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Cisco UCS C240 M6SN for Microsoft Azure Stack HCI

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Cisco UCS C240 M6SN Rack Server with Cisco Nexus 9336C-FX2 Switch

Overview

Cisco UCS® for Microsoft Azure HCI offers highly available and scalable software-defined hyperconverged and storage systems based on Microsoft Azure Stack HCI operating system technology.

If you run your business on Microsoft software, you need a solution that uses hardware designed specifically for Microsoft HCI. Look no further. Cisco and Microsoft have partnered to deliver a solution that accelerates access to data, provides comprehensive data management tools, and is powered by the latest 3rd Gen Intel® Xeon® Scalable processors to set a new standard of excellence.

Main benefits

Cisco UCS for Microsoft Azure Stack HCI offers these main benefits:

- **Cloud-based management:** Cisco Intersight™ provides complete end-to-end system management and offers the ability to help you manage workloads whether located on premises or in a cloud. Intersight is cloud-based and enables Microsoft Azure Stack HCI systems to easily integrate with your broader Intersight-based infrastructure. Server Profiles help ensure consistent server setup. They integrate with Microsoft System Center and PowerShell toolkit and, when combined with the Cisco Intersight solution, enable cloud-management expansion to meet future requirements.

- **Delivers fault tolerance:** Built-in resiliency handles storage, server, and switch failures with continuous availability. Larger deployments can also be configured for chassis and rack fault tolerance. When hardware fails, just swap it out; the software heals itself, with no complicated management steps.

- **All NVMe storage:** Help ensure high performance of your applications, databases, and hybrid-cloud initiatives by using a NVMe based single storage tier reducing complexity and cost associated with multitiered Cache/Capacity designs.

- **Reduces Operating Expenses (OpEx):** Integrated storage with enterprise-class performance, reliability, and capabilities allows one team to manage your entire Microsoft environment.

- **Provides enterprise-class performance:** The Cisco UCS C240 M6SN Rack Server (Figure 1) uses the latest 3rd Gen Intel Xeon Scalable processor technology. With a random memory access configuration of up to 4 TB per server and up to 16 servers, the system infrastructure can accommodate enterprise-class workloads. The solution uses 100 Gigabit Ethernet from end to end to help ensure enough bandwidth for large workloads. It uses RDMA over Converged Ethernet (RoCE) to enable Remote Direct Memory Access (RDMA) to help ensure that performance requirements are met.

- **Offers true scalability:** Start with from 1 to 16 servers in increments of 1, configure 16 to 80 Intel processor cores per server, configure 256 GB to 4 TB of system memory per server, up to 182 TB of Non-Volatile Memory express (NVMe) storage to help ensure enterprise-class performance. To scale out, simply add drives or servers; Storage Spaces Direct will automatically configure and begin using the new drives. As a result, storage efficiency and performance improve predictably at scale.

- **Get exceptional availability:** Users of Azure Stack HCI will benefit because the system does not have a single point of failure. If a server fails, Cisco Intersight can assign the server profile for the workload to another server in the cluster that may be running a lower-priority workload. The profile is reassigned, and another server can replace the failed node, all without the user taking any action. Also, if a top-of-rack Cisco Nexus® switch fails, its partner Nexus switch maintains a copy of its configuration. Therefore, a replacement switch can be cabled in with switch configuration restored from its partner.

- **Azure Stack HCI operating system automatically updated:** Once the system is set up in your data center, simply access Microsoft Azure to license and download the Microsoft Azure Stack HCI operating system. Over time, Azure will automatically send security and other updates directly to your Cisco Azure Stack HCI system so you do not have to be concerned that your system is not up to date and your data is not secured.

- **Range of Nexus Choices**: While the N9K-9336C-FX2 switch was validated for Azure Stack HCI and documented in Cisco Validated Design. There are other Cisco switches which may be used as the Top of Rack switch. To qualify they must be listed on this Microsoft webpage: **Microsoft Azure Stack HCI Physical Networking Switch** https://learn.microsoft.com/en-us/azure-stack/hci/concepts/physical-network-requirements?tabs=22H2%2C20-21H2reqs.

- **Global world-class support:** Enjoy the support capabilities of two world-class support organizations. While most support issues clearly dictate which support team to initiate a conversation, for those times when it is unclear Cisco and Microsoft will work to help ensure that your team is not caught in the middle. Optionally, you can order Cisco Solutions Support which provides the ability for Cisco to monitor all support requests and keep you updated so you can spend your time focused on other tasks.

