White Paper

Enterprise Messaging That Is Agile, Simple, and Efficient: Deploy Microsoft Exchange Server 2010 on Cisco UCS

What You Will Learn

Enterprise messaging has never been more central to a company's success. Today, Cisco and Microsoft help IT departments upgrade to a next-generation messaging platform with Microsoft Exchange Server 2010 running on the Cisco Unified Computing System™ (Cisco UCS™). Microsoft Exchange Server 2010 on Cisco UCS can be quickly deployed, secured, and scaled to meet business needs and supports physical and virtual infrastructures and public and private cloud environments. It also provides the industry-leading technology mix that companies need to:

- Increase agility, with the capability to rapidly deploy the solution and scale to thousands of mailboxes
- Reduce IT complexity, through reliance on a single, converged data center platform with comprehensive systems management capabilities that extend from the software all the way to the bare metal
- Increase efficiency overall, helping keep IT costs aligned with business needs

The Challenges of Next-Generation Messaging

As enterprise messaging has evolved into a mission-critical service, so too have end-user and IT requirements evolved to reflect the importance of this service. In response to these changes, Microsoft Exchange Server has transformed radically over the past several releases, and this transformation has brought significant server, storage, and network redesign changes as well. These changes not only reflect the requirements for supporting such a critical service but also the varied delivery models, including physical and virtual infrastructures and public and private cloud environments.

New delivery models and technologies have brought new challenges, however. Compared to previous versions, Microsoft Exchange Server 2010 requires significantly more memory; performs very well on cheaper, slower disks; and requires complex network load balancing. Crucial to high performance on slower disks is the capability to cache more data in memory, and to achieve this, Microsoft Exchange mailbox servers require relatively large quantities of allocated RAM.

As email has evolved into a mission-critical service, expectations for high availability have increased considerably. To deliver high availability across the three major Microsoft Exchange Server roles—mailbox, hub transport, and client access—it has become necessary to replicate data and to load-balance client-facing services and potentially manage geographically dispersed failover.

When planning for a new or upgraded Microsoft Exchange deployment, administrators and IT architects have numerous choices across server, storage, and network stacks. Each of these stacks is typically managed individually by specialists focused on that area, and a large project requires complex coordination between areas and then ongoing cooperation during steady-state operations. Unifying these requirements across a single holistic platform is likely to greatly increase efficiency and simultaneously decrease overall costs.

As this document discusses, Microsoft Exchange Server 2010 running on Cisco UCS meets the challenges of delivering a mission-critical messaging service while enabling the full promise that such a platform can offer, including:

- **Agility:** By streamlining the move to a next-generation data center and messaging platform and enabling extreme scalability for thousands of mailboxes as business requirements change
- **Simplicity:** By using Cisco Validated Designs, which provide a certified, tested starting point for Microsoft Exchange deployments and by using a comprehensive data center platform that supports physical and virtual infrastructures and public and private cloud environments
- **Efficiency:** By enabling the holistic management of the messaging infrastructure from the software all the way to the bare metal while providing several critical capabilities designed to improve performance and availability and reduce costs

Microsoft Exchange Design

Planning and designing a solid Microsoft Exchange infrastructure is a critical task that can be daunting, but that must be done correctly. You first must establish business requirements for high availability to guide the development of the technical solution. You also must answer critical questions about concerns such as whether or not servers will be geographically dispersed and how full-site failover will occur. After you have established business requirements, you can develop a technical design. Successful completion of this design requires consideration of the number of servers used for each Microsoft Exchange role; CPU and memory allocation; storage planning, such as disk type, speed, and capacity; and the use of server virtualization and network load-balancing technologies.

The Microsoft Exchange Server 2010 Mailbox Server Role Requirements Calculator provides a number of metrics in addition to storage, such as CPU and memory requirements for mailbox servers. By using these outputs, you can derive the specifications for Microsoft Active Directory domain controllers, Microsoft Exchange client access servers (CASs), and Microsoft Exchange hub transport servers. Memory, CPU, and to a lesser extent, storage requirements will help you decide whether to provision specific server roles directly on physical servers, or whether to employ server virtualization for some or all servers in the solution. Storage is generally the most complex component of a Microsoft Exchange deployment to plan and implement. Numerous options range from full-featured SAN implementations, to direct-attached storage (DAS), to lower-end SAN implementations. Although DAS is the default choice in much of the documentation about planning a Microsoft Exchange Server 2010 deployment, SAN storage can be used instead. In some cases, SAN storage may integrate better with the overall hardware platform for Microsoft Exchange, or it may provide desirable, additional functions, such as snapshot-based backup operations.

