Overview
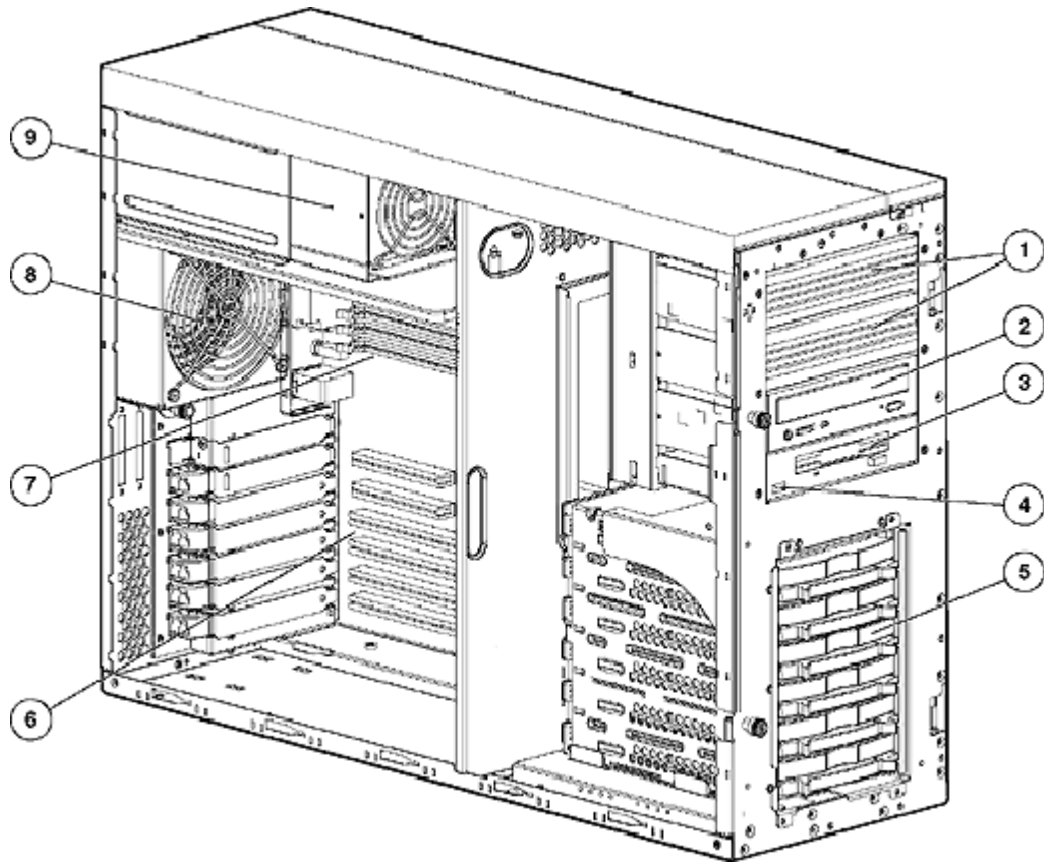

1. Two Available Removable Media Bays
2. 48X Max IDE CD-ROM Drive
3. 1.44 Diskette Drive
4. USB Port
5. Six Hot Plug Drive Bays (shown above) or Four Non Hot Plug SCSI Drive Bays (not shown)

6. Six Expansion Slots (four PCI-X, two PCI-Express)
7. Four DIMM sockets for up to 8GB of memory
8. System Fan (an optional redundant system fan is available)
9. Power Supply
NOTE: In hot plug models, an optional 2nd power supply is available for hot-plug 1+1 redundancy

Overview

At A Glance

- Intel Xeon 3.0 GHz, 3.2 GHz, or 3.4 GHz processors (dual processor capability) with 1MB level 2 cache standard. Processors include support for Hyper-Threading and Extended Memory 64 Technology (EM64T)
- Intel® E7520 chipset
- 800-MHz Front Side Bus
- Integrated Dual Channel Ultra320 SCSI Adapter
- Smart Array 641 Controller (standard in Array Models only)
- NC7761 PCI Gigabit NIC (embedded)
- Up to 1 GB of PC2700 DDR SDRAM with Advanced ECC capabilities (Expandable to 8 GB)
- Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI-Express, and one x8 PCI-Express
- New HP Power Regulator for ProLiant delivering server level, policy based power management with industry leading energy efficiency and savings on system power and cooling costs
- Three USB ports: 1 front, 1 internal, 1 rear
- Support for Ultra320 SCSI hard drives (six hot plug or four non-hot plug drives supported standard, model dependent)
- Internalstorage capacity of up to 1.8TB; 2.4TB with optional 2-bay hot plug SCSI drive
- 725W Hot-Plug Power Supply (standard, most models); optional 725W Hot-Pluggable Redundant Power Supply (1+1) available. Non hot plug SCSI models include a 460W non-hot plug power supply.
- Tool-free chassis entry and component access
- Support for ROM based setup utility (RBSU) and redundant ROM
- Systems Insight Manager, SmartStart, and Automatic Server Recovery 2 (ASR-2) included
- Protected by HP Services and a worldwide network of resellers and service providers. Three-year Next Business Day, on-site limited global warranty. Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory, and SCSI hard drives.

QuickSpecs

Standard Features

Processor *One of the following depending on Model*	Intel Xeon Processor 3.4 GHz/800-1MB L2 Intel Xeon Processor 3.2 GHz/800-1MB L2 Intel Xeon Processor 3.0 GHz/800-1MB L2
Cache Memory	Integrated 1MB Level 2 cache
Upgradeability	Upgradeable to dual processing
Chipset	Intel® E7520 Chipset with 800-MHz Front Side Bus
Memory Protection	Advanced ECC

Memory
One of the following depending on model

Type	PC2700 DDR SDRAM (333MHz)
Standard for Non-Array Models	512 MB
Standard for Array Models	1 GB
Maximum	8 GB

Network Controller   NC7761 Gigabit NIC (embedded)

Expansion Slots

Slot Number	Bus Speed	Maximum Card Length	Bus Number*	Device Number**	Hot Plug	PCI Voltage
1	PCI Express x4 (half length)	6.6"	16	1	no	N/A
2	PCI Express x8	12.28"	12	1	no	N/A
3	64-bit/100MHz PCI-X	12.28"	9	2	no	3.3 Volt
	In HP ProLiant ML350 G4 Array Models, the Smart Array 641 is installed in Slot 3.					
4	64-bit/100MHz PCI-X	12.28"	9	1	no	3.3 Volt
5	64-bit/133MHz PCI-X	12.28"	6	1	no	3.3 Volt
6	64-bit/66MHz PCI-X	12.28"	2	2	no	3.3 Volt

*NOTE: Bus number listed reflects the default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
**NOTE: Slots are enumerated differently based on operating system. Microsoft's operating systems enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
NOTE: All slots can accept universal keyed PCI cards

Storage Controller	Integrated Dual Channel Ultra320 SCSI Adapter Smart Array 641 Controller (Standard in Array Models only)

QuickSpecs

Standard Features

Storage	Diskette Drives	1.44MB Diskette Drive	
	Optical Drive	48x IDE CD-ROM Drive	
	Hard Drives	36GB 15,000 rpm hard drive included in non hot plug SCSI models only	

Maximum Internal Storage	Hot Plug SCSI	2.4TB	6 x 300GB with standard drive cage + 2 x 300GB with optional ML3xx Two Bay Hot Plug SCSI Drive Cage
	Non hot plug SCSI	888GB	4 x 72GB with standard drive cage + 2 x 300GB with optional ML3xx Two Bay Hot Plug SCSI Drive Cage
	External Storage	Two external SCSI port knockouts available; optional Internal-to-External SCSI Cable Option Kit required for external connections	

- HD68 Internal to External SCSI Cable Option Kit PN 159547-B22
- VHDCI Internal to External SCSI Cable Option Kit PN 333370-B21

Interfaces	Parallel	1
	Serial	1 (optional 2nd serial port available)
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	Network RJ-45	1
	USB 2.0 Ports	3 (1 front, 1 internal, 1 rear)

NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html.

