

# Cisco UCS C220 M3 Rack Server

## Product Overview

The Cisco® Unified Computing System™ (Cisco UCS) combines Cisco UCS C-Series Rack Servers and B-Series Blade Servers with networking and storage access into a single converged system that simplifies management and delivers greater cost efficiency and agility with increased visibility and control. The latest expansion of the Cisco UCS portfolio includes the new Cisco® UCS C220 M3 Rack Server (one rack unit [1RU]) and Cisco UCS C240 M3 Rack Server (2RU) and the Cisco UCS B200 M3 Blade Server. These three new servers increase compute density through more cores and cache balanced with more memory capacity, disk drives and with faster I/O. Together these server improvements and complementary Cisco UCS advancements deliver the best combination of features and cost efficiency required to support IT's diverse server needs.

The Cisco UCS C220 M3 Rack Server (Figure 1) is designed for performance and density over a wide range of business workloads, from web serving to distributed databases. Building on the success of the Cisco UCS C200 M2 Rack Server, the enterprise-class Cisco UCS C220 M3 server further extends the capabilities of the Cisco UCS portfolio in a 1RU form factor with the addition of the Intel® Xeon® processor E5-2600 and E5-2600 v2 product families, which deliver significant performance and efficiency gains. In addition, the Cisco UCS C220 M3 server offers up to two Intel® Xeon® processor E5-2600 or E5-2600 v2 processors, 16 DIMM slots, eight disk drives, and two 1 Gigabit Ethernet LAN-on-motherboard (LOM) ports, delivering outstanding density and performance in a compact package.

The Cisco UCS C220 M3 interfaces with Cisco UCS using another unique Cisco innovation: the Cisco UCS Virtual Interface Card. The Cisco UCS Virtual Interface Card is a virtualization-optimized Fibre Channel over Ethernet (FCoE) PCI Express (PCIe) 2.0 x8 10-Gbps adapter designed for use with Cisco UCS C-Series servers. The VIC is a dual-port 10 Gigabit Ethernet PCIe adapter that can support up to 256 PCIe standards-compliant virtual interfaces, which can be dynamically configured so that both their interface type (network interface card [NIC] or host bus adapter [HBA]) and identity (MAC address and worldwide name [WWN]) are established using just-in-time provisioning. In addition, the Cisco UCS VIC 1225 can support network interface virtualization and Cisco® Data Center Virtual Machine Fabric Extender (VM-FEX) technology.

**Figure 1.** Cisco UCS C220 M3 Server



## Applications

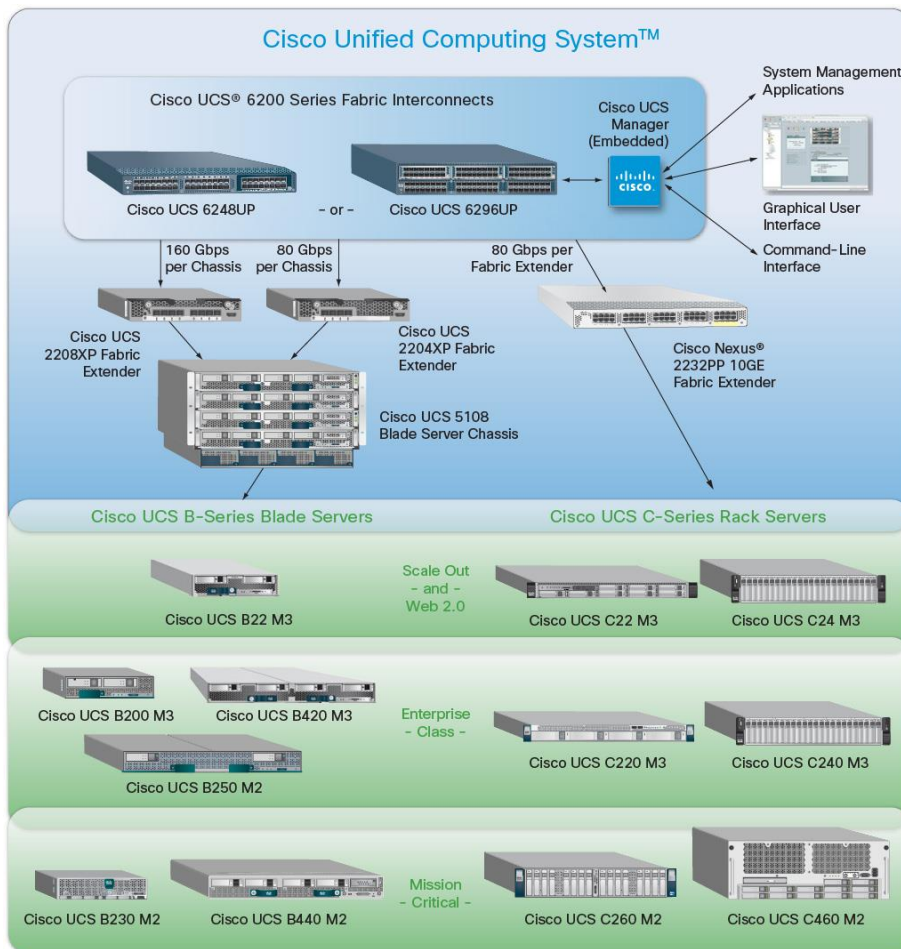
The Cisco UCS C220 M3 server is a high-density general-purpose 2-socket server optimized to deliver high performance for a large range of workloads, including:

