Product Overview

IP-based gateway services for P4000 SAN Solutions built on industry standards

You made the decision to invest in a P4000 storage array, but now you've found that you still have file and application servers that aren't connected. So you're still spending time managing islands of storage and your array isn't meeting its full potential. Wouldn't it be nice to complete the consolidation to truly create one unified storage pool to expand and protect?

HP P4000 G2 Unified NAS Gateways boost the value of your P4000 SAN by adding Windows-powered IP-based gateway services to it. You'll spend less time and effort on maintenance and deliver a better return-on-investment for your SAN when you consolidate to a single, unified storage pool that can serve files to your clients and blocks to your servers via the iSCSI protocol. Industry-standards protect your investment by providing compatibility with your network and applications, and a Microsoft Cluster Server (MSCS) license is included to provide high availability and reduce downtime.

What is a P4000 G2 Unified NAS Gateway? HP P4000 G2 Unified NAS Gateways are enhanced Windows-powered gateways for your medium business, workgroup, or datacenter environment. They are built on industry-standard HP ProLiant servers and come with the Microsoft® Windows Storage Server 2008 R2 Enterprise operating system -- including cluster services -- pre-installed. They connect via Ethernet and add file, print, and management services to a P4000 SAN to build an affordable and highly-available unified storage solution. Since HP P4000 G2 Unified NAS Gateways are Windows-based, integration into your Windows environment is easy, your antivirus and backup applications run right on the box, and management has a familiar look and feel.
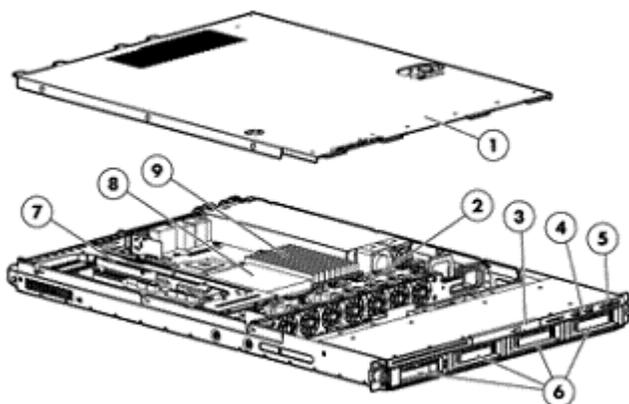
Models
HP P4000 G2 Unified NAS Gateway

The HP P4000 G2 Unified NAS Gateway is a 1U rack-mount solution that makes adding gateway services to a P4000 SAN more affordable than ever before.

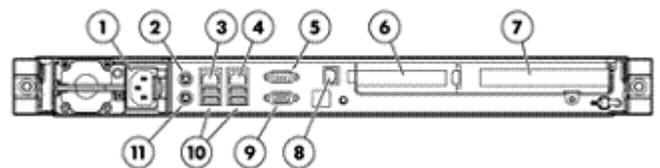|	
P4000 G2 1-Node Unified NAS Gateway	BV875A
P4000 G2 2-Node Unified NAS Gateway (2 x BV875A)	BV876A

Front View:

1. Access panel
2. System fans
3. DVD-RW drive
4. USB Ports (2)

Rear View:

