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IBM TotalStorage NAS Gateway 300 Model G02 — New Lower Cost, Single-Node Solution for LAN to SAN Access

Overview

The NAS Gateway 300 Model G02 is the new single-node model of the NAS Gateway 300. The Model G02 is a lower cost model of the NAS Gateway 300 that offers many of the outstanding features of the dual-node Model G27, but without the engine failover protection feature of the Model G27.

New IBM TotalStorage™ NAS Gateway 300 Model G02

The Model G02, a single-node (single engine) model, offers many outstanding features and options that can help enhance the performance of your network.

- The processor speed of the Model G02 is more than two times the speed of its predecessor model — the Model G01.

- The engine contains dual processors for faster processing capability, and several memory options to fine-tune performance based on your applications.

- To accommodate more LAN ports and other device connections, the Model G02 has six high-performance PCI slots.

- Higher performance 2 Gbit/s Fibre Channel and TCP/IP Offload Ethernet adapters can help provide an increase in system throughput.

- Built-in SCSI port for tape backup.

- Redundant hot-swappable power supplies for increased availability.

Key Prerequisites

- A mandatory Fibre Channel adapter must be selected for SAN connections.

- Either a 1 GB or 2 GB additional memory option must be selected.

- Country-specific power cords must be selected with each system.

- An EIA rack is required for rack mounting.

Planned Availability Date

March 14, 2003

At a Glance

If you need flexibility in your IT infrastructure to help with exploding storage requirements, then you will appreciate the lower cost, IBM TotalStorage NAS Gateway 300 Model G02.

Model G02 Highlights

- Single node model of the TotalStorage NAS Gateway 300 with an engine containing two high-performance 2.4 GHz processors

- Six PCI slots in the engine to accommodate multiple LAN and SAN connections, a management adapter, and tape backup adapters

- 4.5 GB memory capacity

- Built-in 10/100/1000 Mbps Ethernet port

- Built-in SCSI LVD port for tape backup

- High-performance, single and dual-port 2 Gbit/s Fibre Channel Adapters

- Choice of four high-performance Ethernet adapters for additional LAN attachment, including a 10/100/1000 Mbps Copper Accelerated Ethernet Adapter

- 560-watt, redundant hot-swappable power supplies and hot-swappable system fans

- Preloaded operating system and application code
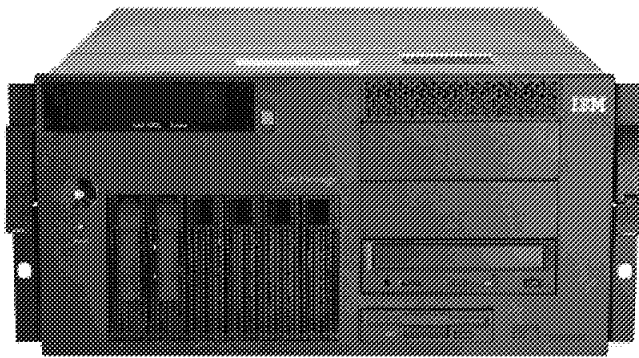
For ordering, contact:
Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

| 800-IBM-CALL | Reference: YE001

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Description

The NAS Gateway 300 Model G02 is a single node model of the TotalStorage NAS Gateway 300. The Model G02 offers many outstanding features and options that can help enhance the performance of your network. The Model G02 has a single engine contained in a 5U enclosure designed for mounting in a standard 19-inch EIA rack. The NAS Gateway 300 Model G02 engine has 6 PCI slots for the purpose of inserting adapters for connections to the Ethernet LAN, Fibre Channel, management adapter, and tape backup adapters. The Model G02 contains many of the features available with the dual node Gateway 300 Model G27, except that the Model G02 is a lower cost system for customers not requiring the dual node failover protection afforded by the Model G27. The Model G02 comes with preloaded operating system and application code. For additional information, refer to the **Preloaded Operating System and Application Code Functions** section.

IBM NAS Gateway 300 Model G02 Configuration

Model G02

- Single 5187-7RY NAS engine (contained in a 5U enclosure)

  - Dual 2.4 GHz Intel® Xeon Processors in the NAS engine

  - Six PCI slots per engine for LAN and SAN connections, management adapter, and tape backup adapters

  - Built-in 10/100/1000 Mbps Ethernet port

  - Built-in SCSI LVD port for tape backup

- Preloaded tuned operating system, application code

- 36.4 GB HDD ─ Standard (for operating system and application code); optional Mirrored OS HDD feature adds second 36.4 GB HDD

- 512 MB memory ─ Standard (up to 4.5 GB memory total; at least 1 GB optional memory is mandatory option per engine)

- 1-port 10/100/1000 Mbps Ethernet (standard)

- Optional Fibre Channel Adapters ─ (one adapter per engine mandatory), (SAN or tape backup connections ─ single-port adapter), (redundant SAN connections ─ dual-port adapter)

  - 1-port, 2 Gbit/s Fibre Channel Adapter
  - 2-port, 2 Gbit/s Fibre Channel Adapter

- Optional Ethernet Adapters ─ (LAN connections)

  - 4-port 10/100 Mbps Adapter

  - 1-port Gigabit SX Adapter (fiber optic cable connection)

  - 1-port 10/100/1000 Mbps Copper Ethernet Adapter

  - 1-port 10/100/1000 Mbps Copper Accelerated Ethernet Adapter

- Optional SCSI Adapter (SCSI tape backup connections)

- Dual, 560-watt redundant, hot-swappable, auto-ranging power supplies (per engine)

- Hot-swappable system fans

Accessibility by People with Disabilities

For Hardware Offerings:

The following features support use by people with disabilities:

- Controls and latches operable with one hand and minimal dexterity

- Keys are discernible by touch without activating them

- Ports and connectors support connection of industry-standard devices

Product Positioning

The IBM TotalStorage NAS family of products are modular, network storage products designed to provide businesses with solutions for the ever changing storage requirements prevalent in today's business climate.

