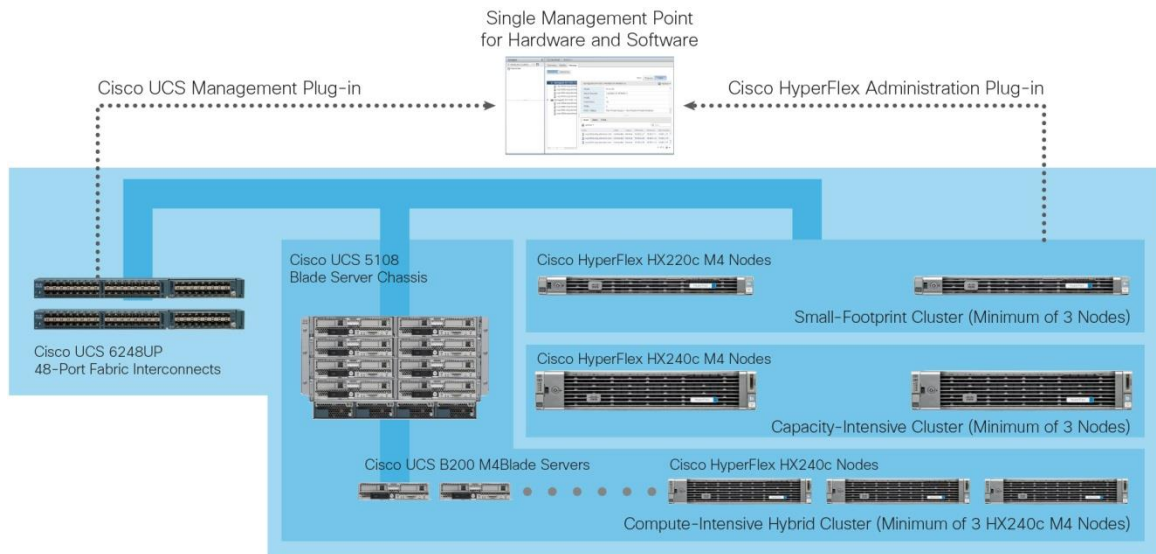# Cisco HyperFlex HX240c M4 Node

A New Generation of Hyperconverged Systems

To keep pace with the market, you need systems that support rapid, agile development processes. Cisco HyperFlex™ Systems let you unlock the full potential of hyperconvergence and adapt IT to the needs of your workloads. The systems use an end-to-end software-defined infrastructure approach, combining software-defined computing in the form of Cisco HyperFlex HX-Series Nodes, software-defined storage with the powerful Cisco HyperFlex HX Data Platform, and software-defined networking with the Cisco UCS fabric that will integrate smoothly with Cisco® Application Centric Infrastructure (Cisco ACI™). Together with a single point of connectivity and management, these technologies deliver a preintegrated and adaptable cluster with a unified pool of resources that you can quickly deploy, adapt, scale, and manage to efficiently power your applications and your business (Figure 1).

Figure 1.   Cisco HyperFlex Systems

Cisco HyperFlex HX240c M4 Node

Physically, the system is delivered as a cluster of three or more Cisco HyperFlex HX240c M4 Nodes that are integrated into a single system by a pair of Cisco UCS 6200 Series Fabric Interconnects. Each node includes two Cisco Flexible Flash (FlexFlash) Secure Digital (SD) cards, a single 120-GB solid-state disk (SSD) drive, a single 1.6-terabyte (TB) SSD caching drive, and up to twenty-three 1.2-TB SAS drives for a contribution of up to 27.6 TB of storage capacity to the cluster. The nodes use Intel® Xeon® processor E5-2600 v3 family CPUs and large internal memory and storage capacities to deliver an outstanding combination of performance, flexibility, and efficiency in a 2-rack-unit (2RU) form factor (Figure 2).

