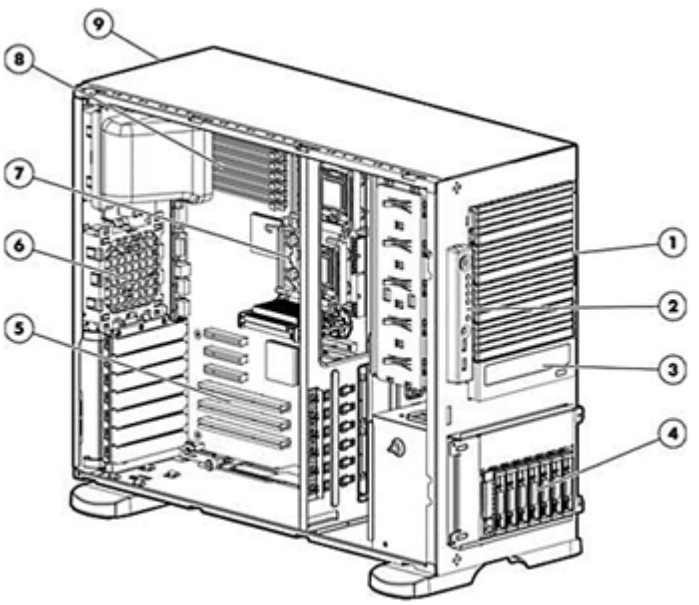
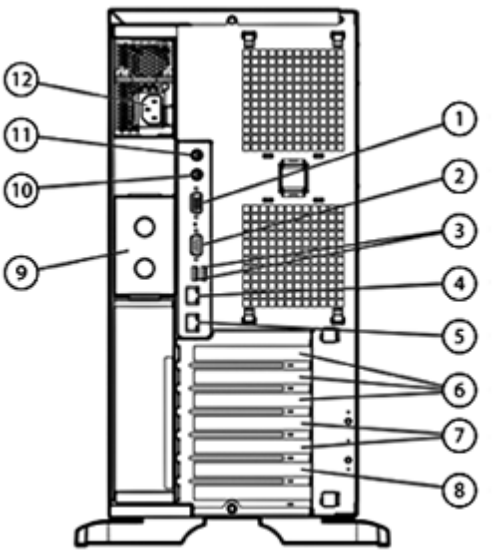
Overview





Front View:

1. Five removable media bays
2. Front display panel; includes power button, UID, two USB 2.0 ports, and system status LED's
3. CD-ROM Drive (Dual-Core models), DVD-ROM Drive (Quad-Core models)
4. Eight SFF (2.5") (shown) or six LFF (3.5") SAS or SATA Hot Plug drive bays
5. Six expansion slots (three PCI Express, three PCI-X)
6. Two system fans standard with support for optional redundant system fans
7. Support for two Intel Dual-Core or Quad-Core Xeon 5000 sequence processors
8. Eight PC2-5300 FB-DIMM (DDR2 667) memory sockets
9. Single Hot-Plug power supply standard, optional second redundant supply for availability

Rear View:

1. Monitor port
2. Serial port
3. USB ports
4. Integrated Lights-Out 2 (iLO2) port
5. Network port
6. PCI Express x4
7. PCI-X 64/100
8. PCI-X 64/133
9. Access to add 2nd redundant power supply
10. Mouse port
11. Keyboard port
12. Power

What's New

- Intel's latest Quad-Core Xeon 5300 series processors with 8MB (2x4MB) L2 cache and up to 1333 MHz FSB
- Enhanced memory support on Quad-Core models for a maximum of 32 GB of FB-DIMM memory
- PCI-X expander cage option kit provides 2 additional full length 64-bit PCI-X slots from a single PCI Express slot
- Support for the expanded portfolio of Hot Plug 2.5" (SFF) and 3.5" (LFF) SAS and SATA hard disks.

At A Glance

Building on a tradition of excellence, the HP ProLiant family introduces the fifth generation HP ProLiant ML350 server. The HP ProLiant ML350 G5 server provides Multi-Core performance, enterprise level management, and highly available redundant options in a modular server form factor. New for this generation is a smaller and quieter chassis, embedded Smart Array E200i Controller and 5 media bays.

Overview

- Processors:
  - Dual-Core and Quad-Core Intel® Xeon™ 5000 sequence processors with up to 8 MB Level 2 cache for blazing performance; systems support up to 2 processors
  - 1333/1066/667 MHz front side bus (FSB)
  - Intel® 5000Z chipset
- Memory:
  - Eight PC2-5300 FB-DIMMs (DDR2 667) sockets with Online-Spare support for cost-effective memory configuration and expansion
  - Up to 16 GB of memory, supported by (8) slots of PC2-5300 Fully Buffered DIMMs (DDR2-667); 4:1 interleaving; and online spare on Dual-Core Models (5000 and 5100 series)
  - Up to 32 GB of memory supported on Quad-Core (5300 series) models
- Storage Controllers:
  - Entry Models: HP Smart Array E200i/64MB Controller (integrated SAS/SATA Hot-Plug Controller with RAID 0/1/1+0 support)
    - 128MB BBWC optional upgrade kit for RAID 5 support also available
  - Base Models: HP Smart Array E200i/128 BBWC Controller (RAID 0/1/1+0/5)
- Internal Drive Support:
  - Up to eight SFF (2.5") or six LFF (3.5") Hot Plug Serial Attached SCSI (SAS) or Serial-ATA (SATA) hard drives
  - Maximum of 4.50TB of internal storage capacity (using Hot-Plug SATA drives)
- Network Controller:
  - Embedded NC373i Multifunction Gigabit Network Adapter with TCP/IP Offload Engine, including support for Accelerated iSCSI through an optional Licensing Kit
- Expansion Slots:
  - Six total expansion slots
  - One 64-bit/133-MHz PCI-X; two 64-bit/100-MHz PCI-X; three x8 PCI Express (x4 speed)
  - Optional PCI-X Expander provides additional two 64-bit/100-MHz PCI-X slots by converting a single PCI Express slot
  - A single x8 PCI Express slot with x8 bus speed can be achieved by attaching the x4/x8 PCIE Bus Expander option kit. (Please see the chart and notes in the Expansion Slots under Standard Features below for more details)
- USB Ports:
  - Six USB 2.0 ports: (2) front; (2) rear; (2) internal
- Redundancy:
  - Optional Hot plug redundant power supplies
  - Support for optional redundant system fans
- Management:
  - Integrated Lights-Out 2 featuring Integrated Remote Console with KVM over IP performance over shared network access
  - Support for ROM-Based Setup Utility (RBSU) and redundant ROM
  - Systems Insight Manager, SmartStart, and Automatic Server Recovery 2 (ASR-2)
  - HP Power Metre and Power Regulator for ProLiant, delivering integrated power consumption monitoring and server level, policy based power management for industry leading energy efficiency and savings on system power and cooling costs
- Deployment/Serviceability:
  - Optional parallel and second serial port available without using a PCI slot
  - Tool-free chassis entry and component access
  - Tool-free motherboard removal
  - Universal rail solution supporting both square and round hole rack environments
- Warranty:
  - Protected by HP Services and a worldwide network of resellers and service providers. Three-year Next Business Day, on-site limited global warranty. Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory, and SAS hard drives. SATA hard drives have a one-year warranty.

Standard Features

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: http://h71028.www7.hp.com/ERC/downloads/4AA0-6362ENW.pdf.

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.

