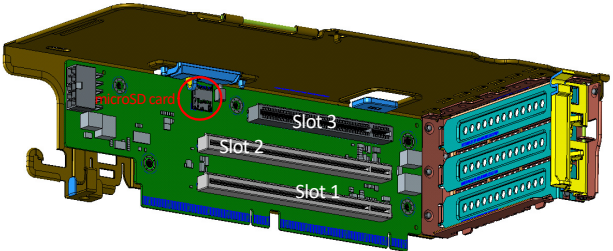
The two riser cards are shown in *Figure 13*.
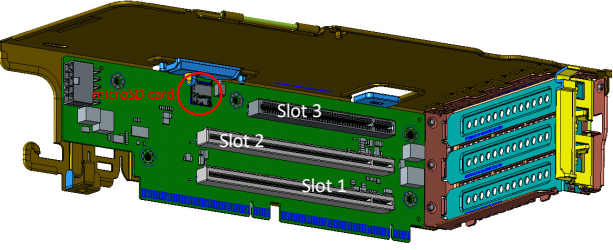
Figure 13   Riser Card 1 (slots 1, 2, and 3) and Riser Card 2 (slots 4, 5, and 6)
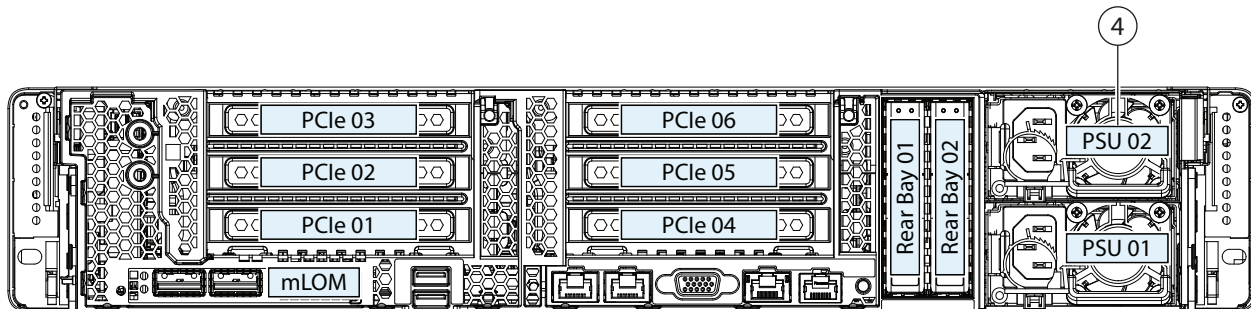
The two riser card 1 options are shown in *Table 27*. The riser card 2 options are shown in *Table 28 on page 64*.

Table 27 Riser Card 1 option
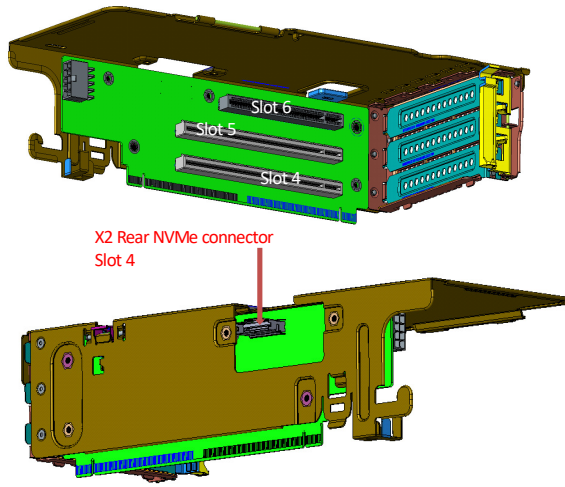
Slot #	Height	Length	Electrical	Physical
Riser Card 1 (option 1, PID HX-RIS-1-240M5)				
3	Full	Half	x8	
2	Full	Full[1]	x16	
1	Full	Half	x8	
Riser Card 1 (option 1B, PID HX-RIS-1B-240M5)				
3	Full	Half	x8	
2	Full	Full	x8	
1	Full	Half	x8	

Notes:

1. GPU capable slot

Cisco HyperFlex HX-E-240-M5SX/HXAF-E-240-M5SX M5 Edge Node

Table 28 Riser Card 2 Option

Slot #	Height	Length	Electrical	Physical
Riser Card 2 (option 2B, PID HX-RIS-2B-240M5)				

Slot #	Height	Length	Electrical	Physical
6	Full	Full	x8	
5	Full	Full[1]	x16	
4	Full	Half	x8	

Serial Port Details

The pinout details of the rear RJ-45 serial port connector are shown in *Figure 14*.

