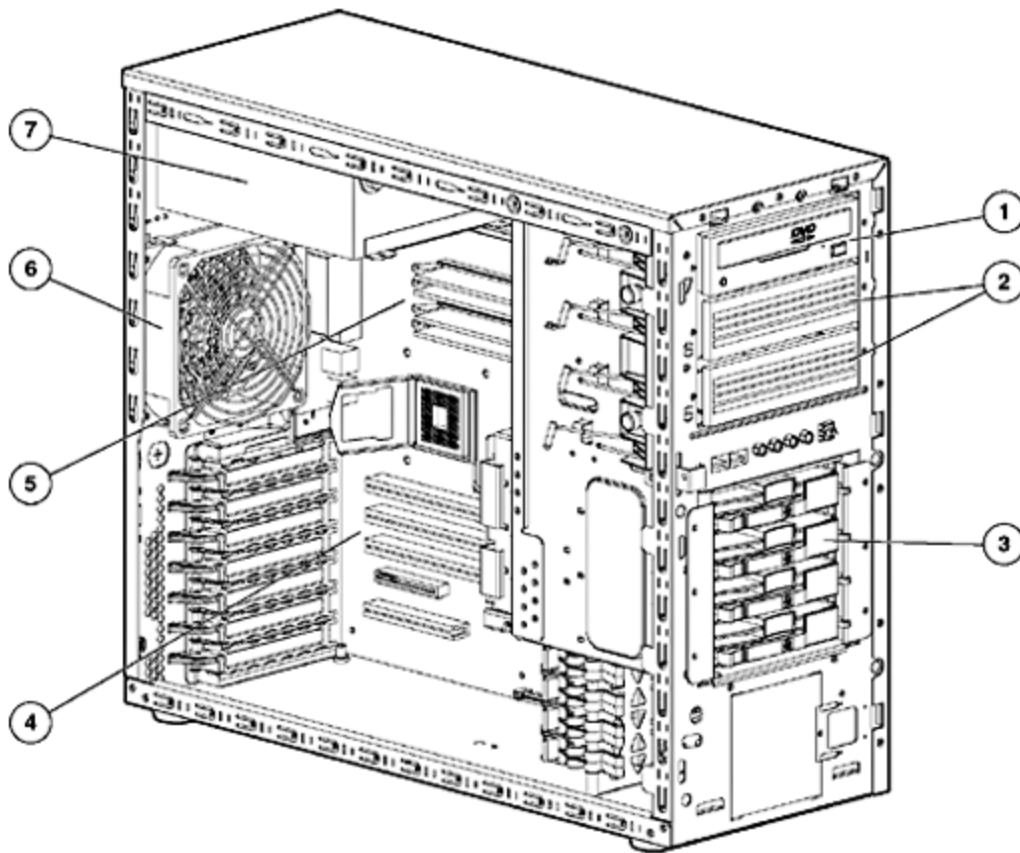


Overview



1. 48x IDE (ATAPI) CD-ROM

2. Removable Media Bays

3. 1" Non hot-plug or Hot-Plug Drives

4. (2) 64-Bit/100MHz PCI-X slots , (1) 32-Bit/33MHz PCI Slot and (1) x8 PCI Express slot

5. Four memory DIMM Slots, expandable up to 4GB

6. System Fan

7. 350W Power Supply

Overview

At A Glance

- Supports one Intel Pentium 4 3.0 GHz, 3.20 GHz, or 3.40 GHz processor with 1MB or 2MB cache size or 1 Intel Celeron 2.8 GHz processor with 256KB cache size (available through HP Direct).
- Processors include support for Hyper-Threading. 64-bit Intel® Xeon™ processors with 2MB cache support.
- Includes Intel E7221 Chipset that supports 533MHz FSB for the Celeron Model and 800MHz FSB for the Pentium 4 Models
- Standard 512 MB of PC3200 DDR SDRAM running at 400MHz, with advanced unbuffered ECC capabilities, interleaving optional, and expandable up to 4 GB
- Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
- Two PCI-X 64-bit/100MHz slots
- One PCI 32-bit/33MHz slot
- One PCI-Express slot (x8 connector x4 speed)
- Hot plug drives on some SATA and SCSI models
- 350W Power Supply
- Four USB 2.0 Ports
- Integrated four Channel SATA Controller (SATA Models) or a Single Channel Wide Ultra320 SCSI Adapter in PCI-X slot (SCSI Models)
- Supports up to four 1" Ultra320 NHP SCSI hard drives, or 1" Ultra320 HP SCSI hard drives, or four 1" SATA NHP Drives, or four 1" HP SATA HDD (depending on model & accessories)
- Four expandable PCI slots (3 available on SCSI models, 4 available on SATA model): two 64-bit/100MHz PCI-X at 3.3 Volt, one PCI-Express (x8 connector x4 speed), and one 32-bit/33MHz 3.3 Volt
- Internal HP SCSI storage capacity of up to 1.2 TB (4 x 300 GB hot plug 1" SCSI HDD) (HP SCSI Models)
- Internal NHP SATA storage capacity of up to 320 GB (4 x 80 GB 1" SATA drives) (NHP SATA Models)
- Internal HP SATA storage capacity of up to 1 TB (4 x 250 GB 1" SATA drives) (HP SATA Models)
- Integrated ATI Rage XL with 8MB SDRAM video
- Four USB 2.0 ports - Two on front, two on rear
- ROM Based Setup Utility (RBSU) and PXE support
- Protected by HP Services, including a one-year, limited warranty, Next Business Day 1 year on-site limited Global warranty - Certain restrictions and exclusions apply. 1-800 HP INVENT.

