

### Overview

HP StorageWorks NAS 8000 solutions provide easily managed network-attached storage (NAS) solutions in dedicated storage and SAN configurations for customers that require file-sharing flexibility. With an HP operating system optimized for file serving, NAS 8000 solutions attach directly to Ethernet networks, and deliver low maintenance and high uptime. Cluster technology is available for environments requiring mission-critical access to data. The NAS 8000 solutions support Windows®, UNIX®, and Linux. They allow IT managers to increase departmental and site storage quickly and easily without bringing down servers or disrupting client access to network data. The solutions scale easily to tens of TBs. They use hot swap fans, memory, and power supplies for increased availability. Network administration, user access, and storage configurations are all easily managed through the Command View NAS or command line interfaces. The NAS Data Path Manager software enables management and control of the data paths.

### HP NAS 8000 Solution Feature Set

- An operating system optimized for storage and file serving.
- The Command View NAS web interface for server and array management.
- A Configuration Wizard that helps you set up your system.
- NAS Data Path Manager (Optional Software)
  - Support for EVA 5000 arrays
  - For Fiber Channel Management for all Supported Arrays:
    - Load Balancing features
    - Performance Monitoring of host bus adapter (HBA) throughput
    - Data Path failover
    - Data Path control and status through the Command View NAS
- Context-sensitive online help.
- On-line file system expansion
- Performance Monitoring Tool
  - Metrics for overall NFS reads and writes, CPU load
  - Real-time Charts
  - History Charts (up to 2-weeks)
  - Print Chart
  - Export Data into Spreadsheet-friendly Format
- Optional high availability system.
- Backup and disaster recovery options.
- Dynamic file system expansion
- Network configuration support for:
  - SNMP and SMTP notification of critical events
  - Remote system log capabilities
  - UPS connection
  - User and group mapping
  - Snapshots for quick retrieval of data that is inadvertently lost or deleted
  - Quota management
  - Solution monitoring
  - Fully integrated virus protection
  - HP support and diagnostic tools
  - Server and array software upgrades

The NAS 8000 is structured to be Configure To Order. Each of the models is designed to be as flexible and complete as possible. The top level part numbers (A7414B, A7415B, A7416B, A7417B) are only use to setup configuration rules and signal the HP ordering systems to configure the parts as a complete solution, racking it if requested. Each of the part numbers can be ordered in many different configurations to meet customers' needs. This document shows the major different configurations for each model. However there are options within each of the configurations provided. See the min and max columns in the Configuration Tables at the end of this document. The best way to order these solutions is to use the Sales Builder for Windows sales tool.

### Overview

### Models

#### Product Family Models

Single server NAS solution in front of dedicated VA array(s)	A7414B
Two server clustered NAS solution in front of dedicated VA array(s)	A7415B
NAS for SAN environments with two clustered NAS servers in front of XP, VA, EVA 5000, EMA & MA arrays	A7416B
NAS 8000 cluster upgrade for transition from single server configuration to cluster configuration	A7417B
<b>These two models are not configurable and do not support HA. They are intended primarily for the channel partners:</b>	
NAS 8000 Dedicated Storage Server – NAS 8000 Server with no storage, includes CPUs, NICs, HBAs & Software	A7398B
NAS 8000 SAN Server – NAS 8000 Server with no storage, includes CPUs, NICs, HBAs & Software	A7399B

### Feature List

#### CONTROLLABLE:

- **complete:** provides command line and Web interfaces – HP StorageWorks Command View NAS
- **manageable:** provides control and status of the data paths between the NAS server and the storage

#### RESILIENT:

- **comprehensive:** ensures data availability with basic and enhanced network backup and local backup
- **reliable:** provides high uptime with available 24 x 7 x 365 telephone and Web support
- **adaptable:** failures in the data path are detected and failover occurs without disruption
- **available:** maximizes uptime with clustering and redundant, hot-swappable components
- **secure:** has native UNIX and Windows security, universal file locking, integrated virus protection

#### EXTENSIBLE:

- **integrated:** functions with popular system management applications and backup solutions
- **extensive:** operates with a wide range of applications for databases, Web serving, and e-mail
- **flexible:** operates with Windows 98/XP/NT/2000, UNIX, and Linux clients
- **scalable:** extends storage to 30TB attached to VA arrays, even more with SAN (EVA 5000, XP, VA & EMA arrays)

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### Included in the all configuration

<b>NAS 8000 server- base configuration</b>		A7418B
<b>Operating System</b>	HP NAS O/S with Command View NAS management software	
<b>Integrated Software</b>	HP Virus Guard, HP OpenView Storage Data Protector Agent, and NDMP server support	
<b>Processor</b>	2 Intel Xeon Processors at 1.9 GHz standard (up to 4 supported)	
<b>Cache Memory</b>	1 MB Integrated Level 3 Cache	
<b>Memory</b>	2048 MB PC1600 registered ECC SDRAM (4x1 interleaved memory)	
<b>Network Controller</b>	HP NC3134 Dual 10/100 Tx Server Adapter	
<b>Storage Connectivity</b>	2 FCA2101 2 Gb FC HBAs	
<b>Manageability</b>	Integrated Lights-Out (iLO) Standard management	

### Overview

**SSP for non-HA dedicated storage** A7414B

**Entry option for NAS file serving**

- Dedicated storage managed completely by the NAS server
- Self contained solution easily managed from the graphical user interface
- Single pool of storage for file serving only

**Configuration 1: non-HA dedicated storage with va7110 array** A7414B

**Configuration 2: non-HA dedicated storage with va7410 array** A7414B

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**SSP for HA dedicated storage** A7415B

- Dedicated storage managed completely by the NAS server
- Full integration with MC/ServiceGuard with IP address and file system fail over
- Configurable for Active/Active or Active/Passive 2-way clusters
- Cluster synchronization and setup is built in to the Command View NAS Configuration Wizard
- Automatic and manual (for maintenance) fail-over and fail-back
- Self contained solution that is easily managed
- Single pool of storage for file serving only

**Configuration 1: HA dedicated storage with single va7410 array** A7415B

**Configuration 2: HA dedicated storage with dual va7410 arrays** A7415B

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**SSP for SAN attached solutions** A7416B

- HA and non-HA configurations
- Supported arrays (VA7100, VA7110, VA7400, VA7410, EVA 5000, XP, MA, or EMA)
- EVA 5000 support requires HP StorageWorks NAS Data Path Manager. However, the operating system solution kit for the EVA is NOT required.
- NAS server is a consumer of LUNs, but the storage pool is managed by SAN management
- Single pool of storage used for application servers and NAS servers
- Full integration with MC/ServiceGuard with IP address and file system fail over
- Configurable for Active/Active or Active/Passive 2-way clusters
- Cluster synchronization and setup is built in to the Command View NAS Configuration Wizard
- Automatic and manual (for maintenance) fail over and fail-back
- HP StorageWorks NAS Data Path Manager required HA configurations

**Configuration 1: non-HA SAN solution** A7416B

**Configuration 2: HA SAN solution** A7416B

**Other solutions are available. See Sales Builder for Windows for complete configuration possibilities.**

### Software Features

#### Software Features

Snapshot functionality, quota management (default, soft, and hard quotas), Windows NT® pass-through authentication, NAS disaster recovery protection, NIC channel bonding, telnet, e-mail alerts, SNMP, NDMP, Web browser management; supports Windows 98/XP/NT/2000, HP-UX, SUN Solaris, Red Hat Linux, SCO UnixWare, and IBM AIX; all software factory pre-configured; typical system startup in minutes.