In general, you must consider a few main variables when planning storage for Microsoft Exchange: the number of I/O operations per second (IOPS) that the storage can support and the amount of usable space that the disks provide. Sometimes the usable space will exceed the number of IOPS applied on the storage, thus artificially limiting space utilization; in other cases, the opposite will occur. Because of changes in Microsoft Exchange Server 2010 architecture and improvements in performance, you can use slower, high-capacity SATA disks, which are also generally much cheaper than faster alternatives.

You can use the Microsoft Exchange Server 2010 Mailbox Server Role Requirements Calculator, as well as guidance from third-party SAN vendors, to determine the correct number of disks and the RAID types based on user profile information, such as the expected number of users, use profile, and mailbox size.

A main factor in reducing the number of IOPS that Microsoft Exchange generates and in determining whether you can use slower disks is the capability to cache more data in the memory. When data is stored in RAM, it can be accessed much more quickly and it no longer requires trips to disk. Another factor to consider is whether to increase the amount of memory allocated to mailbox servers. Mailbox servers with 32 to 64 GB of RAM, or even more, are not uncommon. This requirement is often a critical factor in deciding whether to virtualize mailbox servers. This decision is usually influenced significantly by the amount of memory in virtual machine hosts relative to the amount of memory that a single Microsoft Exchange virtual machine may require.

Network-level requirements for deploying Microsoft Exchange Server 2010 have increased substantially relative to previous versions, and the opportunities for errors have increased proportionally. The network is of particular focus in two main areas: load balancing and data replication. All the client access services require load balancing to function in a highly available manner, and unfortunately, they all also have different requirements for maintenance of affinity. When discussing network load balancing, affinity is the management of client connections so that the connections are always sent to the same server during a session. Microsoft Windows includes a basic network load-balancing service that you can use to load-balance Microsoft Exchange Servers; however, this service does not provide a comprehensive feature set, and it can be difficult to deploy in virtualized environments. If you are deploying geographically dispersed instances of Microsoft Exchange Server for resiliency or simply due to the makeup of your organization, you will also need client access servers in each location. Managing the namespaces to which clients connect for services, such as Microsoft Outlook Anywhere or Outlook Web App, becomes a challenge when multiple Internet-facing data centers exist. Some organizations opt to use different namespaces for each data center, while others rely on global traffic-management solutions. These solutions typically use a combination of technology to predict a client's geographic location and manipulation of the Domain Name System (DNS) to determine the data center to which a client is ultimately routed.

The mailbox server availability model in Microsoft Exchange Server 2010 is different from that in previous versions. In previous versions of Microsoft Exchange Server, a single copy of each mailbox database was stored on a SAN, and then multiple, clustered instances of Microsoft Exchange Server could access the SAN. Microsoft Exchange Server 2010 introduces a replication-based model in which multiple copies of mailbox data are distributed across mailbox servers. This approach changes the high-availability model from a server-based model to a database-based model, which introduces a significant amount of flexibility. To replicate databases, transaction logs must, of course, be transported over the network, which in turn requires bandwidth. In a LAN, bandwidth is unlikely to be a concern, but over a WAN, bandwidth is likely to be a consideration when planning for log replication.

Microsoft Exchange Server 2010 can perform compression of transaction logs on the server, which can decrease the amount of bandwidth required, but you still must plan for bandwidth consumption. The trade-off of performing compression on the server is increased CPU utilization. One alternative to performing compression on the server is to use a WAN acceleration and compression appliance. You also can use these appliances to manage Microsoft Messaging API traffic from clients in locations that have limited network bandwidth and no local mailbox server.

