

Designed to help meet the high performance and scalability demands of enterprise networks



## IBM TotalStorage NAS Gateway 500



---

### Highlights

---

- **Increased access**—Designed to allow IP clients and servers to access storage area network (SAN) devices without each server or client being directly connected by Fibre Channel.
- **Manageable**® Integrated system diagnostics and management tools are designed to help minimize downtime.
- **Scalable**—Support for non-disruptive capacity can increase up to 224TB<sup>1</sup> of SAN-attached physical storage.
- **High performance**—Optimized for network file serving and storage requirements.
- **Flexible**—Cross-platform file sharing (CIFS [Microsoft® Windows®], NFS [UNIX®], HTTP, and FTP) can help reduce network complexity and expense, and allow data to be shared across the organization.
- **Redundancy**—Fans, power supplies, disk drive, adapters, processors and clustered nodes.
- **Installation**—The installation wizard is designed to help simplify installation/setup.

### IBM, NAS and storage networking

The IBM® TotalStorage® NAS Gateway 500 is part of the overall IBM Storage Networking offering of hardware, software and services. It provides an additional building block designed to help increase the flexibility, efficiency and effectiveness of your storage networking solutions.

### High-performance, dedicated NAS gateway bridging LAN and SAN

Cost-effective and innovative, the IBM NAS Gateway 500 acts as the gateway between the Fibre Channel and IP networks. It allows IP clients to be directly interconnected with many IBM storage devices. The IBM NAS Gateway 500 can be a powerful addition to an existing or planned SAN installation. In addition, it is designed to help reduce the amount of direct Fibre Channel connections to servers and clients that require SAN access, resulting in potential cost savings. For increasing efficiency and access to existing SAN storage, the IBM NAS Gateway 500 is designed to provide an effective solution.

### **Flexible configurations**

The IBM NAS Gateway 500 is compatible with many SAN storage systems<sup>1</sup>, including:

- *IBM TotalStorage Enterprise Storage Server®*
- *IBM TotalStorage FASiT product family*
- *IBM TotalStorage SAN Volume Controller*

In addition, the IBM NAS Gateway 500 has been tested for compatibility with multiple SAN fabric switches and directors as well as many IBM tape drives and tape libraries, which makes it well suited for providing storage access to IP users. To provide enough storage capacity for each user, up to 224TB<sup>2</sup> of SAN-attached physical storage can be allocated for use with the IBM NAS Gateway 500. It is designed to allow an administrator to reallocate storage to fit the growing needs of the organization. When requirements for storage increase, the IBM NAS Gateway 500 can access multiple SAN devices of the same family to help provide additional storage.

### **IBM TotalStorage SAN Volume Controller**

The IBM NAS Gateway 500 is designed to support attachment to non-IBM storage systems via attachment to the IBM TotalStorage SAN Volume Controller<sup>3</sup>.

### **Investment protection**

Because of its flexibility, the IBM NAS Gateway 500 provides administrators with tools designed to help them manage storage resources more efficiently, helping to create a more cost-effective storage system to reduce total cost of ownership. By deploying the IBM NAS Gateway 500, access between clients/servers and SAN storage is a possible solution for addressing the demands of increased storage capacity.

### **High system availability for business continuance**

The IBM NAS Gateway 500 is a good value for those wishing to extend the reach of their SAN. The IBM NAS Gateway 500 incorporates a variety of reliability and availability features designed to support high demand operations. It houses hot swappable, redundant power supplies and fans and provides multipath failover protection and host dual pathing between the unit and its SAN-attached storage device. In addition, the clustering feature between two nodes is designed to help minimize system downtime. Each node supports an optional second hard drive and RAID level 1 for creating mirrored system drives to further help increase system availability.

### **Automated Problem Reporting and Management**

Electronic Service Agent is designed to support automatic problem analysis, problem definable threshold levels for error reporting, automatic problem reporting, automatic customer notification, sharing of modem for clustered systems, vital product data (VPD) reporting, reporting product install and fix information.

