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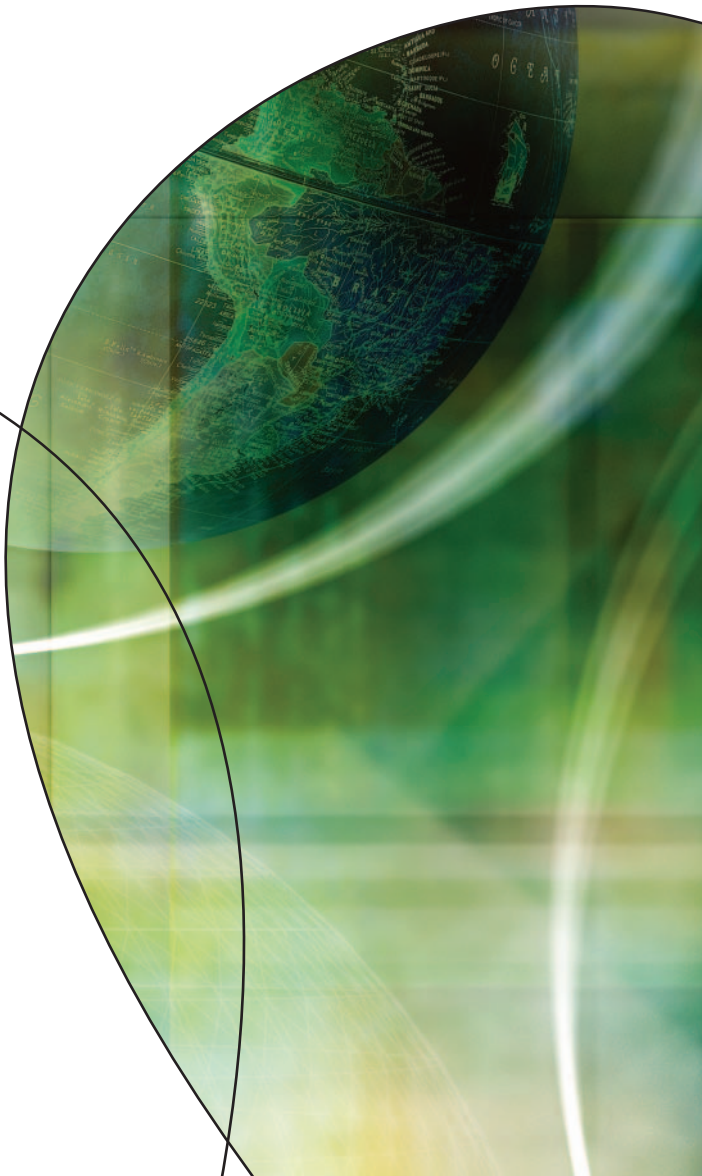
DATA SYSTEMS

Hitachi TagmaStore® Universal Storage Platform and Network Storage Controller

Partner Beyond Technology



Hitachi TagmaStore® Universal Storage Platform and Network Storage Controller

Having established a new industry category for storage, these models from Hitachi Data Systems are unique in their ability to deliver Application Optimized Storage™ solutions that support business applications, increase efficiencies, control costs, provide data security, meet compliance demands, and improve service levels across the enterprise.

Storage Management Simplification, Business Continuity, and Disaster Recovery

Integral Components of Application Optimized Storage™ Solutions from Hitachi Data Systems

The Universal Storage Platform and Network Storage Controller immediately simplify storage management by reaching previously unattainable levels of consolidation and virtualization of internal and external heterogeneous storage—in just one pool. At the same time, advanced replication capabilities support business continuity 24/7 with always-up system reliability, allowing simplified, unified data replication to multiple sites with guaranteed data integrity over any distance.

Aggregate internal and external heterogeneous storage, logically partition storage resources to maximize application quality of service (QoS), move data across tiers of storage to match application-centric attributes, create solid business continuity, and manage it all with a common set of tools from one pane of glass.

- Reduce management complexity through heterogeneous storage pooling and storage management
- Ensure business continuity with 24/7 uptime across the enterprise through advanced replication capabilities

- Increase efficiency through massive consolidation or aggregation across different storage platforms
- Improve information access through an integrated hardware, software, and services platform
- Create tiers of storage: effectively match storage cost to data value

Now Integrated: Powerful Storage, Software, and Services

As the most recent additions to the Application Optimized Storage solutions portfolio, the Universal Storage Platform and Network Storage Controller leverage the third-generation Universal Star Network™ crossbar switch architecture, making them the industry's highest performing and most scalable storage systems. The Universal Storage Platform delivers up to 32PB of storage while the Network Storage Controller provides up to 16PB of storage.

Reach your operational objectives and support your business strategies with the Universal Storage Platform or Network Storage Controller. You'll enjoy having fewer elements to manage, reduced complexity in your heterogeneous environment, and any-to-any local and remote copying. You can implement sustainable and repeatable management processes as you set a resilient foundation for data lifecycle management and storage utility.