#### Cluster

The HP NAS 8000 cluster has two NAS servers that function as one complete system to provide fail over services for each other. The HA configuration uses fully integrated MC/ServiceGuard functionality to provide two-way clustering, SMB/CIFS and NFS fail-over, active/active and active/passive, automatic and manual fail over. Cluster management allows the NAS servers to be managed as one device through the Command View NAS interface.

The main purpose of high-availability clusters is to provide a higher degree of storage availability to client systems than is possible with a single server. This is accomplished by eliminating single points of failure and providing functional redundancy. Uninterrupted service is provided by failing over file serving capabilities to a secondary NAS server when one of the clustered NAS servers fails.

#### Operating System

The HP NAS 8000 operating system is optimized for file serving in heterogeneous (CIFS and NFS) network environments. The appliance-like nature of the OS ensures robustness, manageability and efficiency for the IT Administrator. The NAS 8000 OS provides the base feature set for robust, high performance file serving in UNIX, Windows, and mixed UNIX/Windows environments from either a dedicated storage array or a SAN. It supports NFSv2 (UNIX clients), NFSv3 (UNIX clients), and CIFS (Windows clients) file serving protocols. For Windows clients, the NAS 8000 OS implements a complete Windows ACL (Access Control List) implementation, modeled from Windows 2000 semantics.

#### Administration Interface

HP Command View NAS management software is a graphical user interface that runs in a web browser. This software provides an easy-to-use interface for configuring, managing, and monitoring the NAS 8000. Some of the highlights of Command View NAS are:

- A Configuration Wizard, which leads the installer or administrator through the NAS 8000 configuration tasks. These same tasks are available outside of the Wizard format for post-installation changes.
- A status page that provides quick access to the NAS server status, clustering status (for high-availability configurations), and array status for any dedicated arrays.
- A storage management page that facilitates the setup and management of user storage, including the creation of file volumes, SMB shares, NFS exports, snapshots and user/group quotas.
- An applications page, which allows easy access to the graphical user interfaces associated with the Anti-Virus, OpenView Storage Data Protector, NDMP and snapshot applications.
- A support page that provides access to system logs, logs and diagnostics for dedicated arrays, software licenses, and links to HP's support Web site and the NAS O/S upgrades.
- Context-sensitive help, installation and user guides, and command reference.
- Access to Command View SDM is provided for configurations with dedicated arrays to allow advanced array management.
- Performance monitoring tool provides chart, graphs and spreadsheet friendly data of the NFS performance and CPU utilization.

HP Command View NAS supports all of the NAS 8000 configurations: dedicated arrays, high availability, and SAN.

#### File Size

Maximum file system size is 2 TB; Maximum file size is 2 TB; Supports up to 250 File Systems

#### Diagnostics and Predictive Monitoring

Integrated-Lights-Out (iLo) Card support – enables secure remote access to the console for diagnostics, boot from virtual floppy capability.  
Environmental and system monitoring with SNMP alerts, performance monitoring.

#### Network Interface and Protocols

DHCP, TCP/IP, NFS v2 and v3, CIFS/SMB, SMTP, DNS, NIS, Multiple Master Domain, NDMP (v2 and v3), Dual-port 10/100 Base-T standard; additional 10/100 Base-T and Gigabit NICs optional.

### Tools Features

**System Management Tools** Functions with popular systems management applications, including HP OpenView Network Node Manager, HP Tootools, CA Unicenter TNG, IBM Tivoli NetView, and BMC Patrol

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**Optional Software** **HP StorageWorks NAS Data Path Manager (A7423A)** – Provides the administrator with control and status of the data paths between the NAS server and the storage device.  
Data path failures are detected and failover will occur internal to the NAS 8000 server without disruption. Load balancing is provided to maximize the data path routes. A graphical user interface has been developed for administrative control and status. This interface allows routes to be designated as active or failover paths. It will also report failures and display current status of the operational paths. This optional software activates the performance monitoring of the host bus adapters throughput.

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**Applications** Compatible with MS SQL2000, MS Exchange 5.5, and Lotus Domino R5 mail servers, and Microsoft IIS (4.0 and 5.0) and Apache Web servers.

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**Virus Detection and Protection** Fully integrated virus protection with HP Virus Guard. A one-year license to upgrade the virus signatures is included with the HP NAS 8000 system. HP Virus Guard removes the burden and the need for an external virus-scanning tool to scan NAS 8000 storage giving you the confidence of virus-free storage by providing real-time protection for the storage on the NAS 8000 with no additional hardware requirements.  
With CIFS real-time protection guarding the NAS 8000, the storage is protected. Any virus that is written to the storage will immediately be detected. Administrators may choose to automatically and immediately delete, quarantine, or clean the virus based on their specific requirements.  
HP Virus Guard also provides everything needed to schedule updates of virus-signature files so that it will always be able to detect the latest viruses. HP Virus Guard also provides the ability to schedule periodic virus scans.

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**Backup** HP OpenView Data Protector 5.0 (full agent integration), NDMP certification for VERITAS NetBackup and NDMP support and network backup for Legato NetWorker; Computer Associates Intl. BrightStor ARCserve (basic network only), VERITAS Backup Exec (basic network only), IBM Tivoli Storage Manager (basic network only).

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**Support** 3-year on-site parts and labor, next-business day delivery of customer-replaceable parts and on-site support; optional installation, 24 x 7 support available in selected regions.  
See <http://www.hp.com/go/nas>.  
**NOTE:** This Web site is available in English only.

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**Globalization and Localization** CIFS and NFS unicode data; English manuals and Web interface.

### Hardware Features - NAS Server

<b>Processors</b>	2 Intel Xeon Processor MP at 1.90 GHz/1 MB in the base server (A7418B) A7398B and A7399B ship with 4 processors	
<b>Cache Memory</b>	1 MB Integrated Level 3 Cache	
<b>Upgradability</b>	Upgradable to quad processing	
<b>Chipset</b>	ServerWorks Grand Champion-HE chipset <b>NOTE:</b> For more information regarding ServerWorks, please see the following URL: <a href="http://www.serverworks.com/products/overview.html">http://www.serverworks.com/products/overview.html</a> <b>NOTE:</b> This Web site is available in English only.	
<b>Memory</b>	<b>Standard</b>	2048 MB 200-MHz Double Data Rate (DDR) SDRAM (PC1600 Registered SDRAM Memory with Advanced ECC functionality). Recommendation: only 2GB of memory (either stand alone or mirrored)
	<b>Optional</b>	Hot plug mirrored memory - 2048 MB 200 MHz Double Data Rate (DDR) SDRAM (PC1600 Registered SDRAM Memory with Advanced ECC functionality) via 2nd memory expansion board and 4x512 memory modules
	<b>NOTE:</b> Advanced ECC Memory Technology protects the data even in the event of an entire SDRAM component failure. Embedded in the chipset design, this feature allows the use of Industry-Standard Registered DIMMs.	
<b>Network Controller</b>	NC3134 expandable Dual-port 10/100TX server adapter in a slot	
<b>Manageability</b>	Integrated Lights-Out (iLO) Standard Management	
<b>Internal Storage Controller</b>	Smart Array 5i Plus Controller, Ultra3 SCSI (set up as RAID 1 across 2 internal hard drives). <ul style="list-style-type: none"><li>● 64 MB total memory for code, transfer buffers, and read/write cache on the 5i Plus Memory Module</li><li>● The Battery-Backed Write Cache (BBWC) Enabler protects write cache memory from hard boot, power, controller, or system board failures.</li></ul>	
<b>Internal Storage Devices (Service Use Only)</b>	<b>Diskette Drive</b>	1.44 MB (slim line) – ejectable for security and serviceability
	<b>CD-ROM</b>	24x IDE CD-ROM Drive (slim line) – ejectable for security and serviceability
	<b>Hard Drives</b>	2 x 36.4 GB SCSI drives
<b>Form Factor</b>	Rack (4U = 7 inches), ships with sliding rails and cable management system Space saving 4U form factor provides space efficiencies while providing maximum deployment flexibility	

