

### Overview

The HP ProLiant DL380 G5 Data Protection Storage Server is a network attached storage (NAS) appliance that utilizes Microsoft System Center Data Protection Manager 2006 (DPM) to provide rapid & reliable recovery, near continuous data protection, and operational simplicity for disk-based backup of Windows file servers in an Active Directory domain. Disk based backup and simple end-user file recovery deliver a low total cost of ownership.

As a member of the Windows Server System Manager family, DPM has been designed to optimize disk-based backup and recovery of Windows file servers and is a fast and cost effective method to recover file data lost to user error or equipment corruption. HP has worked closely with Microsoft on DPM and as such, ProLiant Data Protection Storage Servers have been optimized to deliver simplicity without compromise, resulting in a solution that is cost effective and easy to implement while providing immediate business value.

Data Protection Storage Servers complement existing IT data protection infrastructures and are non-disruptive to IT environments. They can be extended further into the data protection value chain through optional SCSI interface and tape backup software to deliver a disk-to-disk-to-tape data protection framework.

The HP ProLiant DL380 G5 Data Protection Storage Server is currently available in a bundled 8TB configuration comprised of the DL380 G5 Data Protection Storage Server and two MSA30 external storage cabinets each fully loaded with 300GB SCSI drives.

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**What is Microsoft System Center Data Protection Manager (DPM)?** Data Protection Manager, the newest member of the Microsoft® Windows Server™ System focuses on disk-based data protection and recovery of Windows based File Servers in an Active Directory domain. DPM works with Microsoft Windows 2000 Server, Microsoft Windows Server 2003, and Windows Storage Server 2003 R2 to deliver best-in-class disk-based data protection services. DPM uses replication, Volume Shadow Copy Services infrastructure and a rich, policy-driven engine to provide businesses of all sizes with better control of their recovery infrastructure, continuous protection, and rapid data recovery at the lowest TCO.

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<b>Product Highlights</b>	<b>Rapid and Reliable Recovery</b>	Disk based backup and recovery provides a fast and reliable method to recover individual lost files and end-user restore functionality allows users to instantly recover previous versions of their own files from snapshots stored on the server. The DL380 G5 base platform offers reliability through hot-swappable power supplies, redundant cooling fans, failover to spare disk drives, and integrated lights out (iLO) management.
	<b>Cost Effective Near Continuous Protection</b>	Synchronizes byte level changes on an hourly basis which reduces the risk exposure associated with data loss by 96% when compared to daily backups. This product includes the operating system, Microsoft Data Protection Manager (DPM) software, and 8TB of pre-configured storage in an easy to implement and administer appliance.
	<b>Scalable Capacity</b>	Bundled with a Smart Array 6402 Controller and two MSA30 Storage Enclosures each containing 14 x 300GB drives delivering a total of 8TB available raw storage. This base configuration can be extended through additional Smart Array Controllers and MSA Enclosures; however, performance considerations above 20TB total capacity in high data churn environments indicates the need for additional DL380 G5 Data Protection Storage Servers to help distribute work load.