Figure 14   Serial Port (Female RJ-45 Connector) Pinout

Serial Port (RJ-45 Female Connector)

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

,;.\
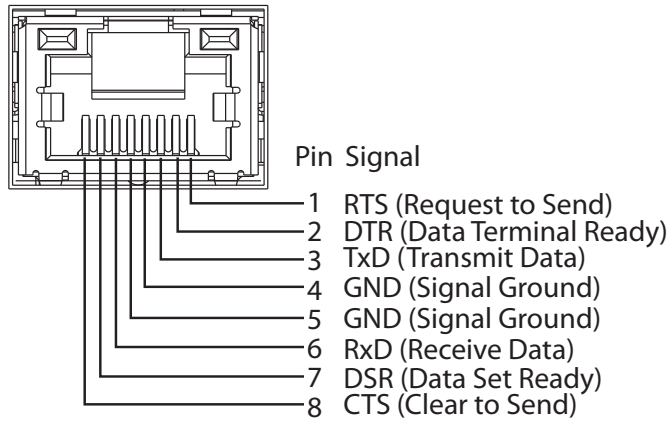
SPARE PARTS

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

> **NOTE:** Some spare parts you order may also require accessories for full functionality. For example, drives or RAID controllers may need accompanying cables. CPUs may need heatsinks, thermal paste, and installation tools. The spares and their accessory parts are listed in *Table 29*.

Table 29 Spare Parts

Product ID (PID)	PID Description
HX-HS2-C240M5=	Heat sink for HX240 All Flash and Hybrid M5 SD Servers CPUs above 150W
HX-CPUAT=	CPU Assembly Tool for M5 Servers
HX-CPU-TIM=	Single CPU thermal interface material syringe for M5 server HS seal
HX-HSCK=	HX Processor Heat Sink Cleaning Kit For Replacement of CPU
HX-M5-CPU-CAR=	HX M5 CPU Carrier
HX-RSAS-C240M5x	C240M5SX Rear drive SAS cable kit (includes SAS cable/backplane)
HX-BBLKD-S2=	C-Series M5 SFF drive blanking panel[1]
CBL-SASHBA-M5SD=	CBL, SAS HBA to Riser1 & 2 w/ SAS/SATA drive, C240M5SD
HX-RIS-CBL-M5SD	HX240c M5SD Riser-2 to Riser-1 Cable
HX-RS1C-240M5SD=	Riser 1C one PCIe slot, 2 drive bays, and a micro SD slot
HX-PCIF-240M5=[2]	HX240 All Flash and Hybrid M5 SD PCIe Riser Blanking Panel
HX-MLOMBLK-M5=	C220 M5 and HX240 All Flash and Hybrid M5 SD mLOM blanking panel
HX-RAILS-M5=	Ball Bearing Rail Kit for C240M5 SD Server
HX-C240SD-EXT=	HX C240SD M5 Extender Kit for 2-post rack
HX-FAN-C240M5SD=	HX240 All Flash and Hybrid M5 SD Fan Module (one)
N20-BKVM=	KVM cable for Server console port
HX-PSU-M5BLK=	Power Supply Blanking Panel for M5 servers
HX-MSTOR-M2=	Mini Storage Carrier for M.2 SATA (holds up to 2)
PACK-QSFP-SFP=	Packaging for QSFP 40G and SFP 10G
HX-INT-SW01=	C220 M5 and HX240 All Flash and Hybrid M5 SD Chassis Intrusion Switch
Riser	