The Universal Storage Platform and Network Storage Controller Provide:

- **Storage Aggregation and Virtualization.** Enjoy unequalled flexibility by hosting externally attached Hitachi and non-Hitachi storage systems to create large-scale storage pools.
- **Data Lifecycle Management.** Benefit from the economy of solutions that match value of data to the cost of storage.
- **Scalability and Performance.** Expect unequalled storage capacity, number of connections, and configuration flexibility.
- **Quality of Service.** Deliver business continuity through universal replication, tying together and managing hardware and software of other storage devices within a unifying storage platform.
- **Investment Protection.** Leverage your current storage investment on your terms and extend the mileage on aging systems.

Consolidate and Aggregate: Streamline Storage Management, Re-direct Your Team's Energies to Support New Business Initiatives

- Fewer elements to manage, less stress, more savings
- Common and consistent storage management, including business continuity processes and procedures
- Higher utilization of resources, including staff
- Ability to adjust newly released resources to other projects
- Less software/hardware to buy; fewer licenses/maintenance agreements required
- Lower environmental costs

Foundations for Data Lifecycle Management and Tiered Storage Solutions

The value of enterprise data changes over time, but it is still necessary to manage and store data throughout its lifecycle. Government regulations and legal concerns require companies to archive data securely, while keeping it easily accessible. With the Universal Storage Platform or the Network Storage Controller you can:

- Match data to the applicable storage tier, including mainframe data
- Create unique and appropriate storage pools

- Migrate data based on rules
- Meet governmental compliance regulations and legal requirements to protect and keep data for longer periods of time
- Manage tiers of storage in pools with a single console
- Direct fluid and transparent movement of data between different classes of storage

Three Universal Storage Platform Models

With three models to choose from—USP100, USP600, and USP1100—you're on the fast track to storage management success. Each Universal Storage Platform carries universal data and storage services, including replication across heterogeneous platforms. This unique technology foundation has it all—connectivity, virtualized, multiplatform storage pooling, and logical partitioning—all enabled by:

- Third-generation Universal Star Network crossbar switch architecture
- Up to 81GB/sec internal bandwidth
- Up to 332TB internal/32PB external capacity; 256GB cache
- Up to 192 Fibre Channel, 96 ESCON, or 96 FICON ports
- Up to 64 back-end Fibre Channel loops
- Fibre Channel initiator for external storage connections
- Optional embedded NAS Blade

Model NSC55 and the Disk-less Network Storage Controller

The NSC55 blends enterprise-class functionality in a modular, space-efficient form factor to meet the business needs of entry-level enterprises and fast-growing midsize organizations, while supporting distributed or departmental applications in large enterprises. The NSC55 supports advanced storage management and data replication features previously not available in modular storage. With the same external storage virtualization, logical partitioning, and universal replication capabilities as the Universal Storage Platform, the NSC55 can help reduce total cost of ownership (TCO), simplifying the storage environment and maximizing existing resources.

The NSC55 is now also available in a disk-less version. The disk-less Network Storage Controller for midsized enterprises completely separates the commodity media (disks) from the innovation (intelligent control unit) required to provide storage, data, and content services. It allows you to adopt the latest functionality and capabilities while utilizing existing storage assets.

Logical Partitioning Ensures Application QoS

Logically partition the Universal Storage Platform and create up to 32 Private Virtual Storage Machines, or up to eight on the Network Storage Controller, each with dedicated capacity, cache, and ports. Guarantee application QoS by matching application requirements to partition attributes. Enable utility-level capabilities: leverage logical partitioning and use the individual virtual serial numbers of each Virtual Machine to charge back departments or business units.

Storage Simplification—It's Essential

Simplify with the Universal Storage Platform or Network Storage Controller. Control external storage from a single pane of glass. Maximize storage and server usage. Aggregate existing storage hardware. Employ Hitachi HiCommand® Tiered Storage Manager and Hitachi Volume Migration software to enable nondisruptive movement of data volumes to tiered storage, based on cost and usage. Enhance QoS and reduce costs, since fewer software licenses are needed.

Eliminate the Complexity Created by Multiple Heterogeneous Replication Products

Hitachi Universal Replicator software provides simplified and unified data replication. It powers a business continuity framework that simplifies satisfaction of the most demanding uptime requirements, regardless of the type of storage platform hosting the business-critical data. No need for redundant servers or replication appliances. Universal Replicator software includes:

- Disk-based journaling
- Bandwidth control for communications links
- Link failure mitigation
- Workload management to reduce resource usage on production/primary systems
- Multi-data-center support

Strength in Business Continuity and Disaster Recovery

Employ the unique capabilities of Universal Replicator software to stand up to outages or disasters across aggregated storage—with full business continuity. Continue essential functions during and after a disaster. Maintain up-to-date copies of data in geographically dispersed locations and centralize secure management to satisfy the most demanding disaster recovery and uptime requirements. Also, enable:

- Improved recovery point objective capabilities
- Lowered cache utilization compared to traditional storage-based replication
- Data protection without performance degradation, even when a replication link goes down or optimal bandwidth is not available
- Reduced communications costs
- Heterogeneous data movement among platforms at any distance

The Universal Storage Platform and Network Storage Controller ensure that your organization has the ability to keep working—no matter what.

