



Hitachi TagmaStore™
Network Storage Controller,
Adaptable Modular Storage, and
Workgroup Modular Storage
Modular Storage for the Midrange Market

Partner Beyond Technology



As pressure from government and regulatory agencies for long-term data protection and retention intensifies, small- and medium-sized businesses (SMBs) are confronted with storage challenges—escalating data growth, application performance and availability, business continuity, shortened backup windows, and complex storage infrastructures—resembling those faced by larger enterprises. And SMBs must meet these enterprise-sized challenges under typical SMB constraints of limited budget, staff, and data center space.

Hitachi TagmaStore™ Network Storage Controller, Adaptable Modular Storage, and Workgroup Modular Storage

With many years of experience serving Fortune 500 companies, Hitachi Data Systems understands these challenges and has developed Application Optimized Storage™ solutions to match application requirements to storage attributes. These proven solutions, now available to SMBs, are built on a new set of modular, cost-effective product lines that deliver superior performance, availability, and reliability along with advanced storage management features previously not available to the midrange storage market.

Hitachi Data Systems helps SMBs meet enterprise-level storage challenges

As SMBs seek to gain competitive advantage and grow in their respective markets while trying to comply with regulatory requirements, they are facing many of the same data storage challenges and pain points as large enterprises:

- ∴ Data growth continues to accelerate.
- ∴ Inexpensive storage devices are unreliable and perform poorly.
- ∴ IT budgets and head count are flat or shrinking.
- ∴ Hard-to-manage storage infrastructure—server-internal disks or server-attached storage from multiple vendors—drives management cost to several times the acquisition costs.
- ∴ Backup and restore windows are shrinking.
- ∴ Disaster recovery time objectives require that applications be recovered within minutes or hours.
- ∴ Applications are not meeting performance and availability expectations.
- ∴ Compliance requirements and litigation fears demand that data be kept in tamperproof storage for defined time periods and made available quickly when necessary.
- ∴ “Old” data needs to be online and accessible in short time periods (generally seconds or minutes).

Hitachi Data Systems believes SMBs deserve no less than large companies—storage system availability, performance, manageability, and surrounding services—

but recognizes that most SMBs have limited budget, staff, and data center space. That’s why Hitachi Data Systems is offering three new midrange modular storage systems to serve as the foundation for proven, enterprise-caliber Application Optimized Storage™ solutions from Hitachi Data Systems—solutions that help align IT with your business objectives and are scaled to fit your environment and budget. Further, by leveraging the industry and application-specific expertise of Hitachi TrueNorth™ Channel partners, Hitachi Data Systems brings you the optimal solution for your business—all without compromising the legendary quality and reliability that make Hitachi storage systems the choice for more than half of all Fortune 100 companies.

Three new midrange modular storage systems bring enterprise-class functionality to SMBs without compromising quality and reliability

Combining the unique virtualization capabilities of the Hitachi TagmaStore Universal Storage Platform, which established a new storage category, with the high-performance, cost-effective modular packaging of the Hitachi Thunder 9500™ V Series systems, Hitachi Data Systems offers SMBs unparalleled choices to address storage challenges and pain points:

- ∴ Hitachi TagmaStore™ Network Storage Controller
- ∴ Hitachi TagmaStore Adaptable Modular Storage
- ∴ Hitachi TagmaStore Workgroup Modular Storage

These advanced modular storage systems are

configured and managed from a “single pane of glass”—the easy-to-use, graphical user interface (GUI) of Hitachi HiCommand® Suite and Storage Area Management (SAM) software.

Network Storage Controller

The Network Storage Controller model NSC55 takes the architecture of the Universal Storage Platform to a scaled-down, modular, rack-mounted form factor at a price that places it well within reach of medium-sized businesses. With the same external storage virtualization, logical partitioning, and universal replication capabilities as the Universal Storage Platform, model NSC55 can help reduce total cost of ownership (TCO), simplifying the medium-sized company’s storage environment and maximizing existing resources. Model NSC55 aggregates heterogeneous storage devices into a single, virtual pool that can be managed through a single, centralized console using a common set of software tools.

The Network Storage Controller model NSC55 fills a critical gap in midrange tiered storage solutions for medium-sized companies.

