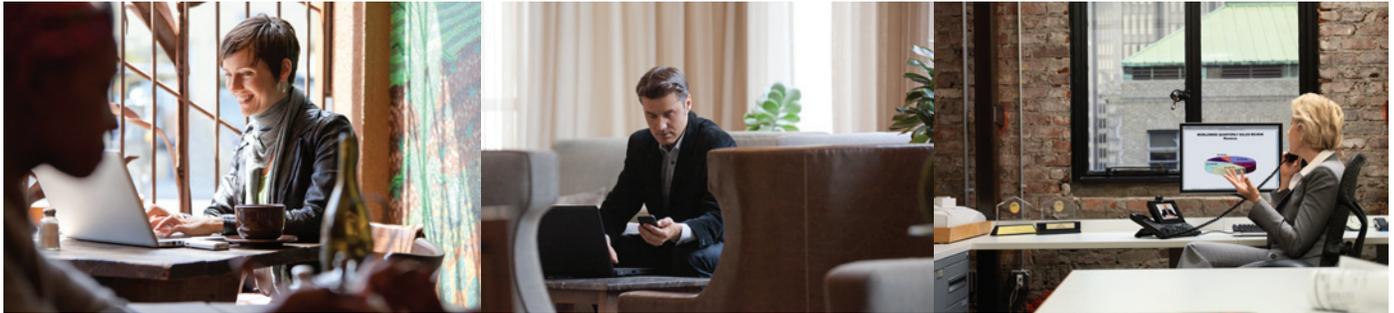


Deploy a Next-Generation Messaging Platform with Microsoft Exchange Server 2010 on Cisco Unified Computing System Powered by Intel Xeon Processors

Solution Brief
May 2011



Highlights

Next-Generation Messaging System

- The Cisco Unified Computing System with Intel Xeon processors running Microsoft Exchange Server 2010 delivers a best-in-class, next-generation platform that can be quickly deployed, secured, and scaled to meet business needs.

Extreme Flexibility and Scalability

- Provide users with flexible communications access and easily scale messaging operations.

Uncompromised Reliability and Availability

- Help ensure high availability by eliminating points of failure and by automating functions.

Increase ROI and Lower TCO

- Use the latest, proven technologies to lower capital expenses and reduce operating costs.

Simplify Migration

- Ease migration and risk, delivering the scalable performance and flexible virtualization necessary for critical business messaging.

Intel Advantage

- Automate energy efficiency, improve performance, and gain flexible virtualization with Intel Xeon processors.

Enterprise messaging has never been more central to a company's success. Today, Cisco, Intel, and Microsoft help IT departments upgrade to a next-generation messaging platform and lower expenses with Microsoft Exchange Server 2010 running on the Cisco Unified Computing System™.

Enterprise messaging is a necessary and critical function that directly affects every employee's communication and productivity, so it is no surprise that both employees and management are demanding a more flexible messaging platform from their IT departments. Such a platform must:

- Offer easy scalability of the number of mailboxes to support new employees, mergers, and acquisitions
- Support the devices that employees choose on their own, giving the same level of access whether at home or the office
- Help IT staff reduce risk and bring the organization into compliance with regulatory and legal requirements
- Speed the flow of the increasing amounts of data contained in messages
- Reduce capital and operational expenditures

The Cisco Unified Computing System with Intel® Xeon® processors running Microsoft Exchange Server 2010 is an excellent platform to help IT departments meet these challenges.



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Next-Generation Messaging System

The Cisco Unified Computing System running Microsoft Exchange Server 2010 delivers a best-in-class, next-generation platform to fully support all corporate messaging goals today and into the future.

Single, Cohesive System

The Cisco Unified Computing System is a cohesive system that integrates Cisco® rack-mount and blade servers with a unified fabric that supports both network and storage I/O (Figure 1). The system is a programmable infrastructure that abstracts the properties, configuration, and connectivity of server and I/O resources, creating a pool of computing resources available to quickly serve business needs. A unified, model-based management interface applies the properties and configures server and I/O resources with click-of-the-mouse simplicity, enabling automation of administrative tasks and reducing errors and operating costs.

Radical Simplification

The unified fabric of the Cisco Unified Computing System consolidates the system's computing resources in a single network that supports all I/O, dramatically simplifying the Microsoft Exchange Server infrastructure. As part of the simplification that is a feature of the unified fabric, a single Cisco virtual interface card (VIC) supports all network interface cards (NICs) and host bus adapters (HBAs) necessary to

support all Microsoft Exchange Server roles. These virtual adapters speed network and storage traffic regardless of whether Microsoft Exchange Server 2010 is running as a bare-metal or virtualized system.