The NAS Gateway 300 Model G02, a member of the IBM NAS family, is a single-node, specialized NAS server that is positioned in the network between the Ethernet LAN and the SAN. It is designed to appear as a typical NAS device to servers and end-user clients.

The NAS Gateway 300 is LAN attached to end-user clients, computers, as well as file, application, and transaction servers. The single-node Model G02 is attached to the SAN via high-speed 2 Gbit/s Fibre Channel, providing a high-performance path for servers and end-user clients to gain access to the vast storage resources located on the SAN. The Model G02 is a key building block to be considered when planning the infrastructure that provides access to the SAN.

Reference Information

- Hardware Announcement 101-046, dated February 21, 2001, entitled IBM TotalStorage Network Attached Storage 300G, 5196 Models G00, G25 Provides High Performance Specialized Server Between Your LAN and SAN

- Hardware Announcement 101-323, dated October 30, 2001, entitled IBM TotalStorage Network Attached Storage 300G Enhancements ─ New Models and Features Provide Enhanced Performance and Flexibility

- Hardware Announcement 102-296, dated November 12, 2002, entitled IBM TotalStorage NAS Gateway 300 Model G27 Provides a Powerful New Solution for LAN to SAN Access

Special Information Regarding the NAS Gateway 300 Model G02

The TotalStorage NAS Gateway 300 Model G02 single-node system uses the same NAS Engine (5187-7RY), adapter features, and power cord features as the dual-node NAS Gateway 300 Model G27. The NAS Gateway 300 Model G27 was announced via Hardware Announcement 102-296, dated November 12, 2002.

An order for the NAS Gateway 300 Model G02 must include the 5187-7RY NAS Engine, and required memory, adapter, and power cord features.

Refer to the Hardware Announcement above for additional information on feature numbers, product charges, warranty upgrade charges, and maintenance charges for the NAS Gateway 300.

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Intel is a registered trademark of Intel Corporation.

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IBM TotalStorage™ NAS Gateway 300 Model G02

Optional Features

IBM 5187 NAS Engine Model 7RY

- Dual 2.4 GHz Processors
- 6 PCI slots
- 512 MB Memory
- 36 GB HDD
- Built-in SCSI LVD port
- Dual 560 Watt Power Supplies

- 1 GB Memory Upgrade
- 2 GB Memory Upgrade
- Gigabit SX Ethernet Adapter
- 4-Port 10/100 Ethernet
- 10/100/1000 CU Ethernet
- 10/100/1000 CU w/accl
- 1-Port 2 Gbit FC Adapter
- 2-Port 2 Gbit FC Adapter
- SCSI LVD/SE Adapter
- Remote Svr. Adapter
- Mirrored OS HDD

Preloaded Operating System and Application Code Functions

Windows® Powered OS (SP2®)

- Optimized for NAS Gateway 300 Model G02

Server Appliance Kit (SAK) Features

- Storage Manager for SAK V2
- Uninterruptible Power Supply (UPS) Agent

File Systems Supported

- CIFS (Windows NT® LM 0.12), NFS (V2, V3), FTP, HTTP (V1.1), Apple File protocol, NetWare (via Windows Services for NetWare V5)

Setup Tutorial

- NAS Setup Navigator

Remote NAS System Administration

- Administrative task performed in the Web-based GUI

- Alternate administrative task performed using Windows Terminal Service

- Advanced management functions available via Windows Terminal Service

- Simple point-and-click for restores using Windows NT Backup

- NAS Backup Assistant MMC Snap-in Web page

UNIX® Services

- NFS support
- Web-based GUI for performing administrative tasks
- Microsoft™ Services for UNIX V2.2+QFE
- NFS V2 (IETF RFC 1084), V3 (IETF RFC 1830)

Simple Network Management (SNMP) Enabled

- Provides the capability of the NAS Gateway 300 to be managed by a network management application, such as IBM Director using SNMP protocols

Automatic Recovery of Operating System

- Customer-scheduled backups of the system partition
- Original factory CD-ROM reload of operating system
- Prevention of accidental reloads via reload enablement diskette

Advanced Aggregate Management

- IBM Director Agent V3.1.1

Columbia Data Products' Persistent Storage Manager (PSM) for IBM NAS Products ─ V2.2

PSM creates True Images (multiple point-in-time persistent images of any or all system data volumes). All persistent images are designed to survive system power loss or a planned or unplanned re-boot. Each instance of PSM is designed to handle 250 concurrent data images. Typically, any image can be easily managed through the Microsoft Web user interface, and accessed the same as any other active volume. In case of data corruption or loss, typically, any persistent image can be used for instant restoration of the entire volume from image, which can help substantially reduce the amount of system down time.

PSM is designed to:

- Create and keep multiple point-in-time persistent images

- Restore one or more volumes from persistent images instantly (typically within seconds)

  − Administrators can use this function to restore larger amounts of data in lieu of restoring files one by one.

