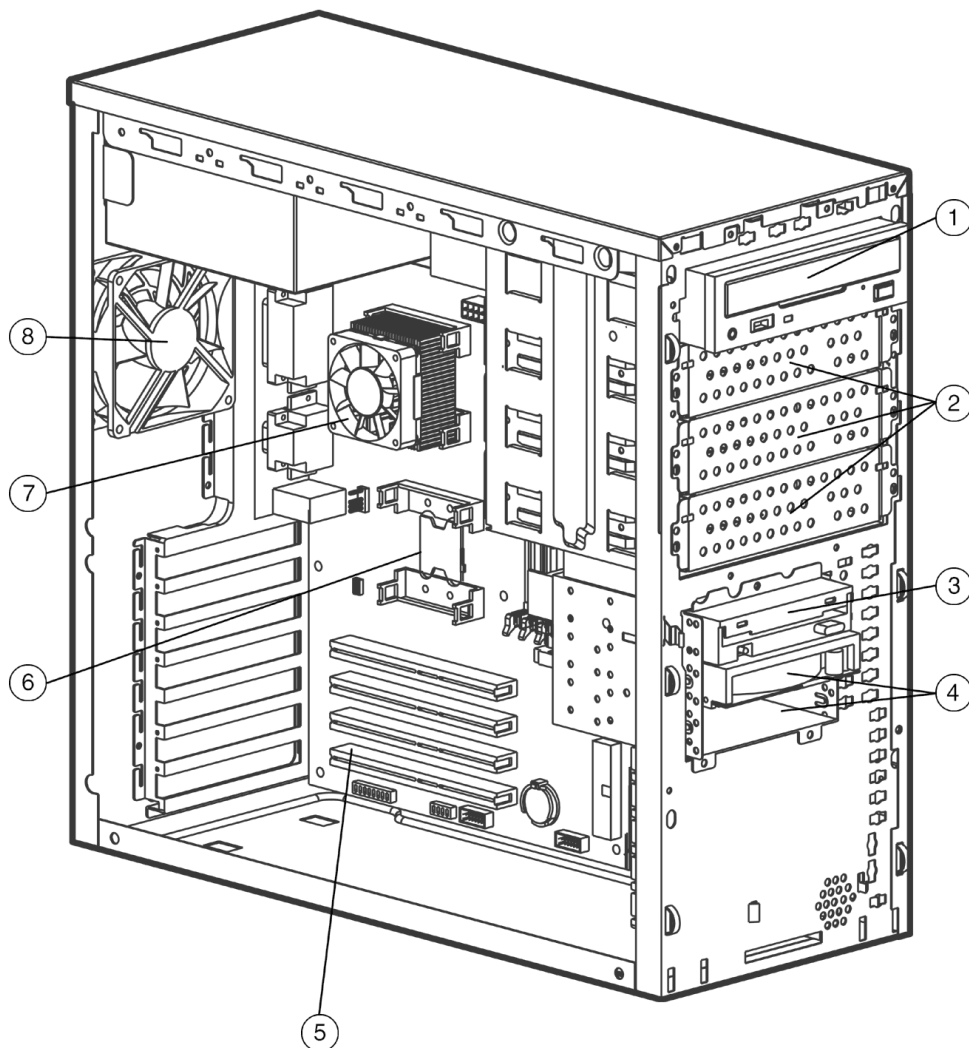


### Overview



1. 48x IDE (ATAPI) CD-ROM
2. Removable Media Bays (1.6" each)
3. 1.44 MB Diskette Drive
4. Two 1" Non-hot plug Hard Drive Bays

5. Four 64-bit/33MHz PCI
6. Processor socket 2 (unpopulated)
7. Processor 1 (populated)
8. System Fan

### What's New

- Supports up to 2 Intel® Xeon® 3.06 GHz or 2.8 GHz processors

### Overview

#### At A Glance

- Two USB ports
- ROM Based Setup Utility (RBSU) and PXE support
- ServerWorks GC-SL Chipset with 533-MHz Front Side Bus
- 512-KB second level ECC cache standard (full speed)
- 256-MB PC2100 ECC DDR SDRAM Memory, expandable to 4 GB
- Four total I/O slots; three available in SCSI models
- 64-Bit/33MHz, 3.3v PCI
- NC7760 PCI Gigabit Server Adapter (embedded)
- Integrated Dual Channel Ultra ATA/100 Adapter with Integrated ATA RAID 0, 1, & 1+0 (ATA Models) or Integrated Single Channel Wide Ultra3 SCSI Adapter in a PCI slot (SCSI Models)
- Support for up to five 1" Ultra320 non-hot-plug SCSI hard drives or four 1" ATA non-hot-plug drives (model dependent)
- SCSI Models (with optional drive cage): Internal storage capacity of up to 1.040 TB (3 x 146.8 GB non-hot-plug + 2 x 300 GB hot plug 1" hard drives)
- ATA Models: Internal storage capacity of up to 640 GB (4 x 160-GB ATA/100 drives)
- Integrated ATI Rage XL with 8MB SDRAM video
- 300W Power Supply
- Systems Insight Manager, SmartStart and Automatic Server Recovery-2 (ASR-2)
- Protected by HP Services, including a one-year, limited warranty, Next Business Day 1 year on-site limited Global warranty and Pre-Failure Warranty, which covers processors, memory, and hard drives - Certain restrictions and exclusions apply.

### Standard Features

<b>Processor</b> One of the following depending on Model	Intel Xeon Processor 3.06 GHz/533-512KB (Supports up to 2 processors)		
	Intel Xeon Processor 2.8 GHz/533-512KB (Supports up to 2 processors)		
<b>Cache Memory</b>	Integrated 512-KB Level 2 ECC cache (full speed)		
<b>Chipset</b>	ServerWorks Grand Champion SL Chipset with 533-MHz Front Side Bus <b>NOTE:</b> For more information regarding ServerWorks, please see the following URL: <a href="http://www.serverworks.com/products/overview.html">http://www.serverworks.com/products/overview.html</a> .		
<b>Memory Protection</b>	Advanced ECC capabilities		
<b>Memory</b>	Type	PC2100 DDR SDRAM running at 266MHz	
	Standard	256 MB (1 x 256 MB)	
	Maximum	4 GB	
<b>Network Controller</b>	NC7760 PCI Gigabit Server Adapter (embedded)		
<b>Expansion Slots</b>	I/O	Number of slots	PCI Voltage:
	64-bit/33MHz PCI	4	3.3 volts
<b>Storage Controller</b>	Integrated Single Channel Wide Ultra3 SCSI Adapter in a PCI slot ( <a href="#">SCSI Models only</a> ) Integrated Dual Channel Ultra ATA 100 IDE Adapter with Integrated ATA RAID 0, 1, & 1+0 ( <a href="#">ATA Models</a> )		
<b>Storage</b>	Diskette Drives	1.44 MB Diskette Drive	
	Optical Drive	48x IDE CD-ROM Drive	
	Hard Drives	One of the following: (1) 36.4 GB Ultra320 SCSI Drive (SCSI Models only) (1) 40 GB ATA/100 7200 rpm 1" Drive (ATA Models only)	
<b>Maximum Internal Storage</b>	SCSI (Non-Hot Plug and Hot Plug)	1.04 TB	3 x 146.8 GB non-hot-plug + 2 x 300 GB hot plug Ultra 320 with optional drive cage
	ATA	640 GB	4 x 160.0 GB ATA (internal drive bays and removable media bays)

### Standard Features

Interfaces	Parallel	1
	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB	2
	<p><b>NOTE:</b> Please see the following URL for additional information regarding USB support:  <a href="http://h18004.www1.hp.com/products/servers/platforms/usb-support.html">http://h18004.www1.hp.com/products/servers/platforms/usb-support.html</a>.</p>	
	Network RJ-45 (Ethernet)	1

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**Graphics** Integrated ATI RAGE XL Video Controller with 8MB SDRAM Video Memory

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**Form Factor** Tower (5U) Tower to Rack Enabling Option Kit available (PN 238547-B22)

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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 <a href="http://www.hp.com/go/hpsim">http://www.hp.com/go/hpsim</a> .
	SmartStart	SmartStart simplifies server setup by providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at <a href="http://www.hp.com/servers/smartstart">http://www.hp.com/servers/smartstart</a> . Minimum SmartStart version supported: SmartStart 6.4. Latest SmartStart version supported: SmartStart 7.2
	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 <a href="http://www.hp.com/servers/manage">http://www.hp.com/servers/manage</a> .
	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 <a href="http://www.hp.com/go/subscriberschoice">http://www.hp.com/go/subscriberschoice</a> 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 <a href="http://www.hp.com/go/support">http://www.hp.com/go/support</a> .
	Survey Utility and diagnostics utilities	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP at your fingertips Available in SmartStart.