Able to manage 16PB of internal and externally attached storage, model NSC55 can logically partition cache, ports, and internal and external capacity into eight Private Virtual Storage Machines to optimize application performance. With its enterprise-level storage performance, model NSC55 enables medium-sized companies to manage storage infrastructures in ways never possible before.

With model NSC55, you can exploit the benefits of external storage virtualization and common software capabilities across your entire storage pool. Handle issues such as simplifying the management of multiple heterogeneous modular storage systems, easily deploying tiered storage solutions to

better manage your data over its lifecycle, or replicating data across heterogeneous storage systems for business continuity applications.

A versatile, rack-mounted, entry-level relative of the Universal Storage Platform, model NSC55 can be configured to support Application Optimized Storage solutions that address a wide range of mainframe and open systems requirements:

Tiered Storage/Consolidation

- ⚡ Allows matching of storage to application requirements and deployment of data to the right class of storage via HiCommand Tiered Storage Manager software for applications such as regulatory compliance
- ⚡ Provides a more cost-effective and feature-rich platform for aggregating/consolidating storage systems
- ⚡ Reduces storage management complexity and cost by using common data management and storage administration software across a pool of virtualized heterogeneous storage
- ⚡ Enables application-specific quality of service and security within Private Virtual Storage Machines at a lower cost than previously possible
- ⚡ Reduces costs of mainframe storage through virtualized, externally attached SATA storage, such as the Workgroup Modular Storage model WMS100

Business Continuity and Enhanced Backup

- ⚡ Provides cost-effective options for increased data protection, business continuity, and disaster recovery with common, enterprise-level universal replication and copy software across differentiated tiers of heterogeneous storage
- ⚡ Combines with backup software, such as VERITAS NetBackup, to efficiently replace tape and provide quick recovery when needed

Microsoft Exchange Server

- ⚡ Provides the platform for building an e-mail archival system based on model NSC55 and virtualized attached storage to enhance Exchange performance and efficiently back up and recover Exchange data

Adaptable Modular Storage and Workgroup Modular Storage

Adaptable Modular Storage models AMS200 and AMS500 are today's most scalable high-performance, high-availability modular storage systems. Models AMS200 and AMS500 support native Fibre Channel storage area network (SAN) or network attached storage (NAS) workloads on high-performance Fibre Channel or cost-efficient Serial ATA (SATA) intermix drives. These models also support RAID-6 disk configurations, for even higher availability.

Workgroup Modular Storage model WMS100 is ideal for SMBs that require the best in scalability and performance in a small footprint. Model WMS100 supports cost-efficient SATA drives while maintaining the performance and reliability edge that world-class Hitachi engineering delivers.

Adaptable Modular Storage and Workgroup Modular Storage systems complement Universal Storage Platform and versatile, rack-mounted Network Storage Controller models in tiered storage configurations, hosting data that has multiple performance and archiving requirements.

Both Adaptable Modular Storage and Workgroup Modular Storage models support cache partitioning, a unique innovation in the midrange market brought over from the Universal Storage Platform.

Adaptable Modular Storage: Two high-availability and high-performance models, especially effective in cost-efficient tiered storage configurations in enterprise infrastructures.

Workgroup Modular Storage: One affordable and easy-to-deploy storage system for a variety of business-critical SMB applications.

Power, scalability, and flexibility in smaller, modular footprints for SMBs

These modular systems equip Application Optimized Storage solutions with many of the enterprise-level benefits provided by the Universal Storage Platform and Network Storage Controller—in smaller, modular footprints for SMBs. For example:

- ⚡ Cost-efficient storage solutions for standalone “branch office” deployment or tiered-storage configurations built

on the Universal Storage Platform or Network Storage Controller

- ⚡ Advanced features to improve the reliability and usability within any modular infrastructure or mission-critical SMB operation, and for specific application workloads
- ⚡ Support for native Fibre Channel SAN or NAS configurations (with future support for iSCSI) and a choice of SATA and Fibre Channel disks, allowing you to match the value of your data to the cost of storage
- ⚡ Cache partitioning to enhance application quality of service
- ⚡ Single-pane-of-glass management of all Hitachi storage via the HiCommand Suite and Hitachi SAM software