	External SCSI knockouts	2

Graphics — Integrated ATI RAGE XL Video Controller with 8-MB SDRAM Video Memory
VGA connector; up to 1200 x 1600 resolution supported

Form Factor — Tower or rack (5U)

NOTE: Rack models (and rack conversion kit) support:

- Square or round hole racks 24"- 35" deep, including HP Rack System /E and HP Systems
- Telco racks with 3rd part option kit from Rack Solutions http://www.racksolutions.com/hp

ProLiant Essentials Foundation Pack Software	HP Systems Insight Manager	HP Systems Insight Manager (HP SIM) helps maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before those problems result in unplanned downtime or reduced productivity. For more information on HP SIM visit http://www.hp.com/go/hpsim.

Standard Features

Management Agents	The Management Agents provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, or portables, and send alerts to Systems Insight Manager or other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, visit http://www.hp.com/servers/manage.
SmartStart	SmartStart simplifies server setup by providing a quick, easy way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at http://www.hp.com/servers/manage. Minimum SmartStart version supported: 7.1 Latest SmartStart version supported: 7.2
Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides automatic delivery of software and driver change notifications for ProLiant products. Sign up at http://www.hp.com/go/subscriberschoice and customize your profile to receive alerts on updates as they become available.
ROMPaq, support software, and configuration utilities	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options Available in SmartStart or downloadable from the Software and Drivers download pages at http://www.hp.com/go/support.
Insight Diagnostics Online Edition	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP at your fingertips Available in SmartStart.
Optional ProLiant Essentials Value Packs	Optional software offerings that extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Rapid Deployment Pack - an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands.
- Workload Management Pack - provides easier management of complex environments, improving overall server utilization and enabling Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.
- Integrated Lights-Out Advanced Pack - upgrades the Integrated Lights-Out processor to full virtual presence and control with graphical console and virtual media.
- Performance Management Pack - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources.
- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus
- Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats

Standard Features

- Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.
- Server Migration Pack - The Server Migration Pack automates the manual processes required for migrating servers between physical or virtual platforms (P2V, V2P, and V2V).

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.
NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.

Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support PCI-X 1.0 Compliant Novell Certified Microsoft® Logo certifications USB 2.0
Availability	Optional Redundant System Fan Optional Hot Plug, Redundant Power supply (most models)
Remote Management	Remote Insight Lights-Out Edition II (optional)
Management	HP Systems Insight Manager SmartStart Redundant ROM System Firmware Update ROMPaq ProLiant RBSU (ROM-Based Setup Utility) Automatic Server Recovery-2 (ASR-2) Dynamic Sector Repairing (with Smart Array Controller) Drive Parameter Tracking (with Smart Array Controller) Pre-Failure Warranty (covers processors, memory and SCSI hard drives)
Security	Power-on password Setup password Diskette boot control Parallel and serial interface control Disk configuration lock Power switch security

QuickSpecs

Standard Features

Server Power Cords	Tower models ship standard with a 12' country specific, lowline NEMA power cord. Rack models ship standard with a 10' IEC cable. Rack models for some countries also include a 12' NEMA cord. Most redundant power supply options ship with a 12' country specific power cord. The one exception is the IEC redundant power supply (P/N 358352-B21) which ships with a 10' IEC cable only.
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.

Power Supply

Hot plug models	725 Watt, Power Factor Correction (PFC), Hot Plug 100 to 240 VAC Rated Input Voltage (Auto-sensing), CE Mark Compliant Optional 2nd power supply for hot-pluggable 1 + 1 redundancy.
Non hot plug models	460 Watt, Power Factor Correction (PFC), Non hot plug 100 to 240 VAC Rated Input Voltage (Auto-sensing), CE Mark Compliant

System Fans	1 fan ships standard, 2 fans total supported (does not include power supply or processor heatsink fans)
Required Cabling	For required cabling information, refer to the HP ProLiant ML350 G4 cabling matrix at http://www.hp.com/servers/proliantML350.
OS Support	Microsoft Windows Server 2003 Microsoft Small Business Server 2003 Microsoft Windows 2000 Server and Advanced Server Novell NetWare Novell NetWare Small Business Suite LINUX (Red Hat, SuSE, and UnitedLinux) VMware Virtualization Software **NOTE:** For a complete and up-to-date listing of supported operating systems please visit our OS Support Matrix at: http://www.hp.com/go/supportos. **NOTE:** For a complete and up-to-date information on Linux support, please visit the HP Linux Web site at http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html **NOTE:** Optional hardware may be required to support some operating systems. **NOTE:** For information on how to buy server operating systems from HP please visit the OS product site at: http://h18004.www1.hp.com/products/servers/software/OEM.html **NOTE:** For an up-to-date listing of the latest drivers available for the HP ProLiant ML350 G4, please see: http://www.compaq.com/support/files/server/us/index.html. **NOTE:** For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at: http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html.
Installation of Server into Telco Racks	Support for all 2-post Telco racks requires the use of the HP ProLiant ML350 G4 rack kit and an additional option kit from Rack Solutions. http://www.racksolutions.com/hp.

Standard Features

Factory Express Portfolio for Servers and Storage	HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to http://www.hp.com/go/factory-express.

Custom Builder

Please see the Enterprise Configurator for configuration assistance at:
http://www.hp.com/products/configurator.

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of resellers and service providers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

NOTE: Limited warranty includes 3 year parts, 3 year labor, 3-year on-site support.

