



Unified Computing Realized

Advances in technology along with the trend toward collaboration and market globalization are putting IT at the center of a shift in the business model for the healthcare industry. The rapid adoption of electronic health records (EHRs) and the implementation of new clinical applications are creating a critical need for more data storage, resulting in the growth of healthcare facilities and increased IT spending. IT must help ensure that users have access to the data and applications they need on demand, from any location, a process that poses an even greater challenge when accommodating smaller community hospitals and ambulatory care centers. In addition, to meet Health Insurance Portability and Accountability Act (HIPAA) privacy standards, IT must help ensure that this data is secure.

These new business imperatives are requiring healthcare organizations to take a new approach to the design and management of the data center, with the goal of moving from rigid, dispersed platforms to more flexible, integrated, and virtualized environments. By unifying the underlying resources, processes, applications, and people that support the organization, the data center network can become the foundation for implementing new capabilities to increase efficiency and meet patient needs.

The Cisco® Unified Computing System is a next-generation data center platform that unites compute, network, storage access, and virtualization into a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility.

Figure 1. The Cisco Unified Computing System is Composed of Fabric Interconnects, Fabric Extenders, Blade Server Chassis, Blade Servers, Network Adapters and Extended Memory Technology (Not Shown)



Managed as a single system whether it has 1 server or 320 servers with thousands of virtual machines, the Cisco Unified Computing System decouples scale from complexity.

Business Benefits

- Reduced TCO at the platform, site, and organizational levels
- Increased IT staff productivity and business agility
- Reduced management time
- Improved scalability through a design for up to 320 discrete servers and thousands of virtual machines
- Increased flexibility to use multivendor products through industry standards supported by a partner ecosystem of industry leaders

Innovations Supporting Business Benefits

- **Embedded system management:** Management is uniquely integrated into all components of the system, enabling the entire solution to be managed as a single entity through Cisco Unified Computing System (UCS) Manager. Cisco UCS Manager provides an intuitive GUI, a command-line interface (CLI), and a robust API to manage all system configuration and operations.

- **Just-in-time provisioning with service profiles:** Cisco UCS Manager implements role- and policy-based management using service profiles and templates. Infrastructure policies—such as power and cooling, security, identity, hardware health, and Ethernet and storage networking—needed to deploy applications are encapsulated in the service profile. Now infrastructure can be provisioned in minutes instead of days, shifting IT's focus from maintenance to strategic initiatives.
- **Unified fabric:** Cisco's unified fabric technology reduces cost by eliminating the need for multiple sets of adapters, cables, and switches for LANs, SANs, and high-performance computing networks. The unified fabric enables a "wire-once" deployment model in which changing I/O configurations no longer means installing adapters and recabling racks and switches.
- **Cisco Virtual Network Link (VN-Link) virtualization support:** Cisco VN-Link technology extends the network to the virtual machine. This technology enables a consistent operational model, whether networks are connected to physical servers or virtual machines. Now all links can be centrally configured and managed without introducing additional switching layers into virtualized environments. I/O configurations and network policies move with virtual machines, helping increase security and efficiency while reducing complexity.
- **Cisco Extended Memory Technology:** This Cisco technology provides more than twice as much memory (384 GB) as traditional two-socket servers, increasing performance and capacity for demanding virtualization and large-data-set workloads. Alternatively, this technology offers a more cost-effective memory footprint for less-demanding workloads.

- **State-of-the-art performance:** The system's blade servers are based on the Intel Xeon processor 5500 series. These multicore processors automatically adjust server performance according to application needs, increasing performance when needed and achieving substantial energy savings when not
- **Energy efficiency:** The simplified design of the system can reduce the number of components that need to be powered and cooled by more than 50 percent compared to traditional blade server environments. Power supplies are 92 percent efficient, and the Intel Xeon processor 5500 series uses automated low-power states to better match power consumption with workloads.

