IBM

IBM TotalStorage
Network Attached Storage 200
Models 201 and 226

IBM Network Attached Storage 200 (tower model)

Highlights

- **Scalable**—*Scalable architecture with 109.2GB to 3.5 2TB[1] storage capacity is designed to provide a nondisruptive path for capacity upgrades and helps provide investment protection by allowing you to "pay as you grow."*

- **Secure**—*Multiple levels of RAID and advanced software support data protection for business continuance.*

- **Flexible**—*Cross-platform file sharing (Windows® [CIFS], UNIX® [NFS], HTTP, FTP, AppleTalk® and NetWare®) helps reduce network complexity and maintenance expense and allows data to be used across the organization.*

- **Manageable**—*Advanced systems diagnostic and management tools help you minimize downtime.*

- **Performance**—*Innovative design incorporates the latest Intel® Pentium® III processors to help keep productivity high, even during peak usage periods.*

- **Data consolidation**—*Centralized data management helps increase operational efficiency.*

- **Simple**—*Simple installation via setup tutorial.*

- **Easy to use**—*Intuitive design helps simplify installation and administration.*

IBM, NAS and Storage Networking

The IBM TotalStorage™ Network Attached Storage (NAS) 200 product line is one element in the overall IBM Storage Networking offering of hardware, software and services. The IBM NAS 200 provides a powerful building block to increase the flexibility, efficiency and effectiveness of storage networking deployments. Additionally, because these NAS products are designed for interoperability, they can typically be integrated into existing IT infrastructures. IBM NAS products also scale, accommodating the quickly growing storage needs and changing technology demands of today's enterprises, which eases the administrative burden on strained IT personnel.

Task-optimized storage appliances

The IBM NAS 200 models provide affordable and scalable workgroup or departmental support for customers that require network attached storage because of server consolidation or file sharing. Its support of multiple protocols allows file sharing in Microsoft® Windows, UNIX or mixed environments and helps eliminate the need for a separate storage arrangement for each protocol. The performance of the IBM NAS 200 helps support high levels of client productivity while simultaneously supporting data protection for business continuity.

Feature	Potential Benefits
Windows Powered OS	Optimized Windows Powered OS keeps throughput (I/O) performance high.
Advanced data protection	Advanced data protection is designed to protect your data for business continuance.
Scalability	Flexible storage capacity delivers a "pay as you grow" architecture.
Simplified installation	Simplified installation helps deliver storage quickly without tying up valuable IT resources.
Versatility	Multiple network protocol support offers better data integration across the organization and helps eliminate the need for a separate file server for each format.
Reliability	Hot-swap, redundant power supplies and hard disk drives, as well as IBM Director and Integrated Systems Management help protect against downtime.
Performance	Provides excellent performance for Windows users and exceptional overall performance for mixed platform environments.
Affordability	The IBM TotalStorage NAS 200 requires a low initial investment, helping to lower the total cost of ownership for workgroups and departmental environments.

High-reliability design

Hot-swappable and redundant hard disk drives and power supplies mean the IBM NAS 200 series is designed to deliver reliability. Its redundant features contribute to overall network dependability. IT staff typically do not have to take the systems off-line when replacing power supplies or hard drives or when adding additional storage.

Multi-layered data protection

The IBM NAS 200 provides a variety of features to help safeguard your most valuable asset—your data. By providing a choice of RAID levels, the NAS 200 helps protect against the failure of any individual disk. The IBM NAS 200 also provides the user with a variety of backup methods, including support for the most popular backup software such as Tivoli® Storage Manager™ (TSM). The TSM agent and client are preinstalled on the product.