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### Overview

<b>Benefits Of Data Protection Storage Servers running Microsoft Data Protection Manager (DPM)</b>	<b>Near continuous protection</b>	Backs up data snapshots at fixed intervals and synchronizes data between snapshots based on business policy so that critical data can be protected at all times, minimizing potential data loss between backups to an as little as an hour. Capable of storing up to 64 snapshots.
	<b>End-user file restore</b>	Enables end users to perform point-in-time file recoveries via Windows Explorer and Microsoft Office for accidental file deletion or corruption.
	<b>Faster backup and recovery</b>	Disk based backup and recovery provides the one of the fastest ways to recover individual lost files and end-user restore functionality allows users to instantly recover previous versions of their own files.
	<b>High reliability</b>	The HP ProLiant Storage Server platform, RAID configured Modular Smart Array, disk-based storage, and online verification and administrative alert functionality ensures a reliable backup and recovery experience.
	<b>Start protecting network file servers in minutes</b>	Fully pre-configured and optimized for out of the box deployment, this solution automatically discovers and alerts administrators that unprotected servers are on the network and the comprehensive wizard interface reduces the time it takes to protect valuable file data and delivers simplicity without compromise.
	<b>Low total cost of ownership (TCO)</b>	Estimates put 70% of the cost of backup and recovery related to manual labor. This solution integrates within the existing Windows environment, utilizes industry standard components, automates much of the backup/restore function, and overcomes many issues associated with legacy or proprietary systems.
	<b>Integrates into existing IT environments</b>	Works with existing tape backup and data protection strategies as well as file servers in Active Directory domains running Windows Server 2000, 2003 or Windows Storage Server 2003 R2 based products such as the HP ProLiant Storage Server family. Supports network throttling to maximize network performance. Customer's existing tape backup software can be used to backup this server to tape.
	<b>Eliminates backup window issues on production servers</b>	Eliminates the need to plan backup windows for production file servers. Storage growth due to regulatory compliance, business expansion, and increasing globalization has caused businesses to no longer have time to do a backup and for those backups to take longer than the time available.
	<b>Flexible backup scheduling and verification</b>	Production file server replication and shadow copy settings can be independently managed to meet the recovery objectives of individual customers. Verification is as easy as browsing the disk on the Data Protection Storage Server.
	<b>Bundled with full support for Data Protection Manager</b>	HP Data Protection Storage Server includes 1 full year of software support for Microsoft Data Protection Manager.

### Overview

#### Technical Specifications DL380 G5 Data Protection Storage Server

- 2U form factor
- (1) Dual Core Intel Xeon 2.67 GHz/1333 MHz FSB with 4MB L2 Cache
- 1 GB of PC2-5300 Fully Buffered DIMMs; 2 x 512MB (expandable to 4GB - OS Limit)
- Windows Storage Server 2003 R2 Standard Operating System
- Smart Array P400 Controller with 512 MB BBWC (integrated on system board)
- Three available 64-bit PCI- Express slots,
- Embedded Dual NC373i Multifunction Gigabit NICs (embedded)
- Redundant Power Supplies; 2 x 575-Watt Hot Plug Power Supplies
- Redundant Cooling; 8 hot-plug Fans total
- Integrated Lights-Out (iLO) Management standard on system board, Advanced License Pack included
- 6402 External Smart Array Controller with 128MB Write Cache

#### Bundled Modular Smart Array 30 (MSA30)

- Two Modular Smart Array 30 (MSA30) storage cabinets each with fourteen 300GB SCSI hard drives (1 hot-swappable spare per MSA30)
- 3U form factor per MSA30.
- Supports up to 14 (1-inch) Ultra320 (as well as legacy Ultra3 and Ultra2 drives) Universal hard disk drives.
- Award-winning innovative SCA (Single Connect Attach) direct connect drive carrier - provides better cooling and reliability for 10K and 15K drives.
- Hot pluggable disk drives, power supplies, and fans.
- Redundant fans and dual power supplies
- Environmental Monitoring Unit (EMU) - Monitors environmental conditions within the enclosure and components such as the power supplies and fans.

### Optional Software

#### Optional Software

- **HP OpenView Management tools** - The ProLiant DL380 G5 Data Protection Storage Server supports Open View through SNMP. For more information HP OpenView: <http://www.managementsoftware.hp.com/>
- **HP OpenView Storage Data Protector** - The HP OpenView Storage 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.

The ProLiant DL380 G5 Data Protection Storage Server supports using Data Protector as the tape and disk backup software solution for heterogeneous O/S as well as application data protection. For more information on HP OpenView Data Storage Protector:

<http://h18006.www1.hp.com/products/storage/software/dataprotector/index.html>

### Service and Support, HP Care Pack, and Warranty Information

HP Care Pack Services offer upgraded service levels to extend and expand your standard product warranty with easy to buy, easy to use support packages that help you make the most of your hardware and software investments. They let you choose the support levels that meet your business requirements, from basic to mission-critical. They help you contain total cost of ownership.