Table 29 Spare Parts *(continued)*

Product ID (PID)	PID Description
HX-RIS-1B-240M5=	Riser 1B 3PCIe slots (x8, x8, x8); all from CPU1, For T4
HX-RIS-1-240M5=	Riser 1 3PCIe slots (x8, x16, x8); slot 3 req CPU2, For T4
PCIe Riser 2 options (all slots controlled with CPU2)	
HX-RIS-2B-240M5 =	Riser 2B 3PCIe slot(x8,x16,x8) supports GPU+rear NVMe, For T4
CPUs	
8000 Series Processor	
HX-CPU-I8280L=	2.7
HX-CPU-I8280=	2.7
HX-CPU-I8276L=	2.2
HX-CPU-I8276=	2.2
HX-CPU-I8270=	2.7
HX-CPU-I8268=	2.9
HX-CPU-I8260Y=	2.4
HX-CPU-I8260L=	2.4
HX-CPU-I8260=	2.4
6000 Series Processor	
HX-CPU-I6262V=	1.9
HX-CPU-I6258R=	2.7
HX-CPU-I6254=	3.1
HX-CPU-I6252N=	2.3
HX-CPU-I6252=	2.1
HX-CPU-I6248R=	3.0
HX-CPU-I6248=	2.5
HX-CPU-I6246R=	3.4
HX-CPU-I6246=	3.3
HX-CPU-I6244=	3.6
HX-CPU-I6242R=	3.1
HX-CPU-I6242=	2.8
HX-CPU-I6240R=	2.4

Table 29 Spare Parts *(continued)*

Product ID (PID)	PID Description
HX-CPU-I6240Y=	2.6
HX-CPU-I6240L=	2.6
HX-CPU-I6240=	2.6
HX-CPU-I6238R=	2.2
HX-CPU-I6238L=	2.1
HX-CPU-I6238=	2.1
HX-CPU-I6234=	3.3
HX-CPU-I6230R=	2.1
HX-CPU-I6230N=	2.3
HX-CPU-I6230=	2.1
HX-CPU-I6226R=	2.9
HX-CPU-I6226=	2.7
HX-CPU-I6222V=	1.8
5000 Series Processor	
HX-CPU-I5220S=	2.6
HX-CPU-I5220R=	2.2
HX-CPU-I5220=	2.2
HX-CPU-I5218R=	2.1
HX-CPU-I5218B=	2.3
HX-CPU-I5218N=	2.3
HX-CPU-I5218=	2.3
HX-CPU-I5217=	3.0
HX-CPU-I5215L=	2.5
HX-CPU-I5215=	2.5
4000 Series Processor	
HX-CPU-I4216=	2.1
HX-CPU-I4215R=	3.2
HX-CPU-I4215=	2.5
HX-CPU-I4214R=	2.4

Table 29 Spare Parts *(continued)*

Product ID (PID)	PID Description
HX-CPU-I4214Y=	2.2
HX-CPU-I4214=	2.2
HX-CPU-I4210R=	2.4
HX-CPU-I4210=	2.2
HX-CPU-I4208=	2.1
3000 Series Processor	
HX-CPU-I3206R=	1.9
Memory	
HX-ML-128G4RW=	128GB DDR4-3200MHz LRDIMM 4Rx4 (16Gb)
HX-MR-X64G2RW=	64GB DDR4-3200MHz RDIMM 2Rx4 (16Gb)
HX-MR-X32G2RW=	32GB DDR4-3200MHz RDIMM 2Rx4 (8Gb)
HX-MR-X16G1RW=	16GB DDR4-3200MHz RDIMM 1Rx4 (8Gb)
Drives	
Front Capacity Drive	
HX-SD960G61X-EV=	960GB 2.5 Inch Enterprise Value 6G SATA SSD (1X endurance)
HX-SD38T61X-EV=	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance)
HX-SD76T61X-EV=	7.6TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.0(2a) and later)**
HX-SD960G6S1X-EV=	960GB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) + catalog and later)**
HX-SD19T6S1X-EV=	1.9TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) + catalog and later)**
HX-SD38T6S1X-EV=	3.8TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) + catalog and later)**
HX-SD76T6S1X-EV=	7.6TB 2.5 inch Enterprise Value 6G SATA SSD (1X endurance) **(HyperFlex Release 4.5(2c), 5.0(1c) + catalog and later)**
Rear Cache Drive	
HX-SD800GK3X-EP=	800GB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)
HX-SD16TK3X-EP=	1.6TB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)
Front System / Log Drive	
HX-SD240GM1X-EV=	240GB 2.5 inch Enterprise Value 6G SATA SSD

