IBM System Storage N7000 series

Reliable, powerful, scalable modular storage for large-enterprise data center applications and consolidations

Highlights

- Scalable—Designed for nondisruptive expansion to more than 1.1 petabytes (1176 TB) storage capacity
- Versatile—Supports concurrent block I/O and file serving over Ethernet and Fibre Channel SAN infrastructures
- Efficient consolidation—FlexShare helps ensure that critical workloads get priority service
- Application availability—Supports application-level recovery in minutes, not hours
- Performance—Delivers high, consistent performance for mission-critical applications

In an increasingly demanding and competitive business landscape, effective data management is essential to the success of your business. Employees, partners, and customers need access to up-to-date information to work productively, make timely decisions, and meet business goals. You are under pressure to deliver more storage capacity and at higher levels of service, yet critical resources—staffing, budget, power, cooling, and floor space—are often constrained.

These demands call for enterprise-class storage systems with the flexibility to support changing IT requirements, accommodate continuous data growth, satisfy application-level service requirements, and unify SAN and NAS infrastructures at a low overall cost.

The IBM System Storage® N7000 series systems are designed to help you tackle the challenge of effective data management using virtualization technology and a unified storage architecture. The N7000 series is designed to deliver high-end enterprise storage and data management capabilities with midrange affordability. Built-in serviceability and manageability features help support your efforts to increase reliability; simplify and unify storage infrastructure and maintenance; and deliver exceptional economy.

The N7000 series, like all N series systems, provides powerful virtualization and thin-provisioning capabilities to help you maximize storage utilization while minimizing the use of power, cooling, and floor space. At the same time, you can improve staff productivity with an integrated suite of application-aware manageability software offering policy-based automation to otherwise manual tasks.

The IBM N7000 series can unify FC SAN, iSCSI SAN, NAS, primary, nearline, and regulatory compliance data retention and archival storage in an integrated architecture. The N7000 also offers massive scalability to support growth and consolidation. The combination of versatility and simplicity of N series systems is intended to help you respond quickly to changing business needs.

In addition, the N7000 series ordered with a Gateway feature can help you get the most from your existing storage equipment. You can improve your return on investment while continuing to support different access methods for different business solutions throughout the enterprise. The IBM N7000 series is able to support the attachment to broad range of IBM, EMC, Hitachi, Fujitsu, 3PAR, and HP storage subsystems, including the IBM Enterprise Storage Server® (ESS) series, IBM XIV® Storage System, IBM System Storage DS8000® and DS4000® series with its Gateway feature.

Designed to support scalability, versatility, flexibility, reliability, and availability with outstanding value

Scalability. The N7000 series is designed to meet the massive storage scalability and I/O scalability needs that are critical in large data center environments. The N7900 system can be configured with 1.176 PB of raw storage capacity using up to 1,176 disk drives.

The N7900 systems offer high-bandwidth controller designs, which can be in an active-active configuration. Each system offers 16 4-Gbps Fibre Channel (FC) ports and 12 Gigabit Ethernet (GbE) ports standard with the system's 10 PCI-e and six PCI-x expansion slots that can accommodate quad-port 4-Gbps FC adapter cards and 10 GbE adapter cards. For additional connectivity, the N7000 series can expand to a maximum of 56 Fibre Channel ports and 52 Ethernet ports.

Versatility. The unified storage architecture of the N7000 series can help eliminate the need to manage separate NAS and SAN storage by providing concurrent support for block and file protocols via Ethernet and Fibre Channel interfaces. With support for Fibre Channel and SATA hard drives, the N7000 product line also has the flexibility to be used for primary and secondary tiered storage.

Storage provisioning can take hours on other storage systems but with N series system's thin provisioning capabilities provided by FlexVol, volumes can be expanded and contracted automatically without IT staff intervention or disruption to applications.

Another feature of the N series Data ONTAP™ operating system, FlexClone, enables the nearly instant creation of clones without requiring incremental storage. FlexClone can dramatically accelerate test and development cycles for IT projects.