HP Care Pack warranty extensions can be purchased along with HP products to cost-effectively upgrade or extend your warranty. For many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

- Warranty and Services Included with the Product** The HP ProLiant DL380 G5 Data Protection Server comes with a 3-3-3 warranty (3 years parts exchange, 3 years labor, and 3 years on-site, next business day response) for product hardware.
- Note that standard HP warranty ensures Software media will be free of physical defects for a period of 90 days from delivery. However the HP ProLiant Data Protection Storage Server products all come with a full year of 9 hours by 5 days software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service.
  - The HP ProLiant Data Protection Manager product software support can be uplifted to include
    - SW Phone-In, 24x7, 2 hr call back
    - SW Support for Storage, 24x7 2hr call back

For more information about HP's Global Limited Warranty and Technical Support, visit [ftp://ftp.compaq.com/pub/products/storageworks/warranty/EN\\_321708-008.pdf](ftp://ftp.compaq.com/pub/products/storageworks/warranty/EN_321708-008.pdf)

HP offers a portfolio of services ranging from Storage Design and Architecture that provides a complete multi-site design and implementation, to various levels of on-going maintenance support. Additionally the basic warranty service can be enhanced and/or HP Installation services can be purchased.

**Available HP Care Pack Services** Extend your product warranty with a wide choice of cost-saving support packages.

HP Care Pack Services are sold by HP and HP authorized enterprise and commercial resellers. Services for customers purchasing via direct and enterprise resellers are quoted using HP order configuration tools.

- HP Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.
- HP Care Pack is not available for less than the product's warranty duration.
- HP Care Pack is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the Warranty Start Date (delivery date to end user customer). Proof of purchase may be required.
- HP Care Pack services are prepaid.

For additional information on Product Services and HP Care Pack, as well as orderable part numbers, please refer to the URL: <http://www.hp.com/hps/carepack/>.

If you have specific questions about availability or how to obtain services contact your local HP representative. Contact information for your local area can be found at: <http://www.hp.com/services>.

To find HP Care Pack Services available via HP authorized commercial resellers, visit [http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf\\_nonlkup\\_crylang.asp?code=ELNL](http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf_nonlkup_crylang.asp?code=ELNL)

### Service and Support, HP Care Pack, and Warranty Information

#### Deployment and Per Event Service Descriptions

The Installation service deployment activities will include:

- Unpacking the product, performing initial inspection, and setting up product hardware and power connectivity
- Connecting Customer-provided cables
- Setting the network address and setting appropriate domain variables in the NAS operating system
- Configuring the storage by creating a file share
- Configuring user mapping to make the share available for access

Care Pack	Duration	Commercial reseller channels	Direct & Enterprise channels
Installation for Storage (per event)	One time	available	HA113A1 - 5D6

#### 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>

#### HP Education Services

For more information about HP Education Services for Storage and SAN, visit <http://education.hp.com/curr-storsan.htm>

#### Awards

HP IT Resource Center (ITRC) and HP Business Support Center (BSC) were selected as two of the Association of Support Professionals' (ASP) Top Ten award winners in its seventh annual Ten Best Web Support Sites competition for 2004, an award that showcases excellence in online service and support. <http://www.hp.com/hpinfo/newsroom/press/2004/040616a.html>

HP earned the No. 1 ranking in customer satisfaction among vendors of corporate information technology (IT) service and support, according to the newly released Technology Business Research Inc.'s Corporate IT Service and Support survey covering the first quarter of 2004. <http://www.hp.com/hpinfo/newsroom/press/2004/040624a.html>

### *Service and Support, HP Care Pack, and Warranty Information*

#### **Components**

For more information about Deployment, Per Event, Consulting and Education services for HP Storage, visit: <http://www.hp.com/hps/storage/>

For more information about HP Care Pack Services for Storage, visit:

[http://www.hp.com/hps/carepack/storage/cp\\_networked.html](http://www.hp.com/hps/carepack/storage/cp_networked.html)

For more information about HP Storage Software, services and updates, visit:

<http://h18006.www1.hp.com/storage/software.html>

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>

### Product Configuration Wizard

In the following steps you will be guided through a series of steps to help you configure a customized model.