Within the Cisco VIC, fully functional, unique PCIe NICs and HBAs are created without requiring single-root I/O virtualization (SR-IOV) support from either operating systems or hypervisors. With Cisco VICs, hardware-based teaming provides active-active fault tolerance and load balancing without requiring additional software. Storage path redundancy is provided with

Microsoft Multi-Path I/O (MPIO) supported across multiple HBAs.

Microsoft Exchange benefits from the Cisco VICs because database availability group (DAG) members benefit from the use of multiple virtual adapters for messaging application programming interface (MAPI) communication, DAG replication, and management—all at the cost of just a single adapter. This approach reduces capital and operating costs while delivering the performance, scalability, reliability, and agility required to support tens of thousands of mailboxes.

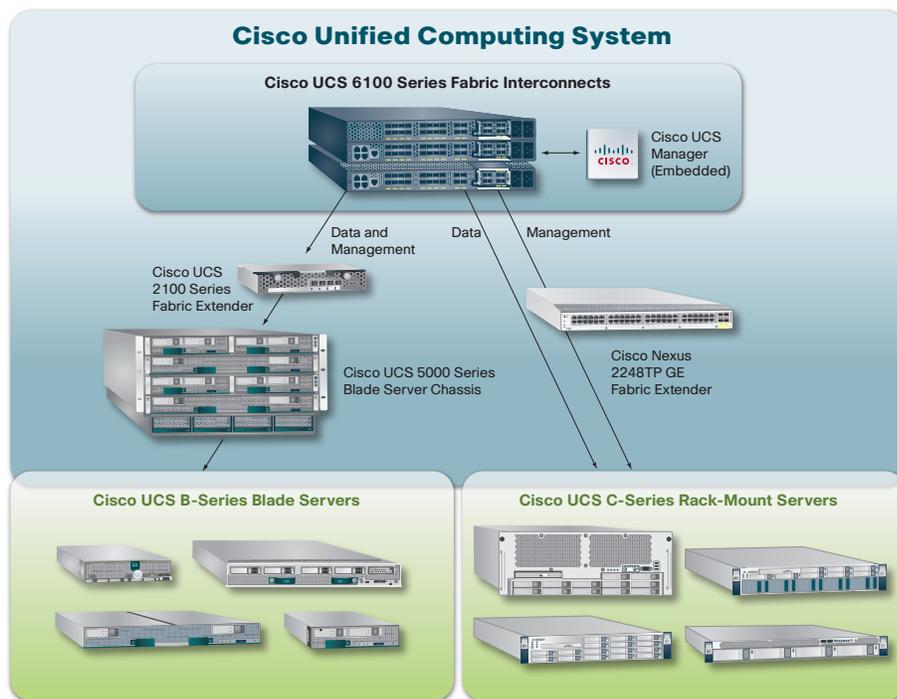


Figure 1. Cisco Unified Computing System: Radically Simplified Servers, Networking, and Storage Access

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Automated Protection, Control, and Compliance

A next-generation messaging system must facilitate and automate protection and compliance of all email data. The Cisco Unified Computing System is designed to protect and speed data between servers and storage, with network isolation for physical and virtual servers. Microsoft Exchange Server 2010 delivers integrated, automated capabilities that help ensure information protection, control, and compliance.

- Out-of-the-box email archiving provides tools to preserve email data invisibly to users and IT staff.
- The new retention policy framework allows IT staff to define, deploy, and automate the retention and archiving of email.
- With the new legal hold policy and a simplified e-discovery process, protection and compliance is now easier than ever.

Extreme Scalability and Flexibility

Running Microsoft Exchange Server 2010 on the Cisco Unified Computing System supports business needs while giving users the flexibility to access their communications at any time and from any device. The solution supports the addition of one or thousands of mailboxes quickly and

easily. When more mailboxes are required, for example, because of an influx of users from a merger or acquisition, additional Cisco UCS servers can be configured in minutes. Just as easily, businesses can scale or upgrade applications to more powerful Cisco UCS server hardware to meet changing workload requirements. As more and faster processors become available, Intel FlexMigration gives customers the capability to run virtualized applications on multiple generations of Intel Xeon processors.

Exceptional Scalability

Scalability is not needed only to add more servers and network connections; it is also needed to control operating costs through automation and simplified management. The Cisco Unified Computing System provides exceptional management scalability by presenting itself to Microsoft System Center Operations Manager (SCOM) as a single, cohesive system. Microsoft SCOM has access to all Cisco Unified Computing System elements with a single query, speeding and simplifying this crucial management function. Designed to support up to 320 servers, each Cisco Unified Computing System scales without disrupting operations.