Standard Features

Processor

One of the following depending on Model

Intel Pentium 4 - 3.4 GHz/800-2 MB L2 (direct only)
 Intel Pentium 4 - 3.2 GHz/800-2 MB L2
 Intel Pentium 4 - 3.4 GHz/800-1 MB L2
 Intel Pentium 4 - 3.2 GHz/800-1 MB L2
 Intel Pentium 4 - 3.0 GHz/800-1 MB L2 (direct only)
 Intel Celeron 2.8 GHz/533-256 KB L2 (direct only)

Cache Memory

One of the following depending on Model

Integrated 1MB level 2 ECC cache (Pentium 4 models)
 Integrated 2MB level 2 ECC cache (Pentium 4 models)
 Integrated 256KB level 2 ECC cache (Celeron models)

Memory Protection

Advanced ECC

Memory

One of the following depending on model

Type	PC3200 DDR SDRAM running at 400MHz
Standard (Intel Models)	512 MB (1 x 512 MB)
Standard (Celeron models - base)	256 MB (1 x 256 MB) (available through HP direct)
Maximum	4 GB

Network Controller

Embedded NC7761 PCI 10/100/1000T Gigabit network adapter

Expansion Slots

I/O (4 Total, 4 Available in SATA models, 3 available in SCSI models)

Two 64-bit/100MHz PCI-X	3.3 volts
One PCI-Express x8	N/A
One 32bit/33MHz PCI	3.3 volts

Storage Controllers

Single Channel Ultra320 SCSI Adapter ([SCSI Models](#)) OR
 Integrated four Channel SATA Adapter with Integrated ATA RAID 0, 1 ([SATA Models](#))

Storage

Diskette Drive	Optional 1.44 MB Diskette Drive
Optical Drive	48x IDE (ATAPI) CD-ROM Drive

Maximum Internal Storage Type

Hot Plug SCSI	1.2 TB	4 x 300 GB Ultra320
Non-Hot Plug SCSI	587.2 GB	4 x 146.8 GB Ultra320
Hot Plug SATA	1.0 TB	4 x 250 GB SATA
Non-Hot Plug SATA	320 GB	4 x 80 GB SATA

Standard Features

Interfaces	Parallel	1
	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB	4
	Network RJ-45 (Ethernet)	1

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

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 (PN 238547-B22) available)
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Standard Features

ProLiant Essentials Foundation Pack Software

HP Systems Insight Manager	HP's new 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. HP SIM are both easy to set up work with the Insight Management Agents, integrated Light-Out and Remote Insight Light-Outs Edition, and Version Control Agents to deliver robust fault, configuration, and asset management as well as remote administration. With HP SIM customers will also be able to take advantage of role-based security; the ability to manage ProLiant, Integrity, and HP 9000 systems; and plug-ins for storage, client, printer, and power management as well as server rapid deployment, performance management, and workload management. For more details on HP SIM visit http://www.hp.com/go/hpsim .
Management Agents	The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to HP Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management Web site at http://www.hp.com/servers/manage .
SmartStart	SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at http://www.hp.com/servers/manage . SmartStart version supported (minimum): SmartStart 7.20.
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 various new alerts as they become available, on a weekly or monthly basis.
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 Software and Drivers download pages, linked from the SmartStart website at http://www.hp.com/servers/smartstart .
Survey Utility and diagnostics utilities	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart.
Optional ProLiant Essentials Value Packs	Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs: <ul style="list-style-type: none">● 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 Microsoft® 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.

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>.

Standard Features

Industry Standard Compliance

ACPI V1.0b Compliant
PCI 2.2 Compliant
PCI-X 1.0 Compliant
PCI-Express 1.0a Compliant
PXE Support
WOL Support
Microsoft Logo certifications
Novell Logo certifications
USB2.0

Manageability

HP Systems Insight Manager
Online ROM Flash Utility
Automatic Server Recovery-2 (ASR-2)
Drive Parameter Tracking (with Smart Array Controller)
Dynamic Sector Repairing (with Smart Array Controller)
Pre-Failure Warranty (covers processors, memory and hard drives)
BIOS Serial Console

Security

Power-on password
Setup password
Diskette boot control
Power switch security
Intruder Alert Message

Server Power Cords

All models ship with one 6' standard low-line country specific power cord.

Power Supply

350 Watts, PFC (Power Factor Correcting)

System Fans

1 - Non-hot plug, Non-redundant system fan shipped standard
NOTE: Does not include fans in CPU heatsink or power supply.

Required Cabling

For required cabling information, refer to the Web site at
<http://h18000.www1.hp.com/products/servers/ProLiantML310/>.

OS Support

Microsoft Windows Server 2003 (Standard & Web Edition)
Microsoft Small Business Server 2003
Microsoft Windows 2000 Server
Novell NetWare
Linux(Red Hat, SuSE, and UnitedLinux)

NOTE: For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at:
<http://www.hp.com/go/supportos>

NOTE: For an up-to-date listing of the latest drivers available for the HP ProLiant ML310, please see:
<http://h18023.www1.hp.com/support/files/server/us/index.html>.

NOTE: For a more complete and up-to-date information on Linux support, please visit HP Linux Web site at:
<http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html>

NOTE: For more complete and up-to-date 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>

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/ProLiantdl760/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 how to order 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, 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. In addition 90-days 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

ML310T02 3.4/800-1M HP-SCSI 376793-xx1	Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra 320 SCSI controller in PCI slot
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.2 TB maximum hot plug SCSI (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.4/800-1M HP-SATA/SAS 376794-xx1	Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four Channel Integrated SATA Controller
	Hard Drives	None ship standard (up to 4 hot plug SATA drives supported)
	Internal Storage	1.0 TB maximum hot plug SATA (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.4/800-1M NHP-SCSI 378247-xx2	Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra 320 SCSI controller in PCI slot
	Hard Drives	(1) 36.4 GB Ultra320 SCSI
	Internal Storage	587.2 GB maximum NHP SCSI (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

Models

ML310T02 3.4/800-1M NHP SATA80 381833-xx2	Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four Channel Integrated SATA Controller
	Hard Drives	(1) 80GB Non hot plug SATA drive
	Internal Storage	320 GB maximum NHP SATA (with optional drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-2M HP SCSI 381839-xx1	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	2MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra 320 SCSI controller in PCI slot
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.2 TB maximum hot plug SCSI (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-2M HP SATA 381838-xx1	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	2MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four Channel Integrated SATA Controller
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.0 TB maximum hot plug SATA (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

