

A Cost-effective SAN for the Small-to-midsized Business

Hitachi Data Systems and QLogic Deliver
the First Microsoft-designated Simple SAN
Solution for Windows Server Environments

An Application Brief

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Executive Summary

An *Information Week* survey of more than 1,400 IT decision makers recently revealed that storage spending is far outpacing traditional IT budget items at midsized organizations. For these organizations, storage is now a number one priority, and significant investments are planned to keep up with rapidly increasing demand for capacity.

For IT administrators at midsized organizations, the prospect of deploying more storage capacity is troubling. Existing architectures that rely on server-based and direct-attached storage have limited scalability and are time-consuming to manage. A cost-effective new approach to growing and managing the organization's pool of storage capacity is urgently needed.

In large enterprise IT environments, the limitations of direct-attached and server-attached architectures led to the development of storage area networks (SANs). These dedicated pools of storage accommodate massive growth in capacity and allow an administrator to effectively manage more resources. But, for midsized organizations with limited storage expertise in the IT group, SANs have traditionally been considered too unwieldy and expensive. Although small-to-midsized businesses/small to-midsized enterprises (SMBs/SMEs) desperately need the benefits of SAN technology, their distinct requirements demand a more practical, less complex, and more cost-effective approach that is easier to manage and deploy.

In collaboration with Microsoft and QLogic, Hitachi Data Systems delivered the first Microsoft-designated Simple SAN Solution for Windows Server Environments, tailor-made for the needs of the SMB/SME. The Plug-and-play SAN Kit for Hitachi TagmaStore™ Adaptable Modular Storage and Workgroup Modular Storage systems combines low-cost SAN hardware and innovative software, allowing IT administrators to connect two or more servers to an initial SAN, and extend SAN connectivity between the data center and a distant workgroup.

The Plug-and-play SAN Kit, when combined with the Adaptable Modular Storage or Workgroup Modular Storage systems, delivers the most scalable, high-performance, and highly available SAN infrastructure in its class. Leveraging the Microsoft Virtual Disk Service (VDS) technology for standardized access and the wizard-driven graphical user interface (GUI) of QLogic SANsurfer Express software, an administrator can quickly deploy a SAN, often in less than one hour.

This innovative combination of hardware and software components can produce significant savings for small-to-midsized organizations. Given storage capacity growth of 500GB per year, the Plug-and-play SAN Kit is projected to save up to US\$10,000 over five years, by eliminating the need for additional IT support staff. The increase in application availability and ease of adding storage capacity and servers to the SAN can also be expected to deliver further savings.

Contents

Keeping up with the Pace of Storage Growth	1
DAS Architecture Limitations	1
The Benefits of Networked Storage.....	2
SAN and the Small-to-midsized Business	2
The Plug-and-play SAN Kit from Hitachi Data Systems	2
QLogic and The Microsoft Simple SAN Initiative	3
Enabling The Simple SAN Solution	4
A Simple SAN for Any Size of Business	5

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Keeping up with the Pace of Storage Growth

Small-to-midsized businesses/small-to-midsized enterprises (SMBs/SMEs) are renowned for their ability to focus and execute quickly, as they take advantage of new business opportunities. But this accelerated pace can pose serious challenges for IT managers attempting to provide business applications with the storage capacity needed to sustain continuous growth. Demand for storage from e-mail and database applications is growing at a phenomenal rate. And, for many organizations, new government regulations stipulating data retention and protection policies add to an already exasperated storage management and capacity burden.

Unlike IT departments in large enterprises, with the resources to support dedicated teams of specialized staff, the IT group at an SMB is likely to consist of generalists with a diverse set of business and technical skills. The conventional server-attached and direct-attached storage (DAS) architectures used by these organizations are difficult to expand and time-consuming to manage. As the total amount of storage capacity deployed increases, so too does the need for effective management of the new resources. But, lacking the in-house expertise to dedicate to storage management, SMBs can quickly become overwhelmed by the needs of a growing storage infrastructure.

DAS Architecture Limitations

There are roughly 79 million SMBs in the United States, and it is estimated that two-thirds of these organizations still deploy server-based storage and DAS. Server-based and DAS architectures have inherent scalability problems, with the number of disc slots in the hardware limiting how much capacity can be attached to a single application server.

Difficulty sharing the capacity of server-based storage and DAS also leads to inefficient and underutilized resources. For example, an e-mail server may be quickly running out of capacity and require a server upgrade because all existing disk slots are full, but a workgroup file server with a full complement of disks may have capacity to spare.

Because the maximum amount of capacity supported by a server-based or DAS architecture is restricted to the number of hardware disk slots, capacity shortages invariably require servers or DAS devices to be upgraded. This process often involves application downtime while the new hardware is brought online and existing data is copied to the new device. As the pace of storage growth escalates, frequent

downtime for server and DAS upgrades can impact system availability, disrupting the business processes that rely on the affected applications.

