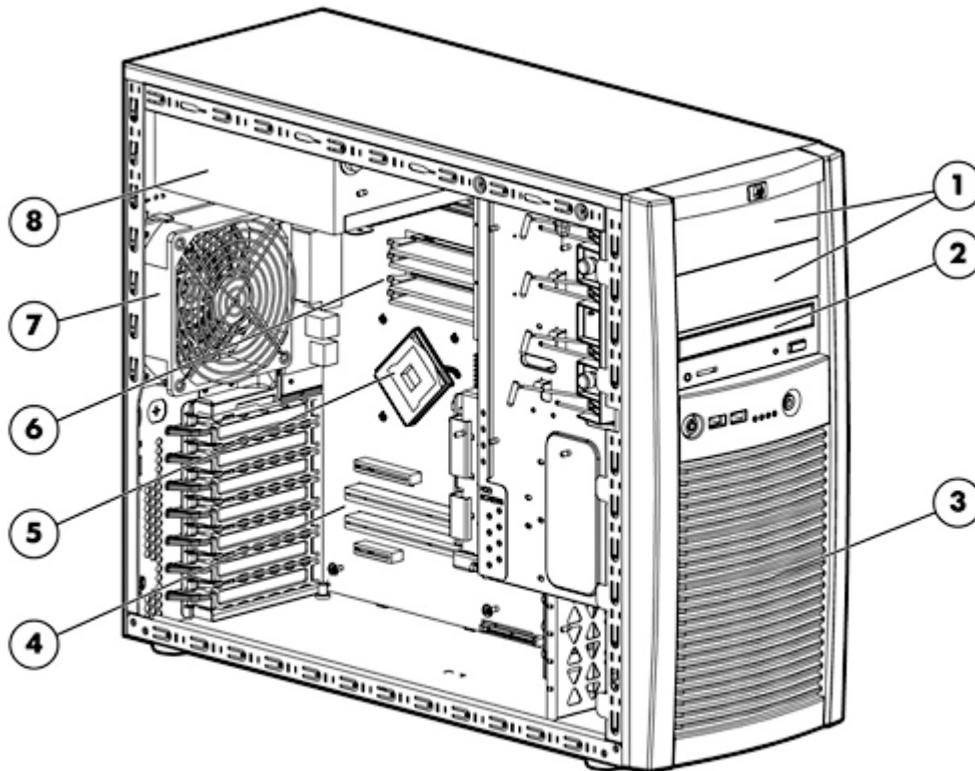


Overview



1. Removable Media Bays
2. 48x IDE (ATAPI) CD-ROM
3. Four Hot-Plug Drive Bays
4. Four Expansion Slots (Two PCI-X, Two PCI Express)

5. Processor Socket (Intel® Pentium® D or Pentium® 4)
6. Four DIMM Sockets for up to 8GB DDR2 memory
7. System Fan
8. 370W Power Supply

What's New

- Support for Dual-core Intel® Pentium® D 900 Series processors with 2 x 2M cache

Overview

At A Glance

The HP ProLiant ML310 G3 is an affordable, single processor tower server designed to provide the solid network foundation essential to fuel thriving small offices. Dual-core Intel Pentium D or Pentium 4 processing power combines with industry-leading management and essential data protection features for a secure, affordable platform that helps you run your business efficiently.

- **Processors:**
 - Supports a single Intel® Pentium® D 800 or 900 Series, Pentium® 4 600 Series, or Celeron D® 300 Series processor
 - 800MHz Front Side Bus (FSB)
 - Intel E7230 Chipset
- **Memory:**
 - Up to 8GB of PC2-4200 533MHz unbuffered DDR2 SDRAM with advanced ECC capabilities and optional interleaving
- **Storage Controller:**
 - SCSI Models: Single Channel U320 SCSI Adapter in PCI-X slot
 - SATA Models: Four Channel embedded SATA Controller
- **Internal Drive Support:**
 - Supports up to four hot plug U320 SCSI, SAS, or SATA hard drives for up to 3TB internal storage
 - SCSI models support U320 SCSI drives
 - SATA models support SAS and SATA hard drives
- **Network Controller:**
 - Embedded NC320i PCIe Gigabit Server Adapter
- **Expansion Slots:**
 - 4 Total: (2) PCI-X 64-bit/100MHz; (2) PCI Express
- **USB 2.0 Ports:**
 - 5 Total: 2 front; 2 rear accessible ports; 1 internal
- **Management:**
 - Integrated Lights-Out 2 (iLO 2) management controller
 - ROM Based Setup Utility (RBSU) and PXE support
- **Form Factor:**
 - 5U Tower
 - Optional Tower-to-Rack Enabling Kit available
- **Warranty:**
 - Protected by HP Services and a worldwide network of resellers and service providers. One year, Next Business Day, on-site limited global warranty

Standard Features

Processor One of the following	Dual-core Intel® Pentium® D 940 (3.2 GHz/800 - 2 x 2MB L2)
	NOTE: See "Configuration Information - Factory Integrated Models" section
	Dual-core Intel® Pentium® D 930 (3.0 GHz/800 - 2 x 2MB L2)
	Dual-core Intel® Pentium® D 920 (2.8 GHz/800 - 2 x 2MB L2)
	NOTE: See "Configuration Information - Factory Integrated Models" section
	Intel® Pentium® 4 650 (3.4 GHz/800 - 2M L2)
	Intel® Pentium® 4 640 (3.2 GHz/800 - 2M L2)
Intel® Pentium® 4 630 (3.0 GHz/800 - 2M L2)	
NOTE: See "Configuration Information - Factory Integrated Models" section	
Intel® Celeron D® 331 (2.66 GHz/533 - 256KB L2)	