The warranty is fully supported by HP Services and a worldwide network of resellers and service providers. In addition, 90-day software telephone support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMWare-based IT solutions helping to deliver high level of application availability. Response times range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

HP Care Pack services include coverage for the HP branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as 22" and smaller external monitors and tower UPS options up to 3kVA; these items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included, standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

Standard Features

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: http://www.hp.com/hps/carepack

NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us at: http://www.hp.com/hps

NOTE: Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Models

ML350T04 HPSCSI x3.0-1MB/800, 512 MB 331890-xx1	Processor(s)	(1) Intel Xeon 3.0 GHz processor standard (up to 2 supported)
	Cache Memory	Integrated 1MB Level 2 cache
	Standard Memory	512 MB (1 x 512 MB)
	Network Controller	NC7761 PCI Gigabit NIC (Embedded)
	Storage Controller	Integrated dual channel Ultra320 SCSI adapter
	Hard Drive	None ship standard (up to 6 supported)
	Internal Storage	2.4 TB maximum hot plug SCSI (with optional hard drives & drive cage)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	1.44 MB Diskette Drive
	Form Factor	Tower (5U)

Country Code Key		Tower Code Key	Rack Code Key
	XX=00	U.S. English	U.S. English
	XX=01	Australia	N/A
	XX=03	UK	N/A
	XX=04	Germany	N/A
	XX=05	France	N/A
	XX=20	Brazil	N/A
	XX=29	Japan	Japan
	XX=37	APD	APD
	XX=42	Europe	Europe
	XX=AA	PRC	PRC

QuickSpecs

Options

HP ProLiant ML350 G4 Unique Options	Hot Plug Redundant Power Supply Option Kit (NA, LA)	358352-001
	Hot Plug Redundant Power Supply Option Kit (AUST)	358352-011
	Hot Plug Redundant Power Supply Option Kit (EURO)	358352-021
	Hot Plug Redundant Power Supply Option Kit (UK)	358352-031
	Hot Plug Redundant Power Supply Option Kit (Japan)	358352-291
	Hot Plug Redundant Power Supply Option Kit (IEC)	358352-B21

NOTE: PN 358352-B21 contains the redundant power supply with an IEC power cable. Purchase this kit only when connecting to a PDU or UPS that supports IEC cables. All other kits contain country specific power cables.

ProLiant ML350 G4 Tower to Rack Conversion Kit	358350-B21
ML350 G4 Redundant System Fan Kit	365866-B21
ProLiant ML350 G4 Second Serial Port Option Kit	338288-B21

ProLiant Essentials Value Pack Software

ProLiant Essentials Integrated Lights-Out Advanced Pack

ProLiant Essentials Integrated Lights-Out Advanced Pack, 1 server — 263825-B21
Featuring: sophisticated virtual administration features for ultimate control of servers in the data centers and remote sites.
NOTE: For additional ProLiant Integrated Light-Out Advanced Pack License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11052_div/11052_div.HTML

ProLiant Essentials Intelligent Networking Pack

ProLiant Essentials Intelligent Networking Pack - Windows Edition, Single Server License — 372906-B21
NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.
NOTE: For additional ProLiant Intelligent Networking Pack - Windows License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML

ProLiant Essentials Intelligent Networking Pack - Linux Edition, Single Server License — 397004-B21
NOTE: For additional ProLiant Intelligent Networking Pack - Linux License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML

ProLiant Essentials Performance Management Pack

ProLiant Essentials Performance Management Pack, Single-Server License — 306696-B21
NOTE: For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation.
NOTE: The most recent version of the software can always be downloaded at http://www.hp.com/products/pmp.
NOTE: For additional ProLiant Performance Management Pack License Kits please see the QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11925_div/11925_div.HTML

ProLiant Essentials Rapid Deployment Pack Windows Edition and Linux Edition Release

Rapid Deployment Pack, Single-Server License — 267196-B21
NOTE: This license allows 1 server to be deployed and managed via RDP.

Rapid Deployment Pack, Single-Server License (Japan) — 267196-291
NOTE: This license allows 1 server to be deployed and managed via RDP.

Options

ProLiant Essentials Workload Management Pack

ProLiant Essentials Workload Management Pack, Single Server License   303284-B21

ProLiant Essentials Virtualization Management Software

ProLiant Essentials Virtual Machine Management Pack, Single-Server License   372214-B21
NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.

ProLiant Essentials Server Migration Pack, Single-Migration License   375345-B21
NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation.
NOTE: This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.

ProLiant Essentials Vulnerability and Patch Management Pack

ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License   371645-B21
NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.
NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.

ProLiant Software Maintenance Subscription

ProLiant Software Maintenance Subscription   355060-B21
ProLiant Software Maintenance Single Release   356573-B21
ProLiant Foundation Pack Single Release   356604-B21

Options

Processors	Intel Xeon 3.4 GHz-1MB Processor Option Kit	370513-B21
	Intel Xeon 3.2 GHz-1MB Processor Option Kit	358345-B21
	Intel Xeon 3.0 GHz-1MB Processor Option Kit	358344-B21

Memory (DIMMs)

NOTE: The HP ProLiant ML350 G4 requires interleaved memory configurations when more than one DIMM is installed. Base models ship standard with a single DIMM. To upgrade system memory, DIMMs must be installed in identical pairs.
NOTE: Each SDRAM Memory kit contains one (1) DIMM.

	512 MB Advanced ECC PC2700 DDR SDRAM DIMM Kit (1 x 512 MB)	358347-B21
	1 GB Advanced ECC PC2700 DDR SDRAM DIMM Kit (1 x 1024 MB)	358348-B21
	2 GB Advanced ECC PC2700 DDR SDRAM DIMM Kit (1 x 2048 MB)	358349-B21

Internal Storage Upgrades	Duplex Ultra320 SCSI Backplane Option Kit	339323-B21
	ML3xx Two Bay Hot Plug SCSI Drive Cage	244059-B21

NOTE: The drive cage option kit (PN 244059-B21) has one 1" drive bay and one 1.6" drive bay. It installs in two removable media bays.

Optical Drives	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21

NOTE: The DVD-ROM drive is supported in either the CD-ROM bay or a removable media bay. If placed in a removable media bay, it requires the 2-Device IDE cable (PN 305381-B21).

	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
	HP DVD+R/RW 16X Half Height	383974-B21

Serial Port Kit	HP ProLiant 2nd Serial port option kit	390390-B21

Hard Drives	*Ultra320 – Universal Hot Plug*	
	HP 300GB U320 10K Universal HDD	350964-B22
	HP 146GB U320 10K Universal HDD	286716-B22
	HP 72GB U320 10K Universal HDD	286714-B22
	HP 146GB U320 15K Universal HDD	347708-B22
	HP 72GB U320 15K Universal HDD	286778-B22
	HP 36GB U320 15K Universal HDD	286776-B22
	Ultra320 - Non-Hot Plug	
	HP 36GB U320 15K NHP HDD	357012-B21
	HP 72GB U320 10K NHP HDD	332751-B21
	HP 146GB U320 10K NHP HDD	356990-B21

NOTE: Please see the Wide Ultra320 Universal Hot Plug QuickSpecs for additional technical information on the hard drives Support details, please see the following: http://h18000.www1.hp.com/products/quickspecs/11531_div/11531_div.HTML (Worldwide)

Options

Storage Controllers		
	Smart Array 6402/128 Controller	273915-B21
	Smart Array 6404/256 Controller	273914-B21
	512MB DDR BBWC Upgrade	372538-B21
	Smart Array 641 Controller	291966-B21
	Smart Array 642 Controller	291967-B21
	128MB Battery-Backed Cache Enabler	351580-B21

NOTE: This 128MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller.