### Standard Features

#### Optional ProLiant Essentials Value Packs

Optional software offerings that selectively 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.
- 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.
- 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
- 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.

**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>

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#### Industry Standard Compliance

ACPI V1.0b Compliant  
PCI 2.2 Compliant  
PXE Support  
WOL Support  
Microsoft® Logo certifications

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#### Intelligent Manageability

HP Systems Insight Manager  
Redundant ROM  
Remote Flash ROM  
Automatic Server Recovery-2 (ASR-2)  
Remote Insight Lights-Out Edition II (optional)  
Drive Parameter Tracking (with Smart Array Controller)  
Dynamic Sector Repairing (with Smart Array Controller)  
Pre-Failure Warranty (covers processors, memory and hard drives)

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### Standard Features

Security	Power-on password Setup password Diskette boot control Power switch security
Server Power Cords	One Lowline power cord ships standard
Power Supply	300 Watts, PFC (Power Factor Correcting)
System Fans	1 system fan ships standard. 1 system fan total supported (does not include fans integral to CPU heatsink or power supply assemblies).
Required Cabling	For required cabling information, refer to the HP Web site at <a href="http://h18000.www1.hp.com/products/servers/ProLiantML330/">http://h18000.www1.hp.com/products/servers/ProLiantML330/</a> .
OS Support	Microsoft Windows 2000 (Server and Advanced Server) Microsoft Small Business Server 2000 Microsoft Small Business Server 2003 Windows Server 2003 Novell NetWare Novell NetWare Small Business Server 6.0 Linux (Red Hat, SuSE, UnitedLinux) <b>NOTE:</b> For a more complete and up-to-date listing of supported OS's and versions, please visit our OS Support Matrix at: <a href="http://h10018.www1.hp.com/wwsolutions/index.html">http://h10018.www1.hp.com/wwsolutions/index.html</a> <b>NOTE:</b> For a more complete and up-to-date information on Linux support, please visit HP Linux Web site at: <a href="http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html">http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html</a> <b>NOTE:</b> For an up-to-date listing of the latest drivers available for the HP ProLiant ML330, please see: <a href="http://h18023.www1.hp.com/support/files/server/us/index.html">http://h18023.www1.hp.com/support/files/server/us/index.html</a> . <b>NOTE:</b> For more complete and up-to-date information on how to buy server operating systems from HP please visit the OS product site at: <a href="http://h18004.www1.hp.com/products/servers/software/OEM.html">http://h18004.www1.hp.com/products/servers/software/OEM.html</a>

### Standard Features

#### Rack Airflow Requirements

##### Rack 10000 series Cabinets

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

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

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

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

**NOTE:** For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: <http://h18000.www1.hp.com/products/servers/ProLiantml330/index.html>.

#### 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, EVA3000 & EVA5000, 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>

### Standard Features

#### Service and Support

One-year limited warranty, including hardware diagnostic support, and pre-failure warranty (coverage of hard drives, memory and processors). The warranty is fully supported by HP Services and a worldwide network of resellers and service providers. An additional 90-day getting started 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.

**NOTE:** Limited warranty includes 1 year parts, 1 year labor, 1-year on-site support.

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.

**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

<b>ML330T03 X3.06-512KB/533 256MB, 40GB, ATA</b> 353448-002	<b>Processor</b>	(1) Intel Xeon 3.06 GHz Processor standard
	<b>Cache Memory</b>	Integrated 512-KB Level 2 cache (full speed)
	<b>Memory</b>	256 MB
	<b>Network Controller</b>	NC7760 PCI Gigabit Server Adapter (embedded)
	<b>Storage Controller</b>	Integrated Dual Channel Ultra ATA-100 IDE Adapter with Integrated ATA RAID 0, 1, 1+0
	<b>Hard Drive</b>	40 GB Ultra ATA/100
	<b>Internal Storage</b>	640 GB maximum (with optional hard drives)
	<b>Optical Drive</b>	48x IDE (ATAPI) CD-ROM Drive
	<b>Diskette Drive</b>	1.44 MB Diskette Drive
	<b>Form Factor</b>	Tower (5U) (Tower to Rack Enabling Kit available)

<b>ML330T03 X2.80-512KB/533 256MB, 40GB, ATA</b> 317817-002	<b>Processor</b>	(1) Intel Xeon 2.80 GHz Processor standard
	<b>Cache Memory</b>	Integrated 512-KB Level 2 cache (full speed)
	<b>Memory</b>	256 MB
	<b>Network Controller</b>	NC7760 PCI Gigabit Server Adapter (embedded)
	<b>Storage Controller</b>	Integrated Dual Channel Ultra ATA-100 IDE Adapter with Integrated ATA RAID 0, 1, 1+0
	<b>Hard Drive</b>	40 GB Ultra ATA/100
	<b>Internal Storage</b>	640 GB maximum (with optional hard drives)
	<b>Optical Drive</b>	48x IDE (ATAPI) CD-ROM Drive
	<b>Diskette Drive</b>	1.44 MB Diskette Drive
	<b>Form Factor</b>	Tower (5U) (Tower to Rack Enabling Kit available)

<b>ML330T03 P3.06-512KB/533 256MB, 36GB, SCSI</b> 353093-002	<b>Processor</b>	(1) Intel Xeon 3.06 GHz Processor standard
	<b>Cache Memory</b>	Integrated 512-KB Level 2 cache (full speed)
	<b>Memory</b>	256 MB
	<b>Network Controller</b>	NC7760 PCI Gigabit Server Adapter (embedded)
	<b>Storage Controller</b>	Integrated Single Channel Ultra3 SCSI Adapter in a PCI slot
	<b>Hard Drive</b>	(1) 36.4 GB Ultra320 SCSI
	<b>Internal Storage</b>	512 GB maximum (with optional hot plug drive cage and optional hard drives)
	<b>Optical Drive</b>	48x IDE (ATAPI) CD-ROM Drive
	<b>Diskette Drive</b>	1.44 MB Diskette Drive
	<b>Form Factor</b>	Tower (5U) (Tower to Rack Enabling Kit available)

### Models

ML330T03 P2.8-  
512KB/533 256MB,  
36GB, SCSI  
317821-002

<b>Processor</b>	(1) Intel Xeon 2.8 GHz Processor standard
<b>Cache Memory</b>	Integrated 512-KB Level 2 cache (full speed)
<b>Memory</b>	256 MB
<b>Network Controller</b>	NC7760 PCI Gigabit Server Adapter (embedded)
<b>Storage Controller</b>	Integrated Single Channel Ultra3 SCSI Adapter in a PCI slot
<b>Hard Drive</b>	(1) 36.4 GB Ultra320 SCSI
<b>Internal Storage</b>	402.8 GB maximum (with optional hot plug drive cage and optional hard drives)
<b>Optical Drive</b>	48x IDE (ATAPI) CD-ROM Drive
<b>Diskette Drive</b>	1.44 MB Diskette Drive
<b>Form Factor</b>	Tower (5U) (Tower to Rack Enabling Kit available)