**NOTE:** Options ship separately and are not factory integrated.

### Step 1 - Order base configuration

<p>HP ProLiant DL380 G5 8 TB Data Protection Storage Server AE446A</p>	<p><b>Processor</b> <b>Cache Memory</b> <b>Memory</b>  <b>Network Controller</b> <b>Storage Controller</b>  <b>Hard Drive (Internal Storage)</b> <b>Diskette Drive</b> <b>Optical Drive</b> <b>Storage Enclosures</b>  <b>Form Factor</b> <b>Remote Management</b> <b>Data Protection Profile</b></p>	<p>(1) Dual Core Intel Xeon 2.67 GHz/1333 MHz FSB with 4MB L2 Cache 4 MB L2 Cache 1 GB of PC2-5300 Fully Buffered DIMMs; 2 x 512MB (expandable to 4GB - OS Limit) Embedded Dual NC373i Multifunction Gigabit NICs (embedded) Smart Array P400 Controller with 512 MB BBWC (integrated on system board) plus 6402 External Smart Array Controller with 128MB Write Cache. (2) 36.4 GB Ultra320 15K 1" drives (for mirrored OS internal to server) 1.44 MB Diskette Drive Slimline DVD-ROM Drive (8x24) Standard two (2) Modular Smart Array 30 SCSI enclosure complete with dual power supply and fourteen (14) 300 GB 1" Ultra320 10K RPM drives. <b>NOTE:</b> External user storage is installed in the included Modular Smart Array 30 SB storage. DL380 G5 with (2) MSA30 Cabinets: (8U Total) iLO Port with Advance License Pack Included <b>On average, the 8TB Data Protection Storage Server will protect approximately 5TB of file data residing on Windows file servers.</b> The remaining raw capacity is used for DPM snapshots and overhead while some is lost to RAID. This factor is based on an average change rate of 10% per snapshot. Many installations will be able to realize larger protection groups due to lower churn profiles. Each Data Protection Storage Server ships with three (3) Data Protection Management Licenses (DPML) which license the server to protect 3 production file servers. See step 4 for information on adding additional licenses.</p>
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### Step 2 - add optional second processor

You may add a second processor to a ProLiant DL380 G5 Data Protection Storage Server Base.

<b>Processor</b>	Dual-Core Intel Xeon 5150 Processor (2.67 GHz, 1333 FSB)	418323-B21
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### Step 3 - add optional additional memory

<b>Memory</b>	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	<b>NOTE:</b> Comes standard with 1 GB of memory and is expandable to 4 GB (OS Limit).	



### Product Configuration Wizard

#### Step 4 - add additional DPM Server Agent LTU's

Server Agent License Packs	Microsoft System Center Data Protection Management License, 1 Server Agent <b>NOTE:</b> The base configuration ships with license to protect 3 Windows file server. One Data Protection Management License (DPML) is required for each additional Windows file server that is protected by the Data Protection Storage Server.	403557-B21
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#### Step 5 - add SCSI interface to connect to tape devices

SCSI HBA	64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter	268351-B21
	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21

#### Step 6 - add tape backup solution

Tape Drives	The DL380 G5 Data Protection Storage Server can be part of a complete disk-to-disk-to-tape data protection infrastructure by integrating a tape backup solution.	
	HP offers industry leading tape backup solutions. For more information and assistance in determining which solution is right for your needs, please visit: <a href="http://www.hp.com/go/tape">http://www.hp.com/go/tape</a>	

