

Advanced system designed to enable outstanding, cost-effective deployment versatility



IBM System Storage N3000 Modular Disk Storage Systems



Highlights

- **High availability**—leverages proven features including a high performing and scalable operating system, data management software and redundancy features
- **Simple Replication and Disaster Recovery**—designed to provide easy-to-deploy mirroring solution that's highly tolerant of WAN interruptions
- **Backup and Recovery Features**—designed to support disk-based backup, with file or application-level recovery with Snapshot™ and SnapRestore® software features
- **Management Simplicity**—self-diagnosing systems designed to enable on-the-fly provisioning
- **Versatile**—Single, integrated architecture designed to support concurrent block I/O and file serving over Ethernet and Fibre Channel SAN infrastructures

THE CHALLENGE:

Easy data management in a “scale-out” data center

The promise of scaling out a data center with small, low-cost servers has led to an unintended consequence—“stranded storage” from internal disks or directly attached storage (DAS) solutions. IT professionals today are now overwhelmed by the amount of data they have to manage. They are challenged by the need to keep pace with their companies' growing business, improve backup and restore effectiveness, implement disaster recovery solutions and not overwhelm their IT staff, often on a shoestring budget.

THE SOLUTION:

IBM System Storage N3000 modular disk storage system helps simplify data management

The IBM N3000 systems are designed to provide primary and secondary storage for midsize enterprises.

Consolidating all their fragmented application-based storage and unstructured data into one unified, easily managed and expandable platform can help IT generalists increase their effectiveness. N3000 systems offer integrated block- and file-level data access, intelligent management software and data protection capabilities—like higher-end N series systems—in a cost-effective package. IBM N series innovations include Serial-Attached SCSI (SAS) drive support, expandable I/O connectivity and onboard remote management.

The IBM N3000 is compatible with the entire family of N series unified storage systems, which feature a comprehensive line-up from top-to-bottom of hardware and software designed to address a variety of possible deployment environments.

The N3300 squeezes 3.6 TBs of physical capacity into a 2U enclosure with optional external expansion for an additional 21 TBs of physical capacity. The N3600 scales up to 69 TBs by supporting up to 104 disk drives. Whether for primary or secondary storage use, the



N3000 systems are intended to provide outstanding deployment versatility and connectivity to help satisfy your data protection and recovery needs.

Easy-to-use

IBM N3000 systems offer versatility via unified file and block storage—CIFS, NFS, iSCSI and FC protocols are supported—and can be used as primary or secondary storage. These systems are designed to address storage consolidation challenges as well as application server virtualization projects. With Data ONTAP®, the N3000 systems offer the ability to use storage efficiently by helping increase utilization through thin provisioning (FlexVol® & FlexClone®) and reduce storage space requirements with Snapshot technology.

Higher business uptime

The N3000 systems support dual-controller configuration with automated Active-Active failover. Using the IBM N series SnapSuite™ of manageability software, multipath high availability for business continuity, and intelligent Data Protection and Disaster Recovery software is intended to help keep your business running smoothly.

Designed to help keep costs low

The N3000 systems are designed as the entry point to the entire N series family. The systems provide multiple I/O connectivity options, a small footprint to hold high density SAS drives, and external expansion using low-cost SATA

drives and Fibre Channel disks for production applications, and utilize Data ONTAP Snapshot technology. The systems are truly versatile products that can be deployed to address some of the most demanding application environments. For further systems administration time and cost advantages, the N3000 systems come standard with Remote Onboard Management capabilities to help simplify remote system monitoring, cycle power, execute firmware upgrades, enter console commands and run diagnostics to help maintain the reliability of the system and your business-critical data.

Highly flexible, unified storage solution

The IBM System Storage™ N3000 series is designed for a broad range of deployment scenarios. The N3000 supports Ethernet and Fibre Channel environments, enabling economical NAS, FC and iSCSI deployments. The N3000 system functions as a “unification engine,” which is designed to allow you to simultaneously serve both file and

block-level data across a single or multiple networks—demanding procedures that for some solutions require multiple separately managed systems. The flexibility of the N3000 allows it to address the storage needs of a wide range of organizations, including distributed enterprises and data centers for midrange enterprises. The N3000 also supports sites with computer and data-intensive enterprise applications such as database, data warehousing, workgroup collaboration and messaging.

Affordable data protection for distributed enterprises

N3000 storage systems can offer significant advantages for distributed enterprises with remote and branch office sites. These organizations and others can leverage the SnapVault® and SnapMirror® software functions to implement a cost-effective data protection strategy by mirroring data back to a corporate data center. N3000 systems can help improve data availability and simplify backup and restore operations by implementing centralized backup via a single methodology.