- **Cisco Validated Design:** The complete system was tested by Cisco using the Microsoft provided test kit. The results were reviewed and approved by Microsoft. Every system element no matter how small is completely documented.

- **Customer Installable:** The CVD provides a complete set of instructions to enable your team to install the system without additional time and expense.

- **Maintain System Rack Standard:** The Cisco system installs into your system racks thus we support and maintain your standard for system racks in your data center.

Figure 1.
Cisco UCS C240 M6SN Rack Server

Solution example

Table 1 and Figure 2 show a sample configuration.

Table 1. Sample configuration components

Configuration name	Description
Part number	UCS-MAH-B00R00-M6
Windows OS	Azure Stack HCI, version 22H2
Solution type and profile	Premium hyperconverged solution, with capacity profile
Form factor	Rack-mount 2-Rack-Unit (2RU) nodes
Trusted Platform Module (TPM) 2.0	Yes
CPU	3rd Gen Intel Xeon Scalable processor
Core count	8 – 40 cores: up to 80 cores per server
Memory	256 GB to 4 TB per server
Host Bus Adapter (HBA)	Cisco Boot-Optimized M.2 RAID controller (holds up to two M.2 SATA SSDs)

Network interface card (NIC)	Quantity	Type	RDMA type
NIC	1	Cisco-MLNX MCX623106AS-CDAT 2x100GbE QSFP56 PCIe NIC	RoCE

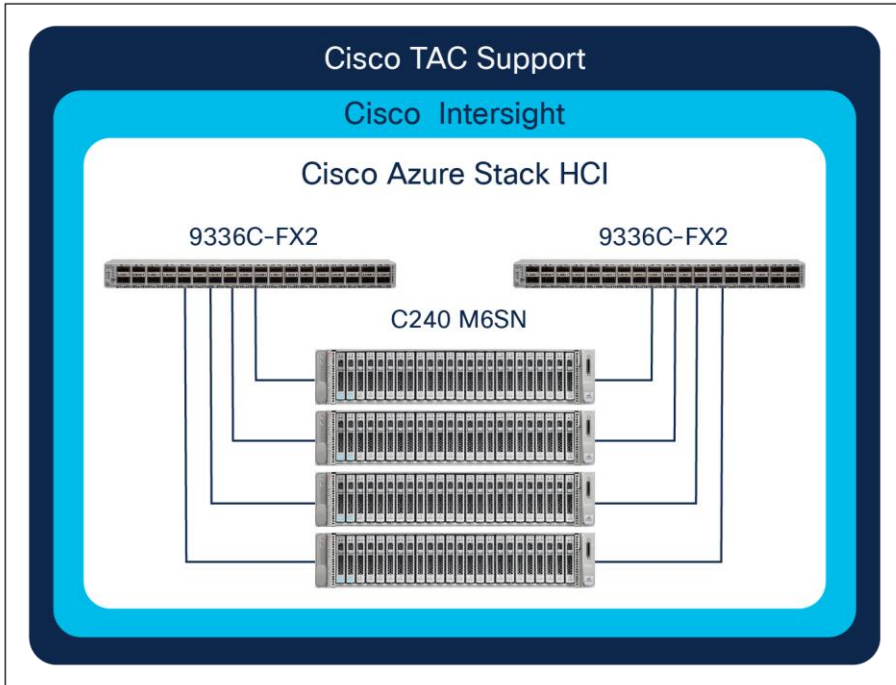| Drives (per-node minimum)	Type	Quantity	Size	Category
Capacity	NVMe	6 to 24	1.9TB, 3.8 TB, or 7.6 TB	Mixed use
Switch	(2) Cisco Nexus 9336C-FX2			

Figure 2.
Sample 4-node Configuration

Ordering information

Table 2 lists the part numbers for the solution. The solution has a 1-node minimum configuration and is expandable to 16 nodes – UCS-MAH-B00R00-M6 - Microsoft Azure Stack HCI Bundle.