Processor One of the following depending on Model	Quad-Core Intel Xeon Processor X5355 (2.66 GHz, 120 Watts, 1333 FSB) NOTE: Available via Configuration To Order only. Quad-Core Intel Xeon Processor E5345 (2.33 GHz, 80 Watts, 1333 FSB) NOTE: Available via Configuration To Order only. Quad-Core Intel Xeon Processor E5335 (2.00 GHz, 80 Watts, 1333 FSB) NOTE: Available via Configuration To Order only. Dual-Core Intel Xeon Processor 5160 (3.00 GHz, 80 Watts, 1333 FSB) NOTE: Available via Configuration To Order only. Dual-Core Intel Xeon Processor 5150 (2.66 GHz, 65 Watts, 1333 FSB) NOTE: Available via Configuration To Order only. Dual-Core Intel Xeon Processor 5110 (1.60 GHz, 65 Watts, 1066 FSB) NOTE: Available via Configuration To Order only. Quad-Core Intel Xeon Processor E5320 (1.86 GHz, 80 Watts, 1066 FSB) Quad-Core Intel Xeon Processor E5310 (1.60 GHz, 80 Watts, 1066 FSB) Dual-Core Intel Xeon Processor 5140 (2.33 GHz, 65 Watts, 1333 FSB) Dual-Core Intel Xeon Processor 5130 (2.00 GHz, 65 Watts, 1333 FSB) Dual-Core Intel Xeon Processor 5120 (1.86 GHz, 65 Watts, 1066 FSB) Dual-Core Intel Xeon Processor 5080 (3.73 GHz, 130 Watts, 1066 FSB) Dual-Core Intel Xeon Processor 5060 (3.2 GHz, 130 Watts, 1066 FSB) Dual-Core Intel Xeon Processor 5050 (3.0 GHz, 95 Watts, 667 FSB)
Cache Memory One of the following depending on Model	4MB (2 x 2MB) Level 2 cache (5000 series) 4MB (1 x 4MB) Level 2 cache (5100 series) 8MB (2 x 4MB) Level 2 cache (5300 series)
Upgradeability	Upgradeable to dual processing (8 or 4 cores) (Please contact your regional sales support to determine quad core upgradeability. Some of the earlier shipping models may not support this upgrade)
Chipset	Intel 5000Z Chipset NOTE: For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/.
Memory Protection	Online spare Advanced ECC

Standard Features

Memory
One of the following depending on model

Type	PC2-5300 Fully Buffered DIMMs (DDR2-667)
Standard (Entry Models)	512 MB (1 x 512 MB)
Standard (Base Models and Entry Quad-Core models	1 GB (2 x 512 MB)
Maximum (Dual-Core Models)	16 GB (8 x 2 GB)
Maximum (Quad-Core Models)	32 GB (8 x 4 GB)

Network Controller

Embedded NC373i Multifunction Gigabit Network Adapter with TCP/IP Offload Engine, including support for Accelerated iSCSI through an optional Licensing Kit

Expansion Slots

Slot Number	Bus Speed/Connector	Maximum Card Length	Bus Number*	Device Number**	Hot Plug	PCI Voltage
6****	PCI Express x4/x8	12.28"	15	0	no	N/A
5	PCI Express x4/x8	12.28"	6	0	no	N/A
4***	PCI Express x4/x8	12.28"	9	0	no	N/A
3	64-bit/100MHz PCI-X	12.28"	12	2	no	3.3 Volt
2	64-bit/100MHz PCI-X	12.28"	12	1	no	3.3 Volt
1	64-bit/133MHz PCI-X	12.28"	20	1	no	3.3 Volt

*NOTE: Bus number listed reflects the default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
**NOTE: Slots are enumerated differently based on operating system. Microsoft's operating systems enumerate from lowest to highest Device ID by bus (starting with the lowest bus).
***NOTE: A single PCI Express slot with x8 Bus Speed can be achieved by attaching the x4/x8 PCIE Bus Expander option kit (403724-B21) to slot number 4. The installation of this kit uses both slots 4 and 5 to create the single x8 speed PCI Express slot.
****NOTE: The optional PCI-X expander can utilize slot 6 to provide an additional two (2) 64-Bit PCI-X full length, full height slots. Please see "Server Specific Options" below for more information. (435670-B21)
NOTE: Slots 1-3 can accept 3.3V or universal keyed PCI cards.

Storage Controller

Entry Models	HP Smart Array E200i/64MB Controller
Base Models	HP Smart Array E200i/128 BBWC Controller

NOTE: Supports RAID 0/1/1+0 with 64MB of Cache, upgradeable to 128MB with BBWC for RAID 5 support.

Storage

Diskette Drives	None included standard
Optical Drive	Dual-Core: 48x IDE CD-ROM drive Quad-Core: 16x DVD-ROM drive
Hard Drives	None included standard

Standard Features

Maximum Internal Storage	Hot Plug LFF (3.5") Serial ATA (SATA)	4.50TB	6 x 750GB
	Hot Plug LFF (3.5") Serial Attached SCSI (SAS)	1.80TB	6 x 300GB
	Hot Plug SFF (2.5") SATA	960GB	8 x 120GB
	Hot Plug SFF (2.5") SAS	1.168TB	8 x 146GB

Interfaces	Parallel	Optional parallel port available
	Serial	1 (optional 2nd serial port available)
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	Network RJ-45	2 (1 dedicated for iLO 2)
	USB 2.0 Ports	6 (2 front, 2 rear, 2 internal) 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 ES1000 1280 x 1024 x 16M color (32MB video standard)

Form Factor Tower or Rack (5U)

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

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

ProLiant Essentials Foundation Pack Software	HP Systems Insight Manager	HP Systems Insight Manager (HP SIM) 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 simplifies server setup by providing a quick, easy way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at http://www.hp.com/servers/manage. Minimum SmartStart version supported: 7.60
Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides automatic delivery of software and driver change notifications for ProLiant products. Sign up at http://www.hp.com/go/subscriberschoice and customize your profile to receive alerts on updates as they become available.
ROMPaq, support software, and configuration utilities	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options Available in SmartStart or downloadable from the Software and Drivers download pages at http://www.hp.com/go/support.
Insight Diagnostics Online Edition	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP at your fingertips Available in SmartStart.
Optional ProLiant Essentials Value Packs	Optional software offerings that extend the functionality of an Adaptive Infrastructure to address specific business problems and needs: • Insight Control Environment - is based on HP Systems Insight Manager and ProLiant Essentials software, and brings the value of Insight Control to ProLiant customers by delivering comprehensive health and performance monitoring, remote control, vulnerability scanning and patch management as well as flexible deployment and power management through an integrated installation package and streamlined licensing. For more information, visit: http://www.hp.com/go/ice • Accelerated iSCSI Pack - enables the embedded Multifunction network controller to serve as both a NIC and an iSCSI HBA providing access to SAN storage over the same connection used for networking. Processing of the protocol stack is offloaded to the NIC reducing CPU utilization and greatly improving the speed with which the requests are processed and sent to the network. • Rapid Deployment Pack (RDP) is an automated deployment and provisioning solution for all ProLiant servers. RDP includes the ProLiant

Integration Module featuring ProLiant server pre-configured events for OS installation, and optimized software drivers, firmware and management agents. Every RDP disc includes 7-day, 10-node trial licenses for evaluation purposes. RDP requires a license for each server deployed and is available for purchase with HP servers. For more information, visit: http://www.hp.com/servers/rdp.

- Server Migration Pack - P2P Edition: Upgrading or replacing your existing server? Effortlessly transition to new servers with automated, accurate and affordable migration of OS, application and data.
- Performance Management Pack (offered exclusively through the Insight Control suites) - 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.

Optional Remote Management Packs

- Integrated Lights-Out Advanced Pack - upgrades the iLO 2 processor with comprehensive remote control including Virtual KVM remote graphical console, enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication).
- Integrated Lights-Out Select Pack - upgrades the iLO 2 processor with enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication) for servers managed using remote consoles available in iLO 2 Standard and iLO 2 Standard Blade Edition.
- Insight Power Manager (IPM) - upgrades the single-server remote management capabilities of iLO Select/Advanced to include centralized reporting and policy-based management of power consumption and thermal output provided by the Insight Power Manager. IPM unifies all of this functionality within a single user interface - HP Systems Insight Manager.

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

Industry Standard Compliance

ACPI V2.0 Compliant
PCI 2.2 Compliant
PXE Support
WOL Support
PCI-X 1.0a Compliant
Novell Certified
Microsoft® Logo certifications
USB 2.0

Availability

Optional Hot-Plug, Redundant Power supply
Online-Spare Memory
Optional Dual Redundant System Fans

Standard Features

Remote Management

Integrated Lights-Out (iLO 2) Management 2

- Virtual Text Remote Console (pre-OS only)
- Remote Serial Console
- Virtual Power Button Control
- Virtual Unit ID control
- Integrated Remote Console (ActiveX Control client)
- Dedicated & full function shared network connectivity with VLAN
- Embedded system health
- Present power consumption
- Browser, command line and scripted access
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell security (SSH)
- Advanced Encryption Standard (AES)/Triple Data Encryption Standard (3DES)
- OS independent hardware health status
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privilege

System Management

HP Systems Insight Manager
SmartStart
Redundant ROM
System Firmware Update
ROMPaq
ProLiant RBSU (ROM-Based Setup Utility)
Automatic Server Recovery-2 (ASR-2)
Dynamic Sector Repairing (with Smart Array Controller)
Drive Parameter Tracking (with Smart Array Controller)
Pre-Failure Warranty (covers processors, memory, and SAS hard drives)

Security

Power-on password
Setup password
Diskette boot control
Parallel and serial interface control
Disk configuration lock
Power switch security

Server Power Cords

ProLiant ML servers in a rack-mount configuration no longer ship standard with NEMA power cords that allow connection to 110V US wall outlets in a home or office. These servers are primarily connected to PDU's in data centre racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant ML rack-mount server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately. The 12' cord (AF556A) or 6' cord (187335-001) can be purchased online at HP.COM. In a tower configuration, the servers ship standard with a 6' country specific NEMA power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific sku. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix.