Models

ML310T02 3.2/800-1M HP-SCSI 376871-xx1	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra320 SCSI controller in PCI slot
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.2 TB maximum hot plug SCSI (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-1M HP-SATA/SAS 376852-xx1	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four Channel Integrated SATA Controller
	Hard Drives	None ship standard (up to 4 hot plug SATA drives supported)
	Internal Storage	1.0 TB maximum hot plug SATA (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-1M NHP SCSI 378279-xx2	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra320 SCSI controller in PCI slot
	Hard Drives	(1) 36.4 GB Ultra320 SCSI
	Internal Storage	320 GB maximum (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

Models

ML310T02 3.2/800-1M NHP SATA80 381832-xx2	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four Channel Integrated SATA Controller
	Hard Drives	(1) 80GB Non hot plug SATA drive
	Internal Storage	320 GB maximum non hot plug SATA (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

Country Code Key	XX=00	NA
	XX=01	Australia
	XX=03	UK
	XX=04	Germany
	XX=05	France
	XX=20	Brazil
	XX=29	Japan
	XX=37	AP
	XX=42	EURO
	XX=AA	PRC

Configuration Information - Factory Integrated Models (NA Only)

NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.

NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.

Step 1: Base Configuration

Models	HP ProLiant ML310 Tower CTO Chassis NHP SCSI (North America)	381850-405
	HP ProLiant ML310 Tower CTO Chassis NHP SATA (North America)	381851-405
	HP ProLiant ML310 Tower CTO Chassis HP-SCSI US (North America)	378559-405
	HP ProLiant ML310 Tower CTO Chassis HP-SATA (North America)	378560-405

Factory Integrated Models ship with:

Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
Integrated four Channel SATA Controller (included with 381851-405 and 378560-405 ONLY)
350 Watts, PFC (Power Factor Correcting)
Keyboard
Mouse
Tower 5U Form Factor

Configuration Information - Factory Integrated Models (NA Only)

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

Processors	Celeron Processor 2.80-GHz/533 MHz Front Side Bus, Factory Integration only	383872-L22
	Pentium Processor 3.00-GHz/800 MHz Front Side Bus, Factory Integration	390813-L22
	Pentium Processor 3.20-GHz/ 800 MHz Front Side Bus, 1MB Factory Integration only	383871-L22
	Pentium Processor 3.20-GHz/ 800 MHz Front Side Bus, 2MB Factory Integration only	383870-L22
	Pentium Processor 3.40-GHz/ 800 MHz Front Side Bus, 1MB Factory Integration only	383869-L22
	Pentium Processor 3.40-GHz/ 800 MHz Front Side Bus, 2MB Factory Integration only	383868-L22
Base Memory	256MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 256 MB)	354557-B21
	512MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 512 MB)	354560-B21
	1024MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 1024 MB)	354563-B21
Optical Drive	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	HP ProLiant 48X CD w/SCREWS	337863-B21
	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
Base Hard Drives	36-GB 15,000 rpm U320 Non-Hot Plug Drive	357012-B21
	NOTE: Must also select the U320 SCSI HBA Base if choosing SCSI drives below:	
	72.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286714-B22
	NOTE: If selecting this drive, must choose 378559-405 in Step 1 above.	
	36.4-GB 15,000 rpm U320 Universal Hard Drive (1")	286776-B22
	NOTE: If selecting this drive, must choose 378559-405 in Step 1 above.	
	72.8-GB 15,000 rpm U320 Universal Hard Drive (1")	286778-B22
	NOTE: If selecting this drive, must choose 378559-405 in Step 1 above.	
	146.8-GB 10,000 rpm U320 Universal Hard Drive (1")	286716-B22
	NOTE: If selecting this drive, must choose 378559-405 in Step 1 above.	
	36.4 GB 15,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	357012-B21
	NOTE: If selecting this drive, must choose 381850-405 in Step 1 above.	
	72.8 GB 10,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	332751-B21
	NOTE: If selecting this drive, must choose 381850-405 in Step 1 above.	
	80-GB NHP SATA 1.5Gb 7,200 RPM Hard Drive (1")	383410-B21
NOTE: If selecting this drive, must choose 381851-405 in Step 1 above.		
80-GB HP SATA 1.5Gb 7,200 RPM Hard Drive (1")	349237-B21	
NOTE: If selecting this drive, must choose 378560-405 in Step 1 above.		
160-GB HP SATA 1.5Gb 7,200 RPM Hard Drive (1")	349238-B21	
NOTE: If selecting this drive, must choose 378560-405 in Step 1 above.		
250-GB HP SATA 1.5Gb 7,200 RPM Hard Drive (1")	349239-B21	
NOTE: If selecting this drive, must choose 378560-405 in Step 1 above.		

Step 3: Choose Additional Factory Integratable Options

Controller	HP U320 SCSI FIO HBA ALL	358700-B21
	NOTE: Must select if SCSI hard drives are chosen in step 2.	

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Options" section below.

Options

ProLiant ML310 G2 Unique Options	1.44MB Floppy Drive Option Kit	379257-B21
	HP ProLiant 2nd Serial port option kit	390390-B21
ProLiant Essentials Value Pack Software	Rapid Deployment Pack, 1 User, V1.x NOTE: This license allows 1 server to be managed and deployed via the Deployment Server.	267196-B21
	Rapid Deployment Pack, 1 User, V1.x (Japan) NOTE: This license allows 1 server to be managed and deployed via the Deployment Server.	267196-291
	Rapid Deployment Pack, 10 Users, V1.x NOTE: This license allows 10 servers to be managed and deployed via the Deployment Server.	269817-B21
	Rapid Deployment Pack, 10 Users, V1.x (Japan) NOTE: This license allows 10 servers to be managed and deployed via the Deployment Server.	269817-291
	ProLiant Essentials Workload Management Pack 2.0 (Featuring Resource Partitioning Manager version 2.0)	303284-B21
	ProLiant Essentials Performance Management Pack Single Server License NOTE: This license allows 1 server to be managed by Performance Management Pack.	306696-B21
	ProLiant Essentials Performance Management Pack Flexible License NOTE: A single pack is shipped with a single license key for the total number of licenses ordered	306697-B21
	ProLiant Essentials Performance Management Pack Tracking license 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 .	306698-B21
Memory (SDRAM DIMMs)	1024MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 1024 MB)	354563-B21
	512MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 512 MB)	354560-B21
	256MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 256 MB)	354557-B21
Optical Drives	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
	CD-RW/DVD-ROM Combo Drive Option Kit NOTE: 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).	331346-B21
Diskette Drives	1.44MB Floppy Drive Option Kit	379257-B21