### Options

ProLiant Essentials Value Pack Software	Rapid Deployment Pack, 1 User, V1.x	267196-B21
	<b>NOTE:</b> This license allows 1 server to be managed and deployed via the Deployment Server.	
	Rapid Deployment Pack, 10 Users, V1.x	269817-B21
	<b>NOTE:</b> This license allows 10 servers to be managed and deployed via the Deployment Server.	
	Flexible Quantity License Kit	302127-B21
	License-Only - for use with a Master License Agreement	302128-B21
	ProLiant Essentials Workload Management Pack 2.0 (Featuring Compaq Resource Partitioning Manager version 2.0)	303284-B21
	ProLiant Essentials Recovery Server Option Pack	280189-B21
	Performance Management Pack, single server	306696-B21
	<b>NOTE:</b> This license allows 1 server to be managed by Performance Management Pack.	
	Performance Management Pack, 10 Pack Server License	374055-B21
	ProLiant Essentials Performance Management Pack Flexible License	306697-B21
	<b>NOTE:</b> A single pack is shipped with a single license key for the total number of licenses ordered	
	ProLiant Essentials Intelligent Networking Pack, 1 License	372906-B21
	ProLiant Essentials Intelligent Networking Pack Flex License	372950-B21
	ProLiant Essentials Intelligent Networking Pack Track License	372951-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License	371645-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, 10-Server License	372029-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, Flexible-Quantity License	371646-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, Tracking license for new servers	371647-B21
ProLiant Essentials Vulnerability and Patch Management Pack, Tracking license for installed servers	378372-B21	
ProLiant Essentials Vulnerability and Patch Management Pack, 1-Server 10-Desktop Bundle License	389941-B21	
<b>NOTE:</b> Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <a href="http://www.hp.com/servers/proliantessentials">http://www.hp.com/servers/proliantessentials</a> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.		
<b>NOTE:</b> For more information regarding ProLiant Essentials Software, please see the following URL: <a href="http://www.hp.com/servers/proliantessentials">http://www.hp.com/servers/proliantessentials</a> .		

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Software	HP digital asset protection	302316-001
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### Options

Processors	Intel Xeon 3.06 GHz-512KB Processor Option Kit	354606-B21
	<b>NOTE:</b> The Intel Xeon 3.06 GHz-512KB Processor Option Kit is supported by the ProLiant ML330 G3 servers only.	
	Intel Xeon 2.80 GHz-512KB Processor Option Kit	317823-B21
	<b>NOTE:</b> The Intel Xeon 2.80 GHz-512KB Processor Option Kit is supported by the ProLiant ML330 G3 servers only.	
	Intel Xeon 2.40 GHz-512KB Processor Option Kit	323139-B21
	<b>NOTE:</b> The Intel Xeon 2.40 GHz-512KB Processor Option Kit is supported by the ProLiant ML330 G3 servers only.	
Memory (DIMMs)	128MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 128 MB)	287494-B21
	256MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 256 MB)	287495-B21
	512MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 512 MB)	287496-B21
	1024MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 1024 MB)	287497-B21
Optical Drives	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
	CD-RW/DVD ROM Combo Drive Option Kit	331346-B21
	<b>NOTE:</b> The DVD-ROM drive is supported in the CD-ROM bay and in the removable media bay. If placed in the removable media bay, it requires the 2-Device IDE cable (PN 305381-B21).	
	HP DVD+R/RW 16X Half Height	383974-B21
Internal Storage	ML3xx Two Bay Hot Plug SCSI Drive Cage	244059-B21
	<b>NOTE:</b> 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.	
Hard Drives	<b>Ultra320 SCSI – Universal Hot Plug</b>	
	<b>NOTE:</b> These Hot Plug Drives are for use in conjunction with the ML3xx Two Bay Hot Plug SCSI Drive Cage (PN 244059-B21).	
	300-GB 10,000 rpm U320 Universal Hard Drive (1")	350964-B22
	146.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286716-B22
	72.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286714-B22
	146.8-GB 15,000 rpm Ultra320 Universal Hard Drive (1")	347708-B22
	72.8-GB 15,000 rpm U320 Universal Hard Drive (1")	286778-B22
	36.4-GB 15,000 rpm U320 Universal Hard Drive (1")	286776-B22
	<b>Ultra320 SCSI – Non-Hot Plug</b>	
	146.8-GB 10,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	356990-B21
	72-GB 10,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	332751-B21
	36-GB 15,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	357012-B21
	<b>NOTE:</b> All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds. U320 drives require an optional U320 Smart Array Controller or U320 SCSI HBA to support U320 transfer rates.	
	<b>ATA 100 - Non-Hot Plug</b>	
160-GB ATA 100 7,200 rpm Hard Drive (1")	366486-B21	

### Options

80-GB ATA 100 7,200 rpm Hard Drive (1")	278424-B21
40-GB ATA 100 7,200 rpm Hard Drive (1")	230534-B21

**NOTE:** Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:

**U320 Hard Drive QuickSpecs:**

[http://h18000.www1.hp.com/products/quickspecs/11531\\_na/11531\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11531_na/11531_na.HTML)

**ATA100 Hard Drive QuickSpecs:**

[http://h18000.www1.hp.com/products/quickspecs/11361\\_na/11361\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11361_na/11361_na.HTML)

### Storage Controllers – SCSI Drives

**NOTE:** The following Storage Controllers are qualified for SCSI drives only.

Smart Array 6402/128 Controller	273915-B21
Smart Array 641 Controller	291966-B21
Smart Array 642 Controller	291967-B21
Smart Array 6404/256 Controller	273914-B21
128MB Battery-Backed Cache Enabler	351580-B21

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

128-MB Cache Module for Smart Array 5302 Controller	153506-B21
256-MB Battery-Back Cache Module	254786-B21

**NOTE:** This 256-MB Battery-Backed Cache Module supports the Smart Array 5300 series controllers, HP StorageWorks Modular Smart Array 1000 and the HP StorageWorks Modular Smart Array 500.

256MB Battery-Backed Cache Upgrade Kit for SA-6400	273913-B21
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**NOTE:** This 256-MB Battery-Backed Cache upgrade kit supports the Smart Array 6400 series controller only.

64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter	268351-B21
Ultra320 Expansion Module for SA-6402	273911-B21
64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS	284688-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\\_na/11587\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11587_na/11587_na.HTML)  
(Smart Array 6400 Series)

[http://h18000.www1.hp.com/products/quickspecs/12067\\_na/12067\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12067_na/12067_na.HTML)  
(Smart Array 641)

[http://h18000.www1.hp.com/products/quickspecs/12069\\_na/12069\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12069_na/12069_na.HTML)  
(Smart Array 642)

[http://h18000.www1.hp.com/products/quickspecs/10429\\_na/10429\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/10429_na/10429_na.HTML)  
(SCSI Adapter)

[http://h18000.www1.hp.com/products/quickspecs/11555\\_na/11555\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11555_na/11555_na.HTML)  
(U320 Adapter)

### Options

<b>Communications</b>	HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter	367132-B21
	HP NC310F PCI-X 1000SX Gigabit Server Adapter	368169-B21
	HP NC1020 PCI 1000T Gigabit Server Adapter	353377-B21
	NC6770 PCI-X Gigabit Server Adapter, 1000-SX	244949-B21
	HP NC7771 PCI-X 1000T Gigabit Server Adapter	290563-B21
	HP NC7170 PCI-X Dual Port 1000T Gigabit Server Adapter	313881-B21
	<b>NOTE:</b> Any NC61XX, or NC71XX NIC can be used for redundancy with the embedded NC7760 Network Controller.	
HP High-speed PCI soft modem	DC132D	

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<b>Management Options</b>	Remote Insight Lights-Out Edition II	227251-001
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### Tape Drives

**NOTE:** In order to install certain tape drives internally, you may need to remove the rails that come standard on the drives and then re-insert the screws in the mounting holes. Mounting screws are shipped standard with server.