Table 29 Spare Parts *(continued)*

Product ID (PID)	PID Description
Boot Drives	
HX-M2-240GB=	240GB SATA M.2 SSD
HX240c-M5SD (Hybrid)	
Front Capacity Drive	
HX-HD12TB10K12N=	1.2TB 2.5 inch 12G SAS 10K RPM HDD
HX-HD18TB10K4KN=	1.8TB 2.5 inch 12G SAS 10K RPM HDD
HX-HD24TB10K4KN=	2.4TB 12G SAS 10K RPM SFF HDD (4K)
Rear Cache Drive	
HX-SD16TK3X-EP=	1.6TB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)
Front System / Log Drive	
HX-SD240GM1X-EV =	240GB 2.5 inch Enterprise Value 6G SATA SSD
Boot Drives	
HX-M2-240GB=	240GB SATA M.2 SSD
HX-M2-HWRAID=	Cisco Boot optimized M.2 Raid controller
PCIe Cards	
HX-PCIE-IRJ45=	Intel i350 Quad Port 1Gb Adapter
HX-PCIE-ID10GF=	Intel X710-DA2 dual-port 10G SFP+ NIC
HX-PCIE-ID10GC=	Intel X550-T2 dual-port 10GBase-T NIC
HX-PCIE-ID25GF=	Intel XXV710-DA2 10-dual-port 25G NIC
GPU	
HX-GPU-T4-16=	NVIDIA T4 PCIE 75W 16GB
HX-GPU-M10=	NVIDIA M10 GPU
HX-GPU-RTX6000=	NVIDIA QUADRO RTX 6000, PASSIVE, 250W TGP, 24GB
HX-GPU-RTX8000=	NVIDIA QUADRO RTX 8000, PASSIVE, 250W TGP, 48GB
Power Supplies	
HX-PSU1-1050W=	1050W AC power supply for C-Series servers
HX-PSUV2-1050DC=	1050W DC power supply for C-Series servers
Security	

Table 29 Spare Parts *(continued)*

Product ID (PID)	PID Description
HX-TPM2-002=	Trusted Platform Module 2.0 for UCS servers
HX-TPM2-002B=	Trusted Platform Module 2.0 M5 UCS servers (FIPS 140-2 Compliant)
HX-INT-SW01=	C220 M5 and C240 M5 Chassis Intrusion Switch
Power Cables	
R2XX-DMYMPWRCORD=	No power cord (dummy PID to allow for a no power cord option)
CAB-48DC-40A-8AWG=	C-Series -48VDC PSU Power Cord, 3.5M, 3 Wire, 8AWG, 40A
CAB-N5K6A-NA=	Power Cord, 200/240V 6A, North America
CAB-AC-L620-C13=	AC Power Cord, NEMA L6-20 - C13, 2M/6.5ft
CAB-C13-CBN=	CABASY,WIRE,JUMPER CORD, 27" L, C13/C14, 10A/250V
CAB-C13-C14-2M=	CABASY,WIRE,JUMPER CORD, PWR, 2 Meter, C13/C14,10A/250V
CAB-C13-C14-AC=	CORD,PWR,JMP,IEC60320/C14,IEC6 0320/C13, 3.0M
CAB-250V-10A-AR=	Power Cord, 250V, 10A, Argentina
CAB-9K10A-AU=	Power Cord, 250VAC 10A 3112 Plug, Australia
CAB-250V-10A-CN=	AC Power Cord - 250V, 10A - PRC
CAB-9K10A-EU=	Power Cord, 250VAC 10A CEE 7/7 Plug, EU
CAB-250V-10A-ID=	Power Cord, 250V, 10A, India
CAB-250V-10A-IS=	Power Cord, SFS, 250V, 10A, Israel
CAB-9K10A-IT=	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy
CAB-9K10A-SW=	Power Cord, 250VAC 10A MP232 Plug, Switzerland
CAB-9K10A-UK=	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK
CAB-9K12A-NA=	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America
CAB-250V-10A-BR=	Power Cord - 250V, 10A - Brazil
CAB-C13-C14-2M-JP=	Power Cord C13-C14, 2M/6.5ft Japan PSE mark
CAB-9K10A-KOR=	Power Cord, 125VAC 13A KSC8305 Plug, Korea
CAB-ACTW=	AC Power Cord (Taiwan), C13, EL 302, 2.3M
CAB-JPN-3PIN=	Japan, 90-125VAC 12A NEMA 5-15 Plug, 2.4m
CAB-48DC-40A-INT=	-48VDC PSU PWR Cord, 3.5M, 3 Wire, 8AWG, 40A (INT)
CAB-48DC-40A-AS =	-48VDC PSU PWR Cord, 3.5M, 3Wire, 8AWG, 40A (AS/NZ)
CAB-C13-C14-IN=	Power Cord Jumper,C13-C14 Connectors,1.4 Meter Length, India