	Ultra320 Expansion Module for SA-6402	273911-B21
	64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS	284688-B21
	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21
	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter	268351-B21

NOTE: Please see the following Controller or SCSI Adapter QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information:
http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.HTML (Smart Array 6400 Series)
http://h18000.www1.hp.com/products/quickspecs/12067_div/12067_div.HTML (Smart Array 641)
http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.HTML (Smart Array 642)
http://h18000.www1.hp.com/products/quickspecs/10429_div/10429_div.HTML (SCSI Adapter)
http://h18000.www1.hp.com/products/quickspecs/11555_div/11555_div.HTML (U320 Adapter)

Communications		
	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 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 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

NOTE: A minimum of 1 GB of memory per port is required for NC370x adapters, with a maximum of two NC370x ports permitted in a server.

NOTE: NC61XX, NC71XX, NC77XX, or NC1020 network adapter (NIC) can be used for redundancy with the embedded NC7761 NIC. When either the embedded NC7761 or the NC1020 is teamed with other HP Ethernet adapters, Jumbo Frames and LSO features are automatically disabled.

Options

Management Options	Remote Insight Lights-Out Edition II (NA, LA)	227251-001
	Remote Insight Lights-Out Edition II (EMEA)	227251-021
	Remote Insight Lights-Out Edition II (ROW)	227251-371

Tape Drives

NOTE: The following tape drives are recommended for use with the HP ProLiant ML350 G4. Additional HP tape drives are supported.

NOTE: For the complete listing of Tape Drive offerings, please see:
http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html

USB Tape Drives
NOTE: When using the USB internal tape connector, the front USB port will be deactivated.

HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite)	DW026A
HP StorageWorks DAT 72 USB External Tape Drive (Carbonite)	DW027A

Internal, Rack-Mount, and Array Module Ultrium Tape Drives

HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite)	DW064A
HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite)	DW016A

Internal, Rack-Mount, and Array Module DAT Drives

HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)	Q1522B
HP StorageWorks 1U Rack-mount kit with one DAT 72 (Carbon)	A7443A

NOTE: Single drive installed in a 1U Rack-mount kit.

Rack-Mount Tape Drive Enclosures

HP StorageWorks 1U Rack-Mount Kit — A7445B
NOTE: The 1U Rack-mount Kit can support up to (2) half-height tape drives and compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232 and Ultrium 448 tape drives.

HP StorageWorks 1U USB Rack-Mount Kit	A8007A
1U USB Cable Option Kit	396114-B21

NOTE: Converts a 1U SCSI rack-mount kit to a USB interface to support the USB tape drives.

Options

Tape Autoloaders	**DAT Autoloader**	
	HP StorageWorks DAT 72x6 Autoloader (Internal)	Q1566A
	HP StorageWorks DAT 72x6 Autoloader (External)	Q1567A

NOTE: Please see the DAT 72x6 Tape Autoloader QuickSpecs for additional options such as host bus adapters, controllers and media: http://h18006.www1.hp.com/products/quickspecs/11905_div/11905_div.html (Worldwide)

HP StorageWorks 1/8 Tape Autoloader	
HP StorageWorks 1/8 Ultrium 960 Tape Autoloader	AF204A
HP StorageWorks 1/8 Ultrium 448 Tape Autoloader	AF203A
HP StorageWorks 1/8 Ultrium 232 Tape Autoloader	AF202A
1/8 Tape Autoloader Rackmount Kit	C9268R

NOTE: Required to install the unit in a standard 19-inch rack; includes rails and rackmount instructions.

NOTE: Please reference the 1/8 Tape Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

Tape Libraries	**HP StorageWorks MSL2024 Tape Library**	
	HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
	HP StorageWorks MSL2024 1 Ultrium 448 Drive Library	AG116A
	HP StorageWorks MSL2024 2 Ultrium 448 Drive Library	AG117A
	HP StorageWorks MSL4048 Tape Library	
	HP StorageWorks MSL4048 1 Ultrium 448 Drive Library	AG320A
	HP StorageWorks MSL4048 2 Ultrium 448 Drive Library	AG321A
	HP StorageWorks MSL4048 1 Ultrium 960 Drive Library	AG322A
	HP StorageWorks MSL4048 2 Ultrium 960 Drive Library	AG323A
	HP StorageWorks MSL6000 Tape Library	
	Ultrium 960 technology	
	HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library	AD606A
	HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library	AD608A
	HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library	AD607A
	HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library	AD609A
	Ultrium 460 technology	
	HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library	AD598A
	HP StorageWorks MSL6030 1 Ultrium 460 Dr FC Library	AD600A
	HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library	AD599A
	HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library	AD601A

NOTE: Please reference the MSL2024 and MSL6000 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

Options

Magneto-Optical Jukeboxes	HP StorageWorks 9.1 GB Optical Jukeboxes	
	600mx, 4 drive, 64 slot jukebox	C1160M
	1200mx, 4 drive, up to 128 slots	C1104M
	2200mx, 6 drive, up to 238 slots	C1107M

NOTE: Please see the HP StorageWorks Magneto-Optical Products data sheet for a complete listing of available jukeboxes at:
http://www.hp.com/products1/storage/products/archivalprod/brochures/MO_family_pb.pdf
NOTE: Please reference the Magneto-Optical Jukebox data sheets at http://www.hp.com/go/optical for additional information needed to create a complete solution.

Ultra Density Optical Jukeboxes	1900ux, 4 drive, 64 slot jukebox	AA966A
	3800ux, 4 drive, 128 slot jukebox	AA969A
	7100ux, 6 drive, 238 slot jukebox	AA971A

NOTE: Please see the HP StorageWorks Ultra Density Optical Jukeboxes QuickSpecs for a complete listing of available jukeboxes at:
http://h18006.www1.hp.com/products/quickspecs/11944_div/11944_div.html

NOTE: Please reference the Ultra Density Optical Jukebox QuickSpecs at http://www.hp.com/go/optical for additional information needed to create a complete solution

HP Data Protector Express Software	HP DP Express Backup Server Upgrade for ProLiant Software	AA966A
	HP DP Express Package for Microsoft Small Business Server	AA969A

NOTE: Please see the HP Data Protector Express QuickSpecs for additional information regarding the purchase of HP Data Protector Express software:
http://h18000.www1.hp.com/products/quickspecs/12337_div/12337_div.html (Worldwide)

HP StorageWorks Modular Smart Array 20	HP StorageWorks Modular Smart Array 20	335921-B21
	NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies.	
	HP StorageWorks Modular Smart Array 20 Starter Kit	366172-B21
	NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. Includes Smart Array 6402/128 Controller.	
	NOTE: The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 3.5" Hot Plug Hard Drives.	

HP StorageWorks Modular Smart Array 30	HP StorageWorks Modular Smart Array 30 SB	302969-B21
	NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies	
	HP StorageWorks Modular Smart Array 30 DB	302970-B21
	NOTE: Rack-mountable 14 drive enclosure with dual bus, redundant power supplies	
	NOTE: The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 Hot Plug Hard Drives.	

