Cisco UCS C480 ML M5 Rack Server

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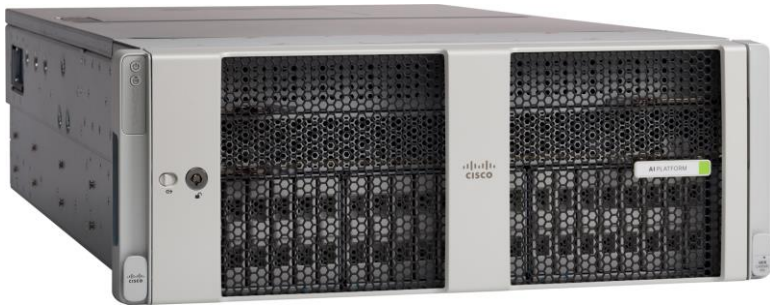
The Cisco UCS® C480 ML M5 Rack Server is a no-compromise purpose-built Cisco UCS C-Series server for deep learning in a 4-Rack-Unit (4RU) form factor.

Product overview

The Cisco UCS C480 ML M5 Rack Server is a purpose-built server for deep learning. It is storage- and I/O-optimized to deliver industry-leading performance for training models. The Cisco UCS C480 ML M5 delivers outstanding levels of storage expandability and performance options for standalone or Cisco Unified Computing System™ (Cisco UCS)–managed environments in a 4RU form factor. And because of its modular design, you pay for only what you need. It offers these capabilities:

- Eight NVIDIA SXM2 V100 32G modules with NVLink interconnect

- The latest Intel® Xeon® Scalable processors with up to 28 cores per socket and support for two processor configurations. It supports both first- and second-generation Intel Xeon Scalable CPUs

- 2933-MHz DDR4 memory and 24 DIMM slots for up to 7.5 terabytes (TB) of total memory

- Support for the Intel Optane™ DC Persistent Memory (128G, 256G, and 512G)

- Memory speeds increase from 2666 MHz to 2933 MHz

- Intel Optane DC Persistent Memory Modules (DCPMM) – 128G, 256G, and 512G[1]

- Up to 7.5 TB using 12x128G DDR4 DIMMs and 12x512G Intel Optane DC Persistent Memory Modules

- Four PCI Express (PCIe) 3.0 slots for 100G UCS VIC 1495

- Flexible storage options with support for up to 24 Small-Form-Factor (SFF) 2.5-inch, SAS/SATA Solid-State Disks (SSDs) and Hard-Disk Drives (HDDs)

- Up to six PCIe NVMe disk drives

- One Cisco® 12-Gbps SAS Modular RAID Controller in a dedicated slot

- M.2 boot options

- Dual embedded 10 Gigabit Ethernet LAN-On-Motherboard (LOM) ports

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[1] Each Intel Optane DC Persistent Memory Module requires a DDR4 DIMM for deployment. For example, if you are planning to use 12 Intel Optane DC Persistent Memory Modules, you will need 12 DDR4 DIMMs. In this scenario, the size of each of the DCPMMs must be the same. Similarly, the size of each of the DDR4 DIMMs must the same. But the size of the DCPMMs don't need to be the same as the size of the DDR4 DIMMs.

Features and benefits

Table 1 summarizes the features and benefits of the Cisco UCS C480 ML M5.

Feature	Benefit
Eight NVIDIA SXM2 V100 32GB modules with NVLink interconnect	Fast deep learning model training
Modular storage support with up to 24 front-accessible hot-swappable Hard Disk Drives (HDDs) and Solid-State Disks (SSDs)	Modularity to right-size storage options to match training requirements Flexibility to expand as storage needs increase
High-capacity memory support of up to 3 TB using 128-GB DIMMs, and up to 7.5 TB using Intel Optane DC Persistent Memory Modules	Large memory footprint to deliver performance and capacity for large-model training
Up to six PCIe NVMe drives	Up to six Gen3 x4 lanes NVMe drives for extreme I/O performance for faster model training
Support for up to four PCIe Generation 3.0 slots	Support for up to four 10/25G or 40/100G Cisco VICs
Hot-swappable, redundant power supplies	Increased high availability
Integrated dual 10-Gbps Ethernet	Increased network I/O performance and additional network options

Compute and I/O optimized for industry-leading performance

The Cisco UCS C480 ML M5 is a purpose-built enterprise-class rack server for deep learning that is compute- and I/O-optimized to deliver industry-leading performance for faster model training irrespective of training data size.