This helps reduce tape management requirements and the need for remote systems administration. Recovering data backed up on IBM System Storage N3000 systems can be faster than recovering from tape.

Support for low TCO and long-term investment protection

N3000 systems support a low TCO with an affordable price point, easy installation and configuration and ease of ongoing maintenance. Standardization on the IBM System Storage N series unified storage architecture can help your organization leverage staff IT skills and reduce complexity. The innovative design of the N3000 results in a small form-factor appliance that conserves scarce and valuable space in data centers or remote office locations. In addition, the ability to support unified storage networks allows you to leverage your current network investment while deploying a long-term, highly scalable and easily upgradeable storage solution.

IBM System Storage N3000 Technical Specifications

Technical Highlights

Maximum RAID Group Sizes	RAID-6 (RAID-DP™) FC—28 (26 data disks plus 2 parity disks) SATA—16 (14 data disks plus 2 parity disks) RAID-4 ¹ FC—14 (13 data disks plus 1 parity disk) SATA—7 (6 data disks plus 1 parity disk)
SAN Protocol Support	Fibre Channel Protocol (FCP) and/or iSCSI; fabric-attached and direct-attached
Network Protocol Support	NFS V2/V3/V4 over UDP or TCP, PCNFSD V1/V2 for (PC) NFS client authentication, Microsoft® CIFS, HTTP 1.0, HTTP 1.1 virtual hosts
LUNs	Up to 1024
FlexVols	Up to 200 per controller on N3300 and up to 500 per controller on N3600
Volume/Aggregate Size²	16 TB
Snapshots	Up to 51,000 per controller on N3300 and up to 127,000 per controller on N3600
Number of Supported Hosts	Up to 2 ports per controller configured as front-end (host) connectivity ports Up to 4 directly connected servers per Active/Active configuration Up to 16 SAN host connected servers
Supported Configurations	Controller Configurations Single controller, active/active controller with Cluster Failover (CFO) Back-End (Disk) Configurations Dual-path, Multipath HA Storage(single loop)
Reliability	Redundant hot-swappable controllers, cooling fans and power supplies
Management	Full-duplex 10/100 Base-T Ethernet onboard console, diagnostic LED, Maintenance Center, SNMP, telnet, SSH, HTTP, Web (SSL), host scripting, e-mail alerts, Operations Manager, Protection Manager™
Security	Virus Protection, SecureAdmin™, IPSec, CHAP authentication, Role Based access control (RBAC)

Scalability				
	N3600		N3300	
	Active/Active Configuration	Single Controller	Active/Active Configuration	Single Controller
Max. Raw Capacity^a	69 TB	69 TB	24.6 TB	24.6 TB
Max. Number of Internal Disk Drives	20	20	12	12
Max. Number of Disk Drives	104	104	40	40
Max. Drives per Back-End (Disk) FC Loop	84	84	28	28
Maximum Disk Storage Expansion Units	6	6	2	2
ECC Memory	4 GB	2 GB	2 GB	1 GB
Nonvolatile Memory	512 GB	256 MB	256 GB	128 MB

I/O				
	N3600		N3300	
	Active/Active Configuration	Single Controller	Active/Active Configuration	Single Controller
Onboard Fibre Channel Ports (target or initiator)	4 ports of 1, 2 or 4 Gb (auto-sensing)	2 ports of 1, 2 or 4 Gb (auto-sensing)	4 ports of 1, 2 or 4 Gb (auto-sensing)	2 ports of 1, 2 or 4 Gb (auto-sensing)
Onboard (fixed) GbE Ports	4	2	4	2
Modular I/O Slots	2	1	-	-

I/O Card Support				
	N3600		N3300	
	Active/Active Configuration	Single Controller	Active/Active Configuration	Single Controller
Dual FC Disk Adapters (max.)	2	1	-	-
Dual FC -Tape Adapters (max.)	2	1	-	-
Dual GbE (copper or fiber) cards (max.)	2	1	-	-

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

Standard

Integrated RAID manager, including RAID-DP
Snapshot
Fast Boot
NIS
DNS
FilerView®
FlexVol
FlexShare™
Network Data Management Protocol (NDMP)

Licensed

CIFS
NFS
HTTP
iSCSI
FCP
FlexClone
MultiStore®
Clustered Failover
SnapMirror
SnapRestore
SnapDrive®
SnapManager® for Microsoft Exchange
SnapManager for Microsoft SQL Server™
SnapManager for Oracle
SnapManager for SAP
Single Mailbox Recovery
SnapVault
SnapValidator
SnapMover®
Operations Manager
NearStore®
Advanced Single Instance Storage
Protection Manager™