Options

HP StorageWorks Modular Smart Array 500	HP StorageWorks Modular Smart Array 500 Generation 2	335880-B21
	NOTE: Please see the Modular Smart Array 500 Generation 2 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/11956_div/11956_div.HTML (Worldwide)	
HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000	201723-B22
	NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML (Worldwide)	
HP StorageWorks Modular Smart Array 1500 cs	Modular Smart Array 1500 Controller Shelf	AA986A
	NOTE: Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at: http://www.hp.com/go/MSA1500cs	
Cluster Options	ProLiant Cluster Starter Kit	364023-B21
	NOTE: For additional information regarding the ProLiant Cluster Starter Kit please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11935_div/11935_div.html (Worldwide)	
	HP HA/F200 for Entry SAN Cluster	364026-B22
	HP HA/F200 for Entry SAN Cluster (Japan)	364026-292
	NOTE: For additional information regarding the ProLiant Cluster for Entry Level SAN please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11932_div/11932_div.html (Worldwide)	
	ProLiant Cluster HA/F500 for the Enterprise SAN	364024-B21
	NOTE: For additional information regarding the ProLiant Cluster HA/F500 for Enterprise SAN please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11933_div/11933_div.html (Worldwide)	
	HP Serviceguard for Linux ProLiant Cluster A.11.16 for SUSE SLES 9 and Red Hat EL & 4 (2 node license cluster kit)	305199-B26
	HP Serviceguard for Linux A.11.16 for SUSE SLES9 and Red Hat EL 3 & 4 (single license version)	307754-B26
	HP Serviceguard for Linux and Red Hat Global File System - 1 year subscription	T2798AA#001
	HP Serviceguard for Linux and Red Hat Global File System - 3 years subscription	T2798AA#003
	NOTE: For additional information regarding HP Serviceguard for Linux, please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html (Worldwide)	

Options

Uninterruptible Power Systems – Tower UPS		
	HP UPS T1000 XR (1000 VA, 700 Watts), Low Voltage (NA)	204155-001
	HP UPS T1000 XR (1000 VA, 700 Watts), High Voltage (Int'l)	204155-B31
	HP UPS T1000 XR (1000VA, 700Watts) 100 VAC (JPN)	312803-291
	HP UPS T1500 XR (1440 VA, 1050 Watts) (NA)	204155-002
	HP UPS T1500 XR (1500 VA, 1050 Watts) (Int'l)	204155-B32
	HP UPS T1500 XR (1500 VA, 1050 Watts) (Japan)	204155-291
	HP UPS T2200 XR (1920 VA, 1600 Watts) Low Voltage (NA)	204451-001
	HP UPS T2200 XR (2200 VA, 1600 Watts) High Voltage (NA)	204451-002
	HP UPS T2200 XR (2200 VA, 1600 Watts) (Int'l)	204451-B31
	HP UPS T2200 XR (2200 VA, 1600 Watts) (Japan)	204451-291

Uninterruptible Power Systems – HP Rack UPS		
	HP UPS R1500 XR (100 to 127) (NA)	204404-001
	HP UPS R1500 XR (208 to 480) (Int'l)	204404-B31
	HP UPS R1500 XR (100 to 127) (Japan)	204404-291
	HP UPS R3000 XR (120V) (NA)	192186-001
	HP UPS R3000 XR (208V) (NA)	192186-002
	HP UPS R3000 XR (100V) (Japan)	192186-291
	HP UPS R3000 XR (208V) (Japan) HP UPS R3000 XR (200V) (Japan)	192186-292
	HP UPS R3000 XR (230V) (Int'l - detachable cord)	192186-B31
	HP UPS R3000 XR (230V) (16A IEC309 Plug)	192186-B32
	HP UPS R3000 XR (230V) (16A CEE 7/7 SCHUKO Plug)	192186-B33
	HP UPS R3000 XR (230V) (16A BS-546 Plug)	192186-AR1
	HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage (NA/Jpn)	326529-D71
	HP UPS R5500 XR, (6000VA, 5400 Watt), High Voltage (Int'l)	326529-B31

HP Monitored Power Distribution Unit (PDU)		
	HP Monitored Power Distribution Unit: Full Rack Version	
	HP 17.3 kVA S2324 Monitored PDU- dual input, 3-phase, 24A (NA/JPN)	370959-D71
	HP 8.3 kVA S1324 Monitored PDU- single input, 3-phase, 24A (NA/JPN)	370960-D71
	HP 16.6 kVA S2140 Monitored PDU- dual input, 1-phase, 40A (NA/JPN)	370961-D71
	HP 8.6 S1140 Monitored PDU- single input, 1-phase, 40A (NA/JPN)	370962-D71
	HP 22.1 kVA S2316 Monitored PDU- dual input, 3-phase, 16A (INTL)	370963-B31
	HP 11 kVA S 1316 Monitored PDU- single input, 3-phase, 16A (INTL)	370964-B31
	HP 14.7 kVA S2132 Monitored PDU- dual input, 1-phase, 32A (INTL)	370965-B31
	HP 7.4 kVA S1132 Monitored PDU- single input, 1-phase, 32A (INTL)	370966-B31

Options

Modular PDUs 1U/0U (Up to 32 outlets) NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).	HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC) (NA, Japan)	252663-D71
	NOTE: 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) (NA, Japan)	252663-D72
	HP Modular Power Distribution Units (mPDU), High Volt Model, 32A (200-240 VAC) (Int'l)	252663-B31
	HP Modular Power Distribution Units (mPDU), High Volt Model, 40A (200-240 VAC) (WW)	252663-B21
	NOTE: This mPDU (252663-B21), 40A model has a hardwired input.	
	HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW)	252663-B24
	NOTE: 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 For North America, need to order cable PN 340653-001.	
	HP Modular Power Distribution Unit (mPDU), High Volt Model, 40A, Attached Cord, (NA/JPN)	252663-D73
	HP Modular Power Distribution Unit (mPDU), High Volt Model, 40A, Attached Cord, (Int'l)	252663-B32
	NOTE: 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: http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.HTML (Worldwide)	

USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B
	256MB HP Drive Key II (USB 2.0)	PH657A

Other	ProLiant ML3xx Internal to External SCSI Cable Option Kit (HD68)	159547-B22
	ProLiant ML3xx Internal to External SCSI Cable Option Kit (VHDCI)	333370-B21
	NOTE: The ProLiant ML3xx Internal to External SCSI Cable Option Kits (PN 159547-B21 and 333370-B21) are supported by the HP ProLiant ML330, HP ProLiant ML350, and HP ProLiant ML370 products.	

Rack Conversion Kit	ProLiant ML350 G4 Tower to Rack Conversion Kit	358350-B21
	Rack Adapter Kit NOTE: This kit allows HP rack servers to fit in racks that are 24" wide.	332815-B21
	Shipping Kit for Round Hole Racks NOTE: This kit is required if the server will be configured and shipped within a round hole rack.	371482-B21

Options

HP Rack 5000 Series (Graphite Metallic)	HP 5642 Rack-Unassembled	358254-B21

NOTE: Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color:
http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.HTML (Worldwide)
NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.

HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet - Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet	AF004A
	10642 G2 (42U) Rack Cabinet, without door - Shock Pallet	AF005A
	10642 G2 (42U) Rack Cabinet - with Extension, without door - Shock Pallet	AF006A
	10636 G2 (36U) Rack Cabinet - Pallet	AF011A
	10636 G2 (36U) Rack Cabinet - Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet - Crated	AF013A
	10636 G2 (36U) Rack Cabinet , with Extension - Shock Pallet	AF014A
	10636 G2 (36U) Rack Cabinet, without door - Shock Pallet	AF015A
	10636 G2 (36U) Rack Cabinet, with Extension, without door - Shock Pallet	AF016A

NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.

NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:
http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.HTML (Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.

HP Rack 10000 Series (Graphite Metallic)	10642 (42U) Infrastructure Rack (Low Voltage)	379006-001
	10642 (42U) Infrastructure Rack (High Voltage)	379005-001
	HP S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
	HP 10842 (42U) Rack Cabinet - Pallet	257415-B21
	HP 10842 (42U) Rack Cabinet - Shock Pallet	257415-B22
	HP 10647 (47U) Rack Cabinet - Pallet	245160-B21
	HP 10647 (47U) Rack Cabinet - Crated	245160-B23
	HP 10642 (42U) Rack Cabinet - Pallet	245161-B21
	HP 10642 (42U) Rack Cabinet - Shock Pallet	245161-B22
	HP 10642 (42U) Rack Cabinet - Crated	245161-B23
	HP 10636 (36U) Rack Cabinet - Pallet	245162-B21
	HP 10636 (36U) Rack Cabinet - Shock Pallet	245162-B22
	HP 10636 (36U) Rack Cabinet - Crated	245162-B23
	HP 10622 (22U) Rack Cabinet - Pallet	245163-B21
	HP 10622 (22U) Rack Cabinet - Shock Pallet	245163-B22

HP 10622 (22U) Rack Cabinet - Crated   245163-B23

NOTE: xxxxxx-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). xxxxxx-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 Compaq 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_div/10995_div.HTML (Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower

Rack Options for HP Rack 10000 Series

TFT7210R Rack Mounted 17" Monitor   348373-B21
NOTE: For a complete list of Monitors please view the following URL: http://www.hp.com/go/kvm

TFT7600RKM US	AG052A
TFT7600RKM UK	AG053A
TFT7600RKM GR	AG054A
TFT7600RKM FR	AG055A
TFT7600RKM IT	AG056A
TFT7600RKM SP	AG057A
TFT7600RKM DEN	AG058A
TFT7600RKM NOR	AG059A
TFT7600RKM SE/FI	AG060A
TFT7600RKM SWI	AG061A
TFT7600RKM PORT	AG062A
TFT7600RKM BEL	AG063A
TFT7600RKM JPN2	AG064A
TFT7600RKM RUS	AG065A
TFT7600RKM INTL	AG066A
1U Rack Keyboard & Drawer (Carbon)	257054-xx1

Country Code Key (for 1U Rack Keyboard & Drawer (PN 257054-xx1))

XX = 001	US	XX = 091	Norway
XX = 031	UK	XX = 101	Sweden/Finland
XX = 041	Germany	XX = 111	Switzerland
XX = 051	France	XX = 131	Portugal
XX = 061	Italy	XX = 181	Belgium
XX = 071	Spain	XX = 291	Japan
XX = 081	Denmark	XX = B31	International

NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower.

Options

HP KVM Switch Options	IP Console Switch Box (KVM/IP), 3 x 1 x 16	262586-B21
	IP Console Switch Box (KVM/IP), 1 x 1 x 16	262585-B21
	Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
	Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21
	USB Interface Adapter, 1 pack	336047-B21
	Serial Interface adapter - 1 Pack with power supply	373035-B21

NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.

	HP 1x 4 USB/PS2 KVM Switch, TT (NA/JPN)	371301-D71
	HP 1x 4 USB/PS2 KVM Switch, TT (AU/NZ)	371301-011
	HP 1x 4 USB/PS2 KVM Switch, TT (UK)	371301-031
	HP 1x 4 USB/PS2 KVM Switch, TT (EU)	371301-A21
	HP 1x 4 USB/PS2 KVM Switch, RM (ALL)	371302-B21
	HP PS2 KVM Cable with audio, 6', 2-pack	371730-B21
	HP USB KVM Cable with audio, 6', 2-pack	371729-B21

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.

HP Serial Console Server Options	HP 16 Port Serial Console Server (worldwide)	AF101A
	HP 48 Port Serial Console Server (worldwide)	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A

NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.

Options

Service and Support Offerings (HP Care Pack Services)

Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years (Electronic)	U4512E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic)	U4513E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic)	U4514E

O/S and Hardware Installation

Hardware Installation (Electronic)	U4522E
Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays. (Electronic)	U4523E

Support Plus

Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays. (Electronic)	U4524E

Support Plus 24

Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4525E
Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U6308E
Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U8330E

NOTE: For more information, customer/resellers can contact
http://www.hp.com/services/carepack

Memory

HP ProLiant ML350 G4 Memory Configuration
The HP ProLiant ML350 G4 requires memory interleaving when more than one DIMM is installed. For interleaving, DIMMs must be populated in identical pairs. The system will not boot properly if multiple DIMMs of varying density or type are installed in the system.

Standard Memory
All ML350 G4 models ship with Advanced ECC** PC2700 DDR SDRAM (running at 333 MHz).
Non-array models include a single 512 MB DIMM.
Array models include a single 1 GB DIMM.

Factory Integrated Models include the memory capacity of your choice.

NOTE: Advanced ECC Memory - ECC protection provides the ability to detect and correct single bit memory errors while Advanced ECC extends this coverage to include protection against multiple simultaneous errors on a DIMM. Advanced ECC detects and corrects 4bit memory errors that occur within a single DRAM chip on a DIMM. Advanced ECC algorithms work in combination with industry standard ECC DIMMS.

Common Memory Upgrades from Base Memory
NOTE: Charts do not represent all possible memory configurations.

Total Capacity Required	Pair 1		Pair 2	
	Base Memory (Non-Array Models)	DIMM Upgrade #1	DIMM Upgrade #2	DIMM Upgrade #3
512 MB	512 MB	Empty	Empty	Empty
1 GB	512 MB	512 MB	Empty	Empty
2 GB	512 MB	512 MB	512 MB	512 MB
3 GB	512 MB	512 MB	1 GB	1 GB
5 GB	512 MB	512 MB	2 GB	2 GB

Total Capacity Required	Pair 1		Pair 2	
	Base Memory (Array Models)	DIMM Upgrade #1	DIMM Upgrade #2	DIMM Upgrade #3
1 GB	1 GB	Empty	Empty	Empty
2 GB	1 GB	1 GB	Empty	Empty
3 GB	1 GB	1 GB	512 MB	512 MB
4 GB	1 GB	1 GB	1 GB	1 GB
6 GB	1 GB	1 GB	2 GB	2 GB

Following are memory options available from HP:
NOTE: All memory kits are single DIMM kits
- 512 MB Advanced ECC PC2700 DDR SDRAM DIMM Memory Kit (1 x 512 MB)   358347-B21
- 1 GB Advanced ECC PC2700 DDR SDRAM DIMM Memory Kit (1 x 1024 MB)   358348-B21
- 2 GB Advanced ECC PC2700 DDR SDRAM DIMM Memory Kit (1 x 2048 MB)   358349-B21

NOTE: 2 GB DIMMs are supported in memory slots 1 and 2 only when slots 3 and 4 are also populated with 2 GB DIMMs. In all other instances, 2 GB DIMMs should be installed in slots 3 and 4.