Cisco UCS Mapping

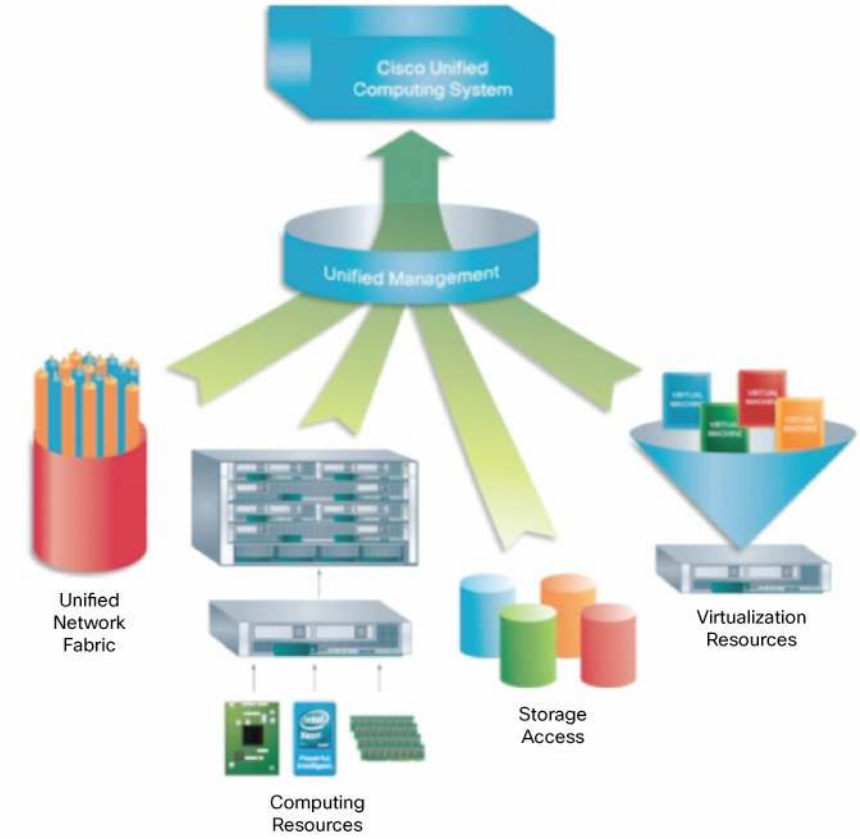
After considering the points discussed earlier in this document related to planning and designing a Microsoft

Exchange environment, you will need to select a platform on which to run the environment. Cisco UCS can serve as this platform. The Cisco UCS platform is the result of the quest of Cisco to address the needs of the next-generation data center. The platform was designed from the start to create a best-in-class offering that can handle

any workload and converge the data center toward a single point of management. Cisco builds its Cisco UCS servers to solve some of the critical, physical challenges that data centers face: space, power, cooling, cabling, and connectivity costs.

One main benefit of Cisco UCS for almost any organization evaluating the platform for both Microsoft Exchange and the data center at large is the consolidation of multiple IT services into a single platform. These services and server, virtualization, networking, and storage resources often operate independently within an IT department, which increases the cost and complexity of a major project such as a Microsoft Exchange Server upgrade and adds to overall long-term operating expenses and complexity. Figure 1 shows the architecture of the Cisco UCS platform at a glance.

Figure 1. Cisco UCS Unifies Network, Computing, Storage, and Virtualization Resources into a Single Cohesive System



Cisco UCS supports combined management of physical servers for applications that do not need to be virtualized, as well as platform-agnostic management of virtualization platforms such as Hyper-V technology from Microsoft and VMware vSphere. Cisco UCS blade servers can host more than 384 GB of RAM in a single dual-socket blade, which is substantially more memory than traditional competing server platforms. The platform-agnostic virtualization support in Cisco UCS makes it easy to deploy applications on top of the hypervisor, which is best suited for the workload from both cost and function perspectives. For example, in the case of Microsoft Exchange, Microsoft Hyper-V is well suited for hosting Microsoft Exchange workloads, and it provides a single-vendor solution to reduce support overhead and overall solution complexity. When planning large-scale enterprise deployments, some organizations may be constrained by the Microsoft Hyper-V limit of four virtual CPUs. When you reach this limit, you will need to run mailbox servers directly on physical Cisco UCS servers. Storage is a critical area for

which the Cisco UCS platform can reduce data center cost and simplify management by using a consolidated network fabric and a single management console.