Cache Memory One of the following depending on Model	Integrated 2 x 2MB level 2 ECC cache (Pentium D 900 Series models)
	Integrated 2 x 1MB level 2 ECC cache (Pentium D 800 Series models)
	Integrated 2MB level 2 ECC cache (Pentium 4 models)
	Integrated 256KB level 2 ECC cache (Celeron D models)

Memory Protection	Advanced ECC
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Memory	Type	PC2-4200 unbuffered DDR2 SDRAM (533MHz)
	Standard	512 MB (1 x 512 MB)
	Maximum	8 GB

Network Controller	Embedded NC320i PCIe Gigabit Server Adapter
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Expansion Slots	Slot Number	Bus Speed	Maximum Card Length	Hot Plug	Connector Type
	4	PCI Express x4	12.3	No	x8
	3	64-bit/100MHz PCI-X	12.3	No	3.3V
	2	64-bit/100MHz PCI-X	12.3	No	3.3V
	1	PCI Express x1	12.3	No	x1

Standard Features

Storage Controllers One of the following depending on Model

The HP ProLiant ML310 G3 offers both SCSI and Serial models. SCSI models support U320 SCSI hard drives. Serial models support Serial Attached SCSI (SAS) and Serial ATA (SATA) hard drives. Use of SAS hard drives in Serial models requires installation of a SAS controller or HBA.

Single Channel Ultra320 SCSI Adapter (in PCI-X slot) (SCSI Models)

Integrated four port SATA controller with integrated SATA RAID 0, 1 (SATA Models)

NOTE: Use of the embedded SATA RAID feature requires installation of a driver from a floppy drive. The supported floppy drive can be a USB floppy drive, half-height internal floppy drive, or virtual floppy via Integrated Lights-Out 2 (iLO 2).

NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS hard drive configurations

Storage	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	Optional 1.44 MB Diskette Drive NOTE: A diskette device is required to configure the embedded SATA RAID feature.

Maximum Internal Storage	Hot Plug SCSI	1.2TB	4 x 300GB U320 SCSI
	Hot Plug SAS (3.5")	1.2TB	4 x 300GB SAS
	Hot Plug SATA (3.5")	3.0TB	4 x 750GB SATA

NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS hard drive configurations

Interfaces	Parallel	1
	Serial	1 (Optional second serial port available)
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB 2.0 Ports	5 total: 2 front; 2 rear; 1 internal NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html .
	Dedicated USB	1 (available for USB tape connectivity)
	Network RJ-45 (Ethernet)	1
	iLO 2 Remote Management port	1

Graphics	Integrated ATI ES1000 Video Controller with 16-MB SDRAM Video Memory
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Form Factor	5U Tower Optional Tower-to-Rack Enabling Kit available
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Standard Features

ProLiant Essentials Foundation Pack Software

HP Systems Insight Manager

HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible environment to centrally manage servers, storage and other infrastructure devices across multiple operating system platforms.

Through a single management view, HP SIM provides core management services that include device discovery and identification, event views, health monitoring, inventory data collection, software version control and reporting. HP SIM is built on industry standards and is extensible with value-added ProLiant Essentials, Integrity Essentials and Storage Essentials software to meet individual management needs. For more details on HP SIM visit <http://www.hp.com/go/hpsim>.

HP SIM provides organizations with the following benefits:

- Simplifies and consolidates infrastructure lifecycle management using task and query based functionality
- Provides the foundation for infrastructure automation and virtualization
- Enables IT management based on business processes not hardware platforms
- Lowers infrastructure maintenance cost and frees resources for innovation
- Maximizes resource utilization with virtualization technologies
- Provides a central point of integration between infrastructure and Enterprise management tools such as HP OpenView

Insight Management Agents

Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers.

Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack. For additional information about the Management Agents and the HP System Management Homepage 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 consistent server configurations. For more information, please visit the SmartStart Web site at <http://www.hp.com/servers/manage>.
Latest SmartStart version supported: SmartStart 7.5
Minimum SmartStart version supported: SmartStart 7.4

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.

Standard Features

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 .
Integrated Lights-Out 2 Standard (iLO 2)	Standard remote management functionality that enables remote control of system power and access to the system serial console and event logs regardless of server status. Firmware preinstalled on servers. Also, updates downloadable from the Software and Drivers web pages and on the ProLiant Software Maintenance Pack.
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">• Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus.• Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats.• Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.• Server Migration Pack - The Server Migration Pack automates the manual processes required for migrating servers between physical or virtual platforms (P2V, V2P, and V2V).
Optional Remote Management Packs	<ul style="list-style-type: none">• Integrated Lights-Out Advanced Pack - upgrades the Integrated Lights-Out processor to full virtual presence and control with graphical console and virtual media.