Standard Features

UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf.
Power Supply	800 Watt-CE Mark Compliant Hot Plug Power Supply (1000 Watt high line) Optional second Power Supply provides redundant capability NOTE: Please see the "Power Specifications" section later in this document for low line and high line requirements.
System Fans	2 fans ship standard, dual redundant fans are optional, 4 fans total supported (does not include power supply or processor heat sink fans)
Required Cabling	For required cabling information, refer to the HP ProLiant ML350 G5 cabling matrix at http://www.hp.com/servers/proliantML350. NOTE: Please see the "Storage" section of this QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives.
OS Support	Microsoft Windows Server 2003/R2 (Standard, Web, and Enterprise Editions) Microsoft Windows Small Business Server 2003 Microsoft Windows 2000 Server and Advanced Server Novell NetWare 6.5/Open Enterprise Server Red Hat Enterprise Linux SUSE Linux Enterprise Server OpenServer 5.0.7/6.0 UnixWare 7.1.3/7.1.4 NOTE: For a complete and up-to-date listing of supported operating systems please visit our OS Support Matrix at: http://www.hp.com/go/supportos. NOTE: For more Linux OS support & certification information, please visit the ProLiant & BladeSystem Server Linux matrix http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html NOTE: Optional hardware may be required to support some operating systems. NOTE: For information on how to buy server operating systems from HP please visit the OS product site at: http://h18004.www1.hp.com/products/servers/software/OEM.html NOTE: For an up-to-date listing of the latest drivers available for the HP ProLiant ML350 G5, please see: http://www.compaq.com/support/files/server/us/index.html. NOTE: For more information on VMware support, please visit the VMware Server Support Matrix at: http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html.
Installation of Server into Telco Racks	Support for all 2-post Telco racks requires the use of the HP ProLiant ML350 G5 rack kit and an additional option kit from Rack Solutions. http://www.racksolutions.com/hp.

Standard Features

Factory Express Portfolio for Servers and Storage

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

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

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

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 Centre or an Authorized Partner for assistance.

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 Labour, 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 offsite, 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.

- *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

HP ML350 G5 Entry Models Tower Quad-Core Models HP ML350T05 E5310 LFF 440188-001 Dual-Core Models HP ML350T05 5130 LFF 416893-001 HP ML350T05 5120 LFF 416892-001 Rack Dual-Core Models HP ML350R05 5130 LFF 416894-001	Processor(s) One of the following depending on Model	(1) Quad-Core Intel Xeon E5310 Processor (1.6 GHz, 80 Watts, 1066 FSB) (1) Dual-Core Intel Xeon 5130 Processor (2.0GHz, 65 Watts, 1333 FSB) (1) Dual-Core Intel Xeon 5120 Processor (1.86 GHz, 65 Watts, 1066 FSB)
	Cache Memory	4MB (1 x 4MB) Level 2 cache - 5100 Series
	Memory One of the following depending on Model	Dual-Core: 512 MB (1 x 512 MB) Quad-Core: 1GB (2x512MB) PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/64 Controller (RAID 0/1/1+0)
	Hard Drive	None Ship Standard; (0/6 LFF)
	Internal Storage	1.80TB LFF SAS; 4.50TB LFF SATA
	Optical Drive One of the following depending on Mode	Dual-Core: 48x CD-ROM standard Quad-Core: 16x DVD-ROM standard
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	800-Watt CE-mark compliant Hot-Plug power supply Optional second power supply provides redundant operation
	Fans	2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)
	Form Factor One of the following depending on Model	Tower Rack (5U), (8.75 in/22.25 cm)

HP ML350 G5 Base Models Tower Quad-Core Models HP ML350T05 E5320 SFF 438730-001 HP ML350T05 E5310 SFF 434717-001 Dual-Core Models HP ML350T05 5140 SFF 417605-001 HP ML350T05 5130 SFF 417536-001 Rack Quad-Core Models HP ML350R05 E5320 SFF 440189-001 Dual-Core Models HP ML350R05 5140 SFF	Processor(s) One of the following depending on Model	(1) Quad-Core Intel Xeon E5320 Processor (1.86 GHz, 80 Watts, 1066 FSB) (1) Quad-Core Intel Xeon E5310 Processor (1.6 GHz, 80 Watts, 1066 FSB) (1) Dual-Core Intel Xeon 5140 Processor (2.33 GHz, 65 Watts, 1333 FSB) (1) Dual-Core Intel Xeon 5130 Processor (2.0 GHz, 65 Watts, 1333 FSB)
	Cache Memory One of the following depending on Model	8MB (2 x 4MB) Level 2 cache - 5300 Series 4MB (1 x 4MB) Level 2 cache - 5100 Series
	Memory	1 GB (2 x 512 MB) Standard; PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/128 BBWC Controller (RAID 0/1/1+0/5)
	Hard Drive	None Ship Standard; (0/8 SFF)
	Internal Storage	1.168TB SFF SAS; 480GB SFF SATA
	Optical Drive One of the following depending on Model	Dual-Core: 48x CD-ROM standard Quad-Core: 16x DVD-ROM standard
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	800-Watt CE-mark compliant Hot-Plug power supply Optional second power supply provides redundant operation
	Fans	2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)

Models

417538-001	Form Factor	Tower
HP ML350R05 5130 SFF	One of the following	Rack (5U), (8.75 in/22.25 cm)
417537-001	depending on Model	

Smart Buys

The ProLiant Smart Buy program offers a collection of promotional server and option products that are configured with SMB in mind, offered at discounted prices, and positioned for quick delivery. Smart Buy server offers are available for a limited time only.

For a full listing of ProLiant Smart Buys available for all server families, visit ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf.

S-Buy ML350 T05 5120 LFF 419520-005	**Processor(s)**	(1) Dual-Core Intel Xeon 5120 Processor (1.86 GHz, 65 Watts, 1066 FSB)
	Cache Memory	4MB (1 x 4MB) Level 2 cache
	Memory	1 GB (2 x 512 MB) Standard; PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/64 MB Controller (RAID 0/1/1+0)
	Hard Drive	None Ship Standard; (0/6 LFF)
	Internal Storage	1.80TB LFF SAS; 4.50TB LFF SATA
	Optical Drive	CD-RW/DVD-ROM Combo
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	800-Watt CE-mark compliant Hot-Plug power supply Optional second power supply provides redundant operation
	Fans	2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)
	Form Factor	Tower

S-Buy ML350 T05 5130 RPS LFF 419521-005	**Processor(s)**	(1) Dual-Core Intel Xeon 5130 Processor (2.0GHz, 65 Watts, 1333 FSB)
	Cache Memory	4MB (1 x 4MB) Level 2 cache
	Memory	1 GB (2 x 512 MB) Standard; PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/128 MB BBWC Controller (RAID 0/1/1+0/5)
	Hard Drive	None Ship Standard; (0/6 LFF)
	Internal Storage	1.80TB LFF SAS; 4.50TB LFF SATA
	Optical Drive	CD-RW/DVD-ROM Combo
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	(2) 800-Watt CE-mark compliant Hot-Plug, redundant power supplies
	Fans	2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)
	Form Factor	Tower

Smart Buys

S-Buy ML350 T05 5130 RPS SFF 419522-005	Processor(s)	(1) Dual-Core Intel Xeon 5130 Processor (2.0GHz, 65 Watts, 1333 FSB)
	Cache Memory	4MB (1 x 4MB) Level 2 cache
	Memory	1 GB (2 x 512 MB) Standard; PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/128 MB BBWC Controller (RAID 0/1/1+0/5)
	Hard Drive	None Ship Standard; (0/8 SFF)
	Internal Storage	1.168TB SFF SAS; 480GB SFF SATA
	Optical Drive	CD-RW/DVD-ROM Combo
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	(2) 800-Watt CE-mark compliant Hot-Plug, redundant power supplies
	Fans	(4) redundant fans ship standard (does not include power supply or processor heatsink fans)
	Form Factor	Tower

