

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 SCALABILITY

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.



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.

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.

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.

NST5000 **HYBRID STORAGE** **APPLIANCE** **DATA SHEET**

Hybrid Storage for NAS and iSCSI.

OVERVIEW

The Nexsan NST5000 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 NST5000 blends solid-state technology, a highly scalable back-end storage infrastructure, multiple NAS/iSCSI 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 or iSCSI application requirements, the NST5000 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 NST5000 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.

The NST5000 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 NST5000 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.

INTRODUCING FASTier

The proprietary Nexsan FASTier 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 4.4TB - 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 NST5000 Hybrid Storage Appliance realigns the trade-off between performance, capacity and cost so IT administrators can do more than ever before.



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HIGHLIGHTS

- iSCSI block and NFS/CIFS shared folders
- FASTier 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, SAS and SATA drives
- Active Directory, LDAP, 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
- 124TB maximum capacity for NST5100
- 1440TB maximum capacity for NST5300
- 5040TB maximum capacity for NST5500
- RAID 5, 6 and 10
- 1 / 2 / 3 / 4 TB 7200 RPM NL-SAS or SATA drives
- 450 / 600 GB 15K RPM 3.5" SAS drives
- 600 / 900 GB 10K RPM 2.5" SAS drives
- Ethernet ports: up to (4) 1Gb plus (8) more 1Gb or (4) 10Gb per system

NST5000 PRODUCT FAMILY

All NST5000 storage systems utilize SSD, NL-SAS, SATA 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 up to 96GB DRAM per controller to significantly accelerate IOPS and throughput. The NST5000 features up to 24 Xeon CPU cores and 192GB per dual-controller, up to 14 dedicated RAID engines, up to 5PB of capacity and up to 4.4TB of SSD in FASTier cache. The NST5100 delivers up to 15 drives and FASTier SSDs in a 3U chassis, and up to 16 more drives in a 3U drive expansion chassis, for a total raw capacity of up to 124TB. For larger capacity needs, the NST5300 houses up to 16 FASTier SSDs in a 3U chassis while leveraging Nexsan E-Series[™] disk arrays on the backend, which deliver up to 360 drives in just 24U, while the NST5500 delivers up to 1,260 drives in just 84U.

The NST5000 provides CIFS and NFS shared folders as well as 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 NST5000 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 via Fibre Channel to the NST5000 head and written to simultaneously for business continuity. Active Directory and LDAP integration make it easy to manage user identities and access rights on the NST5000 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.

ENTERPRISE-CLASS FEATURE SET

NAS (CIFS and NFS) Services	Shared Folders can be accessed through CIFS, NFS or both. FTP services are also provided.
iSCSI Block Services	iSCSI volumes can be provided to physical or virtual servers for direct-attached or SAN connections.
FASTier	DRAM and Flash SSD technology is used to accelerate read and write IOPS and throughput. FASTier works transparently so there is no administration burden to turbo-charge I/O performance. FASTier 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 by the NST5000.
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 NST5000 head, each connected via Fibre Channel. 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.
Date Compression	Granular 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 NST5000 with snapshot and replication capabilities.

ENTERPRISE-CLASS PERFORMANCE AND RELIABILITY

Drive Types	The NST5100 utilizes SSD, SAS 15K RPM or NL-SAS 7200 RPM drives to meet varying storage needs. The NST5300 and NST5500 models store their data on E-Series disk arrays, which support mixing and matching SSD, SAS 15K RPM and SATA drives.
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 NST5300 and NST5500.
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 NST5300 and NST5500.
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.

ENTERPRISE-CLASS PERFORMANCE AND RELIABILITY Cont.	
High Availability	All active components are redundant and hot-swappable including power supplies, disks and controllers.
NST5500 and NST5300 Controller I/O Ports	Each NST5300 or NST5500 storage controller provides (2) to (6) 1Gb Ethernet ports, (2) optional 10Gb Ethernet ports; as well as (2) to (6) 6 Gb/s SAS ports for connection to the E-Series disk arrays.
NST5100 Controller I/O Ports	Each NST5100 storage controller provides (2) to (6) 1Gb Ethernet ports, (2) optional 10Gb Ethernet ports, as well as a 24Gb SASx4 port to the NST5100X expansion chassis
POWER AND SPACE EFFICIENCY	
Industry-leading Storage Density	The NST5100 delivers up to 32 drives in 6U of rack space, providing an industry-standard 5 drives per U of storage density. The NST5300 delivers up to 360 drives in 24U of rack space, while the NST5500 delivers up to 1,260 drives, providing an industry-leading 15 drives per U of storage density.
AutoMAID® Power Management	In the NST5300 and NST5500, 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.
Single Pane-of-Glass Management	Remotely manage one or many systems. Nexsan storage systems find each other, and appear in the management console, which displays their health using red/yellow/green indicators. Easily move between systems to administer them.
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 NST5300 or NST5500 storage system. On the NST5100, the drives are front-accessible.

