

Hitachi Storage Solutions for Microsoft® Exchange



Hitachi Unified Storage – A Smart Choice

Organizations of all sizes rely on email to conduct business, and many are looking to Microsoft Exchange Server 2010 to further their businesses objectives. In these environments, the IT infrastructure is more important than ever before, and this includes storage. Hitachi storage solutions for Microsoft Exchange provide the predictability, scalability and flexibility required for optimal performance of Exchange 2010 environments.

With the introduction of Exchange Server 2010, Microsoft introduced several storage-related enhancements, such as a new mailbox resiliency design, a new architecture that removes storage groups and an improved Exchange Extensible Storage Engine (ESE). These changes increase the options for addressing different business needs, but they also significantly change deployment, maintenance and upgrade processes. Add requirements to support more dynamic environments, spiking workloads, mobile device users, as well as larger mailboxes, and this can stretch the limits of existing IT infrastructures, especially the storage environments.

A well-thought-out IT environment that provides predictable performance and availability as well as dynamic scalability and flexibility will help your organization achieve the most from your Exchange environment as your requirements evolve.

Hitachi storage solutions for Microsoft Exchange can help you maximize the effectiveness of your Exchange deployments while reducing complexities, costs and risks inherent in conventional storage environments, and maximizing performance and availability.

Hitachi storage solutions for Microsoft Exchange feature enterprise-class storage hardware, such as the Hitachi Unified Storage (HUS) 100 family, software and services. Additionally, Hitachi Data Systems provides technical guides, best practices and checklists specifically for Exchange. These resources ensure not only that the right solutions are selected for your environment but also that they are deployed and configured optimally.

Considerations for Your Exchange Environment

Regardless of the size of your organization, systems administrators are constantly faced with having to flexibly shift and tweak resources to meet user and business requirements in a predictable and scalable manner. Capacity, performance and availability needs are often at odds with budget constraints, as well as each other; this requires careful balancing in order to meet data and application expectations. Recognizing your priorities for your Exchange Server 2010 environment will make it easier and less time consuming to find the best storage solution for your needs.

Assess Your Requirements

- Does your current infrastructure effectively support the IOPS required for your desired mailbox count and quotas as well as 3rd-party remote mail clients?
- Do you need to reduce the time spent configuring and managing storage for Exchange environments?
- Is the disk I/O capacity adequate for the immediate future as well as for several years later?

- Have you been able to calculate capacity and performance requirements to account for variables such as heavy usage activity?
- Do you need to consolidate multiple instances of storage for Exchange Servers?
- Is 99.999% data availability and recoverability critical to your organization?

Hitachi Unified Storage Solutions: A Smart Choice to Meet Key Demands

Addressing the various nuances to effectively implement and manage Exchange 2010 environments calls for predictable, scalable and flexible storage solutions. Business demands predictable services, and for Exchange environments that means reliable performance and exceptional availability. It also requires that storage solutions have the scalability and flexibility to meet changing needs in a cost-effective manner.

Hitachi storage solutions for Microsoft Exchange can help you achieve these key business requirements along with better administrative efficiencies (see Table 1). The Hitachi Unified Storage 100 family offers industry-differentiated features, such as Hitachi Dynamic Provisioning software and Hitachi dynamic load balancing controller (symmetric active-active controller), which are well suited to Exchange 2010 environments.

Ensure Exceptional Availability and Data Integrity

Ensuring that your Exchange Server 2010 environments are properly protected means having the highest levels of data integrity and availability. To meet these requirements,

the Hitachi Unified Storage 100 family delivers unsurpassed reliability, native support for multipath I/O (MPIO) and 99.999% data availability with no single point of failure. Spare hard drive devices can be located anywhere in the system, available to any RAID group, with automatic drive rebuild that does not impact your Exchange 2010 environment. This means you can run high-volume applications continuously and nearly eliminate the chances of unplanned system downtime or data loss. All HUS family systems support host path failover, fully redundant hot swappable components, online microcode updates and mirrored cache with battery backup.

To ensure the highest availability for an Exchange server to its corresponding storage, Hitachi Data Systems recommends using dual host bus adapters on each Exchange Server 2010 mailbox server. Also recommended: deploying dual dedicated fabrics and using expert services to assist with planning and design, such as those offered by Hitachi Data Systems Global Solution Services.