Options

Hard Drives

Ultra320 - Universal Hot Plug (SCSI Hot Plug Models Only)

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 U320 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

Ultra320 - Non-Hot Plug (SCSI Non Hot Plug Models Only)

36.4 GB 15,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	357012-B21
72.8 GB 10,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	332751-B21
146.8 GB 10,000 rpm, U320 Non-Hot Plug Hard Drive, 1"	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)

http://h18000.www1.hp.com/products/quickspecs/11531_na/11531_na.HTML
(North America)

Serial-ATA (SATA) Hot Plug Hard Drive (SATA Hot Plug Models Only)

80-GB HP SATA 1.5Gb 7,200 RPM Hard Drive (1")	349237-B21
160-GB HP SATA 1.5Gb 7,200 RPM Hard Drive (1")	349238-B21
250-GB HP SATA 1.5Gb 7,200 RPM Hard Drive (1")	349239-B21

Serial-ATA (SATA) Non Hot Plug Hard Drive (SATA Non Hot Plug Models Only)

80-GB NHP SATA 1.5Gb 7,200 RPM Hard Drive (1")	383410-B21
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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:

http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.HTML (Worldwide)

http://h18000.www1.hp.com/products/quickspecs/11940_na/11940_na.HTML
(North America)

Options

Storage Controllers	<p>NOTE: The following Storage Controllers are qualified for SCSI drives only. They do not support SATA Drives.</p> <p>Smart Array 6402/128 Controller 273915-B21</p> <p>Smart Array 6404/256 Controller 273914-B21</p> <p>Smart Array 641 Controller 291966-B21</p> <p>Smart Array 642 Controller 291967-B21</p> <p>128MB Battery-Backed Cache Enabler 351580-B21</p> <p>NOTE: This 128MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller.</p> <p>256MB DDR, Battery-Backed Cache Upgrade Kit for SA-6400 273913-B21</p> <p>NOTE: This 256-MB DDR, Battery-Backed Cache upgrade kit supports the Smart Array 6400 series controller only.</p> <p>Ultra320 Expansion Module for SA-6402 273911-B21</p> <p>64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 268351-B21</p> <p>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 374654-B21</p> <p>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/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 (Dual Channel SCSI Adapter) http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.HTML (Single Channel SCSI HBA)</p>
Communications	<p>HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter 367132-B21</p> <p>HP NC310F PCI-X Single Port 1000SX Gigabit Server Adapter 368169-B21</p> <p>HP NC320T PCI Express Single Port 1000T Gigabit Server Adapter 367047-B21</p> <p>HP NC1020 PCI Single Port 1000T Gigabit Server Adapter 353377-B21</p> <p>HP NC6170 PCI-X Dual Port 1000SX Gigabit Server Adapter 313879-B21</p> <p>HP NC7170 PCI-X Dual Port 1000T Gigabit Server Adapter 313881-B21</p> <p>HP NC7771 PCI-X Single Port 1000T Gigabit Server Adapter 290563-B21</p> <p>Agere PCI V.92 56K Worldwide Controller less Win Modem DC131B</p> <p>NOTE: RJ11 modem adapter is not included.</p> <p>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 NICs, Jumbo Frames and LSO features are automatically disabled.</p>
Management Options	<p>Remote Insight Lights-Out Edition II (NA, LA) 227251-001</p> <p>Remote Insight Lights-Out Edition II (EMEA) 227251-021</p> <p>Remote Insight Lights-Out Edition II (ROW) 227251-371</p>
Security	<p>HP/Atalla AXL600L SSL Accelerator Card for ProLiant Servers 524545-B21</p> <p>AXL300 Accelerator PCI Card for ProLiant Servers 227933-B21</p>

Options

Tape Drives

NOTE: The following tape drives are recommended for use with the ProLiant ML310 G2. Additional HP tape drives are supported. For a complete listing of HP tape drive offerings supported with the ML310 G2, visit <http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>

Internal, External, and Rack-Mount DAT Drives

HP StorageWorks DAT 24 Tape Drive, Internal (Flint)	C1555D
HP StorageWorks DAT 24 Tape Drive, External (Flint)	C1556D
HP StorageWorks DAT 40 Tape Drive, Internal (Carbon)	C5686B
HP StorageWorks DAT 40 Tape Drive, External (Carbon)	C5687C
HP StorageWorks DAT 72 Tape Drive, Internal (Carbon)	Q1522A
HP StorageWorks DAT 72 Tape Drive, External (Carbon)	Q1523A
HP StorageWorks 1U Rack-Mount Kit with one DAT 72 drive	A7443A

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

http://h18000.www1.hp.com/products/quickspecs/11883_div/11883_div.HTML
(Worldwide)

http://h18000.www1.hp.com/products/quickspecs/11883_na/11883_na.HTML
(North America)

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

HP StorageWorks Ultrium 215 Tape Drive, Internal (Carbon)	Q1543A
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 448 Tape Drive, Internal (Carbon)	DW016A
HP StorageWorks Ultrium 448 Tape Drive, External (Carbon)	DW017A
HP StorageWorks Ultrium 448 Rack-mount (Carbon) - Single drive installed in a 1U rack-mount kit	DW028A
HP StorageWorks Ultrium 230 Tape Drive, Internal (Carbon)	Q1515A
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

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

http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html (Worldwide)

http://h18006.www1.hp.com/products/quickspecs/11739_na/11739_na.html
(North America)

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>

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, DLT VS 160, Ultrium 215 and Ultrium 448 tape drives.