NOTE: NSTXX10 is NAS only
NSTXX20 is iSCSI only
NSTXX30 is iSCSI and NAS

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.

NST6000™ UNIFIED HYBRID STORAGE

Performance, Availability and Scale
for Any SAN and NAS Workload
in Your Environment

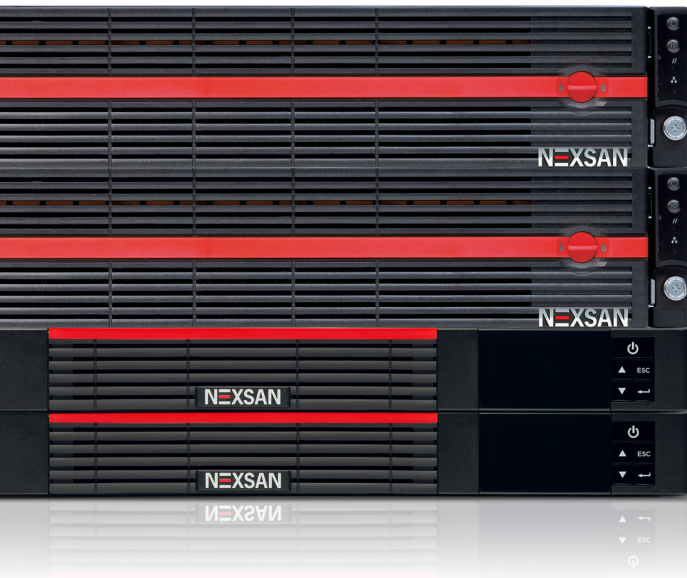


Figure 1
NST6000 Unified Hybrid Storage System

UNIFIED

The Nexsan NST6000 unified hybrid storage appliance is ideal for organizations seeking significantly increased application performance and simplified storage administration.

The NST6000 is a unified storage system. The NST6000 supports block-level - Fibre Channel, iSCSI (SAN) and file-level - NFS, CIFS, SMB, FTP (NAS) protocols without sacrificing performance and eliminating the need for separate software stacks and block and file licenses.

The NST6000 conveniently manages all protocols, pools, shares and LUNs within a single system. E-Centre, NST6000's single-pane management interface, provides a single view to manage all SAN and NAS storage.

HYBRID

NST6000 is a hybrid storage system. NestOS, NST6000's operating system, integrates the use of solid-state caching and hard disk storage to enable organizations to meet the most demanding I/O performance requirements of both SAN and NAS workloads.

NestOS's FASTier caching technology is smart. It includes fault tolerant DRAM for the highest possible write caching performance and enterprise-class SSDs to accelerate read I/O, allowing you to independently customize your performance and capacity points.

FASTier read/write cache devices can be customized at a storage pool level, enabling organizations to extend the use of FASTier to many applications in the data center.

UNIFIED HYBRID

The combination of solid-state technology, Fibre Channel connectivity, and a highly scalable back-end storage infrastructure makes the NST6000 platform ideal for continuous data availability supporting mission-critical IT applications.

NST6000 TECHNICAL SPECS SYSTEM CAPACITIES

Data listed in the table refers to a single 6U NST6000 Appliance unless indicated otherwise

	NST6530
NST6000 System Form Factor NST6000 Controllers NST6000 Vault Protection Modules	6U 2 x 2U = 4U 2 x 1U = 2U
NST6000 System CPU Type Cores	Xeon 24 Cores 12 per Controller
NST6000 System Memory (DRAM) Basic Premium	192 GB 384 GB 96 GB 192 GB per Controller
FASTier Fault Tolerant Write Cache Capacity	32 GB 64 GB Mirrored Capacity in System
FASTier Read Cache Capacity Standard Maximum	4.4 TB 9.2 TB
Maximum FASTier Read Cache Devices	Up to 46 Read Cache Devices
FASTier Read Cache Types	200, 400, 800GB eMLC 100, 200GB SLC
RAID Levels	RAID 5, RAID 6, RAID 10



Figure 2
NST6530 with Nexsan E-Series
SAS Storage Arrays in a 42U rack.



Figure 3
NST6530 with Nexsan NST224X
SAS Storage Enclosures in a 42U rack.