System Specifications

	N3600	N3300
AC Power/Current (line voltage for standalone systems dependent on local power distribution; system cabinets are 200 to 240 VAC only)	88 to 264 VAC, 11 to 6A, 50/60 Hz 855 W	88 to 264 VAC, 9 to 4.5A, 50/60 Hz 675 W
Thermal Rating	1928 Btu/hr	1560 Btu/hr (note: Watts x 3.4129)
Weight (fully loaded)	112 lb (51 kg)	66 lb (30 kg)
Height	6.95" (17.75 cm), fits into 4U space	3.45" (8.76 cm), fits into 2U space
Width	19" IEC rack-compliant (17.7", 44.9 cm)	
Depth	22" (56 cm)	
Operating Temperature, Altitude, and Relative Humidity	10° C to 40° C (50° F to 104° F); at $\leq 3,000\text{ m}$ (at $\leq 10,000'$) elevation; 20% to 80% relative humidity, non-condensing (28° C wet bulb temperature)	
Non-operating Temperature and Relative Humidity	-40° C to 60° C (-40° F to 140° F); 10% to 95% relative humidity, non-condensing, in original container	
Operating Acoustic Noise	≤ 66 dBA sound pressure (LpA) @ normal operating conditions (at 22°C and at sea level)	
Min. Cabinet Clearances for airflow	25.4 cm (10 in) in front, 30.5 cm (12 in) in rear	
Min. Cabinet Clearances for service	76.2 cm (30 in) in front, 76.2 cm (30 in) in rear	
Safety/Emissions/Immunity	Safety: EN 60950, CE, CSA 60950, UL 60950, CB IEC60950-1 (all national deviations), EN60825-1, GOST-R, BSMI CNS14336, CCC GB 4943-2001, SABS, S Resolution 92-98 Emissions/Immunity: FCC Part 15 Class A, ICES-003, CE, MIC, VCCI, AS/NZS EN55022, EN55024, IEC61000-3-2, IEC61000-3-3, BSMI, KN22, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11, KN24, CISPR 24	

Storage Specifications

Disk Shelves Supported (Fibre Channel, SATA)	EXN4000 4Gbps FC Storage Expansion Unit EXN1000 SATA Storage Expansion Unit Each supports up to 14 low-profile disk drives Support for Legacy Expansion Unit EXN2000 FC Storage Expansion Unit
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Disk Drive Support	Disks Supported on New Configurations SAS—144 GB, 300 GB disks, 15,000 RPM FC 4 Gbps—144 GB, 300 GB disks, 15,000 RPM SATA—250 GB, 500 GB, 750 GB disks, 7,200 RPM Disks Supported for Legacy EXNx000 Configurations FC—36 GB, 72 GB, 144 GB, 300 GB disks SATA—250 GB, 320 GB, 500 GB, 750 GB disks
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Internal Disk Drive Storage Interface	Serial Attached SCSI (SAS)
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Disk Drive Storage Shelf Interface	Fibre Channel-Arbitrated Loop (FC-AL)
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Power Supply/Cooling Fans	Dual, redundant, hot-pluggable, integrated power supply/fan assemblies (220 V/110 V)
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AC Power/Max. Current	100 to 120 VAC/3.95A; 200 to 240 VAC/1.9A
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Thermal Rating	1,167 Btu/hr (fully loaded shelf)
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Operating Acoustic Noise	58 dBA sound pressure (LpA) @ normal operating conditions (at 23°C and at sea level)
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Dimensions (height/width/depth)	3 EIA U (5.25", 13.3 cm)/19" IEC rack-compliant (17.6", 44.7 cm)/20" (50.85 cm)
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Weight	77 lb (35 kg) fully loaded
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For more information

Contact your IBM representative or IBM Business Partner or visit:

ibm.com/storage/nas/



MB, GB and TB equal 1,000,000, 1,000,000,000 and 1,000,000,000,000 bytes, respectively, where referring to storage capacity.

Actual storage capacity will vary based upon many factors and may be less than stated. Some numbers given for storage capacities give capacity in native mode followed by capacity using data compression technology.

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^a Max. capacity is derived based on the type, size, and number of the drives. Max. capacity and volume size are calculated using Base 10 arithmetic (i.e., 1 TB = 1,000,000,000,000 bytes).

¹ RAID-6 is the recommended configuration for drives greater than 144 GB.

² Maximum volume/aggregate size is calculated using Base 2 arithmetic (1 TB = 240 Bytes).

³ Maximum capacity is calculated using Base 10 arithmetic (1 TB = 1012 Bytes).

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