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <http://www.hp.com/servers/proliantessentials> or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: <http://www.hp.com/servers/proliantessentials>

Industry Standard Compliance

ACPI V1.0b Compliant
PCI 3.0 Compliant
PCI-X 1.0 Compliant
PCI-Express 1.0a Compliant
PXE Support
WOL Support
Microsoft Logo certifications
Novell Logo certifications
USB 2.0

Standard Features

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 SCSI and SAS hard drives) BIOS Serial Console
Security	Power-on password Setup password Diskette boot control Power switch security
Server Power Cords	All models ship with one 1.8m (6 foot) standard low-line, country specific power cord. Localized cables included with geographic specific models in other world regions.
UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf .
Power Specifications	To review typical system power ratings use the Active Answers Power Calculator at: http://h30099.www3.hp.com/configurator/powercalcs.asp
Power Supply	370 Watt PFC (Power Factor Correcting)
System Fans	1 - Non-hot plug, Non-redundant system fan NOTE: Does not include fans in CPU heatsink or power supply.
Required Cabling	For required cabling information, refer to the Cabling Matrix at http://h18000.www1.hp.com/products/servers/ProLiantML310/ .

Standard Features

OS Support

Microsoft Windows Server 2003 (Standard Web Edition)
Microsoft Small Business Server 2003
Microsoft Windows 2000 Server
Novell NetWare
Red Hat Enterprise Linux
SUSE Linux Enterprise Server
SCO OpenServer

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 more Linux OS support & certification information, please visit our the ProLiant & BladeSystem Server Linux matrix <http://h18004.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>

NOTE: For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at:

<http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html>

Factory Express Portfolio for Servers and Storage

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

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

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

Rack and Rack Options

Rack Cabinets:

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

KVM Switches, Serial Console Servers, Rackmount Monitors, Keyboards:

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

HP Enterprise Configurator

The HP eCo-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.

Standard Features

HP ProLiant Smart Buys (NA only)

The HP Smart Buy program offers mainstream business solutions at competitive prices with excellent availability and superior HP quality. It offers a wide range of industry-leading HP products at compelling prices, allowing you to receive richer configurations with additional options.

NOTE: ProLiant Smart Buys are available in NA only. For detailed specification information on ProLiant Smart Buys please click on the following link: <ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>

Service and Support

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

NOTE: Server Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

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.

HP services provide continuous care and support expertise with committed response designed to meet your IT and business needs.

To fully capitalizing on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a ProLiant server support offer to help you speedily deploy and maximize system uptime.

Enhanced Care - Minimum recommended service support offer designed to ensure customers have access to expert assistance, whenever they need it.

- *4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years*

Continuous Care - Recommended service delivering cost-effective support options designed to extend HP Services committed response and guaranteed fix times, designed to speed problem identification and resolution.

- *6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years*

Total Care - Highest HP Support service level recommend to help increase IT performance and availability with comprehensive, integrated hardware and software services

- *Support Plus 24 - Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support onsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays*

Deployment Services - HP Installation and Start Up services designed to take time, risk, and worry out of the deployment of ProLiant servers - and free customers IT support staff to focus on what they do best, their business.

Standard Features

- *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*

NOTE: For a complete listing of service offerings and information visit:

<http://www.hp.com/services/proliantservices>

<http://www.hp.com/go/proliant/carepack>

Models

NOTE: In addition to the models listed below, ProLiant Smart Buys are also available in North America. For detailed specification information on ProLiant Smart Buys please click on the following link: <ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>.

Hot Plug SCSI Models

ML310T03 p930 HP-SCSI 410191-xx1	Processor(s)	Dual-core Intel Pentium D 930 (3.0 GHz/800)
	Cache Memory	2 x 2MB L2
	Memory	512 MB (1 x 512 MB)
	Network Controller	Embedded NC320i PCIe Gigabit Server Adapter
	Storage Controller	Single Channel Ultra320 SCSI Adapter (in PCI-X slot)
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.2TB maximum hot plug SCSI
	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 Kit available)

ML310T03 p650 HP-SCSI 393459-xx1	Processor(s)	Intel Pentium 4 650 (3.4 GHz/800)
	Cache Memory	2MB L2
	Memory	512 MB (1 x 512 MB)
	Network Controller	Embedded NC320i PCIe Gigabit Server Adapter
	Storage Controller	Single Channel Ultra320 SCSI Adapter (in PCI-X slot)
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.2TB maximum hot plug SCSI
	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 Kit available)

ML310T03 p640 HP-SCSI 394320-xx1	Processor(s)	Intel Pentium 4 640 (3.2 GHz/800)
	Cache Memory	2MB L2
	Memory	512 MB (1 x 512 MB)
	Network Controller	Embedded NC320i PCIe Gigabit Server Adapter
	Storage Controller	Single Channel Ultra320 SCSI Adapter (in PCI-X slot)
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.2TB maximum hot plug SCSI
	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 Kit available)

Models

Hot Plug Serial Models (SATA/SAS)

NOTE: Embedded controller does not support hot plug nor LED status.

ML310T03 p930 HP-SATA/SAS 410192-xx1	Processor(s)	Dual-core Intel Pentium D 930 (3.0 GHz/800)
	Cache Memory	2 x 2MB L2
	Memory	512 MB (1 x 512 MB)
	Network Controller	Embedded NC320i PCIe Gigabit Server Adapter
	Storage Controller	Integrated four port SATA controller with integrated SATA RAID 0, 1 NOTE: Use of the embedded SATA RAID feature requires installation of a driver from a floppy drive. The supported floppy drive can be a USB floppy drive, half-height internal floppy drive, or virtual floppy via Integrated Lights-Out 2 (iLO 2).
	Hard Drives	None ship standard (up to 4 hot plug SATA or SAS drives supported) NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA or SAS drive configurations
	Internal Storage	3.0TB maximum (hot plug SATA)
	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 Kit available)