- Enable user-level file retrieval

  − User-level access can be granted for one or more of the images to allow users to retrieve older copies of their own files from the images. Users will automatically have the same access privileges to individual files and directories in the images that they would have on the live volume.

- Provide flexible and configurable image access and administration via Web-based user interface

  − Schedule images (for each schedule entry [image group], specify interval, number to keep, image name, properties [read-only or read-write, retention level])

  − Create a new image immediately (specify name and properties)

  − Delete images

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- View and change properties of images (also reset read-write images)

- Restore a volume (from any image of that volume)

- Configure advanced parameters

  - Maximum number of images to keep concurrently

  - Name of image root directory (all images on a volume are mounted as junctions, for example, virtual volumes) under the image root directory

  - Inactive period and inactive period wait timeout

  - Size of the image cache file (per volume)

  - Image cache file usage warning and automatic image deletion thresholds (per volume)

IBM Director Agent V3.1.1 with IBM Director Extensions

The NAS Gateway 300 system preloaded code contains IBM Director Agent V3.1.1. This provides the Gateway 300 with a client management application for networked computers, helping to centralize control of your computer systems and lower the total cost of management. The IBM Director Agent is designed to allow the user to view, monitor, and control the NAS Gateway 300 through a management application such as the IBM Director/Server. The IBM Director Agent is also intended to allow you to:

- Learn detailed inventory information about the NAS Gateway 300, including operating system, memory, network adapters, and other hardware

- Track the NAS Gateway 300 proactively with features such as power management, event log, and system monitor capability

- Upwardly integrate with Tivoli® Enterprise, Tivoli NetView®, Computer Associates Unicenter, HP OpenView, Microsoft SMS, and Intel® LANDesk™ Management Suite

Because the IBM Director Agent uses some of the latest systems management standards, including Common Information Model (CIM), Web-Based Enterprise Management (WBEM), and the eXtensible Markup Language (XML), management of the NAS Gateway 300 can typically be integrated with most enterprise management environments.

The IBM Director/Server is designed to provide the additional management functions that can be used to aid in managing the Gateway 300, such as Advanced Systems Management, Capacity Manager, Cluster Systems Management, Fibre Channel Storage, IBM Rack Manager, and ServeRAID™ Manager.

IBM Tivoli Storage Manager (TSM) V4.2.2

The IBM NAS Gateway 300 comes with the TSM Agent and Client (V4.2.2) software pre-installed and ready to license to allow backup of the Gateway 300 data to a TSM server. This backup client is designed to provide file level backup and restore function.

TSM is designed to be a full-function storage software solution that addresses the challenges of complex storage management across a distributed environment. It is capable of managing a broad range of data storage, recovery, and availability functions across your entire computing infrastructure, from the massive enterprise file servers in your data center to the storage peripherals throughout your organization and to the laptops in your remote offices.

TSM is designed to enable organizations, with large amounts of mission-critical data held on distributed heterogeneous platforms, to interface with up to seven different platforms including Windows 2000, Sun Solaris, HP-UX, AIX®, OS/390®, VM, and OS/400®. For additional information on TSM, refer to the following Web site:

http://www.tivoli.com/storage

IBM Tivoli SANergy™ V2.2.3

Tivoli SANergy software is pre-installed and ready to license on the TotalStorage NAS Gateway 300 to enable two different solution offerings that are designed to provide the benefits of a NAS device with the higher performance and scalability of a SAN.

For customers using the NAS Gateway 300 as a Web or FTP server, multiple Gateway 300s can be connected to the same storage to provide increased I/O to the same files on SAN storage. By connecting more Gateway 300s to the SAN, IT administrators can accommodate increasing numbers of HTTP or FTP requests for the same data on the SAN by clients across the LAN.

Similarly, for individual computers requiring higher bandwidth access to the SAN storage than any LAN connection can provide, the pre-installed Tivoli SANergy is also ready to license and use.

Many computers connected to the NAS Gateway 300 can have higher bandwidth access to SAN storage by purchasing another license for Tivoli SANergy software and adding a Fibre Channel host bus adapter. With these two pieces and a direct SAN connection to the NAS Gateway 300′s Fibre Channel storage, these bandwidth-hungry computers can receive data from the NAS Gateway 300 at a theoretical limit of up to 100 MB per second. Tivoli SANergy is designed to dynamically route data to either the LAN or SAN to provide optimum network utilization.

For more information on Tivoli SANergy, contact Tivoli, or refer to:

http://www.tivoli.com/products/index/sanergy/

Services for UNIX V2.2+QFE

Services for UNIX V2.2+QFE can support enhanced performance for NFS V2.

Services for NetWare V5 (SFN5)

A supplementary CD-ROM, shipped with the NAS Gateway 300, includes Windows Services for NetWare V5.0 (SFN5) as the means to provide interoperability within the Novell environment. SFN5 provides a complete set of new interoperability services and tools for integrating the Windows 2000-based servers into an existing NetWare environment.

Only SFN 5.0 is included with the preloaded code. It is required for supporting the NetWare File system protocol. Since the NAS emulates a NetWare file server, individual NetWare users, and/or servers (running Novell 4, 5, or 6) can access the NAS as if it were another NetWare server. Services for NetWare only support server emulation up to NetWare 3.12 in bindary emulation mode. This support is only available over an IPX interface. If the NAS device is used in a Novell Directory Services environment (Novell V4.x, or later), NDS clients can access the NAS device using CIFS.

