

Hitachi Adaptable Modular Storage 2000 Family and Microsoft® Exchange Server 2007: Monitoring and Management Made Easy

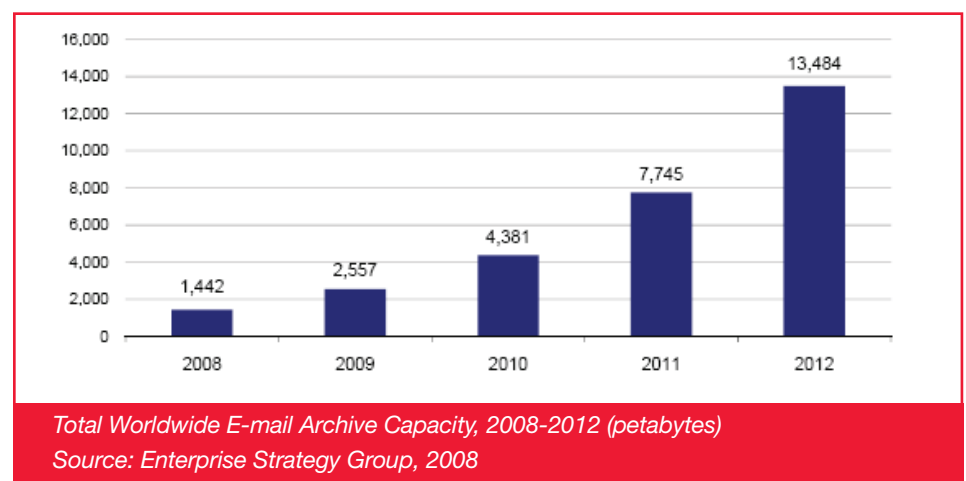


Monitoring and Management Made Easy

Over the past few years, corporate e-mail — or, more specifically, Microsoft Exchange — has become one of IT's biggest consumers of disk capacity as well as one of organizations' most important business applications. In fact, for many organizations, e-mail is a lifeline of their operations, supporting or enabling key business functions. It is common, for example, for business collaboration, business workflow and other critical sales processes to depend heavily — and in some cases entirely — on e-mail being up and running and performing at certain levels. When Exchange goes down or performance degrades, business suffers. At a minimum, organizations can expect to see employee productivity levels drop; at the extreme, significant financial consequences, such as lost revenue, regulatory penalties and more, can result.

So, just how fast is e-mail growing? As one barometer, ESG projects total worldwide e-mail archive capacity to increase more than ninefold over the next four years, from just under 1,500 petabytes in 2008 to more than 13,400 petabytes in 2012. These numbers illustrate the huge increases in primary e-mail capacity volumes that organizations are

experiencing and are indicative of lengthening e-mail retention periods. It is now common practice for organizations to retain e-mails for months, years or even in perpetuity. As another data point: ESG estimates that e-mail represents anywhere from 20 to 25 percent of all corporate data.



Bottom line: Organizations have a whole lot of e-mail data that must be managed, stored, mined and ultimately archived for business, regulatory and corporate governance purposes.

While the scope of the e-mail challenge varies from business to business and over time, pain points tend to be fairly universal among organizations running Exchange. Running out of disk space, dealing with capacity issues, migrating data among platforms and addressing performance issues are commonplace among businesses of all types and sizes and in virtually all industries.

Organizations that take steps today to ensure that their Exchange environments are properly designed and supported to meet capacity, performance and availability requirements over the long haul will find themselves better positioned for business. They will find it easier to meet e-mail-related business and user service level agreements (SLAs), for example, recovery time and point objectives, in the future as well as to lower capital and operational costs. Importantly, they will be in the position to derive maximum business value from their environments.

Monitoring and Managing Exchange

One of the reasons why Exchange environments are so challenging is that they are constantly changing. Users are constantly being added or deleted, mailbox quotas adjusted, microcode updated, new platforms considered and more. The changes can be minimal — a new user is added occasionally — or major — all mailbox quotas are updated. Whatever the scenario, these changes can have significant capacity and performance implications, which, if left unaddressed, can have significant business consequences. That is why being able to monitor the Exchange environment to plan for upcoming changes, measure the impact of a change after it takes place and manage the environment accordingly thereafter is hugely important.

Monitoring and Management in Action

Example 1

The Problem: Running out of Disk Capacity

Running out of disk capacity is a real concern in Exchange environments. Being able to proactively prevent shortages can be huge — saving businesses big dollars in lost revenue or fines that can result from application downtime or compliance breaches.