Table 2.   Part numbers for Cisco UCS C240 M6SN Rack Server with Cisco Nexus 9336C-FX2 Switch

System Element	Cisco PID	Description
Cisco UCS	UCSC-C240-M6SN	UCS C240 M6 Rack w/o CPU, mem, drives, 2U 24 NVMe
CPU	UCS-CPU-I8380	Intel 8380 2.3GHz/270W 40C/60MB 3200MHz
	UCS-CPU-I8368	Intel 8368 2.4GHz/270W 38C/57MB 3266MHz
	UCS-CPU-I8362	Intel 8362 2.8GHz/265W 32C/48MB 3200 MHz
	UCS-CPU-I8360Y	Intel 8360Y 2.4GHz/250W 36C/54MB 3200 MHz
	UCS-CPU-I8358P	Intel 8358P 2.6GHz/240W 32C/48MB 3200 MHz
	UCS-CPU-I8358	Intel 8358 2.6GHz/250W 32C/48MB 3200 MHz
	UCS-CPU-I8352M	Intel 8276 2.3GHz/185W 32C/48MB 3DX 3200 MHz
	UCS-CPU-I8352Y	Intel 8352Y 2.2GHz/205W 32C/48MB 3200 MHz
	UCS-CPU-I8352S	Intel 8352S 2.2GHz/205W 32C/48MB 3200 MHz

System Element	Cisco PID	Description
	UCS-CPU-I6354	Intel 6354 3.0GHz/205W 18C/39MB 3200 MHz
	UCS-CPU-I6348	Intel 6248 2.6GHz/235W 28C/42MB DCP 3200 MHz
	UCS-CPU-I6346	Intel 6346 3.1GHz/205W 16C/36MB 3200 MHz
	UCS-CPU-I6342	Intel 6342 2.8GHz/230W 24C/36MB 3200 MHz
	UCS-CPU-I6338T	Intel 6338T 2.1GHz/165W 24C/36MB 3200 MHz
	UCS-CPU-I6338	Intel 6338 2.0GHz/205W 32C/48MB 3200 MHz
	UCS-CPU-I6336Y	Intel 6336Y 2.4GHz/185W 24C/36MB 3200 MHz
	UCS-CPU-I6334	Intel 6334 3.6GHz/165W 8C/18MB 3200 MHz
	UCS-CPU-I6326	Intel 6326 2.9GHz/185W 16C/24MB 3200 MHz
Memory	UCS-MR-X16G1RW	16GB RDIMM SRx4 3200 (8Gb)
	UCS-MR-X32G2RW	32GB RDIMM DRx4 3200 (8Gb)
	UCS-MR-X64G2RW	64GB RDIMM DRx4 3200 (16Gb)
	UCS-ML-128G4RW	128GB LRDIMM QRx4 3200 (16Gb) (non 3DS)
	UCS-DIMM-BLK	UCS DIMM Blank
Risers/ Heat Sink	UCSC-RIS2A-240M6	C240/C245 M6 Riser2A; (x8;x16;x8);StBkt; (CPU2)
	UCSC-HSHP-240M6	Heatsink for 2U SFF M6 PCIe SKU
	UCSC-M2EXT-240M6	C240M6/C245M6 2U M.2 Extender board
	UCSC-FBRS3-C240M6	C240/C245 M6 2U Riser3 Filler Blank
	UCSC-RIS1A-240M6	C240 M6 Riser1A; (x8;x16x, x8); StBkt; (CPU1)
Cables	CAB-C13-C14-2M	Power Cord Jumper, C13-C14 Connectors, 2 Meter Length
Power Supply	UCSC-PSU1-1600W	Cisco UCS 1600W AC Power Supply for Rack Server
Boot Drives	UCS-M2-960GB	960GB SATA M.2
	UCS-M2-HWRAID	Cisco Boot optimized M.2 Raid controller
I/O Card	UCSC-P-M6DD100GF	Cisco-MLNX MCX623106AS-CDAT 2x100GbE QSFP56 PCIe NIC