NST6000 TECHNICAL SPECS CONNECTIVITY

Data listed in the table refers to a single 2U NST6000 Controller unless indicated otherwise

		NST6530
NST6000 Host Connectivity		
1GbE I/O Embedded STANDARD CONFIGURATION		4 – port 1GbE 1 is management. 1 is reserved.
10 GbE I/O PCIe Card STANDARD CONFIGURATION		(1) dual-port 10GbE
PCIe Slots for Additional Host Connectivity		2
1GbE PCIe Cards OPTIONAL		dual-port or quad-port 1GbE
10GbE PCIe Cards OPTIONAL		dual-port 10GbE
8 Gb/s FC I/O PCIe Cards OPTIONAL		dual-port or quad-port 8Gb
1GbE I/O Ports		2 to 10
10GbE I/O Ports		2 to 6
8 Gb/s FC I/O Ports		0 to 8
NST6000 SAS Storage Connectivity: Nexsan E-Series V Arrays		
6 Gb/s SAS STANDARD CONFIGURATION	# of SAS Ports	6 ports. 4 lanes (links) per port. Total SAS Bandwidth = 144 Gb/s.
	PCIe Card Type	(1) dual-port (1) quad-port
Nexsan E-Series V Storage # of RAID Arrays Expansion Units		3 E-Series V Arrays 6 Expansion Units 9 Total E-Series
6 Gb/s SAS Switch OPTIONAL		16 Mini-SAS wide ports 4 lanes (links) per port
NST6000 SAS Storage Connectivity: Nexsan NST224X Enclosure		
6 Gb/s SAS STANDARD CONFIGURATION	# of SAS Ports	6 ports. 4 lanes (links) per port. Total SAS Bandwidth = 144 Gb/s.
	PCIe Card Type	(1) dual-port (1) quad-port
Nexsan NST224X Number of Enclosures		Up to 9.
6 Gb/s SAS Switch OPTIONAL		16 Mini-SAS wide ports 4 SAS lanes per port

NST6000 TECHNICAL SPECS

SYSTEM STORAGE CAPACITY

Data listed in the table refers to a single 6U NST6000 Appliance unless indicated otherwise. Additional capacities are available for the NL-SAS HDDs and Performance-SAS HDDs listed below.

		NST6530
NST6000 SAS Storage Connectivity: Nexsan E-Series V Array		
Nexsan E-Series V RAID Array Number of Head Units	STANDARD CONFIG 3 E-Series Arrays 6 Expansion Units 9 Total E-Series	WITH SAS SWITCH 7 E-Series Arrays 14 Expansion Units 21 Total E-Series
E-Series V Arrays Types Available	E18: 18 3.5" drives in 2U E48: 48 3.5" drives in 4U E60: 60 3.5" drives in 4U	
E-Series V Expansion Units Types Available	E18X: 18 3.5" drives in 2U E48X: 48 3.5" drives in 4U E60X: 60 3.5" drives in 4U	
Max 3.5" NL-SAS HDD Capacity Based on use of E60 and E60X Number HDD Capacity @ 4TB/HDD	STANDARD CONFIG 540 NL-SAS Drives 2,160 TB	WITH SAS SWITCH 1260 NL-SAS Drives 5,040 TB
Max 3.5" Performance-SAS HDD Capacity Based on use of E60 and E60X Number HDD Capacity @ 600GB/HDD	STANDARD CONFIG 540 SAS Drives 324 TB	WITH SAS SWITCH 1260 SAS Drives 756 TB
NST6000 SAS Storage Connectivity: Nexsan NST224X Enclosure		
HDD 2.5" 10K Performance SAS HDDs	Number of NST224X Enclosures	Up to 9. 24 HDDs / Enclosure.
	Max Performance - SAS HDD Capacity Number HDD Capacity @ 1.2 TB/HDD	216 Drives 259.2TB
eMLC SSDs	Number of NST224X Enclosures	Up to 9. 24 SSDs / Enclosure.
	Max External SSD Capacity Number SDD Capacity @ 800 GB/SDD	216 Drives 172.8TB

NST6000 TECHNICAL SPECS SYSTEM STORAGE SERVICES

Data listed in the table refers to a single 6U NST6000 Appliance unless indicated otherwise

	NST6530
Client Support	Linux, OS X, Unix, Windows ESXi, Hyper-V, XenServer
Storage Services	Fibre Channel, iSCSI, NFS, CIFS, SMB, FTP
Maximum Single File Size	16 TB
Max NFS Shares	512
Max CIFS Shares	512
Max Snapshots Per Share	2,048
Maximum LUN Size	64 TB
Max LUNs Per Target	255
System Max LUNs	255 - Fibre Channel 1,024 - iSCSI
Max Snapshots per LUN	2,048

ENVIRONMENTALS. DIMENSIONS.