ML310T03 p650 HP-SATA/SAS 393460-xx1	Processor(s)	Intel Pentium 4 650 (3.4 GHz/800)
	Cache Memory	2MB L2
	Memory	512 MB (1 x 512 MB)
	Network Controller	Embedded NC320i PCIe Gigabit Server Adapter
	Storage Controller	Integrated four port SATA controller with integrated SATA RAID 0, 1 NOTE: Use of the embedded SATA RAID feature requires installation of a driver from a floppy drive. The supported floppy drive can be a USB floppy drive, half-height internal floppy drive, or virtual floppy via Integrated Lights-Out 2 (iLO 2).
	Hard Drives	None ship standard (up to 4 hot plug SATA or SAS drives supported) NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA or SAS drive configurations
	Internal Storage	3.0TB maximum (hot plug SATA)
	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 Kit available)

Models

ML310T03 p640 HP-
SATA/SAS
394321-xx1

Processor(s)	Intel Pentium 4 640 (3.2 GHz/800)
Cache Memory	2MB L2
Memory	512 MB (1 x 512 MB)
Network Controller	Embedded NC320i PCIe Gigabit Server Adapter
Storage Controller	Integrated four port SATA controller with integrated SATA RAID 0, 1 NOTE: Use of the embedded SATA RAID feature requires installation of a driver from a floppy drive. The supported floppy drive can be a USB floppy drive, half-height internal floppy drive, or virtual floppy via Integrated Lights-Out 2 (iLO 2).
Hard Drives	None ship standard (up to 4 hot plug SATA or SAS drives supported) NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA or SAS drive configurations
Internal Storage	3.0TB maximum (hot plug SATA)
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 Kit available)

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

Configuration Information - Factory Integrated Models (North America only)

NOTE: For Configure to Order requirements within EMEA region, please consult local Sales Contact.

NOTE: All configure-to-order servers must start with a CTO Chassis. Use the following section to order a server customized to your requirements with options integrated at the factory. The options you select in steps 2 and 3 will be integrated with the base configuration you select in step 1. Additional options selected in Step 4 will also be integrated when applicable.

NOTE: Standard models of this product offering (see previous section of this document) do not support HP Factory Express Server Configuration Level 1.

NOTE: FIO indicates that this option only available as a Factory Installable Option.

Step 1: Base Configuration

Models	HP ProLiant ML310 G3 CTO Chassis HP-SCSI	393494-B21
	HP ProLiant ML310 G3 CTO Chassis HP-SATA/SAS	393495-B21
	Factory Integrated Models ship with:	
	Embedded NC320i PCIe Gigabit Server Adapter	
	Integrated Four Channel SATA Controller (HP-SATA/SAS chassis only)	
	370 Watts, PFC (Power Factor Correcting)	
	Keyboard and Mouse	

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

Processors	Intel Celeron D 331 (2.66 GHz/533 - 256K cache), FIO	406032-L21
	Intel Pentium D 920 (2.8 GHz/800 - 2 x 2MB L2) DC, FIO	410115-L21
	Intel Pentium D 930 (3.0 GHz/800 - 2 x 2MB L2) DC, FIO	410116-L21
	Intel Pentium D 940 (3.2 GHz/800 - 2 x 2MB L2) DC, FIO	410117-L21
	Intel Pentium 4 630 (3.0 GHz/800 - 2M L2), FIO	402051-L21
	Intel Pentium 4 640 (3.2 GHz/800 - 2M L2), FIO	402052-L21
	Intel Pentium 4 650 (3.4 GHz/800 - 2M L2), FIO	402053-L21
Base Memory	2048 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 2048 MB)	393354-B21
	1024 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 1024 MB)	390824-B21
	512 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 512 MB)	390825-B21
Optical Drive	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
	HP DVD±R/RW 16X Half Height	383974-B21

Configuration Information - Factory Integrated Models (North America only)

Base Hard Drives	Hot Plug U320 SCSI Drives	
	NOTE: For use in Hot Plug SCSI base configurations P/N 393494-B21.	
	HP 300GB U320 10K Universal HDD	350964-B22
	HP 146GB U320 10K Universal HDD	286716-B22
	HP 72GB U320 10K Universal HDD	286714-B22
	HP 300GB U320 15K Universal HDD	411089-B22
	HP 146GB U320 15K Universal HDD	347708-B22
	HP 36GB U320 15K Universal HDD	286776-B22
	HP 72GB U320 15K Universal HDD	286778-B22
	Hot Plug SATA Drives	
	NOTE: For use in Hot Plug SATA/SAS base configurations P/N 393495-B21.	
	HP 750GB 1.5G SATA 7.2K 3.5" HDD	432341-B21
	HP 500GB 1.5G SATA 7.2K 3.5" HDD	395473-B21
	HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21
	HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
	HP 80GB 1.5G SATA 7.2K 3.5" HDD	349237-B21
	Hot Plug SAS Drives	
	NOTE: For use in Hot Plug SATA/SAS base configurations P/N 393495-B21.	
	HP 300GB 3G SAS 15K 3.5" SP HDD	431944-B21
	HP 146GB 3G SAS 15K 3.5" SP HDD	375872-B21
HP 72GB 3G SAS 15K 3.5" SP HDD	375870-B21	
HP 36GB 3G SAS 15K 3.5" SP HDD	375868-B21	