1. Power supply
2. Mouse connector
3. NIC 1 Port / Shared iLO 2 Management Port
4. NIC 2 Port

Product Overview

5. Power Button, UID Button, and Front LED Indicators

6. Four (4) 3.5" hot-plug SAS/SATA hard drive bays - two occupied with drives for O/S mirror

7. PCIe expansion slot cage

8. Dual-Core Intel® Xeon® processor

9. DDR3 Registered (RDIMM) memory -- nine slots

5. Serial Port

6. PCIe slot (occupied by Smart Array controller for internal O/S drives)

7. PCIe slot (occupied by NC364T 4 port Gigabit Server Adapter)

8. Dedicated Integrated Lights-Out 2 management port (optional)

9. VGA Port

10. USB Ports (4)

11. Keyboard connector

QuickSpecs

Features and Benefits

Add more data services to your P4000 SAN	HP P4000 G2 Unified NAS Gateways are file bridges into a P4000 iSCSI SAN. They add IP-based data services, including file and print serving, in a package that can be clustered for high-availability and can host management utilities.
Manage, expand, and protect a single centralized storage pool	If you're already consolidating your block storage into your P4000 SAN, complete the job by adding file services to your storage pool with a P4000 G2 Unified NAS Gateway. You'll have a unified solution that can serve files to your clients and blocks to your servers, and you'll drive a better return-on-investment for your P4000 SAN up by centralizing all of your storage -- not just that for your mission-critical servers. You can do the same on a smaller scale for more cost-conscious environments like small and remote offices: create a highly-available unified solution combining P4000 G2 Unified NAS Gateways with the P4000 Virtual SAN Appliance (VSA).
Optimized file services for clients	In a Windows (SMB/CIFS) environment, there's no better way to serve files. Windows Storage Server 2008 delivers better file serving performance than standard Windows Server, has exclusive features like Single Instance Storage (SIS) file de-duplication, and supports Volume Shadow Copy Service snapshots. In mixed environments, you get the flexibility of heterogeneous support for additional protocols like NFS, HTTP, FTP, and WebDAV.
Ready for High Availability	With the included Microsoft Cluster Server (MSCS) license, you can cluster P4000 G2 Unified NAS Gateways to enable high availability and scalable performance. Pre-bundled single sku HA dual node solutions make it easier to order and provide cost savings.
Seamless integration into your Windows environment	It's running Windows, so it integrates natively into your Active Directory and DFS environments, runs your favorite antivirus, backup, and storage management applications, and the Microsoft Management Console (MMC) user interface has a familiar look and feel.
HP ProLiant industry-standard hardware	Relax -- your investment is protected because you're not locked into proprietary platforms. P4000 G2 Unified NAS Gateways are built on HP ProLiant technology and feature Quad-Core Intel® Xeon® processors, PCIe expansion, and support for additional arrays and interconnects.
Intelligent storage services	Make more efficient use of storage space using the file de-duplicating Single-instance Storage (SIS) feature and enjoy the benefits of other storage-specific tools like Indexed Search, Quotas, File Screening, Storage Reporting, and Distributed File System (DFS) Replication.
Remote and Enterprise manageability	You can manage and troubleshoot from outside the office at both the operating system level (with Remote Desktop or HTTPS) and at the platform level (using Integrated Lights-Out 2 with the included Advanced Pack). P4000 G2 Unified NAS Gateways also integrate with HP Systems Insight Manager (HP SIM) and support ProLiant Support Pack.

Standard Features

Operating System   Microsoft Windows Storage Server 2008 R2, Enterprise x64 Edition