Adaptable Modular Storage model AMS200 and model AMS500

A variety of features and functions clearly address the needs of SMB customers:

- ⚡ Simplified software for quick and easy configuration and management
- ⚡ Native NAS (and future iSCSI) support that allows IP-based volumes to be managed with the same tools as SAN volumes, reducing management overhead
- ⚡ Cache partitioning, allowing businesses to more efficiently allocate cache to specific applications, optimizing their performance
- ⚡ RAID-6 dual parity striping for greater availability and faster RAID group rebuild times in the rare event of a hard disk drive (HDD) problem
- ⚡ SATA and Fibre Channel disk drive intermix (with the Adaptable Modular Storage models), allowing you to host any workload on the most economical storage system
- ⚡ Redundant, hot-swappable components and Hi-Track® “call-home” service/remote maintenance tool to support maximum uptime

All-SATA model WMS100—cost-effective for even the smallest SMB

The model WMS100 is the choice for SMB applications requiring functional SATA storage with high performance, availability, and reliability for Fibre Channel-

or IP-attached storage or NAS, and for applications lending themselves to modular workloads, especially where a SATA option is a particularly good fit, such as:

- :: Microsoft Exchange operations that seek optimized storage
- :: Enterprise resource planning and customer relationship management systems with SMB-sized workloads
- :: Database applications with moderate workload characteristics
- :: Cache partitioning, allowing businesses to more efficiently allocate cache to specific applications, optimizing their performance
- :: Redundant, hot-swappable components and remote monitoring (Hi-Track service/tool) for maximum uptime

Hitachi Thunder 9585V™ Ultra High-end Modular Storage

For customers whose capacity needs exceed 88TB or who require more than 4 ports of Fibre Channel connectivity, the Thunder 9585V is a well-proven storage system that remains the fastest, most scalable modular system in the industry. The Thunder 9585V:

- :: Scales to 129TB of Fibre Channel or 173TB of Fibre Channel/SATA intermix of raw capacity
- :: Provides 8 Fibre Channel ports; 1,024 virtual storage ports
- :: Supports RAID levels 0 (Fibre Channel only), 1, 0+1, 5
- :: Shares the same software as all other Hitachi storage

Application Optimized Storage Solutions for Adaptable Modular Storage and Workgroup Modular Storage

Leveraging the Hitachi Data Protection Suite, powered by CommVault®, Hitachi Data Systems offers solutions for tiered storage, backup, and archiving.

How do Hitachi midrange systems help storage managers gain control over the bigger picture?

With the Adaptable Modular Storage,

Workgroup Modular Storage, and the Network Storage Controller models, you can:

- :: Reduce storage management complexity, cost, and risk by using tiered storage infrastructures with the highest midrange storage performance available
- :: Simplify your storage environment with easy-to-use software utilities for configuration and management
- :: Deliver application-specific performance, availability, and protection across systems—from a few terabytes to more than 88TB
- :: Offer more cost-effective options for increased data protection and disaster recovery than any other storage in the midrange category
- :: Enable a complete data lifecycle management solution that allows you to deploy the right class of storage and match it to application requirements
- :: Enhance availability and reliability for more uptime with fewer outages, both planned and unplanned
- :: Manage and configure your systems by using HiCommand Suite and Hitachi SAM software or third-party software integrated via the Hitachi HiCommand Storage Services Manager software, powered by ApplIQ
- :: Allow hot-swapping of virtually every component, ensuring continuous availability
- :: Benefit from seamless integration via HiCommand Tiered Storage Manager

software between the Universal Storage Platform or the Network Storage Controller and any of the modular models

- :: Reduce TCO through savings in management costs and efficient use of new and existing storage systems

Global Solution Services— at Your Service

Hitachi Data Systems Global Solution Services offers and works with TrueNorth Channel partners to provide professional services for planning, design, and deployment of solutions for SMB and enterprise environments. Global Solution Services teams combine the industry's best people, products, and methodologies to provide architectural analysis, configuration planning, and enterprise assessment to ensure you maximize your storage investments and meet your business objectives. For information on services to help you meet regulatory compliance, protect your data, reduce your total cost of ownership, or develop a disaster recovery plan, contact your representative or go to www.hds.com.