### Hardware Features - NAS Server

#### Intelligent Manageability Integrated Lights-Out (iLO) Standard Management

- Virtual Text Remote Console
- Virtual Power Button Control
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) Security
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privileges

Integrated Lights-Out (iLO) Advanced Pack (supports Advanced features such as Graphical Remote Console and Virtual Floppy - Standard)

Automatic Server Recovery-2 (ASR-2)

#### Availability

- Smart Array 5i Plus Controller with standard Battery Backed Write Cache (BBWC) Enabler provides transportable data protection and increases overall controller performance. 64 MB Battery Backed Write Cache protection
- Redundant Cooling Zones across major server subsystems (Memory, I/O, CPU) provide 7x24 cooling. Each zone is independent of each other and is able to support n+ 1 redundancy, as indicated below:
- PCI-X expansion zone is 1+ 1 redundant (fans 1 and 2)
- Memory zone is 1+ 1 redundant (fans 3 and 4)
- CPU zone is 2+ 1 redundant (fans 5, 6, and 7)

This zone configuration enables the server to withstand up to three fan failures, provided that they are not within the same zone. Each fan is hot plug redundant and individually removable.

- Advanced Memory Protection Technology – delivers unsurpassed memory protection and server availability:
- Online Spare Memory

Offers a higher level of memory protection than Advanced ECC alone. If the number of single-bit correctable errors on a bank exceeds the pre-defined error threshold, that bank will fail over to the online spare bank without intervention or server interruption. Online spare memory can be configured across one or two memory cards. The failed memory can then be replaced at the user's convenience during a scheduled maintenance window.

- Single-Board Mirrored Memory

Single-board mirrored memory provides a higher level of availability than Advanced ECC and Online Spare Memory because it protects against multi-bit errors. Single-board Mirrored Memory uses mirrored banks on a single memory board that is configured with one redundant bank of memory. The system writes to both banks, but reads from one. If a DIMM(s) has a multi-bit error, the system simply reads from the mirrored bank instead. This process occurs without intervention or server interruption, and the failed DIMM can be replaced during a regularly scheduled shutdown.

- Hot Plug Mirrored Memory

Hot Plug Mirrored Memory is a fault-tolerant memory feature that provides a higher level of availability than Advanced ECC, Online Spare Memory, or Single-Board Mirrored Memory because it protects against multi-bit errors and does not require any server downtime to replace failed DIMMs. Hot Plug Mirrored Memory requires that two memory boards be installed, one an exact mirror of the other, which run in parallel and provide protection against multi-bit memory errors. When configured for Hot Plug Mirrored Memory, the system writes to both memory boards, but reads from one. If a read error occurs, the system fails over to the redundant memory board. At that point the memory board containing the failed DIMMs can be hot replaced. Once the failed DIMMs are replaced and the memory board is re-installed into the server, the system goes back to full mirrored status. All this occurs without bringing the server down.

**NOTE:** Hot Plug Mirrored Memory and Dual-Board Online Spare Memory require the use of two memory boards. All DL580 G2 servers ship standard with a single memory board. The second memory board is optional (P/N 203320-B21).

**NOTE:** All HP Advanced Memory Protection modes are user configurable through the ROM-Based Setup Utility (RBSU) and viewable through HP Insight Manager 7 (CIM 7) and the Integrated Management Log (IML).

- Four Hot Plug Drive Bays (Two Left open)
- Duplex SCSI Backplane
- Dual Hot Plug Redundant Power Supplies

## Hardware Features - NAS Server

### Serviceability

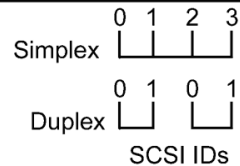
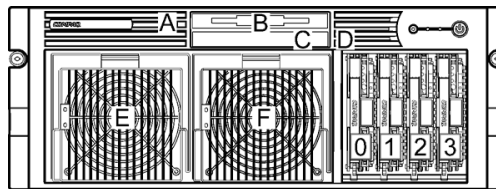
- Innovative Diagnostic Lighting
- QuickFind Diagnostic Display – precisely depicts all major subsystems of the server (PCI-X I/O, Memory, CPU, Redundant Cooling, Interlock, Thermtrip) and gives instant visual indication of fault status. Located on top front of server.
- LED display on front panel indicates power, internal health, external health, Unit ID light.
- LED display on Memory board indicates Memory status, health, and protection mode.
- Tool-less, virtually cable-less interior design
  - Tool-less access to interior of server
  - Two ejectable, slim line media drives (diskette and CD-ROM standard with support for optional DVD-ROM drives) are removable without the use of tools
  - Front access power supplies
  - Spring-loaded memory board release latches prevent unseating incidents
  - PCI Card Guides locks full length PCI cards in place during transit
  - SCSI Duplex/Simplex Drive Cage connects directly to system board – no cables.
  - Seven individually removable fans connect without cables to the system board
  - Processor/VRM Retention Cage securely locks both processor and VRM into their respective sockets
  - Tool-less removal of system board
- Quick Deploy Rails
  - Tool-less design "snap in" rails

### Power Supply

800 Watt (low line or high line) Hot Plug Power Supply  
**NOTE:** Two 800 Watt Hot Plug Power Supplies ship standard

### System Fans

- Standard 7 Hot plug, redundant fans (individually removable)  
 Maximum 7 Hot plug, redundant fans (individually removable)
- Redundant Cooling Zones across major server subsystems (Memory, I/O, CPU) provide 7x24 cooling. Each zone is independent of each other and is able to support n+ 1 redundancy, as indicated below:
    - PCI-X expansion zone is 1+ 1 redundant (fans 1 and 2)
    - Memory zone is 1+ 1 redundant (fans 3 and 4)
    - CPU zone is 2+ 1 redundant (fans 5, 6, and 7)
  - This zone configuration enables the server to withstand up to three fan failures, provided that they are not within the same zone. Each fan is hot plug redundant and individually removable.