- 64-bit processing (compatible with 32-bit applications)
- Microsoft Cluster Server (MSCS) license included
  - **NOTE:** P4000 G2 Unified NAS Gateways may be clustered only with gateways also running Microsoft Windows Storage Server 2008 R2, Enterprise x64 Edition operating system (HP recommends like hardware as well).
- Optimized for File Serving: Better file serving performance out of the box than a general-purpose Windows Server 2008 R2 installation on the same hardware.
- HP-enhanced File Server Management Console: Features the familiar look and feel of the Microsoft Management Console (MMC).
- HP Rapid Startup: Simplifies and accelerates new device deployment by presenting basic system settings on your first boot.
- Single-instance Storage (SIS): Recovers up to 35% of disk space by de-duplicating files and reducing the amount of redundant data stored. Identifies identical files, stores a single copy of the file in a central repository, and replaces the files with pointers to the file in the SIS common store.
- Search Enhancements: Indexing Service extracts the information from a set of documents and organizes it in a way that makes it quick and easy to access that information through the Search function for computers running Windows 2000 or Windows XP.
- File Server Resource Manager (FSRM): Provides both on-demand and scheduled reports detailing storage use, allows administrators to create and manage folder and volume quotas, and permits both name-based screening of files and allowing/disallowing file creation on specified folder trees.
- Unified Share and Storage Management Snap-in: With a consistent and familiar interface, simplifies management of shares and volumes by unifying SMB and NFS share provisioning, integrating share and storage provisioning, and providing an overview of storage and shares.
- Distributed File System (DFS) Management Console: Updated DFS namespace failover, failback and prioritization controls.
- Distributed File System Replication (DFS-R): State-based, multi-master replication engine that supports replication scheduling and bandwidth throttling. DFS-R uses a new compression algorithm that efficiently updates files over limited bandwidth networks by replicating only the changes needed to ensure global file consistency.
- Full support of Volume Shadow Copy Service, which creates point-in-time copies of files and folders at predetermined time intervals that can then be accessed from client computers.
- Unlimited Client Access Licenses (CALs) included
- Microsoft Services for Network File System (NFS)
- Simultaneous support for multiple file serving protocols, including SMB/CIFS, NFS, HTTP, FTP, and WebDAV
- Print Management Console: Manage multiple printers (license for unlimited printer support) from a single console, whether locally or over the WAN
- Support for any number of SATA or SAS drives and multiple network ports
- Support for up to 1TB of SDRAM

Standard Features

Management	Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS)
	Remote system management via Remote Desktop or Telnet
	HP ProLiant Onboard Administrator (powered by the Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration. It functions without additional software, and can be accessed from any location via a web browser.
	Capabilities of the HP ProLiant Onboard Administrator include:

- Rom-based Setup Utility (RBSU) and Option Rom Configuration for Arrays (ORCA)
- IML and iLO event logging
- Automatic Server Recovery (ASR)
- OS independent hardware health status
- Present server power consumption
- Virtual Unit ID control
- Remote serial console
- Virtual power button control
- Dynamic Sector Repairing (with Smart Array controller)
- Drive Parameter Tracking (with Smart Array controller)
- Hot Spare Boot
- Advanced license (standard): Virtual KVM remote graphical console, power management capabilities such as power measurement, regulation, and capping, new iLO Text Console, automatic and on-demand video recording of server events, global team collaboration for up to four remote users, virtual media (floppy, CD/DVD, USB key), virtual folders, and enterprise security (directory services and two-factor authentication).

For additional information, please see: www.hp.com/go/iLO

Processor / Cache Memory	**P4000 G2 Unified NAS Gateway**	
	HP DL320 G6 Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W)	
Chipset	Intel 5500 Chipset with up to 6.4GT/s QPI	
Memory	Type	DDR3 Registered (RDIMM) standard
	Standard	6GB (3 x 2GB)
	Maximum	Up to 192 GB, using DDR3 Registered (RDIMM) memory, operating at 800 MHz when fully populated at 2 DIMMs per Channel in 6 Slots.
	DIMM Sockets	9
Network Controller	NIC Ports	6 (1 shared with iLO2)
	Controller	HP NC326i Integrated Dual Port Gigabit Server Adapter
		HP NC364T PCI-E Quad Port Gigabit Server Adapter

Standard Features

Expansion Slots	Slot Number	Bus Speed	Connector Width	Bus Number*	Form Factor	Notes
	1	x16 PCI-Express	x16	21	Full length, full height	Occupied by NC364T
	2	x4 PCI-Express	x8	10	Half length, low-profile	Occupied by Smart Array controller

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.