Storage
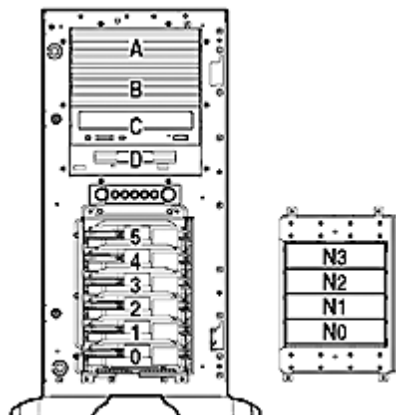
0 - 5	6 Hot Plug SCSI Hard Drive Bays	
or		
N0 - N3	4 Non-hot plug SCSI Hard Drive Bays	
D	1.44 MB Diskette Drive	
C	48x CD-ROM	
A,B	Available half height bay	

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
1.44-MB Diskette Drive	Up to 1	D	Integrated
IDE (ATAPI) CD-ROM Drive	Up to 2	A, B, C	Integrated IDE
DVD-ROM Drive Option Kit	Up to 2	A, B, C	Integrated IDE
ML3xx Two Bay Hot Plug SCSI Drive Cage	Up to 1	A + B*	Integrated SCSI

*NOTE: The Two Bay Hot Plug SCSI Drive Cage requires the use of both available removable media bays (A+B). In most cases, it is not possible to install both a non hot plug tape drive and the two bay hot pug SCSI drive cage option.

NOTE: Non hot plug SCSI models support a maximum of 4 total drive devices in bays 0-5, A or B.

Storage

Hard Drives

Ultra320 SCSI - Hot Plug Drives

	Quantity Supported	Position Supported	Controller
300GB U320 10K	Up to 6	0-5	Integrated Dual Channel Ultra320 SCSI Adapter
146.8GB U320 10K			Smart Array 641 Controller
72.8GB U320 10K			Smart Array 6402/128 Controller
146.8GB U320 15K			Smart Array 6404/256 Controller
72.8GB U320 15K			Smart Array 642 Controller
36.4GB U320 15K			64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter

NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds.

Ultra320 SCSI - Non-Hot Plug

	Quantity Supported	Position Supported	Controller
146GB U320 10K	Up to 4	N0-N4, A, B	Integrated Dual Channel Ultra320 SCSI Adapter
78GB U320 10K			Smart Array 641 Controller
36GB U320 15K			(NOTE: The Smart Array 641 Controller ships standard with Array models.)
			Smart Array 6402/128 Controller
			Smart Array 6404/256 Controller
			Smart Array 642 Controller
			64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter

NOTE: Installation of Non hot plug SCSI drives in the removable media bays (position C or D) requires the purchase of an additional SCSI cable.

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 20 Family	Up to 2	External	Smart Array 6402/128 Controller Smart Array 6404/256 Controller
Modular Smart Array 30 Family	Up to 2	External	Integrated Dual Channel Ultra320 SCSI Adapter NOTE: Connection of an external device to the embedded SCSI controller requires an internal-to-external cable (PN 159547-B22 or 333370-B21) Smart Array 6402/128 Controller Smart Array 6404/256 Controller Smart Array 642 Controller 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
Modular Smart Array 500 G2	1	External	Please see the Modular Smart Array 500 or 500 G2 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/msa500.

QuickSpecs

HP ProLiant ML350 Generation 4 (G4)

Storage

Modular Smart Array 1500 cs or Modular Smart Array 1000	Please see the Modular Smart Array 1500 cs or Modular Smart Array 1000 QuickSpecs links below to determine configuration requirements	Please see the Modular Smart Array 1500 cs or Modular Smart Array 1000 QuickSpecs (URL below) for the latest list of supported HBAs.

Modular Smart Array 1000: http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML (Worldwide)
Modular Smart Array 1500 cs: http://www.hp.com/go/MSA1500cs

Tape Drives, Tape Autoloaders, & Tape Libraries

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/Division/10233.html (Worldwide)

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/Division/10809.html (Worldwide)

	Quantity Supported	Position Supported	Controller
HP StorageWorks Tape Drives, Hot plug DAT 40 Hot Plug DAT 72 Hot Plug	1	0-5	Integrated Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Tape Drives, Internal Ultrium 232 Ultrium 448 DAT 40 DAT 72 DLT VS80 DLT VS160 SDLT 320	Up to 2	A, B	Integrated Dual Channel Ultra320 SCSI Adapter Smart Array 641 Controller 64-Bit/133MHz Dual Channel Ultra320 SCSI 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2
HP StorageWorks Tape Drives, External Ultrium 232 Ultrium 448 Ultrium 460 DAT 40 DAT 72 DLT VS80 DLT VS160 SDLT 320	Up to 2	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS

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HP StorageWorks Tape Drives, External Ultrium 960 SDLT 600	1 per SCSI Channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Tape Drives, USB External DAT 24 USB DAT 40 USB DAT 72 USB	1 per USB port	External	USB port
HP StorageWorks Tape Autoloaders, External DAT 72x6 Tape Autoloader 1/8 Tape Autoloader	1 autoloader per SCSI channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Rack-mount Tape Drive Enclosures 1U Rack-Mount Kit 3U Rack-Mount Kit 5U Rack-Mount Kit	1 per SCSI channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Tape Libraries, External MSL2024 (Ultrium 448 and 960-based) MSL4048 (Ultrium 448 and 960-based) MSL6000 (Ultrium 960 and 460-based) MSL6000 (SDLT 600-based) MSL5026S2 (SDLT 320-based) MSL5052S2 (SDLT 320-based)	Please reference the MSL Tape Library QuickSpecs to determine configuration requirements	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information.

QuickSpecs

Power Specifications

Part Number	345875-001
Operational Input Voltage Range (Vrms)	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	725	725	725	725	725	725
Nominal Input Current (A rms)	9.2	7.9	4.2	4.0	3.8	3.6
Max Rated Input Wattage Rating (Watts)	906	895	873	863	863	863
Max. Rated VA (Volt-Amp)	915	904	910	899	909	909
Efficiency (%)	80	81	83	84	84	84
Power Factor	0.99	0.99	0.96	0.96	0.95	0.95
Leakage Current (mA)	0.31	0.36	0.65	0.69	0.72	0.75
Maximum Inrush Current (A peak)	15	17	30	32	34	35
Maximum Inrush Current duration (miliseconds)	3					

NOTES:
ActiveAnswers Power Calculation
Power calculator is LIVE on ActiveAnswers Web site. This is an external link.
Follow this link: http://h30099.www3.hp.com/configurator/powercalcs.asp

To drill down to calculators:
- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: ML350 G4
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