#### Step 7 - additional network cards

Network Cards	HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter	367132-B21
	HP NC310F PCI-X 1000SX Gigabit Server Adapter	368169-B21
	HP NC320T PCI Express 1000T Gigabit Server Adapter	367047-B21
	HP NC340T PCI-X 4-port 1000T Gigabit Server Adapter	391661-B21
	HP NC370F PCI-X Multifunction 1000SX Gigabit Server Adapter	374193-B22
	HP NC370T PCI-X Multifunction 1000T Gigabit Server Adapter	374191-B22
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21
	HP NC1020 PCI 1000T Gigabit Server Adapter	353377-B21
	HP NC7170 PCI-X Dual Port 1000T Gigabit Server Adapter	313881-B21
	HP NC7771 PCI-X 1000T Gigabit Server Adapter	290563-B21
	<b>NOTE:</b> Any NIC (except the NC1020) on the option list can be used for redundancy with the embedded Dual NC373i Multifunction Gigabit NICs. When teaming with other NICs or with the embedded NIC, the lack of Jumbo Frames and LSO features on the NC1020 will cause high end NICs to have those features disabled.	

### Product Configuration Wizard

#### Step 8 - add UPS, rack and power distribution unit (pdu)

**NOTE:** The ProLiant DL380 G5 Data Protection Storage Server includes a standard rail kit for HP racks.

**UPS and PDU Power Cord Matrix** Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units:  
<ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf>

<b>Uninterruptible Power Systems – Rack</b>	HP UPS R1500 XR (100 to 127)	204404-001
	HP UPS R3000 XR (120V)	192186-001
	HP UPS R3000 XR (208V)	192186-002
	HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage	326529-D71
	HP UPS R12000 XR N+x (200-240V) (hardwired)	207552-B22
<b>NOTE:</b> The UPS R12000 XR has a hardwired input and output connection.		

<b>Modular PDUs 1U/0U</b> (Up to 32 outlets)	HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC)	252663-D71
	<b>NOTE:</b> This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR.	
	HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC)	252663-D72
	HP Modular Power Distribution Units (mPDU), High Volt Model, 40A (200-240 VAC)	252663-B21
	<b>NOTE:</b> This mPDU (252663-B21), 40A model has a hardwired input.	
	HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC)	252663-B24
	<b>NOTE:</b> This PDU has a detachable input power cord and allows for adaptability to country specific power requirements. This model may also be used with the high volt UPSs R3000 XR and R6000. Need to order cable PN 340653-001.	
	<b>NOTE:</b> Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords: <a href="http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.HTML">http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.HTML</a>	

<b>Third Party Rack Adapter Kit</b> (for wide racks)	Rack Adapter Kit <b>NOTE:</b> Not required for most racks. This kit allows HP rack servers to fit in racks that are 24" wide.	332815-B21
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<b>Rack Shipping Kit</b>	Shipping Kit for Round Hole Racks	371482-B21
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### Product Configuration Wizard

HP Rack 10000 Series (Graphite Metallic)	HP Rack S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
	HP Rack 10842 (42U, 800mm wide) – Pallet	257415-B21
	HP Rack 10842 (42U, 800mm wide) – Shock Pallet	257415-B22
	HP Rack 10647 (47U) – Pallet	245160-B21
	HP Rack 10647 (47U) – Crated	245160-B23
	HP Rack 10642 (42U) – Pallet	245161-B21
	HP Rack 10642 (42U) – Shock Pallet	245161-B22
	HP Rack 10642 (42U) – Crated	245161-B23
	HP Rack 10636 (36U) – Pallet	245162-B21
	HP Rack 10636 (36U) – Shock Pallet	245162-B22
	HP Rack 10636 (36U) – Crated	245162-B23
	HP Rack 10622 (22U) – Pallet	245163-B21
	HP Rack 10622 (22U) – Shock Pallet	245163-B22
	HP Rack 10622 (22U) – Crated	245163-B23

**NOTE:** -B21 (pallet) used to ship empty racks shipped on a truck  
 -B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)  
 -B23 (crated) used for air shipments of empty racks

**NOTE:** It is mandatory to use a shock pallet in order to ship racks with equipment installed. Not all HP equipment is qualified to be shipped in the Rack 10000 series

**NOTE:** Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:

[http://h18000.www1.hp.com/products/quickspecs/10995\\_na/10995\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML)

**NOTE:** For additional information regarding Rack Cabinets, please see the following URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>.