Storage Controller	**NOTE:** P4000 G2 Unified NAS Gateways include a storage controller designed for internal drives housing the O/S mirror only.
	Controller(s) HP Smart Array P212/256MB Controller with battery-backed write cache (BBWC)
	RAID 0/1/1+0/5/5+0, 6, 6 + 0
	Internal SAS connectors 1
	External SAS connectors 1
	NOTE: Smart Array Advanced Pack License Key is included with product

Storage	Hard Drives	
	Internal	Four 3.5" (Large Form Factor) hot-plug bays
		• 2 x 300 GB 6G SAS 15K LFF HDDs for O/S mirror
	External	Designed for attach to P4000 SANs
	Optical Drive	DVD-RW (all models)

Power Supply	400 Watts, Non Hot Plug, Non Redundant

Power Cords	One high voltage power cord (IEC C13 to C14) standard
	NOTE: P4000 G2 Unified NAS Gateways are primarily connected to PDUs in racks, so they ship standard with only PDU C-14 to C13 power cord(s). However, you may alternatively plug a P4000 Unified NAS Gateway into a wall receptacle by ordering a separate power cord (see options below).

System Fans	Non-hot plug, Non-redundant

Form Factor	Rack Mount (1U), (1.75 in/4.45 cm)

Standard Features

Rack Airflow Requirements	**Rack 10000 series Cabinets**

Rack 10000 series Cabinets
The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches)

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/proliantdl145/index.html

Telco and Threaded Hole Rack Support

Telco Rack Kit:
NOTE: Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions: http://www.racksolutions.com/hp

Optional Software

HP Data Protector Express Software	HP Data Protector Express is easy-to-use data protection and disaster recovery software. It is designed for smaller environments where ease of installation, use, and installation are needed. It enables backup to disk and/or tape of data stored on a P4000 G2 Unified NAS Gateway and disaster recovery in the event of a serious incident. A P4000 G2 Unified NAS Gateway can also act as the Backup Server and as a target for backup of data on other LAN connected machines or data protection can be integrated into an existing Data Protector Express installation. For more information on HP Data Protector Express Software: http://www.hp.com/go/dataprotectorexpress
HP Data Protector Software	HP Data Protector Software is enterprise data protection and disaster recovery, ensuring recovery from any disruption. Data Protector integrates a variety of techniques to eliminate backup and recovery windows. The capabilities to eliminate planned downtime range from online backup and backup of open files to zero-downtime, zero-impact backup. The software provides industry-leading instant recovery as well as several disaster recovery alternatives to eliminate unplanned downtime, allowing recovery of entire data centers in minutes. Data Protector is enabling organizations to reduce costs by automating routine tasks to maximize the effectiveness of the data protection staff. For the price of an entry-level product, it provides the enterprise functionality customers need. Data Protector scales from single server to distributed enterprise, covering an extensive range of heterogeneous applications, operating environments and storage configurations with a single solution. HP P4000 G2 Unified NAS Gateways support using Data Protector as a backup software solution. For more information on HP Data Protector: http://h18006.www1.hp.com/products/storage/software/dataprotector/index.html
HP File Migration Agent	HP FMA is an automated solution designed to help simplify Windows-based file, web, and application server administration in small business to enterprise environments. This is accomplished through policy-based file migration and archive to popular storage targets, including HP Reference Information Storage System (RISS), and NAS, via Common Internet File System (CIFS). The following Windows Storage Server features or add-ons are currently NOT supported by HP File Archiving software: **NOTE:** Single Instance Storage (SIS) - (NOT SUPPORTED) **NOTE:** DFS-Replication (DFS-R) - (NOT SUPPORTED) **NOTE:** File Server Resource Manager (FSRM) - Content Filter, & File Screening - (NOT SUPPORTED) For more information: http://h18006.www1.hp.com/products/storage/software/fma/

Optional Software

HP Systems Insight Manager Software

HP SIM 5.x is the first unified server and storage management platform. Now, from a single management console, administrators can manage their complete HP server and storage environment with a feature rich, extensible and secure management tool set.