In addition to RAID and backup support, the IBM NAS 200 provides on-disk data protection. Using Columbia Data Products® Persistent Storage Manager™ (PSM), up to 250 persistent True Image™ views of data can be created. These point-in-time views can be created on a scheduled basis, and with the proper permissions, users can usually restore previous file levels without administrator involvement. Administrators can also typically restore entire drives and volumes in a single step, saving precious IT time by eliminating the need to drag and drop thousands of files back to the original location. By incorporating its own open file manager, PSM also helps administer the consistent backup of in-use files. The open file manager helps to reduce or eliminate system access issues during backup, supporting 24×7 availability to data.

The IBM NAS 200 is designed to provide:

- *Support for a variety of RAID levels*
- *Backup support via Tivoli Storage Manager and other third-party software packages*
- *Protection against accidental file deletions*
- *Client and administrator file restoration*
- *Administrator single-step volume and drive restoration*
- *Continued access to files during backup*
- *24×7 data access*

IBM Director Agent

The IBM Director Agent, with its Universal Manageability Services, works with the IBM Director Console to help manage systems intelligently. It functions as the client-side software for use with IBM Director, but can also be used independently of the IBM Director Console for added flexibility and remote management for both IBM and non-IBM systems. This client management application is designed to allow IT administrators to view, monitor and control systems from its easy-to-use Web interface.

The Director Agent communicates with physical devices (BIOS, LAN adapters and storage devices) and also logical devices (networks, operating systems, registries and applications) to surface data and monitor status. Data updates and alerts are organized into specialized Common Information Model (CIM) providers with objects that expose properties, events and methods. CIM properties and events can be translated into Simple Network Management Protocol (SNMP) variables and traps.

The Director Agent provides general system information including details on the operating system, basic system hardware, memory, network devices, ports and adapters. In addition, proactive systems management functions include

power management, system shutdown capabilities (including services for Microsoft Windows NT®), AssetID and Alert on LAN configuration, event logs and system monitors.

To help obtain continued uptime, IBM Director provides an interface to the following Integrated Systems Management features:

- *Advanced Systems Management processor*
- *Light-Path Diagnostics for using LEDs to quickly identify a failed part*
- *Predictive Failure Analysis® with user-selected alert levels for monitoring CPUs, memory, fans and power supplies*
- *Automated paging*
- *Optional Remote Supervisor Adapter PCI Card for network alerts via IBM Director*

Scalable storage systems

As storage networks become more complex, organizations are faced with finding cost-effective ways to manage their exponential growth. To effectively prepare for short- and long-term storage requirements, companies must have scalable storage systems that can grow as networking capacity needs increase. The IBM Network Attached Storage 200 series helps provide solutions for these expanding requirements.

The tower version of the IBM NAS 200 series works well in workgroup and small departmental settings. The tower delivers from 109.2GB to 1.69TB of storage and is well suited for deployment in remote or branch-office environments. The rack version provides from 109.2GB to 3.52TB of storage and is appropriate for department or regional offices. Both the tower and rack provide excellent performance for Windows and mixed Windows/UNIX environments. Whether delivering affordably priced storage for

10 people in a branch office or 100 people in a regional location, the IBM NAS 200 series is designed to meet ever-expanding storage requirements.

The IBM NAS 200 series is well suited for the following types of storage:

- *Workgroup, branch and regional office e-mail*
- *Client backup*
- *Rich media*
- *Software development*
- *Office automation*

Tower configuration— Storage where you need it

Whether you need additional storage in a remote location or for a workgroup within your main building or campus, the IBM NAS 200 series tower version offers many features found in larger systems, but at an affordable, entry-level price. This single-engine tower configuration is powered by a 1.13GHz Pentium III processor with a single-channel hardware RAID controller. For enhanced performance, an additional 1.13GHz Pentium III processor is available. With a basic storage capacity of 109.2GB, this model can be expanded up to 1.69TB by using up to nine internal 73.4GB hard disk drives (HDDs) and an external storage unit with fourteen 73.4GB HDDs. Initial and subsequent storage investments can be scaled to the customer's growth needs.