Step 3: Choose Additional Factory Integratable Options

Controllers	Ultra320 SCSI HBAs and Controllers	
	NOTE: A U320 SCSI HBA or Controller is required if SCSI hard drives are selected.	
	HP U320 SCSI FIO HBA ALL	358700-B21
	Smart Array 641 Controller	291966-B21
	Smart Array 642 Controller	291967-B21
	SAS HBAs and Controllers	
	NOTE: A SAS HBA or Controller is required if SAS hard drives are selected. SAS HBAs and Controllers support both SAS and SATA hard drives.	
	HP 8 Internal Port SAS HBA with RAID	347786-B21
	HP Smart Array P600/256 BBWC Controller	337972-B21
	SATA Controller	
HP 6-port SATA RAID Controller	372953-B21	
Hard Drive Cables	HP 4-port SATA/SAS cable (target fan cable)	389653-B21
	NOTE: This cable is required when the HP 6-port SATA RAID controller is installed on hot plug SATA/SAS models of the ML310 G3. See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations.	
Modems	Agere 2006 PCI Hi-Speed 56K Sof FIO	440519-B21
	NOTE: This part number must be used for factory integration. For field integration (or as an additional "ship along" option) choose EK694AA.	

Configuration Information - Factory Integrated Models (North America only)

Step 4: Choose Additional Options for Factory Integration

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

Options

NOTE: Some options may not be factory configurable. Please contact your local sales representative for additional information.

ProLiant Essentials Value Pack Software

NOTE: Single Server Licenses are designed for use with a single server. Single Server Licenses contain one license with a unique license activation key and documentation. 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.

ProLiant Essentials Intelligent Networking Pack

ProLiant Essentials Intelligent Networking Pack - Windows Edition, Single Server License 436225-B21

NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.

NOTE: For additional ProLiant Intelligent Networking Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML

ProLiant Essentials Intelligent Networking Pack - Linux Edition, Single Server License 436229-B21

NOTE: For additional ProLiant Intelligent Networking Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML

ProLiant Essentials Virtualization Management Software

ProLiant Essentials Virtual Machine Management Pack, Single-Server License 435661-B21

ProLiant Essentials Server Migration Pack, Single-Migration License 435663-B21

NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation.

NOTE: This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.

NOTE: For additional ProLiant Essentials Virtualization Management Software License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.HTML

ProLiant Essentials Vulnerability and Patch Management Pack

ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License 371645-B21

NOTE: For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12111_div/12111_div.HTML

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: <http://www.hp.com/servers/proliantessentials>.

Remote Management

Integrated Lights-Out Advanced Pack

Integrated Lights-Out Advanced Pack, 1 server 263825-B21

Featuring: Sophisticated virtual administration features for ultimate control of servers in the data centers and remote sites.

NOTE: For additional Integrated Light-Out Advanced Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11052_div/11052_div.HTML

Options

Memory (SDRAM DIMMs)	2048 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 2048 MB)	393354-B21
	1024 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 1024 MB)	390824-B21
	512 MB Unbuffered Advanced ECC PC2-4200 DDR2 (1 x 512 MB)	390825-B21

Optical Drives	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	HP DVD±R/RW 16X Half Height	383974-B21

Diskette Drives	1.44MB Floppy Drive Option Kit	379257-B21
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Serial Port Kit	HP ProLiant Second Serial port option kit	390390-B21
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Hard Drives	Ultra320 - Universal Hot Plug (SCSI Hot Plug Models Only)	
	HP 300GB U320 10K Universal HDD	350964-B22
	HP 146GB U320 10K Universal HDD	286716-B22
	HP 72GB U320 10K Universal HDD	286714-B22
	HP 300GB U320 15K Universal HDD	411089-B22
	HP 146GB U320 15K Universal HDD	347708-B22
	HP 72GB U320 15K Universal HDD	286778-B22
	HP 36GB U320 15K Universal HDD	286776-B22

NOTE: Please see the [Ultra320 Universal Hot Plug QuickSpecs](http://h18000.www1.hp.com/products/quickspecs/11531_div/11531_div.HTML) 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)

Serial-Attached SCSI (SAS) Hot Plug Hard Drive (SATA/SAS Hot Plug Models Only)	HP 300GB 3G SAS 15K 3.5" SP HDD	431944-B21
	HP 146GB 3G SAS 15K 3.5" SP HDD	375872-B21
	HP 72GB 3G SAS 15K 3.5" SP HDD	375870-B21
	HP 36GB 3G SAS 15K 3.5" SP HDD	375868-B21

Serial-ATA (SATA) Hot Plug Hard Drive (SATA/SAS Hot Plug Models Only)	HP 750GB 1.5G SATA 7.2K 3.5" HDD	432341-B21
	HP 500GB 1.5G SATA 7.2K 3.5" HDD	395473-B21
	HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21
	HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
	HP 80GB 1.5G SATA 7.2K 3.5" HDD	349237-B21

NOTE: Please see the [Hard Drive QuickSpecs](http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.HTML) 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)