Storage Manager for SAK V2

This release of the preloaded code includes Storage Manager for SAK V2, a storage management tool that includes the following functions:

- Storage Reports
- Directory Quotas
- File Screening

Storage Reports address disk usage, wasted storage space, file ownership, security, and administration. Reports can run interactively, scheduled on a regular basis, or run as part of a storage resource management policy when disk space utilization reaches a critical level.

Directory Quotas allows the administrator to add, delete, monitor, and change disk space limits for selected directories on the NAS appliance.

Directory Quotas provide disk space monitoring and control in real time, and support active and passive limits with two real-time space alarms.

File Screening allows the blocking of any file type such as MP3, graphics files, VBS viruses, and executables from writing to the NAS appliance.

NAS Setup Navigator

The NAS Setup Navigator provides a GUI that guides the user through the steps required to initially configure the IBM NAS products. The tasks that need to be performed are displayed in a two-level menu tree on the left side of the screen. When the user selects a task, the right side of the screen displays a brief description of that task. In many cases, a content window will also contain a description of where to get more detailed information. The basic configuration tasks described are:

- General Settings: Administrator user ID and password, date/time, network identification, system language

- LAN Network Settings: Public and private connections

- RAID Setup, Shares: NFS, CIFS

- Services for UNIX: NFS server and gateway, NIS server, user name mapping, password synchronization, server for PCNFS

Uninterruptible Power Supply (UPS) Agent

The preloaded code includes a UPS agent to receive power failure notifications from an external UPS product.

An external UPS unit may be added to provide emergency backup power for a specific period of time when the local power fails. This power comes from batteries housed within the UPS. During a power failure, the UPS is designed to instantly switch your server appliance to emergency battery backup power. The UPS agent enables you to control how the UPS service works on your server appliance. The available UPS settings depend on the specific UPS hardware used on your system. You will need to configure the following information:

- UPS device manufacturer
- UPS device model
- The serial port to which the UPS device is connected

Ethernet Teaming Considerations for the Gateway 300 Model G02

Teaming/load balancing is a method of combining several Ethernet link-level connections to form a single logical IP network connection. The NAS Gateway 300 Model G02 offers a choice of four Ethernet adapters that plug into the PCI slots in the G02 engines and provide connections to the Ethernet LAN. These adapters, within certain limitations, can help implement teaming on the Model G02. Refer to the product publication *IBM TotalStorage NAS Gateway 300 User's Reference*, GA27-4321, for greater detail.

Ethernet Adapters Available for the Model G02

- 1-port Gigabit Ethernet SX Adapter (#0006)
- 4-port 10/100 Mbps Ethernet Adapter (#0015)
- 1-port 10/100/1000 Mbps Copper Ethernet Adapter (#0018)
- 1-port 10/100/1000 Mbps Copper Accelerated Ethernet Adapter (#3305)

Valid teaming combinations are:

- Gigabit Ethernet SX Adapter (#0006) with another adapter (#0006)
- Gigabit Ethernet SX Adapter (#0006) with a 10/100/1000 Copper Ethernet Adapter (#0018)
- 10/100/1000 Copper Ethernet Adapter (#0018) with another Ethernet Adapter (#0018)
- Any combination of ports on a single 4-port 10/100 Ethernet Adapter (#0015)
- Any combination of up to four ports between two 4-port 10/100 Ethernet Adapters (#0015)
- 10/100/1000 Copper Accelerated Ethernet Adapter (#3305) with another Accelerated Ethernet Adapter (#3305) (using only Gig EtherChannel [GEC] or IEEE 802.3ad modes)

Teaming Adapters (#0006 and #0018)

The Gigabit Ethernet SX Adapter (#0006) and 10/100/1000 Copper Ethernet Adapter (#0018) can implement teaming using the following modes:

- Adapter Fault Tolerance (AFT)
- Switch Fault Tolerance (SFT)
- Adaptive Load Balancing (ALB)
- Cisco Fast EtherChannel (FEC) and GEC
- IEEE 802.3ad Link Aggregation Group Specification

Teaming Adapters (#0015 and #3305)

The 4-port 10/100 Ethernet Adapter (#0015) and the 10/100/1000 Copper Accelerated Ethernet (#3305) use Session-Layer Interface Card (SLIC) technology which incorporates hardware assist for TCP processing. This acceleration will only be supported simultaneously with teaming if all of the ports are on the same adapter. These adapters can implement teaming/load balancing using the following modes:

- Cisco FEC and GEC
- IEEE 802.3ad Link Aggregation Group Specification
- Outbound-Only teaming
- Hot Standby Failover

Publications

The following publication is shipped in hardcopy with the product:

Title	Order Number
IBM TotalStorage NAS Gateway 300 Model G02 Installation and Initial Setup Guide	GA27-4331

Along with the above publication, the following Model G27 documentation and CD-ROM are shipped for your convenience and reference. *The Installation Guide* and *Quick Start Instructions* are shipped in hardcopy, and the following documentation is included in PDF and HTML format on the documentation CD-ROM.