HP SIM also serves as a central access point for ProLiant Essentials, Integrity Essentials, and Storage Essentials software options that deliver targeted functionality for these platforms. For more information: http://h18013.www1.hp.com/products/servers/management/hpsim/index.html

Insight Management Agents - Allow all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers

HP Storage Essentials NAS Manager Software

Provides comprehensive Network Attached Storage (NAS) management capabilities for HP ProLiant Storage Servers. Visualize your distributed HP NAS solutions and centrally manage their capacity, performance, events, and dependencies to ensure NAS availability and performance and unify SAN and NAS management. For more information on the complete line of HP Storage Essential products go to: http://www.hp.com/go/storageessentials

SAN / Array Compatibility

HP P4000 G2 Unified NAS Gateways are designed to be connected to a P4000 SAN by using the iSCSI initiator. P4000 Gateways can connect to additional storage arrays by adding a recommended Fibre Channel or SAS HBA, or by using an iSCSI initiator.

Host Bus Adapter (HBA) **Support**	HBA selection is left as your choice based on existing infrastructure and/or desired array support. Please see compatible HBAs listed in the 'Options' section below. **NOTE:** See the following URL for additional information about Fibre Channel HBAs: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html **NOTE:** This would require removing the NC364T NIC to accommodate an HBA.

HP SAN / Array Support	**HP Enterprise Virtual Array** (EVA)	http://h18006.www1.hp.com/products/storageworks/eva/index.html
	HP P9500/XP	http://h18006.www1.hp.com/storage/xparrays.html
	HP P4000 Storage Systems	http://hp.com/go/p4000
	HP P2000/Modular Smart Array (MSA)	http://h18006.www1.hp.com/storage/disk_storage/msa_diskarrays/index.html

HP P4000 G2 Unified NAS Gateways and third-party storage arrays/SAN interoperability statement

HP acknowledges that some third-party storage arrays/SAN environments have been successfully tested for interoperability with HP P4000 G2 Unified NAS Gateway and ProLiant Storage Server SAN Gateway products. HP will provide support for the HP Gateway products when connected to third-party storage arrays, but HP will not provide support on third-party storage arrays/SAN unless specifically called out in an HP Support contract. HP may support the third-party SAN environment attached to HP Gateway product(s) when specifically under contract with HP, but that SAN coverage does not extend to supporting the SAN connectivity of the third-party array.

If you call HP Services and the problem is determined to be caused by a third-party storage array or the storage arrays' connectivity into a non-HP supported SAN, you will be directed to contact the third-party storage array supplier for support. Please refer to the third-party supplier for information relating to specific support of their storage arrays with Windows Storage Server 2008 Enterprise Edition.

QuickSpecs

Models (Pre-configured)

These models come with factory-selected drives and the Microsoft Windows Storage Server 2008 R2, Enterprise Edition x64 operating system pre-installed

Choose a Pre-configured Model

NOTE: Options ship separately and are not factory integrated.

P4000 G2 Unified NAS Gateway

Specifications		
	Processor	Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W) Processor
	Memory	6GB (3 x 2GB)
	Storage Controller	HP SA P212/256 BBWC 1-ports Int/1-ports Ext PCIe x8 SAS Controller
	Internal Storage	2 x HP 300GB 6G SAS 15K 3.5in DP ENT HDD (OS mirror)
	Network Ports	6 x Gigabit Ethernet (1 shared with iLO2)
	Expansion Slots	2 x PCIe (one slot occupied by Smart Array Controller and one slot occupied by NC364T)
	Form Factor	1U Rack

HP P4000 G2 1-Node Unified NAS Gateway	BV875A
HP P4000 G2 2-Node Unified NAS Gateway (2 x BV875A)	BV876A

Options

The following options are available for P4000 G2 Unified NAS Gateway
NOTE: Options ship separately and are not factory integrated.
NOTE: Carefully match options to your model to ensure compatibility.

Add More Memory

NOTE: P4000 G2 Unified NAS Gateway is expandable to 1TB (by O/S license); however, it can be physically expanded to 192GB.

Registered DIMMs (RDIMMs)

HP 2GB 2Rx8 PC3-10600R-9 Kit	500656-B21
HP 4GB 2Rx4 PC3-10600R-9 Kit	500658-B21
HP 4GB 4Rx8 PC3-8500R-7 LP Kit	500660-B21
HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit.
NOTE: Kits described as LP include Low Power DIMMs.