Efficient consolidation. The N7000 series is designed to consolidate and serve data for a wide variety of workloads, including mission-critical business applications, technical applications, databases, e-mail, home directories, digital

media, backup and recovery, regulatory compliant data retention, and archival. IBM N series systems support Windows®, UNIX®, including AIX®, Solaris™ and HP-UX, and Linux® host operating systems as well as VMware for server virtualization.

Consolidation of dissimilar data workloads can cause poor response times during peak hours of operations. To help address this challenge, N series offers FlexShare quality-of-service software, which is intended to allow you to set and dynamically adjust workload priorities. FlexShare can help ensure that important applications get fast response times.

Application availability. N7000 systems combine hardware and software features to meet the need for continuous availability. Complementing the high-availability hardware design is the proven reliability of the Data ONTAP operating system and RAID-DP (N series implementation of RAID-6), which uniquely provides double-level RAID data protection to help ensure that data is not lost in the event of multiple disk drive failures. In addition, RAID-DP has negligible performance impact. The N7000 also supports simple yet powerful synchronous, semi-synchronous and asynchronous mirroring that can be deployed in one-to-one, one-to-many and many-to-one mirroring configurations.

The N7000 can serve as the foundation for a comprehensive data management solution consisting of hardware, software, and services. With an appliance architecture, and built-in backup and recovery software, an N7000 solution is designed to address the entire spectrum of data availability challenges while offering value in price/performance and scalability.

Ultimately what matters is application-level availability, and this is where N series systems excel. Snapshot, a standard feature of Data ONTAP, makes it possible to instantly revert to a previous version of data upon failure or user error. N series Snapshot copies are unique in that they can be created frequently during production because they use only a small amount of incremental storage and have virtually no impact on performance. Host-based SnapManager software integrates Snapshot management with applications designed to ensure consistent backup images and application-level recovery in minutes.

Performance. High performance and massive storage capacity are characteristics that make the N7000 systems ideal for large-scale applications and storage consolidation. An N7000 system is designed to complete jobs quickly and handle a large number of users via a powerful, high-bandwidth architecture with scalability to 1,176 disk drives capable of delivering up to 1.176 PB of raw storage capacity. With large cache memory configurations, expandable high-performance I/O, 4-Gbps FC SAN support, 4-Gbps disk drive support, and support for 10-Gbps Ethernet, the N7000 delivers exceptional enterprise-class system performance.

N7000 near-line storage capabilities

The N7000 is well suited for near-line storage configurations. An N7000 system populated with Fibre Channel disk drives that backs up to another N series system populated with SATA disk drives offers disk-to-disk backup capabilities that are designed to help you fill the price/performance gap between fast but costly primary storage and less costly but slow archival (tape and optical) storage. Utilizing SATA disk drive technology, you could achieve near-primary storage performance at near-tape storage costs. A disk-based, secondary storage device for enterprise applications, N7000 disk-to-disk environments are designed to complement and dramatically improve existing tape backup, archiving and data protection schemes. They do so by inserting economical and simple-to-use disk-based storage between application storage and tape libraries in a three-tier storage architecture.

This arrangement is designed to provide economical storage and rapid disk-based access to reference data to help address business and regulatory requirements. It can serve as a key component in an information lifecycle management process by storing less-critical data on a device where cost and performance stand between primary and tape storage.

Combined with SnapVault, the N7000 disk-to-disk backup environments are designed to serve as a robust and fully integrated appliance that makes backing up and restoring data rapid and reliable. Backing up directly to an N7000 system in a near-line storage configuration, and then to tape can help your organization enhance data protection management, improve primary storage and tape library performance, and reduce backup resource requirements and costs. Two N series systems operating in a disk-to-disk backup scenario are designed to be faster and to consume less application-server CPU processing power than direct backup to tape. SnapVault software can be used to help reduce network bandwidth consumption by supporting incremental block transfers to backup data across a LAN or WAN. SnapMirror software, which replicates data at high speeds over a LAN or a WAN, is designed to provide high data availability and fast recovery for mission-critical applications.