Title	Order Number
IBM TotalStorage NAS 100, 200, and Gateway 300 Planning Guide	GA27-4319
IBM TotalStorage NAS Gateway 300 Model G27 Quick Start Instructions	NA
IBM TotalStorage NAS Gateway 300 Model G27 Hardware Installation Guide	GA27-4320
IBM TotalStorage NAS Gateway 300 Model G27 User's Reference	GA27-4321
IBM TotalStorage NAS Gateway 300 Model G27 Hardware Service Guide	GY27-0414
IBM TotalStorage NAS Gateway 300 Model G27 Documentation CD	NA
IBM TotalStorage NAS Translated Safety Notices	GA27-0043

NA = Not Applicable

All of the publications contained on the CD-ROM are also available, in PDF format, on the Web at:

http://www.ibm.com/storage/support/nas

Technical Information

Specified Operating Environment

Physical Specifications

NAS Engine

- Width: 440 mm (17.3 in)
- Depth: 674 mm (26.5 in)
- Height: 216 mm (8.5 in)
- Weight — Minimum configuration (approximate): 32.4 kg (71.5 lb)
- Weight — Maximum configuration (approximate): 34.0 kg (74.9 lb)

Standards

EMC — The product conforms to the following EMC standards:

- FCC Class A
- CISPR-22 Class A
- VCCI Class 1
- BSMI Class A

Safety

The product conforms to the following safety standards:

- UL 1950 (U.S.)
- CSA C22.2 No.950 (Canada)
- TUV/CDE/IEC950/EN60950 (EU, Germany)
- NOPM-018 (Mexico)
- CE Mark (EU)
- CB Certificate (EU)
- GOST-R (Russia)
- BSMI Type Certification (Taiwan)

Operating Environment

Temperature (operating)

- 10° to 35°C (50° to 95°F) at 0 - 914 m (0 - 3,000 ft)
- 10° to 32°C (50° to 90°F) at 914 - 2,133 m (3,000 - 7,000 ft)

Temperature (storage)

- -40° to 60°C (-40° to 140°F) at 0 - 2,133 m (0 - 7,000 ft)

Relative Humidity (operating and storage)

- 8 - 80%

Wet Bulb

- Wet Bulb (operating temperature): 23°C
- Wet Bulb (storage temperature): 27°C

Electrical Power (per NAS Engine)

- Input voltage low range (90 - 137 V ac, 50 - 60 Hz)
- Input voltage high range (180 - 265 V ac, 50 - 60 Hz)
- Input kilovolt-amperes (kVA) (0.8 kVA)

Noise Level

- 6.3 bels — Horizontal floor standing position (operating)

Note: The noise emission level stated is the declared (upper limit) sound power level, in bels, for a random sample of machines. All measurements made in accordance with ISO 7779 and reported in conformance with ISO 9296.

Hardware Requirements

Power Cord Requirement

One of the following power (line) cord features **must** be specified for NAS Gateway 300 Model G02 for the correct country-specific power cord to ship with the machine(s).

- Feature number 0101 — Power Cord (#1) U.S. 6 ft (1.8 m), 125 V

  - Provides power cords for U.S., Canada, Mexico, others.

  - 6 ft (1.8 m), unshielded, rated 250 V/10 A.

- Attached plug (NEMA 5-15P) is designed for 100 - 125 V ac input.

- Feature number 0102 — Power Cord (#2) Europe, Middle East, Africa

  - Provides power cords for Brunei, China, China (Hong Kong S.A.R), Macao, Malaysia, Singapore, Bahrain, Cyprus, Ghana, Iraq, Ireland, Jordan, Kenya, Kuwait, Libya, Malawi, Malta, Nigeria, Oman, Qatar, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, UK, Yemen, Zambia.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (BS 1363/A) is designed for 200 - 240 V ac input.

- Feature number 0103 — Power Cord (#3) Australia, New Zealand

  - Provides power cords for Australia, New Zealand.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (AS/NZS C112) is designed for 200 - 240 V ac input.

- Feature number 0104 — Power Cord (#4) Europe, South Korea

  - Provides power cords for Albania, Angola, Austria, Belarus, Belgium, Bosnia, Bulgaria, Croatia, Czechoslovakia, Egypt, Finland, France, Germany, Greece, Hungry, Macedonia, Mozambique, Netherlands, Norway, Poland, Portugal, Romania, Russia, Saudi Arabia, Slovakia, Slovenia, Spain, Sudan, Sweden, Syrian Arab, Indonesia, South Korea, Iceland, Iran, Kazakhstan, Lebanon, Luxembourg, Turkey, Ukraine, Yugoslavia, Zaire.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (CEE 7-VII) is designed for 200 - 240 V ac input.

- Feature number 0105 — Power Cord (#5) Europe, Denmark

  - Provides power cords for Denmark.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (DK2-5a) is designed for 200 - 240 V ac input.

- Feature number 0106 — Power Cord (#6) Pakistan, South Africa

  - Provides power cords for India, Pakistan, South Africa, Nambia, Swaziland, Zimbabwe, Bangladesh, Myanmar, Sri Lanka.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (SABS 164) is designed for 200 - 240 V ac input.

- Feature number 0107 — Power Cord (#7) Switzerland, Liechtenstein

  - Provides power cords for Switzerland, Liechtenstein.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (1011-S2450 7) is designed for 200 - 240 V ac input.

- Feature number 0108 — Power Cord (#8) Chile, Italy, Ethiopia

  - Provides power cords for Chile, Italy, Ethiopia.

- 9 ft (2.8 m), unshielded, rated 250 V/10 A.

- Attached plug (CEI 23-16) is designed for 200 - 240 V ac input.