Table 29 Spare Parts *(continued)*

Product ID (PID)	PID Description
CAB-C13-C14-3M-IN=	Power Cord Jumper, C13-C14 Connectors, 3 Meter Length, India
Select Hypervisor / Host Operating System	
ESXi Options	
VMware	
HX-VSP-7-0-FND-D=	Factory Installed vSphere SW 7.0 1-CPU Enduser provides License **(HyperFlex Release 4.5(1a) and later)**
HX-VSP-7-0-FND2-D=	Factory Installed vSphere SW 7.0 2-CPU Enduser provides License **(HyperFlex Release 4.5(1a) and later)**
VMware PAC Licenses	
HX-VSP-EPL-1A=	VMware vSphere 7.x Ent Plus (1 CPU), 1-yr, Support Required
HX-VSP-EPL-3A=	VMware vSphere 7.x Ent Plus (1 CPU), 3-yr, Support Required
HX-VSP-EPL-5A=	VMware vSphere 7.x Ent Plus (1 CPU), 5-yr, Support Required
HX-VSP-STD-1A=	VMware vSphere 7.x Standard (1 CPU), 1-yr, Support Required
HX-VSP-STD-3A=	VMware vSphere 7.x Standard (1 CPU), 3-yr, Support Required
HX-VSP-STD-5A=	VMware vSphere 7.x Standard (1 CPU), 5-yr, Support Required
Guest Operating system	
Microsoft Options	
HX-MSWS-19-ST16C=	Windows Server 2019 Standard (16 Cores/2 VMs)
HX-MSWS-19-DC16C=	Windows Server 2019 Data Center (16 Cores/Unlimited VMs)
HX-MSWS-22-ST16C=	Windows Server 2022 Standard (16 Cores/2 VMs)
HX-MSWS-22-DC16C=	Windows Server 2022 Data Center (16 Cores/Unlimited VMs)

Notes:
1. A drive blanking panel must be installed if you remove a disk drive from a HX server. These panels are required to maintain system temperatures at safe operating levels, and to keep dust away from system components.
2. If a new riser blanking panel is required, please order HX-PCIF-240M5=, which is a 3-panel filler for the entire riser. For a single slot filler, please order HX-PCIF-01F= (only for Riser 1 and Riser 2B).

KVM CABLE

The KVM cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB 2.0 ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM cable ordering information is listed in *Table 30*.

Table 30 KVM Cable

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

Figure 15   KVM Cable
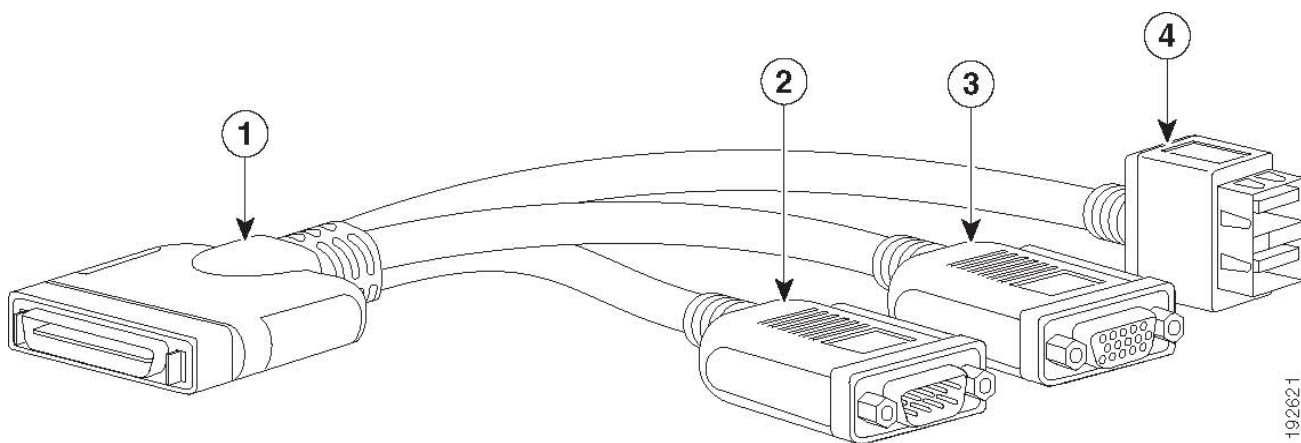
1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB 2.0 connector (for a mouse and keyboard)

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 31* below to determine if still supported.