System Element	Cisco PID	Description
NVMe Drives	UCS-NVME14-I1920	1.9 TB 2.5in U.2 Intel P5500 NVMe High Perf Medium Endurance
	UCS-NVME14-I3840	3.8 TB 2.5in U.2 Intel P5500 NVMe High Perf Medium Endurance
	UCS-NVME14-I7680	7.6 TB 2.5in U.2 Intel P5500 NVMe High Perf Medium Endurance
	UCSC-BBLKD-S2	UCS C-Series M5 SFF drive blanking panel
CIMC	CIMC-LATEST	IMC SW (Recommended) latest release for C-Series Servers.
Security	UCSX-TPM-002C	TPM 2.0, TCG, FIPS140-2, CC EAL4+ Certified, for M6 servers
Rails	UCSC-RAIL-M6	Ball Bearing Rail Kit for C220 and C240 M6 rack servers
Cisco Support	CON-SNTP-UC0CC2N4	SNTC-24X7X4 UCS C240 M6 Rack w/o CPU, mem, drives, 2
	UCSC-DLOM-01	Cisco Card Mode BIOS setting for C-Series Servers
	UCS-SID-INFR-OI	Other Infrastructure
	UCS-SID-WKL-MSFT	Microsoft
Power Cables and Options	Power Cables	All Power cable options in Base PID
	UCSC-RAIL-M6	Ball bearing rail kit
	UCSX-TPM-002C	Trusted Platform Module 2.0 for UCS servers
	UCSC-INT-SW02	C220 and C240 M6 Chassis Intrusion Switch
	UCSC-CMA-C240M6	Reversible CMA for ball bearing rail kit
	UCSC-BZL-C240M5	C240 M5/M6 Security Bezel
	UCS-M2-HWRAID	Cisco Boot optimized M.2 RAID controller (holds up to two M.2 SATA SSDs)
Solution Support (Optional)	CON-SSS2P-UC0CC2N4	SOLN SUPP 24X7X2 UCS C240 M6 Rack w/o CPU, mem, drives, 2

System Element	Cisco PID	Description
Nexus Switch	N9K-C9336C-FX2	Nexus 9300 Series, 36p 40/100G QSFP28
	CON-SNTP-N9336FX2	SNTC-24X7X4 Nexus 9300 Series, 36p 40/100G QSFP28
	MODE-NXOS	Dummy PID for mode selection
	NXK-AF-PE	Dummy PID for Airflow Selection Port-side Exhaust
	NXOS-10.1.2	Nexus 9500, 9300, 3000 Base NX-OS Software Rel 10.1.2
	NXK-ACC-KIT-1RU	Nexus 3K/9K Fixed Accessory Kit, 1RU front and rear removal
	NXA-PAC-1100W-PE2	Nexus AC 1100W PSU - Port Side Exhaust
	CAB-C13-C14-2M	Power Cord Jumper, C13-C14 Connectors, 2 Meter Length
	NXA-FAN-65CFM-PE	Nexus Fan, 65CFM, port side exhaust airflow
	SVS-B-N9K-ESS-XF	EMBEDDED SOLN SUPPORT SWSS FOR ACI NEXUS 9K
Solution Support (Optional)	CON-SSCS-N9336FX2	SOLN SUPP 8X5XNBDOS Nexus 9300 Series, 36p 40/100G QSFP28
Connect Cables	Cables	Full list of optional connect cables for Nexus switches.

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Why choose Cisco?

For 10 years Cisco, with the Cisco Unified Computing System™ (Cisco UCS), has partnered with Microsoft to deliver system infrastructures that provide leading performance, availability, security, and ease of management. Our new M6 design is built upon the lessons learned in our previous M5 designs with lowered total cost of ownership and complexity the result with out sacrificing performance. Through Cisco Intersight, workloads do not need to be tied to individual servers. Thus, each server is configured exactly the same, a new server can be added in minutes, and servers can easily be repurposed if needed.

Note that configurations must adhere to the specifications provided in Cisco Validated Designs to be fully supported by Microsoft and Cisco.

For more information

For more information on Cisco UCS for Microsoft Azure Stack HCI solutions, visit: https://www.cisco.com/c/en/us/solutions/data-center-virtualization/microsoft-applications-on-cisco-ucs/microsoft-azure-stack-hci.html.

For more information about Cisco UCS C240 M6SNRack Servers, visit https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-c-series-rack-servers/ucs-c240-m6-rack-server-ds.html.

For more information on Cisco Solutions posted to the Microsoft Azure Stack HCI Validated Solutions list, visit: https://azurestackhcisolutions.azure.microsoft.com/#/catalog?Manufacturer=Cisco.

For more information on Microsoft Azure Stack HCI, visit: https://docs.microsoft.com/en-us/azure-stack/hci/overview.

For more information about Cisco UCS and Microsoft, visit https://www.cisco.com/go/microsoft.