- Feature number 0109 — Power Cord (#9) Israel

  - Provides power cords for Israel.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (SI 32) is designed for 200 - 240 V ac input.

- Feature number 0110 — Power Cord (#10) U.S., Japan, South America

  - Provides power cords for U.S., Bahamas, Barbados, Bolivia, Brazil, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, N. Antilles, Panama, Peru, Trinidad Venezuela, Liberia, Japan, Philippines, Taiwan, Thailand.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (NEMA 6-15P) is designed for 200 - 240 V ac input.

- Feature number 0111 — Power Cord (#11) Argentina

  - Provides power cords for Argentina.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (IRSM 2073) is designed for 200 - 240 V ac input.

- Feature number 0112 — Power Cord (#12) China

  - Provides power cords for China.

  - 9 ft (2.8 m), unshielded, rated 250 V/6 A.

  - Attached plug (GB 2099.1) is designed for 200 - 240 V ac input.

- Feature number 0113 — Power Cord (#13) Universal Jumper Cable

  - Provides power cords for equipment that will be mounted in IBM racks. Attached plug is designed to be plugged into IBM Power Distribution Units (PDU) in IBM rack enclosures.

  - 9 ft (2.8 m), unshielded, rated 250 V/10 A.

  - Attached plug (IEC 320 C14) is designed for 200 - 240 V ac input.

- Feature number 0114 — Power Cord (#14) U.S. 9 ft (2.8 m)

  - Provides power cords for U.S., Bahamas, Barbados, Bolivia, Brazil, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Guyana, Haiti, Honduras, Jamaica, N. Antilles, Panama, Peru, Trinidad, Venezuela, Liberia, Japan, Philippines, Taiwan, Thailand.

  - 9 ft (2.8 m), unshielded, rated 125 V/10 A.

  - Attached plug (NEMA 5-15P) is designed for 100 - 120 V ac input.

System Mounting Requirement

The NAS Gateway 300 Model G02 is designed to be rack-mounted in an EIA industry-standard rack. The Model G02 requires 5U of rack space.

System Memory Requirement

The NAS Gateway 300 Model G02 comes with 512 MB of double data rate (DDR) synchronous DRAM (SDRAM) in the form of two 256 MB memory modules on the system planar board. The Model G02 memory contains error correcting code (ECC). The 512 MB memory occupies two of the six memory slots on the planar board. The engines have a supported memory capacity of 4.5 GB and can be upgraded by plugging 512 MB or 1 GB pairs of memory modules into the four remaining, unpopulated memory slots on the planar board. This allows upgrading memory in 1 GB or 2 GB increments.

Note: Upgrading to the 4.5 GB maximum can only be accomplished by installing two, 2 GB memory features.

A mandatory memory upgrade of at least 1 GB of additional memory per engine is required.

Ethernet and Fibre Channel Adapter Requirements

The NAS Gateway 300 connects to servers and end-user clients via the Ethernet LAN. The Model G02 has an integrated 1-port 10/100/1000 Mbps adapter on the planar board of the engine that can be used for customer connections to the Ethernet LAN.

Optional 4-port 10/100 Mbps, Gigabit SX, 10/100/1000 Mbps Copper, or 10/100/1000 Mbps Copper Accelerated Ethernet adapters can also be installed to provide additional connections to the Ethernet LAN.

The Model G02 attaches to the SAN via optional Fibre Channel adapters that plug into the optional adapter slots. Single- and dual-port adapters are available for the G02. At least one Fibre Channel adapter must be installed in the engine.

Software Requirements: The NAS Gateway 300 is shipped containing preloaded code. No additional code is required and no programs other than those shipped with the system and those tested and demonstrated to be compatible with the Gateway 300 should be loaded or executed on this product.

Compatibility

Refer to the following IBM Web sites for IBM TotalStorage NAS interoperable listings:

> http://www.storage.ibm.com/snetwork/nas/
> nas_interoperability.html

> http://www.storage.ibm.com/proven/index.html

Compatibility with Multi-Path Failover Support

Multi-Path Failover support is designed to allow the NAS Gateway 300 to continue assessing storage on its attached device(s) even if an element in the path (for example, adapter, cable, or switch) fails. The software within the storage device can automatically seek an alternate path to the Gateway 300 and the Gateway can recognize and support this change in path. The following products support Multi-Path Failover on the Gateway 300:

- Support for IBM Enterprise Storage System via Storage Sub-system Device Driver

- Support for IBM FAStT 200, 500, and 700 via RDAC support

Limitations

Optional Adapter Features for NAS Gateway 300 Model G02

The Model G02 engine has six PCI slots available for purposes of installing optional features. A combination of up to six of the features below may be installed in each engine, in accordance with the maximum number for each type of adapter per engine as shown.

Adapter Name	Feature Number	Maximum Number of Optional Adapters Per Engine	
1-port Fibre Channel Adapter	3705	2	Notes 1, 4, 5, 6, 7, 8
2-port Fibre Channel Adapter	3706	1	Notes 1, 3, 4, 5, 6, 8
4-port 10/100 Mbps Ethernet Adapter	0015	2	Notes 2, 4, 6, 8
10/100/1000 Mbps Copper Ethernet Adapter	0018	2	Notes 2, 4, 6, 8
10/100/1000 Mbps Copper Ethernet Accelerated Adapter	3305	2	Notes 2, 4, 6, 8
Gigabit SX Ethernet Adapter	0006	2	Notes 2, 4, 6, 8
SCSI LVD/SE Adapter (Tape Backup feature)	0013	1	Notes 4, 5, 6, 7, 8
Remote Supervisor Adapter	0010	1	Notes 4, 9

Note 1: The Model G02 must have a minimum of one optional Fibre Channel Adapter installed in each engine for connection to the SAN, either a 1-port or 2-port adapter.