### **System Management Tools**

- *Command Line Interface (CLI) is designed to allow individual commands to be entered or alternatively, execution logic and sequences of commands can be grouped using scripts.*
- *Web-based System Management (WebSM) (a facility that provides a familiar browser-like and easily navigated GUI interface) is designed to allow remote operation & management.*
- *System Management Interface Tool (SMIT) which presents a menu interface to allow users to select tasks to be performed and includes additional screens to gather information from the user and ultimately to form and execute a command.*

- *Support for SNMP V3 and Management Information Base (MIB) reporting*
- *Resource Monitoring and Control (RMC) is designed to provide the ability to monitor the state of system resources and respond when predefined thresholds are crossed, so many routine tasks can be performed automatically.*

The IBM NAS Gateway 500 supports a variety of backup methods, including popular backup software such as IBM Tivoli® Storage Manager (TSM), which is designed to provide host-free and LAN-free applications. The product is also interoperable with a number of tape backup solutions.

In addition, IBM Tivoli SAN Manager (TSANM) Agent, IBM Tivoli Storage Manager Client & Agent and IBM Tivoli Storage Resource Manager Agent are pre-installed to help allow the NAS Gateway 500 to easily integrate into a Tivoli management environment and eliminate the need to install these products on each NAS device.

The IBM NAS Gateway 500 can help safeguard the most valuable asset of an organization—its data—by providing features designed to support:

- *Backup using Tivoli Storage Manager and other third-party software packages*
- *Recovery of data after accidental file deletions*
- *File restorations by clients and administrators*
- *Single-step volume and file restorations by administrators*

#### **Cross-platform file sharing through multiprotocol support**

The NAS Gateway 500 can be directly connected to Fibre Channel storage or the SAN infrastructure to allow connectivity to multiple storage devices on a SAN. The NAS Gateway 500 is designed to help extend the value of the customer's SAN network by combining enterprise class reliability and availability, and lower administrative cost through storage consolidation.

The IBM NAS Gateway 500 is designed for the heterogeneous environment, supporting mixed UNIX, Linux®, and Windows clients with file sharing support of CIFS (Windows), NFS v2 and v3 (UNIX/Linux), HTTP, and FTP.

Heterogeneous access to data helps

support concurrent file sharing between users of these different platforms, helping to eliminate the need to have a separate server for each.

#### **Data Protection to Disk**

The IBM NAS Gateway 500 is designed to offer on-board data protection using snapshots to create copies of its file systems. System administrators initiate snapshots and can restore directories or files utilizing Snap Rollback.

In addition, system administrators may restore the entire file system using Snap Rollback. The NAS Gateway 500 exploits Enhanced Journal File System 2 (JFS2) snapshot facilities. The product is designed to help simplify snapshot and rollback operations. Snapshots can be created on a file system basis. Snapshots can be initiated manually or they can be scheduled. The snap rollback command restores at the file, directory or file system levels depending on the parameter specification. Within the snap rollback command, the snap volume is automatically mounted, the specified rollback is performed, and the snap volume is then automatically unmounted. Snapshot data is also designed to be accessed with little or no system administrator intervention.

### **Volume creation flexibility allowing spanning across multiple disk devices**

As part of the creation of a NAS Gateway 500 volume, the NAS volume can be configured to span across multiple disks. This is designed to allow users the ability to create multiple volumes for multiple purposes, with varying storage sizes. The organization across the logical volumes can be accomplished through the Web-Based System Manager, the menu-driven System Management Interface Tool (SMIT) or the Command Line Interface, helping to reduce or eliminate the need for users to be aware of the physical servers used for data storage on their networks.

In addition, the NAS Gateway 500 is designed to allow for dynamic expansion of volumes. A snapshot resource management feature is designed to automatically create snapshot resource allocations for newly created volumes.

### **Extensive adapter support**

Both single and dual port versions of copper and fiber gigabit ethernet adapters as well as single or dual port Fibre Channel HBAs are supported. This includes support for 2Gbps fibre channel HBAs and 1Gbps Ethernet adapters.