- A Diskette Drive eject button
- B Ejectable: 24x IDE CD-ROM (Slimline)
- C Ejectable: 1.44-MB Diskette Drive (Slimline)
- D CD-ROM Drive eject button
- E 800-Watt (low line or high line) Redundant Hot Plug Power Supply
- F 800-Watt (low line or high line) Primary Hot Plug Power Supply
- 0-1 Wide Ultra3 ready Drive Cage Duplex is the shipping configuration



### Hardware Specifications

<b>System Unit Rack</b>	<b>Chassis Footprint (HxWxD)</b>	6.94 x 19 x 26.5 in (17.6 x 48.3 x 67.3 cm)		
	<b>Weight</b>	81 lb/36.7 kg		
	<b>Input Requirements</b>	Rated Input Voltage	100 to 120 VAC/200 to 240 VAC	
		Rated Input Frequency	50 to 60 Hz	
		Input Power	1135W @ 110 VAC/1125W @ 220 VAC	
		Rated Input Current	12A (100 VAC), 9.8A (120 VAC), 4.9A (220 VAC)	
		<b>Max BTU Rating</b>	4000 BTU	
	<b>Power Supply Output Power</b> (per power supply)	Rated Steady-State Power	800W/800W (lowline/highline)	
		Maximum Peak Power	800W/800W (lowline/highline)	
	<b>Temperature Range</b>	Operating	50° to 95° F (10° to 35° C)	
		Non-operating	-20° to 140° F (-29° to 60° C)	
		Shipping	-22° to 122° F (-30° to 50° C)	
	<b>Relative Humidity</b> (non-condensing)	Operating	20% to 80%	
		Non-operating	5% to 90%	
	<b>Maximum Wet Bulb Temperature</b>	101.7°F/38.7°C		
	<b>Acoustic Noise</b>	Idle		
		(Fixed Disk Drives Spinning)		
		L WAd (BELS)	7.24	
		L pAm (dBA)	60.7	
		Operating		
(Random Seeks to Fixed Disks)				
L WAd (BELS)	7.25			
L pAm (dBA)	60.8			

### Power Specifications

#### Power Specifications

Power Supply Part Number	192147-001
Power Supply Spare Kit	278535-B21
Operational Input Voltage Range (V rms)	90 to 264
Frequency Range (Nominal) (Hz)	47 to 63 (50/60)

Nominal Input Voltage (Vrms)	100	115	208	220	230	240
Max Rated Output Wattage Rating	800	800	800	800	800	800
Nominal Input Current (A rms)	12.0	10.2	5.2	4.9	4.7	4.5
Max Rated Input Wattage Rating (Watts)	1143	1111	1067	1067	1067	1053
Max. Rated VA (Volt-Amp)	1203	1170	1088	1088	1088	1074
Efficiency (%)	70	72	75	75	75	76
Power Factor	0.95	0.95	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.43	0.50	.90	.96	1.00	1.04
Maximum Inrush Current (A peak)	25	25	25	25	25	25
Maximum Inrush Current duration (mS)	20	20	20	20	20	20

#### System Specifications

##### NAS Server Fully Configured

Up to 4 Processors, 16 Memory Slots, 4 Hard Drives, 6 PCI Slots, and 2 Hot Plug Power Supplies

Nominal Input Voltage (Vrms)	100	115	208	220	230	240
Fully Loaded System Input Wattage (W)	1068	1068	1025	1025	1025	1012
Fully Loaded System Input AMPs (A rms)	11.6	9.8	5.0	4.8	4.5	4.3
Fully Loaded System Thermal (BTU-Hr)	3746	3642	3496	3496	3496	3450
Fully Loaded System VA (Volt-Amp)	1156	1124	1046	1046	1046	1032
System Leakage with all power supplies loaded (mA)	.87	1.00	1.81	1.91	2.00	2.09
System Inrush Current with all power supplies loaded (A)	50	50	50	50	50	50
Power cord requirements	Nema 5-15P to IEC320-C19			Option no./Spare no: 235603-001/237457-001		
	PDU Jumper Cord IEC320-C19 to IEC320-C20			Option no./Spare no: 295633-B21/295508-001		

#### NOTES:

ActiveAnswers Power Calculation.

Power calculator is LIVE on ActiveAnswers Web site:

<http://h30099.www3.hp.com/configurator/powercalcs.asp>

**NOTE:** This Web site is available in English only.

To drill down to calculators:

- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: DL580 G2
- Click on: "Power Calculator" link (You may need to scroll down to see it.)

## Service, Support, and Warranty Information

**Software Product Services** Standalone telephone support  
Rights to new license version  
Media and documentation updates

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**Hardware Product Services** Installation services  
On-site maintenance (includes warranty support)  
Response time upgrades during the warranty period  
Post-warranty coverage  
Performance consulting via statement of work

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**Warranty Upgrade Options** Response - Upgrade on-site response from next business day to same day 4 hours  
Coverage - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days  
Duration - Select duration of coverage for a period of 1, 3, or 5 years  
See <http://www.hp.com/go/nas> for details.  
**NOTE:** This Web site is available in English only.

### Options

#### Tape Library and Required HBAs

HP tape libraries can be directly connected to HP NAS 8000 and operated by the HP OpenView Storage Data Protector (Omniback II) agents or the NDMP server running on HP NAS 8000.

The libraries supported are: HP Tape Libraries with Ultrium 230 and DLT 8000 tape drives. Connections can be either LVDS (SCSI) or Fibre Channel.

Also supported HP ESL and MSL Tape Libraries with SDLT and Ultrium drives.

The solution requires for two of either of these cards to be used for directly attaching the Tape Library or to a Tape Library on the SAN

- FC HBA – PCI-FCH HBA 2 GB W2K ALL
- SCSI Adapter – Ultra 3 HBA Dual Channel ALL

	NDMP Fiber Channel SCSI			
NAS 8000 1.6.0 and 1.6.1	Tape Changer	DLT8000	LTO	SDLT
HP Tape Library 2/20	Yes	Yes	Yes	N/A
HP Tape Library 4/40	Yes	Yes	Yes	N/A
HP Tape Library 6/60	Yes	Yes	Yes	N/A
HP Tape Library 10/100	Yes	Yes	Yes	N/A
HP Tape Library 10/180	Yes	Yes	Yes	N/A
HP Tape Library 20/700	Yes	Yes	Yes	N/A
MSL 5000 series	Yes	Yes	Yes	N/A
ESL 9000 series	Yes	N/A	Yes	Yes

	Data Protector 5.0 Fiber Channel SCSI			
NAS 8000 1.6.0 and 1.6.1	Tape Changer	DLT8000	LTO	SDLT
HP Tape Library 2/20	NOTE 1	Yes	Yes	N/A
HP Tape Library 4/40	NOTE 1	Yes	Yes	N/A
HP Tape Library 6/60	NOTE 1	Yes	Yes	N/A
HP Tape Library 10/100	NOTE 1	Yes	Yes	N/A
HP Tape Library 10/180	NOTE 1	Yes	Yes	N/A
HP Tape Library 20/700	NOTE 1	Yes	Yes	N/A
MSL 5000 series	NOTE 2, 3	Yes	Yes	N/A
ESL 9000 series	NOTE 2, 3	N/A	Yes	Yes

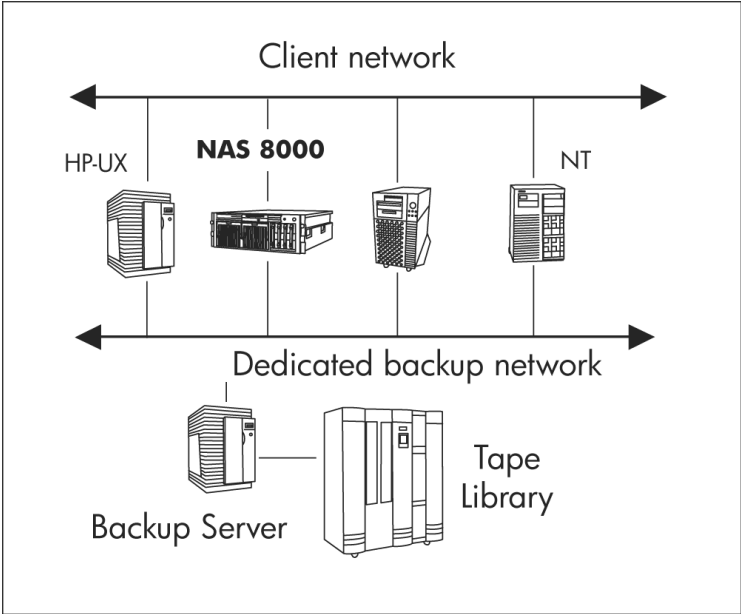
The following restrictions exist:

1. The Data Protector NAS agent for the NAS 8000 can not be used to control the Pre-merger HP Tape Library changers when connected via FC. This includes (2/20, 4/40, 6/60, 10/180, 20/700). The Tape Library changer must be controlled from a NT or HPUX node (also running Data Protector), when FC connected libraries are used. Data Protector with SCSI connected 2/20, 4/40, 6/60 is the preferred configuration.
2. When configuring the MSL/ESL with Data Protector, the add device must be used. The "auto configure" mode will not correctly associate the tape changer with its tape devices, and the SuperDLT device type is not recognized by the NAS 8000 automatic device configure module.
3. When the MSL/ESL bridge (E1200 firmware versions 4.03.14 and 4.03.16.) is configured with direct ( FC LOOP mode) connections to the NAS 8000 tape HBAs, the bridge should be configured in "Auto Select" mode, with "2G" link speed. Refer to the MSL configuration guides for setup of the E1200. The Switch Fabric mode is preferred, using either McData or Brocade switches using either a Data Protector agent or NDMP service with NetBackup or NetWorker.

## Options

### Backup Topologies

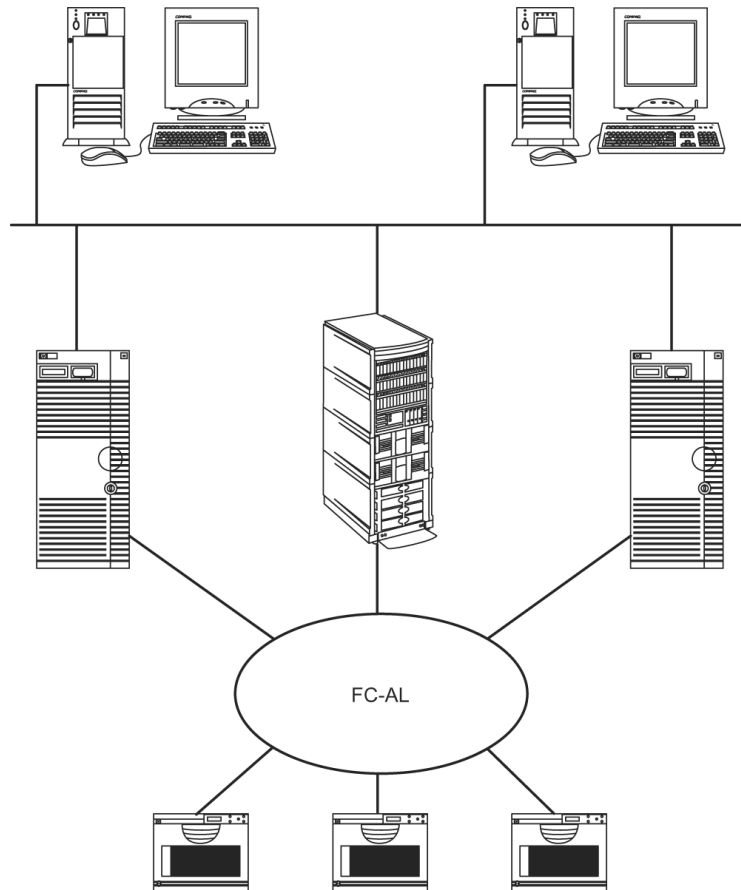
The three supported backup topologies are (1) network, (2) local SCSI or FC, or (3) SAN backup device connections.



### Options

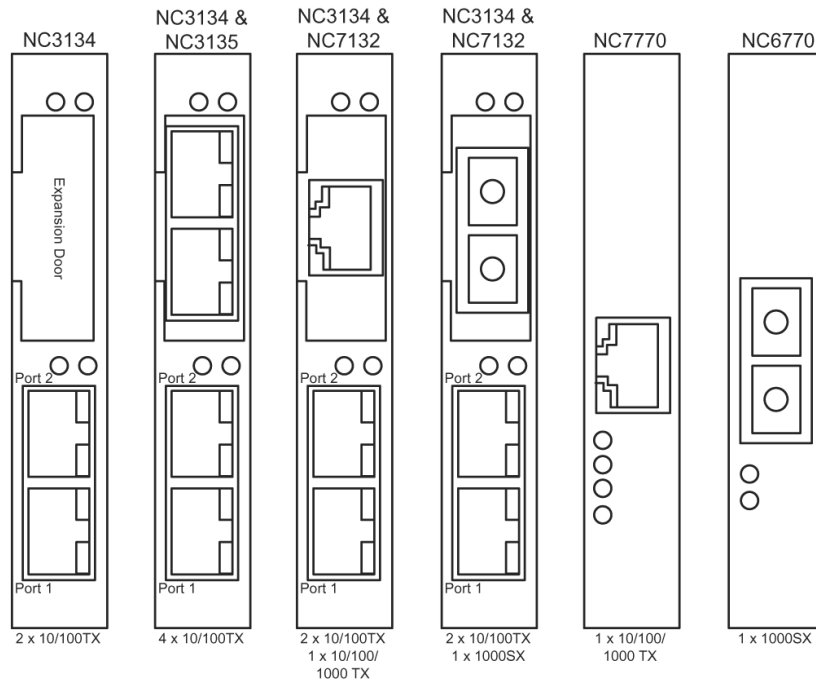
In the network configuration, the backup devices are connected to a backup server on the network not directly to the NAS 8000. A dedicated backup network will keep backup data from interfering with the client network. There are several backup applications that have been tested in this configuration. (HP OpenView Storage Data Protector, OmniBack II, VERITAS Backup Exec, VERITAS NetBackup, Computer Associates ARCserve 2000, IBM Tivoli Storage Manager, Legato NetWorker) NDMP and the backup agent supports direct SCSI or FC connection of the tape devices to the NAS 8000. Tape changer control and tape library sharing are supported.

In a SAN configuration, NDMP and the backup agent will support backup to be done on a shared tape library on the SAN. As shown below.



## Options

### Optional NICs



The following NICs are supported and have been tested.

- NC3134 (138603-B21) Expandable Dual-port 10/100
- NC7770 (244948-B21) Single-port PCI-X gigabit copper
- NC7132 (153543-B21) Single-port gigabit copper upgrade for NC3134
- NC6770 (244949-B21) Single-port PCI-X 1000SX gigabit fiber
- NC6132 (338456-B23) Single-port 1000SX fiber upgrade for NC3134
- NC3135 (128604-B21) Dual-port 10/100 upgrade for NC3134

### NIC configuration examples

The NAS 8000 solution reserves two PCI slots (one of which is loaded with the NC3134 dual-port 10/100TX expandable adapter) for NICs. Below are some popular configuration examples: If you want:

Two 10/100TX ports

Order no additional NICs. Dual 10/100TX ports are standard on the NAS 8000.

