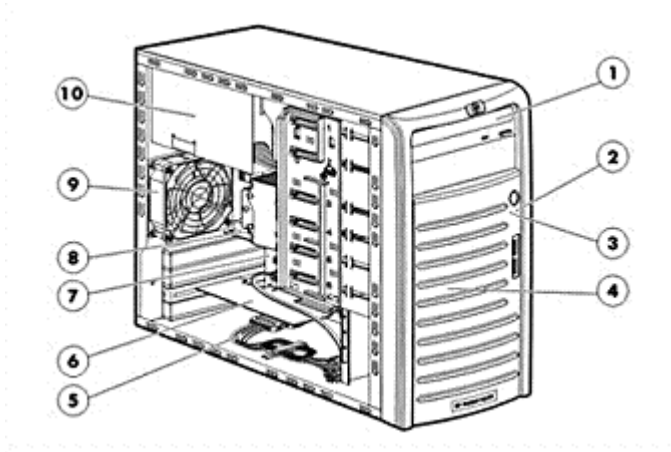
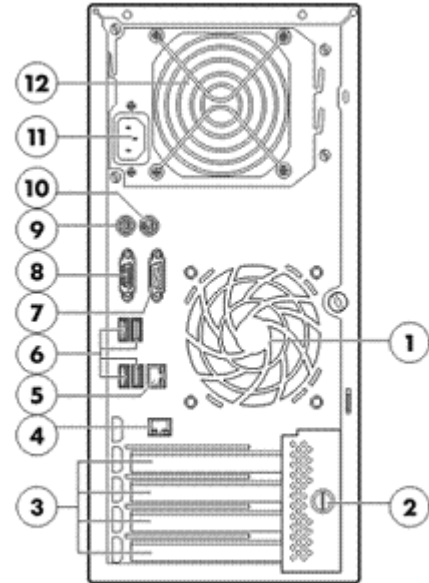


### Overview



#### Front View:

1. DVD-ROM Drive
2. Power LED
3. Drive Activity LED
4. Front Bezel
5. SAS Cable (SAS model only)
6. Hard Drive Controller Card (Optional)
7. System Board
8. HP ProLiant 100 G5 Lights-Out 100c Management Card Port (Optional)
9. System Fan
10. 365W Power Supply



#### Rear View:

1. Rear System Fan
2. PCI Slot Cover Retainer
3. PCI Slot Covers
4. HP ProLiant 100 G5 Lights-Out 100c Management Card Port (Optional)
5. LAN Port (RJ-45)
6. Rear USB 2.0 Ports
7. Serial Port
8. VGA Port
9. PS/2 Keyboard Port
10. PS/2 Mouse Port
11. Power Supply Outlet
12. Power Supply Unit (PSU) Fan

### What's New

The HP ProLiant ML110 G5 is now available with higher performance processors (quad-core up to 3.0GHz and dual-core up to 3.16GHz) resulting in better processing power and increased productivity for the growing businesses.

- Support for SATA Non-Hot Plug Entry and Midline Hard Drives

### Overview

### At A Glance

- **Processor:**
  - Intel® Xeon® processor 3300 series
  - Intel® Xeon® processor 3200 series
  - Intel® Xeon® processor 3100 series
  - Intel® Core™ 2 Duo processor 7000 series
  - Intel® Pentium® processor 2000 series
  - Intel® Celeron® processor 400 series
- **Memory:**
  - Four (4) DIMM slots
  - Four (4) DIMM slots
  - 1GB Standard/8GB Maximum of PC2-6400 Unbuffered DDR2 ECC 800 MHz
- **Storage Controller:**
  - SATA Models: Integrated 6 ports SATA controller with embedded RAID (4 ports available for hard disks)  
**NOTE: Transfer rate: 3 Gb/s SATA.**
  - SAS Models: HP SC40Ge Host Bus Adapter with RAID 0, 1 support, FIO  
**NOTE: When using the SC40Ge with SATA hard drives, 1.5G SATA hard drives are required.**  
**NOTE: Transfer rate: 3 Gb/s SATA.**
- **Internal Drive Support:**
  - 4 HDD Support:
    - Internal SAS storage capacity of up to 1.8TB (4 x 450GB 3.5" SAS drives)
    - Internal SATA storage capacity of up to 8.0TB (4 x 2TB 3.5" SATA drives)
- **Network Controller:**
  - Embedded NC105i PCI Express Gigabit Ethernet Server Adapter
- **Expansion Slots:**
  - Slot 1: PCI 32-bit/33MHz at 3.3V
  - Slot 2: PCI-Express x8 connector with x1 link
  - Slot 3: PCI-Express x8 connector with x1 link
  - Slot 4: PCI-Express x8 connector with x8 link
- **USB 2.0 Ports:**
  - Eight (8) USB 2.0: 2 front, 4 rear, 2 internal (one for tape, one for standard USB device)
- **Management:**
  - Standard Lights Out 100 IPMI 2.0 reporting
  - Optional HP ProLiant 100 G5 Lights Out 100c Remote Management Card
  - Standard HP ProLiant ML110 G5 Easy Set-up CD
- **Form Factor:**
  - Micro ATX tower (4U)
- **Warranty:**
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair are available for one year from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.  
**NOTE: Server Warranty includes 1 year parts, 1 year labor, 1-year on-site support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>**