- Distributed database clusters
- Middleware
- High-performance virtual desktops
- IT and web infrastructure

## Cisco UCS Servers Change the Economics of the Data Center

IT infrastructure matters now more than ever, as organizations seek to achieve the full potential of infrastructure as a service (IaaS), bare metal, virtualized servers, and cloud computing. Cisco continues to lead in data center innovation with the introduction of new building blocks for Cisco UCS that extend its exceptional simplicity, agility, and efficiency (Figure 2). Cisco leadership with new innovations such as the third-generation Cisco UCS C220 M3 rack server.

**Figure 2.** Cisco UCS Components



Cisco innovations, such as Cisco UCS Manager, allow administrators to create a software definition for a desired server (using Cisco service profiles and templates) and then instantiate that server and its I/O connectivity by associating a service profile with physical resources. This approach contrasts with the traditional approach of configuring each system resource manually, one at a time, through individual element managers. Unlike the products of other vendors, Cisco service profiles can be moved from rack server to rack or blade server, or between blade or rack servers in different chassis. In other words, Cisco UCS Manager and service profiles are both form-factor agnostic and can bridge blade chassis boundaries.

Other Cisco UCS building blocks include enhanced server I/O options and expanded Cisco UCS fabric interconnects that extend scalability and management simplicity for both blade and rack systems across bare-metal, virtualized, and cloud-computing environments. Cisco helps ensure that nearly all parts of Cisco UCS offer investment protection and are backward compatible. For example, fabric extenders can be upgraded using the same fabric interconnects and the same Cisco UCS VIC 1225. Fabric interconnect hardware can be upgraded independently of fabric extenders and blade chassis. Cisco continues to innovate in all these areas, helping ensure that both now and in the future, more powerful rack servers with larger, faster memory have adequate I/O bandwidth and compute power. Cisco completes this vision through continuous innovation in VIC, fabric extender, fabric interconnect, blade server, blade chassis, and rack server technologies and form-factor-agnostic Cisco UCS Manager Software.

The Cisco UCS C220 M3 is part of a family of rack servers: the Cisco C-Series Rack Servers. Cisco UCS C-Series servers extend unified computing innovations to an industry-standard form factor to help reduce total cost of ownership (TCO) and increase business agility. Designed to operate both in standalone environments and as part of Cisco UCS, the Cisco UCS C-Series servers employ Cisco technology to help customers handle the most challenging workloads. The Cisco UCS C-Series complements a standards-based unified network fabric, Cisco Data Center VM-FEX virtualization support, Cisco UCS Manager Software, Cisco fabric extender and fabric interconnect architectures, and Cisco Extended Memory Technology. Again, Cisco is innovating across all these technologies. With Cisco UCS architectural advantages, software advances, continuous innovation, and unique blade server and chassis designs, Cisco UCS is the first truly unified data center platform. In addition, Cisco UCS can transform IT departments through policy-based automation and deep integration with familiar systems management and orchestration tools.

## Unique Benefits in a Familiar Package

The Cisco UCS C220 M3 server extends Cisco's product portfolio to meet the needs of customers that choose to deploy rack servers. Available from Cisco and its data center partners, the Cisco UCS C220 M3 advances the rack server market with the features outlined in Table 1.