Technical Specifications

System Unit - Hot Plug SCSI Tower	Dimensions (HxWxD) (with feet/bezel)	18.5 x 10.25 x 26 in (46.99 x 26.04 x 66.04 cm)	
	Dimensions (HxWxD) (without feet/bezel)	17.5 x 8.5 x 24 in (44.50 x 21.59 x 60.96 cm)	
	Weight(approximate)	60 lb (27.24 kg) (without hard drives)	
	Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC
		Rated Input Frequency	50 Hz to 60 Hz
		Input Power	906W @ 100VAC
		Rated Input Current	9.2A(100VAC),4.3A(200VAC)
	Rated Line Frequency	50 to 60 Hz	
	BTU Rating	3,125 BTU/hr	
	SCSI Connectors	Two internal HD68 connectors	
		(Support for either two internal, two external, or a mix of internal/external is available. This is achieved using an internal to external SCSI cable option kit (PN 159547-B22) and either of the two SCSI knockouts.)	
	Power Supply Output Power (per power supply)	Rated Steady-State Power	725W
	Temperature Range	Operating	50° to 95° F (10° to 35° C) (No direct sustaining sunlight)
		Storage (up to one year)	-40° to 158° F (-40° to 70° C)
	Maximum Wet Bulb Temperature	82.4° F (28° C)	
	Relative Humidity (non-condensing)	Operating	10% to 90%
		Non-operating	5% to 90%
	Acoustic Noise	Idle (Fixed Disk Drives Spinning)	
		L WAd (BELS)	6.5
		L pAm (dBA)	48
		Operating (Random Seeks to Fixed Disks)	
		L WAd (BELS)	6.5
		L pAm (dBA)	48

QuickSpecs

Technical Specifications

System Unit - Hot Plug SCSI Rack			
Dimensions (HxWxD)	8.61 x19 x 24 in (21.87 x48.26 x 60.96 cm)		
Weight(approximate)	60 lb (27.24 kg) (without hard drives)		
Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC	
	Rated Input Frequency	50 Hz to 60 Hz	
	Input Power	906W @ 100VAC	
	Rated Input Current	9.2A(100VAC),4.3A(200VAC)	
Rated Line Frequency	50 to 60 Hz		
BTU Rating	3,125 BTU/hr		
SCSI Connectors	Two internal HD68 connectors		

NOTE: Support for either two internal, two external, or a mix of internal/external is available. This is achieved using an internal to external SCSI cable option kit, PN 159547-B22 or 333370-B21, and either of the two SCSI knockouts.

Power Supply Output Power (per power supply)	Rated Steady-State Power	725W
Temperature Range	Operating	50° to 95° F (10° to 35° C) (No direct sustaining sunlight)
	Storage (up to one year)	-40° to 158° F (-40° to 70° C)
Maximum Wet Bulb Temperature	82.4° F (28° C)	
Relative Humidity (non-condensing)	Operating	10% to 90%
	Non-operating	5% to 90%
Acoustic Noise	Idle (Fixed Disk Drives Spinning)	
	L WAd (BELS)	6.5
	L pAm (dBA)	48
	Operating (Random Seeks to Fixed Disks)	
	L WAd (BELS)	6.5
	L pAm (dBA)	48

Technical Specifications

System Unit - Non Hot Plug SCSI Tower	**Dimensions** (HxWxD) (with feet/bezel)	18.5 x 10.25 x 25.75 in (46.99 x 26.04 x 65.4 cm)	
	Dimensions (HxWxD) (without feet/bezel)	17.5 x 8.5 x 24 in (44.50 x 21.59 x 60.96 cm)	
	Weight(approximate)	60 lb (27.24 kg) (without hard drives)	
	Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC
		Rated Input Frequency	50 Hz to 60 Hz
		Input Power	676W @ 100 VAC
		Rated Input Current	6.9A(100VAC)/3.3A(200VAC)
	Rated Line Frequency	50 to 60 Hz	
	BTU Rating	2,360 BTU/hr	
	SCSI Connectors	Two internal HD68 connectors	
		(Support for either two internal, two external, or a mix of internal/external is available. This is achieved using an internal to external SCSI cable option kit,PN 159547-B22 or 333370-B21, and either of the two SCSI knockouts.)	
	Power Supply Output Power (per power supply)	Rated Steady-State Power	460W
	Temperature Range	Operating	50° to 95° F (10° to 35° C) (No direct sustaining sunlight)
		Storage (up to one year)	-40° to 158° F (-40° to 70° C)
	Maximum Wet Bulb Temperature	82.4° F (28° C)	
	Relative Humidity (non-condensing)	Operating	10% to 90%
		Non-operating	5% to 90%
	Acoustic Noise	Idle (Fixed Disk Drives Spinning)	
		L WAd (BELS)	6.0
		L pAm (dBA)	46.3
		Operating (Random Seeks to Fixed Disks)	
		L WAd (BELS)	6.0
		L pAm (dBA)	46.5

Technical Specifications

NC7761 PCI Gigabit Server Adapter (embedded)	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	32-bit bus-master PCI	
	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	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)

Integrated Dual Channel Ultra320 SCSI Adapter	Drives Supported	Up to 28 SCSI devices (14 per channel)
	Data Transfer Method	64-bit PCI bus-master
	SCSI Channel Transfer Rate	320 MB/s per channel
	Maximum Transfer Rate per PCI Bus (peak)	400 MB/s per channel
	SCSI Protocols	Wide Ultra2 SCSI
		Wide-Ultra SCSI-3
		Ultra320 SCSI
	Electrical Protocol	Low Voltage Differential (LVD)
	SCSI Termination	Active Termination
	External SCSI Connectors	Optional VHDCI and HD68 internal-to-external connectors
	Internal SCSI Connectors	Two 68-Pin Wide-Ultra SCSI-3 connectors

Technical Specifications

Smart Array 641 Controller
(NOTE: The Smart Array 641 Controller ships standard with the Array Models only.)

Protocol	Ultra320 SCSI
SCSI Electrical Interface	Low Voltage Differential (LVD)
Drives Supported	Up to 6 Ultra 320, Ultra3 and Ultra2 SCSI hard drives
SCSI Port Connectors SA-641	One internal SCSI port
Data Transfer Method	64-Bit PCI bus-master
PCI Bus Speed	64-bit, 133-MHz PCI-X (1 GB/s maximum bandwidth)
PCI	3.3 volt PCI slot compatibility only
Simultaneous Drive Transfer Channels	One
Channel Transfer Rate	320-MB/s total; 320-MB/s per channel
Software upgradeable Firmware	Yes
Cache Memory	64-MB DRAM used for code, transfer buffers, and non-battery backed read cache
Logical Drives Supported	32
Maximum Capacity	1.80 TB (6 X 300 GB)
Memory Addressing	64-bit, supporting servers memory greater than 4 GB
RAID Support	RAID 5 (Distributed Data Guarding) RAID 1+0 (Striping & Mirroring) RAID 1 (Mirroring) RAID 0 (Striping)
Upgradeable Firmware	2-MB Flashable ROM
Disk Drive and Enclosure Protocol Support	Ultra320, Ultra2 and Ultra3
Warranty	Maximum: The remaining warranty of the HP server product in which it is installed (to a maximum three-year limited warranty) Minimum: One-year, on-site limited warranty Pre-Failure Warranty: Drives attached to the Smart Array Controller and monitored under Insight Manager are supported by a Pre-Failure (replacement) Warranty. For complete details, consult the HP Support Center or refer to your HP Server Documentation.