The Benefits of Networked Storage

For large enterprises, SAN technology has eliminated the restrictions of server-based and DAS architectures. A SAN pools all capacity on a Fibre Channel network and uses high-performance, highly available network switches to connect all application servers to storage. Because capacity is consolidated and shared, the SAN eliminates pockets of stranded disk space, raising the efficiency of the storage infrastructure.

With more efficient use of available capacity, future storage purchases often can be postponed, resulting in reduced capital expenditures. When more storage capacity is needed, a SAN allows resources to be added without impacting application servers, eliminating downtime from upgrades. The SAN also provides greater flexibility, supporting cost-effective storage alternatives, such as Serial ATA (SATA) disks, to host lower priority data.

SAN technology significantly boosts storage administrator productivity. With all storage resources centralized on the network and administered from a single location, the management burden from continually escalating storage capacity is offset. In fact, with a SAN architecture in place, administrators can manage up to four times more storage than in a corresponding server-based storage and DAS environment.

SAN and the Small-to-midsized Business

The cost and complexity of SAN architectures have, to date, restricted the technology to large enterprise IT departments. Although SMBs face application availability service levels and demand for capacity every bit as aggressive as large organizations, lack of IT resources and limited capital spending are restricting access to SAN technology.

For a storage solution to meet the needs of SMBs it must provide the benefits of the SAN and yet be simple to deploy, easy to manage, and affordable. The Plug-and-play SAN Kit for Hitachi TagmaStore™ Adaptable Modular Storage and Workgroup Modular Storage systems has been designed specifically to address these problems.

The Plug-and-play SAN Kit from Hitachi Data Systems

Hitachi Data Systems is a leader in providing high-performance, highly available, and scalable storage solutions to meet the needs of enterprises, large and small. The Adaptable Modular Storage and Workgroup Modular Storage systems are designed for small-to-midsized organizations and allow for uninterrupted scaling of capacity, supporting over 40TB of storage. These modular systems provide high-performance, high-availability, and total data security, offering shared access to storage from multiple application servers.

The Plug-and-play SAN Kit is an all-inclusive kit for SMBs looking to make their first step toward consolidating storage using a SAN architecture. The kit is designed to reduce the complexity, expense, and risk of deploying high-performance shared storage.

Figure 1: The Plug-and-play SAN Kit from Hitachi Data Systems



SMBs and SMEs can employ the all-inclusive Plug-and-play SAN Kit—hardware, software, and cabling included—to consolidate their storage in a SAN architecture.

With all the hardware, software, and cabling included, the Plug-and-play SAN Kit provides everything required to connect two or more servers to a first SAN, or to extend a SAN from the data center to a distant workgroup. By bundling cost-effective hardware components and innovative SAN management software together, Hitachi Data Systems is able to dramatically lower the cost of implementing and managing a SAN. The Plug-and-play SAN Kit can be installed in under an hour and managed directly from Microsoft Windows. No storage expertise is required to install or manage the SAN.

QLogic and The Microsoft Simple SAN Initiative

The Plug-and-play SAN Kit is the first solution on the market to benefit from the innovative Microsoft Simple SAN initiative. Recognizing the significant hurdles facing IT staff at small-to-midsized organizations when attempting to install, configure, and maintain a SAN, the Windows Storage Server division at Microsoft developed the Simple SAN program to help vendors deliver an inexpensive, easy to install and manage SAN solution.

The focus of the Simple SAN initiative was to provide an out-of-box SAN solution for the SMB market. To find out exactly what efforts went into creating a storage network, Microsoft and QLogic developed a joint study, known as the Build a SAN Challenge, which asked a wide variety of IT professionals, with different levels of experience, about the complexities of building and installing a SAN. The study identified more than 100 complex steps and procedures routinely performed by storage administrators when deploying a SAN. With this information in hand, QLogic developed a revolutionary wizard-based software solution to quickly and reliably assist in the installation, configuration, and maintenance of each SAN component.

The QLogic SANsurfer Express software reduces complexity by automating the entire process of installing and managing the SAN. This intuitive and straightforward management software offers IT administrators with no SAN expertise an easy-to-use solution for first-time SAN installation. GUI wizards enhance the ease-of-use and allow non-experts to install the entire SAN in several minutes.

Unlike alternative solutions that involve multiple management software packages and require specialized training and storage management expertise, the Plug-and-play SAN Kit ships with a single management console for a Microsoft Windows 2003 Server. No other utilities are required for installation, configuration, and management of each SAN component. This incredibly simple solution provides a single tool for administering the switch, host bus adapters, and the storage systems in the SAN.

Figure 2: Quick Start Guide for the Plug-and-play SAN Kit



Quick Start Guide

A Quick Start Guide assists the user with the first steps of installation, while SANsurfer Express software reduces the complexity of the rest of the procedures by automating the entire process of installing and managing the SAN.