Note 2: The maximum total quantity of the combination of the 4-port 10/100 Mbps Ethernet, 10/100/1000 Mbps Copper Ethernet, 10/100/1000 Copper Accelerated Ethernet, and Gigabit SX Ethernet cannot exceed four.

Note 3: The 2-port Fibre Channel Adapter, if installed, must be installed in slot number 6 only.

Note 4: The maximum total quantity of PCI adapters features, in all supported combinations, cannot exceed six.

Note 5: If the 2-port Fibre Channel Adapter is installed, then only one of either the 1-port Fibre Channel Adapter or the SCSI LVD/SE Adapter can be installed, but not both.

Note 6: The maximum total quantity of the combination of the 1-port Fibre Channel Adapter, 2-port Fibre Channel Adapter, 4-port 10/100 Ethernet Adapter, Gigabit SX Ethernet Adapter, 10/100/1000 Copper Ethernet Adapter, 10/100/1000 Copper Accelerated Ethernet Adapter, and SCSI LVD/SE Adapter cannot exceed five.

Note 7: If two, 1-Port Fibre Channel Adapters are installed, they are mutually exclusive with the SCSI LVD/SE Adapter.

Note 8: If the combination of the 1-port Fibre Channel Adapter, 2-port Fibre Channel Adapter, and SCSI LVD/SE Adapter equals two, then the maximum total quantity of the combination of the 4-port 10/100 Mbps Ethernet, 10/100/1000 Mbps Copper Ethernet, 10/100/1000 Copper Accelerated Ethernet, and Gigabit SX Ethernet cannot exceed three.

Note 9: The Remote Supervisor Adapter, if installed, must be installed in slot number 1 only.

G02 Memory Upgrade Options

The Model G02 engine comes equipped with 512 MB of DDR SDRAM on the engine's planar board. The Model G02 memory contains ECC. The 512 MB memory occupies two of the six memory slots on the planar board. The remaining four memory slots can be populated with additional memory modules up to a total of 4.5 GB base plus added memory features. The engine must have at least one of these mandatory optional memory features installed: feature number 0301 (1 GB Memory Upgrade) or feature number 0302 (2 GB Memory Upgrade). Below are the supported memory options for the Model G02.

Model G02 Supported Memory Options per Engine

Memory Feature	Quantity	Total Memory Base + Feature(s)
1 GB Upgrade #0301	1	1.5 GB
1 GB Upgrade #0301	2	2.5 GB
2 GB Upgrade #0302	1	2.5 GB
1 GB Upgrade #0301 + 2 GB Upgrade #0302	1 1	3.5 GB
2 GB Upgrade #0302	2	4.5 GB

Planning Information

Customer Responsibilities: The NAS Gateway 300 Model G02 is designated as customer setup. Customer setup information and installation instructions are shipped with each system.

Configuration Information

The Model G02 is designed to be configured and have administrative tasks done from a remote network or management station. Included with these products are the Windows Terminal Service (WTS) and Microsoft Management Console (MMC), which help simplify the configuration and administrative tasks and procedures. These tools are a part of the preloaded operating system package residing on the system hard disk and CD-ROM shipped with the system. The CD-ROM contains client software that is loaded on the remote Network Station™ on the LAN that communicates with the Model G02 to perform configuration and administrator tasks and procedures. Optionally, the IBM Director, running on a network management console on the LAN, can also be used to perform these tasks.

Rack Installations

The NAS Model G02 requires 5U rack units of space and is designed to be installed in a 19-inch rack cabinet designed for 26-inch deep devices.

If using a non-IBM rack, the cabinet must meet the EIA-310-D standards and have a depth of at least 28 inches. Also, adequate space (approximately two inches for the front bezel and one inch for air flow) must be maintained from the slide assembly to the front door of the rack cabinet to allow sufficient space for the door to close and provide adequate air flow.

Power Considerations

The NAS Model G02 engine has two, 560-watt hot-swappable power supplies, which are redundant for high availability. The power supplies are auto-sensing, auto-ranging, and designed for operation on AC power sources that provide either 90 - 137 V ac (50 - 60 Hz) or 180 - 265 V ac (50 - 60 Hz).

Power Cords: Power cords for the Model G02 must be specified when initial orders are placed for the system. Refer to the **Hardware Requirements** section for a listing of power cords and the applicable countries that the power cords are used.

Network Cables: All network cables that attach the NAS Gateway 300 Model G02 to the Ethernet LAN and the SAN are supplied by the user.

Cable Orders

Cabling Considerations for 10/100 Mbps Ethernet Adapters

The 10/100 Mbps Ethernet Adapters for the NAS Gateway 300 have RJ-45 connectors. The RJ-45 connector provides a 10Base-T or 100Base-TX interface for connecting twisted-pair cable to the Ethernet network. Cabling is not included with these adapter features. To connect the Ethernet adapters to a repeater or switch, use an unshielded twisted pair (UTP) cable with RJ-45 connectors at both ends. For 100 Mbps operation, Category 5 cabling, or better must be used. For 10 Mbps operation, Category 3, or better, cabling must be used.