Ensure Reliable Performance, Even During Peak I/O Workloads

The infrastructure that supports an Exchange 2010 environment must be able to handle demanding I/O workloads without disrupting operations or hindering response times. Peak activity can be difficult to predict. For example, spikes might occur due to shifting usage patterns caused by mobile email usage, deadline-driven projects such as a new service launch, or even new product installations. In addition, repetitive procedures, including integrity checks or virus scans, need to be taken into account. Running Exchange Server

TABLE 1. THE HITACHI DATA SYSTEMS SOLUTION STACK FOR EXCHANGE

Customer Concern	Microsoft tested and supported storage solutions for Microsoft Exchange 2010 deployments
Solution Areas	Microsoft Exchange 2010
What Hitachi Data Systems Offers	Scalable storage solutions that are Microsoft Exchange 2010 reviewed, approved Exchange 2010 sizing tools and prescriptive guidance for Exchange 2010
Running On	Hitachi Unified Storage
Supported By	Microsoft Exchange Solution Review Program (ESRP) listings, reference architectures, best practices, deployment guides, monitoring and managing guides

2010 on a storage area network (SAN) with Hitachi Unified Storage 100 family solutions can help you automate workload leveling, and even increase resilience in handling workload fluctuations.

The Hitachi dynamic virtual controllers of the HUS family eliminate the complexity of assigning LUNs and server access to an owning controller. Servers can access their LUNs through host ports on either controller and do so without any performance slowdown. Dynamic load balancing controllers between the controllers automatically balance I/O workloads across resources to eliminate bottlenecks. Rebalancing is transparent to hosts and requires no intervention from the Exchange or storage administrator. This makes it easy to provision the storage for Exchange data while also providing exceptional performance and scalability.

Hitachi Dynamic Provisioning software provides a wide-striping technology that dramatically improves performance, capacity utilization and management of your environment. By deploying your Exchange Server 2010 mailbox servers using volumes from Dynamic Provisioning storage pools on the HUS family systems, you can expect:

- Improved I/O “buffer” to burst into during peak usage times
- Leveling of the Exchange workload, which can eliminate hot spots and result in reduced mailbox moves related to performance
- Reduction of unused capacity by leveraging the combined capabilities of all disks composing a storage pool
- Elimination of special management and placement of power users, on such devices as BlackBerry, Windows Mobile device or iPhone

Dynamic Scalability for Changing Demands

Exchange Server 2010 environments can grow to accommodate demand for more mailboxes or larger mailboxes. Changes in mailbox quotas or the number of users require recalculation of disk capacity, and there are also considerations for determining transaction log capacity or expanding the Exchange environment.

Hitachi Data Systems has developed, tested and validated a comprehensive set of

best practices for Exchange environments to help you with scalability concerns. These guides will help you accurately calculate database and transaction log capacities, identify factors for increasing mailbox quotas and determine issues when adding servers in your Exchange 2010 environment.

A common strategy to avoid future service interruption is to significantly overallocate storage, which increases long-term capital expenditure (CAPEX). Here again, the features of the Hitachi Unified Storage 100 family make it easy to scale an Exchange 2010 environment, as you need it.

Hitachi Dynamic Provisioning allows you to purchase less storage capacity initially with optimized physical disk space, and then use easy pool volume expansion capabilities to nondisruptively add capacity at your own pace. You can start smaller and grow disk capacity to more than 3PB and connect to up to 4096 servers. Upgrades are easy with data-in-place upgrades among the product line systems. The HUS family systems provide simplified deployment and management of highly scalable storage. They meet high-volume increases in client connections, user concurrency rates, mailbox quotas, iPhone, Android and other mobile users, and regulatory- and compliance-driven retention requirements.

Repurpose Unused Capacity with Zero Page Reclaim

Whenever mailboxes are moved between databases, the old capacity is not automatically returned to the storage pool for future expansion. The same thing occurs when Exchange Server 2007 mailboxes are upgraded to Exchange Server 2010. Zero page reclaim is a feature of Hitachi Dynamic Provisioning software. With it, the pages of all zeros in a Data Provisioning pool are identified and reclaimed for use again. This reduces the consumed capacity of the Data Provisioning pool, which improves storage utilization rates.

Need to increase the capacity or the performance of the Data Provisioning pool? Just add more drives. The mailboxes are automatically striped over the new drives to boost performance and the capacity that was moved from the original drives becomes available again for expansion.

Cost-effective Service Delivery

There is no question that the critical nature of email services demands a high priority on ensuring predictable performance and continuous availability of your Exchange environments. But what are the long-term costs in ensuring this service delivery? Although CAPEX may be initially painful, operational expenditure (OPEX) has long-lasting impact and has been reported to now make up over 75% of the total cost of owning a data center. It is critical to automate management and gain control over storage resources.

Some storage systems burden administrators with labor-intensive tasks, such as manually assigning LUN ownership and access to preferred paths. In the case of a drive failure, administrative effort may even be required to return the Exchange system state back to normal, thus impacting availability.