**Table 1.** Features and Benefits

Feature	Benefit
<b>10-Gbps unified network fabric</b>	<ul style="list-style-type: none"> <li>• Low-latency, lossless, 10-Gbps Ethernet and industry-standard FCoE and native Fibre Channel fabric</li> <li>• Wire-once deployment model in which changing I/O configurations no longer means installing adapters and recabling racks and switches</li> <li>• Fewer interface cards, cables, and upstream network ports to purchase, power, configure, and maintain</li> </ul>
<b>Virtualization optimization</b>	<ul style="list-style-type: none"> <li>• Cisco Data Center VM-FEX and Adapter-FEX technologies, I/O virtualization, and Intel Xeon processor E5-2600 and E5-2600 v2 product family features, extending the network directly to virtual machines</li> <li>• Consistent and scalable operational model</li> <li>• Increased security and efficiency with reduced complexity</li> <li>• Capability to move virtual machine security features and policies from rack to rack or rack to blades</li> </ul>

Feature	Benefit
<b>Unified management (when integrated into Cisco UCS)</b>	<ul style="list-style-type: none"> <li>• Entire solution managed as a single entity with Cisco UCS Manager, improving operational efficiency and flexibility</li> <li>• Service profiles and templates that implement role- and policy-based management, enabling more effective use of skilled server, network, and storage administrators</li> <li>• Automated provisioning and increased business agility, allowing data center managers to provision applications in minutes rather than days by associating a service profile with a new, added or repurposed Cisco UCS C220 M3 server</li> <li>• Capability to move service profiles from rack server to another rack server, or blade to rack server, or rack to blade server in minutes instead of hours or days</li> </ul>
<b>Intel Xeon processor E5-2600 and E5-2600 v2 product families</b>	<ul style="list-style-type: none"> <li>• Automated energy efficiency reduces energy costs by automatically putting the processor and memory in the lowest available power state while still delivering the performance required and flexible virtualization technology that optimizes performance for virtualized environments, including processor support for migration and direct I/O</li> <li>• Up to twice the performance for floating-point operations. Intel Advanced Vector Extensions (Intel AVX) provides new instructions that can significantly improve performance for applications that rely on floating-point or vector computations</li> <li>• Cisco UCS C-Series servers keep pace with Intel Xeon processor innovation by offering the latest processors with an increase in processor frequency and improved security features. With the increased performance provided by the Intel Xeon processor E5-2600 and E5-2600 v2 product families, Cisco UCS C-Series rack servers offer an improved price-to-performance ratio, making Cisco UCS servers among the best values in the industry</li> <li>• Advanced reliability features, including Machine Check Architecture Recovery, to automatically monitor, report, and recover from hardware errors to maintain data integrity and keep mission-critical services online</li> <li>• Hardened protection for virtual and cloud Environments: Establish trusted pools of virtual resources with Intel® Trusted Execution Technology (Intel® TXT). Intel TXT ensures that physical servers and hypervisors boot only into cryptographically verified "known good states." It safeguards your business more effectively by protecting your platform from the insertion of malware during or prior to launch</li> </ul>