### Rack Options for Rack 10000 Series

**NOTE:** For additional information regarding Rack Options, please see the following URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>

KVM USB Interface Adapter	336047-B21
Server Console Switch 1 x 4 port (100-230 VAC)	400336-001
Server Console Switch, 0 x 1 x 8 port	336044-B21
Server Console Switch, 0 x 2 x 16 port	336045-B21
IP Console Switch Box, 1 x 1 x 16	262585-B21
IP Console Switch Box, 3 x 1 x 16	262586-B21
TFT7210R Rack Mounted 17" Monitor	348373-B21
TFT5600 Rack Keyboard Monitor	221546-001

**NOTE:** For a complete list of Monitors please view the following URL: <http://h18004.www1.hp.com/products/monitors/>.

## Step 9 - Order HPTS Service Care Packs

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Service Care Packs or warranty upgrades enhance the base hardware warranty provided with the HP ProLiant Storage Server. The Care Packs provide support for product software and operating system with extended hours of coverage and reduced response time. And Care Packs allow the customer to budget fixed cost support rather than variable costs that include parts and labor.

Note that the standard HP warranty ensures software media will be free of physical defect for a period of 90 days from delivery. However the HP ProLiant Data Protection Server products all come with a full year of 9 hours by 5 days software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service. Extended hours of coverage and additional years of service are available should the customer require more protection.

### Technical Specifications

<b>System Unit</b>	<b>Dimensions (HxWxD)</b>	3.38 x 17.54 x 26.01 in (8.59 x 44.54 x 66.07 cm)
	<b>Weight</b>	<b>Maximum</b> 60 lb (27.22 kg) <b>Minimum</b> 47.18 lb (20.41 kg)
<b>Input Requirements</b> (per power supply)	<b>Rated Input Voltage</b>	100-132 VAC, 200-240 VAC
	<b>Rated Input Current</b>	10A (100VAC), 10A (120VAC), 6.1A (200VAC)
	<b>Rated Input Frequency</b>	50 to 60 Hz
	<b>Rated Input Power</b>	1000/1056/1205 W
<b>BTU Rating</b>	BTU/HR	3490/3680/4150
<b>Power Specifications</b>	To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at URL: <a href="http://h30099.www3.hp.com/configurator/powercalcs.asp">http://h30099.www3.hp.com/configurator/powercalcs.asp</a> . To drill down to calculators: - Click on: "ProLiant Servers" - Click on the Server of interest. Example: DL380 G5 - Click on: "Power Calculator" link. (You may need to scroll down to see it.)	
<b>Power Supply Output Power</b> (per power supply)	<b>Rated Steady-State Power</b>	800/850/1000 W
	<b>Maximum Peak Power</b>	800/850/1000 W
<b>Temperature Range</b>	<b>Operating</b>	50° to 95° F (10° to 35° C) at sea level with an altitude de-rating of 1.8° F per 1000 ft (1.0° C per 304.8 m) to 10,000 ft (3048 m) no direct sunlight allowed. Maximum rate of change is 18° F/Hr (10° C/Hr). Upper operating limit is 10,000 ft (3,048 m) or 70 Kpa/10.1 psia. System performance may be reduced if operating with a fan fault or above 30° C.
	<b>Non-operating</b>	-22° to 140° F (-30° to 60° C) Maximum rate of change is 36° F/Hr (20° C/Hr). Upper non-operating limit is 30,000 ft (9,144 m) or 30.3KPa/4.4 psia.
<b>Maximum Wet Bulb Temperature</b>	101.7° F (38.7° C)	
<b>Relative Humidity</b> (non-condensing)	<b>Operating</b>	10% to 90% relative humidity (Rh), 28° C maximum wet bulb temperature.
	<b>Non-operating</b>	5% to 95% relative humidity (Rh), 38.7° C maximum wet bulb temperature.
<b>Acoustic Noise</b>	<b>Idle Minimum</b> (Fixed Disk Drives Spinning)	
	L WAd (BELS)	6.4
	L pAm (dBA)	47
	<b>Operating Minimum</b> (Random Seeks to Fixed Disks)	
	L WAd (BELS)	6.6
	L pAm (dBA)	49