The Solution: Hitachi Adaptable Modular Storage 2000 Family

The Adaptable Modular Storage 2000 family leverages on-board native software tools to monitor and proactively manage (for example, re-allocate or load balance) disk usage across the Exchange environment to ensure optimal performance and, importantly, prevent application outages, which can result from capacity shortages. These tools “collect” information about the storage environment and “kick off” appropriate actions in the disk storage system (for example, to rebalance workloads and more). They also alert administrators when disk capacities are running low and capacity needs to be added. (Note that administrators can track disk capacity at the server level by deploying Hitachi Tuning Manager software.)

Example 2

The Problem: Poor Performance

Performance issues are common in Exchange environments and can have many causes. Identifying the sources of problems can be a difficult, time-consuming and resource-intensive task without the proper tools.

The Solution: Hitachi Tuning Manager Software plus Hitachi Adaptable Modular Storage 2000 Family

Using Hitachi Tuning Manager, IT administrators can determine the root causes of performance problems when they occur — whether they originate at the server or storage level. This is done all through a single pane of glass: the Tuning Manager GUI.

The Hitachi Tuning Manager GUI uses a “step-through” approach to identify server and storage bottlenecks. Tuning Manager checks metrics like channel processor (CHP) microprocessor (MP) utilization, cache write pending (CWP) rates, side file (SF) usage and array group (AG) utilization to ensure that all perform optimally in an Exchange/2000 family environment.

On the hardware front, the Adaptable Modular Storage 2000 family features load-balancing controllers, which automatically balance I/O workloads to eliminate performance bottlenecks and maximize performance. Also, the 2000 family leverages symmetric active-active controllers and a SAS backplane, which both simplify management and improve overall system performance. Administrators no longer need to be concerned about controller ownership of LUs or about access through preferred paths. These tasks are handled automatically by the 2000 family.

For organizations needing more assistance in tuning their environments for Exchange, Hitachi Data Systems offers Best Practices for Exchange deployment and Storage Performance Assessment Services.

IT Checklist

To minimize the business risks and maximize business benefits of Exchange environments, organizations should look for these features in IT solutions:

- **Flexibility** — Allowing users to support new technologies, such as virtualization, as needed or as they become available.
 - ✓ **Hitachi Adaptable Modular Storage 2000 family**
- **Scalability** — Allowing users to meet capacity and performance requirements without having to overhaul the existing environment.
 - ✓ **Hitachi Adaptable Modular Storage 2000 family**
- **Application focus** — Specifically mapping product features and functions to application requirements, keeping future upgrades in mind, without retrofitting to meet application requirements.
 - ✓ **Hitachi Adaptable Modular Storage 2000 family**
- **Easy monitoring and management** — Providing automated monitoring and management of the storage and server environments.
 - ✓ **Hitachi Adaptable Modular Storage 2000 family with Hitachi Tuning Manager software**

Monitoring the health of the Exchange environment and then proactively managing the environment (for example, watching for potential server bottlenecks or disk capacity issues) allows organizations to better achieve these important business goals:

- Manage growth and changes in the Exchange environments
- Ensure stable, available Exchange environments with business acceptable response rates
- Manage recent or planned transition or migrations to Exchange 2007, as well as future updates
- Enable server and storage consolidation, including those centered around virtualization

Hitachi Data Systems offers expert guidance on software and best practices to automate monitoring activities, streamline management operations, reduce complexity and deliver effective management capabilities for Exchange 2007 implementations using 2000 family systems in the *Exchange Server 2007 on the Adaptable Modular Storage 2000 Family Solution Cookbook*.

The Hitachi Data Systems Way

Monitoring and management tools to give a view of the storage environment provide one level of benefit — allowing IT administrators to not only monitor the health of supporting storage systems but also proactively manage resources to prevent or resolve disk capacity or performance issues and balance workloads, for example.

Tools that provide a host-to-storage view of the Exchange environment from a single GUI provide an added benefit — allowing IT administrators to address both server and storage issues from a single pane of glass. These types of tools provide the end-to-end visibility necessary to isolate and diagnose performance bottlenecks or capacity issues from the host server all the way down to the storage system.

Storage-based monitoring and management capabilities are native in Hitachi Adaptable Modular Storage 2000 family systems. Host-to-server monitoring and management is available using Hitachi Tuning Manager, an add-on software application.