Options

Hard Drive Cables	<p>HP 4-port SATA/SAS cable (target fan cable) 389653-B21</p> <p>NOTE: This cable is required when the HP 6-port SATA RAID controller is installed on hot plug SATA/SAS models of the ML310 G2. See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations.</p>
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Storage Controllers	<p>SCSI Controllers</p> <p>NOTE: The following Storage Controllers are qualified for SCSI drives only. They do not support SATA or SAS Drives.</p> <p>NOTE: In compliance with the European Union's Reduction of Hazardous Substances (RoHS) initiative, the Smart Array 641, 642, 6402, and 6404 RAID controllers will not be installed in ProLiant ML310 G3 servers sold on or after July 1, 2006. Installation of these options into the ProLiant ML310 G3 would create a non-compliant server configuration.</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>128-MB BBWC (Battery-Backed Write Cache) Enabler 351580-B21</p> <p>NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, and Smart Array 642 Controller.</p> <p>Ultra320 Expansion Module for SA-6402 273911-B21</p> <p>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 374654-B21</p> <p>SCSI HBA</p> <p>HP SC11Xe Host Bus Adapter 412911-B21</p> <p>NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:</p> <p>http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.HTML (Smart Array 6400 Series)</p> <p>http://h18000.www1.hp.com/products/quickspecs/12067_div/12067_div.HTML (Smart Array 641)</p> <p>http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.HTML (Smart Array 642)</p> <p>http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.HTML (Single Channel SCSI HBA)</p> <p>http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.HTML (SC11Xe HBA)</p> <p>SAS Controllers</p> <p>Smart Array E200 Controller</p> <p>HP Smart Array E200/64MB Controller 409180-B21</p> <p>HP Smart Array E200/128 BBWC Controller 411508-B21</p> <p>128-MB BBWC (Battery-Backed Write Cache) Enabler 351580-B21</p> <p>NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, and Smart Array 642 Controller.</p> <p>Smart Array P400 Controller</p> <p>HP Smart Array P400/256MB Controller 405132-B21</p> <p>HP Smart Array P400/512MB BBWC Controller 411064-B21</p>
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Options

Smart Array P400 Battery Attach Kit	417836-B21
NOTE: This option kit contains a 24" battery cable and adhesive material for installing a battery into the server if a Smart Array P400 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.	
Battery-backed write cache upgrade	383280-B21
NOTE: For Smart Array P400 Controller only.	
512MB Battery-backed cache upgrade	405148-B21
NOTE: For Smart Array P400 Controller only.	
Smart Array P600 Controller	
Smart Array P600/256 BBWC Controller	337972-B21
512MB DDR BBWC Upgrade	372538-B21
NOTE: For Smart Array P600 Controller only.	
NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:	
http://h18000.www1.hp.com/products/quickspecs/12460_div/12460_div.HTML (Smart Array E200 Controller)	
http://h18000.www1.hp.com/products/quickspecs/12400_div/12400_div.HTML (Smart Array P400 Controller)	
http://h18000.www1.hp.com/products/quickspecs/12247_div/12247_div.HTML (Smart Array P600 Controller)	
SAS HBA	
HP SC44Ge Host Bus Adapter	416096-B21
HP 8 Internal Port SAS HBA with RAID	347786-B21
NOTE: Please see the HBA QuickSpecs for additional information:	
http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html (SC44Ge HBA)	
http://h18004.www1.hp.com/products/quickspecs/12332_div/12332_div.html (8 Internal Port SAS HBA)	
SATA Controller	
HP 6-port SATA RAID Controller	372953-B21
NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations.	
NOTE: Please see the following QuickSpecs for additional information:	
http://h18004.www1.hp.com/products/quickspecs/12091_div/12091_div.html (6-port SATA RAID Controller)	
NOTE: In compliance with the European Union's Reduction of Hazardous Substances (RoHS) initiative, the HP 6-port SATA RAID Controller will not be installed in ProLiant ML310 G3 servers sold on or after July 1, 2006. Installation of this option into the ProLiant ML310 G3 would create a non-compliant server configuration.	

Options

Communications	HP NC110T PCI Express Gigabit Server Adapter	434905-B21
	HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter	367132-B21
	HP NC340T PCI-X 4-port 1000T Gigabit Server Adapter	391661-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	NOTE: When either the standard NC7761 or the NC1020 is teamed with other HP NICs, Jumbo Frames and LSO features are automatically disabled.	
	2006 Agere PCI high-speed international soft modem	EK694AA

Tape Drives

NOTE: For the complete listing of Tape Drive offerings for this server, please visit: <http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>

For recommended tape drive offerings for this ProLiant server see the following:

USB Tape Drives

HP StorageWorks DAT 40 USB Internal Tape Drive (Carbonite)	DW022A
HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite)	DW026A

Internal and Rack-Mount Ultrium Tape Drives

HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite)	DW064A
HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite)	DW016A
HP StorageWorks 1U Rack-mount kit with one Ultrium 448 (Carbonite)	DW028B

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_div/11739_div.html
(Worldwide)

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>.

Internal DAT Drives

HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)	Q1522B
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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://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html
(Worldwide)

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>.

Rack-Mount Tape Drive Enclosures

HP StorageWorks 1U SCSI Rack-Mount kit	A7445B
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NOTE: The 1U Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, Ultrium 448 and Ultrium 920 tape drives.

HP StorageWorks 1U USB Rack-Mount Kit	A8007A
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NOTE: The 1U USB Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the DAT 24 USB, DAT 40 USB and DAT 72 USB tape drives.