### Standard Features

#### Processor

One of the following depending on Model

#### Quad-Core Processors

Intel® Xeon® processor X3370 (3.00 GHz, 95W, 1333MHz FSB, 12MB)

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® processor X3360 (2.83 GHz, 95W, 1333MHz FSB, 12MB)

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® processor X3330 (2.66 GHz, 95W, 1333MHz FSB, 6MB)

Intel® Xeon® Processor X3220 (2.40 GHz, 95W, 1066MHz FSB, 8MB)

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® Processor X3210 (2.13 GHz, 95W, 1066MHz FSB, 8MB)

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

#### Dual-Core Processors

Intel® Xeon® processor E3120 (3.16 GHz, 65W, 1333MHz FSB, 6MB)

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® processor E3110 (3.00 GHz, 65W, 1333MHz FSB, 6MB)

Intel® Core™ 2® processor E7400 (2.80 GHz, 65W, 1066MHz FSB, 3MB)

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Pentium® processor E2160 (1.80 GHz, 65W, 800MHz FSB, 1MB)

#### Single-Core Processors

Intel® Celeron® processor 440 (2.0 GHz, 35W, 800MHz FSB, 512KB)

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

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#### Cache Memory

One of the following depending on Model

12 MB Level 2 cache - Xeon X3370, X3360

8 MB Level 2 cache - Xeon X3220, X3210

6 MB Level 2 cache - Xeon X3330, E3120, E3110

3 MB Level 2 cache - Core2 E7400

1 MB Level 2 cache - Pentium E2160

512KB Level 2 cache - Celeron 440

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#### Chipset

Intel® 3200

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#### Memory Protection

ECC

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Standard Features

Memory	Type	PC2-6400 unbuffered DDR2 ECC 800MHz
	Standard	1 GB
	Maximum	8 GB

Network Controller	Embedded NC105i PCI Express Gigabit Ethernet Server Adapter
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Expansion Slots #	Technology	Bus Width***	Connector Width	Bus Number*	Device Number**	Form Factor	Notes
1	PCI	32-bit	N/A	0	30	Full height slot	33MHz/3.3V
2	PCIe	X1	X8	0	28	Full height slot	
3	PCIe	X1	X8	2	28	Full length, full height slot	
4	PCIe	X8	X8	0	1	Full length, full height slot	

\*Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number.

\*\* Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).

\*\*\* Indicates the number of physical electrical lanes running to a PCI-e connector.

**NOTE:** PCI-X Interface (PCI 32bit/33MHz compatible)

Storage Controller	SATA Models	Integrated 6 ports SATA controller with embedded RAID (4 ports available for Hard Disks) <b>NOTE:</b> Transfer rate: 3 Gb/s SATA.
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Storage	Optical Drive	SATA DVD-ROM Drive
	Hard Drives	(SATA Model only) 160GB SATA 7200 rpm Drive

Maximum Internal Storage	Type	
	Non-Hot Plug SAS	1.8TB (4 x 450GB)
	Non-Hot Plug SATA	8.0TB (4 x 2TB)



### Standard Features

Interfaces	Parallel	0
	Serial	1
	Pointing Device (Mouse, PS2)	1
	Graphics	1
	Keyboard (PS2)	1
	USB 2.0 Ports	8 total (4 rear, 2 front panel, 2 internal (one for USB Tape connectivity))
		<p><b>NOTE:</b> Internal USB ports are optimal for the attachment of HP USB DAT Tape Drives</p> <p><b>NOTE:</b> Please see the following URL for additional information regarding USB support: <a href="http://h18004.www1.hp.com/products/servers/platforms/usb-support.html">http://h18004.www1.hp.com/products/servers/platforms/usb-support.html</a></p>
Network RJ-45 (Ethernet) Management	1 HP ProLiant 100 G5 Lights-Out 100c Remote Management port (Optional)	

