



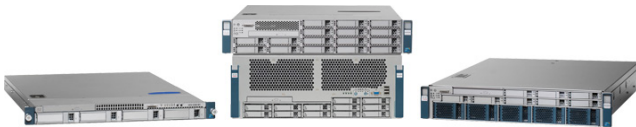
# Unified Computing and Cisco UCS C-Series Rack-Mount Servers

How Cisco UCS C-Series Servers Integrate into the Cisco Unified Computing System

## Cisco UCS C-Series Rack-Mount Servers

Cisco® UCS C-Series Rack-Mount Servers (Figure 1) extend Cisco Unified Computing System™ innovations to a rack-mount form factor, including a standards-based unified network fabric, Cisco VN-Link virtualization support, and Cisco Extended Memory Technology. Designed to operate both in standalone environments and as part of the Cisco Unified Computing System, these servers enable organizations to deploy systems incrementally—using as many or as few servers as needed—on a schedule that best meets the organization's timing and budget. Cisco UCS C-Series servers offer investment protection through the capability to deploy them either as standalone servers or as part of the Cisco Unified Computing System.

**Figure 1.** From Left to Right, Cisco UCS C200 High-Density, C460 High-Performance, C250 Extended-Memory, and C210 General-Purpose Rack-Mount Servers



## Standard x86 Management for Standalone Deployments

When deployed as standalone servers in a heterogeneous environment, Cisco UCS C-Series servers can be managed just like any other x86-architecture servers. Popular enterprise management tools using OS-resident host agents work without modification. Cisco UCS Integrated Management Controller (CIMC) gives administrators the tools they need to manually control server functions, including remote keyboard, video, and mouse (KVM); power on and off; and standard Simple Network Management Protocol (SNMP) traps for system monitoring.

## Integration with Cisco Unified Computing System

Cisco UCS C-Series servers also can be integrated with the Cisco Unified Computing System, making them part of a single cohesive system governed by a centralized, embedded, highly available, secure management platform. The system is based on a form-factor-neutral architecture that offers exceptional flexibility in the use of resources. Cisco UCS C-Series servers can be repurposed in and out of the Cisco Unified Computing System as needed, and they can operate in the system side by side with Cisco UCS B-Series Blade Servers.

## Cisco UCS Manager

Cisco UCS Manager provides a single management interface for all Cisco Unified Computing System components. It enables all system components, including rack-mount and blade servers, their I/O adapters, and network components, to be managed as a unified whole. This unified interface eliminates the time-consuming and error-prone manual integration of individual components into application architectures using individual and inconsistent element managers. Cisco UCS Manager supports:

## Fast, consistent, and error-free configuration

using service profiles and service profiles and templates that direct the configuration of every element in the hardware stack, from server and interface identity settings to uplink port settings including VLAN, VSAN, quality-of-service (QoS), and EtherChannel characteristics; service profiles automate provisioning and increase agility, allowing the entire system to be configured in minutes.

**Role- and policy-based management** that preserves the traditional roles of server, storage, and network administrators; these administrators set policies that automate the application of service profiles and templates

**Automatic discovery** that detects, inventories, and manages any component that has been added to the system or changed

**Consistent firmware update** across all system components that helps reduce downtime by enforcing compliance with tested and approved configurations; for example, a service profile that configures a database server might require a specific firmware revision for its Fibre Channel host bus adapter (HBA)

**BIOS and boot settings** that control the system's operation, allowing it to be used for another purpose by changing the servers boot settings to load system software from an alternative source

**Monitoring and troubleshooting** of the entire system from a single, intuitive GUI

**XML-based design** that facilitates extensions and interfaces with higher-level system management tools from 12 leading providers including BMC, CA, EMC, HP, IBM, and Microsoft

## Service Profiles and Cisco UCS C-Series Servers

One compelling reason that many organizations prefer rack-mount servers is the wide range of I/O options available in the form of PCI Express (PCIe) adapters. Through Cisco UCS Manager, Cisco plans to support the spectrum of I/O options, which includes interfaces supported by Cisco as well as adapters from third parties\*

## Adapters Supported by Cisco UCS Manager

Cisco UCS Manager will detect the existence of adapters such as RAID controllers, the Cisco UCS P81E Virtual Interface Card, and some converged network adapters (CNAs), adding them to its inventory. It can manage these adapters' identity, firmware revisions, and other configuration parameters, including settings such as RAID level (for RAID controllers) and VLAN settings (for CNAs).

## Other Adapters

Other adapters will be detected and inventoried, but Cisco UCS Manager will not control their configuration. These adapters can be used as selection criteria for resource pools and for the application of service profile templates. For example, the existence of two Quad Gigabit Ethernet cards on a rack-mount server might qualify the server to be part of a specific virtualization pool, and upon detection the server can be added automatically to the resource pool.

## Cisco UCS Manager Connectivity Architecture

To become an integrated part of the Cisco Unified Computing System, Cisco UCS C-Series servers must be connected to one or two parent fabric interconnects on which Cisco UCS Manager resides. Management and data traffic are separated for reliability. Data traffic connectivity runs directly from the interconnect ports to the server adapters. Management traffic passes through one or two [Cisco Nexus 2248TP GE Fabric Extenders](#) and then to 1 Gigabit Ethernet LAN on motherboard (LOM) interfaces on the servers, which provide exclusive access to the CIMC.

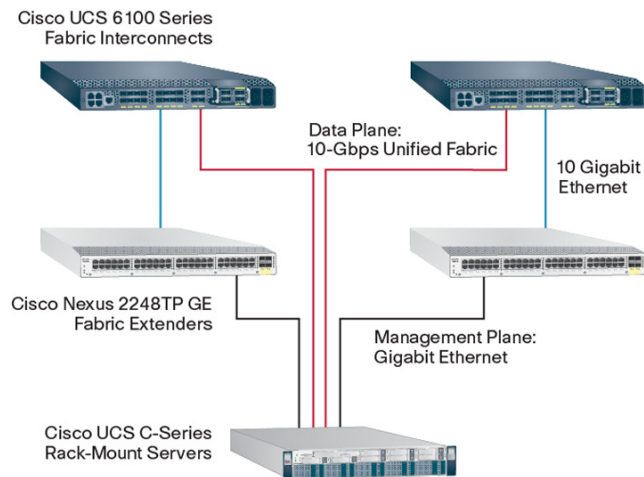
The use of fabric extenders for the management traffic enlarges the management domain of fabric interconnects without increasing complexity. They enable a larger number of servers to be connected to the fabric interconnects while continuing to preserve the lossless nature of the adapter-to-interconnect link.

With this approach, rack-mount fabric extenders can be used in a top-of-rack configuration, facilitating rack-at-a-time deployment by allowing all server connections to be made prior to the rack's installation in a data center. Server racks configured using the top-of-rack strategy can be integrated into data center networks quickly, as only the fabric extender's uplinks must be connected to the parent interconnects to deploy the rack.

## Cisco Unified Computing System Means Unified Management

Unified management is the hallmark of the Cisco Unified Computing System. By integrating rack-mount servers into this form-factor-neutral architecture, Cisco UCS Manager can support both blade and rack-mount servers with similar ease, increasing customer choice and providing the capability to deploy the Cisco Unified Computing System on the server form factor that best suits an organization's requirements and budget (Figure 2).

**Figure 2.** Indirect Connection Using Fabric Extender Technology Increases a System's Maximum Scale



## For More Information

- Please visit <http://www.cisco.com/go/unifiedcomputing>.
- For more information about managing Cisco UCS C-Series servers, please see [Managing Cisco UCS C-Series Rack-Mount Servers At-a-Glance](#)