Your Partner Beyond Technology

Hitachi Data Systems believes a company's information is a strategic asset. That's why we leverage our global Hitachi R&D resources to develop storage solutions with the performance, availability, and scalability to maximize your ROI and minimize your risk. We focus on your perspective while applying the best hardware, software, and services to satisfy your business needs.

Application Optimized Storage Solutions

In today's business world, applications and the storage environments they depend upon have become critical drivers of business processes and decisions that impact organizational growth, risk, and profitability. Therefore, it's imperative that businesses more closely align storage infrastructure with application needs.

Application Optimized Storage solutions from Hitachi Data Systems answer this business challenge by enabling organizations to precisely match application requirements to storage attributes such as performance, availability, cost, and functionality.

Technical Specifications

	Network Storage Controller Model NSC55	Adaptable Modular Storage Model AMS500	Adaptable Modular Storage Model AMS200	Workgroup Modular Storage Model WMS100
Architecture	Hitachi Universal Star Network™ crossbar switch, Global cache	Dual controller, Shared bus architecture	Dual controller, Shared bus architecture	Dual controller, Shared bus architecture
Number of controllers	Shared global cache architecture	1 or 2	1 or 2	1 or 2
Data cache	4GB - 64GB	2GB - 8GB	2GB - 4GB	1GB - 2GB
Control memory	2GB - 6GB	N/A	N/A	N/A
Maximum LUNs	16,384	2,048	512	512
Internal raw capacity	72TB Fibre Channel	88.5TB SATA intermix, 67.5TB Fibre Channel	40.5TB SATA intermix, 31.5TB Fibre Channel	42TB SATA
Externally attached storage capacity	16PB	N/A	N/A	N/A
Internal disk drive options (Fibre Channel unless noted)	73GB (15K RPM), 146GB (10K RPM), 300GB (10K RPM)	73GB (10K RPM), 73GB (15K RPM), 146GB (10K RPM), 300GB (10K RPM), 250GB SATA (7200 RPM), 400GB SATA (7200 RPM)	73GB (10K RPM), 73GB (15K RPM), 146GB (10K RPM), 300GB (10K RPM), 250GB SATA (7200 RPM), 400GB SATA (7200 RPM)	250GB SATA (7200 RPM), 400GB SATA (7200 RPM)
Disk drive interface	Fibre Channel	SATA - Fibre Channel intermix	SATA - Fibre Channel intermix	SATA
Minimum-maximum number of disk drives	5 - 240 Fibre Channel	5 - 225 Fibre Channel, 0 - 210 SATA	5 - 105 Fibre Channel, 0 - 90 SATA	5 - 105 SATA
RAID Support				
RAID-0	NO	YES (Fibre Channel only)	YES (Fibre Channel only)	NO
RAID-1	YES (RAID-1+)	YES	YES	YES
RAID-0+1	NO	YES	YES	YES
RAID-5	YES	YES	YES	YES
RAID-6	YES	YES	YES	YES
Maximum host connections	48 Fibre Channel, 16 FICON, 16 ESCON, 8 NAS	4 @ 1, 2, or 4 Gbit/sec Fibre Channel	4 @ 1 or 2 Gbit/sec Fibre Channel	4 @ 1 or 2 Gbit/sec Fibre Channel
Maximum attached hosts through virtual ports	6,144	512	512	512
Model upgrade options	NO	NO	AMS500	NO
Availability				
Nondisruptive component replacement	Major FRU	Major FRU	Major FRU	Major FRU
Nondisruptive hot-pluggable disks	YES	YES	YES	YES
Nondisruptive microcode updates	YES	YES	YES	YES
Hi-Track® "call-home" service/remote maintenance tool	YES	YES	YES	YES
Cache binding	Hitachi Cache Residency Manager	Hitachi Cache Residency Manager	Hitachi Cache Residency Manager	Hitachi Cache Residency Manager
Software				
Management software	Hitachi Resource Manager™ utility package, HiCommand® Suite	Hitachi Resource Manager™ utility package, HiCommand Suite	Hitachi Resource Manager™ utility package, HiCommand Suite	Hitachi Resource Manager™ utility package, HiCommand Suite
Virtualization of externally attached storage	Hitachi Universal Volume Manager	N/A	N/A	N/A
Logical partitioning	Hitachi Virtual Partition Manager 8 partitions (cache, ports, internal and externally attached capacity)	Cache Partition Manager 16 partitions (cache only)	Cache Partition Manager 8 partitions (cache only)	Cache Partition Manager 8 partitions (cache only)
Remote copy	Hitachi TrueCopy™ Remote Replication (sync and async) and Hitachi Universal Replicator	Hitachi TrueCopy™ Remote Replication (sync)	Hitachi TrueCopy™ Remote Replication (sync)	N/A
Point-in-time copy	Hitachi ShadowImage™ In-System Replication and Hitachi Copy-on-Write Snapshot	Hitachi ShadowImage™ In-System Replication and Hitachi Copy-on-Write Snapshot	Hitachi ShadowImage™ In-System Replication and Hitachi Copy-on-Write Snapshot	Hitachi ShadowImage™ In-System Replication and Hitachi Copy-on-Write Snapshot
Serverless disk copy and tape	Hitachi ShadowImage In-System Replication, Hitachi TrueCopy Remote Replication (sync and async), Universal Replicator	Hitachi Cross-System Copy to/from Universal Storage Platform and Hitachi Lighting 9900™ V Series	Hitachi Cross-System Copy to/from Universal Storage Platform and Hitachi Lighting 9900™ V Series	Hitachi Cross-System Copy to/from Universal Storage Platform and Hitachi Lighting 9900™ V Series
Tiered storage management	HiCommand Tiered Storage Manager	N/A	N/A	N/A