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Graphics	32MB shared supporting 1600 x 1200 x 16M resolution
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Form Factor	Micro ATX Tower (4U)
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Remote Management	Lights-Out 100c	Lights Out LO100c is a Remote Management Card (RMC) for ProLiant 100 series servers that do not have embedded LO100i. The LO100c has all the features of the LO100i Advanced license and allows customers, or their service providers, to remotely manage ProLiant servers over a LAN or the Internet from anywhere, anytime regardless whether the server is located in the same building, across town, or around the globe.
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With LO100c, users can acquire complete remote control with Virtual KVM (graphical hardware-based, remote console). Users can also access the server's serial console, control system power, update system firmware and software, as well as monitor system environmental conditions. The LO100c remote management card can be accessed from a web browser or command line interface. This virtual "at-the-server" functionality means administrators stay in control of remote HP ProLiant 100 series servers. The HP Lights-Out100c consists of a management processor and firmware that provides cost-effective, entry-level lights-out functionality, basic system board management functions, and diagnostics.

**NOTE:** For more information, please refer to the QuickSpecs for the LO100c found at: <http://h18004.www1.hp.com/products/servers/management/remotemgmt/lightsout100/index.html>



### Standard Features

#### Core Infrastructure Management

HP ProLiant ML110 G5 Easy Set-up CD

The HP ProLiant Easy Set-up CDs optimize single-server setup, providing a simple way to deploy reliable and consistent server configurations. The HP ProLiant 100 Series Easy Set-up CD ship standard with the ML110 G5.

It offers essential single-server deployment tools for HP ProLiant 100 series servers that simplify HP entry server setup, providing a repeatable way to deploy reliable and consistent single-server configurations. The HP ProLiant Easy Set-up CDs assist with the OS installation process by preparing the system for installing "off-the-shelf" versions of Windows operating system software and automatically integrating optimized HP ProLiant server software drivers and utilities. Users enjoy the following benefits:

- An easy-to-use, intuitive graphical interface that prepares your system for the OS installation process.
- Integration of key server software drivers with assisted installation.
- Dependency and validity checks to ensure that all supported ProLiant software can be installed.

**NOTE:** For the latest information about other related software; please visit the HP Insight Control Management Software Portfolio at: <http://h18004.www1.hp.com/products/servers/management/> and the HP ProLiant Easy Set-up CD Web site at: [www.hp.com/servers/easysetup](http://www.hp.com/servers/easysetup)

#### Industry Standard Compliance

ACPI V3.0a Compliant  
PCI 2.3 Compliant  
PXE Support  
WOL Support  
IPMI 2.0 compliance  
Microsoft® Logo certifications  
RedHat Enterprise Linux Logo certifications  
SUSE Linux Enterprise Server Logo certifications  
USB 2.0

#### Manageability

Standard Lights Out 100 IPMI 2.0 reporting  
Optional HP ProLiant 100 G5 Lights-Out 100c Remote Management Card  
Standard HP ProLiant ML110 G5 Easy Set-Up CD

#### Security

Power-on password  
Setup password  
USB lock

#### Server Power Cords

6' lowline NEMA power cord.



### Standard Features

Power Supply 365 Watts

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System Fans 1 – non-redundant system fan shipped standard  
1 – non-redundant CPU heatsink fan shipped standard

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Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server  
Red Hat Enterprise Linux (RHEL)  
SUSE Linux Enterprise Server (SLES)  
Netware

**NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/supportos> and our driver download page <http://www.hp.com/support/ML110G5>

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### Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and/or 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 MSAxxx, 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>.

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### HP Enterprise Configurator

The HP eConfigure 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. <http://www.hp.com/products/configurator>.

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### Standard Features

#### Service and Support

HP Care Pack Services provide total care and support expertise with committed response designed to meet your IT and business needs.

HP Care Pack services include coverage for the HP branded hardware options qualified for the server that are purchased at the same time or afterward and internal to the enclosure. It also includes the 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 and 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.

To fully capitalize 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.

**Recommended Service** – Simplify ProLiant solution implementation, maintenance and management.

- **Support Service** – 3 Year, 9x5 Next Business Day coverage, excluding HP holidays only
- **Deployment Service** – Hardware Installation only

**Enhanced Service** – Optimize service level to increase IT performance and availability

- **Support Service** – 3 Year 13x5 Same Business Day, 4-Hour response coverage
- **Deployment Service** – Installation and Start-up only

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.