HP StorageWorks 3U Rack-Mount Kit	274338-B21
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NOTE: 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, DLT VS 160, SDLT 320, SDLT 600, Ultrium 215, Ultrium 448, Ultrium 230, Ultrium 460 and Ultrium 960 drives.

HP StorageWorks 5U Rack-Mount Kit	274339-B21
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NOTE: The 5U Rack-Mount Kit can support up to 4 full-height tape drives and is compatible with SDLT 320, SDLT 600, Ultrium 230, Ultrium 460 and Ultrium 960 drives.

NOTE: Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits:

http://h18000.www1.hp.com/products/quickspecs/10854_div/10854_div.HTML (Worldwide)

http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML
(North America)

HP StorageWorks Tape Array 5300	C7508A
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Options

NOTE: 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.

NOTE: Please see the Tape Array 5300 QuickSpecs for additional information regarding this product.

http://h18000.www1.hp.com/products/quickspecs/11878_div/11878_div.HTML (Worldwide)

http://h18000.www1.hp.com/products/quickspecs/11878_na/11878_na.HTML
(North America)

Tape Autoloaders

DAT Autoloader

HP StorageWorks DAT 72x6 Tape Autoloader, Internal (Carbon)

Q1566A

HP StorageWorks DAT 72x6 Tape Autoloader, External (Carbon)

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)

http://h18006.www1.hp.com/products/quickspecs/11905_na/11905_na.html
(North America)

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: 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

NOTE: Please reference the SSL1016 Tape Autoloader QuickSpecs at

<http://www.hp.com/go/automation> for additional information needed to create a complete solution.

Options

Tape Libraries

HP StorageWorks MSL6000 Tape Library

MSL6030, 1 drive, 30 slots, Ultrium 460, RM	330731-B22
MSL6030, 2 drive, 30 slots, Ultrium 460, RM	330731-B23
MSL6030, 1 drive, 30 slots, Ultrium 460, RM with embedded FC router	330731-B24
MSL6030, 2 drive, 30 slots, Ultrium 460, RM with embedded FC router	330731-B25
MSL6060, 2 drive, 60 slot, Ultrium 460, RM	331196-B21
MSL6060, 2 drive, 60 slot, Ultrium 460, RM with embedded FC router	331196-B22

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

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
ESL E-Series Ultrium 460 drive kit	AA937A
ESL E-Series Ultrium 460-FC drive kit	AA941A
ESL E-Series SDLT 320 drive kit	AA936A
ESL E-Series e2400-FC 2G Interface Controller	AA928A

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>

Options

Magento-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.	
	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 Ultra Density Optical Jukebox QuickSpecs at http://www.hp.com/go/optical for additional information needed to create a complete solution.		
External Storage – Tower & Rack	NOTE: To run any external SCSI-based devices, the customer must purchase an Internal to External Cable Option kit or an additional SCSI controller for SCSI models. For ATA models, a SCSI controller must be purchased.	
	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 1" Hot Plug Hard Drives.	
	Redundant Power Supply 499W	338296-B21
	StorageWorks Enclosure 4200 Redundant Power Supply Option	338296-B21
	StorageWorks Enclosure 4200 Ultra3 Single Bus I/O Module Option	190212-B21
	StorageWorks Enclosure 4200 Ultra3 Dual Bus I/O Module Option	190213-B21
StorageWorks Single Bus U320 I/O Module	287484-B21	
StorageWorks Dual Bus U320 I/O Module	287483-B21	
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 .	
Uninterruptible Power Systems – Tower Supply	HP T500 UPS 120 V (US)	361475-001
	HP UPS Model T700 (700VA, 500 Watt), Low Voltage (NA)	204015-001
	HP UPS Model T700 (700VA, 500 Watt), High Voltage (Int'l)	204015-B31
	HP UPS Model T700 (700VA, 500 Watt), Low Voltage (Japan)	204015-291
	HP T750 UPS (NA, Japan)	378439-D71
	HP T750 UPS (Int'l)	378439-B31
	HP UPS Model T1000 XR (1000VA, 700 Watt), Low Voltage (NA)	204155-001
	HP UPS Model T1000 XR (1000VA, 700 Watt), High Voltage (Int'l)	204155-B31
	HP UPS T1000 XR (1000VA, 700Watts) 100 VAC (JPN)	312803-291
	HP UPS Model T1500 XR (1440VA, 1050 Watt), Low Voltage (NA)	204155-002
	HP UPS Model T1500 XR (1440VA, 1050 Watt), Low Voltage (Int'l)	204155-B32
HP UPS Model T1500 XR (1500VA, 1050 Watt), Low Voltage (JPN)	204155-291	

Options

Uninterruptible Power Systems – Rack	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 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) Compaq 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
	UPS R12000 XR N+ x (200-240V) (WW-hardwired)	207552-B22
	NOTE: The UPS R12000 XR has a hardwired input and output connection.	
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.		
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_na/11041_na.HTML (North America) http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.HTML (Worldwide)		
Rack Enabling Kit	ProLiant ML310/ML330 G2 Rack Enabling Kit	238547-B22
	NOTE: Support for racks with round or square mounting holes (including all Compaq and HP Rack System /E and HP Systems), with an adjustment range of 24" – 36".	
Other	Internal to External SCSI Cable Option Kit (HD68)	159547-B22
	Internal to External SCSI Cable Option Kit (VHDCI)	333370-B21
	Telco Rack Option Kit	251243-B21
	NOTE: Support for all 2-post Telco racks requires the use of the standard four post rack kit and an additional option kit from HP.	
USB Options	USB Optical Scroll Mouse (Carbonite)	DD441B
	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B