IBM N series systems using NearStore software can use the Advanced Single Instance Storage (A-SIS) software feature for better storage utilization. A-SIS software enables N series systems to deduplicate stored data at the block level in order to conserve physical disk space when making disk-to-disk copies of primary data. Traditionally when copies of volumes are created, every duplicate data string is also copied, resulting in an inefficient use for secondary storage. A-SIS deduplication helps eliminate this inefficiency.

Support for data retention through nonerasable, non-rewriteable security capabilities

The N7000 offers multiple capabilities in the area of data retention. It can serve as a high-performance device for storing mission-critical production data and as a data-retention system by running SnapLock software. The N7000 with SnapLock software is designed to deliver high-performance and high-security data permanence to disk-based nearline and primary N series storage. An optional feature of the proven Data ONTAP operating system, SnapLock software supports the accuracy, integrity, and security of data. It helps prevent the alteration of business records and allows data to be rapidly accessible online for long periods of time.

SnapLock offers capabilities to help you address regulatory and best-practices records retention requirements by supporting the creation of non-rewritable, nonerasable volumes on IBM N series systems. This functionality is designed to prevent critical files from being altered or deleted until a specified retention date.

SnapLock is also designed to replicate nonerasable, non-rewriteable data securely and automatically between multiple N series systems using SnapMirror software. The nonerasable, non-rewriteable to nonerasable, non-rewriteable replication of data at remote sites can help your organization address regulatory concerns or best practices, resulting in a highly robust compliant data protection solution. Nonerasable, non-rewriteable data can also be backed up to tape for an additional level of data protection.

Software

Operating system	Data ONTAP
Operating systems supported	Windows 2000, Windows Server 2003, Windows XP, Linux, Sun™ Solaris, IBM AIX, HP-UX, Mac OS, VMware ESX
Software features	See **ibm.com**/systems/storage/network/software/ for a full list of software features.

Specifications

	N7900
Machine Type Model	2867-A21
Gateway Machine Type Model	2867-A21 (w/FC 9551)
Controller Configuration	Dual (active/active)
Processors Speed and Type	2.6 GHz AMD Dual Core Opteron
Number of Processors	8
Random Access memory	64 GB
Nonvolatile Memory	4 GB
Integrated I/O Ports	
Fibre Channel Ports/Speed	16 (4-Gbps)
Ethernet Ports/Speed	12 (1-Gbps)
Storage Scalability	
Maximum Number of Fibre Channel Loops	14
Maximum Raw Capacity	1176 TB
Maximum Number of Disk Drives	1176
Maximum Volume Size	16 TB
Maximum Size of Volumes/LUNs	2048
Maximum Number of Storage Enclosures	84
Disk Expansion Units Supported	EXN4000 - Fibre Channel Disk Storage Expansion Unit: 2-Gbps, 4-Gbps Fibre Channel: 300 GB, 450 GB, 600 GB, 15,000 rpm EXN3000 - SAS Disk Storage Expansion Unit: SAS: 300 GB, 450 GB, 600 GB, 15,000 rpm, SATA: 1 TB, 2 TB EXN1000 - SATA Disk Storage Expansion Unit: SATA: 1 TB, 2 TB
I/O Scalability	
PCI-Express (PCI-e) Expansion Slots	10
PCI-x Expansion Slots	6
Maximum number of FC Ports	56
Maximum number of Ethernet Ports	52

For more information

To learn more about the IBM System Storage N7000 series systems please contact your IBM representative or IBM Business Partner, or visit: **ibm.com**/systems/storage/network

For technical specifications, optional I/O expandability and software features, functions and benefits of the N7000 series, visit: **ibm.com**/systems/storage/network/7000/appliance

For N7000 series interoperability, visit: **ibm.com**/systems/storage/network/interophome.html

Additionally, IBM Global Financing can tailor financing solutions to your specific IT needs. For more information on great rates, flexible payment plans and loans, and asset buy-back and disposal, visit: **ibm.com**/financing

IBM Systems and Technology Group
Route 100
Somers, NY 10589

Produced in the United States of America
July 2010

Please Recycle

TSD02538-USEN-15