For a complete listing of service offerings and information visit:

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

<http://h20219.www2.hp.com/services/us/en/warranty/carepack-servers-proliant.html>



### Models

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

#### SATA Models

HP ML110 G5 X3330 NHP-SATA 495124-001	Processor(s)	(1) Intel® Xeon® processor X3330 (2.66 GHz, 95W, 1333MHz FSB, 6MB)
	Cache Memory	6MB (2 x 3MB) Level 2 cache
	Memory	1GB PC2-6400 UB ECC (DDR2-800MHz) (1 x 1GB)
	Storage Controller	HP Embedded 6 Port SATA Controller with Embedded RAID (4 ports for HDD)
	Hard Drive	1 x 160GB 3.5-inch Non-hot-plug LFF SATA
	Internal Storage	Non-Hot Plug LFF SATA: Maximum 8.0TB (4 x 2TB)
	Optical Drive	Half-Height 16x SATA DVD-ROM
	Form Factor	Micro ATX Tower (4U)

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HP ML110 G5 E3110 NHP SATA 533548-001	Processor(s)	(1) Intel® Xeon® processor E3110 (3.00 GHz, 65W, 1333MHz FSB, 6MB)
	Cache Memory	6MB (2 x 3MB) Level 2 cache
	Memory	1GB PC2-6400 UB ECC (DDR2- 800 MHz) (1x1 GB)
	Storage Controller	HP Embedded 6 Port SATA Controller with Embedded RAID (4 ports for HDD)
	Hard Drive	1 x 160GB 3.5-inch Non-hot-plug LFF SATA
	Internal Storage	Non-Hot Plug LFF SATA: Maximum 8.0TB (4 x 2TB)
	Optical Drive	Half-Height 16x SATA DVD-ROM
	Form Factor	Micro ATX Tower (4U)

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HP ML110 G5 Pentium E2160 NHP-SATA 444809-001	Processor(s)	(1) Intel® Pentium® processor E2160 (1.8GHz, 65W, 800MHz FSB, 1MB)
	Cache Memory	1MB (1 x 1MB) Level 2 cache
	Memory	1GB PC2-6400 UB ECC (DDR2-800MHz) (1 x 1GB)
	Storage Controller	HP Embedded 6 Port SATA Controller with Embedded RAID (4 ports for HDD)
	Hard Drive	1 x 160GB 3.5-inch Non-hot-plug LFF SATA
	Internal Storage	Non-Hot Plug LFF SATA: Maximum 8.0TB (4 x 2TB)
	Optical Drive	Half-Height 16x SATA DVD-ROM
	Form Factor	Micro ATX Tower (4U)



### 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.

<b>S-Buy ML110G5 X3075</b> 160 SATA 455946-005	<b>Processor(s)</b>	(1) Dual-Core Intel Xeon 3075 (2.66 GHz, 1333 FSB, 4M)
	<b>Cache Memory</b>	1 x 4MB Level 2 cache
	<b>Memory</b>	1 GB PC2-6400 ECC (DDR2-800Mhz) (1 x 1GB)
	<b>Storage Controller</b>	HP Embedded 6 Port SATA Controller with embedded RAID (4 ports for HDD)
	<b>Hard Drive</b>	(1) 160GB SATA 7.2K 3.5"
	<b>Internal Storage</b>	Maximum 3.0TB (4 x 750GB) SATA
	<b>Optical Drive</b>	16x DVD-RW Drive
	<b>Form Factor</b>	Micro ATX Tower
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<b>S-Buy ML110G5 X3075</b> SBS 160 SATA 455947-005	<b>Processor(s)</b>	(1) Dual-Core Intel Xeon 3075 (2.66 GHz, 1333 FSB, 4M)
	<b>Cache Memory</b>	1 x 4MB Level 2 cache
	<b>Memory</b>	1 GB PC2-6400 ECC (DDR2-800Mhz) (1 x 1GB)
	<b>Storage Controller</b>	HP Embedded 6 Port SATA Controller with embedded RAID (4 ports for HDD)
	<b>Hard Drive</b>	(2) 160GB SATA 7.2K 3.5"
	<b>Operating System</b>	Microsoft Windows Small Business Server 2003 R2 Standard Edition with 5 CALs
	<b>Internal Storage</b>	Maximum 3.0TB (4 x 750GB) SATA
	<b>Optical Drive</b>	16x DVD-RW Drive
<b>Form Factor</b>	Micro ATX Tower	
<hr/>		
<b>S-Buy ML110G5 E4600</b> SATA 470064-777	<b>Processor(s)</b>	(1) Dual-Core Intel® Core 2 Processor E4600 (2.40 GHz, 65W, 800 FSB, 2M)
	<b>Cache Memory</b>	2 MB Level 2 cache
	<b>Memory</b>	1 GB PC2-6400 ECC (DDR2-800Mhz) (1 x 1GB)
	<b>Storage Controller</b>	HP Embedded 6 Port SATA Controller with embedded RAID (4 ports for HDD)
	<b>Hard Drive</b>	(1) 160GB SATA 7.2K 3.5"
	<b>Internal Storage</b>	Maximum 3.0TB (4 x 750GB) SATA
	<b>Optical Drive</b>	DVD-ROM Drive
	<b>Form Factor</b>	Micro ATX Tower