Balanced Performance

Whether the goal is to increase performance, density, or

performance per watt, the Cisco Unified Computing System powered by Intel Xeon processors supports a broad range of servers with leading performance, reliability, and scalability designed to support tens of thousands of mailboxes.

Access at Any Time from Any Device

The Microsoft Exchange Server 2010 platform's new multiple-access features allow users to access their email at any time, from any device. Within the system, the virtualization-aware unified fabric securely transports all network and storage traffic, with isolation between traffic flows, visibility, and control even in virtualized environments. Beyond the system, data flows quickly to user devices across enterprise networks and WANs supported by Cisco's industry leadership.

Choice

The Cisco Unified Computing System with Intel Xeon processors is an excellent platform for running Microsoft Exchange Server 2010, whether in a virtualized or nonvirtualized environment, giving organizations increased flexibility in the way they deploy the platform. With outstanding virtualization support, the Cisco Unified Computing System has been validated with Microsoft Hyper-V and VMware vSphere, both proven and reliable hypervisor choices. All Microsoft Exchange Server 2010

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server roles, except for the unified messaging role, can be run in virtual machines, enabling server consolidation and lower costs.

Uncompromised Reliability and Availability

When communications stop, business stops and the CIO's phone starts ringing. As a Tier 1 business application, the messaging platform cannot go down. Cisco and Microsoft have specifically built this solution for reliability and high availability from the processors all the way up through the application layers. High availability can be assured by eliminating points of failure and by automating functions to avoid errors that can cause downtime.

No Single Point of Failure

The Cisco Unified Computing System was designed to be fully redundant, with no single point of failure. If a failure occurs, Cisco UCS servers can be provisioned in minutes to reduce downtime. Microsoft Exchange Server 2010 clusters servers to provide either active-active or active-passive failover for continuous availability.

Virtualization Automation

When running in conjunction with Microsoft Hyper-V, Microsoft System Center Virtual Machine Manager (VMM) can automatically migrate live virtual machines to alternative servers to accommodate scheduled maintenance, or proactively move or take other action if anomalies are detected. Intel Xeon Machine Check Architecture Recovery further increases flexibility and application availability.

Increase Return on Investment and Lower Total Cost of Ownership

IT departments are always pushed to lower costs. Every new IT purchase is closely scrutinized to get the most from the investment, while helping ensure that the cost of owning and operating the new solution is within the IT department's operating budget.

Improved Efficiency with Virtualization

The Cisco Unified Computing System enhances Microsoft Exchange Server 2010 return on investment (ROI) through exceptional consolidation of Microsoft Exchange Server roles, resulting in a reduction in the number of servers needed. The Cisco Unified

Computing System increases ROI while also lowering the total cost of ownership (TCO) by uniquely combining industry-standard, Intel Xeon processors, with Intel Virtualization Technology (Intel VT), a cost-effective and large memory footprint, virtualized I/O, and efficient power management.

Lower Storage Access Expense

The solution's unified fabric provides access to the IT department's choice of storage systems without additional cost. In the case of network-attached storage (NAS), the system's high-bandwidth, low-latency, 10-Gbps Ethernet network speeds the flow of data between servers and storage systems. In the case of SAN-based storage, the same network carries Fibre Channel over Ethernet (FCoE) traffic completely transparently to the host operating system or hypervisor through converged network adapters (CNAs) that place both network and storage traffic on the same network. After FCoE traffic reaches the system's fabric interconnects, it can proceed directly to a FCoE-enabled storage system or transition to native 2-, 4-, or 8-Gbps Fibre Channel to reach storage

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anywhere in the data center without the need for additional switches. The result is consistent data management with a dramatic reduction in the overall number of adapters, cables, and switches that an IT department must purchase, configure, manage, and maintain, greatly simplifying configuration and reducing both capital and operating costs.

Improved Consolidation Ratios

Cisco Extended Memory Technology provides the largest (384 GB) memory footprint available for a 2-socket Intel server. This large footprint improves performance of memory-intensive applications and helps support greater physical-to-virtual consolidation ratios, reducing the number of servers, and the costs, required to support Microsoft Exchange Server 2010.

Reduced Carbon Footprint

The Cisco Unified Computing System uses high-efficiency power supplies along with Intel Xeon processors with Intel Intelligent Power Technology. These technologies combine with Microsoft Windows Server 2008 Release 2 (R2) to increase power savings by automatically tailoring consumption to match workload demands.