### Technical Specifications

<b>Smart Array P400 Controller</b>	<b>Disk Drive and Enclosure Interface</b>	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	<b>SAS Connectors</b>	2 internal (SFF8484) x4 wide port connectors
	<b>Cache Memory Speed</b>	DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	<b>Server Interface</b>	x8 2.5G PCIe provides 2GB/s maximum bandwidth.
	<b>SAS Speed</b>	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	<b>Cache Memory</b>	40-bit 256MB cache (72-bit 512MB module upgrades available); ECC protection, battery-backed, and transportable
	<b>Logical Drives Supported</b>	Up to 32 logical drives
	<b>Maximum Logical Drive Capacity</b>	3TB (6 x 500GB)
	<b>Host Memory Addressing</b>	64-bit, supporting greater than 4GB server memory space
	<b>RAID Support</b>	RAID 6 with ADG (Advanced Data Guarding) requires Battery Backed Write Cache Upgrade RAID 5 (Distributed Data Guarding) RAID 1 +0 (Striping & Mirroring) RAID 0 (Striping)

<b>Embedded Dual NC373i Multifunction Gigabit NICs</b>	<b>Network Interface Compatibility</b>	10Base-T/100Base-TX/1000Base-TX	
	<b>Data Transfer Method</b>	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	<b>Network Transfer Rate</b>	PCI Express, four lanes (x4)	
		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
		100Base-TX (Half-Duplex)	1000 Mb/s
<b>Connector</b>	1000Base-TX (Half and Full-Duplex)	2000 Mb/s	
	<b>Cable Support</b>	Two RJ-45	
	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

Technical Specifications for MSA30 Enclosure	Protocol Support	Wide Ultra320 (LVD) Wide Ultra3 (LVD) Wide Ultra2 (LVD)
	O/S Support	Defined by specific HP array controller or SCSI adapter used; please refer to the QuickSpecs and/or User Guide of the specific array controller or SCSI adapter
	Dimensions (HxWxD)	<b>Rack</b> 5.2 x 19 x 20.5 in (13.1 x 47.88 x 51.66 cm)
	Shipping Dimensions (HxWxD)	<b>Rack</b> 34.25 x 14.5 x 31.25 in (86.31 x 36.54 x 78.75 cm)
	Weight	<b>Rack</b> 68 lb (30.9 kg)
	LED Indicators (on front panel)	EMU Status LED (left) Enclosure Power LED (middle) Fault LED (right)
	Drive LED Indicators (on drive trays)	Drive LED (top) On Line LED (middle) Drive Failure LED (bottom)
	Enclosure LED Indicators (back of unit)	I/O Module (top) EMU (middle) Power supplies (bottom)
	Input Requirements	<b>Nominal Line Voltage</b> 110 to 240 V AC
		<b>Range Line Voltage</b> 90 to 264 V AC
		<b>Line Frequency</b> 47 to 63 Hz
		<b>Typical Input Current</b> 2.3A at 120 V AC
	Relative Humidity (non-condensing)	<b>Operating</b> 10% to 90%
		<b>Shipping</b> 5% to 90%
	I/O Module Connector	Very High Density Cable Interconnect (VHDCI)
	Power	377 Watts per supply (load)
	BTU (220 volts)	<b>Single power supply 14 drives</b> 1164 BTUs/hour
		<b>Single power supply 5 drives</b> 536 BTUs/hour
		<b>Single power supply 1 drive</b> 273 BTUs/hour
		<b>Dual power supply 14 drives</b> 1232 BTUs/hour
		<b>Dual power supply 5 drives</b> 625 BTUs/hour
		<b>Dual power supply 1 drive</b> 352 BTUs/hour
	Temperature Range	<b>Operating</b> 50° to 94° F (10° to 35° C°)
		<b>Shipping</b> -40° to 151° F (-40° to 66° C)

**NOTE:** To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.

### *Technical Specifications*

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