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NST4000
HYBRID STORAGE APPLIANCE
DATA SHEET

Hybrid Storage for NAS, FC, & iSCSI

SMART HYBRID
FASTier™ flexible hybrid caching provides high performance where it's needed. NestOS software intelligently optimizes the hybrid storage architecture and resources.

AGILE SCALABILTY
Linear, non-disruptive scaling up to 2.1 Petabytes.

EFFICIENT UNIFIED
Unified storage system that supports FC, NFS, iSCSI, CIFS, SMB, and FTP in a single software stack and within a single-pane-of-glass management.

ENTERPRISE CLASS
Enterprise class Integrated System Data Management, Business Continuity, and Data Protection features and services that are right-sized for the mid-market.

OVERVIEW
The Nexsan NST4000 is a modern hybrid storage appliance, a more efficient, agile and intelligent alternative to traditional storage arrays, filers, and all-flash arrays. Organizations have different needs for performance, capacity and connectivity when managing and protecting the data that drives your business. The NST4000 blends solid-state technology, a highly scalable back-end storage infrastructure, multiple NAS/iSCSI/FC front-end connections, and enterprise-class data management services in a single system. It gives you the convenience and control to meet the needs of one or more workloads in one dedicated easy-to-use appliance.

For organizations struggling to meet both high performance and high capacity NAS, FC or iSCSI application requirements, the NST4000 makes that easy with a hybrid of solid-state accelerated hard drives. For applications with the most stringent workload requirements like server virtualization, desktop virtualization (VDI), databases and cloud computing, the NST4000 delivers unparalleled performance to ensure application demands never outpace available I/O again. Your applications will have never performed faster on a system operating at the economics of spinning disk storage.

INTRODUCING FASTier™ Caching
The proprietary Nexsan FASTier caching acceleration technology uses multiple types of solid-state memory, including DRAM and SSD to optimize block and file operations in a fault tolerant architecture. FASTier can scale from 100GB to 6.4TB - large enough to hold entire working sets for unprecedented application acceleration. Automatic caching algorithms remove the need for manual intervention or application-specific tuning. Whereas traditional disk storage is hard pressed to meet high I/O requirements and SSD-only arrays have a very high cost with limited capacity, Imation's NST4000 Hybrid Storage Appliance realigns the trade-off between performance, capacity and cost so IT administrators can do more than ever before.

FULLY FEATURED
The NST4000 is fully featured with snapshots, replication, thin provisioning, replication, compression, and much more. A revolutionary GUI and scriptable CLI streamline setup and management for the time-constrained IT administrator. As with all Imation storage, the Nexsan NST4000 with E-Series disk arrays offers industry-leading density and power management for the smallest footprint with up to 60 disks in 4U, while consuming 85% less power when idle via AutoMAID® power saving technology. A no single point-of-failure architecture ensures the ultimate in reliability. The net of all this performance and functionality is a true enterprise-class solution without the enterprise-class price.

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HYBRID SCALING

With NST, you can scale both Solid State and Hard Disk Drives independently. Additionally scale FASTier™ intelligent caching up to 6.4TB with high performance memory and flash technology.

PERFORMANCE AGILITY

NST's FASTier™ Intelligent caching allows you to tune performance where you need it, apply FASTier to specific applications that require high performance.

APPLICATION FLEXIBILITY

Unified storage system that supports multiple application needs through iSCSI, FC, NFS, SMB, and FTP in a single system, with a 'single pane of glass' management.

HIGH-CAPACITY SCALING

Linear, non-disruptive scaling up to 2.1PB, leveraging the processing power of E-Series to manage I/O and storage features such as compression.

NST4000 HYBRID STORAGE APPLIANCE

NST4000 storage systems utilize SSD, NL-SAS or SAS drives; two redundant, high performance, multi-core Xeon-based storage controllers; high speed I/O subsystems and a fully redundant architecture. All active components are hot-swappable, including power supplies, disks and controllers. FASTier read and write cache complements 96GB DRAM to significantly accelerate IOPS and throughput. The NST4000 features 16 Xeon CPU cores, up to 4 dedicated RAID engines, up to 2.1PB of capacity and up to 6.4TB of SSD in FASTier cache. The NST4000 houses up to 22 FASTier SSDs while leveraging Nexsan E-Series™ disk arrays on the backend, which deliver up to 2.1 petabytes in just 24U.