S-Buy ML350T05 E5335 LFF 470064-509	Processor(s)	(1) Quad-Core Intel Xeon E5335 Processor (2.0GHz, 80 Watts, 1333 FSB)
	Cache Memory	8MB (2 x 4MB) Level 2 cache
	Memory	1 GB (2 x 512 MB) Standard; PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/128 MB BBWC Controller (RAID 0/1/1+0/5)
	Hard Drive	None Ship Standard; (0/6 LFF)
	Internal Storage	1.80TB LFF SAS; 4.50TB LFF SATA
	Optical Drive	DVD±R/RW 16X
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	800-Watt CE-mark compliant Hot-Plug power supply Optional second power supply provides redundant operation
	Fans	2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)
	Form Factor	Tower

S-Buy ML350T05 E5335 SFF 470064-510	Processor(s)	(1) Quad-Core Intel Xeon E5335 Processor (2.0GHz, 80 Watts, 1333 FSB)
	Cache Memory	8MB (2 x 4MB) Level 2 cache
	Memory	1 GB (2 x 512 MB) Standard; PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/128 MB BBWC Controller (RAID 0/1/1+0/5)
	Hard Drive	None Ship Standard; (0/8 SFF)
	Internal Storage	1.168TB SFF SAS; 480GB SFF SATA
	Optical Drive	DVD±R/RW 16X
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	(2) 800-Watt CE-mark compliant Hot-Plug, redundant power supplies
	Fans	2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)
	Form Factor	Tower

Smart Buys

S-Buy ML350T05 5130 LFF SBS AH522A	**Processor(s)**	(1) Dual-Core Intel Xeon 5130 Processor (2.0GHz, 65 Watts, 1333 FSB)
	Cache Memory	4MB (1 x 4MB) Level 2 cache
	Memory	1 GB (2 x 512 MB) Standard; PC2-5300 Fully Buffered DIMMs (DDR2-667)
	Network Controller	Embedded NC373i Multifunction Gigabit Server Adapter
	Storage Controller	Smart Array E200i/64 MB Controller (RAID 0/1/1+0)
	Hard Drive	(2) 72GB 3G SAS 15K 3.5"; (2/6 LFF)
	Operating System	Microsoft Windows Small Business Server 2003 R2 Standard Edition with 5 CALs
	Internal Storage	1.80TB LFF SAS; 4.50TB LFF SATA
	Optical Drive	CD-RW/DVD-ROM Combo
	PCI-Express Slots	Six expansion slots (three PCI Express, three PCI-X)
	Power Supplies	800-Watt CE-mark compliant Hot-Plug power supply Optional second power supply provides redundant operation
	Fans	2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)
	Form Factor	Tower

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: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

Step 1: Base Configuration (choose one of the following configurable models)

Models

ML350 G5 Tower Models

LFF - 3.5" Drives

HP ProLiant ML350G5 LFF SAS/SATA Tower CTO Chassis 412645-B21

Includes:

Embedded NC373i Multifunction Gigabit Server Adapter
Integrated Smart Array E200i Controller
Six Hot-Plug (LFF) SAS/SATA Drive Bays
Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors)
Six USB ports
800W Hot-Plug Power Supply
Tower Form Factor
Keyboard
2-button Mouse

SFF - 2.5" Drives

HP ProLiant ML350G5 SFF SAS/SATA Tower CTO Chassis 395570-B21

Includes:

Embedded NC373i Multifunction Gigabit Server Adapter
Integrated Smart Array E200i Controller
Eight Hot-Plug (SFF) SAS/SATA Drive Bays
Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors)
Six USB ports
800W Hot-Plug Power Supply
Tower Form Factor
Keyboard
2-button Mouse

ML350 G5 Rack Models

LFF - 3.5" Drives

HP ProLiant ML350G5 LFF SAS/SATA Rack CTO Chassis 412644-B21

Includes:

Embedded NC373i Multifunction Gigabit Server Adapter
Integrated Smart Array E200i Controller

Six Hot-Plug (LFF) SAS/SATA Drive Bays
Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors)
Six USB ports
800W Hot-Plug Power Supply
Rack (5U) Form Factor

SFF - 2.5" Drives

HP ProLiant ML350G5 SFF SAS/SATA Rack CTO Chassis	395569-B21

Includes:
Embedded NC373i Multifunction Gigabit Server Adapter
Integrated Smart Array E200i Controller
Eight Hot-Plug (SFF) SAS/SATA Drive Bays
Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors)
Six USB ports
800W Hot-Plug Power Supply
Rack (5U) Form Factor

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

Processors	HP X5355 ML350G5 FIO Kit	436015-L21
	HP E5345 ML350G5 FIO Kit	436013-L21
	HP E5335 ML350G5 FIO Kit	437444-L21
	HP E5320 ML350G5 FIO Kit	435512-L21
	HP E5310 ML350G5 FIO Kit	435513-L21
	HP X5160 ML350G5 FIO Kit	416891-L21
	HP X5150 ML350G5 FIO Kit	416890-L21
	HP X5140 ML350G5 FIO Kit	416889-L21
	HP X5130 ML350G5 FIO Kit	416888-L21
	HP X5120 ML350G5 FIO Kit	416887-L21
	HP X5110 ML350G5 FIO Kit	416886-L21
Base Memory	512 MB FBD PC2-5300 1 x 512 MB Kit	413507-B21
	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21
Smart Array E200i Controller Cache	HP SA E200 64MB Cache FIO Kit NOTE: Select this option for RAID 0/1/1+0	405102-B21
	128-MB Battery-Backed Write Cache (BBWC) NOTE: Select this option for RAID 0/1/1+0/5.	351580-B21

Optical Drive	Floppy Drive ML350/370 G5 Kit	409582-B21
	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	HP 48X CD-ROM ALL (no screws)	384758-B21
	HP DVD±R/RW 16X Half Height	383974-B21
	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21

Step 3: Choose Additional Options for Factory Integration

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

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

HP ProLiant ML350 G5 Unique Options	HP Redundant Fan ML350 G5 Kit	409579-B21
	HP x4/x8 PCI Express Bus Expander NOTE: The HP x4/x8 PCI Express Bus Expander kit converts 2 x4 PCI Express slots into a single x8 PCI Express slot for high performance x8 PCI Express cards	403724-B21
	HP PCI-X Expander Kit (2 x 64-bit 100MHz PCI-X slots) NOTE: The HP PCI-X Expander kit converts a single PCI Express slot (slot 6) into two full height, full length 64-bit 100MHz PCI-X slots NOTE: The HP PCI-X Expander kit can support a maximum of one (1) HP Smart array, HBA, or SCSI PCI-X adapter. Prioritize internal slots for use with PCI-X storage controllers. Please refer to the ML350G5 user guide for additional details.	435670-B21
	HP Tower to Rack Conversion Kit - ML350 G5 Kit NOTE: See "Redundant Options" section below for Hot Plug Redundant Power supplies.	412640-B21
ProLiant Essentials Value Pack Software	**ProLiant Essentials Value Pack**	
	Accelerated iSCSI Pack	
	ProLiant Essentials Accelerated iSCSI Pack, No Media, Single License NOTE: For use with a single NIC port. Contains one license with a unique license activation key and documentation. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12466_ca/12466_ca.HTML	452679-B21
	Insight Control Environment	
	HP Insight Control Environment, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_ca/12631_ca.HTML	452148-B21
	ProLiant Essential RDMA Pack	
	HP ProLiant Essentials RDMA Pack for Embedded Multifunction Gigabit Server Adapters, No Media, 1-Server License NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12573_ca/12573_ca.HTML	452681-B21
	Rapid Deployment Pack	
	ProLiant Essentials Rapid Deployment Pack No Media 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: This license allows 1 server to be deployed and managed via RDP. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_ca/11053_ca.HTML	452151-B21
	Server Migration Pack - P2P	
	ProLiant Essentials Server Migration Pack - P2P Edition, 1- Migration License, - License Only, No Media NOTE: This license allows 1 migration. Contains one license with a unique license activation key and documentation NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12467_ca/12467_ca.HTML	417435-B21
	Remote Management	
	Integrated Lights-Out Advanced Pack	