Rack configuration—For more performance and storage-intensive environments

The IBM NAS 200 series rack model is a high-capacity appliance engineered to expand storage in a small footprint for larger client/server networks. The rack model offers an affordable alternative to other, more expensive departmental-level NAS solutions. With its two 1.13GHz Pentium III processors and a four-channel hardware RAID controller, the

single-engine IBM NAS 200 rack is designed to provide the performance required in more data-intensive applications. The IBM NAS 200 rack also provides excellent storage scalability. Starting at 109.2GB, the IBM NAS 200 rack can be scaled up to 3.52TB by using six internal 73.4GB hot-swappable hard disk drives and the attachment of up to three external storage units with fourteen 73.4GB HDDs each.

Preloaded system software

The IBM NAS 200 series is preloaded with a tightly integrated suite of preloaded software, including a Windows Powered operating system tuned for storage. This preloaded software helps simplify the installation, configuration and management of the NAS 200 compared to general-purpose file servers. The entire software image is loaded to the engine's hard disk drive with a backup copy provided on a CD-ROM. The software image includes:

- *Microsoft Terminal Services and IBM Director Agent, with its Universal Manageability Services (Web-based GUI), supports centralized management via IBM Director Management Server software*
- *IBM Advanced Appliance Configuration Utility for headless setup and configuration*
- *Windows NT Backup*
- *IBM setup tutorial for ease of installation and configuration*
- *Tivoli Storage Manager agent and client for storage management and backups*
- *Columbia Data Products Persistent Storage Manager for True Image data views of files, drives and volumes (backup enablement)*
- *WQuinn Storage Manager for SAK 2.0 software for storage management including quota setting and quota enforcement*

Network Attached Storage 200 at a glance

	IBM NAS 200 tower (5194 Model 201)	IBM NAS 200 rack (5194 Model 226)
Product packaging		
Form factor	Tower[2]	Rack (customer provided)
Disk type	Ultra160 SCSI/36.4GB/10000 rpm	Ultra160 SCSI/36.4GB/10000 rpm
	Ultra160 SCSI/73.4GB/10000 rpm	Ultra160 SCSI/73.4GB/10000 rpm
Number of disks (minimum)	3 x 36.4GB/109.2GB	3 x 36.4GB/109.2GB
Number of disks (maximum)	23 x 73.4/1.69TB[3]	48 x 73.4GB/3.52TB[3]
Disk capacity	See above	See above
Disk speed	See above	See above
Power supply	Three 250 Watt auto-ranging	Three 250 Watt auto-ranging
Tape backup	Optional through internal or external SCSI	Optional through internal or external SCSI or external Fibre Channel
Physical dimensions	*Engine:*	*Engine:*
	217mm W × 700mm D × 440mm H	440mm W × 688mm D × 217mm H
	(8.5 in. W × 27.5 in. D × 17.3 in. H)	(17.3 in. W × 27.1 in. D × 8.5 in. H)
	Min. 26.58 kg (58.6 lb), max. 37.5 kg (82.7 lb)	Min. 25.24 kg (55.7 lb), max. 36.2 kg (79.8 lb)
	Storage Unit:	Storage Unit:
	444mm W × 519mm D × 127.5mm H	444mm W × 519mm D × 127.5mm H
	(17.5 in. W × 20.4 in. D × 5 in. H)	(17.5 in. W × 20.4 in. D × 5 in. H)
	34.6 kg (76 lb) with hard disk drives	34.6 kg (76 lb) with hard disk drives
Operating environment		
Temperature	10° to 35°C (50° to 95°F) at 0 to 914m (0 to 3000 ft)	
	10° to 32°C (50° to 90°F) at 914m to 2133m (3000 to 7000 ft)	
Relative humidity (non-condensing)	8% to 80%	
Maximum altitude	2133m (7000 ft)	
Electrical	100 - 240 V ac; 50 Hz - 60 Hz; 5 - 2.5 A (at min. - max. voltage)	
Performance		
Processor type	One 1.13GHz[4] Pentium III with 133MHz front-side bus (second processor available)	Two 1.13GHz[4] Pentium III with 133MHz front-side bus
Level 2 cache (per processor)	512KB	512KB
ECC SDRAM memory standard	512MB	1GB
ECC SDRAM memory maximum	2.5GB	3GB
RAID accelerator supported	ServeRAID™-4LX with 32MB of ECC cache (0, 1, 1E, 5, 5E, 00, 10, 1E0 and 50 RAID supported)	ServeRAID-4H with 128MB of battery-backed ECC cache (0, 1, 1E, 5, 5E, 00, 10, 1E0 and 50 RAID supported)
File protocols supported	CIFS, NFS, HTTP, NetWare, AppleTalk, FTP	CIFS, NFS, HTTP, NetWare, AppleTalk, FTP
Integrated Systems Management	Yes	Yes
Performance (NetBench)	See[5]	See[5]
Performance (SPECsfs)	See[5]	See[5]
Connectivity		
PCI slots available	4 (1 × 64-bit/33MHz, 1 × 32-bit/33MHz and 2 × 64-bit/66MHz)	4 (1 × 64-bit/33MHz, 1 × 32-bit/33MHz and 2 × 64-bit/66MHz)
Standard network connectivity	1 - 10/100 planar port (std.)	1 - 10/100 planar port (std.)
Optional network connectivity	Up to 7 additional 10/100 PCI ports	Up to 7 additional 10/100 PCI ports
	Up to 2 Gigabit PCI ports	Up to 2 Gigabit PCI ports
	Up to 2 10/100/1000 PCI ports	Up to 2 10/100/1000 PCI ports
Maximum Ethernet connections	8 (1 planar + one 4-port 10/100, two single port 1Gb and one single port 10/100, or one 4-port 10/100, two single port 10/100/1000 and one single port 10/100)	8 (1 planar + one 4-port 10/100, two single port 1Gb and one single port 10/100, or one 4-port 10/100, two single port 10/100/1000 and one single port 10/100)
External Tape Backup PCI options	SCSI SE, SCSI LVD/SE, SCSI HVD	SCSI SE, SCSI LVD/SE, SCSI HVD or Fibre Channel