Two 10/100TX ports and two 10/100/1000TX ports

Order one NC7132 single-port gigabit copper upgrade for the NC3134 and one NC7770 single-port PCI-X gigabit copper adapter.

Two 10/100TX ports and two 1000SX fiber ports

Order one NC6132 single-port 1000SX fiber upgrade for the NC3134 and one NC6770 single-port PCI-X 1000SX fiber adapter.

Eight 10/1000TX ports

Order another NC3134 dual-port 10/100TX expandable adapter and two NC3135 dual-port 10/100TX upgrades.

## Configuration Information

Before selecting a solution that best meets the customer's needs, understand the three orderable configurations:

- Non-HA (1 node) with dedicated storage (A7414B)
- HA (2 node cluster) with dedicated storage (A7415B)
- NAS Connected to SAN Non-HA and HA (A7416B)

These solutions can be optionally pre-racked at the factory. Racked or unracked, the operating system is loaded and the components are factory tested and configured. The software will only be shipped pre-loaded into the hardware that goes thru the HP integration centers. There are currently no plans to offer a CD media kit for the NAS 8000.

The following examples are rack mounted solutions.

### A7414B – Configuration 1: Non-HA Dedicated Storage with VA7110

Item	Min	Max	Description	Part Number
1			SSP-Non HA Direct Attached	A7414B
2	1	1	HP NAS Server	A7418B
<p>The NAS SERVER A7418B, contains the following factory installed components. Quantities are per server: 2-processors, 4 - 512 (2048 total) SDRAM, 2- 36.4 GB HDD, 2-Host Adapters, 1-Dual ported 10/100 Tx NIC. The following components can be ordered additional to those listed above for the minimum configured A7418B and will be factory installed into the NAS SERVER.</p>				
			<b>Xeon Processors (Addition to the 2 processors Standard)</b>	
			<b>Additional Processors (Customer must order additional processors in pairs)</b>	
	0	2	1.9 GHz 1 MB Processor Option Kit ML 570/D	001
			<b>SDRAM Memory + memory mirroring capability</b>	
	0	1	2 GB REG PC1600 4X512 ALL (4 x 512 MB) & Hot-plug memory expansion board:	002
			<b>NIC Cards (Optional 1)</b>	
			NC3134 64 Dual 10/100 ALL	003
			NC6770 PCIX 1000SX ALL	004
			NC7770 10/100/1000T ALL	005
			<b>NIC Upgrade Module (Optional 1) or (Optional 2 if Option 004 is ordered)</b>	
			NC6132 1000SX MODULE ALL	006
			NC7132 1000T UPGDMOD ALL	007
			NC3135 Dual 10/100 Mo ALL	008
	0	2	<b>HBAs for Tape Backup (need to order in pairs)</b>	
			ULTRA 3 HBA D/CH ALL	009
			PCI-FCH HBA 2 GB W2K ALL	010
3	0	1	NAS Data Path Manager (Data Path Failover & Control)	A7423A
4	0	1	<b>Network Management Integration CD</b>	
			Ent Management SPI 1 Host LTU & SW Kit (Optional 1)	T1002A
5	1	1	<b>Virtual Array</b>	
Alternate			Virtual Array 7110 w/ Dual Controllers 512 MB ea.	A7294AZ
Alternate			Virtual Array 7110 w/ Dual Controllers 1024 MB ea.	A7295AZ
Alternate			Virtual Array 7110 w/ Dual Controllers 2048 MB ea	A7296AZ
6	4	15	<b>Disk Drives Mixing of Hard Disk Drives is acceptable.</b>	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A



## Configuration Information

7	2	2	<b>FCCables</b>	
Alternate			Fibre Optic Cable 2m LC/SC Duplex M/M	C7529A
Alternate			Fibre Optic Cable 16m LC/SC Duplex M/M	C7530A
8	0	2	<b>DS 2405 Disk enclosure (max 15 drives per enclosure)</b>	A6250AZ
9	2	45	<b>Disk Drives for DS 2405 Mixing of Hard Disk Drives is acceptable.</b>	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A
10	1	1	HP9000 Std Rack	
Alternate			HP9000 Std Rack System E25	A4900A
Alternate			HP9000 Std Rack System E33	A4901A
Alternate			HP9000 Std Rack System E41	A4902A
11	1	1	Rear Door for Std. Rack System E25 (required for E25 rack)	A5211AZ
Alternate			Rear Door for Std. Rack System E33 (required for E33 rack)	A5212AZ
Alternate			Rear Door for Std. Rack System E41 (required for E41 rack)	A5213AZ
12	2	2	Modular Power Dist. Unit for std racks	A5137AZ
13	0	1	HP Cable Guide	E7723B
14	0	1	HP 8000 Installation Service	H4780A

### A7414B - Configuration 2: Non-HA Direct Attach with VA7410

Item	Min	Max	Description	Part Number
1			SSP-Non HA Direct Attached	A7414B
2	1	1	HP NAS Server	A7418B

The NAS SERVER A7418B, contains the following factory installed components. Quantities are per server: 2-processors, 4 - 512 (2048 total) SDRAM, 2- 36.4 GB HDD, 2-Host Adapters, 1-dual ported 10/100T NIC. The following components can be ordered additional to those listed above for the minimum configured A7418B and will be factory installed into the NAS SERVER.

			<b>Additional Processors (Customer must order additional processors in pairs)</b>	
	0	2	1.9 GHz 1 MB Processor Option Kit ML 570/D	001
			<b>SDRAM Memory + memory mirroring capability</b>	
	0	1	2 GB REG PC1600 4X512 ALL (4 x 512 MB) & Hot-plug memory expansion board:	002
			<b>NIC Cards (Optional 1)</b>	
			NC3134 64 Dual 10/100 ALL	003
			NC6770 PCIX 1000SX ALL	004
			NC7770 10/100/1000T ALL	005
			<b>NIC Upgrade Module (Optional 1) or (Optional 2 if Option 004 is ordered)</b>	
			NC6132 1000SX MODULE ALL	006
			NC7132 1000T UPGDMOD ALL	007
			NC3135 Dual 10/100 Mo ALL	008
	0	2	<b>HBAs for Tape Backup (need to order in pairs)</b>	
			ULTRA 3 HBA D/CH ALL	009
			PCI-FCH HBA 2 GB W2K ALL	010

### Configuration Information

3	0	1	NAS Data Path Manager (Data Path Failover & Control)	A7423A
4	0	1	<b>Network Management Integration CD</b>	
			Ent Management SPI 1 Host LTU & SW Kit (Optional 1)	T1002A
Alternate			Virtual Array 7110 w/ Dual Controllers 1024 MB ea.	A6267AZ
Alternate			Virtual Array 7110 w/ Dual Controllers 2048 MB ea	A6268AZ
6	10	15	<b>Disk Drives Mixing of Hard Disk Drives is acceptable.</b>	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A
7	2	2	<b>FCCables</b>	
Alternate			FBR Optic Cable 2m LC/LC	C7524A
Alternate			FBR Optic Cable 16m LC/LC	C7525A
Alternate			FBR Optic Cable 50m LC/LC	C7526A
8	0	6	DS 2405 Disk enclosure (max 15 drives per enclosure)	A6250AZ
9	2	90	<b>Disk Drives – Mixing of Hard Disk Drives is acceptable</b>	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A
10	1	1	<b>HP9000 Std Rack</b>	
Alternate			HP9000 Std Rack System E25	A4900A
Alternate			HP9000 Std Rack System E33	A4901A
Alternate			HP9000 Std Rack System E41	A4902A
11	1	1	Rear Door for Std. Rack System E25 (required for E25 rack)	A5211AZ
Alternate			Rear Door for Std. Rack System E33 (required for E33 rack)	A5212AZ
Alternate			Rear Door for Std. Rack System E41 (required for E41 rack)	A5213AZ
12	2	2	Modular Power Dist. Unit for std racks	A5137AZ
13	0	1	<b>HP Cable Guide</b>	E7723B
14	0	1	<b>HP 8000 Installation Service</b>	H4780A