Add a Network Adapter

NOTE: Multifunction Server Adapters support the installed Microsoft Windows Server Scalable Networking Pack, which enables TCP Chimney offload, Receive-side Scaling (RSS), and Network Direct Memory Access (NetDMA) features.

HP NC112T PCIe Gigabit Server Adapter	503746-B21
HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21
HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21

NOTE: A minimum of two gigabyte (2 GB) of server memory is required per each NC522SFP adapter.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs

NOTE: This would ship as a separate option and require replacing the factory installed NC364T on site.

Options

Add Storage

HP P4000 G2 Unified NAS Gateways are designed and optimized for integration with a P4000 SAN, but can connect to additional storage arrays by adding a recommended Fibre Channel or SAS HBA, or by using an iSCSI initiator.

Fibre Channel HBAs

NOTE: Fibre Channel HBAs enable connection to HP XP, EVA, and MSA2000fc arrays and Fibre Channel SANs.
For more information on Fibre Channel HBAs, see:
http://h18006.www1.hp.com/storage/saninfrastructure/hba.html.

HP FC2142SR 4Gb PCI-e HBA	A8002A
HP FC2242SR Dual Channel 4Gb PCI-e HBA	A8003A
HP FC1142SR 4Gb PCI-e HBA	AE311A
HP FC1242SR Dual Channel 4Gb PCI-e HBA	AE312A
HP 81Q 8Gb PCI-e FC HBA	AK344A
HP 81E 8Gb PCI-e FC HBA	AJ762A
HP 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
HP 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A

SAS HBAs

NOTE: The HP SC08Ge SAS HBA enables connection to HP MSA2000sa arrays.

HP SC08Ge Host Bus Adapter	488765-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC08Ge HBA)

HP SC11Xe Host Bus Adapter	412911-B21

NOTE: Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS.

NOTE: Any factory integrated SAS HBA purchase automatically includes the HP HBA SAS-SATA 4x 1 LN Cable Kit (452130-B21)

NOTE: This would ship as a separate option and require replacing the factory installed NC364T on site.

QuickSpecs

Options

Add a Power Cord

HP P4000 G2 Unified NAS Gateways come standard with at least one rack (IEC-IEC) PDU power cord. If you wish to use wall outlet power instead, you can choose a country- or region-specific power cord.

HP 1.83m 10A C13-UL US Power Cord	AF556A
HP 1.83m 10A C13 China Power Cord	AF557A
HP 2.5m 10A C13-Argentina Power Cord	AF558A
HP 1.83m 10A C13 Brazil Power Cord	AF559A
HP 1.83m 10A C13 Korea Power Cord	AF560A
HP 1.83m 10A C13 Taiwan Power Cord	AF561A
HP 2.0m 10A C13 India Power Cord	AF562A
HP 2.5m C13 AU/NZ Power Cord	AF569A
HP 1.83m 10A C13 CH Power Cord	AF565A
HP 1.83m 10A C13 DK Power Cord	AF566A
HP 1.83m 10A C13 EU Power Cord	AF568A
HP 1.83m 10A C13 IL Power Cord	AF564A
HP 1.83m C13 IT/CL Power Cord	AF571A
HP 2m C13 Japan Power Cord	AF572A
HP 1.83m 10A C13 UK Power Cord	AF570A
HP 2.5m C13 ZA/IN Power Cord	AF567A
HP 1.83m 10A C13 NBR14136 Brazil Power Cord	AF591A

Add a Backup Solution

NOTE: For the complete listing of data protection offerings for P4000 Unified NAS Gateways, please visit:
http://www.hp.com/products1/storage/compatibility/tapebackup/NAS/index.html

Service and Support, HP Care Pack, and Warranty Information

Warranty

HP P4000 G2 Unified NAS Gateways come with a standard 3-3-3 warranty (3 years parts exchange, 3 years labor and 3 years onsite, next business day response). Software media is warranted to be free of physical defect for a period of 90 days from delivery.