Options

	Integrated Lights-Out Advanced Pack, No Media ,1 Server License, including 1 year of 24x7 Technical Support and Updates NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/10861_ca/10861_ca.HTML	452141-B21
	Integrated Lights-Out Select Pack	
	Integrated Lights-Out Select Pack, No Media, 1 Server License, including 1 year of 24x7 Technical Support and Updates NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/10861_ca/10861_ca.HTML	452158-B21
	Integrated Lights-Out Power Management Pack	
	HP iLO Power Management Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates NOTE: This option kit includes 1 license for iLO Advanced and Insight Power Manager. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12632_ca/12632_ca.HTML	452145-B21
	Insight Power Manager	
	HP Insight Power Manager, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates NOTE: This option kit includes 1 license for Insight Power Manager. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12623_ca/12623_ca.HTML	452677-B21
	NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information. NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.	
ProLiant Software Maintenance Subscription	ProLiant Software Maintenance Single Release NOTE: Please see the SmartStart QuickSpecs for additional information regarding the subscription purchase: http://h18000.www1.hp.com/products/quickspecs/Canada/11073.html	356573-B21

Options

Processors	Quad-Core Intel Xeon Processor X5355 (2.66 GHz, 120 Watts, 1333 FSB)	436015-B21
	Quad-Core Intel Xeon Processor E5345 (2.33 GHz, 80 Watts, 1333 FSB)	436013-B21
	Quad-Core Intel Xeon Processor E5335 (2.00 GHz, 80 Watts, 1333 FSB)	437444-B21
	Quad-Core Intel Xeon Processor E5320 (1.86 GHz, 80 Watts, 1066 FSB)	435512-B21
	Quad-Core Intel Xeon Processor E5310 (1.6 GHz, 80 Watts, 1066 FSB)	435513-B21
	Dual-Core Intel Xeon Processor 5160 (3.0 GHz, 80 Watts, 1333 FSB)	416891-B21
	Dual-Core Intel Xeon Processor 5150 (2.67 GHz, 65 Watts, 1333 FSB)	416890-B21
	Dual-Core Intel Xeon Processor 5140 (2.33 GHz, 65 Watts, 1333 FSB)	416889-B21
	Dual-Core Intel Xeon Processor 5130 (2.0 GHz,65 Watts, 1333 FSB)	416888-B21
	Dual-Core Intel Xeon Processor 5120 (1.86 GHz, 65 Watts, 1066 FSB)	416887-B21
	Dual-Core Intel Xeon Processor 5110 (1.6 GHz, 65 Watts, 1066 FSB)	416886-B21
	Dual-Core Intel Xeon Processor 5080 (3.73 GHz, 130 Watts, 1066 FSB)	409397-B21
	Dual-Core Intel Xeon Processor 5060 (3.2 GHz, 130 Watts, 1066 FSB)	409401-B21
	Dual-Core Intel Xeon Processor 5050 (3.0 GHz, 95 Watts, 667 FSB)	409400-B21
Memory (DIMMs)	512 MB FBD PC2-5300 1 x 512 MB Kit	413507-B21
	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-B21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-B21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-B21
	8 GB FBD PC2-5300 2 x 4 GB Kit	397415-B21
Smart Buy Memory (DIMMs)	1 GB FBD PC2-5300 2 x 512 MB Kit	397409-S21
	2 GB FBD PC2-5300 2 x 1 GB Kit	397411-S21
	4 GB FBD PC2-5300 2 x 2 GB Kit	397413-S21
Optical Drives	Floppy Drive ML350/370 G5 Kit	409582-B21
	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	HP DVD±R/RW 16X Half Height	383974-B21
	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
Serial Port Kit	Parallel/Serial Port ML370/350 G5 Kit	401222-B21

Options

Hard Drives	SAS SFF Hot Plug Drives	
	HP 146GB 3G SAS 10K SFF SP HDD	431958-B21
	HP 72GB 3G SAS 10K SFF SP HDD	375861-B21
	HP 72GB 3G SAS 15K SFF SP HDD	431935-B21
	HP 36GB 3G SAS 10K SFF SP HDD	375859-B21
	HP 36GB 3G SAS 15K SFF SP HDD	431933-B21
	SAS LFF Hot Plug Drives	
	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
	NOTE: Please see the SAS 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/12244_ca/12244_ca.HTML	
	SATA SFF Hot Plug Drives	
	HP 120GB 1.5G SATA 5.4K SFF HDD	431786-B21
	HP 60GB 1.5G SATA 5.4K SFF HDD	379306-B21
	NOTE: SATA hard drives have a 1-year warranty. Please see the SATA 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_ca/11940_ca.HTML	
	3.5" SATA Hot Plug Drives	
	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: SATA hard drives have a 1-year warranty. Please see the SATA Hard Drive QuickSpecs for additional technical information on the hard drives Support details, please see the following: http://h18000.www1.hp.com/products/quickspecs/11940_ca/11940_ca.HTML	
Storage Controllers	SAS Controllers	
	Smart Array E200 Controller	
	HP Smart Array E200/128 BBWC Controller	411508-B21
	128-MB Battery-Backed Write Cache (BBWC)	351580-B21
	NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, and Smart Array 642 Controller.	
	Smart Array E500 Controller	
	HP Smart Array E500/256MB Controller	435129-B21
	Smart Array P400 Controller	
	HP Smart Array P400/512MB BBWC Controller	411064-B21
	NOTE: Supports RAID 0/1/1+0/5/6.	

HP Smart Array P400/256MB Controller NOTE: Supports RAID 0/1/1+0/5.	405132-B21
512MB Battery-backed cache (BBWC) upgrade NOTE: for Smart Array P400 Controller.	405148-B21
Battery-backed write cache (BBWC) upgrade NOTE: for Smart Array P400 Controller.	383280-B21
Smart Array P400 Battery Attach Kit 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.	417836-B21
Smart Array P600 Controller	
HP Smart Array P600/256 BBWC Controller NOTE: Supports external drive attach.	337972-B21
512MB Battery-backed write cache (BBWC) upgrade NOTE: For Smart Array P600 Controller.	372538-B21
Smart Array P800 Controller	
HP Smart Array P800/512 BBWC Controller NOTE: Supports external drive attach.	381513-B21
NOTE: Please see the following QuickSpecs additional information: http://h18000.www1.hp.com/products/quickspecs/12460_ca/12460_ca.HTML (Smart Array E200 Controller) http://h18000.www1.hp.com/products/quickspecs/12700_ca/12700_ca.HTML (Smart Array E500 Controller) http://h18000.www1.hp.com/products/quickspecs/12400_ca/12400_ca.HTML (Smart Array P400 Controller) http://h18000.www1.hp.com/products/quickspecs/12247_ca/12247_ca.HTML (Smart Array P600 Controller) http://h18000.www1.hp.com/products/quickspecs/12616_ca/12616_ca.HTML (Smart Array P800 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_ca/12617_ca.html (SC44Ge HBA) http://h18004.www1.hp.com/products/quickspecs/12332_ca/12332_ca.html (8 Internal Port SAS HBA)	
SCSI Controllers for External Drive/Storage Support	
Smart Array 6402/128 Controller NOTE: Ultra320 SCSI.	273915-B21
Smart Array 6404/256 Controller NOTE: Ultra320 SCSI.	273914-B21
Smart Array 642 Controller NOTE: Ultra320 SCSI.	291967-B21
128MB Battery-Backed Write Cache (BBWC) NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller, and Smart Array 642 Controller.	351580-B21
64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21

Options

	SCSI HBA	
	HP SC11Xe Host Bus Adapter NOTE: Supports external drive attach. 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/11943_ca/11943_ca.HTML (Single Channel Ultra320 SCSI HBA) http://h18000.www1.hp.com/products/quickspecs/11587_ca/11587_ca.HTML (Smart Array 6400 Series) http://h18000.www1.hp.com/products/quickspecs/12069_ca/12069_ca.HTML (Smart Array 642) http://h18000.www1.hp.com/products/quickspecs/12566_ca/12566_ca.HTML (SC11Xe HBA)	412911-B21
Communications	HP NC110T PCI Express Gigabit Server Adapter NOTE: Does not support Windows 2000.	434905-B21
	HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter	367132-B21
	HP NC310F PCI-X 1000SX Gigabit Server Adapter	368169-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	HP NC364T PCI Express Quad Port Gigabit Server Adapter NOTE: Does not support Windows 2000.	435508-B21
	HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
	HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
	HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter	394795-B21
	HP NC510F PCIe 10 Gigabit Server Adapter NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510F adapter.	414126-B21
	HP NC510C PCIe 10 Gigabit Server Adapter NOTE: A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510C adapter.	414129-B21
	HP NC7771 PCI-X 1000T Gigabit Server Adapter	290563-B21
	Agere 06 PCI Hi-Speed 56K SftMd	440519-B21
Redundant Options	Hot Plug Redundant Power Supply 350/370/380 G5 IEC Kit	399771-B21
	Hot Plug Redundant Power Supply 350/370/380 G5 NEMA Kit	399771-001
	Redundant Fan ML350 G5 Kit	409579-B21

Options

Tape Drives

NOTE: A separate SCSI Controller is required for connecting SCSI tape drives to this server.
NOTE: For the complete listing of Tape Drive offerings, please see:
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 72 USB Internal Tape Drive (Carbonite)	DW026A

SAS Tape Drives

NOTE: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

HP StorageWorks Ultrium 448 SAS Internal Tape Drive	DW085A
HP StorageWorks Ultrium 920 SAS Internal Tape Drive	EH847A

NOTE: Please refer to the "Tape Drives, Tape Autoloaders & Tape Libraries" table in the Storage section of this document for a list of SAS controllers with tape support.