Cabling Considerations for 10/100/1000 Mbps Ethernet Copper Adapter

The 10/100/1000 Mbps Copper Ethernet Adapter for the NAS Gateway 300 has a RJ-45 connector. The RJ-45 connector provides a 10Base-T/100Base-TX/1000Base-T interface for connecting twisted-pair cable to the Ethernet network. Cabling is not included with the systems or these adapters ordered as field features. To connect the Ethernet adapters to a repeater or switch, use an UTP cable with RJ-45 connectors at both ends. Category 5 cabling, or better, must be used.

Cabling Considerations for Gigabit SX Ethernet Adapter

The Gigabit SX Ethernet Adapter has a duplex-type SC connector for connection of multimode fibre optical cable. This adapter can use either 50 micron or 62.5 micron multimode fiber optic cable. The maximum cable distance for 62.5 micron cable is 275 meters (902 ft). The maximum cable distance with 50 micron cable is 550 meters (1,804 ft).

Cabling Considerations for Fibre Channel Adapters

The 1-port and 2-port Fibre Channel Adapters have compact female-type LC duplex connectors for each port. These adapters can use either 50 micron or 62.5 micron type SFP multimode fibre optic cable.

For 50 micron cable:

- Maximum cable length is 500 meters at 1 Gbit/s operation.

- Maximum cable length is 300 meters at 2 Gbit/s operation.

For 62.5 micron cable:

- Maximum cable length is 300 meters at 1 Gbit/s operation.
- Maximum cable length is 90 meters at 2 Gbit/s operation.

Security, Auditability, and Control

This product uses the security and auditability features of the application software.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and Conditions

This product is available for purchase under the terms of the IBM Customer Agreement.

IBM hardware products are manufactured from new parts, or new and used parts. In some cases, the hardware product may have been previously installed.

Regardless, IBM warranty terms apply.

Volume Orders: Contact your IBM representative.

IBM Credit Corporation Financing: Yes

Warranty Period

- Three years for system hardware ─ Parts
- One year for system hardware ─ Labor

Licensing: IBM and some non-IBM programs are licensed under the terms and conditions of the IBM License Agreements that ship with the system. IBM also provides programs with this solution that come with their own license agreements. Unless expressly provided by IBM, IBM and non-IBM programs are provided **"as is" without warranties of any kind, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose.**

Warranty Service

First year: IBM On-Site Repair (IOR) Monday through Friday, 9 hours per day, excluding holidays, next business day response.

Second and third years: Parts exchange only

IBM support centers will assist customers with hardware problem isolation to determine if warranty service or parts exchange is required.

ServiceSuite™ and ServiceElect (formerly ESA) Maintenance: For ServiceElect (Z125-5510) and ServiceSuite (Z125-5745) Statements of Work

Warranty Service Upgrade

During the warranty period, Warranty Service Upgrade provides an enhanced level of service for an additional charge. This enhanced level of service provides on-site labor during the second and third years, or provides a higher level of on-site service labor in year one, and provides on-site labor during the second and third years. Parts are covered for three years by the original warranty.

The following Warranty Service Upgrade options are available.

- IOR, 9 hours a day, Monday through Friday excluding holidays, next business day response

or

- IOR, 24 hours a day, 7 days a week, same day response

IBM support centers will assist customers with hardware problem isolation to determine if warranty service or parts exchange is required.

Maintenance Service

Offering 1: IOR, Monday through Friday, 9 hours per day, excluding holidays, next business day response. In the U.S., customers should call ITS Service at 800-426-7378.

Offering 2: IOR, 24 hours a day, 7 days a week, same day response. In the U.S., customers should call ITS Service at 800-426-7378.

Maintenance Service (ICA)

Currently available maintenance services for existing ICA legacy contracts only. The preferred go-to-market offerings are ServiceElect. However, ICA legacy contracts will still be available for current customers until they are withdrawn.

Alternative Service (Warranty Service Upgrades): During the warranty period, Warranty Service Upgrade provides an enhanced level of service for an additional charge. This enhanced level of service provides on-site labor during the second and third years, or provides a higher level of on-site service labor in year one, and provides on-site labor during the second and third years. Parts are covered for three years by the original warranty.

The following Warranty Service Upgrade options are available.

- IOR, 9 hours a day, Monday through Friday excluding holidays, next business day response

or

- IOR, 24 hours a day, 7 days a week, same day response

IBM support centers will assist customers with hardware problem isolation to determine if warranty service or parts exchange is required.

Maintenance Service

Option 1: IOR, Monday through Friday, 9 hours per day, excluding holidays, next business day response. In the U.S., customers should call ITS Service at 800-426-7378.

Option 2: IOR, 24 hours per day, 7 days per week, same day response. In the U.S., customers should call ITS Service at 800-426-7378.

Usage Plan Machine: No

IBM Hourly Service Rate Classification: Two

Mid-Range System Option: Yes

Eligible Types	Discount Three-Year	Five-Year
5187-7RY	12%	17%

Corporate Service Option: Yes

	Discount	
	Three-Year	**Five-Year**
System	12%	17%

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

Rental Offering: No

Field-Installable Features: Yes

Model Conversions: No

Machine Installation: Customer Setup, customers are responsible for installation according to the instructions IBM provides with the machine.

Graduated Charges: No

Educational Allowance: A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

Prices

Contact your IBM representative for prices information for this announcement.

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