<b>Hot-swappable SAS, SATA, or SSD drives</b>	<ul style="list-style-type: none"> <li>• Up to 4 LFF or 8 SFF front-accessible, hot-swappable, internal SAS, SATA, or SSD drives, providing redundancy options and ease of serviceability</li> <li>• Balanced performance and capacity to best meet application needs: <ul style="list-style-type: none"> <li>◦ SATA SSDs</li> <li>◦ 15,000-RPM SAS drives for highest performance</li> <li>◦ 10,000 RPM SAS drives for high performance and value</li> <li>◦ 7200-RPM SATA drives for high capacity and value</li> </ul> </li> </ul>
<b>RAID 0, 1, 5, 6, 10, 50, and 60 support</b>	A choice of RAID controllers provides data protection for up to 8 SAS, SATA, or SSD drives in PCIe and mezzanine card form factors.
<b>Cisco UCS C-Series Integrated Management Controller (CIMC)</b>	<ul style="list-style-type: none"> <li>• Web user interface for server management; remote keyboard, video, and mouse (KVM); virtual media; and administration</li> <li>• Virtual media support for remote CD and DVD drives as if local</li> <li>• Intelligent Platform Management Interface (IPMI) 2.0 support for out-of-band management through third-party enterprise management systems</li> <li>• Command-line interface (CLI) for server management</li> </ul>
<b>Fast-memory support</b>	16 DIMM slots supporting DDR3 1866-MHz memory for optimal performance
<b>Redundant fans and power supplies</b>	<ul style="list-style-type: none"> <li>• Dual-redundant fans and hot-swappable, redundant power supplies for enterprise-class reliability and uptime</li> <li>• Power efficiency through Cisco Common Form-Factor Platinum Power Supplies (450W and 650W)</li> </ul>
<b>Support for up to 2 PCIe 3.0 slots</b>	<ul style="list-style-type: none"> <li>• Flexibility, increased performance, and compatibility with industry standards</li> <li>• PCIe 3.0 slots, which are estimated to substantially increase the bandwidth over the previous generation and offer more flexibility while maintaining compatibility with PCIe 2.0</li> <li>• I/O performance and flexibility with one x8, half-height and half-length slot and one x16, full-height and half-length slot</li> </ul>
<b>Integrated dual-port Gigabit Ethernet</b>	<ul style="list-style-type: none"> <li>• Outstanding network I/O performance and increased network efficiency and flexibility</li> <li>• Increased network availability when configured in failover configurations</li> </ul>
<b>Trusted Platform Module (TPM)</b>	<ul style="list-style-type: none"> <li>• TPM is a chip (microcontroller) that can securely store artifacts used to authenticate the platform (server). These artifacts can include passwords, certificates, or encryption keys</li> <li>• TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy, helping ensure authentication and authorization</li> </ul>
<b>Tool-free access</b>	Tool-free access to all serviceable items, and color-coded indicators to guide users to hot-pluggable and serviceable items
<b>Cisco Flexible Flash (FlexFlash) memory</b>	The server supports up to two internal Cisco FlexFlash drives (secure digital [SD] cards). The first SD card is preloaded with four virtual drives. The four virtual drives contain, respectively, the Cisco Server Configuration Utility, the Cisco Host Upgrade Utility, the Cisco C-Series server drivers set, and a blank virtual drive on which you can install an OS or a hypervisor. The second SD card is blank and can be used to mirror the first.