The node configuration includes:

- 1 x 120-GB internal SSD for storing data platform logs
- 1 x 1.6-TB SSD drive to support the data platform caching layer
- 2 FlexFlash SD cards for boot drives and the hypervisor
- Up to 23 x 1.2-TB 10,000-rpm SAS drives to support the data platform capacity layer
- 1 Cisco UCS Virtual Interface Card (VIC) 1227
- VMware vSphere ESXi 6.0 software preinstalled (ESXi 5.5 is also supported but is not preinstalled)
- Cisco UCS service profile templates for automated cluster configuration

Figure 2.   Cisco HyperFlex HX240c M4 Node

Hybrid Configurations

The HX240c M4 can be deployed with Cisco UCS B-Series Blade Servers to create a hybrid cluster to support computation-intensive workloads. You can start your deployment with three HX240c M4 high-capacity nodes and add Cisco UCS B200 M4 Blade Servers to the cluster for additional computing capacity. With a single point of connectivity and management, you can easily scale your cluster to support more workloads and deliver the performance, bandwidth, and low latency that your users and applications need.

Product Features and Benefits

Table 1 lists the main features and benefits of the HX240c M4.

Table 1.   Features and Benefits

Feature	Benefit
Memory	- Up to 768 GB of memory - Capability to use 16- or 32-GB DIMMs
1 or 2 Intel Xeon processor E5-2600 v3 family CPUs	The Intel Xeon processor E5-2600 v3 family is designed to deliver the best combination of performance, built-in capabilities, and cost effectiveness: - More than twice the performance and more cores (up to 16 cores per socket) than the previous generation Intel Xeon processor - Low-power, high-speed DDR4 memory technology - Increased performance with Intel AVX2 - Increased virtual machine density - Automated energy efficiency that reduces energy costs by automatically putting the processor and memory in the lowest available power state while still delivering the performance required - Flexible virtualization technology that optimizes performance for virtualized environments, including processor support for migration and direct I/O - Innovation with the latest processors that increase processor frequency and improve security features With the increased performance provided by the Intel Xeon processor E5-2600 v3 family, Cisco HyperFlex HX-Series Nodes offer an improved price-to-performance ratio, making Cisco HyperFlex HX-Series systems among the best values in the industry.

Feature	Benefit
Support for up to 6 PCI Express (PCIe) 3.0 slots, 4 of which are full-height, full-length	• Flexibility, increased performance, and compatibility with industry standards • High I/O bandwidth, increased flexibility, and backward compatibility with support for PCIe 2.0 • 1 slot capable of graphics processing unit (GPU) support for enhanced virtual desktop infrastructure (VDI) capabilities (future support)
Modular LAN-on-motherboard (mLOM)	• Cisco UCS VIC 1227, which provides up to 256 I/O devices programmable on demand for hypervisor and virtual machine support • Cisco Data Center Virtual Machine Fabric Extender (VM-FEX), which supports dynamic I/O interfaces that connect directly to virtual machines for improved performance
20-Gbps unified network fabric capable	• Low-latency, lossless, 20 Gigabit Ethernet and industry-standard Fibre Channel over Ethernet (FCoE) and native Fibre Channel fabric to each node at first customer shipment, upgradeable to 40-Gbps in the future • Wire-once deployment model, eliminating the need to install adapters and cables, racks, and switches when changing I/O configurations • Fewer interface cards, cables, and upstream network ports to purchase, power, configure, and maintain
Virtualization optimization	• I/O virtualization and Intel Xeon processor E5-2600 v3 family features, extending the network directly to virtual machines • Consistent and scalable operational model • Increased security and efficiency with reduced complexity • Capability to move virtual machine security features and policies from rack to rack or rack to blade
Single point of management	• Managed as a single entity through VMware vCenter client plug-ins: one for the data platform and one for Cisco UCS management • Built-in role- and policy-based management through service profiles and templates, enabling more effective use of skilled server, network, and storage administrators • 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 HX240c M4
Storage	• 1 x 120-GB SSD log drive • 1 x 1.6-TB SSD caching drive • Up to 23 x 1.2-TB 10,000-rpm SAS drives • Cisco 12-Gbps Modular SAS host bus adapter (HBA) with internal SAS connectivity
Cisco Integrated Management Controller (IMC)	Connection to Cisco UCS management for automated configuration through a single interface
Advanced reliability, availability, and serviceability (RAS) features	• Hot-swappable, front-accessible drives • Redundant FlexFlash SD cards • Dual-redundant fans and hot-swappable, redundant power supplies for enterprise-class reliability and uptime • Convenient latching lid for easy access • Tool-free CPU insertion, enabling processor upgrades and replacements with less risk of damage • Tool-free access to all serviceable items, and color-coded indicators to guide users to hot-pluggable and serviceable items
Security features	• Trusted Platform Module (TPM), a chip (microcontroller) that can securely store artifacts, including passwords, certificates, and encryption keys, that are used to authenticate the platform (node); TPM 1.2 SPI is supported • Locking bezel option to protects against unauthorized access to disk drives
FlexFlash SD cards	• 2 x 64-GB redundant internal FlexFlash SD cards, which are used as boot drives • Support for the Utility mode with out-of-band updates of utility partitions
Software	Cisco HyperFlex HX Data Platform Software (1- or 3-year software subscription)