Ultrium Tape Drives

HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite)	DW064A
HP StorageWorks Ultrium 460 Internal Tape Drive (Carbon)	Q1518B
HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite)	DW016A
HP StorageWorks Ultrium 920 SCSI Internal Tape Drive	EH841A
HP StorageWorks Ultrium 960 Internal Tape Drive (Carbonite)	Q1538A

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_ca/11739_ca.html
http://h18006.www1.hp.com/products/quickspecs/12128_ca/12128_ca.html

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

Internal DAT Drives

HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)	Q1522B

Options

Tape Autoloaders	**HP StorageWorks DAT Autoloader**	
	HP StorageWorks DAT 72x10 tape autoloader	AE313A
	HP StorageWorks 1/8 Tape Autoloader	
	HP StorageWorks 1/8 Ultrium 960 Tape Autoloader	AF204A
	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 NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions	AH166A
	1/8 Tape Autoloader Rackmount Kit NOTE: Required to install the unit in a standard 19-inch rack; includes rails and rackmount instructions	C9268R
	NOTE: Please reference the 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	
	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

Options

	HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library 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	AD601B
HP StorageWorks Modular Smart Array 20	HP StorageWorks Modular Smart Array 20 NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies.	335921-B21
	HP StorageWorks Modular Smart Array 20 Starter Kit NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. Includes Smart Array 6402/128 Controller. NOTE: The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 3.5" Hot Plug Hard Drives.	366172-B21
HP StorageWorks Modular Smart Array 30	HP StorageWorks Modular Smart Array 30 SB NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies	302969-B21
	HP StorageWorks Modular Smart Array 30 DB NOTE: Rack-mountable 14 drive enclosure with dual bus, redundant power supplies NOTE: The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 Hot Plug Hard Drives.	302970-B21
HP StorageWorks Modular Smart Array 50	HP StorageWorks Modular Smart Array 50 Enclosure NOTE: Please see the Modular Smart Array 50 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12245_ca/12245_ca.HTML	364430-B21
HP StorageWorks Modular Smart Array 500	HP StorageWorks Modular Smart Array 500 Generation 2 NOTE: Please see the Modular Smart Array 500 Generation 2 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/11956_ca/11956_ca.HTML	335880-B21
HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000 NOTE: Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at http://h18000.www1.hp.com/products/quickspecs/11033_ca/11033_ca.HTML	201723-B22
HP StorageWorks Modular Smart Array 1500 cs	Modular Smart Array 1500 Controller Shelf NOTE: Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at: http://www.hp.com/go/MSA1500cs	AA986A

Options

Cluster Options	ProLiant Cluster Starter Kit	364023-B22
	NOTE: For additional information regarding the ProLiant Cluster Starter Kit please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11935_ca/11935_ca.html	
	HP HA/F200 for Entry SAN Cluster	364026-B22
	NOTE: For additional information regarding the ProLiant Cluster for Entry Level SAN please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11932_ca/11932_ca.html	
	NOTE: For configuration/certification options for the HP Parallel Database Cluster for Oracle RAC please go to: http://www.hp.com/solutions/highavailability/oracle	
	HP Serviceguard for Linux ProLiant Cluster A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (2 node license cluster kit)	305199-B26
	HP Serviceguard for Linux, A.11.18 (single license version - Red Hat EL 4&5, SUSE SLES9&10)	305199-B27
	HP Serviceguard for Linux A.11.16 for SUSE SLES 9 & 10 and Red Hat EL 3 & 4 (single license version)	307754-B26
	HP Serviceguard for Linux ProLiant Cluster, A.11.18 (2 license version - Red Hat EL 4&5, SUSE SLES9&10)	307754-B27
	HP Serviceguard for Linux and Red Hat Global File System - 1 year subscription	T2798AA#001
	HP Serviceguard for Linux and Red Hat Global File System - 3 years subscription	T2798AA#003
	NOTE: For additional information regarding HP Serviceguard for Linux, please see the following QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11518_ca/11518_ca.html	
	NOTE: For configuration/certification options for HP Serviceguard for Linux please go to: http://www.hp.com/info/sglx	
StorageWorks Options	NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html	
	HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
	HP StorageWorks FC2242SR Dual Channel 4 Gb PCI-e HBA	A8003A
	HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
	HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA	AE312A
	HP StorageWorks FC2143 4Gb PCI-X 2.0 -to-Fibre Channel HBA	AD167A
	HP StorageWorks FC2243 Dual Channel 4Gb PCI-X 2.0 HBA	AD168A
	HP StorageWorks FC1143 4Gb PCI-X 2.0 HBA	AB429A
	HP StorageWorks FC1243 Dual Channel 4Gb PCI-X 2.0 HBA	AE369A
Uninterruptible Power Systems – Tower	HP, T1000 UPS	AF403A
	HP, T1500 UPS	AF406A
	HP, R/T 2200 UPS	AF409A

Options

Uninterruptible Power Systems - Rack	HP, R1.5kVA UPS, 1U	AF419A
	HP R3000 VA UPS, 2U, L5-30	AF422A
	HP R3000 VA UPS, 2U, L6-20	AF423A
	HP R5500 VA UPS	AF426A
HP Monitored Power Distribution Unit (PDU)	**HP Monitored Power Distribution Unit: Full Rack Version**	
	17.3 kVA Monitored PDU Model S2324	AF503A
	8.6 kVA Monitored PDU Model S1324	AF504A
	16.6 kVA Monitored PDU Model S2140	AF505A
	8.3 kVA Monitored PDU Model S1140	AF506A
	22 kVA Monitored PDU Model S2316	AF507A
	11 kVA Monitored PDU Model S1316	AF508A
	14.7 kVA Monitored PDU Model S2132	AF509A
	7.3 kVA Monitored PDU Model S1132	AF510A
	4.9kVA Monitored PDU model S124	AF914A
	7.3kVA Monitored PDU model S132	AF915A
Modular PDUs 1U/0U (Up to 32 outlets) NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).	2.8 kVA Model - mPDU, 24A, Low	252663-D71
	4.9kVA Model - mPDU, 24A, High	252663-D72
	8.3kVA Model - mPDU, 40A, High (power cord attached)	252663-D73
	8.3kVA Model - mPDU 40A, High (core only)	252663-D75
	4.9kVA Model - mPDU 24A, High (core only)	252663-D74
	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_ca/11041_ca.HTML	
USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B
	HP USB 04 Standard Keyboard	DT528A# ABA
	HP 1GB USB 2.0 Floppy Drive Key	442085-B21
	HP 256MB USB 2.0 Floppy Drive Key	442084-B21
Rack Conversion Kit	HP ML350 G5 Tower to Rack Conversion Kit	412640-B21
	ProLiant DL380 G4, ML370 G4, ML350 G4 Shipping Bracket for Round Hole Racks NOTE: This kit is required if the server will be configured and shipped within a round hole rack.	371482-B21

Options

HP Rack 5000 Series (Graphite Metallic)	HP 5642 Rack-Unassembled	358254-B21
	NOTE: Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and colour: http://h18000.www1.hp.com/products/quickspecs/12074_ca/12074_ca.HTML	
	NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	
HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet - Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet	AF004A
	10636 G2 (36U) Rack Cabinet - Pallet	AF011A
	10636 G2 (36U) Rack Cabinet - Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet - Crated	AF013A
	10636 G2 (36U) Rack Cabinet, with Extension - Shock Pallet	AF014A
	10622 G2 (22U) Rack Cabinet - Pallet	AF021A
	10622 G2 (22U) Rack Cabinet - Shock Pallet	AF022A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet	AF041A
	10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet	AF042A
	10647 G2 (47U) Rack Cabinet - Pallet	AF031A
	NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.	
	NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and colour: http://h18000.www1.hp.com/products/quickspecs/12402_ca/12402_ca.HTML	
	NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.	
HP Rack 10000 Series (Graphite Metallic)	HP S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
	NOTE: xxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels).	
	NOTE: It is mandatory to use a shock pallet in order to ship racks with equipment installed. Not all equipment is qualified to be shipped in the Rack 10000 series.	
	NOTE: Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and colour: http://h18000.www1.hp.com/products/quickspecs/10995_ca/10995_ca.HTML	
	NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower	