Cisco UCS supports integration with a variety of storage technologies, including Small Computer System Interface over IP (iSCSI) and Fibre Channel, from multiple industry-leading vendors. For example, many storage vendors offer tight integration with Microsoft Exchange by using hardware-based snapshots for backup and recovery. With the movement from single-copy to multiple-copy high availability in Microsoft Exchange Server 2010, SAN costs will rise significantly if multiple copies of the same data are stored on the same SAN. These costs can be mitigated substantially by taking advantage of data deduplication technologies offered by storage vendors that integrate with the Cisco UCS platform. Thin-provisioning technologies can also greatly reduce initial capital costs when implementing storage for Microsoft Exchange.

Thin-provisioning technologies allow administrators to oversubscribe storage so that more storage is allocated than actually exists on the SAN. As storage use grows, IT can purchase more disks for the SAN, and these disks will become available to already-provisioned logical unit numbers (LUNs). Successfully implementing a thin-provisioned storage model requires monitoring of actual disk use over time and careful capacity planning to help ensure that the SAN does not run out of available disk space despite the amount of storage allocated to applications such as Microsoft Exchange.

The Cisco® Unified Network Services portfolio provides a comprehensive integrated solution for addressing application load balancing and WAN optimization requirements. Given the fundamental importance of load balancing in a highly available Microsoft Exchange environment, the integration of the Cisco Application Control Engine (ACE) platform can further simplify a deployment by consolidating management and reducing vendor complexity. The Cisco ACE appliance can also perform SSL offloading. SSL offload technology moves cryptographic processing from the CASs, which reduces CPU utilization and adds capacity to the CASs. SSL offload also reduces certificate management overhead because SSL certificates need to be updated in only one location instead of across numerous servers.

Providing a single unified, global namespace for client-facing services such as Microsoft Outlook Web App, Exchange ActiveSync, and Outlook Anywhere is a challenge for many administrators. There are numerous solutions to this problem, although none of them are perfect. One solution is the use of technology such as Cisco Global Site Selector (GSS). Cisco GSS makes intelligent load-balancing decisions based on server and service health and client location. Clients interface with Cisco GSS through standard DNS lookups, thus requiring no changes or additions to end-user devices or machines to function in a globally aware design.

If you have clients distributed globally in offices with connectivity that is overused or extremely expensive, the addition of a WAN optimization solution to reduce the amount of traffic generated by Microsoft Outlook clients in the branch office can help tremendously. The Cisco Wide Area Application Services (WAAS) Appliance is another integrated component of Cisco Unified Network Services that can be deployed as part of the solution.