Services Included with the Product One year of HP Software Support, standard 9x5 business hours (software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service).

Add Care Pack Services

Scalable, Flexible, Dependable -- Like your storage.
Your storage is evolving. Get scalable support that evolves with it. HP Care Pack Services is an easy-to-buy, easy-to-use portfolio of packaged services covering your lifecycle needs. You can rely on our highly skilled, HP certified professionals to offer a breadth of expertise across leading storage technologies, and work side by side with you for optimal results. Partner with HP Technology Services to boost availability and avoid costly downtime by mitigating technology-related business risks. To help take the worry out of deploying, supporting and managing your storage technologies, we've designed a portfolio of service options that are as flexible, scalable and affordable as our storage.

Protect your business beyond the warranty
Standard warranty protects against product defects and some causes of downtime. HP Care Pack Services helps you proactively guard against unplanned downtime which can reduce your productivity and profitability. By using a standard approach to warranty uplifts, such as HP Care Pack Services, customers can be certain of consistency of operations for both mission-critical and standard business computing.

Extending warranties with HP Care Pack Services
The key to normalizing the warranty of combined solutions-is making service uplift simple: HP Care Pack Services. This portfolio of predefined packages, extending across the entire IT lifecycle, offering consulting, education, technical support, optimization, risk assessment, and more. It's entirely flexible allowing customers to extend the cover to the precise level of support required. Customer's standard hardware warranty, for example, can be upgraded to next-business-day response, to same-day coverage, or even to a committed six-hour call-to-repair service available 24 hours every day of the week.

- Provide consistent, predictable levels of support across your entire department or business
- Give you direct access to proven technical and problem-solving expertise
- Offer a choice of response-time and repair-time commitments
- Are available whenever and wherever you do business

For many products, post-warranty HP Care Pack Services are available when your original warranty has expired. Choose the support levels that meet your business requirements, from basic to mission-critical. In the new world of business technology, when your technology has to work for your business to work, who can you trust to make your technology work? HP Technology Services, the trusted business technology experts who manage your technology in action, because when technology works, business works.

http://www.hp.com/services/storage

NOTE: Care Pack Services availability may vary by product and country.

Service and Support, HP Care Pack, and Warranty Information

Recommended Services	**HP Care Pack Services recommended for optimal satisfaction of all deployments of your product**
	3-Year HP Support Plus 24 3-Year HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. HP Services engineers deliver reactive onsite hardware support and over-the-phone software support around-the-clock.
	HP Installation and Startup Service for P4000 Gateways HP Installation and Startup Service for P4000 G2 Unified NAS Gateways provides deployment of your solution while helping you establish readily available access to and management of your critical data and applications.

Product Number	Product Name	Service Name	Care Pack Services Product Number	Alternate Care Pack Services Product Number
		HP Installation and Startup Service for P4000 Unified NAS Gateway	Contact your HP sales rep or Channel Partner for assistance	Contact your HP sales rep or Channel Partner for assistance
BV875A	HP P4000 1-Node Unified NAS Gateway	3-Year HP Support Plus 24		
BV876A	HP P4000 2-Node Unified NAS Gateway	3-Year HP Support Plus 24		

Related Services	**Services that will enhance the user experience in many product deployments**
	3-Year HP Proactive 24 3-Year HP Proactive 24 Service (P24) is an integrated hardware and software support solution, which combines industry leading technical assistance with proactive account services to cover the entire IT infrastructure and to improve the stability, availability, and operational effectiveness of the IT environment.
	HP Entry Storage Data Migration Service for Windows HP Entry Storage Data Migration Service for Windows offers you a cost competitive and convenient way to accommodate data migration triggered by a need to refresh or consolidate storage, or to create different storage tiers. This service offers a migration cost in line with the costs of storage products in small and medium-sized storage environments. The service is delivered via a skilled HP service specialist with special consideration for data availability, integrity, and ongoing operational performance during the transfer process.