## Configuration Information

### A7415B – Configuration 1: HA dedicated storage with single VA7410 array

Item	Min	Max	Description	Part Number
1			SSP-Non HA Direct Attached	A7415B
2	2	2	HP NAS Server	A7418B
<p>The NAS SERVER A7418B, contains the following factory installed components. Quantities are per server: 2-processors, 4 - 512 (2048 total) SDRAM, 2- 36.4 GB HDD, 2-Host Adapters, 1-dual ported 10/100 Tx NIC. The following components can be ordered in addition to those listed above for the minimum configured A7418B and will be factory installed into the NAS SERVER.</p>				
			<b>Additional Processors (2 per Server) (Customer must order additional processors in pairs)</b>	
	0	4	1.9 GHz 1 MB Processor Option Kit ML 570/D	001
			<b>SDRAM Memory + memory mirroring capability</b>	
	0	2	2 GB REG PC1600 4X512 ALL (4 x 512 MB) & Hot-plug memory expansion board:	002
			<b>NIC Cards (Optional 1)</b>	
			NC3134 64 Dual 10/100 ALL	003
			NC6770 PCIX 1000SX ALL	004
			NC7770 10/100/1000T ALL	005
			<b>NIC Upgrade Module (Optional 1) or (Optional 2 if Option 004 is ordered)</b>	
			NC6132 1000SX MODULE ALL	006
			NC7132 1000T UPGDMOD ALL	007
			NC3135 Dual 10/100 Mo ALL	008
	0	4	<b>HBAs for Tape Backup (Customer must order HBAs in pairs)</b>	
			ULTRA 3 HBA D/CH ALL	009
			PCI-FCH HBA 2 GB W2K ALL	010
3	2	2	NAS Data Path Manager (Data Path Failover & Control)	A7423A
4	0	1	<b>Network Management Integration CD</b>	
			Ent Management SPI 1 Host LTU & SW Kit (Optional 1)	T1002A

### Configuration Information

High Availability Components				
5	1	1	Quorum Server	A7421C
6	2	2	MC/ServiceGuard for NAS 8000 LTU	T1501AA
7	1	1	CAT 5 Network Cable (Cross-Over – Heartbeat between the two servers)	C7539A
8	1	1	<b>Virtual Array</b>	
Alternate			Virtual Array 7410 with Dual Controllers 1024 MB ea.	A6267AZ
Alternate			Virtual Array 7410 with Dual Controllers 2048 MB ea.	A6268AZ
9	10	15	Disk Drives *Mixing HDD accepted	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A
10	2	2	Cables	
Alternate			FBR Optic Cable 2m LC/LC	C7524A
Alternate			FBR Optic Cable 16m LC/LC	C7525A
Alternate			FBR Optic Cable 50m LC/LC	C7526A
11	0	6	<b>DS 2405 Disk enclosure (max 15 drives per enclosure)</b>	A6250AZ
12	2	90	<b>Disk Drives – Mixing of Hard Disk Drives is acceptable</b>	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A
13	1	1	<b>HP9000 Std Rack</b>	
Alternate			HP9000 Std Rack System E25	A4900A
Alternate			HP9000 Std Rack System E33	A4901A
Alternate			HP9000 Std Rack System E41	A4902A
14	1	1	Rear Door for Std. Rack System E25 (required for E25 rack)	A5211AZ
Alternate			Rear Door for Std. Rack System E33 (required for E33 rack)	A5212AZ
Alternate			Rear Door for Std. Rack System E41 (required for E41 rack)	A5213AZ
15	2	6	Modular Power Dist. Unit for std racks	A5137AZ
16	0	1	HP Cable Guide	E7723B
17	0	1	HP 8000 Installation Service	H4780A

## Configuration Information

### A7415B – Configuration 2: HA dedicated storage with dual VA7410 arrays

Item	Min	Max	Description	Part Number
1			SSP-Non HA Direct Attached	A7415B
2	2	2	HP NAS Server	A7418B
<p>The NAS SERVER A7418B, contains the following factory installed components. Quantities are per server: 2-processors, 4 - 512 (2048 total) SDRAM, 2- 36.4 GB HDD, 2-Host Adapters, 1-dual ported 10/100Tx NIC. The following components can be ordered additional to those listed above for the minimum configured A7418B and will be factory installed into the NAS SERVER.</p>				
			<b>Additional Processors (2 per Server) (Customer must order additional processors in pairs)</b>	
	0	4	1.9 GHz 1 MB Processor Option Kit ML 570/D	001
			<b>SDRAM Memory + memory mirroring capability</b>	
	0	2	2 GB REG PC1600 4X512 ALL (4 x 512 MB) & Hot plug memory expansion board:	002
			<b>NIC Cards (Optional 2)</b>	
			NC3134 64 Dual 10/100 ALL	003
			NC6770 PCIX 1000SX ALL	004
			NC7770 10/100/1000T ALL	005
			<b>NIC Upgrade Module (Optional 2) or (Optional 4 if Option 004 is ordered)</b>	
			NC6132 1000SX MODULE ALL	006
			NC7132 1000T UPGDMOD ALL	007
			NC3135 Dual 10/100 Mo ALL	008
	0	4	<b>HBAs for Tape Backup (Customer must order HBAs in pairs)</b>	
			ULTRA 3 HBA D/CH ALL	009
			PCI-FCH HBA 2 GB W2K ALL	010
3	2	2	NAS Data Path Manager (Data Path Failover & Control)	A7423A
4	0	1	<b>Network Management Integration CD</b>	
			Ent Management SPI 1 Host LTU & SW Kit (Optional 1)	T1002A