**NOTE:** To run external SCSI-based devices, either an Internal-to-External SCSI Cable Option kit (for SCSI models) or a SCSI controller with external channel (for ATA models) must be purchased.

Review the server cabling matrix for additional information on cables required to connect backup products to the server.

#### Ultrium Tape Drives - External, Rack-Mount and Array

HP StorageWorks Ultrium 215 Tape Drive, External (Carbon)	Q1545A
HP StorageWorks Ultrium 215 rack-mount (Carbon) - Single drive installed in a 1U rack-mount kit	A7444A
HP StorageWorks Ultrium 215 Array Module (Carbon) - Offline hot-swap drive for Tape Array 5300	C7492B
HP StorageWorks Ultrium 230 Tape Drive, External (Carbon)	Q1517A
HP StorageWorks Ultrium 230, Rack-mount (Carbon) - Single drive installed in a 3U rack-mount kit	350545-B21
HP StorageWorks Ultrium 230 Array Module (Carbon) - Offline hot-swap drive for Tape Array 5300	C7470B
HP StorageWorks Ultrium 448 Tape Drive, External (Carbonite)	DW017A
HP StorageWorks Ultrium 448, Rack-mount (Carbonite) - Single drive installed in a 1U rack-mount kit	DW028A
HP StorageWorks Ultrium 448 Tape Drive, Internal (Carbonite)	DW016A
HP StorageWorks Ultrium 460 Tape Drive, External (Carbon)	Q1520A
HP StorageWorks Ultrium 460, Rack-mount (Carbon) - Single drive installed in a 3U rack-mount kit	350546-B21
HP StorageWorks Ultrium 460 Array Module (Carbon) - Offline hot-swap drive for Tape Array 5300	Q1512B
HP StorageWorks Ultrium 960 Tape Drive, External (Carbonite) Q1539A	Q1539A
HP StorageWorks Ultrium 960 Rack-mount (Carbonite) - Single drive installed in a 3U rack-mount kit	Q1595A

### Options

**NOTE:** Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items:

[http://h18006.www1.hp.com/products/quickspecs/11739\\_na/11739\\_na.html](http://h18006.www1.hp.com/products/quickspecs/11739_na/11739_na.html)

[http://h18006.www1.hp.com/products/quickspecs/12128\\_na/12128\\_na.html](http://h18006.www1.hp.com/products/quickspecs/12128_na/12128_na.html)

For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: <http://www.hp.com/go/connect>

#### DAT Drives - External, Rack-Mount and Array Module

**NOTE:** Use of a hot plug tape drives requires installation of the optional two-bay SCSI drive cage.

HP StorageWorks DAT 72 Tape Drive, External (Carbon)	Q1523A
HP StorageWorks DAT 72 Tape Drive, Internal (Carbon)	Q1522A
HP StorageWorks DAT 72 Tape Drive, Internal Hot-Plug (Carbon)	Q1529A
HP StorageWorks DAT 72 Array Module (Carbon) - Offline hot-swap drive for Tape Array 5300	Q1524B
HP StorageWorks DAT 40 Tape Drive, External (Carbon)	C5687C
HP StorageWorks DAT 40 Tape Drive, Internal (Carbon)	C5686B
HP StorageWorks DAT 40 Tape Drive, Internal Hot-Plug (Carbon)	Q1546A
HP StorageWorks DAT 40 Array Module (Carbon) - Offline hot-swap drive for Tape Array 5300	C7497B

**NOTE:** Please see the DAT Tape Drive QuickSpecs for controllers, media, and other options:

[http://h18000.www1.hp.com/products/quickspecs/11883\\_na/11883\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11883_na/11883_na.HTML)

For an up-to-date listing of the latest O/S and software support details for HP DAT drives, please visit: <http://www.hp.com/go/connect>

#### Internal and External DLT VS Tape Drives

HP StorageWorks DLT VS80 Tape Drive, Internal (Carbon)	337699-B21
HP StorageWorks DLT VS80 Tape Drive, External (Carbon)	337699-B22
DLT VS160, Internal (Carbon)	A7569A
DLT VS160, External (Carbon)	A7570A

**NOTE:** Please see the DLT VS Tape Drive QuickSpecs for additional options such as host bus adapters, controllers, media, and other options:

[http://h18006.www1.hp.com/products/quickspecs/11403\\_na/11403\\_na.HTML](http://h18006.www1.hp.com/products/quickspecs/11403_na/11403_na.HTML)

For an up-to-date listing of the latest O/S and software support details for the DLT VS80, please visit: <http://www.hp.com/go/connect>

#### External and Rack-mount SDLT Tape Drives

HP StorageWorks SDLT 320 Tape Drive, External (Carbon)	257319-001
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**NOTE:** Please see the SDLT 320 Tape Drive QuickSpecs for additional options such as adapters, controllers, and media.

[http://h18006.www1.hp.com/products/quickspecs/114840\\_na/11840\\_na.HTML](http://h18006.www1.hp.com/products/quickspecs/114840_na/11840_na.HTML)

For an up-to-date listing of the latest O/S and software support details for HP SDLT tape drives, please visit: <http://www.hp.com/go/connect>

#### Rack-Mount Tape Drive Enclosures

HP StorageWorks 1U Rack-Mount Kit	A7445A
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**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 DAT 24, DAT40, DAT72, DLT VS 80, and Ultrium 215 tape drives.

### Options

HP StorageWorks 3U Rack-Mount Kit	274338-B21
<b>NOTE:</b> The 3U Rack-Mount Kit can support up to 2 full-height or 4 half-height tape drives and compatible with multiple Single-Ended and LVD SCSI tape drives including DAT, DLT VS80, SDLT 320, Ultrium 215, Ultrium 230, and Ultrium 460 Tape Drives.	
HP StorageWorks 5U Rack-Mount Kit	274339-B21
<b>NOTE:</b> The 5U Rack-Mount Kit can support up to 4 full-height tape drives and is compatible with SDLT 320, Ultrium 230, and Ultrium 460 tape drives.	
<b>NOTE:</b> Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits:	
<a href="http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML">http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML</a>	
HP StorageWorks Tape Array 5300	C7508A
<b>NOTE:</b> The Tape Array 5300 is a 3U enclosure that supports up to 2 full-height or 4 half-height hot-swap array modules, including DAT and Ultrium tape drives. Cables and terminators are not included and must be ordered separately.	
<b>NOTE:</b> Please see the Tape Array 5300 QuickSpecs for additional information regarding this product.	
<a href="http://h18000.www1.hp.com/products/quickspecs/11878_na/11878_na.HTML">http://h18000.www1.hp.com/products/quickspecs/11878_na/11878_na.HTML</a>	
<b>Accessories for 3U &amp; 5U Rack-mount Tape Drive Kits</b>	
LVD Cable Kit, VHDCI/HD68	168048-B21
<b>NOTE:</b> For use with the 3U Rack-mount Kit and 5U Rack-mount Kit only.	
LVD Cable Kit, HD68/HD68	242381-B21
<b>NOTE:</b> For use with the 3U Rack-mount Kit and 5U Rack-mount Kit only.	
<b>Accessories for 3U &amp; 5U Rack-mount Tape Drive Kits</b>	
<i>PSU/Fan Upgrade Kit - Redundant hot-swap power supply unit and fan for Tape Array 5300.</i>	
68-pin HD multi-mode terminator	C2364A
1.0m 68-pin VHDCI to 68-pin HD cable	C2361B
2.5m 68-pin VHDCI to 68-pin HD cable	C2362B
5.0m 68-pin VHDCI to 68-pin HD cable	C2365A
10.0m 68-pin VHDCI to 68-pin HD cable	C2363B
0.5m 68-pin HDI to 68-pin HD cable LVD/SE	C2978B
1.5m 68-pin HDI to 68-pin HD cable LVD/SE	C2979B
0.9m 68-pin HDI to 68-pin HD cable LVD/SE	C2911C
2.5m 68-pin HDI to 68-pin HD cable LVD/SE	C2924C
<b>NOTE:</b> For use with Tape Array 5300 only	

