

WHITE PAPER

Simplifying Storage for Mid-Sized Enterprises

Sponsored by: Hitachi Data Systems

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EXECUTIVE SUMMARY

Today, IT managers at mid-sized organizations face many of the same storage planning and management issues as managers at larger enterprises. They also must deal with several unique requirements, however. IT managers at mid-sized organizations need solutions that are easy to acquire and to set up, that have a low initial investment without sacrificing the ability to expand as needs grow, and that address specific needs without disrupting current operations.

The evolving storage requirements and the unique challenges faced by mid-sized organizations make their selection of storage systems and storage management solutions a key concern. They need:

- ☒ Simple and scalable solutions for painless and low-cost storage consolidation that also accommodates the performance requirements of diverse applications
- ☒ Intelligent storage solutions that enhance the reliability and pace of data migration and data protection across multiple tiers of storage
- ☒ Storage management solutions that boost IT staff efficiency and reduce the time required for administrators to configure and manage expanding storage assets

Hitachi Data Systems, a leading worldwide supplier of storage and IT management solutions is well-positioned to enable mid-sized organizations to grow and better manage their information. Its storage systems and storage management products can provide simple yet scalable solutions that support ongoing capacity growth, centralize the process of organizing and using all storage assets, and significantly improve the efficiency of IT management organization.

MAKING THE RIGHT IT INVESTMENTS

The effective collection and use of information are key requirements for organizations. With the right information, delivered at the right time, companies can boost employee productivity, make smarter decisions, and react more quickly to changing conditions. Making wise investments in business applications and the IT systems that support their use, therefore, is a major area of focus for senior business leaders. Companies must judge offerings based on three business requirements:

- Does the proposed investment help reduce or control increases in the cost of doing business?
- Does the proposed investment enable more rapid innovation in products or services?
- Does the proposed investment ensure the integrity of the business in the face of natural disaster, systems failures, or outside regulatory oversight?

Mid-Sized Organizations Have Unique Business Challenges When It Comes to IT

While business and IT executives in mid-sized organizations (those employing from 500 to 5,000 employees) and smaller independent business units care deeply about these issues, they also must deal with several unique requirements. IT managers at mid-sized organizations:

- Don't have the time or staff to evaluate, select, and self-integrate best-of-breed hardware and software from multiple suppliers. They need solutions that are easy to acquire and to set up.
- Don't have access to large amounts of investment capital, nor are their planning horizons such that they can afford to make bets on new technologies based on long-term return on investment (ROI) or total cost of ownership (TCO). They need solutions that have a low initial investment without sacrificing the ability to expand as needs grow.
- Don't want to re-architect the entire IT environment to address new or changing business conditions. They need integrated offerings (e.g., storage, connectivity, and supporting software and services) that address specific needs (e.g., server consolidation, improved data protection, and dynamic digital content) without disrupting current operations.

Looming Storage Challenges for Mid-Sized Organizations

Today, IT managers at mid-sized organizations face many of the storage planning and management issues as managers at larger enterprises. In IDC's *2005 Trends in Storage Survey* of 269 IT executives, conducted in August 2005, respondents at large and mid-sized businesses stated that their two storage priorities were:

- Adding additional storage capacity to meet the needs of an increasingly diverse application base
- Improving application and information availability by shortening recovery times and enabling practical disaster recovery at a secondary datacenter