Table 31 EOL Products

EOS option PID	Description	EOL bulletin link
CPU		
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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

Table 31 EOL Products

EOS option PID	Description	EOL bulletin link
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-CPU-6146	3.2 GHz 6146/165W 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
HX-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
HX-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
HX-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
HX-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
HX-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
HX-CPU-6126	2.6 GHz 6126/125W 12C/19.25MB Cache/DDR4 2666MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html

Table 31 EOL Products

EOS option PID	Description	EOL bulletin link
HX-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
HX-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
HX-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
HX-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
HX-CPU-4116	2.1 GHz 4116/85W 12C/16.50MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
HX-CPU-4114	2.2 GHz 4114/85W 10C/13.75MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
HX-CPU-4110	2.1 GHz 4110/85W 8C/11MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
HX-CPU-4108	1.8 GHz 4108/85W 8C/11MB Cache/DDR4 2400MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
HX-CPU-3106	1.7 GHz 3106/85W 8C/11MB Cache/DDR4 2133MHz	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744580.html
Memory		
HX-MR-128G8RS-H	128 GB DDR4-2666-MHz TSV-RDIMM/8R/x4	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
HX-ML-X64G4RS-H	64 GB DDR4-2666-MHz LRDIMM/4R/x4	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
HX-MR-X32G2RS-H	32 GB DDR4-2666-MHz RDIMM/2R/x4	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
HX-MR-X16G1RS-H	16 GB DDR4-2666-MHz RDIMM/1R/x4	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-2412151.html
HX-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
HX-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

Table 31 EOL Products

EOS option PID	Description	EOL bulletin link
HX-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
HX-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
HX-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
GPU		
HX-GPU-P40	NVIDIA GRID P40	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744204.html
HX-GPU-P4	NVIDIA P4 (PG414-200), PASSIVE, 75W, 8GB PCIe Card	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-742510.html
HX-GPU-V100	NVIDIA Volta 100 PCIe	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/eos-eol-notice-c51-744204.html
HX-GPU-V100-32	NVIDIA TESLA, VOLTA 100 PCIE 32GB, 250W	https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-hyperflex-accessories-eol.html
Drives		
HX-SD800G123X-EP	800GB 2.5in Enterprise Performance 12G SAS SSD(3X endurance)	https://www.cisco.com/c/en/us/products/collateral/hyperconverged-infrastructure/hyperflex-hx-series/eos-eol-notice-c51-2451489.html

TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 32   Dimensions and Weight

Parameter	Value
Height	3.43 in. (87.1 mm)
Width (including slam latches)	17.57 in.(446.3 mm) Including handles: 18.96 in (481.5 mm)
Depth	29.56 in. (750.8 mm) Including handles: 30.44 in (773.1 mm)
Front Clearance	3 in. (76 mm)
Side Clearance	1 in. (25 mm)
Rear Clearance	6 in. (152 mm)
Weight[1]	
Maximum (24 HDD model with 26 HDDs, 2 CPUs, 24 DIMMs, 2 1600 W power supplies) (8 HDD model with 8 HDDs, 2 CPUs, 24 DIMMs, 2 1600 W power supplies)	59.5 lbs (26.1 kg) 45.5 lbs (20.6 kg)
Minimum (24 HDD model with 1 HDD, 1 CPU, 1 DIMM, 1 770 W power supply) (8 HDD model with 1 HDD, 1 CPU, 1 DIMM, 1 770 W power supply)	41.5 lbs (18.8 kg) 37 lbs (16.8 kg)
Bare (24 HDD model with 0 HDD, 0 CPU, 0 DIMM, 1 770 W power supply) (8 HDD model with 0 HDD, 0 CPU, 0 DIMM, 1 770 W power supply)	40 lbs (18.1 kg) 35.5 lbs (16.1 kg)

Notes:

1. Weight includes inner rail, which is attached to the server. Weight does not include outer rail, which is attached to the rack.