	Model NSC55	Model AMS500	Model AMS200	Model WMS100
Hot-spot eliminator	Hitachi Volume Migration	N/A	N/A	N/A
LUN security	Hitachi Volume Security	Hitachi Volume Security	Hitachi Volume Security	Hitachi Volume Security
Host Storage Domains; multiple LUN0/port; Virtual Storage Ports	YES	YES	YES	YES
Disk-based WORM data protection	Hitachi Data Retention Utility	Hitachi Data Retention Utility	Hitachi Data Retention Utility	Hitachi Data Retention Utility
Dynamic LUN management	YES	YES	YES	YES
Host failover	Hitachi Dynamic Link Manager™	Hitachi Dynamic Link Manager	Hitachi Dynamic Link Manager	Hitachi Dynamic Link Manager
Heterogeneous SAN management	HiCommand Storage Services Manager, powered by ApplQ	HiCommand Storage Services Manager, powered by ApplQ	HiCommand Storage Services Manager, powered by ApplQ	HiCommand Storage Services Manager, powered by ApplQ
Common APIs	YES, across Hitachi storage systems	YES, across Hitachi storage systems	YES, across Hitachi storage systems	YES, across Hitachi storage systems
Operating Systems Support				
Open Systems				
IBM® AIX®	YES	YES	YES	YES
HP-UX	YES	YES	YES	YES
Sun Solaris	YES	YES	YES	YES
Microsoft Windows NT, Windows 2000, Windows Server 2003	YES	YES	YES	YES
HP Tru64 UNIX	YES	YES	YES	YES
SGI IRIX	YES	YES	YES	YES
Novell NetWare	YES	YES	YES	YES
Linux	YES	YES	YES	YES
HP OpenVMS	YES	YES	YES	YES
NetApp Data ONTAP, via HDS-NetApp® Enterprise NAS Gateway	YES	YES	YES	YES
IBM® z/OS, via Universal Storage Platform external attachment	Direct Support (see below)	YES	YES	YES
VMware	YES	YES	YES	YES
Apple MAC OS	NO	YES	YES	YES
Mainframe				
OS/390	YES	N/A	N/A	N/A
MVS/ESA, MVS/XA	YES	N/A	N/A	N/A
VM/ESA, VSE/ESA	YES	N/A	N/A	N/A
z/OS, z/OS.e, z/VM, z/VSE	YES	N/A	N/A	N/A
Red Hat Linux for S/390 and zSeries	YES	N/A	N/A	N/A



Model NSC55



Model AMS500



**Model AMS200
Model WMS100**

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DISK-546-00 June 2005