## Product Specifications

Table 2 lists the specifications for the Cisco UCS C220 M3 server.

**Table 2.** Product Specifications

Item	Specification
<b>Processors</b>	<ul style="list-style-type: none"> <li>• 1 or 2 Intel Xeon processor E5-2600 or E5-2600 v2 product families</li> <li>• For a complete list of processor options, please refer to the LFF <a href="#">SpecSheet</a> or SFF <a href="#">SpecSheet</a></li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• 16 DIMM slots</li> <li>• Support for DDR3 registered DIMMs</li> <li>• Support for DDR3 low-voltage DIMMs</li> <li>• Advanced error-correcting code (ECC)</li> <li>• Mirroring option</li> </ul>
<b>PCIe slots</b>	<ul style="list-style-type: none"> <li>• 2 PCIe Generation 3.0 slots available</li> <li>• I/O performance and flexibility with one x8 half-height and half-length slot, and one x16 full-height and half-length slot</li> </ul>
<b>RAID Card</b>	<ul style="list-style-type: none"> <li>• For a complete list of RAID options, please refer to the corresponding SFF <a href="#">SpecSheet</a> or LFF <a href="#">SpecSheet</a></li> </ul>
<b>Hard drives</b>	Up to 8 front-accessible, hot-swappable, 2.5-inch SAS, SATA or SSD or up to 4 front-accessible, hot-swappable, 3.5-inch SAS, SATA drives
<b>Hard disk options</b>	<p><b>2.5 inch "SFF" drive options:</b></p> <ul style="list-style-type: none"> <li>• For a complete list of drive options, please refer to the <a href="#">SpecSheet</a></li> </ul> <p><b>3.5 inch "LFF" drive options:</b></p> <ul style="list-style-type: none"> <li>• For a complete list of drive options, please refer to the <a href="#">SpecSheet</a></li> </ul>
<b>Cisco Flexible Flash (FlexFlash)</b>	<ul style="list-style-type: none"> <li>• The server supports up to two internal 16GB Cisco FlexFlash drives (SD cards)</li> <li>• The first SD card is preloaded with four virtual drives. The four virtual drives contain, respectively, the Cisco Server Configuration Utility, the Cisco Host Upgrade Utility, the Cisco C-Series server drivers set, and a blank virtual drive on which you can install one of the supported OS's or hypervisors: <ul style="list-style-type: none"> <li>◦ ESXi 5.0 U2, U3</li> <li>◦ ESXi 5.1 U1, 5.1 U2</li> <li>◦ ESXi 5.5, 5.5 U1, 5.5 U2</li> </ul> </li> <li>• The second SD card is blank and can be used to mirror the first.</li> </ul>
<b>Internal USB</b>	The server supports one internal USB flash drive
<b>Cisco UCS Integrated Management Controller</b>	<ul style="list-style-type: none"> <li>• Integrated Emulex Pilot-3 Baseboard Management Controller (BMC)</li> <li>• IPMI 2.0 compliant for management and control</li> <li>• One 10/100/1000 Ethernet out-of-band management interface</li> <li>• CLI and WebGUI management tool for automated, lights-out management</li> <li>• KVM</li> </ul>
<b>Front-panel connector</b>	One KVM console connector (supplies 2 USB, 1 VGA, and 1 serial connector)
<b>Front-panel locator LED</b>	Indicator to help direct administrators to specific servers in large data center environments
<b>Additional rear connectors</b>	Additional interfaces including a VGA video port, 2 USB 2.0 ports, an RJ45 serial port, 1 Gigabit Ethernet management port, and dual 1 Gigabit Ethernet ports
<b>Physical dimensions (H x W x D)</b>	1RU: 1.7 x 16.9 x 28.5 in. (4.32 x 43 x 72.4 cm)
<b>Temperature: Operating</b>	32 to 104°F (0 to 40°C) (operating, sea level, no fan fail, no CPU throttling, turbo mode)
<b>Temperature: Nonoperating</b>	-40 to 158°F (-40 to 70°C)
<b>Humidity: Operating</b>	10 to 90% noncondensing
<b>Humidity Nonoperating</b>	5 to 93% noncondensing
<b>Altitude: Operating</b>	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1°C per 300m)
<b>Altitude: Nonoperating</b>	0 to 40,000 ft (12,000m)

## Regulatory Standards

Table 3 lists regulatory standards compliance information.

**Table 3.** Regulatory Standards Compliance: Safety and EMC

Specification	Description
<b>Safety</b>	<ul style="list-style-type: none"><li>• UL 60950-1 No. 21CFR1040 Second Edition</li><li>• CAN/CSA-C22.2 No. 60950-1 Second Edition</li><li>• IEC 60950-1 Second Edition</li><li>• EN 60950-1 Second Edition</li><li>• IEC 60950-1 Second Edition</li><li>• AS/NZS 60950-1</li><li>• GB4943 2001</li></ul>
<b>EMC: Emissions</b>	<ul style="list-style-type: none"><li>• 47CFR Part 15 (CFR 47) Class A</li><li>• AS/NZS CISPR22 Class A</li><li>• CISPR2 2 Class A</li><li>• EN55022 Class A</li><li>• ICES003 Class A</li><li>• VCCI Class A</li><li>• EN61000-3-2</li><li>• EN61000-3-3</li><li>• KN22 Class A</li><li>• CNS13438 Class A</li></ul>
<b>EMC: Immunity</b>	<ul style="list-style-type: none"><li>• EN55024</li><li>• CISPR24</li><li>• EN300386</li><li>• KN24</li></ul>

## Ordering Information

For a complete list of part numbers, please refer to the corresponding SFF [SpecSheet](#) or LFF [SpecSheet](#).

## Cisco Unified Computing Services

Using a unified view of data center resources, Cisco and our industry-leading partners deliver services that accelerate your transition to a Cisco UCS C-Series Rack Server solution. Cisco Unified Computing Services help you quickly deploy the servers, optimize ongoing operations to better meet your business needs, and migrate to Cisco's unified computing architecture. For more information, visit

<http://www.cisco.com/go/unifiedcomputingservices>.

## For More Information

Please visit <http://www.cisco.com/go/unifiedcomputing>.



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