Hitachi TagmaStore Universal Storage Platform and Network Storage Controller

Model NSC55

Model USP100

Model USP600

Model USP1100

Hitachi Tagmastore Universal Storage Platform and Network Storage Controller—Technical Specifications

COMPONENT	DESCRIPTION	NSC55	UPS100 ENTRY	USP600 ENHANCED	USP1100 HIGH-END
Controller					
Basic Platform Unit	Integrated Control/ Array Frame	1	1	1	1
	Number of Switches	2	2	4	4
Universal Star Network™ Crossbar Switch	Data Bandwidth (GB/sec)	8.5	17	34	68
	Control Bandwidth (GB/sec)	3.6	6.5	6.5	13
	Aggregate Bandwidth (GB/sec)	12.1	23.5	40.5	81
Data Cache	Cards	2	2	2	4
	Base Memory (GB)	4	4	16	32
	Maximum (GB)	64	64	128*	256
Control Memory	Cards	2	2	2	4
	Base Memory (GB)	2	3	3	4
	Maximum (GB)	6	6	12	12
Front-end Directors (connectivity)	Cards	1-2	1-4	1-6	1-6
	Fibre Channel Host Ports	16-48	0-128	0-192	0-192
	Virtual Ports	1,024 per physical port	Up to 16,384	Up to 24,576	Up to 32,768
	FICON Ports	0-16	0-64	0-96	0-96
	ESCON Ports	0-16	0-64	0-96	0-96
	NAS Blade**/Ports	0-1/0-8	0-4/0-32	0-4/0-32	0-4/0-32
	iSCSI Blade	0-1/0-8	0-4/0-32	0-4/0/32	0-4/0/32
Back-end Directors	Type	Standard	Standard	Standard	Standard
	Number	1	1	2	2, 4
Logical Devices Supported	Open Systems	16,384	16,384	16,384	16,384
	z/OS	65,536	65,536	65,536	65,536
Array Frames					
Array Frames	Number	Up to two racks	0, 1	1, 2	1, 2, 3, 4
Hard Disks (GB)	Type	73, 146, 300	73, 146, 300	73, 146, 300	73, 146, 300
	Number (minimum/maximum)	0-240	5-256	64-512	129-1152
Spare Drives per System	Minimum/Maximum	1/4	1/8	1/16	1/40
Internal Capacity	Minimum (73GB disks)	0	0.286	4.741	9.152
	Maximum (300GB disks)	69	74	148	332
Maximum Usable Capacity RAID-5 (TB) (using 300GB disk drives)	Open Systems	56.5	62.4	128.8	287.8
	zOS-compatible	53	58.6	117.2	270.4
Maximum Usable Capacity RAID-1+ (TB) (using 300GB disk drives)	Open Systems	34.6	36.4	72.8	165.0
	zOS-compatible	30.1	31.6	63.0	143.6
External Host Support					
External Capacity		16PB	32PB	32PB	32PB
Private Virtual Storage Machines		8	32	32	32
High Availability					
Hi-Track® Support Package	LAN/Modem etc.	Standard	Standard	Standard	Standard
Extended Support Package	2nd SVP	No	No	Optional	Optional

Physical Dimensions

	Network Storage Controller Integrated Control/Array Rack or Array Rack	Universal Storage Platform Integrated Control/Array Frame	Universal Storage Platform Array Frame
Height	1,999mm; 78.7in.	1,860mm; 73.2in.	1,860mm; 73.2in.
Width (with two side panels)	605mm; 23.8in.	782mm; 30.77in.	650mm; 25.59in.
Depth	897mm; 35.3in.	925mm; 36.42in.	925mm; 36.42in.

		Minimum Configuration	Maximum Configuration
Weight	Min. 158kg; 348 lbs Max. 251.3kg; 554.2 lbs	713kg/1,571 lb	4,000kg/8,080 lbs
Heat	1.67KW	1.88KW/6,431BTU	33.56KW/114,611BTU
Power	1.86KVA	1.95KVA	36.1KVA

Operating Systems Supported

Mainframe:
Fujitsu MSP
IBM MVS/ESA
IBM MVS/XA
IBM VM/ESA®
IBM VSE/ESA
IBM z/OS®
IBM z/OS.e
IBM z/VM®
IBM Red Hat for S/390 and Z-Series®
IBM TPF

Open Systems:
HP-UX
HP Tru64 UNIX
HP OpenVMS
Sun Solaris
IBM AIX®
Microsoft Windows 2000
Microsoft Windows Server 2003
Novell NetWare
SGI IRIX
Red Hat Linux
SuSE Linux

**Upgradable to 256GB*

***Each NAS Blade consists of dual NAS servers*

Note: All capacities are based on 1GB = 1,000,000,000 bytes (1TB = 1,000GB)

For platform-specific feature availability, please contact your Hitachi Data Systems account representative or visit our Web site at www.hds.com.

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