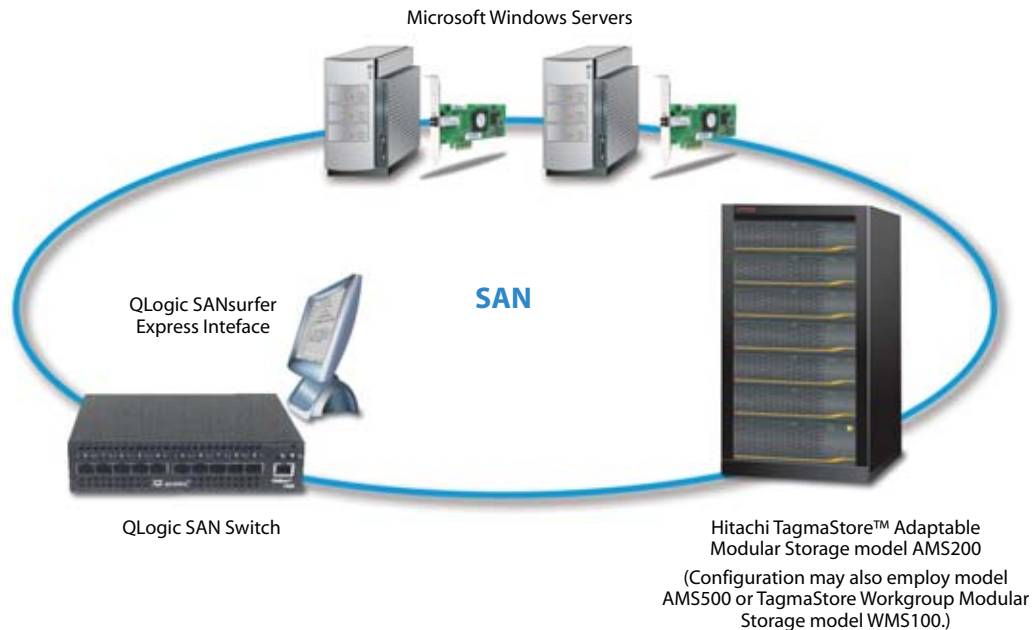
Enabling The Simple SAN Solution

Within the Microsoft Windows environment, a variety of changes were made to support effective use and performance of SAN-based storage. SAN connectivity was enabled for Microsoft Windows NT and the Virtual Disk Service (VDS) was added to Microsoft Windows Server 2003, providing a single interface to configure all DAS and SAN storage. The Microsoft VDS technology provides hardware vendors with a common application programming interface (API) for storage management functionality.

The VDS interface supports common disk management functions such as drive letter assignment, NTFS formatting, and dynamic disk creation. Hardware vendors can also build onto the VDS interface by developing providers: applications that communicate common Windows functionality to a specific piece of hardware. QLogic SANsurfer Express software is based on the VDS service and is designed to manage storage systems that are accessed through VDS provider applications.

The VDS interface for SAN-based storage is very similar to that for local server-based storage and DAS. For IT staff already familiar with direct-attached and server-based Windows disk management features, the integration of QLogic SANsurfer Express software into VDS allows support of hardware and software volumes on the SAN with no specialized training.

Figure 3: An Easy-to-install, Easy-to-manage SAN Configuration via the Plug-and-play SAN Kit



With the Plug-and-play SAN Kit you can gain the benefits of networked storage without the complexity or costs traditionally associated with SANs.

A Simple SAN for Any Size of Business

The Plug-and-play SAN Kit for Hitachi TagmaStore Adaptable Modular Storage and Workgroup Modular Storage systems is the first solution available using Microsoft Simple SAN. This all-inclusive SAN solution for SMBs is designed to reduce the complexity, expense, and risk of deploying a high performance, highly available SAN architecture.

Hitachi Data Systems has created a complete packaged solution, including a Fibre Channel switch, host bus adapters, and all required cabling, giving customers everything they need to deploy an entry level SAN in a single kit. Partnering with Microsoft and QLogic, Hitachi Data Systems has automated the process of configuring the components of the SAN to dramatically simplify deployment and ongoing management. Using the Plug-and-play SAN Kit an administrator with no prior storage management knowledge can install a SAN in less than one hour using just a few mouse clicks.

The Plug-and-play SAN Kit gives SMBs and SMEs access to the scalability and productivity benefits of storage networking technology. By dramatically lowering the cost and complexity of deploying and managing a SAN, Hitachi Data Systems allows an organization to efficiently consolidate storage to free hidden capacity and support nondisruptive future upgrades. With the Plug-and-play SAN Kit, SMBs/SMEs can grow their SANs as fast as they grow their businesses, without incurring the costs of storage administration.

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