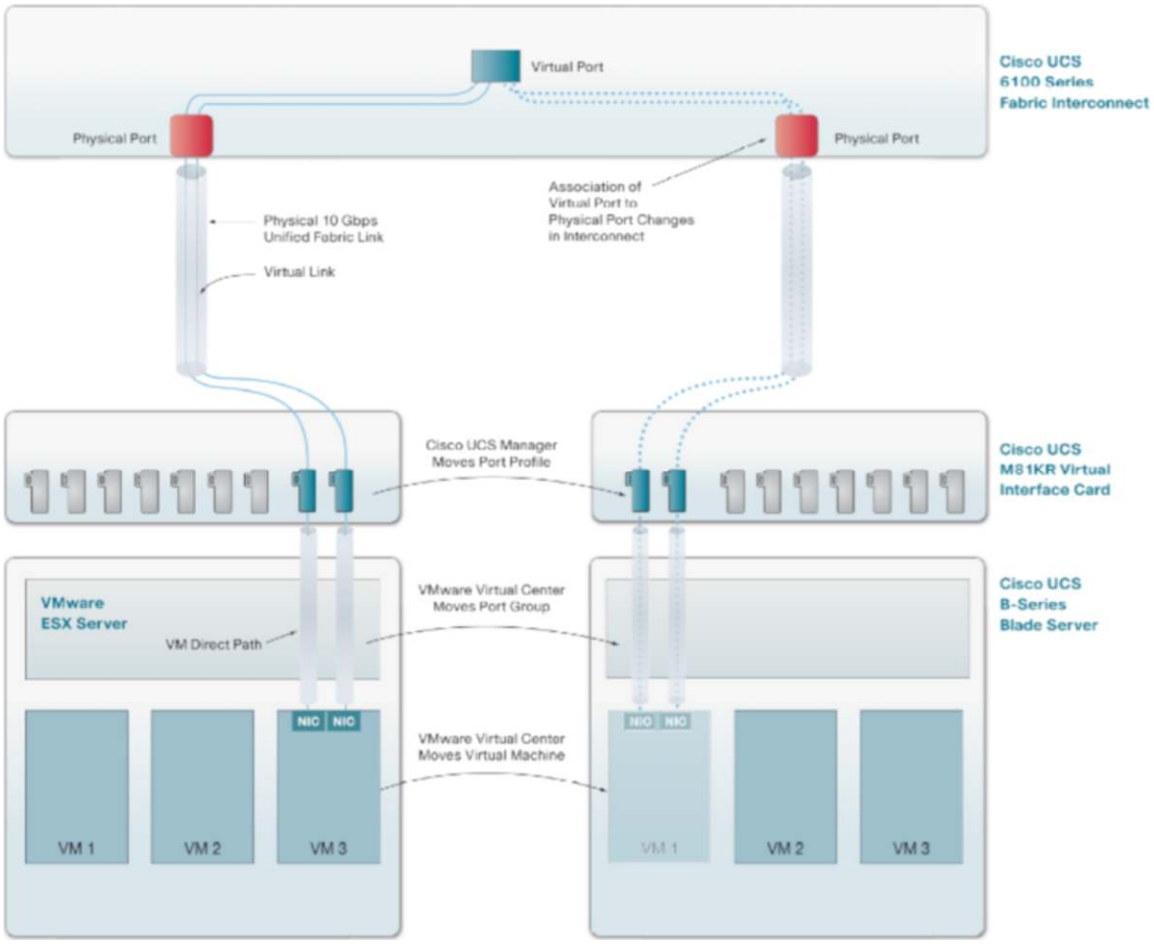
Manageability

The Cisco UCS Manager application is the administrator's entry point for managing Cisco UCS. In addition, Cisco UCS has tight integration with the Microsoft System Center suite, leading to best-in-class management and monitoring for Microsoft Exchange. With the addition of the Cisco VN-Link technology, you can rapidly migrate virtual machines by using Microsoft Hyper-V live migration, and the network and storage port mappings on the fabric will move with the virtual machines.

Microsoft provides an extensive management pack for monitoring Microsoft Exchange Server 2010 with Microsoft System Center Operations Manager. Monitoring, however, stops at the bottom of the OS layer because there is no insight into the hardware layer. The Cisco UCS management pack for Microsoft System Center Operations Manager provides the missing layer, with insight from the chassis all the way to the virtual machine layer. In conjunction with Microsoft System Center Virtual Machine Manager, System Center Operations Manager can also manage and monitor virtual machines and the hosts on which they are running.

You can use Microsoft System Center Virtual Machine Manager to dynamically rebalance workloads in a Cisco UCS environment without concern for the availability of network and storage resources across host machines. The Cisco VN-Link technology that connects virtual machines to the unified fabric integrates with Microsoft Hyper-V at a low level. This approach delivers greatly increased flexibility through the capability to move virtual machines across many host nodes and increased performance because of the direct-memory-access (DMA) level of integration with Microsoft Hyper-V. Figure 2 shows how Cisco VN-Link contributes to flexible workload rebalancing.

Figure 2. Cisco VN-Link Enables Virtual Machine Links to Be Managed and Moved Independent of Physical Links



With Microsoft Exchange Server 2007, administrators moved quickly into Microsoft Windows PowerShell whether they were ready or not; Microsoft Exchange Server 2010 and much of the Microsoft server platform has continued to evolve this technology. To manage Microsoft Exchange at scale in an efficient manner, administrators inevitably

need to turn to Microsoft Windows PowerShell at some point to accomplish their jobs. Cisco UCS integrates transparently with Microsoft Windows PowerShell, enabling Microsoft Exchange administrators to benefit from their investment in learning Microsoft Windows PowerShell down to the hardware level.

Cisco UCS Manager provides a consolidated management tool set for administrators to use to manage resources across the server, network, storage, and virtualization stacks. Although IT departments will inevitably experience increased efficiency by consolidating management, the Cisco UCS Manager tool set also enables a role-based access control (RBAC) model for managing administrator access to the environment. This model enables segregation of duties across different resource sets, such as storage resources and network resources, and greatly reduces the complexity of managing tiered IT support models.