### Configuration Information

High Availability Components				
5	1	1	Quorum Server	A7421C
6	2	2	MC/ServiceGuard for NAS 8000 LTU	T1501AA
7	1	1	CAT 5 Network Cable (Cross-Over – Heartbeat between the two servers)	C7539A
8	1	1	<b>Virtual Array</b>	
Alternate			Virtual Array 7410 with Dual Controllers 1024 MB ea.	A6267AZ
Alternate			Virtual Array 7410 with Dual Controllers 2048 MB ea.	A6268AZ
9	20	30	<b>Disk Drives – Mixing of Hard Disk Drives is acceptable</b>	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A
10	8	8	<b>Cables</b>	
Alternate			FBR Optic Cable 2m LC/LC	C7524A
Alternate			FBR Optic Cable 16m LC/LC	C7525A
Alternate			FBR Optic Cable 50m LC/LC	C7526A
11	0	12	<b>DS 2405 Disk enclosure (max 15 drives per enclosure)</b>	A6250AZ
12	4	180	<b>Disk Drives – Mixing of Hard Disk Drives is acceptable</b>	
Alternate			Enterprise Class 146 GB 15K RPM FC HDD	A7289A
Alternate			Enterprise Class 73 GB 15K RPM FC HDD	A7288A
Alternate			Enterprise Class 73 GB 10K RPM FC HDD	A6194A
Alternate			Enterprise Class 36 GB 15K RPM FC HDD	A6193A
Alternate			Enterprise Class 36 GB 10K RPM FC HDD	A6192A
13	2	2	<b>2 Gb Switch</b>	
Alternate			2 Gb 8-port FC Switch	A7346AZ
			HP Advanced Zoning License (Required -1 per 8-port switch A7346AZ)	A7354A
Alternate			2 Gb 16-port FC Switch	A7340AZ
14	8	8	Short-Wave SFP Transceiver (Required 4 per switch)	A6515A
15	1	1	<b>HP9000 Std Rack System</b>	
Alternate			HP9000 Std Rack System E25	A4900A
Alternate			HP9000 Std Rack System E33	A4901A
Alternate			HP9000 Std Rack System E41	A4902A
16	1	1	Rear Door for Std. Rack System E25 (required for E25 rack)	A5211AZ
Alternate			Rear Door for Std. Rack System E33 (required for E33 rack)	A5212AZ
Alternate			Rear Door for Std. Rack System E41 (required for E41 rack)	A5213AZ
17	4	12	Modular Power Dist. Unit for std racks	A5137AZ
18	0	1	<b>HP Cable Guide</b>	E7723B
19	0	1	<b>HP 8000 Installation Service</b>	H4780A

## Configuration Information

### A7416B - Configuration 1: Non-HA SAN solution

Item	Min	Max	Description	Part Number
1			SSP-Non HA SAN	A7416B
2	1	1	HP NAS Server	A7418B
<p>The NAS SERVER A7418B, contains the following factory installed components. Quantities are per server: 2-processors, 4 - 512 (2048 total) SDRAM, 2- 36.4 GB HDD, 2-Host Adapters, 1-Dual ported 10/100Tx NIC. The following components can be ordered additional to those listed above for the minimum configured A7418B and will be factory installed into the NAS SERVER</p>				
			<b>Additional Processors (2 per Server) (Customer must order additional processors in pairs)</b>	
	0	2	1.9 GHz 1 MB Processor Option Kit ML 570/D	001
			<b>SDRAM Memory + memory mirroring capability</b>	
	0	1	2 GB REG PC1600 4X512 ALL (4 x 512 MB) & Hot plug memory expansion board:	002
			<b>NIC Cards (Optional 1)</b>	
			NC3134 64 Dual 10/100 ALL	003
			NC6770 PCIX 1000SX ALL	004
			NC7770 10/100/1000T ALL	005
			<b>NIC Upgrade Module (Optional 1) or (Optional 2 if Option 004 is ordered)</b>	
			NC6132 1000SX MODULE ALL	006
			NC7132 1000T UPGDMOD ALL	007
			NC3135 Dual 10/100 Mo ALL	008
	0	2	<b>HBAs for Tape Backup (Customer must order HBAs in pairs)</b>	
			ULTRA 3 HBA D/CH ALL	009
			PCI-FCH HBA 2 GB W2K ALL	010
3	0	1	NAS Data Path Manager (Data Path Failover & Control)	A7423A
4	0	1	<b>Network Management Integration CD</b>	
			Ent Management SPI 1 Host LTU & SW Kit (Optional 1)	T1002A
5	1	1	HP9000 Std Rack	
Alternate			HP9000 Std Rack System E25	A4900A
Alternate			HP9000 Std Rack System E33	A4901A
Alternate			HP9000 Std Rack System E41	A4902A
6	1	1	Rear Door for Std. Rack System E25 (required for E25 rack)	A5211AZ
Alternate			Rear Door for Std. Rack System E33 (required for E33 rack)	A5212AZ
Alternate			Rear Door for Std. Rack System E41 (required for E41 rack)	A5213AZ
7	2	2	Modular Power Dist. Unit for std racks	A5137AZ
8	0	1	HP Cable Guide	E7723B
9	0	1	HP 8000 Installation Service	H4780A

## Configuration Information

### A7416B – Configuration 2: HA SAN solution

Item	Min	Max	Description	Part Number
1			SSP-HA dedicated storage	A7416B
2	2	2	HP NAS Server	A7418B
The NAS SERVER A7418B, contains the following factory installed components. Quantities are per server: 2-processors, 4 - 512 (2048 total) SDRAM, 2- 36.4 GB HDD, 2-Host Adapters, 1-dual ported 10/100Tx NIC. The following components can be ordered additional to those listed above for the minimum configured A7418B and will be factory installed into the NAS SERVER.				
			<b>Additional Processors (2 per Server) (Customer must order additional processors in pairs)</b>	
	0	4	1.9 GHz 1 MB Processor Option Kit ML 570/D	001
			<b>SDRAM Memory + memory mirroring capability</b>	
	0	2	2 GB REG PC1600 4X512 ALL (4 x 512 MB) & Hot plug memory expansion board:	002
			<b>NIC Cards (Optional 1)</b>	
			NC3134 64 Dual 10/100 ALL	003
			NC6770 PCIX 1000SX ALL	004
			NC7770 10/100/1000T ALL	005
			<b>NIC Upgrade Module (Optional 2) or (Optional 4 if Option 004 is ordered)</b>	
			NC6132 1000SX MODULE ALL	006
			NC7132 1000T UPGDMOD ALL	007
			NC3135 Dual 10/100 Mo ALL	008
	0	4	<b>HBAs for Tape Backup (need to order in pairs per server)</b>	
			ULTRA 3 HBA D/CH ALL	009
			PCI-FCH HBA 2 GB W2K ALL	010
3	2	2	<b>NAS Data Path Manager (Data Path Failover &amp; Control)</b>	A7423A
4	0	1	Network Management Integration CD	
			Ent Management SPI 1 Host LTU & SW Kit (Optional 1)	T1002A
			<b>High Availability Components</b>	
5	1	1	Quorum Server	A7421C
6	2	2	MC/ServiceGuard for NAS 8000 LTU	T1501AA
7	1	1	CAT 5 Network Cable (Cross-Over – Heartbeat between the two servers)	C7539A

### A7398B - NAS 8000 Dedicated Storage Server

Item	Quantity	Description	Part Number
1		<b>NAS 8000 Dedicated Storage Server</b>	A7398B
	4	Xeon MP X1900-1MB Processors	
	4	512 (2048 total) SDRAM	
	2	36.4 GB HDD	
	2	HBA adapters	
		<b>NIC Cards</b>	
	1	NC3134 Expandable Dual-port 10/100Tx	
	1	NC7770 PCI-X Gigabit Server Adapter	
	1	NC7132 10/100/1000-T Upgrade Module for NC3134	



### Configuration Information

#### A7399B - NAS 8000 SAN Server

Item	Quantity	Description	Part Number
1		<b>NAS 8000 SAN Server</b>	A7399B
	4	Xeon MP X1900-1MB Processors	
	4	512 (2048 total) SDRAM	
	2	36.4 GB HDD	
	2	HBA adapters	
		<b>NIC Cards</b>	
	1	NC3134 Expandable Dual-port 10/100Tx	
	1	NC7770 PCI-X Gigabit Server Adapter	
	1	NC7132 10/100/1000-T Upgrade Module for NC3134	

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