Network Attached Storage 200 at a glance

Supported Fibre Channel devices		• Brocade Silkworm 2800/2400/Compaq FC Switch • IBM 2109-S08 and -S16 FC Switch • IBM 2108 SAN Data Gateway • McDATA 3016 FC Switch • IBM 3534 Managed Hub

Software

Operating system	Windows Powered OS	Windows Powered OS
Backup software	Windows NT Backup Tivoli Storage Manager agent and client (v4.2) (see Interoperability list and TotalStorage Proven list on ibm.com for additional supported backup software)	Windows NT Backup Tivoli Storage Manager agent and client (v4.2) (see Interoperability list and TotalStorage Proven list on ibm.com for additional supported backup software)
Storage management software	WQuinn Storage Manager for SAK 2.0 Columbia Data Products Persistent Storage Manager v2.2	WQuinn Storage Manager for SAK 2.0 Columbia Data Products Persistent Storage Manager v2.2
Systems management software	IBM Director v3.1 agent SNMP v1, v2C and v3 CIM	IBM Director v3.1 agent SNMP v1, v2C and v3 CIM
Remote administration	Universal Manageability Services Microsoft Terminal Services	Universal Manageability Services Microsoft Terminal Services
Configuration tools	IBM ServeRAID Manager IBM Advanced Appliance Configuration Utility	IBM ServeRAID Manager IBM Advanced Appliance Configuration Utility

High availability

Hot-swap, redundant power supplies
Hot-swap, redundant disk drives
IBM Director agent with UMS
Integrated Systems Management
- Advanced Systems Management processor
- Light-Path Diagnostics
- Predictive Failure Analysis
- Automated paging
- Optional Remote Supervisor Adapter PCI card