The NST4000 provides CIFS and NFS shared folders as well as fibre channel or iSCSI volumes. Snapshots do not require the pre-reservation of storage capacity, and they may be scheduled and managed easily from the management GUI or initiated from Windows VSS requestors.

Individual shares, LUNs, or entire storage pools may be replicated asynchronously to a second NST4000 storage system, with snapshots intact for use on the target side for backups, testing or data mining. Synchronous replication utilizes two separate E-Series storage systems connected to the NST4000 head and written to simultaneously for business continuity. Active Directory integration make it easy to manage user identities and access rights on the NST4000 shares, while CHAP, iSNS and LUN masking protect iSCSI traffic. Quotas limit storage consumption by share, and oversubscription is permitted for thin provisioning storage, along with alarms which notify when additional storage is needed. Capacity can be expanded by adding additional storage to a running system, so future needs can be met without incurring downtime. Moreover, link aggregation combines Ethernet ports for faster throughput.

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HIGHLIGHTS

- FC/iSCSI block and NFS/CIFS shared folders
- FASTier™ caching acceleration technology
- Snapshots
- Asynchronous replication
- Synchronous replication
- Quotas and thin provisioning
- Online capacity expansion
- Enterprise-class reliability and fault tolerance
- Hot-swappable active components
- Utilize SSD, NL-SAS and SAS drives
- Active Directory, iSNS and CHAP integration
- Industry-leading efficiencies with 60 disks in 4U storage arrays and up to 85% energy savings

TECHNICAL SPECIFICATIONS

- Dual redundant storage controllers
- 2.1PB maximum storage capacity
- RAID 5, 6 and 10
- 2 / 4/ 6 TB 7200 RPM NL-SAS drives
- 600 / 900 / 1,200 GB 10K RPM 2.5" SAS drives

ENTERPRISE-CLASS FEATURE SET

NAS (CIFS and NFS) Services	Shared Folders can be accessed through CIFS, NFS or both. FTP services are also provided.
FC & iSCSI Block Services	FC or iSCSI volumes can be provided to physical or virtual servers for direct-attached or SAN connections.
FASTier™ Caching	DRAM and Flash SSD technology is used to accelerate read and write IOPS and throughput. FASTier caching works transparently so there is no administration burden to turbo-charge I/O performance. FASTier caching is especially useful for random I/O workloads such as databases or for VMware, Xen or Hyper-V environments.
Online Capacity Expansion	Add additional hard drives to any storage pool to increase its capacity on the fly without impacting active clients. I/O will automatically be balanced across all drives.
Snapshots	There is no performance penalty for taking snapshots. Up to 2048 snapshots are supported. Storage does not need to be reserved to hold snapshot data. The management GUI makes it easy to setup and manage snapshot creation and deletion schedules. Snapshots are mountable for testing or other purposes. Granularity is per pool, per share, or LUN.
Asynchronous Replication	Asynchronous replication is WAN efficient because it only transmits delta blocks to the destination side. All snapshots taken on the source side are available on the destination side for backups, data mining or testing purposes. Granularity of replication is a storage pool, a share, or a LUN.
Synchronous Replication	Synchronous replication places two E-Series storage systems under the NST4000 head. Writes are acknowledged after they are simultaneously placed onto both E-Series, so they are always identical. Together with failover/failback support, synchronous replication provides the utmost in business continuity.
Quotas / Thin Provisioning	More storage can be allocated than actually exists in the system – referred to as oversubscription. Alarms warn of limits reached, so storage can be added.
Data Compression	Granular inline data compression meaning any file or block that is stored in the NST storage pool can be compressed, yet from the application's point of view, the file appears to be stored uncompressed.
Link Aggregation	IEEE 802.3ad link aggregation allows multiple Ethernet ports to be combined for faster throughput.
Data Protection Suite	Provides NST4000 with snapshot and replication capabilities.