Power Specifications

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

- 1050 W (AC) power supply (see *Table 33*).

- 1050 W V2 (DC) power supply (see *Table 34*)

- 1600 W (AC) power supply (see *Table 35*)

Table 33 HX240/HXAF240 M5 Edge 1050 W (AC) Power Supply Specifications

Parameter	Specification			
Input Connector	IEC320 C14			
Input Voltage Range (V rms)	100 to 240			
Maximum Allowable Input Voltage Range (V rms)	90 to 264			
Frequency Range (Hz)	50 to 60			
Maximum Allowable Frequency Range (Hz)	47 to 63			
Maximum Rated Output (W)[1]	800		1050	
Maximum Rated Standby Output (W)	36			
Nominal Input Voltage (V rms)	100	120	208	230
Nominal Input Current (A rms)	9.2	7.6	5.8	5.2
Maximum Input at Nominal Input Voltage (W)	889	889	1167	1154
Maximum Input at Nominal Input Voltage (VA)	916	916	1203	1190
Minimum Rated Efficiency (%)[2]	90	90	90	91
Minimum Rated Power Factor[2]	0.97	0.97	0.97	0.97
Maximum Inrush Current (A peak)	15			
Maximum Inrush Current (ms)	0.2			
Minimum Ride-Through Time (ms)[3]	12			

Notes:

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

Table 34 HX240/HXAF240 M5 Edge 1050 W (DC) Power Supply Specifications

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

Notes:

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

Table 35   HX240/HXAF240 M5 Edge 1600 W (AC) Power Supply Specifications

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

Table 35   HX240/HXAF240 M5 Edge 1600 W (AC) Power Supply Specifications

Maximum Inrush Current (ms)	0.2
Minimum Ride-Through Time (ms)[3]	12

Notes:

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

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

http://ucspowercalc.cisco.com

Environmental Specifications

The environmental specifications for the HX240/HXAF240 M5 Edge server are listed in *Table 36*.

Table 36 Environmental Specifications

Parameter	Minimum
Operating Temperature	Dry bulb temperature of 10°C to 35°C (50°F to 95°F)
	Maximum temperature change of 20°C (36°F) per hour
	(a temperature change within a specified period of time and not a rate of change)
	Humidity condition: Uncontrolled, not to exceed 50% RH starting condition
	Derate the maximum temperature by 1°C (33.8°F) per every 305 meters of altitude above 900m
Extended Operating Temperature	5°C to 40°C (41°F to 104°F) with no direct sunlight
	Humidity condition: Uncontrolled, not to exceed 50% RH starting condition
	Derate the maximum temperature by 1°C (33.8°F) per every 305 meters of altitude above 900m
Non-Operating Temperature	Dry bulb temperature of -40°C to 65°C (-40°F to 149°F)
Operating Relative Humidity	10% to 90% and 28°C (82.4°F) maximum dew-point temperature, non-condensing environment
	Minimum to be higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity
	Maximum to be 24°C (75.2°F) dew point or 90% relative humidity
Non-Operating Relative Humidity	5% to 93% relative humidity, non-condensing, with a maximum wet bulb temperature of 28°C across the 20°C to 40°C dry bulb range.
Maximum Operating Duration	Unlimited
Operating Altitude	A maximum elevation of 3050 meters (10,006 ft)
Non-Operating Altitude	An elevation of 0 to 12,000 meters (39,370 ft)
Sound Power level, Measure A-weighted per ISO7779 LWAd (Bels) Operation at 23°C (73°F)	5.5
Sound Pressure level, Measure A-weighted per ISO7779 LpAm (dBA) Operation at 23°C (73°F)	40

Extended Operating Temperature Hardware Configuration Limits

Table 37 Cisco HX240/HXAF240 M5 Edge Extended Operating Temperature Hardware Configuration Limits

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

Notes:

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

TECHNICAL SPECIFICATIONS

Compliance Requirements

The regulatory compliance requirements for servers are listed in *Table 38*.

Table 38 HX Regulatory Compliance Requirements

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

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