Standards

MPS 1.4, PCI specification 2.1, ISO 9241 Part 3
SNMP v1, v2C and v3
CIM

MIBS supported	MIB-II

Approvals and safety

FCC Class A Part 15, Canada ICES-003 issue 3 Class A, UL 1950,
CSA C22.2 No. 950, NOM-018

Support features

IBM Start-Up Support
IBM Global Services
- IBM Hardware Services–IBM installation and configuration services for IBM TotalStorage
- IBM operational support services–Support Line
- IBM Storage Consulting Services

Network Attached Storage 200 at a glance

Configurations	Minimum (109.2GB): 1 engine (RAID controller and three internal 36.4GB HDDs with a single 1.13GHz Pentium III processor)	Minimum (109.2GB): 1 engine (RAID controller and three internal 36.4GB HDDs with two 1.13GHz Pentium III processors)
	Maximum (1.69TB): 1 engine (RAID controller and nine internal 73.4GB HDDs (six in engine plus three in optional inserts) with two 1.13GHz Pentium III processors) and 1 Storage Unit (14×73.4GB HDDs) (External storage unit requires use of ServeRAID 4MX adapter)	Maximum (3.52TB): 1 engine (RAID controller and six internal 73.4GB HDDs with two 1.13GHz Pentium III processors) 3 Storage Units (14×73.4GB HDDs, 1.03TB each)
Backup interoperability	IBM has tested the IBM NAS 200 series for interoperability with a variety of backup devices and software; visit our Interoperability or IBM TotalStorage Proven pages for the most current list of tested vendors	
Options and accessories	5194 Storage Unit Model EXP 36.4GB Ultra160 SCSI hot-swap SL HDD 73.4GB Ultra160 SCSI hot-swap SL HDD Insert for addition of three 36.4GB or 73.4GB HDDs (insert installed in place of internal tape drive - tower version only) 1.13GHz/133MHz FSB/512KB upgrade processor (tower version only) 200 tower is upgradeable to total engine memory sizes of 1GB, 1.5GB and 2.5GB 200 rack is upgradeable to total engine memory sizes of 2GB and 3GB 1-port 10/100 Ethernet Adapter 4-port 10/100 Ethernet Adapter 1-port 10/100/1000 TX Ethernet Adapter Gigabit Ethernet SX Adapter 5U x 24D tower-to-rack conversion kit (tower version only)* SCSI SE PCI card, SCSI LVD/SE PCI card or SCSI HVD PCI card ServeRAID 4MX with 64MB of battery-backed ECC cache for attachment of external storage unit (tower version) 1-port Fibre Channel Adapter (Model 226 only) Remote Supervisor Adapter IGS Storage Consulting Services	
Warranty	3 years parts/1 year labor warranty (warranty upgrades available)	
National Language Support (operating system)	English, French, German, Japanese, Spanish	
National Language Support (publications)	English, Brazilian Portuguese, French, German, Japanese, Korean, Simplified Chinese, Traditional Chinese, Spanish	

*Note: Use of the tower-to-rack conversion kit does not transform a Model 201 into a Model 226. It is simply a means of converting the Model 201 from a tower configuration into a rack configuration.

[1] All references to storage capacity refer to raw storage. Usable storage is dependent upon the RAID level and number of hot spares employed.
[2] Rack conversion kit option available
[3] Base systems have six drive bays. For the tower version, three additional bays can be added as well as a single 14-bay external enclosure for a total of 23 drives. For the rack version, up to three optional 14-bay external enclosures can be added for a total of 48 drives.
[4] GHz only measures microprocessor internal clock speed, not application performance.
[5] At the time of publication, NetBench and SPECsfs performance determination was in progress. Please check ibm.com/storage/nas for the current status.

For more information

To find out more about the IBM NAS offerings and other high-performance IBM Storage Networking products, contact your IBM representative, IBM Business Partner or call IBM Direct at 1 800 IBM-CALL (1 800 426-2255) or visit **ibm.com**/storage/nas