Simplified and automated storage management can help drive down operational expenses, as well as speed the deployment of new infrastructure, and it can be flexible to changing business needs.

Running Hitachi Unified Storage 100 family systems with Exchange Server 2010 translates to greater operational efficiencies. By separating storage management from application management, HUS family systems create highly serviceable solutions, and provide an intuitive management GUI with helpful wizards. For example, as many solutions grow, managing databases mapped to specific drives can exceed administrative capacity or can require database-level action to deal with performance or capacity issues. Hitachi Dynamic Provisioning can more easily adjust to dynamic changes in workload, often avoiding service impact and high administrative overhead.

From a single console you are able to install, configure and automate LUN creation, RAID setup and host attachment. The HUS family systems give you a choice of Fibre Channel or iSCSI server interface, or both, and the ability to intermix SAS and SATA drives on the same tray for cost savings and significant flexibility.

Hitachi Data Systems recommends using a SAN design that maintains separate and independent paths from the server to each

TABLE 2. HITACHI UNIFIED STORAGE 100 FAMILY SYSTEMS ADDRESS KEY CHALLENGES

Microsoft Exchange Environment: Key Challenges	Hitachi Unified Storage 100 Family: Capabilities	Your Benefits
<ul style="list-style-type: none"> ■ The need to support more and larger mailboxes ■ Longer inbox retention period 	<ul style="list-style-type: none"> ■ HUS can support more than 100,800 users with 0.12 IOPS per user. ■ HUS supports larger disks with prescriptive guidance for deploying larger mailboxes. 	<ul style="list-style-type: none"> ■ Scalability and optimal Exchange performance under changing conditions ■ Exceptional performance over time, even as Exchange stores grow, users are added, more files pile up and general demands increase
<ul style="list-style-type: none"> ■ Maintaining response times during heavy and shifting patterns of access ■ Increasing number of mailboxes and BlackBerry and Windows Mobile users 	<ul style="list-style-type: none"> ■ HUS supports Hitachi Dynamic Provisioning with wide striping for balanced performance. 	<ul style="list-style-type: none"> ■ Higher availability ■ Elimination of performance bottlenecks
<ul style="list-style-type: none"> ■ Workload that consumes more bandwidth than a single host bus adapter port can handle 	<ul style="list-style-type: none"> ■ Hitachi dynamic load balancing controllers automatically reassign storage workloads. ■ Dynamic load balancing controllers are fully integrated with standard Microsoft MPIO host multipathing. 	<ul style="list-style-type: none"> ■ Reduced setup and software costs ■ Higher availability

storage controller. With support for native MPIO and dynamic load balancing within the storage system, the HUS family helps you to simplify management while still having the flexibility to configure solutions to meet your changing needs.

Summary

Hitachi storage solutions for Microsoft Exchange, featuring the Hitachi Unified Storage 100 family systems are a smart choice for Exchange 2010, addressing many of the key challenges of a dynamic environment (see Table 2). These Hitachi systems provide industry-leading performance capabilities that are essential for Exchange resilience, such as balancing performance-related resources where and when needed through active-active controllers. Hitachi Dynamic Provisioning with pooled provisioning makes resource sharing more efficient, and eases management burden. The HUS family systems are built to be flexible, grow quickly as needed and be easy to maintain, with nondisruptive, non-service-impacting scalability.

For More Information

To learn more about how to effectively plan and deploy Hitachi Unified Storage 100 family systems in your Exchange Server 2010 environments please contact your Hitachi Data Systems representative or visit www.hds.com.

Hitachi Data Systems does not sell Exchange Server applications. These products can be purchased through Hitachi TrueNorth™ Partners.

At Your Service

Hitachi Data Systems Global Solution Services offers market-leading storage consultants, proven methodologies and a comprehensive Professional Services portfolio to help manage storage infrastructure. Our team of storage professionals understands the latest in storage and related technologies and complex IT architectures, and takes a strategic approach to services by linking technology to business requirements. That means we can deliver a best-fit, high-performance solution tailored

to meet precise business needs. For the Hitachi Unified Storage 100 family and Exchange Server 2010, Global Solution Services provides best practices and knowledge on how best to optimally design, plan and implement your storage infrastructure to optimize Microsoft Exchange migrations and management.

Hitachi Consulting

Hitachi Consulting provides a wide range of application services for Exchange environments, including assessments and readiness, architecture design, solution implementation and deployment.

Contact your Hitachi Data Systems Global Solution Services representative to develop a custom solution for your environment. Your representative can bring in the appropriate resources from Hitachi Data Systems, Hitachi Consulting and our other partners to develop the right solution for you.



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