Options

Keyboards and Monitors	TFT7210R Rack Mounted 17" Monitor	348373-B21
	TFT7600 Rackmount Keyboard Monitor	AG052A
	1U Rackmount Keyboard with USB	AG072A
	NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower.	
HP KVM Switch Options	2x1x16 IP Console Switch with Virtual Media	AF601A
	4x1x16 IP Console Switch with Virtual Media	AF602A
	2x16 Server Console Switch with Virtual Media	AF600A
	PS/2 Virtual Media Interface Adapter, 1 pack	AF604A
	NOTE: Requires PS/2 and one USB port on server.	
	Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
	Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21
	USB Interface Adapter, 1 pack	336047-B21
	Serial Interface adapter - 1 Pack with power supply	373035-B21
	NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	HP 1x4 Console Switch	AF611A
	PS2 Server Console Cable, 6 ft, 2 pack	AF612A
	USB Server Console Cable, 6 ft, 2 pack	AF613A
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	
HP Serial Console Server Options	HP 16 Port Serial Console Server	AF101A
	HP 48 Port Serial Console Server	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A
	NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	

Options

Service and Support Offerings (HP Care Pack Services)	*Hardware Services On-site Service*	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years (Electronic)	U4512E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic)	U4513E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic)	U4514E
	O/S and Hardware Installation	
	Hardware Installation (Electronic)	U4522E
	Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays. (Electronic)	U4523E
	Support Plus	
	Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays. (Electronic)	U4524E
	Support Plus 24	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4525E
	Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U6308E
	Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U8330E
	NOTE: For additional information on HP Care Pack Services, please see http://www.hp.ca/hps/carepack/.	

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

HP ProLiant ML350 G5 Memory Configuration

The HP ProLiant ML350 G5 requires memory interleaving when more than one DIMM is installed. For interleaving, DIMMs must be configured in identical pairs. The system will not boot properly if multiple DIMMs of varying density or type are installed in the system.

Standard Memory

All HP ProLiant ML350 G5 models ship with PC2-5300 Fully Buffered DIMMs (DDR2-667).
Entry models include a single 512 MB DIMM (Dual-Core) or two 512MB DIMMs (Quad-Core).
Base models include two 512 MB DIMMs (1GB total memory).
Factory Integrated Models include the memory capacity of your choice.

Common Memory Configuration

Valid DIMM pair combinations use slots 1/5, slots 2/6, slots 3/7, and slots 4/8. Maximum supported memory is 16 GB for Dual-Core and 32 GB on Quad-Core models.

NOTE: Charts does not represent all possible memory configurations.

Memory		Slot							
		1A	2B	3C	4D	5A	6B	7C	8D
Standard	1 GB	512 MB	Empty	Empty	Empty	512 MB	Empty	Empty	Empty
Optional	13 GB	512 MB	2 GB	2 GB	2 GB	512 MB	2 GB	2 GB	2 GB
Maximum	32 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB

Following are memory options available from HP:

- 512MB FBD PC2-5300 1 x 512 MB Kit 413507-B21
- 1 GB FBD PC2-5300 2 x 512 MB Kit 397409-B21
- 2 GB FBD PC2-5300 2 x 1 GB Kit 397411-B21
- 4 GB FBD PC2-5300 2 x 2 GB Kit 397413-B21
- 8 GB FBD PC2-5300 2 x 4 GB Kit 397415-B21

Online spare memory configuration

FBDIMMs can either be single-rank or dual-rank. Certain FBDIMM configuration requirements are based on these classifications. A dual-rank FBDIMM is similar to having two separate FBDIMMs, or ranks, on the same module. Although only a single FBDIMM module, a dual-rank FBDIMM acts as two separate FBDIMMs.

In online spare mode, a single rank of memory acts as the spare memory. For single-rank FBDIMMs, the entire FBDIMM acts as the spare memory. For a dual-rank FBDIMM, only half of the FBDIMM acts as the spare memory while the other half is available for operating system and application usage.

Online spare FBDIMM configuration requirements (in addition to general configuration requirements):

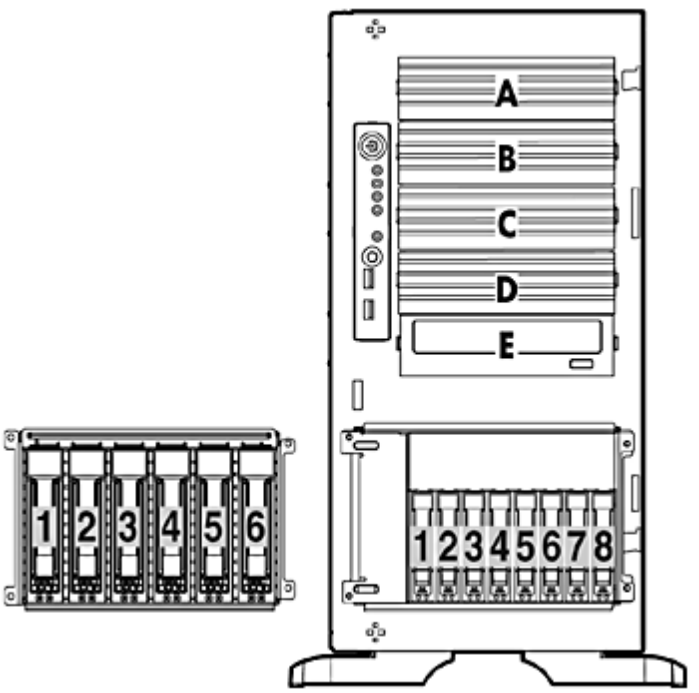
- When only bank A is being used, it must be fully populated with dual-rank FBDIMMs.
- For optimum memory usage, HP recommends all FBDIMMs be the same size with the same HP part number. If different sized FBDIMMs are used, a portion of the installed memory may not be utilized.

In online spare mode, FBDIMMs must be populated as specified in the following table:

- Configuration 1 (Bank A only) is only supported if using bank A, populated with dual-rank FBDIMMs.
- After installing FBDIMMs, use RBSU to configure the system for online spare memory support.

Memory

Bank A 1A and 5A	Bank B 2B and 6B	Bank C 3C and 7C	Bank D 4D and 8D
X	—	—	—
X	X	—	—
X	X	X	X



1 - 6	6 x 3.5" (LFF) Hot-Plug SAS/SATA hard drive bays
Or	
1 - 8	8 x 2.5" (SFF) Hot-Plug SAS/SATA hard drive bays
A,B,C,D	Available half height media bays
E	48x CD-ROM

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
1.44-MB Diskette Drive	Up to 1	A, B, C, D, E	Integrated floppy controller
IDE (ATAPI) CD-ROM Drive	Up to 2	A, B, C, D, E	Integrated IDE
HP DVD±R/RW 16X Half Height	Up to 2	A, B, C, D, E	Integrated IDE
DVD-ROM Drive Option Kit	Up to 2	A, B, C, D, E	Integrated IDE

Storage

Hard Drives

Hot Plug SATA 3.5" Drives

	Quantity Supported	Position Supported	Controller
750GB 1.5G SATA 7.2K 500GB 1.5G SATA 7.2K 250GB 1.5G SATA 7.2K 160GB 1.5G SATA 7.2K 80GB 1.5G SATA 7.2K	Up to 6	1-6	HP Smart Array E200i/64MB Controller HP Smart Array E200i/128 BBWC Controller HP Smart Array E500/256MB Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P600/256 BBWC Controller HP Smart Array P800/512 BBWC Controller HP 6-Port SATA RAID Controller

Hot Plug SFF SATA Drives

	Quantity Supported	Position Supported	Controller
120GB 1.5G SATA 5.4K 60GB 1.5G SATA 5.4K	Up to 8	1-8	HP Smart Array E200i/64MB Controller HP Smart Array E200i/128 BBWC Controller HP Smart Array E500/256MB Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P600/256 BBWC Controller HP Smart Array P800/512 BBWC Controller HP 6-Port SATA RAID Controller

NOTE: HP Systems Insight Manager should not be used to view the status of SATA hard drives and SATA RAID configurations.