Simplified Migration

Many companies are planning an upgrade to Microsoft Exchange Server 2010. To gain the next-generation power of Microsoft Exchange Server 2010, in many cases, migration to a

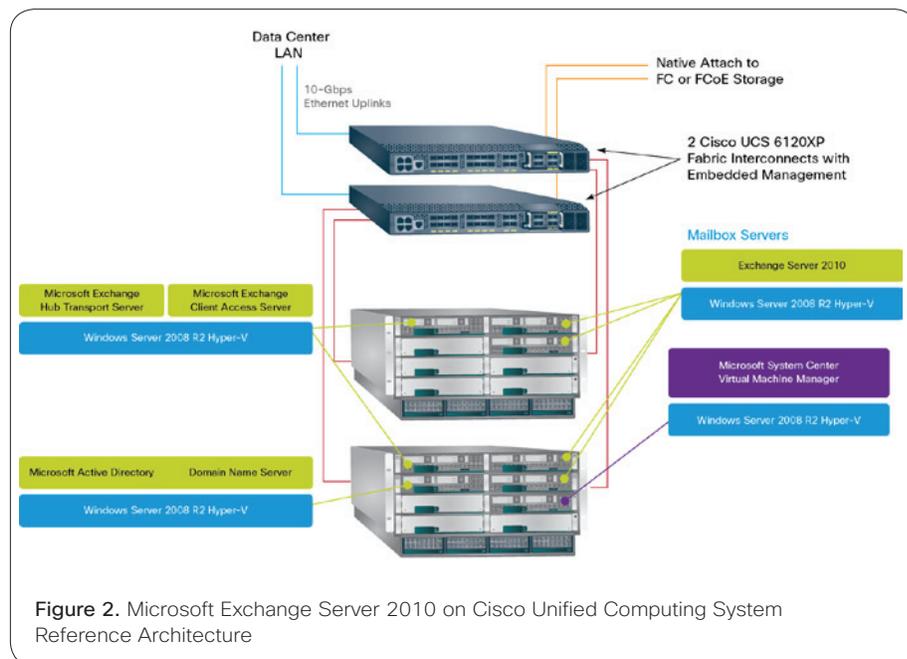


Figure 2. Microsoft Exchange Server 2010 on Cisco Unified Computing System Reference Architecture

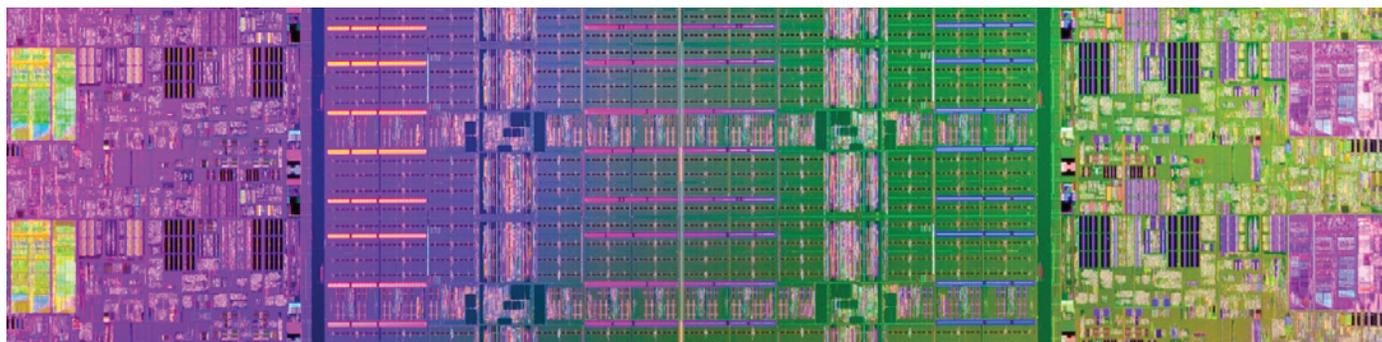
new hardware platform will be required as well. The combination of Microsoft Exchange Server 2010, Microsoft Windows Server 2008 R2, and the Cisco Unified Computing System with industry-standard Intel Xeon Processors eases migration and risk, delivering the scalable performance, flexible virtualization, advanced reliability, and security necessary for critical business messaging.

Reduced Migration Time

Cisco service profiles help reduce migration time, decrease opportunities for errors that lead to application downtime, and increase compliance of the infrastructure. Cisco service profiles help ensure consistent

server configurations for all Microsoft Exchange and Microsoft Hyper-V server roles. If application of a service profile would conflict with the server's capabilities, the system disallows the action, helping ensure that mailbox servers, client access servers, hub transport servers, and unified messaging servers have correct and consistent settings. With the click of a mouse, all server configuration information, such as adapter, memory, CPU, network, VLAN, BIOS, and firmware, is automatically programmed into the server. After server attributes are defined, they can be applied within minutes to configure any number of servers.