### **Security Features**

The NAS Gateway 500 offers several security features to help maintain the integrity of your storage system environment. Some of these security features include:

- *LDAP–Kerberos V5 Authentication: Helps administrators simplify password authentication for users connecting to several gateways.*
- *IBM Web-based System Manager Security: Supports secure operation of the Web-based System Manager in client-server mode.*
- *IBM IP Security: IBM IP Security V5.2 is designed to provide encryption for 56-bit, and Triple DES support for the AIX® 5L™ IP security enhancements.*
- *Open Secure Shell (OpenSSH): OpenSSH is an open-source implementation of the secure shell (SSH) suite. It depends on the OpenSSL libraries for encryption, and is designed to provide secure replacements for rlogin, telnet, rcp, and ftp.*

### **System Software**

The Enterprise NAS Gateway 500 comes preloaded with the NAS Gateway 500 System Software which is a separately licensed software program. This system software program supplies the operating system and other application software for the NAS Gateway 500.

This software must be ordered concurrently with the hardware by placing a separate software order. The software features offering support for CIFS network file protocols and high-availability dual-node clustering can be added as additional features. The NAS Gateway 500 System Software is designed to provide necessary software support for the NAS Gateway 500 including operating system, NAS functionality, systems management, security, optional features, and other software functions designed to enable it to perform as an efficient gateway between the Ethernet LAN and Fibre Channel storage systems.

### **Summary**

The NAS Gateway 500 is an innovative, enterprise-class NAS gateway that connects clients and servers on an IP network to Fibre Channel storage. The Enterprise NAS Gateway 500 and supporting NAS Gateway 500 System Software are designed to be integrated into the network. They are designed to add value while helping lower administrative costs by providing a scalable, storage consolidation solution with the performance, reliability, and availability characteristics that customers expect and demand. It also can help provide a cost-effective method for multi-platform heterogeneous file sharing of a single pool of storage, helping to efficiently bridge the gap between LAN storage needs and SAN storage capacities.

## IBM NAS Gateway 500 at a glance

<b>IBM NAS Gateway 500</b>	5198 Model 001
<b>Product packaging</b>	
NAS Gateway	Configurable in either a single-node or dual-node configuration with one (1-way), two (2-way) or four (4-way) processors per node
Form factor (per node)	Rack-mount 4U
Internal Disk Drive	One 36.4GB Ultra3 SCSI
Internal Disk Bays	Four hot swappable, two are reserved
Media Bays	One CD-ROM and one 1.44 MB diskette drive
Power supply (per node)	Two 670 Watt auto-ranging hot swappable power supplies
Cooling Fans	Two hot swappable cooling fans for processor cooling, two hot swappable cooling fans for PCI-X adapter cooling and dual power supplies each with two cooling fans
Tape backup	Optional 1-port or 2-port Fibre Channel adapter (tape and disk should not be mixed on same adapter), on-board SCSI LVD controller

### Physical dimensions

Width/Depth	482.6 mm/641.4 mm (25.25 in)
Height/Weight (min, max)	178 mm (7.00 in)/34.92 kg (78.70 lbs), 39.03 kg (87.49 lbs)

### Operating environment (per node)

Temperature: operating	5° to 35° C (41° to 95° F), derate 1 degree C per 137m (450 ft) above 915m (3000) ft.
Temperature: storage	10° to 52° C (50° to 126° F), derate 1 degree C per 137m (450 ft) above 915m (3000) ft.
Relative humidity (non-condensing)	8% to 80%
Maximum altitude	2135m (7000 ft)

### Electrical (per node)

Input voltage low range	100-127 V ac nominal
Input voltage high range	200-240 V ac nominal
Frequency	50-60 Hz
Tolerance	90-259 V ac
Input kilovolt-amperes (kVA)	1.0 kVA maximum
Amperage	12 Amps. max at low voltage, 6 Amps max at high voltage