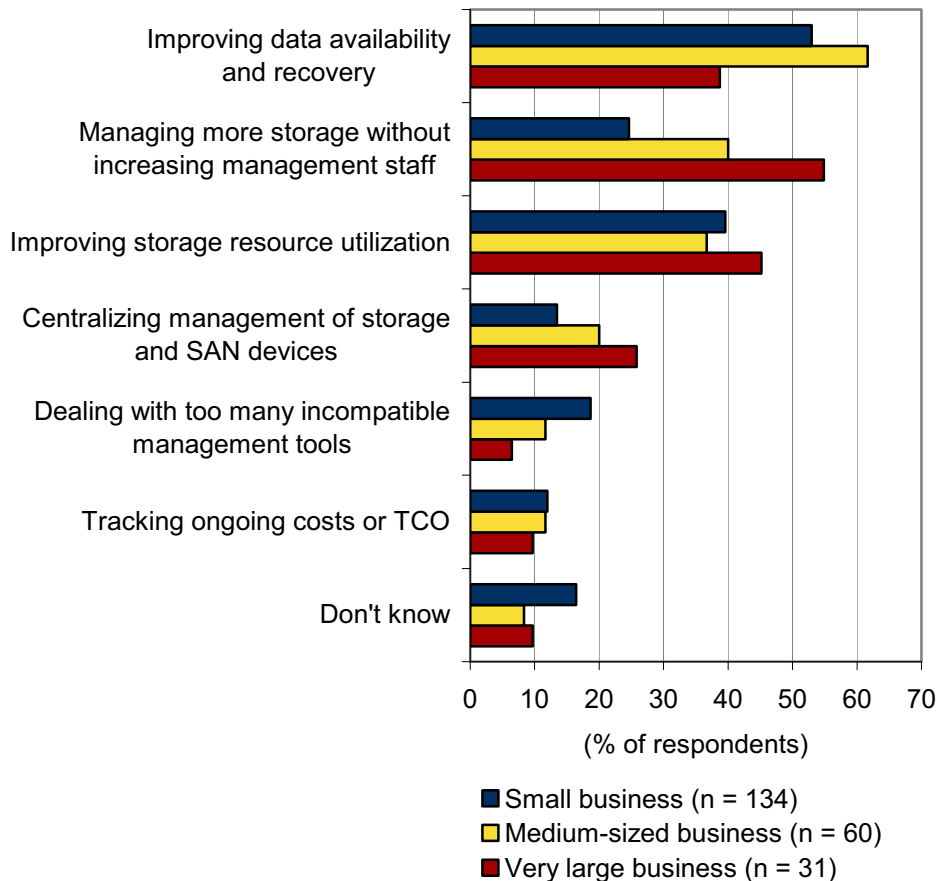
IT executives at mid-sized organizations also made it clear, however, that meeting both of these goals was a source of considerable concern (see Figure 1). Today, their two biggest storage challenges are:

- ☒ Managing the deployment of new storage capacity, especially the migration of information to the new storage, without increasing IT staff levels
- ☒ Overcoming the shortcomings of existing data protection processes, especially finding ways to shrink backup windows and shorten recovery time

FIGURE 1

U.S. Business Top 2 Challenges Relating to Storage Management by Company Size Category

Q. *What are the top 2 challenges facing your company pertaining to storage management?*



Base = respondents involved in the acquisition of any type of storage solution

Source: IDC/InfoWorld *Trends in Storage Survey*, 2005

FINDING THE RIGHT STORAGE SOLUTION

The selection of storage systems and storage management solutions is a key concern for mid-sized organizations as they address evolving storage requirements and unique business challenges. They need:

- ☒ Simple and scalable solutions that enable painless and low-cost storage consolidation while also accommodating the performance requirements of increasingly diverse applications
- ☒ Intelligent storage solutions that enhance the reliability and speed of data migration and data protection across multiple tiers of storage
- ☒ Storage management solutions that boost IT staff efficiency by reducing the time required for administrators to configure and manage expanding storage assets

Simple and Scalable Storage

The need to store rapidly expanding and increasingly diverse sets of information is re-defining the scope of capabilities that mid-sized organizations require in storage systems. These companies need to intelligently store information through its entire life (creation, use, replication, and long-term archiving); they are evolving beyond "one-size-fits-all" storage. They need modular solutions that allow them to manage tiers of networked storage with different performance and cost characteristics. These storage solutions must make it possible for IT managers to:

- ☒ Rapidly and dynamically re-allocate installed capacity and provision new capacity to meet changing business requirements
- ☒ Lengthen the useful life of existing storage assets by boosting performance and easily re-assigning the assets to meet different application requirements
- ☒ Standardize and automate data management policies and processes through the use of common, consistent management tools

Intelligent Storage Across Tiers

Concurrent with the use of next-generation storage arrays that deliver different classes of storage to meet different requirements, IT managers are connecting growing numbers of application servers and storage systems in an effort to consolidate the use and management of IT assets. Intelligent tiered storage solutions allow IT managers to efficiently and dynamically use different classes of storage based on changing performance, capacity, availability, and cost-effectiveness requirements. They also provide a set of capabilities that extends across all of these "tiers" of storage systems. IT managers can:

- ☒ Automate storage provisioning, capacity expansion, and data protection tasks
- ☒ Enable simple cross-system data movement so IT managers can easily and intelligently migrate or replicate data between heterogeneous storage classes
- ☒ Support the robust and coordinated management of information throughout its life cycle, from creation through frequent access to long-term archiving

Like their brethren in large companies, IT managers at mid-sized organizations need solutions that deliver these advanced data services, but they also need them to be packaged in hardware and software solutions optimized to accommodate their specific business requirements: lower up-front costs, greater ease of deployment, and no limitations on future expansion.

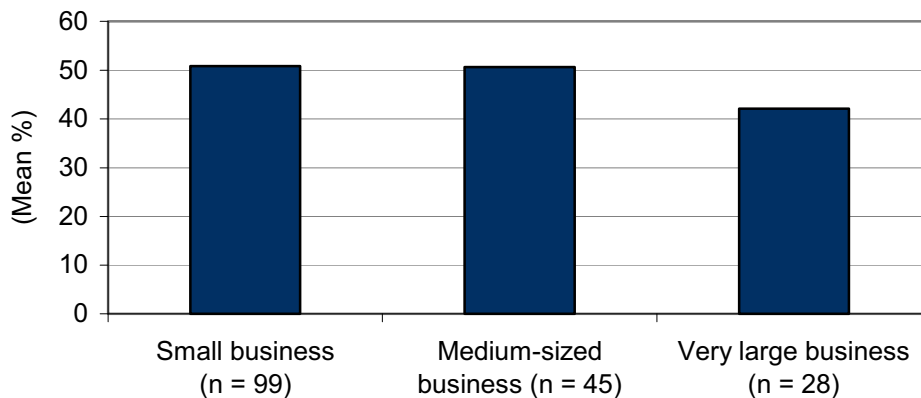
Improved Storage Management Efficiency

IDC's *Trends in Storage Survey* found that many small and mid-sized organizations see their storage capacity (in terms of terabytes) growing at over 50% a year (see Figure 2). Based on these growth rates, many organizations will have four to five times as much storage capacity in place by 2009. IT managers at these companies know that they won't be adding four or five times as much storage IT staff in that period. In fact, many don't plan to even double their staff.

FIGURE 2

U.S. Business Increase in Disk Storage Needs in the Next 12 Months by Company Size Category

Q. By what percentage do you expect your company's disk storage needs to increase?



Base = respondents involved in the acquisition of any type of storage solution who expect their companies' disk storage needs to increase

Source: IDC/InfoWorld *Trends in Storage Survey*, 2005

Achieving this goal will require a quantum improvement in storage management efficiency. IT managers in mid-sized organizations need easy-to-deploy storage management solutions that allow them to create multiple classes of storage based on performance, capacity, cost, and level of data protection. They also need these solutions to shrink the time and effort required to provision storage for servers, manage the connections between storage and server assets, and reduce the burden of migrating information between storage tiers.

ASSESSMENT OF HITACHI DATA SYSTEMS' MID-RANGE STORAGE SOLUTIONS

The remainder of this white paper assesses the products and services delivered by Hitachi Data Systems that can help mid-sized organizations control costs, sustain innovation, and ensure ongoing business operations. Such solutions must:

- ☒ Provide simple yet scalable options that support ongoing capacity growth
- ☒ Centralize the process of organizing and using all storage assets
- ☒ Significantly improve the efficiency of IT management organization

Hitachi Data Systems is a wholly owned subsidiary of Hitachi Ltd. (NYSE: HIT) and is a leading supplier of storage systems, software, and services to enterprises around the globe. Under the framework of Application Optimized Storage, Hitachi Data Systems developed and continues to enhance a broad suite of storage hardware and software products designed to address large and mid-sized companies' growing and evolving information requirements.