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Increased I/O Performance

The I/O redesign of Microsoft Exchange Server 2010 can increase performance by as much as 70 percent. Achieving this improvement requires high memory capacities. Supporting sufficient memory with traditional servers requires 4-socket servers and can be costly. Cisco Extended Memory Technology increases memory capacity in more cost-effective 2-socket servers, and the Intel QuickPath Technology memory controller provides an efficient and cost-effective platform that supports optimal I/O performance.

Reduced Risk

Cisco Validated Designs for Microsoft Exchange Server 2010 on the Cisco Unified Computing System provide detailed guidance about how to create the best data center design for the solution (Figure 2). The Cisco Validated Designs include details about configuring the server, operating system or hypervisor, network, storage, and application-level services required, enabling rapid time-to-value for the solution. As Figure 2 illustrates, Microsoft Exchange Server 2010

software components are distributed across two blade server chassis for redundancy. Using Microsoft Windows Server 2008 R2 Hyper-V as the foundation increases resource utilization, reduces capital costs, and improves reliability. When more mailbox servers are required, simply add one or more blade servers to the prewired infrastructure. Use the same service profiles already in use to configure the new servers, in minutes, and install the software. Cisco Validated Designs, with detailed reference architecture, speeds migration and reduces the risk associated with software and hardware migrations.

Intel Xeon Advantages

The Cisco Unified Computing System powered by Intel Xeon processors provides a solid industry-standard platform for enterprise computing. This joint platform reduces power consumption through automated energy efficiency, improves performance, and provides the agility and cost saving benefits of flexible virtualization.

Intelligent Performance

Workload spikes are easily managed with Intel Xeon processor-based servers that automatically adjust power to the workload. With support for Intel Hyper-Threading Technology, gain near-native performance of virtualized environments and help achieve rapid ROI.

Automated Energy Efficiency

The Cisco Unified Computing System powered by Intel Xeon processors automatically regulates power consumption. The platform intelligently adjusts server performance according to your application needs, achieving more performance per watt than previous processors and drastically reducing energy costs.

Flexible Virtualization

Intel Virtualization Technology greatly simplifies server consolidation to build a virtualized environment, reducing costs. Intel VT FlexMigration helps ensure compatibility between generations of processors, helping organizations size applications appropriately and smoothing migrations.

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Conclusion

The Cisco Unified Computing System in combination with Microsoft Exchange Server 2010 delivers a next-generation messaging system that can be quickly deployed, secured, and scaled up to meet business needs. The collaboration of Cisco and Microsoft brings both human and physical resource efficiency that contributes to reduced errors and downtime. The solution provides support for a broad portfolio of open, industry-standard, x86-architecture servers with large, economical memory capacity to meet the most demanding messaging requirements efficiently and effectively. The Cisco Unified Computing System with Microsoft Windows Server 2008 R2 Hyper-V delivers a virtual infrastructure that reduces TCO, speeds message delivery, increases security, and improves availability. Working together, Cisco and Microsoft provide solution design, sizing, migration, and best-practices guides, reducing risk for

both enterprise data centers and cloud computing environments. Organizations can upgrade today to the next-generation messaging platform and reduce expenses with Cisco Unified Computing System running Microsoft Exchange Server 2010.

Cisco and Microsoft: Better Together

Cisco, Intel, and Microsoft are market-leading, innovative companies with combined technology solutions that greatly enhance the performance, scalability, manageability, and cost effectiveness of virtualized data centers. With the combined vision and capabilities of the companies, customers now have powerful allies for designing and implementing their next-generation data centers. Cisco and Microsoft, together with Intel, deliver a standards-based, cohesive, unified environment that easily scales to meet the needs of the business while reducing TCO.

Cisco offers unified computing support and warranty services as well as fixed-price, fixed-scope Cisco UCS Services. Additionally, Cisco and Microsoft have developed a comprehensive partner ecosystem that includes technology, channel, and systems integration partners to provide a complete, standards-based solution to meet your critical business messaging needs.

For More Information

Learn why thousands of customers around the world have chosen the Cisco Unified Computing System powered by Intel Xeon processors to run their mission-critical workloads.

For more information about Microsoft Exchange Server 2010 running on the Cisco Unified Computing System, visit <http://www.cisco.com/go/microsoft> or <http://www.microsoft.com/exchange>. For more information about Intel Xeon processors, visit: <http://www.intel.com/xeon>.

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