Options

Custom Builder

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

HP Rack 10000 Series (Graphite Metallic)

HP Rack S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
HP Rack 10842 (42U) Rack Cabinet - Pallet	257415-B21
HP Rack 10842 (42U) Rack Cabinet - Shock Pallet	257415-B22
HP Rack 10647 (47U) – Pallet	245160-B21
HP Rack 10647 (47U) – Crated	245160-B23
HP Rack 10642 (42U) – Pallet	245161-B21
HP Rack 10642 (42U) – Shock Pallet	245161-B22
HP Rack 10642 (42U) – Crated	245161-B23
HP Rack 10636 (36U) – Pallet	245162-B21
HP Rack 10636 (36U) – Shock Pallet	245162-B22
HP Rack 10636 (36U) – Crated	245162-B23
HP Rack 10622 (22U) – Pallet	245163-B21
HP Rack 10622 (22U) – Shock Pallet	245163-B22
HP Rack 10622 (22U) – Crated	245163-B23

NOTE: -B21 (pallet) used to ship empty racks shipped on a truck

-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)

-B23 (crated) used for air shipments of empty racks

NOTE: 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)

http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML
(North America)

NOTE: For additional information regarding Rack Cabinets, please see the following URL:

<http://h18000.www1.hp.com/products/servers/proliantstorage/racks/index.html>.

Options

Rack Options for HP Rack 10000 Series

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

HP Rack Light Kit (Neon)	361589-B21
HP Rack Plinth Kit (Carbon)	251960-B21
42U Side Panel – Graphite Metallic	246099-B21
36U Side Panel – Graphite Metallic	246102-B21
47U Side Panel – Graphite Metallic	255486-B21
TFT5600 Rack Keyboard Monitor	221546-xx1

Country Code Key (for TFT5600 Rack Keyboard Monitor (PN 221546-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

1U Rack Keyboard & Drawer (Carbon)	257054-xx1
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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://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html>

Options

HP KVM Switch Options	Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
	Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
	IP Console Switch Box (KVM/IP), 1 x 1 x 16	262585-B21
	IP Console Switch Box (KVM/IP), 3 x 1 x 16	262586-B21
	HP 1x4 USB/PS2 KVM Switch, RM (ALL)	371302-B21
	HP 1x4 USB/PS2 KVM Switch, TT (EURO)	371301-A21
	HP 1x4 USB/PS2 KVM Switch, TT (UK)	371301-031
	HP 1x4 USB/PS2 KVM Switch, TT (AUST/NZ)	371301-011
	HP 1x4 USB/PS2 KVM Switch, TT (NA/JPN)	371301-D71
	PS/2 Interface Adapter, 8 pack	262587-B21
	PS/2 Interface Adapter, 1 pack	262588-B21
	CAT5 KVM Expansion Module	262589-B21
	Serial Interface adapter - 1 Pack with power supply	373035-B21
	CAT5e Cable 3', 4 pack	263474-B21
	CAT5e Cable 6', 8 pack	263474-B22
	CAT5e Cable 12', 8 pack	263474-B23
	CAT5e Cable 20', 4 pack	263474-B24
	CAT5e Cable 40', 1 pack	263474-B25

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	U4445A
Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	U4445E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years	U4446A
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	U4446E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years	U4447A
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4447E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years	U4448A
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4448E

Installation & Startup Services

Hardware Installation	U4456A
Hardware Installation, Electronic	U4456E
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.	U4457A
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	U4457E

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.	U4458A
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	U4458E

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.	U4459A
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	U4459E
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.	U6306A
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	U6306E
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.	U8328A
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	U8328E

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

Memory

HP ProLiant ML310 G2 All Models

Standard Memory - Pentium 4 Models

512-MB PC3200 Unbuffered ECC DDR SDRAM installed (1 x 512-MB SDRAM DIMM)

Standard Memory Replaced with Optional Memory

Up to 4096-MB memory is available with the optional installation of PC3200 Unbuffered ECC DDR SDRAM DIMM Memory kits.

These systems support PC3200 DDR memory and come standard with a single PC3200 DIMM installed.

The system board provides four DIMM sockets:

- Socket 1 (blue connector), channel A
- Socket 2 (black connector), channel A
- Socket 3 (blue connector), channel B
- Socket 4 (black connector), channel B

DIMMs do not need to be installed in pairs although installation of pairs (an equal DIMM for each channel) provides the best performance. The BIOS will detect the DIMM population and set the system accordingly as follows:

- Single-channel mode - DIMMs installed for one channel only
- Dual-channel asymmetric mode - DIMMs installed for both channels but of unequal channel capacities.
- Dual-channel interleaved mode (recommended) - DIMMs installed for both channels and offering equal channel capacities, proving the highest performance.

These systems require DIMMs with the following parameters:

- Unbuffered
- 256-MB, 512-MB, and 1-GB memory technology
- PC3200
- ECC DIMMs only

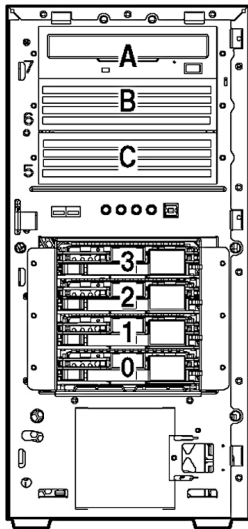
The first DIMM should be installed in Socket 1. A DIMM should not be installed in Socket 2 without a DIMM in Socket 1. Likewise a DIMM should not be installed in Socket 4 without a DIMM in Socket 3. A DIMM need not be installed in Socket 2 in order to install a DIMM in Socket 3.

Table X-X shows some of the suggested memory configurations for these systems.

NOTE: Table 3-1 does not list all possible configurations. Balanced-capacity, dual-channel loading yields best performance.