Hitachi Data Systems' Mid-Range Storage Solutions: TagmaStore WMS and AMS

In 2005, Hitachi Data Systems began delivering a new generation of storage solutions to address the specific needs of mid-sized organizations. These solutions include a new generation of highly reliable, channel-optimized modular storage systems: TagmaStore WMS100, AMS200, and AMS500, which are simpler to configure and deploy than traditional modular storage systems.

These systems allow companies to deploy multiple tiers of disks based on size, performance, and cost within a single, scalable system (maximum system sizes range from 42TB to 88TB). Another key feature is the portfolio of supporting software that makes it easy for IT managers to optimize cache utilization and network capacity within the AMS products. IT managers can tune storage tiers for different applications. Finally, these systems support advanced storage functions such as cross-system data replication and data migration that streamline data protection processes and reduce storage administration overhead.

In April 2006, Hitachi Data Systems further expanded the reach of this product family with the TagmaStore AMS1000 product line. This system extends the advanced capabilities associated with the AMS line to mid-sized organizations with large storage requirements that want to consolidate their existing storage and/or support new, rapidly growing fixed-content applications. Key features in the system include:

- ☒ Support for mixed drive types (high performance and high capacity; up to eight different drives) that allow companies to deploy systems with up to 208TB of capacity
- ☒ Support for up to 16GB of cache, over 1,000 servers, and over 4,000 LUNs via an embedded multi-protocol connection that allows customers to concurrently deploy any two of the following three connection options: 4Gbps Fibre Channel (FC), 1Gbps iSCSI (Ethernet), or 1Gbps NAS (Ethernet)

- ☒ Secure multi-tenancy for separating workloads via logical partitioning of cache resources as well as the sizing of cache segments to application block sizes that enables IT managers to easily re-allocate both cache and network resources to deliver tuned support for up to 32 different storage partitions
- ☒ Advanced data migration tools for the non-disruptive movement of data between different storage tiers

In keeping with the need to deliver simple scalability and investment protection, companies can easily upgrade from the AMS200, to the AMS500, to the AMS1000 as requirements evolve.

Multi-System Tiered Storage: Hitachi Data Systems' TagmaStore Network Storage Controller

Another element of the Hitachi Data Systems Application Optimized Storage is a set of next-generation tiered storage solutions that helps companies better use storage on multiple storage systems. One approach for delivering such solutions involves products that IDC calls networked storage controllers (NSC). An NSC makes it possible to extend many of the capabilities of individual high-end storage systems to a pool of diverse storage systems without sacrificing performance, reliability, and availability. Hitachi Data Systems is a leading provider of NSC solutions, beginning with the development of the intelligent virtual storage control unit, first introduced with the TagmaStore USP in 2004. These systems offer:

- ☒ Robust and well-integrated port aggregation, volume management, and common data replication functions
- ☒ Simple and cost-effective expansion with minimal disruption to ongoing operations, including the ability to partition resources such as cache, disk, and network connections to meet variable requirements
- ☒ Rapid and less painful data migration across heterogeneous storage systems

Hitachi Data Systems continues to strengthen its position as a leader in defining and delivering array-based networked storage virtualization. In July 2005, Hitachi Data Systems announced the NSC55, a scaled-down version of the TagmaStore USP that is more suitable for mid-sized enterprises.

To better match the business priorities of mid-sized businesses, the NSC55 comes in a rack-mountable form factor that uses single-phase 200 volt power, eliminating the need for raised flooring and special datacenter heating and cooling requirements. It also provides secure multi-tenancy logical partitioning that keeps workloads separate via virtual private storage machines, which can dedicate disk, cache, and ports to individual application requirements. The NSC55 uses a software pricing and bundling model that matches the way mid-sized organization prefer to acquire and deploy storage software solutions.

In April 2006, Hitachi Data Systems delivered a new, diskless version of the TagmaStore NSC55. This lower-cost configuration makes it easier for mid-sized enterprises to deploy and exploit the advanced storage capabilities of the NSC55 in conjunction with low-end modular storage. The disk-less Network Storage Controller completely separates the commodity media (disks) from the intelligent control unit that provides storage, data, and content services, enabling customers to adopt the latest functionality and capabilities while utilizing existing storage assets. Hitachi's goal is to free customers from buying unneeded disk capacity, enabling them to maximize their existing storage assets. This approach to network-based storage virtualization delivers total flexibility for IT buyers to match unique application requirements to specific storage attributes.