Data listed in the table refers to single 2U NST6000 Controller unless indicated otherwise

	NST6530
Operating Temperature	10-35C, 50-95F
Operating Humidity	20-95% (non-condensing)
U of Rack Space	2U
Height	3.5in, 8.76cm
Width	17.2in, 43.8cm
Depth	27.87in, 70.78cm
Weight	>40lbs, >18.1Kg
# hot swappable power supplies	2
Maximum Power/Controller Node	< 430 W
Voltage, Frequency	Voltage (110): 90-132V; Frequency 47-63 Hz Voltage (220): 180-246V; Frequency 47-63 Hz
Heat Dissipation	1467 btu/hr

NST6000 VAULT PROTECTION MODULE SYSTEM STORAGE SERVICES

Data listed in the table refers to a single NST6000 Vault Protection Module unless indicated otherwise

	NST6000 Vault Protection Module	
DIMENSIONS	120 V	230 V
Dimensions (H x W x D, inches)	1.7 (1U) x 17.2 x 21.8	1.7 (1U) x 17.2 x 21.8
Dimensions (H x W x D, mm)	43.2 x 438 x 554	43.2 x 438 x 554
Weight (kg)	20.0	19.36
Weight (lbs)	44.1	42.7
BATTERY		
Battery Description	Sealed. Lead-acid. Maintenance free.	
Battery Management	Battery life management and advanced warning for battery replacement	
ELECTRICAL	120 V	230 V
Input / Output Connections	Input: (1) NEMA 5-15P; Output: (5) NEMA 5-15R	Input: (1) C14; Output: (6) C13
Input / Output Nominal Voltage	120V (adjustable to 100/120/125 V)	230V (adjustable to 200/208/220/230/240 V)
Input / Output Frequency	50 / 60 Hz	50 / 60 Hz
On Utility Voltage Regulation	102 – 132 V	102 – 132 V
On Battery Voltage Regulation	- 10% - + 6% of Nominal	- 10% - + 6% of Nominal
COMMUNICATIONS		
User Interface	LCD Graphical Display	
LEDs	Load protected, on battery and fault	
Communication Card Slots	One Slot	
OTHER		
RoHS Compliance	Yes	
Heat Dissipation (BTU)	Line: 113, Battery 714	
Audible Noise	< 45 dB at 1 meter	
Operating Temperature	0-40C, 32-104F	
Performance – Safety – EMC	UL 1778, UL497A	
Safety Markings	cULus, CE	
EMC Markings	IEC 62040-2 C1-C2 / EN 55024 / CISPR22 Class B / FCC part 15 Class B	
Storage Temperature	-15 – 40C, 5-10F	
Relative Humidity	0-95% (non-condensing)	

HIGHLIGHTS

- Block – Fibre Channel, iSCSI
- File – NFS, CIFS, SMB and FTP
- NestOS storage operating system
- FASTier Acceleration Technology
- Multi-Core Xeon CPUs
- Fault-tolerant DRAM
- Enterprise-class eMLC SSD or SLC SSD
- Scalable up to 5 PB (using NL-SAS HDDs)
- Scalable up to 756 TB (using Performance-SAS HDDs)
- Compact 2U NST224X SAS enclosures
- Efficient E-Series V SAS storage arrays and expansion units
- E-Centre Management Interface

FEATURES AND BENEFITS

Complete host connectivity in a single system and software stack: Fibre Channel, iSCSI, NFS, CIFS, SMB and FTP. NST6000 provides fully unified storage with no need to administer discrete tasks, code bases and separate licenses.

Application-friendly: Flexible read/write I/O acceleration tier, customizable to the needs of the Pools, LUNs or Shares presented to Hosts. NST6000's FASTier acceleration technology increases storage I/O performance, lowers latency and extends the life of SSDs.

Smart, practical use of solid-state technology: Fault-tolerant DRAM delivers the highest write caching performance possible and enterprise-class SSDs accelerate read I/O performance. NST6000's hybrid storage solution optimizes the use of solid-state technology for maximum effectiveness.

High-performance continuous availability: Powerful active/active controllers linked together via a high-speed backplane provide up to 700,000 IOPs and non-disruptive failover. NST6000's mirrored write cache with cache vaulting ensures the highest levels of performance and availability. Combined with active/active RAID controllers within the underlying E-Series storage, NST6000 provides high availability storage that can scale up to 5 petabytes.

Adaptable storage infrastructure: Use SSDs, Performance-SAS HDDs and NL-SAS HDDs to meet varying storage requirements. NST6000 is a unified hybrid storage platform that can be customized and deployed for performance-oriented workloads, capacity-oriented workloads, or deploy both performance and capacity tiers within the same system. With the non-disruptive addition of FASTier or new disk enclosures, performance and capacity can be independently scaled.

Intuitive single-pane management: Interface and set-up assistants designed for the IT generalist. For advanced users the management software offers a command line interface for scripting. NST6000's E-Centre GUI provides a single view to manage file and block traffic while leveraging various types of storage media.

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. For more information, visit www.imation.com/nexsan.