Hitachi Adaptable Modular Storage 2000 Family

Hitachi Data Systems offers a number of tools and software applications that make it easier for organizations to monitor and manage their Exchange 2007 environments that use the Adaptable Modular Storage 2000 family systems for storage. These include several management applications that allow IT administrators to easily provision back end 2000 family systems using automated wizards and robust command line interfaces as well as monitor performance and capacity. Additional tools are available from within the Exchange environment to deal with other day-to-day and lifecycle tasks. For integrated host-to-server monitoring and management, Hitachi Tuning Manager is available. Other software tools from Hitachi Data Systems include:

- **Hitachi Storage Navigator Modular 2 with Hitachi Performance Monitor** — Monitors and manages the Adaptable Modular Storage 2000 family systems via a GUI or command-line interface (CLI). Storage Navigator is used to create RAID groups and logical units, and to assign logical units to Exchange 2007 hosts. It is also useful for monitoring events and the status of the various 2000 family components. Hitachi Performance Monitor, meanwhile, is part of the Storage Navigator software package. It acquires information about the performance of RAID groups, logical units and other elements of the 2000 family. It also tracks utilization rates of 2000 family resources, such as hard drives and processors. This information is displayed with line graphs in the Performance Monitor window or saved in .csv files for later analysis.
- **Hitachi Device Manager** — Provides centralized management of Adaptable Modular Storage 2000 family and other Hitachi storage systems. It centralizes storage operations and capacity management for multiple storage systems and hosts. In Exchange 2007 environments, it also allows users to create logical groups and storage groups for easier management.

These tools allow users to monitor and manage the following architectural features of the Adaptable Modular Storage 2000 family:

- **Dynamic Load Balancing** — Simplifies management by automatically reassigning I/O workload when utilization of the two controllers is imbalanced. Rebalancing is transparent to servers and requires no intervention from the Exchange or storage administrator. The controller ensures that traffic to the back end disk devices is dynamically managed, balanced and shared across both controllers, even if the I/O load to specific logical units (LUs) is skewed due to peaks in activity.
- **Symmetric active-active storage controllers** — On the Adaptable Modular Storage 2000 family, Exchange hosts can access databases or log logical units from any of the front end host ports on either of the two controller modules due to its true symmetric active-active design. This feature enables the system to dynamically pass I/O to the controller for processing, regardless of which port the I/O comes in on. Doing so not only improves performance and availability, but also has the added benefit of simplifying SAN design. LUs do not have to be assigned to specific controllers. Each controller has a path to — and can provide service I/O for — any LU on the storage system.
- **Multipathing** — By supporting native MPIO, the Adaptable Modular Storage 2000 family improves basic availability and can improve performance under heavy load from multiple Exchange servers or when it is necessary to share ports with other applications. Expansion or replacement of components, such as disks, circuit boards, cache boards and processor boards, does not disrupt the host. This provides for nondisruptive maintenance of the Exchange storage infrastructure. In addition, host algorithms can be matched to the I/O workload for optimal performance.



Hitachi Adaptable Modular Storage 2000 Family plus Hitachi Tuning Manager

Hitachi Tuning Manager software extends the Adaptable Modular Storage 2000 family's monitoring and management capabilities to the host server environment. This end-to-end view of the Exchange environment allows IT departments to isolate and diagnose problems, such as performance bottlenecks, in the storage network — from the application to the storage device itself. Tuning Manager alerts IT administrators of potential problems before they affect users and business processes. The software also facilitates predictive analysis of server and storage trends to help IT departments better meet SLAs (see sidebar). Hitachi Tuning Manager is an automated, intelligent and path-aware storage resource management tool. It has a Web-based GUI, is fully integrated with the Hitachi Storage Command Suite, supports the 2000 family and is compliant with industry standards.

For more information about Hitachi Tuning Manager and the Hitachi Storage Command Suite, see the Hitachi Data Systems Web site, www.hds.com, or contact your Hitachi sales representative or channel partner.

Summary

As e-mail archives grow, it becomes increasingly important that IT administrators proactively and efficiently monitor and manage the problems these types of environments create. The Hitachi Adaptable Modular Storage 2000 family provides a reliable, flexible, scalable and cost effective modular storage system for Exchange Server 2007. Equally important, it provides the necessary tools to monitor and manage these environments. Native features automate monitoring activities, streamline management operations, reduce complexity and deliver effective management capabilities. Software tools like Hitachi Tuning Manager extend these benefits, giving IT administrators a much needed single-pane view of the entire Exchange environment — from application to storage system and everything in between. By leveraging these tools, organizations can ensure that their Exchange environments are running in optimal fashion for maximum business benefit.

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