Hot Plug SFF SAS 2.5" Drives

	Quantity Supported	Position Supported	Controller
146GB 3G SAS 10K SP 72GB 3G SAS 10K SP 72GB 3G SAS 15K SP 36GB 3G SAS 10K SP 36GB 3G SAS 15K SP	Up to 8 SFF	1-8	HP Smart Array E200i/64MB Controller HP Smart Array E200i/128 BBWC Controller HP Smart Array E500/256MB Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P600/256 BBWC Controller HP Smart Array P800/512 BBWC Controller HP 6-Port SATA RAID Controller

Hot Plug SAS 3.5" Drives

	Quantity Supported	Position Supported	Controller
300GB 3G SAS 15K 3.5" SP 146GB 3G SAS 15K 3.5" SP 72GB 3G SAS 15K 3.5" SP 36GB 3G SAS 15K 3.5" SP	Up to 6 LFF	1-6	HP Smart Array E200i/64MB Controller HP Smart Array E200i/128 BBWC Controller HP Smart Array E500/256MB Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P600/256 BBWC Controller HP Smart Array P800/512 BBWC Controller HP 6-Port SATA RAID Controller

Storage

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 20 Family	Up to 2	External	Smart Array 6402/128 Controller Smart Array 6404/256 Controller
Modular Smart Array 30 Family	Up to 2	External	Smart Array 6402/128 Controller Smart Array 6404/256 Controller Smart Array 642 Controller
Modular Smart Array 50 Enclosure	Up to 2	External	HP Smart Array P600/256 BBWC Controller
Modular Smart Array 500 G2	1	External	Please see the Modular Smart Array 500 or 500 G2 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/msa500.
Modular Smart Array 1500 cs or 1000	Please see the Modular Smart Array 1500 cs or Modular Smart Array 1000 QuickSpecs links to determine configuration requirements		Please see the Modular Smart Array 1000 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/MSA1000 Please see the Modular Smart Array 1500 cs QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/MSA1500cs

Tape Drives, Tape Autoloaders, & Tape Libraries

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

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

NOTE: SAS Tape Drives: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

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

	Position Supported	Controller	Controller/HBA Option Kit Part Number
HP StorageWorks Tape Drives, USB Internal DAT 24 USB DAT 40 USB DAT 72 USB	A-D	Internal USB 2.0 port	N/A

Storage

HP StorageWorks Tape Drives, USB External DAT 24 USB DAT 40 USB DAT 72 USB	External	USB 2.0 port	N/A
HP StorageWorks SCSI Tape Drives, Internal Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 920 Ultrium 960 DAT 40 DAT 72 DLT VS160 SDLT 600	A-D	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21
HP StorageWorks Tape Drives, SAS Internal Ultrium 448 SAS Ultrium 920 SAS	A-D	HP 8 Internal Port SAS HBA with RAID 0/1 HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller NOTE: Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	347786-B21 405132-B21 411064-B21
HP StorageWorks Tape Drives, SCSI External Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 920 Ultrium 960 DAT 40 DAT 72 DLT VS160 SDLT 600	External	HP SC11Xe Host Bus Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	412911-B21 374654-B21
HP StorageWorks Tape Drives, SAS External Ultrium 448 SAS Ultrium 920 SAS	External	HP 8 Internal Port SAS HBA with RAID 0/1 HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller NOTE: Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	347786-B21 405132-B21 411064-B21
HP StorageWorks SCSI Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit 3U Rack-Mount Kit	External	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21

Storage

HP StorageWorks USB Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit	External	USB 2.0 port	N/A
HP StorageWorks SAS Rack-Mount Tape Drive Enclosures 1U Rack-Mount Kit	External	HP 8 Internal Port SAS HBA with RAID 0/1 HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller NOTE: Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements.	347786-B21 405132-B21 411064-B21
HP StorageWorks Autoloaders, External DAT 72x10 Autoloader 1/8 Tape Autoloader	External	HP SC11Xe Host Bus Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	412911-B21 374654-B21
HP StorageWorks Tape Libraries, External MSL2024 (Ultrium 448 Ultrium 920 and 960-based) MSL4048 (Ultrium 448 and 960-based) MSL6000 (Ultrium 960 and 460-based) MSL6000 (SDLT 600-based)	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information.	N/A

Power Specifications

Part Number	380622-001
Spare Kit	403781-001
Operational Input Voltage Range (V rms)	90 - 264
Frequency Range (Nominal) (Hz)	47 - 63 (50 / 60)

Nominal Input Voltage (Vrms)	100	120	208	220	230	240
Max Rated Output Wattage Rating	800	950	1000	1000	1000	1000
Nominal Input Current (A rms)	10.0	8.8	5.85	5.5	5.2	4.97
Max Rated Input Wattage Rating (Watts)	980	1035	1193	1186	1172	1169
Max. Rated VA (Volt-Amp)	1000	1056	1217	1210	1196	1193
Efficiency (%)	81.5	82	84	84	85	85.5
Power Factor	0.98	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.44	0.52	0.91	0.96	1.00	1.04
Maximum Inrush Current (A peak)	30	30	30	30	30	30
Maximum Inrush Current duration (miliseconds)	3	3	3	3	3	3

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

To drill down to calculators:
- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: ML350 G5
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

System Unit - Tower	Dimensions (HxWxD) (with feet/bezel)	18.4 x 8.58 x 23.5 in. (46.8 x 21.8 x 59.6cm)	
	Weight (approximate)	60 lb (27.24 kg) (without hard drives)	
	Input Requirements (per power supply)	Rated Line Voltage	100-120 VAC / 200-240VAC
		Rated Input Frequency	50 Hz to 60 Hz
		Input Power	<1000W @ 90VAC <1050W @ 115VAC <1205W @ 180VAC
		Rated Input Current	10A(100VAC),6.7A(200VAC)
	Rated Line Frequency	50 to 60 Hz	
	BTU Rating	4112BTU/hr	180VAC
	Power Supply Output Power (per power supply)	Rated Steady-State Power	800W at 120V or 1000W at 220V
	Temperature Range	Operating	50° to 95° F (10° to 35° C) (No direct sustaining sunlight)
		Storage (up to one year)	-40° to 158° F (-40° to 70° C)
	Maximum Wet Bulb Temperature	82.4° F (28° C)	
	Relative Humidity (non-condensing)	Operating	10% to 90%
		Non-operating	5% to 90%
	Acoustic Noise	Idle (Fixed Disk Drives Spinning)	
		L WAd (BELS)	5.0
		L pAm (dBA)	33
		Operating (Random Seeks to Fixed Disks)	
		L WAd (BELS)	5.1
		L pAm (dBA)	33

Technical Specifications

System Unit - Rack	Dimensions (HxWxD)	8.54 x 17.5 x 21.9 in. (21.7 x 44.5 x 55.7cm)	
	Weight (approximate)	60 lb (27.24 kg) (without hard drives)	
	Input Requirements (per power supply)	Rated Line Voltage	100-120 VAC / 200-240VAC
		Rated Input Frequency	50 Hz to 60 Hz
		Input Power	<1000W @ 90VAC <1050W @ 115VAC <1205W @ 180VAC
		Rated Input Current	10A(100VAC),6.7A(200VAC)
	Rated Line Frequency	50 to 60 Hz	
	BTU Rating	4112 BTU/hr	180VAC
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		Non-operating	5% to 90%
	Acoustic Noise	Idle (Fixed Disk Drives Spinning)	
		L WAd (BELS)	5.0
		L pAm (dBA)	33
		Operating (Random Seeks to Fixed Disks)	
		L WAd (BELS)	5.1
		L pAm (dBA)	33

Technical Specifications

Smart Array E200i Controller	Disk Drive and Enclosure Interface	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment)
	SAS Connectors	2 internal (SFF8484) x4 wide port connectors
	Cache Memory Speed	DDR-1/266 MHz provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x4 2.5G PCIe provides 2GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 64MB ECC read cache or 40-bit 128MB ECC battery backed, transportable read/write cache
	Logical Volumes Supported	Up to 32 logical volumes
	Maximum Volume Capacity	4.5TB (6 x 750GB SATA)
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 5 (Distributed Data Guarding) RAID 1, 1+0 (Striping & Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Upgradeable Firmware

Embedded NC373i Multifunction 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	PCI Express, four lanes (x4)	
	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)

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