### Options

#### Tape Autoloaders

##### DAT Autoloader

HP StorageWorks DAT 72x6 Internal Autoloader Q1566A

HP StorageWorks DAT 72x6 External Autoloader Q1567A

**NOTE:** Please see the DAT Tape Autoloader QuickSpecs for additional options such as host bus adapters, controllers and media:

[http://h18000.www1.hp.com/products/quickspecs/11985\\_na/11985\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11985_na/11985_na.HTML)

##### HP StorageWorks 1/8 Tape Autoloader

1/8 Ultrium 460 Tape Autoloader, Tabletop AA927A

1/8 SDLT 320 Tape Autoloader, Tabletop AA926A

1/8 Ultrium 230 Tape Autoloader, Tabletop C9572CB

1/8 DLT VS80 Tape Autoloader, Tabletop C9264CB

1/8 Tape Autoloader Rackmount Kit C9268R

**NOTE:** Required to install the 1/8 tape autoloader in a standard 19-inch rack

**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>

##### HP StorageWorks SSL1016 Tape Autoloader

SSL1016 Ultrium 460 Tape Autoloader 330821-B21

SSL1016 SDLT 320 Tape Autoloader 330816-B21

#### Tape Libraries

##### HP StorageWorks MSL6000 Tape Library

###### Ultrium 960 technology

MSL6030, 1 drive, 30 slots, Ultrium 960 AD606A

MSL6030, 2 drive, 30 slots, Ultrium 960 AD607A

MSL6030, 1 drive, 30 slots, Ultrium 960, with embedded FC router AD608A

MSL6030, 2 drive, 30 slots, Ultrium 960, with embedded FC router AD609A

MSL6060, 2 drive, 60 slots, Ultrium 960 AD610A

MSL6060, 2 drive, 60 slots, Ultrium 960, with embedded FC router AD611A

###### SDLT 600 technology

MSL6026, 1 drive, 26 slots, SDLT 600 AD582A

MSL6026, 2 drive, 26 slots, SDLT 600 AD583A

MSL6026, 1 drive, 26 slots, SDLT 600, with embedded FC router AD584A

MSL6026, 2 drive, 26 slots, SDLT 600, with embedded FC router AD585A

MSL6052, 2 drive, 52 slots, SDLT 600 AD587A

MSL6052, 2 drive, 52 slots, SDLT 600, with embedded FC router AD588A

###### Ultrium 460 technology

MSL6030, 1 drive, 30 slots, Ultrium 460 AD598A

MSL6030, 2 drive, 30 slots, Ultrium 460 AD599A

MSL6030, 1 drive, 30 slots, Ultrium 460, with embedded FC router AD600A

MSL6030, 2 drive, 30 slots, Ultrium 460, with embedded FC router AD601A

MSL6060, 2 drive, 60 slot Ultrium 460 AD603A

MSL6060, 2 drive, 60 slot Ultrium 460, with embedded FC router AD604A

### Options

**NOTE:** Please reference the 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>

#### HP StorageWorks MSL5026S2 Tape Library

MSL5026S2, 1 drive, 26 slots, SDLT 320, RM	293472-B22
MSL5026S2, 2 drive, 26 slots, SDLT 320, RM	293472-B23
MSL5026S2, 1 drive, 26 slots, SDLT 320, RM with embedded FC router	293472-B24
MSL5026S2, 2 drive, 26 slots, SDLT 320, RM with embedded FC router	293472-B25

#### HP StorageWorks MSL5026S2 Tape Library

MSL5026S2, 1 drive, 26 slots, SDLT 320, RM	293472-B22
MSL5026S2, 2 drive, 26 slots, SDLT 320, RM	293472-B23
MSL5026S2, 1 drive, 26 slots, SDLT 320, RM with embedded FC router	293472-B24
MSL5026S2, 2 drive, 26 slots, SDLT 320, RM with embedded FC router	293472-B25

**NOTE:** Please reference the MSL5026S2 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>

#### HP StorageWorks MSL5052S2 Tape Library

MSL5052S2, 2 drive, 52 slots, SDLT 320, RM	293474-B21
MSL5052S2, 2 drive, 52 slots, SDLT 320, RM with embedded FC router	293474-B24

**NOTE:** Please reference the MSL5052S2 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>

#### HP StorageWorks MSL5030 Tape Library

MSL5030, 1 drive, 30 slots, Ultrium 230, RM	301897-B22
MSL5030, 2 drive, 30 slots, Ultrium 230, RM	301897-B23
MSL5030, 1 drive, 30 slots, Ultrium 230, RM with embedded FC router	301897-B24
MSL5030, 2 drive, 30 slots, Ultrium 230, RM with embedded FC router	301897-B25

**NOTE:** Please reference the MSL5030 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>

#### HP StorageWorks MSL5060 Tape Library

MSL5060, 2 drive, 60 slots, Ultrium 230, RM	301899-B22
MSL5060, 2 drive, 60 slots, Ultrium 230, RM with embedded FC router	301899-B23

**NOTE:** Please reference the MSL5060 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>

#### HP StorageWorks ESL E-Series Tape Libraries

ESL Extended 712e Tape Library, 0 drive, 712 LTO slots	AA934B
ESL Extended 630e Tape Library, 0 drive, 630 SDLT slots	AA935B
ESL Extended 322e Tape Library, 0 drive, 322 LTO slots	AA939B
ESL Extended 286e Tape Library, 0 drive, 286 SDLT slots	AA940B

### Options

ESL E-Series Ultrium 960 drive kit	AD595A
ESL E Ultrium 460 drive kit	AA937A
ESL E SDLT 320 drive kit	AA936A

**NOTE:** Please reference the ESL E-Series Tape Libraries 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>

#### Magneto-Optical Jukeboxes

#### HP StorageWorks 9.1 GB Entry-level Optical Storage

9100mx standalone drive	C1114M
220mx, 1 drive, 24 slot jukebox	C1118M
220mx, 2 drive, 24 slot jukebox	C1119M

**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

#### HP StorageWorks Ultra Density Optical Storage

30ux standalone drive	AA961A
700ux, 1 drive, 24 slot jukebox	AA962A
700ux, 2 drive, 24 slot jukebox	AA963A
1100ux, 2 drive, 38 slot jukebox	AA964A

**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

#### HP StorageWorks Modular Smart Array 500

HP StorageWorks Modular Smart Array 500 Generation 2 335880-B21

Modular Smart Array 500 High Availability Kit 351281-B21

**NOTE:** includes Modular Smart Array 500 controller, 4-port IO Module, Smart Array Multipath Software and 2 SA-532 Adapters.