ENTERPRISE-CLASS PERFORMANCE AND RELIABILITY

Drive Types	The NST4000 utilizes SSD, SAS 10 RPM or NL-SAS 7200 RPM drives to meet varying storage needs.
Drive Stress Tests	Stringent drive stress tests ensure that only the best quality drives go into Nexsan storage systems.
System Drive Tests	Drives are tested in the storage system prior to being shipped to a customer, to ensure top quality and ongoing reliability, then removed and packaged for shipment.
Anti-Vibration Design	State-of-the-art anti-vibration dampening maximizes reliability and performance in the high density E-Series disk arrays that are utilized by the NST4000.
Cool Drive Technology™	Push/pull fans modules and specially designed air channels optimize drive cooling and reliability of the high density E-Series disk arrays that are utilized by the NST4000.
Dual Storage Controllers	Dual controllers provide a no single point-of-failure solution. Should one controller fail, the second will perform all of the I/O operations as well as utilize its I/O ports for connection to external storage.
RAID	RAID 5/6/10 are provided to protect against a single drive failure or two drives failing at the same time.

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ENTERPRISE-CLASS PERFORMANCE AND RELIABILITY Cont.	
High Availability	All active components are redundant and hot-swappable including power supplies, disks and controllers.
Controller I/O Ports	Each storage controller provides up to (8) 1Gb Ethernet ports, (4) 10Gb Ethernet ports, and (2) 8Gb/s fibre channel ports
POWER AND SPACE EFFICIENCY	
Industry-leading Storage Density	Delivers up to 360 drives in 24U of rack space.
AutoMAID® Power Management	Each RAID set can have its drives progressed into deeper power saving levels when they have not been accessed for a specified period of time, saving up to 85% in power in the disk array. No changes need to be made to applications to get the advantages of AutoMAID.
EASY TO MANAGE	
Quick Start wizard	Get the storage system up and running in 15 minutes or less.
Easy to Manage	A revolutionary GUI design makes it easy to set-up, manage and monitor the storage system. Wizards guide the IT generalist through setup, share and LUN creation and management, snapshots, volume management, replication, clustering, user management and security and setting up alerts.
Web-based Management	A Web server residing in the storage system presents the management GUI in a Web browser. An extensive CLI permits scripted administration as an alternative to using the GUI. Administer storage systems remotely. There is no need to install management software on a client computer and keep it updated. Use Windows Computer Manager to manage Share/Folder/File permissions for users and groups as well as LUNs.
Automatic RAID Set Maintenance	In the event of a drive failure, spare drives are automatically added to a RAID set and a RAID set rebuild is run – all without any manual intervention being required.
Alerts	Alerts are sent via SNMP or email and are stored in system log files. They are transmitted to the Web browser-based management console.
NTP client	Network Time Protocol client relieves the administrator from having to set, adjust and synchronize clocks across systems.
NDMP V4	Backup with popular backup and restore solutions through the industry-standard NDMP V4 interface or backup LUNs using any popular backup and restore applications. NDMP V4 preserves all access rights for CIFS and NFS shares, and uses background snapshots for fast backups.
Role-based Administration	Storage system administrator can grant limited rights administrators per storage pools. These administrators can create, manage and delete shares and LUNs, perform snapshots and replication, and manage share-level access permissions.
Active Drawer Technology™	Active drawers hold the drives to enable easy, hot-swappable management of extreme density without heavy lifting or having to power down the storage system.

ABOUT IMATION

Imation is a global data storage and information security company. Imation's Nexsan portfolio features solid-state optimized unified hybrid storage systems, secure automated archive solutions and high-density enterprise storage arrays. Nexsan solutions deliver high performance for mission-critical IT applications such as virtualization, cloud, databases, and collaboration; and energy efficient, high-density storage for backup and archiving. For more information, visit www.imation.com/nexsan.

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