Cisco UCS service profiles manage the end-to-end specifications of sets of virtual machines or servers running on Cisco UCS, from the BIOS layer through the OS. Too often, administrators find themselves faced with problems that affect specific versions of host bus adapter (HBA) firmware or nuances of hardware configuration that should be consistent across all the servers running a specific service, such as Microsoft Exchange. With Cisco UCS service profiles, administrators can help ensure that all the servers assigned to a specific service profile are consistently configured and managed. Additionally, service profiles enable rapid deployment of additional capacity with limited administrator intervention.

This capability is extremely useful during a deployment project, when new servers and virtual machines must be provisioned in bulk at one time. Likewise, although servers that run Microsoft Exchange Server are typically sized for static user workload volumes, additional servers may be needed during steady-state operations. During a corporate merger and acquisition, for example, incorporating acquired employees will likely require more capacity to add servers. Likewise, the introduction of an additional data center or disaster recovery site will require significant buildout. By using Cisco UCS service profiles, administrators can greatly reduce the complexity and labor costs of server rollouts.

Supportability

Cisco has worked closely with Microsoft to help ensure that the Cisco UCS platform conforms to industry best practices for workloads such as Microsoft Exchange Server and performs as needed. In addition, Cisco has partnered with a number of leading vendors across the software and storage industries to help ensure that organizations can deploy Microsoft Exchange on best-in-class hardware across server, storage, networking, and virtualization environments. In addition, Cisco Validated Designs provide certified, tested starting points for deployment of Microsoft Exchange on the Cisco UCS platform. The Cisco Validated Design program develops solutions for customer deployments on the Cisco UCS platform.

Cisco has developed Cisco Validated Designs for Microsoft Exchange Server 2010 that model typical customer deployments with thousands of seats and worldwide footprints. The design incorporates all the technologies that IT departments may need to combine to provide a high-performing, globally available Microsoft Exchange Server 2010 deployment. IT departments can choose to use all or parts of the Cisco Validated Design to meet their requirements.

Microsoft has a program that develops white papers that discuss real-world scenarios for running Microsoft Exchange Server 2010 on third-party platforms such as Cisco UCS. Cisco participated in this program and developed a complete Microsoft Exchange Server 2010 Tested Solution at technet.microsoft.com/en-us/library/hh145600.aspx.

The Promise of a Converged Data Center Platform for Messaging

Relying on Cisco UCS to run your Microsoft Exchange Server 2010 messaging environment provides the backing of a complete infrastructure architecture. With data center offerings from Cisco such as Cisco UCS, your organization can build a high-performing, cost-effective messaging environment that supports business demands without burdensome complexity. Cisco UCS provides automation and simplified operations at the server, network, and cloud services layers. When you run Microsoft Exchange Server 2010 with Cisco UCS in physical or virtual infrastructures, or in public or private cloud environments, your company can gain numerous benefits.

Agility

To help an organization achieve and maintain competitive levels of agility, Cisco service profiles help reduce migration time, decrease the likelihood of 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 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 button, 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.

After it is up and running, Microsoft Exchange Server 2010 on Cisco UCS helps your organization maintain a high level of agility. For instance, 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, your IT administrator can configure additional Cisco UCS servers in minutes. Just as easily, you can scale or upgrade applications to more powerful Cisco UCS server hardware to meet changing workload requirements.

Cisco UCS also provides exceptional management scalability by presenting itself to Microsoft System Center Operations Manager as a single, cohesive system. Through a management pack for Cisco UCS, Microsoft System Center Operations Manager has access to all Cisco UCS elements with a single query, accelerating and simplifying this crucial management function. Designed to support up to 320 servers, each instance of Cisco UCS scales without disrupting operations.

Simplicity

To support the goals of aligning IT capabilities with business needs and controlling costs, IT departments are making major strides in simplifying operations. Making your move to Microsoft Exchange Server 2010 on Cisco UCS even easier and less risky, Cisco Validated Designs provide a tested and validated reference architecture for Microsoft Exchange Server 2010.

Further, when you rely on Cisco UCS for your messaging environment, you get a single, converged platform that supports a wide range of infrastructure needs—whether virtual or physical or in a private or public cloud—across multiple data centers, infrastructures, and hosting service providers. Cisco also enables IT administrators to control the server, storage, and network infrastructure through a single, cohesive management system that includes the Microsoft System Center suite of tools and Cisco UCS Manager along with a library of cmdlets based on Microsoft Windows PowerShell to further ease control and automation across hardware and software.