Channel A		Channel B		Total	Mode
Socket 1	Socket 2	Socket 3	Socket 4		
256-MB	none	none	none	256-MB	Single-channel
256-MB	none	256-MB	none	512-MB	Dual-channel interleaved
512-MB	none	none	none	512-MB	Single-channel
512-MB	none	512-MB	none	1-GB	Dual-channel interleaved
1-GB	none	none	none	1-GB	Single-channel
1-GB	none	1-GB	none	2-GB	Dual-channel interleaved
1-GB	1-GB	1-GB	none	3-GB	Dual-channel asymmetric
1-GB	1-GB	1-GB	1-GB	4-GB	Dual-channel interleaved

Storage



A,	48x IDE (ATAPI) CD-ROM
B, C	Removable Media Bays (1.6" each)
0, 1, 2, 3	Four 1" Non-Hot Plug Drive Bays, or Four Hot Plug Drive Bays

Drive Support

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

Storage

Hard Drives (SCSI Models only)

Ultra320 SCSI - Non-Hot Plug (Non-Hot Plug SCSI models only)

	Quantity Supported	Position Supported	Controller
1-inch	Up to 4	0, 1, 2, or 3	Single Channel Wide Ultra320 SCSI Adapter (SCSI Models) Smart Array 6402/128 Controller Smart Array 6404/256 Controller Smart Array 641 Controller Smart Array 642 Controller 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter
36.4 GB 15,000 rpm			
72.8 GB 10,000 rpm			
146.8 GB 15,000 rpm			

Ultra320 SCSI -Hot Plug (Hot Plug SCSI models only)

	Quantity Supported	Position Supported	Controller
1-inch	Up to 4	0, 1, 2, or 3	Single Channel Wide Ultra320 SCSI Adapter (SCSI Models) Smart Array 6404/256 Controller Smart Array 6404/256 Controller Smart Array 641 Controller Smart Array 642 Controller 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter
300 GB 10,000 rpm			
146.8 GB 10,000 rpm			
72.8 GB 10,000 rpm			
146.8 GB 15,000 rpm			
72.8 GB 15,000 rpm			
36.4 GB 15,000 rpm			

Hard Drives (SATA Models only)

SATA - (Hot Plug SATA Models Only)

	Quantity Supported	Position Supported	Controller
1-inch	Up to 4	0, 1, 2, 3	Integrated Four Channel SATA Controller
80-GB			
160-GB			
250-GB			

SATA - (Non-Hot Plug SATA models only)

	Quantity Supported	Position Supported	Controller
1-inch	Up to 4	0, 1, 2, 3	Integrated Four Channel SATA Controller
80-GB			

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 30 Family		External	Smart Array 642 Controller

Storage

Maximum Storage Capacity - SATA Models (SCSI Attached (Enclosure))

Internal	1.0 TB (4 x 250.0 GB)
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 Attached (Enclosure))

Internal	1.2 TB (4 x 300 GB hot-plug hard drives)
External	29.400 TB (14 x 300 GB) x 7
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 (North America)

<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 and Tape Libraries listed below, please see the following:

http://h18000.www1.hp.com/products/quickspecs/North_America/10809.html (North America)

<http://h18000.www1.hp.com/products/quickspecs/Division/10809.html> (Worldwide)

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

	Quantity Supported	Position Supported	Controller
HP StorageWorks Tape Drives, Hot Plug DAT40 Tape Drive, Hot Plug DAT72 Tape Drive, Hot Plug	Up to 2	A & B	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
HP StorageWorks Tape Drives, Internal DAT 72 Tape Drive DAT 40 Tape Drive DAT 24 Tape Drive DLT VS80 Tape Drive DLT VS160 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
HP StorageWorks Tape Drives, Internal Ultrium 960	Up to 1	B, C, D	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter
HP StorageWorks Tape Drives, Internal Ultrium 215 Ultrium 230 Ultrium 448 Ultrium 460 DAT 72 Tape Drive DAT 40 Tape Drive DAT 24 Tape Drive DLT VS80 Tape Drive SDLT 320 Tape Drive SDLT 600 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
HP StorageWorks Autoloaders, External	Up to 2	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS

Storage

DAT 72x6 Tape Autoloader
1/8 Tape Autoloader
SSL1016 Tape Autoloader

HP StorageWorks Tape Libraries, External

MSL6060 (Ultrium 460 -based)
MSL6030 (Ultrium 460 -based)
MSL5026S2 (SDLT 320-based)
MSL5052S2 (SDLT 320-based)
MSL5030 (Ultrium 230 -based)
MSL5060 (Ultrium 230 -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

HP StorageWorks ESL E-Series Tape Libraries

ESL 712e
ESL 630e
ESL 322e
ESL 286e

Please reference the [ESL E-series Tape Libraries 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

Power Specifications

Part Number	302199-001
Spare Kit	216108-001
Operational Input Voltage Range (V rms)	100-127V and 200-240V
Frequency Range (Nominal) (Hz)	47 to 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 (A rms)	4.7	4.0	2.2	2.0	1.9	1.8
Max Rated Input Wattage Rating (Watts)	462	455	448	441	435	429
Max. Rated VA (Volt-Amp)	471	464	457	450	444	437
Efficiency (%)	65	66	67	68	69	70
Power Factor	0.98					
Leakage Current (mA)	0.31	0.36	0.65	0.69	0.72	0.75
Maximum Inrush Current (A peak)	63	72	130	138	144	150
Maximum Inrush Current duration	20					

System Specifications

	Processor	Memory	HDD	PCI	PS	
ML310 Fully Configured	1	4	5	4	1	
Fully Loaded System Input Wattage (W)	274	270	266	262	258	255
Fully Loaded System Input Current (A rms)	2.8	2.4	1.3	1.2	1.1	1.1
Fully Loaded System Thermal (BTU- Hr)	935	921	908	894	881	869
Fully Loaded System VA (Volt-Amp)	280	276	272	268	264	260
System Leakage with all power supplies loaded (mA)	0.31	0.36	0.65	0.69	0.72	0.75
System Inrush Current with all power supplies loaded (A)	63	72	130	138	144	150
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		

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: ML310 G2
- Click on: "Power Calculator" link (You may need to scroll down to see it.)