The Cisco UCS C480 ML M5 can be managed with [Cisco Intersight](#)™. Cisco Intersight is a new cloud-based management platform that uses analytics to deliver proactive automation and support. By combining intelligence with automated actions, you can reduce costs dramatically and resolve issues more quickly.

The C480 ML M5 servers can be deployed as standalone servers or in a Cisco UCS–managed environment. When used in combination with Cisco UCS Manager, the C480 ML M5 brings the power and automation of unified computing to enterprise applications, including Cisco SingleConnect technology, drastically reducing switching and cabling requirements. Cisco UCS Manager uses service profiles, templates, and policy-based management to enable rapid deployment and help ensure deployment consistency. It also enables end-to-end server visibility, management, and control in both virtualized and bare-metal environments. The Cisco Integrated Management Controller (IMC) delivers comprehensive out-of-band server management with support for many industry standards, including:

- Redfish Version 1.01 (v1.01)
- Intelligent Platform Management Interface (IPMI) v2.0
- Simple Network Management Protocol (SNMP) v2 and v3
- Syslog
- Simple Mail Transfer Protocol (SMTP)
- HTML5 GUI
- HTML5 virtual Keyboard-Video-Mouse (vKVM)

- Command-Line Interface (CLI)

- XML API

Management Software Development Kits (SDKs) and DevOps integrations exist for Python, Microsoft PowerShell, Ansible, Puppet, Chef, and more. For more information about integrations, see Cisco DevNet.

Product specifications

Product	Specifications
Form factor	4RU rack server
Processors	Intel Xeon Scalable CPUs (2) or second-generation Intel Xeon Scalable CPUs (2)
Memory	24 DDR4 DIMM slots: 16, 32, 64, and 128 GB; up to 2933 MHz Support for the Intel Optane DC Persistent Memory (128G, 256G, and 512G)
PCIe slots	Four PCIe 3.0 slots
RAID controllers	Internal controllers: • Cisco 12-Gbps Modular RAID Controller (PCIe 3.0) with 4-GB Flash-Backed Write Cache (FBWC), providing enterprise-class data protection for up to 24 SAS/SATA HDDs and SSDs
Internal storage	Support for up to 24 hot-swappable 2.5-inch Small-Form-Factor (SFF) drives with up to six PCIe NVMe drives: DVD drive option
Embedded Network Interface Cards (NICs)	Dual 10GBASE-T Intel x550 Ethernet ports
Power supplies	Hot-pluggable, redundant 1600W AC
Other storage	Dual M.2 SATA SSD drives for installing an operating system or hypervisor
Management	• Cisco Intersight • Cisco Integrated Management Controller • Cisco UCS Manager
Rack options	Cisco ball-bearing rail kit with optional reversible cable management arm
Hardware and software interoperability	See the Cisco Hardware and Software Interoperability List for a complete listing of supported operating systems and peripheral options

Ordering information

For ordering information, see the Cisco UCS C480 ML M5 server specifications sheet. For information about installing or upgrading your server, see the Cisco UCS C480 ML M5 hardware installation guide.

Warranty information

Cisco UCS C480 ML M5 Rack Servers have a 3-year Next-Business-Day (NBD) hardware warranty and 90-day software warranty. Augmenting the Cisco UCS warranty, Cisco Smart Net Total Care® (SmartNet) and Cisco Solution Support services are part of Cisco's technical services portfolio. Cisco Smart Net Total Care combines Cisco's industry-leading and award-winning foundational technical services with an extra level of actionable business intelligence that is delivered to

you through the smart capabilities in the Cisco Smart Net Total Care portal. For more information, please refer to https://www.cisco.com/c/en/us/support/services/smart-net-total-care/index.html.

Cisco Solution Support includes both product support and solution support, resolving complex issues in multivendor environments on average 43 percent more quickly than with product support alone. Solution Support is a critical element in data center administration, helping rapidly resolve any issue encountered while maintaining performance, reliability, and Return On Investment (ROI).

This service centralizes support across your multivendor Cisco environment for both our products and solution partner products that you have 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 https://www.cisco.com/c/en/us/services/technical/solution-support.html.

Cisco and partner services

Cisco and our industry-leading partners deliver services that accelerate your transition to a Cisco UCS C-Series Rack Servers solution. Cisco Unified Computing Services can help you create an agile infrastructure, accelerate time to value, reduce costs and risks, and maintain availability during deployment and migration. After deployment, our services can help you improve performance, availability, and resiliency as your business needs evolve, and help you further mitigate risk. For more information, visit https://www.cisco.com/go/unifiedcomputingservices.

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Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. Learn more.

For more information

For more information about Cisco UCS servers, visit https://www.cisco.com/go/ucs.

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