Efficiency

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. To that end, Cisco UCS provides the following features:

- No single point of failure: Cisco designed Cisco UCS 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 can automatically migrate live virtual machines to alternative servers to accommodate scheduled maintenance or proactively move them or take other action if anomalies are detected. Intel Xeon Machine Check Architecture Recovery further increases flexibility and application availability.
- 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 NAS, the system's high-bandwidth, low-latency, 10-Gbps Ethernet network accelerates 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 and transparently to the host operating system or hypervisor through converged network adapters (CNAs) that place both network and storage traffic on the same network.
- Improved consolidation ratios: Cisco UCS Extended Memory Technology provides the largest memory footprint available at 384 GB 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.
- 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 UCS 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.

Conclusion

Email is a mission-critical IT service for most organizations today, and without it, business comes to a halt. As email has evolved, so too have end-user expectations for the service. People now expect large mailboxes in the range of 10 GB and near-perfect high availability. Along with these changing expectations have come significantly increased demands on the server platform that runs Microsoft Exchange Server, including the need for such a platform to support the shift toward delivering IT as a service (ITaaS).

Cisco UCS provides an innovative and flexible solution for running Microsoft Exchange Server directly on physical hardware, on virtual machines, or on a combination of both. As Microsoft Exchange has grown, so have the memory requirements for servers that run Microsoft Exchange Server. Patented Cisco Extended Memory Technology enables conventional 2-socket servers to host significantly more RAM at a lower cost, further reducing the overall cost of deployment.

ADDITIONAL CONTENT

Cisco UCS in the Real World

Customer: Elon University

- Higher education
- Elon, North Carolina
- 358 faculty and approximately 5700 students

Challenges:

- Replace aging server equipment and increase capacity
- Reduce energy and footprint of servers in at-capacity data center
- Improve manageability and control of virtualized environment

Solution:

- Deploy Cisco UCS to support mission-critical systems including Microsoft Active Directory, web servers, Microsoft Exchange Server, SQL databases, Microsoft Windows clustering, file storage servers, and application servers that host various applications

Results:

- Increased capacity significantly while reducing data center energy and cooling requirements
- Eliminated up to 75 additional, disparate physical servers throughout campus
- Improved manageability of infrastructure and accelerated provisioning of new servers

"By virtualizing our data center and end-user workstations, we are well on the way to significantly increasing productivity for clinical users and for our team. Not only is virtualization viable for our clinical areas, it is a big improvement."

—Edward Ricks, Chief Information Officer and Vice President, Information Services, Beaufort Memorial Hospital

"In less than 48 hours, we installed three UCS blade enclosures and fully transitioned our servers to the new environment. It really is mind-boggling the amount of space we saved and how quickly we got everything up and running."

—Brian Carpenter, Director of Information Technology, Heritage Auctions

Cisco Unified Fabric, which connects servers and virtual machines, provides a unified backbone that consolidates network, storage, and management traffic onto a single high-performance fabric. By using the Cisco UCS Manager tool set, administrators can control server, storage, and networking resources from a single console and can integrate with the Microsoft System Center Operations Manager monitoring product.

Organizations that choose to rely on Cisco UCS for their Microsoft Exchange Server deployment gain more than just a powerful data center platform. They get a solution that is purpose-built to help organizations:

- **Achieve new levels of business agility,** with the capability to rapidly deploy the solution through service profiles and scale to thousands of mailboxes
- **Reduce IT complexity** by using Cisco Validated Designs and the capability to rely on a single converged data center platform with comprehensive systems management functions
- **Increase overall efficiency,** helping keep IT costs aligned with business needs by eliminating a single point of failure, enabling virtualization automation, lowering storage costs, improving consolidation ratios, and increasing I/O performance

Why Cisco and Microsoft?

Industry-leading technology from Cisco and Microsoft can help you deliver the next-generation messaging solution, quickly, cost effectively, and with minimal risk. By taking advantage of Cisco Validated Designs, which provide a validated and tested reference architecture, your organization will be well on its way to delivering a highly secure, optimized environment for Microsoft Exchange Server 2010. Together, Cisco and Microsoft can help your organization establish an enterprise messaging solution that can respond rapidly to changing business needs, scale without adding complexity, enable an accelerated transition to virtual and cloud computing, and better align IT costs with business needs.

For More Information

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