Options

HP StorageWorks 3U Rack-mount kit 274338-B22

NOTE: The 3U Rack-mount Kit can support up to (2) full-height or (4) half-height tape drives and compatible with multiple LVD SCSI tape drives including DAT 40, DAT 72, DLT VS160, SDLT 320, SDLT 600, Ultrium 232, Ultrium 460, Ultrium 448, Ultrium 920 and Ultrium 960 tape 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)

Tape Autoloaders

HP StorageWorks DAT Autoloader

HP StorageWorks DAT 72x10 tape autoloader AE313A

HP StorageWorks 1/8 Tape Autoloader

HP StorageWorks 1/8 Ultrium 920 G2 Tape Autoloader AH165A

HP StorageWorks 1/8 Ultrium 448 G2 Tape Autoloader AH164A

HP StorageWorks 1/8 Ultrium 232 G2 Tape Autoloader AH163A

HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit AH166A

NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions

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

Tape Libraries

HP StorageWorks MSL2024 Tape Library

HP StorageWorks MSL2024 1 Ultrium 960 Drive Library AG115A

HP StorageWorks MSL2024 1 Ultrium 960 4GB FC Drive Library AG326B

HP StorageWorks MSL2024 1 Ultrium 920 Drive Library AH169A

HP StorageWorks MSL2024 2 Ultrium 920 Drive Library AH170A

HP StorageWorks MSL2024 1 Ultrium 448 Drive Library AG116A

HP StorageWorks MSL2024 2 Ultrium 448 Drive Library AG117A

HP StorageWorks MSL4048 Tape Library

HP StorageWorks MSL4048 1 Ultrium 448 Drive Library AG320A

HP StorageWorks MSL4048 2 Ultrium 448 Drive Library AG321A

HP StorageWorks MSL4048 1 Ultrium 920 Drive Library AH171A

HP StorageWorks MSL4048 2 Ultrium 920 Drive Library AH172A

HP StorageWorks MSL4048 1 Ultrium 960 Drive Library AG322A

HP StorageWorks MSL4048 1 Ultrium 960 4GB FC Drive Library AG324B

HP StorageWorks MSL4048 2 Ultrium 960 Drive Library AG323A

HP StorageWorks MSL4048 2 Ultrium 960 4GB FC Drive Library AG325B

HP StorageWorks MSL6000 Tape Library

Ultrium 960 technology

HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library AD606B

HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library AD608B

HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library AD607B

HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library AD609B

Ultrium 460 technology

Options

HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library	AD598B
HP StorageWorks MSL6030 1 Ultrium 460 Dr FC Library	AD600B
HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library	AD599B
HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library	AD601B

NOTE: Please reference the MSL2024, MSL4048, and MSL6000 Tape Library QuickSpecs at <http://www.hp.com/go/automation> for additional information needed to create a complete solution; reference current compatibility information at <http://www.hp.com/go/ebs>.

HP Data Protector Express Software	HP DP Express Backup Server Upgrade for ProLiant Software	BB117AP
	HP DP Express Package for Microsoft Small Business Server	BB118AA

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

NOTE: To obtain a free licensed copy of HP Data Protector Express for ProLiant edition software, please visit the "Protect Your Data" link accessible from your ProLiant server's System Management Homepage (SMH) software (SmartStart 7.5 or later).

Uninterruptible Power Systems – Tower Supply	HP T500 UPS 120 V (US)	361475-001
	HP T750 UPS, Low Voltage (NA/JPN)	378439-D71
	HP T750 UPS, High Voltage (INTL)	378439-B31
	HP, T1000 UPS NA	AF403A
	HP, T1000 UPS JPN	AF404A
	HP, T1000 UPS INTL	AF405A
	HP, T1500 UPS NA	AF406A
	HP, T1500 UPS JPN	AF407A
	HP, T1500 UPS INTL	AF408A
	HP, R/T 2200 UPS NA	AF409A
	HP, R/T 2200 UPS JPN	AF410A
	HP, R/T 2200 UPS INTL	AF411A

Rack Kits	ProLiant Rack Enabling Kit (RoHS Compliant)	417705-B21
	NOTE: This is a 5U Rack Enabling Kit that supports the HP ProLiant ML110 and HP ProLiant ML310 servers. 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

Options

USB Options	USB Optical Scroll Mouse (Carbonite)	DD441B
	HP USB 04 Standard Keyboard	DT528A#xxx
	USB 2.0 4-port HUB	DG954A
	HP 1GB Drive Key II- USB 2.0 Flash Drive	AG382AA
	HP 512MB DriveKey II- USB Flash Drive	ED516AA

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, Electronic	U4445E
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, Electronic	U4447E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4448E

Installation & Start-up Services

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, 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, Electronic	U4458E
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Support Plus 24

Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	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, 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, Electronic	U8328E

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

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

HP ProLiant ML310 G3 Models

Standard Memory

All HP ProLiant ML310 G3 models ship with unbuffered, Advanced ECC PC2-4200 DDR2 SDRAM running at 533MHz.

Standard models include a single 512 MB DIMM. Factory Integrated Models include the memory capacity of your choice.

Standard Memory Replaced with Optional Memory

Up to 8 GB memory is available with the optional installation of four 2 GB PC2-4200 Unbuffered Advanced ECC DDR2 SDRAM DIMM kits.

DIMM upgrades do not need to be installed in pairs although installation of pairs (an equal size DIMM for each channel) provides the best performance. The BIOS will detect the DIMM population and initialize 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, providing the highest performance.

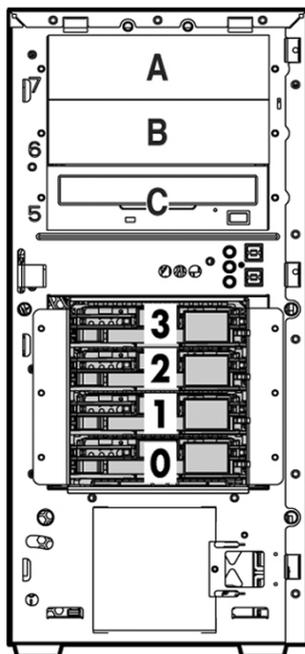
The first DIMM should be installed in Socket 1. A DIMM should not be installed in Socket 2 without a DIMM in Socket 1. Likewise a DIMM should not be installed in Socket 4 without a DIMM in Socket 3. A DIMM need not be installed in Socket 2 in order to install a DIMM in Socket 3.