### Performance

Processors (per NAS 500)	1.45 GHz POWER4+™ processor (Orderable as 1-way, 2-way or 4-way configuration) using the following: <ul style="list-style-type: none"><li>— One-way processor book with one 1.45GHz POWER4+ processor<sup>4</sup></li><li>— Two-way processor book with two 1.45GHz POWER4+ processors<sup>4</sup></li></ul>
Level 2 (L2) cache per processor book	Each processor book has a 1.5 MB Level 2 (L2) cache
Level 3 (L3) cache per processor book	Each processor book has a 8 MB Level 3 (L3) cache
Memory Type	DDR 100Mhz SDRAM
Memory, standard (per NAS 500)	2GB for a 1-way configuration, 4GB for a 2-way configuration with one two-way processor book, 4GB for a 2-way configuration with two one-way processors books, and 8GB for a 4-way configuration
Memory, maximum (per NAS 500)	16GB for a 1-way configuration, 16GB for a 2-way configuration with one two-way processor book, 32GB for a 2-way configuration with two one-way processor books, and 32GB for a 4-way configuration
File protocols supported	CIFS, NFS (v2, v3) , HTTP, FTP
Performance (NetBench)	Please visit our Web site at: <a href="http://ibm.com/totalstorage/nas">ibm.com/totalstorage/nas</a> for up-to-date performance results
Performance (SPECsfs)	Please visit our Web site at: <a href="http://ibm.com/totalstorage/nas">ibm.com/totalstorage/nas</a> for up-to-date performance results

---

## IBM NAS Gateway 500 at a glance

---

### Connectivity

PCI slots available (per node)	Six (All are 64-bit/133MHz) All slots support full length PCI-X Adapters
Onboard Ethernet ports	Dual 10/100 Ethernet ports for clustering heartbeat or interconnection to the Service/Management LAN
Maximum connections (per node)	Eight ethernet ports for file serving or service management on PCI adapters Eight fibre channel ports for external tape and storage attachment Three RS-232 ports for service/management/heartbeat
Optional ethernet network connectivity	Two 10/100 Ethernet for service/management/heartbeat (cannot be used for file serving) (minimum of one required per node, minimum of two required per node for clustering) 1-port Gigabit Ethernet SX adapter 2-port Gigabit Ethernet SX adapter 1-port 10/100/1000 Mbps Ethernet TX adapter 2-port 10/100/1000 Mbps Ethernet TX Adapter
Optional Fibre Channel connectivity	(minimum of one required per node) 1-port 2 Gbps Fibre Channel HBA 2-port 2 Gbps Fibre Channel HBA

### Interoperability

IBM has tested the IBM NAS Gateway 500 for interoperability with a variety of SAN Fabric, FC Switches, Tape, and other devices. Visit our Interoperability or IBM TotalStorage Proven™ pages for the most current list of tested products: [ibm.com/totalstorage/nas](http://ibm.com/totalstorage/nas) or [ibm.com/totalstorage/proven](http://ibm.com/totalstorage/proven)

### IBM TotalStorage NAS Gateway 500 System Software

Operating system	Customized AIX 5L 5.2B Operating System
Network protocol support	NSF v2 and v3, HTTP, FTP, NTP, SNMP, SMTP
Optional network protocol support	CIFS
Backup software	IBM Tivoli Storage Manager client and storage agent Additional third party products are supported'
Storage Management Software	IBM Tivoli Storage Resource Manager (ITSRM) agent
SAN Management	IBM Tivoli SAN Manager (ITSANM) agent
Systems Management Software	NAS WebSM, SMIT, SNMP v3, NAS CLI
Performance Management	Command Line Interface provides monitoring capabilities of overall system performance
Remote administration	WebSM Remote Client installable on AIX, Linux, Windows host

### Optional Software Features

CIFS File Serving	Used to support Microsoft Windows network file sharing protocols
Clustering	Designed to allow clustering of two single node systems for high availability
Remote Mirroring	Required to mirror data from one NAS system to another remote NAS system

### Security

Kerberos, LDAP, Open SSH, SCP, defined Security Access Levels, IBM IP Security v5.2 and triple DES encryption , NIS, NIS+, Authentication via Active Directory

---

---

## IBM NAS Gateway 500 at a glance

---

**Reliability, Availability, Serviceability (RAS) Features** Copper, SOI microprocessors  
Chipkill™, bit steering memory  
ECC L2 Cache, L3 Cache  
First Failure Data Capture  
Redundant, hot swappable disk bays, power supplies, fans, PCI adapters  
Dynamic processor deallocation in 4-way systems  
Dynamic deallocation of L2/L3 cache in 4-way systems  
Dynamic deallocation of PCI-X slots  
Electronic Service Agent for proactive customer problem reporting  
Integrated Service Processor for monitoring of the Central Electronics Complex (CEC)