Service and Support, HP Care Pack, and Warranty Information

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: http://www.hp.com/support

Remote Support Technology (RST)-HP Remote Support Pack
Taking a more proactive approach to IT support, the HP Remote Support pack plug-in module easily integrates with HP Systems Insight Manager to provide a powerful, unified "single pane of glass" solution for onsite and remote management.

HP Remote Support Pack enhances HP Systems Insight Manager with intelligent event diagnosis plus the automatic submission of hardware event notifications securely to HP support, including acknowledgment and status returns. It adds remote configuration collections to allow the delivery of assessment and proactive services for your SAN storage and HP-UX environments.

Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online.
www.hp.com/learn/storage

HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit:
http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.html.

Additional Services Information

For more information about HP Care Pack Services for Storage, please visit:
http://www.hp.com/services/storage

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com

Memory

Standard Memory

DDR3 Registered (RDIMM) with ECC Capabilities

- 6 GB (3 x 2GB)

Maximum Memory

- 192 GB
- Physical maximums:
  - Up to 192 GB, using DDR3 Registered (RDIMM) memory, operating at 800MHz when fully populated at 2 DIMMs per Channel in 6 Slots.

DDR3 memory population guidelines

Installation guidelines for additional memory are summarized below:

- P4000 G2 Unified NAS Gateway (with nine memory slots)
  - There are three (3) channels per processor
  - There are three (3) DIMM slots for each memory channel; nine (9) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor

For more information on memory configuration, consult QuickSpecs for the HP ProLiant DL320 G6 Server or the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator
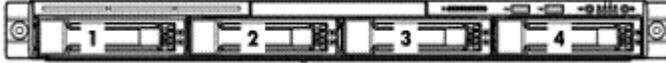
Memory options:

Registered DIMMs (RDIMMs)

HP 2GB 2Rx8 PC3-10600R-9 Kit	500656-B21
HP 4GB 2Rx4 PC3-10600R-9 Kit	500658-B21
HP 4GB 4Rx8 PC3-8500R-7 LP Kit	500660-B21
HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit.
NOTE: Kits described as LP include Low Power DIMMs.

Storage

P4000 Unified NAS Gateway

1 - 4   Four 3.5" (LFF) hot plug SATA / SAS hard drive bays

Hard Drive Factory Pre-configurations

Model	Drives	Position Installed	O/S Volume	Notes
P4000 Unified NAS Gateway	2 x 300GB 6G 15K LFF SAS	1, 2	RAID1 (Drives 1, 2)	Internal drives connected to SA P212 internal SAS port

Technical Specifications

P4000 G2 Unified NAS Gateway

System Unit	**Dimensions** (H x W x D) (with bezel)	1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.20 cm)	
	Weight (approximate)	All hard drives, power supplies, and processors installed	33.50 lb (15.20kg)
	Input Requirements (per power supply)	Rated Line Voltage	90 - 132 VAC, 180 - 264 VAC
		Rated Input Current	6 A (at 100 VAC), 3 A (at 200 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	486 W (at 100 VAC), 479 W (at 200 VAC)
	BTU Rating	Maximum	1836 BTU/hr (at 100 VAC), 1706 BTU/hr (at 200 VAC)
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise		Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).
		Idle	
		LWAd	6.30 B
		LpAm	52.07dBA

Technical Specifications

Operating		
	LWAd	6.38 B
	LpAm	52.77 dBA

P4000 G2 Unified NAS Gateway

Embedded NC326i Dual Port Gigabit Server Adapter	**Network Interface**	10Base-T/ 100Base-TX/ 1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	Four lane (x4), 100MHz PCI Express Reference Clock	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s
	Connector	Two RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

HP NC364T PCI Express Quad Port Gigabit Server Adapter	**Network Interface**	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	EEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
		IEEE 802.3ad 1000Base-TX	
		IEEE 802.1p 100Base-TX	
		IEEE 802.1q 100Base-TX	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	Connector	Four RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
		1000BaseTX	Category 5 or higher UTP; up to 328 ft (100 m)

Technical Specifications

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.
		The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.