High Performance for Data-Intensive Applications

The HX240c M4 with the Intel Xeon processor E5-2600 v3 family is well suited for a wide range of storage-intensive applications, including VDI and server virtualization.

Product Specifications

Table 2 lists the specifications for the HX240c M4.

Table 2.   Product Specifications

Item	Specification
Chassis	2RU node
Processors	1 or 2 Intel Xeon processor E5-2600 v3 family CPUs (For a complete list of processor options, refer to the corresponding technical specifications documents.)
Interconnect	2 Intel Quick Path Interconnect (QPI) channels per processor, each capable of 8.0 and 9.6 gigatransfers per second (GTPS)
Chipset	Intel C610 series
Memory	• 24 DDR4 DIMM slots • Support for DDR4 registered DIMMs (RDIMMs) and load-reduction DIMMs (LRDIMMs) • Advanced error-correcting code (ECC) • Independent channel mode • Mirrored channel mode • Lockstep channel mode
PCIe slots	Up to 6 PCIe 3.0 slots
Storage	• 1 x 120-GB 2.5-inch SATA SSD boot drive • 1 x 1.6-TB 2.5-inch SATA SSD caching drive • Up to 23 x 1.2-TB, 10,000-rpm, SAS HDDs with the 24-drive backplane (with expander) node configuration • 2.5-inch small form factor (SFF) drive options (For a complete list of drive options, refer to the specification sheet.) • Cisco 12-Gbps Modular SAS HBA, which provides enterprise-class data protection for up to 23 SAS disk drives
Embedded network interface card (NIC)	Dual 1-Gbps Intel i350 Ethernet ports
mLOM	Cisco UCS VIC 1227
Power supplies	Hot-pluggable, redundant 650W, 930W DC, 1200W, or 1400W power supplies
FlexFlash	• 2 internal 64-GB FlexFlash drives (SD cards) • Support for Utility mode with out-of-band updates of utility partitions
Integrated Management Controller	• Integrated baseboard management controller (BMC) • IPMI 2.0 compliant for management and control • One 10/100/1000 Ethernet out-of-band management interface • Command-line interface (CLI) and webGUI management tool for automated, lights-out management • Keyboard, video, and mouse (KVM) console
Front-panel connector	One KVM console connector (supplies 2 USB connectors, 1 VGA connector, and 1 serial connector)
Front-panel locator LED	Indicator to help direct administrators to specific nodes in large data center environments
Additional rear connectors	Additional interfaces, including a VGA video port, 2 USB 3.0 ports, an RJ45 serial port, 1 Gigabit Ethernet management port, and dual 1 Gigabit Ethernet ports
Rail-kit options	Cisco ball-bearing rail kit with optional reversible cable-management arm
Software support	• vSphere Enterprise and vSphere Enterprise Plus • ESX 5.5 U3 patch 1 • ESX 6.0 U1 patch 1 • Cisco UCS Manager 2.2

Ordering Information

For a complete list of part numbers, refer to the node's specifications sheet.

Cisco Unified Computing Services

Cisco and our industry-leading partners deliver services that accelerate your transition to Cisco HyperFlex Systems. 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 http://www.cisco.com/go/unifiedcomputingservices.

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For More Information

For more information about Cisco HyperFlex Systems, refer to http://www.cisco.com/go/hyperflex.

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