Power Specifications

Power Cords (13 Cord Sets)	
Country	Power Cord Part Number
APD	139867-006
APD	100613-003
APD	100614-003
Australia	100661-007
Europe	100614-003
France	100614-003
Germany	100614-003
Japan	139867-006
PRC	139867-006
PRC	100613-003
PRC	100661-007
UK	100613-003
US	163719-002

Technical Specifications

System Unit	Dimensions (HxWxD)	17.0 x 7-7/8 x 22 in (43.0 x 20.0 x 55.0 cm)		
	Weight (approximate)	37 lb (16.8 kg)		
	Input Requirements (per power supply)	Range Line Voltage	100-127V and 200-240V	
		Normal Line Voltage	115 to 230 VAC	
	Line Frequency	50 to 60 Hz		
	Rated Input Current	< 6A RMS at 90VAC with maximum load		
	BTU Rating	1,560 BTU		
	SCSI Connectors (SCSI Models only)	One internal HD68 connectors		
		NOTE: Support for either one internal or one external SCSI channel is available. This is achieved using an internal to external SCSI cable option kit (PN 159547-B22) and SCSI knockout bracket.		
	Power Supply Output Power	Rated Steady-State Power	350W	
		Maximum Peak Power	370W	
	Temperature Range	Operating	50° to 93° F (10° to 35° C)	
		Shipping	-40° to 150° F (-40° to 66° C)	
	Relative Humidity (non-condensing)	Operating	20% to 80%	
Non-operating		5% to 90%		
Acoustic Noise	Idle (Fixed Disk Drives Spinning)			
		L WAd (BELS)	5.7	
		L pAm (dBA)	40	
	Operating (Random Seeks to Fixed Disks)			
	L WAd (BELS)	5.7		
	L pAm (dBA)	40		

Non-Hot Plug Wide Ultra320 SCSI Hard Drives	36.4 GB 15K 357012-B21	Capacity	36419.2 MB		
		Height	1 in (2.54 cm)		
		Width	4 in (10.16 cm)		
		Interface	Ultra320 SCSI		
		Transfer Rate Synchronous (Maximum)	320 MB/s		
		Seek Time (typical reads, including settling)	Single Track	0.4 ms	
			Average	3.8 ms	
			Full-Stroke	8 ms	
		Physical Configuration	Rotational	15,000 rpm	
			Bytes/Sector	512	
		Logical Blocks	71,132,000		
	Operating Temperature	50° to 95° F (10° to 35° C)			

Technical Specifications

Non-Hot Plug SATA/100 Hard Drives 80 GB 7.2K 383410-B21

Capacity	80,000 MB	
Height	1.028 in/2.611 cm	
Width	4.0 in/10.16 cm	
Interface	Serial ATA	
Transfer Rate Synchronous (Maximum)	1.5 Gb/s	
Seek Time (typical reads, including settling)	Single Track	0.9 ms
	Average	9.0 ms
	Full-Stroke	17.0 ms
Physical Configuration	Rotational	7,200 rpm
	Bytes/Sector	512
	Logical Blocks	156,301,488
Operating Temperature	41° to 131° F (5° to 55° C)	

48X Max IDE (ATAPI) CD-ROM Drive	Disk	Applicable Disk	CD-ROM, CD-XA, CD-DA (Mode 1, Mode 2, Form 1 and 2) Photo CD (Single and Multi-session) Mixed Mode (Audio and Data combined) CD-R
		Capacity	540 MB (Mode 1, 12 cm) 650 MB (Mode 2, 12 cm)
	Block Size	Mode 1	2,048 bytes
		Mode 2	2,340 bytes, 2,336 bytes
		CD-DA	2,352 bytes
		CD-XA	2,328 bytes
	Interface	IDE (ATAPI)	
	Access Times (typical)	Random	<100 ms
		Full-Stroke	<150 ms
	Data Transfer Rate	Sustained	3000 to 7200 KB/s (20X to 48X)
		Burst	150 KBps to 7,200 KBps
		Bus Rate	16.7 MBps
	Cache Buffer	128 KB	
	Start-up Time (typical)	< 7seconds	
	Stop Time	< 4seconds	
	Laser Parameters	Type	Semiconductor Laser GaAlAs
		Wave Length	780 ± 25 nm
	Operating Conditions	Temperature	41° to 113° F (5° to 45° C)
		Humidity	10% to 80%
	Dimensions	(HxWxD, maximum)	1.7 x 5.85 x 8.11 in (4.29 x 14.86 x 20.60 cm)
		Weight	2.09 lb (0.95 kg)

Technical Specifications

Embedded NC7761 PCI 10/100/1000T Gigabit network adapter	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX 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 4 Channel SATA Controller <i>(SATA NHP Models only)</i>	Drives Supported	Up to 4 SATA hard drives (1 drive/channel)
	Channels	4
	Storage Capacity	1 TB
	Maximum SATA Channel Transfer Rate	150 MB/s per channel
	SATA Protocols	SATA-1a
	Internal SATA Connectors	One 4-lane connector (all four channels)

Single Channel Wide Ultra320 SCSI Adapter <i>(SCSI Models only)</i>	Drives Supported	Up to 15 SCSI devices Wide
	Data Transfer Method	64-bit/100-MHz PCI bus-master
	SCSI Channel Transfer Rate	320 MB/s per channel
	Maximum Transfer Rate per PCI Bus (peak)	1033 MB/s per channel
	SCSI Protocols	Wide Ultra 320 SCSI, Wide Ultra3 SCSI, Wide Ultra2 SCSI, Wide Ultra SCSI-3, Fast-Wide SCSI-2, and Fast SCSI-2
		Fast SCSI-2
	Electrical Protocol	Low Voltage Differential (LVD)
	SCSI Termination	Active Termination
	External SCSI Connectors	None.
	Internal SCSI Connectors	One 68-Pin Wide Ultra SCSI-3 connectors

NOTE: Buy extra controller or internal to external SCSI option kit (part number 159547-B22).

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