Modular Smart Array 500 Controller 218252-B21

128-MB Cache Module for Smart Array Controller 153506-B21

**NOTE:** 128-MB Cache Module for Smart Array Controller (PN 153506-B21) is an upgrade cache module (128 MB Standard) for Modular Smart Array 500 Controller

256-MB Battery-Backed Cache Module 254786-B21

**NOTE:** Please see the Modular Smart Array 500 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:

[http://h18000.www1.hp.com/products/quickspecs/11050\\_na/11050\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11050_na/11050_na.HTML)

### Options

External Storage – Tower & Rack	<p><b>NOTE:</b> To run any external SCSI-based devices, the customer needs to purchase an Internal to External Cable Option kit for SCSI models or a SCSI controller for ATA Models.</p> <p>HP StorageWorks Modular Smart Array 30 SB 302969-B21</p> <p><b>NOTE:</b> Rack-mountable 14 drive enclosure with single bus, redundant power supplies</p> <p>HP StorageWorks Modular Smart Array 30 DB 302970-B21</p> <p><b>NOTE:</b> Rack-mountable 14 drive enclosure with dual bus, redundant power supplies</p> <p><b>NOTE:</b> The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 1" Hot Plug Hard Drives.</p> <p>StorageWorks Enclosure 4200 Redundant Power Supply Option 338296-B21</p> <p>StorageWorks Enclosure 4200 Ultra3 Single Bus I/O Module Option 190212-B21</p> <p>StorageWorks Enclosure 4200 Ultra3 Dual Bus I/O Module Option 190213-B21</p> <p>Redundant Power Supply 499W 338296-B21</p> <p>StorageWorks Single Bus U320 I/O Module for MSA30 287484-B21</p> <p>StorageWorks Dual Bus U320 I/O Module for MSA30 287483-B21</p>
HP StorageWorks Modular Smart Array 1000	<p>HP StorageWorks Modular Smart Array 1000 201723-B22</p> <p><b>NOTE:</b> Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at <a href="http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML">http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML</a></p>
UPS Power Cord Matrix	<p>Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units.</p> <p><a href="ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf">ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf</a>.</p>
Uninterruptible Power Supply	<p>HP T500 UPS, 120 V (US) 361475-001</p> <p>HP T750 UPS 378439-D71</p> <p>HP UPS Model T700 (700VA, 500 Watt), Low Voltage 204015-001</p> <p>HP UPS Model T1000 XR (1000VA, 700 Watt), Low Voltage 204155-001</p> <p>HP UPS Model T1500 XR (1440VA, 1050 Watt), Low Voltage 204155-002</p>
Uninterruptible Power Systems – Rack	<p>HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage 326529-D71</p> <p>HP UPS R1500 XR (100 to 127) 204404-001</p> <p>HP UPS R3000 XR (120V) 192186-001</p> <p>HP UPS R3000 XR (208V) 192186-002</p> <p>UPS R12000 XR N+ x (200-240V) (hardwired) 207552-B22</p> <p><b>NOTE:</b> UPS R12000 XR has a hardwired input and output connection.</p>

### Options

HP Power Distribution Unit with Power Monitoring	HP Power Distribution Unit with Power Monitoring Model S2324 - dual input, 3 phase, 24A	370959-D71
	HP Power Distribution Unit with Power Monitoring Model S1324 - single input, 3 phase, 24A	370960-D71
	HP Power Distribution Unit with Power Monitoring Model S2140 - dual input, 1 phase, 40A	370961-D71
	HP Power Distribution Unit with Power Monitoring Model S1140 - single input, 1 phase, 40A	370962-D71

Modular PDUs – 1U/0U (up to 32 outlets)	HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC) <b>NOTE:</b> The above mPDU may also be used to connect to the low volt model of the UPS R3000 XR.	252663-D71
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<b>NOTE:</b> 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).	HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC) <b>NOTE:</b> L6-30 input.	252663-D72
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HP Modular Power Distribution Unit (mPDU), High Volt Model, 40A, Attached Cord <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>	252663-D73
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USB Options	USB Optical Scroll Mouse (Carbonite)	DD441B
	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B

Rack Enabling Kit	ProLiant ML310/ML330 Rack Enabling Kit	238547-B22
	DL360 G2/G3 Telco Rack Option Kit	251243-B21
	<b>NOTE:</b> The DL360 Telco Rack Option Kit (251243-B21) interfaces with the ProLiant ML310/ML330 Rack Enabling Kit (PN 238547-B22) to support installation in a telco rack.	

Other	ProLiant ML310/ML330 G2 SCSI Cable Kit <b>NOTE:</b> This SCSI Cable Kit (PN 273463-B21) is required when installing an internal tape drive and a SCSI Controller.	273463-B21
	ProLiant ML3xx Internal to External SCSI Cable Option Kit (HD68)	159547-B22
	ProLiant ML3xx Internal to External SCSI Cable Option Kit (VHDCI)	333370-B21

Custom Builder	Please see the Enterprise Configurator for configuration assistance at <a href="http://www.hp.com/products/configurator">http://www.hp.com/products/configurator</a> .
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### Options

<b>HP Rack 5000 Series</b> (Graphite Metallic)	HP 5642 Rack-Unassembled	358254-B21
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<b>Rack Options for Rack 5000 Series</b>	Stabilizer Kit for 5642 rack (Graphite Carbon) <b>NOTE:</b> The stabilizing kit is used to prevent rack from tipping over.	374493-B21
	Baying Kit for 5642 rack (Graphite Carbon) <b>NOTE:</b> The baying kit is used to join two or more HP 5642 racks.	374499-B21

<b>HP Rack 10000 Series</b> (Graphite Metallic)	10642 (42U) Infrastructure Rack (Low Voltage)	379006-001
	10642 (42U) Infrastructure Rack (High Voltage)	379005-001
	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
HP Rack 10614 (14U) – Shock Pallet	292303-B22	

**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>.

### Options

Rack Options for HP Rack 10000 Series	<p><b>NOTE:</b> For additional information regarding Rack Options, please see the following URL: <a href="http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html">http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html</a>.</p> <p>HP Rack Light Kit (Neon) 361589-B21</p> <p>HP Rack Plinth Kit (Carbon) 251960-B21</p> <p>42U Side Panel – Graphite Metallic 246099-B21</p> <p>36U Side Panel – Graphite Metallic 246102-B21</p> <p>47U Side Panel – Graphite Metallic 255486-B21</p> <p>TFT5600 Rack Keyboard Monitor 221546-001</p> <p>1U Rack Keyboard &amp; Drawer (Carbon) 257054-001</p>
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**NOTE:** For additional information regarding Rack Options, please see the following URL: <http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>.

HP KVM Switch Options	<p>Server Console Switch (KVM), 0 x 1 x 8 port 336044-B21</p> <p>Server Console Switch (KVM), 0 x 2 x 16 port 336045-B21</p> <p>IP Console Switch Box (KVM/IP), 1 x 1 x 16 262585-B21</p> <p>IP Console Switch Box (KVM/IP), 3 x 1 x 16 262586-B21</p> <p>HP 1x4 USB/PS2 KVM Switch, TT 371301-D71</p> <p>PS/2 Interface Adapter, 8 pack 262587-B21</p> <p>PS/2 Interface Adapter, 1 pack 262588-B21</p> <p>CAT5 KVM Expansion Module 262589-B21</p> <p>Serial Interface adapter - 1 Pack with power supply 373035-B21</p> <p>CAT5e Cable 3', 4 pack 263474-B21</p> <p>CAT5e Cable 6', 8 pack 263474-B22</p> <p>CAT5e Cable 12', 8 pack 263474-B23</p> <p>CAT5e Cable 20', 4 pack 263474-B24</p> <p>CAT5e Cable 40', 1 pack 263474-B25</p>
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**NOTE:** For additional information regarding HP KVM Switches and options, please see the following URL: <http://h18004.www1.hp.com/products/servers/proliantstorage/rack-options/list.html#console>

### Options

#### Service and Support

Offerings (HP Care Pack Services)

#### **Hardware Services On-site Service**

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years	U4462A
Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	U4462E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years	U4463A
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	U4463E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years	U4464A
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4464E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years	U4465A
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4465E

#### **Installation & Start-up Services**

Hardware Installation	U4473A
Hardware Installation, Electronic	U4473E
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.	U4474A
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	U4474E

#### **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.	U4475A
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	U4475E
Onsite HW support, 8am-9pm, M-F, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays.	U4477A
Onsite HW support, 8am-9pm, M-F, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic	U4477E

#### **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.	U4476A
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	U4476E
Onsite HW support 24x7, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays.	U4478A
Onsite HW support 24x7, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4478E

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

## Memory

### HP ProLiant ML330 G3 Models

#### Standard Memory

256-MB (expandable to 4GB) of non-interleaved PC2100 DDR SDRAM running at 266MHz, with Advanced ECC capabilities (1 x 256MB)

#### Standard Memory Plus Optional Memory

Up to 3328-MB memory is available with the optional installation of PC2100 DDR SDRAM memory kits.