Cisco Unified Computing System Components

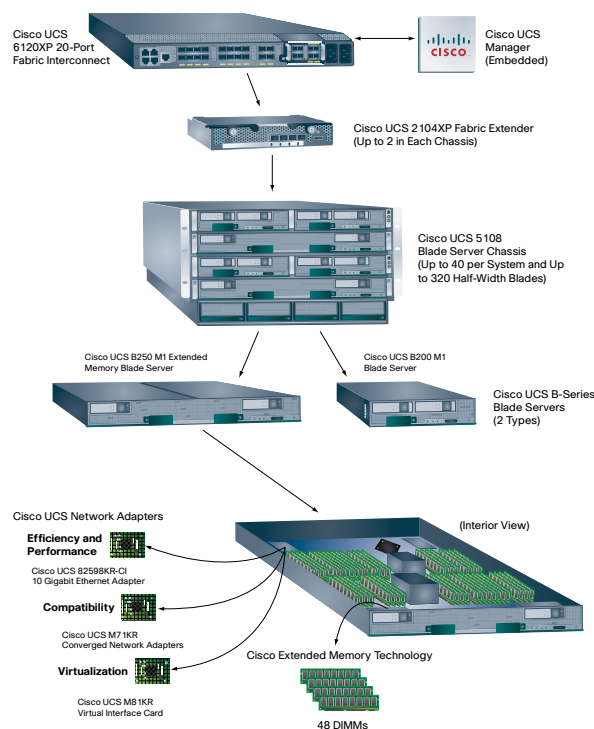
Figure 2 shows the Cisco Unified Computing System components.

- **Cisco UCS 6100 Series Fabric Interconnects** comprise a family of line-rate, low-latency, lossless, 10-Gbps Ethernet interconnect switches that consolidate I/O within the system. Both 20-port one-rack-unit (1RU) and 40-port 2RU versions accommodate expansion modules that provide Fibre Channel and 10 Gigabit Ethernet connectivity.
- **Cisco UCS 5100 Series Blade Server Chassis** support up to eight blade servers and up to two fabric extenders in a 6RU enclosure without the need for additional management modules.
- **Cisco UCS 2100 Series Fabric Extenders** bring the unified fabric into the blade-server chassis, providing up to four 10-Gbps connections each between blade servers and the fabric interconnect, simplifying diagnostics, cabling, and management.
- **Cisco UCS B-Series Blade Servers**, based on the Intel Xeon processor 5500 series, adapt to application demands, intelligently scale energy use, and

offer best-in-class virtualization. Each blade server uses network adapters for access to the unified fabric.

- **Cisco UCS network adapters** are offered in a mezzanine-card form factor. Three types of adapters offer a range of options to meet application requirements, including adapters optimized for virtualization, compatibility with existing driver stacks, or efficient, high-performance Ethernet.
- **Cisco UCS Manager** provides centralized management capabilities, creates a unified management domain, and serves as the central nervous system of the Cisco Unified Computing System.

Figure 2. The Cisco Unified Computing System Integrates Network, Compute, Storage Access, and Virtualization into a Single Cohesive System



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 unified computing architecture. Cisco Unified Computing Services help you quickly deploy your data center resources, simplify ongoing operations, and optimize your infrastructure to better meet your business needs. For more information about these and other Cisco Data Center Services, visit <http://www.cisco.com/go/unifiedcomputingservices>.

Why Cisco?

The Cisco Unified Computing System continues Cisco's long history of innovation in delivering integrated systems for improved business results based on industry standards and using the network as the platform. Recent examples include IP telephony, LAN switching, unified communications, and unified I/O.

Cisco began the unified computing phase of our Data Center 3.0 strategy several years ago by assembling an experienced team from the computing and virtualization industries to augment our own networking and storage access expertise. As a result, Cisco delivered foundational technologies, including the Cisco Nexus® Family, supporting unified fabric and server virtualization.

The Cisco Unified Computing System completes this phase, delivering innovation in architecture, technology, partnerships, and services.

For More Information

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