**Standards** SNMP v3, CIM, MIB-II

**EMC Standards** FCC Class A, Title 47, Part 15, CISPR-22 Class A, ICES/NMB-003 issue 3 Class A (Canada)  
VCCI Class A (Japan), GOST-R (Russia), BSMI CNS13438 Class A (Taiwan), CCC (China), MIC (Korea), ACA C-Tick (Australia/New Zealand), EN55022: 1998, Class A, EN55024: 1998, EN61000-3-2: 2000 EN61000-3-3: 1995

**SAFETY Standards** UL 1950 (U.S.), CB Report/Certificate (world-wide), CSA C22.2 No.950 (Canada)  
IEC950/EN60950 (EU, Germany), NOM-018 (Mexico), CE Mark (EU), GOST-R (Russia) BSMI Type Certification (Taiwan), CCC (China), IEC 60825/DHHS (lasers)

**Support features** IBM Start Up Support  
Call Home  
IBM Global Services  
— IBM Hardware Services—IBM installation and configuration services for IBM TotalStorage  
— IBM Operational Support Services—Support Line  
— IBM Storage Consulting Services

**Backup interoperability** IBM has tested the IBM NAS Gateway 500 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: [ibm.com/totalstorage/nas](http://ibm.com/totalstorage/nas) or [ibm.com/totalstorage/proven](http://ibm.com/totalstorage/proven)

**Options and accessories (per node)** Second 36.4GB physical storage capacity hard disk drive for OS Mirroring capabilities  
2GB (4x512MB) memory upgrade  
4GB (4x1GB) memory upgrade  
8GB (4x2GB) memory upgrade  
Processor Book Upgrade (Additional 2-way processor)  
Cluster Interconnect Kit (provides the hardware for clustering two nodes)  
IBM Global Services Storage Consulting Services

### Warranty

Software One year included, (3-year upgrade available)  
Hardware One year included, On-site Next Day 9-5 (3-year upgrade available)

---

## For more information

To find out more about the IBM TotalStorage NAS Gateway 500 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**/totalstorage/nas



© Copyright IBM Corporation 2004

IBM Systems and Technology Group  
5600 Cottle Road  
San Jose, CA 95136

Produced in the United States of America  
August 2004

All Rights Reserved

IBM, the IBM logo, AIX, AIX 5L, Chipkill, Enterprise Storage Server, POWER4+, Tivoli, TotalStorage and TotalStorage Proven are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation in the United States, other countries or both.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Other company, products and services names may be trademarks or service marks of other companies.

This document could include technical inaccuracies or typographical errors. IBM may make changes, improvements or alterations to the products, programs and services described in this document, including termination of such products, programs and services, at any time and without notice. Any statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. The information contained in this document is current as of the initial date of publication only and is subject to change without notice. IBM shall have no responsibility to update such information.

IBM is not responsible for the performance or interoperability of any non-IBM products discussed herein. Performance data for IBM and non-IBM products and services contained in this document was derived under specific operating and environmental conditions. The actual results obtained by any party implementing such products or services will depend on a large number of factors specific to such party's operating environment and may vary significantly. IBM makes no representation that these results can be expected or obtained in any implementation of any such products or services.

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.

THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY, EITHER EXPRESSED OR IMPLIED. IBM EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements (e.g., IBM Customer Agreement, Statement of Limited Warranty, International Program License Agreement, etc.) under which they are provided.

References in this document to IBM products, programs or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business. Any reference to an IBM program or product in this document is not intended to state or imply that only that program may be used. Any functionally equivalent program or product that does not infringe IBM's intellectual property rights may be used instead. It is the user's responsibility to evaluate and verify the operation of any non-IBM product, program or service.

<sup>1</sup> Please refer to our NAS Interoperability Matrix at **ibm.com**/storage/nas for up-to-date interoperability listings.

<sup>2</sup> 224TB is the maximum storage tested. Based on clustered 2 node configuration with FAST900 and EXP100 attachment.

<sup>3</sup> For more information on support of non-IBM storage systems using IBM TotalStorage San Volume Controller, please refer to **ibm.com**/storage/software/virtualization/svc

<sup>4</sup> Within a single NAS Gateway 500, one-way and two-way processor books may not be mixed.