Table 3-1 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		
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
1 GB	1 GB	2 GB	2 GB	6 GB	Dual-channel interleaved
2 GB	2 GB	2 GB	2 GB	8 GB	Dual-channel interleaved

Storage



A, B Removable Media Bays (1.6" each)

C 48x IDE (ATAPI) CD-ROM

0, 1, 2, 3 Four Hot Plug Hard 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

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

	Quantity Supported	Position Supported	Controller
300GB U320 10K	Up to 4	0-3	Single Channel Ultra320 SCSI Adapter (SCSI Models)
146GB U320 10K			Smart Array 6404/256 Controller
72GB U320 10K			Smart Array 6402/256 Controller
300GB U320 15K			Smart Array 641 Controller
146GB U320 15K			Smart Array 642 Controller
72GB U320 15K			
36GB U320 15K			

Hot Plug SAS - (Hot Plug SATA/SAS Models Only)

	Quantity Supported	Position Supported	Controller
300GB 3G SAS 3.5" 15K SP	Up to 4	0-3	Smart Array P600/256 BBWC Controller HP 8 Internal Port SAS HBA with RAID
146GB 3G SAS 3.5" 15K SP			
72GB 3G SAS 3.5" 15K SP			
36GB 3G SAS 3.5" 15K SP			

NOTE: Use of SAS hard drives in SATA/SAS models requires installation of the controllers listed above.

Hot Plug SATA - (Hot Plug SATA/SAS Models Only)

	Quantity Supported	Position Supported	Controller
750GB 1.5G SATA 7.2K	Up to 4	0-3	Integrated four port SATA Controller
500GB 1.5G SATA 7.2K			HP 6-port SATA RAID controller
250GB 1.5G SATA 7.2K			Smart Array P600/256 BBWC Controller
160GB 1.5G SATA 7.2K			HP 8 Internal Port SAS HBA with RAID
80GB 1.5G SATA 7.2K			

NOTE: Hot plug capability and drive LED status support requires installation of the HP 6-port SATA RAID Controller, the Smart Array P600 Controller, or a SAS HBA.

NOTE: The HP 4-port SATA/SAS target fan cable (P/N 389653-B21) is required when the HP 6-port SATA RAID controller (P/N 372953-B21) is installed.

Tape Drives, Tape Autoloaders & Tape Libraries

Storage

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

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders and Tape Libraries listed below, please see the following:
<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>

For recommended tape drive offerings for this ProLiant server see the following:

	Position Supported	Controller	Controller Part Number
HP StorageWorks Tape Drives, Internal DAT 24 USB DAT 40 USB DAT 72 USB	A or B	USB 2.0 Port	N/A
HP StorageWorks Tape Drives, External DAT 24 USB DAT 40 USB DAT 72 USB	External	USB 2.0 Port	N/A
HP StorageWorks Tape Drives, Internal Ultrium 232 Ultrium 448 Ultrium 920 DAT 40 DAT 72 DLT VS160	A or B	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21
HP StorageWorks Tape Drives, Internal Ultrium 460 Ultrium 960 SDLT 600	A and B	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21
HP StorageWorks Tape Drives, External Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 920 Ultrium 960 DAT 40 DAT 72 DLT VS160 SDLT 600	External	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21

Storage

<p>HP StorageWorks Autoloaders, External DAT 72x10 Autoloader 1/8 G2 Tape Autoloader</p>	<p>External</p>	<p>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2</p>	<p>374654-B21</p>
<p>HP StorageWorks SCSI Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit 3U Rack-Mount Kit</p>	<p>External</p>	<p>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2</p>	<p>374654-B21</p>
<p>HP StorageWorks USB Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit</p>		<p>USB 2.0 Port</p>	<p>N/A</p>
<p>HP StorageWorks Tape Libraries, External MSL2024 (Ultrium 448, Ultrium 920 and 960-based) MSL4048 (Ultrium 448, Ultrium 920 and 960-based) MSL6000 (Ultrium 960 and 460-based) MSL6000 (SDLT 600-based)</p>		<p>Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information.</p>	<p>N/A</p>

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. To use the channel for external connection, order an internal-to-external SCSI cable option kit (PN 159547-B22 or 333370-B21).		
	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	

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

Technical Specifications

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)

Embedded NC320i PCIe Gigabit Server Adapter	Network Interface	10Base-T/100Base-TX/1000Base-TX		
	Compatibility	IEEE 802.3 10Base-T		
		IEEE 802.3ab 1000Base-T		
		IEEE 802.3u 100Base-TX		
	Data Transfer Method	Single lane (x1), 100MHz PCI Express Reference Clock		
	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 (SATA Models only)	Drives Supported	Up to 4 SATA hard drives (1 drive/channel)
	Channels	4
	Storage Capacity	2 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)
	RAID levels supported	RAID 0, RAID 1

Technical Specifications

Single Channel Ultra320 SCSI Adapter (SCSI Models only)	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	Ultra320, Wide Ultra3, Wide Ultra2, Wide Ultra SCSI-3, Fast-Wide SCSI-2, and 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: To implement an external SCSI connection, install an optional controller or internal-to-external SCSI option kit (part number 159547-B22 for HD68 or 333370-B21 for VHDCI).

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.