#### Standard Memory Replaced with Optional Memory

Up to 4096-MB memory is available with the removal of the standard 256-MB of memory and the optional installation of PC2100 DDR SDRAM DIMM memory kits.

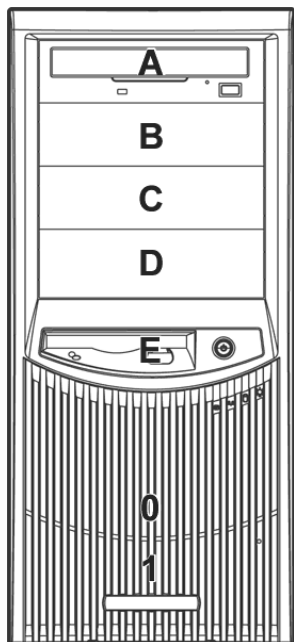
**NOTE:** Charts do not represent all possible memory configurations.

Memory		Slot			
		1	2	3	4
Standard	256 MB	256 MB	Empty	Empty	Empty
Optional	3,328 MB	256 MB	1024 MB	1024 MB	1024 MB
Maximum	4,096 MB	1024 MB	1024 MB	1024 MB	1024 MB

Following are memory options available from HP:

- 128MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 128 MB) 287494-B21
- 256MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 256 MB) 287495-B21
- 512MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 512 MB) 287496-B21
- 1024MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 1024 MB) 287497-B21

## Storage



A	48x IDE (ATAPI) CD-ROM
E	1.44 MB Diskette Drive
B, C, D	Removable Media Bays (1.6" each)
0,1	Two 1" Non-Hot Plug Drive Bays

## Drive Support

	Quantity Supported	Position Supported	Controller
<b>Removable Media</b>			
1.44-MB Diskette Drive	Up to 1	E	Integrated
IDE (ATAPI) CD-ROM Drive	Up to 2	A, B, C, or D	Integrated IDE (ATAPI)
DVD-ROM Drive Option Kit	Up to 2	A, B, C, or D	Integrated IDE (ATAPI)

## Storage

### Hard Drives

#### Hard Drives (SCSI Models only)

Ultra320 Hot Pluggable Drives (NOTE: For use with the ML3xx Two Bay Hot Plug SCSI Drive Cage PN 244059-B21 ONLY.)

	Quantity Supported	Position Supported	Controller
<u>1-inch</u>	Up to 2	A & B	Integrated Single Channel Wide Ultra3 SCSI Adapter in a PCI slot
300-GB 10,000 rpm	(With optional ML3xx Two Bay Hot Plug SCSI Drive Cage)		Smart Array 6402/128 Controller
146.8-GB 10,000 rpm			Smart Array 6404/256 Controller
72.8-GB 10,000 rpm			Smart Array 641 Controller
146.8-GB 15,000 rpm			Smart Array 642 Controller
72.8-GB 15,000 rpm			64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter
36.4-GB 15,000 rpm			

#### Ultra320 – Non-Hot Plug

	Quantity Supported	Position Supported	Controller
<u>1-inch</u>	Up to 5	0, 1, A, B, C, D	Integrated Single Channel Wide Ultra3 SCSI Adapter in a PCI slot
146.8-GB 10,000 rpm		(Using the A position requires the removal or re-positioning of CD-ROM)	Smart Array 6402/128 Controller
72-GB 10,000 rpm			Smart Array 6404/256 Controller
36.4-GB 15,000 rpm			Smart Array 641 Controller
			Smart Array 642 Controller
			64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter

NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds. U320 drives require an optional U320 Smart Array Controller or U320 SCSI HBA to support U320 transfer rates.

#### Hard Drives (ATA Models only)

#### ATA/100 - Non-Hot Plug

	Quantity Supported	Position Supported	Controller
<u>1-inch</u>	Up to 4	0, 1, A, B, C, D	Integrated Dual Channel Ultra ATA-100 Adapter with support for Integrated ATA RAID 0, 1, & 1+0 (ATA Models)
160.0-GB		(Using the A position requires the removal or re-positioning of CD-ROM)	
80.0-GB			
40.0-GB			

### Storage

#### External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 30 Family	Up to 13	External	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 System	1	External	Please see the Modular Smart Array 500 QuickSpecs for the latest list of supported HBAs: : <a href="http://www.hp.com/go/msa500">http://www.hp.com/go/msa500</a>
Modular Smart Array 1000	Please see the Modular Smart Array 1000 QuickSpecs below to determine configuration requirements	External	Please see the 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\\_na/11033\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML)

#### Maximum Storage Capacity - ATA Models (SCSI Enclosure)

Internal	640.0 GB (4 x 160.0 GB) (ATA only)
External	29.400 TB (14 x 300 GB) x 7 (Requires additional SCSI controllers in slots)
Total	30.040 TB

#### Maximum Storage Capacity - SCSI Models (SCSI Enclosure) + Optional Hot Plug Drive Cage

Internal	1040.4 GB ((3 x 146.8 GB non-hot-plug hard drives) + (2 x 300 GB hot plug hard drives))
External	29.400 TB (14 x 300 GB) x 7 (Requires additional SCSI controller in slots)
Total	30.218 TB

#### 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/North\\_America/10233.html](http://h18000.www1.hp.com/products/quickspecs/North_America/10233.html)

**NOTE:** For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders and Tape Libraries listed below, please see the following: [http://h18000.www1.hp.com/products/quickspecs/North\\_America/10809.html](http://h18000.www1.hp.com/products/quickspecs/North_America/10809.html)

**NOTE:** For complete listing of tape drive offerings see <http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>

Quantity	Position Supported	Controller
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### Storage

<b>HP StorageWorks Tape Drives, Internal, Hot Plug</b> DAT 72 Tape Drive DAT 40 Tape Drive (NOTE: For use with the ML3xx Two Bay Hot Plug SCSI Drive Cage (PN 244059-B21) ONLY.)	Up to 2 (With optional ML3xx Two Bay Hot Plug SCSI Drive Cage)	A & B	Smart Array 5i Controller (integrated on system board) Smart Array 6402/128 Controller Smart Array 6404/256 Controller Smart Array 642 Controller Smart Array 641 Controller 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
<b>HP StorageWorks Tape Drives, Internal</b> DAT 72 Tape Drive DAT 40 Tape Drive DAT 24 Tape Drive DLT VS80 Tape Drive DLT VS160 Tape Drive SDLT 320 Tape Drive	Up to 2	B, C, D	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
<b>HP StorageWorks Tape Drives, External</b> Ultrium 215 Ultrium 230 Ultrium 448 Ultrium 460 DAT 72 Tape Drive DAT 40 Tape Drive DAT 24 Tape Drive DLT VS80 Tape Drive DLT VS160 Tape Drive SDLT 320 Tape Drive	Up to 2	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
<b>HP StorageWorks Tape Drives, External</b> Ultrium 960	1	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
<b>HP StorageWorks Autoloaders, External</b> DAT 72x6 Tape Autoloader 1/8 Tape Autoloader SSL1016 Tape Autoloader	1 autoloader per SCSI channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
<b>HP StorageWorks Tape Libraries, External</b> MSL6000 (Ultrium 960-based) MSL6000 (SDLT 600-based) MSL6000 (Ultrium 460-based) MSL5026S2 (SDLT 320-based) MSL5052S2 (SDLT 320-based)	Please reference the MSL Tape Library QuickSpecs to determine configuration requirements	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS

### Storage

<b>HP StorageWorks Rack-mount Tape Drive Enclosures</b> 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/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
<b>HP StorageWorks ESL E-Series Tape Libraries</b> ESL 712e ESL 630e ESL 322e ESL 286	<a href="#">Please reference the ESL E-series Tape Libraries QuickSpecs to determine configuration requirements</a>	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS

### Power Specifications

Part Number	319640-001
Spare Kit	324714-001
Operational Input Voltage Range (Vrms)	90-264
Frequency Range (Nominal) (Hz)	47 - 63 (50 / 60)

Nominal Input Voltage (Vrms)	100	115	208	220	230	240
Max Rated Output Wattage Rating	300	300	300	300	300	300
Nominal Input Current (Arms)	4.6	3.9	2.1	2.0	1.9	1.8
Max Rated Input Wattage Rating (Watts)	435	429	423	423	417	411
Max. Rated VA (Volt-Amp)	458	451	445	445	439	433
Efficiency (%)	69	70	71	71	72	73
Power Factor	0.95					
Leakage Current (mA)	0.70	0.81	1.47	1.55	1.62	1.69
Maximum Inrush Current (A peak)	42	48	81	92	96	100
Maximum Inrush Current duration (mS)	2					

### System Specifications

	Processor	Memory	HDD	PCI	PS	
<b>HP ProLiant ML330 G3 Fully Configured</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>1</b>	
Fully Loaded System Input Wattage (W)	425	419	413	413	408	402
Fully Loaded System Input Current (Arms)	4.5	3.8	2.1	2.0	1.9	1.8
Fully Loaded System Thermal (BTU-Hr)	1450	1429	1409	1409	1390	1371
Fully Loaded System VA (Volt-Amp)	448	441	435	435	429	423
System Leakage with all power supplies loaded (mA)	0.70	0.81	1.47	1.55	1.62	1.69
System Inrush Current with all power supplies loaded (A)	42	48	87	92	96	100
Power cord requirements	Nema 5-15P to IEC320-C13			Option no./Spare no: 227099-001/187335-001		
	IEC320-C13 to IEC320-C14			Option no./Spare no: 142257-001/142258-B21		

Example of real input watts consumed versus rated watts consumed is available via the online tool located at url:

<http://inline.compaq.com/pg/ecg/issd/power/psupply.asp>

select system calculator for one of the systems and reference the green fields at the bottom of the calculator.

#### NOTES:

\* To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at URL: <http://h30099.www3.hp.com/configurator/powercalcs.asp>.

To drill down to calculators:

- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: ML330 G3
- Click on: "Power Calculator" link (You may need to scroll down to see it.)

## Power Specifications

Server Power Cords One 12 Ft. lowline power cord ships standard.

12 ft. Power Cords (13 Cord Sets)

Power Cord Part Number

163719-002

### Technical Specifications

<b>System Unit</b>	<b>Dimensions (HxWxD)</b> (with feet)	16.8 x 7.5 x 20.25 in (41.91 x 19.05 x 51.44 cm)		
	<b>Weight</b>	40 lb (18.18 kg)		
	<b>Input Requirements</b> (per power supply)	Range Input Voltage	100 to 199 VAC/200 to 240 VAC	
		Normal Line Voltage	115 to 230 VAC	
	<b>Line Frequency</b>	50 to 60 Hz		
	<b>Rated Input Current</b>	<6A 100VAC to 199VAC		
		<3A 200VAC to 240VAC		
	<b>BTU Rating</b>	1,560 BTU		
	<b>SCSI Connectors</b>	One internal HD68 connectors		
		<b>NOTE:</b> Support for either one internal, or one external is available. Internal cabling is included with the server. External SCSI cabling from the integrated SCSI controller is achieved using an internal to external SCSI cable option kit (PN 159547-B22 or 333370-B21).		
<b>Power Supply Output Power</b> (per power supply)	Rated Steady-State Power	300W		
	Maximum Peak Power	400W		
<b>Temperature Range</b>	Operating	50° to 93° F (10° to 35° C)		
	Shipping	-40° to 150° F (-40° to 66° C)		
<b>Relative Humidity</b> (non-condensing)	Operating	20% to 80%		
	Non-operating	5% to 90%		
<b>Acoustic Noise</b>	Idle (Fixed Disk Drives Spinning)			
	L WAd (BELS)	5.1		
	L pAm (dBA)	34		
	Operating (Random Seeks to Fixed Disks)			
L WAd (BELS)	5.5			
L pAm (dBA)	38			

### Technical Specifications

<b>48X Max IDE CD-ROM Drive</b>	<b>Disk</b>	Applicable Disk	CD-ROM (modes 1 and 2); mixed mode (audio and data combined) CD-DA Photo CD (Single- and Multi-session) CD-XA (mode 2, forms 1 and 2) CDI ready ; CD-WO
	<b>Block Size</b>	Capacity	650 MB
		Mode 1	2,048 bytes, 1024 bytes
		Mode 2	2,340 bytes, 2,336 bytes, 1024 bytes
		CD-DA	2,352 bytes
		CD-XA	2,328 bytes
	<b>Interface</b>	IDE (ATAPI)	
	<b>Access Times (typical)</b>	Random	<100 ms
		Full-Stroke	<150 ms
	<b>Audio Output Level</b>	Line-Out	0.7 VRMS at 47 kOhms
	<b>Data Transfer Rate</b>	Sustained	150 KB/s (single), 1,500 to 7,200 KBps (10x to 48x)
		Burst	150 KB/s to 7,200 KB/s
	<b>Cache Buffer</b>	128 KB	
	<b>Start-up Time (typical)</b>	<7seconds	
	<b>Stop Time</b>	<4seconds	
	<b>Laser Parameters</b>	Type	Semiconductor Laser GaAlAs
		Wave Length	780 ± 25 nm
	<b>Operating Conditions</b>	Temperature	41° to 113° F (5° to 45° C)
		Humidity	10% to 80%
	<b>Dimensions</b>	(HxWxD, maximum)	1.7 x 5.85 x 8.11 in (42.9 x 150 x 208 cm)
		Weight	2.09 lb (0.95 kg)

<b>NC7760 PCI Gigabit Server Adapter (embedded)</b>	<b>Network Interface</b>	10Base-T/100Base-TX/1000Base-TX	
	<b>Compatibility</b>	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX	
	<b>Data Transfer Method</b>	32-bit bus-master PCI	
	<b>Network Transfer Rate</b>	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	<b>Connector</b>	RJ-45	
	<b>Cable Support</b>	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)

### Technical Specifications

<b>Integrated Single Channel Wide Ultra3 SCSI Adapter in PCI Slot 1</b>	<b>Drives Supported</b>	Up to 14 SCSI devices Wide Ultra320, Wide Ultra3 and Wide Ultra2 SCSI hard drives
	<b>Data Transfer Method</b>	64-bit/33-MHz PCI bus-master
	<b>SCSI Channel Transfer Rate</b>	160 MB/s per channel
	<b>Maximum Transfer Rate per PCI Bus (peak)</b>	267 MB/s per channel
	<b>SCSI Protocols</b>	Wide Ultra 3 SCSI and Wide Ultra2 SCSI
	<b>Electrical Protocol</b>	Low Voltage Differential (LVD)
	<b>SCSI Termination</b>	Active Termination
	<b>External SCSI Connectors</b>	External SCSI cabling from the integrated SCSI controller is achieved using an internal to external SCSI cable option kit (PN 159547-B22 or 333370-B21).
	<b>Internal SCSI Connectors</b>	One 68-Pin Wide Ultra SCSI-3 connectors

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