Universal Storage and Data Management: Hitachi HiCommand™ Suite Version 5.0

The final component in the Hitachi Data Systems Application Optimized Storage portfolio is a set of software services that provides advanced management services for all of Hitachi's platforms as well as other suppliers' platforms that support the SMI-S protocol.

Hitachi's mature portfolio of storage and data management software solutions, the **HiCommand™ Suite Version 5.0**, includes storage area management modules that provide common management capabilities and an intuitive user interface for a heterogeneous storage infrastructure. HiCommand Storage Services Manager acts as the main console for Hitachi's heterogeneous storage infrastructure management software, providing SAN visualization and reporting, asset management, performance and capacity monitoring and planning, and policy-driven event management.

A key element in Hitachi's storage management strategy is the addition of application intelligence to HiCommand. Hitachi's management solutions are designed to access the entire storage environment with a focus on monitoring and optimizing applications, business processes, and IT procedures. Specific solutions include the following:

- ☒ **HiCommand Tuning Manager** is a proactive performance monitoring and reporting tool designed to report throughput and response time between the application and the array. It automates the traditionally onerous storage planning tasks of assessing existing storage workloads and planning for future capacity increases.

- ☒ **HiCommand Tiered Storage Manager** is the "director" of storage assets within given storage tiers. It enables the non-disruptive migration of application data between storage devices, without the need to "quiesce" the system.

In April 2006, Hitachi Data Systems introduced another solution in this area, the **HiCommand Global Link Availability Manager**. This product allows IT managers to manage many server-to-storage system data paths from a single management console. With HiCommand Global Link Availability Manager, administrators can monitor, in real time, the status of all their multiple paths in any heterogeneous environment. They can then more easily make adjustments that will eliminate I/O bottlenecks and maintain appropriate performance levels for different applications.

Challenges for Hitachi Data Systems

Mid-sized organizations' storage requirements are evolving in response to changing business conditions. The development of new technologies and product lines such as the WMS100, AMS200, AMS500, AMS1000, and NSC55 is making it easier for IT managers at mid-sized firms to adopt advanced storage for consolidation, archiving, compliance, and business continuity.

Having a broad product catalog that meets the requirements of mid-sized enterprises and SMBs for low cost and simplicity isn't enough, however. IT managers need their storage suppliers and value-added resellers to provide simple solutions that quickly address specific business requirements.

With the AMS1000 and HiCommand™ Suite Version 5.0 announcements, Hitachi Data Systems is broadening its mid-range options. Addressing the needs of mid-sized organizations ultimately takes more than new hardware and software, however. IT managers in mid-sized organizations need a business partner that can help them select, integrate, and deploy the right combination of hardware and software products to deliver complete solutions that meet their unique requirements.

Over the past three years, Hitachi Data Systems has made significant investments in developing strong business partners around the globe. Some of these partners focus on large enterprises and the advanced storage functions that they require. Others focus on the equally important but different needs of mid-sized enterprises. With this next generation of storage solutions that bring advanced capabilities to mid-sized organizations, Hitachi Data Systems must continue to extend the capabilities of both groups of business partners to target new applications and deliver more support services.

FINAL THOUGHTS

Hitachi Data Systems, with its mid-range storage solutions, is developing specific solutions that target the unique business needs of mid-sized organizations. It delivers a set of targeted solutions that supports consolidated, networked storage; enables cost-effective, long-term data archiving; and addresses the specific storage management requirements of IT managers at mid-sized organizations. The increasing focus of Hitachi Data Systems on addressing the unique requirements of mid-sized organizations, combined with the financial stability and technological prowess of its parent company, Hitachi Ltd., puts Hitachi Data Systems in a strong position to be a leading mid-range storage supplier over the long term.

IT managers at mid-sized organizations must look beyond products. They need partners that have the forethought to incorporate management into both the fundamental product design and the deployment process. Ongoing administration/management is the most overlooked and misunderstood issue in most IT deployment plans. Storage solution partners and implementation partners must provide the tools and service to help mid-sized organizations develop a sound management and provisioning process that meets both today's and tomorrow's needs.

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