### Smart Buys

<b>S-Buy ML110G5 E3110 SATA 470064-958</b>	<b>Processor(s)</b>	(1) Dual-Core Intel® Xeon® Processor E3110 (3.00 GHz, 65W, 1333 MHz FSB, 6M)
	<b>Cache Memory</b>	6 MB Level 2 cache
	<b>Memory</b>	2 GB PC2-6400 (1 x 2GB) ECC DIMM
	<b>Storage Controller</b>	HP Embedded 6 Port SATA Controller with embedded RAID (4 ports for HDD)
	<b>Hard Drive</b>	(1) 250GB SATA 7.2K 3.5" NDL HDD
	<b>Internal Storage</b>	Maximum 3.0TB (4 x 750GB) SATA
	<b>Optical Drive</b>	16x DVD-RW Drive
	<b>Form Factor</b>	Micro ATX Tower

<b>S-Buy ML110G5 E3120 SATA 470064-964</b>	<b>Processor(s)</b>	(1) Dual-Core Intel® Xeon® Processor E3120 (3.16 GHz, 65W, 1333 MHz FSB, 6M)
	<b>Cache Memory</b>	6 MB Level 2 cache
	<b>Memory</b>	2 GB PC2-6400 (1 x 2GB) ECC DDR2
	<b>Storage Controller</b>	HP Embedded 6 Port SATA Controller with embedded RAID (4 ports for HDD)
	<b>Hard Drive</b>	(2) 250GB SATA 7.2K 3.5" MDL HDD
	<b>Internal Storage</b>	Maximum 3.0TB (4 x 750GB) SATA
	<b>Optical Drive</b>	16x DVD-RW Drive
	<b>Form Factor</b>	Micro ATX Tower

<b>S-Buy ML110G5 X3330 250GB SATA 495550-005</b>	<b>Processor(s)</b>	(1) Quad Core Intel® Xeon® Processor X3330 (2.66 GHz, 95W, 1333 MHz FSB, 6M)
	<b>Cache Memory</b>	6 MB Level 2 cache
	<b>Memory</b>	2 GB PC2-6400 (1 x 2GB) DDR2
	<b>Storage Controller</b>	HP Embedded SATA RAID
	<b>Hard Drive</b>	(1) 250GB SATA 7.2K 3.5"
	<b>Internal Storage</b>	Maximum 3.0TB (4 x 750GB) SATA
	<b>Optical Drive</b>	16x DVD-RW Drive
	<b>Form Factor</b>	Micro ATX Tower



### Configuration Information-Factory Integrated Models

**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 information on CTO product offerings and requirements.

**NOTE:** HP does not allow factory integration of options into standard models listed above.

Configure-to-order servers must start with a CTO Chassis.

**NOTE:** FIO indicates that this option is a Factory Installable Option.

### Step 1: Base Configuration

Models	HP ProLiant ML110G5 NHP CTO Chassis	445607-B21
	<b>Factory Integrated Models ship with:</b>	
	Embedded NC105i PCI Express Gigabit Ethernet Server Adapter	
	Keyboard and Mouse	
	<b>NOTE:</b> Keyboard and Mouse option needs to be manually selected for shipment. Please see the USB Options listed in the options selection of this QuickSpecs.	
	Power cord	
	Micro ATX Tower (4U)	
	<b>NOTE:</b> HP SATA drive models are limited to 4.0TB support.	
	<b>NOTE:</b> On SATA models with embedded RAID, setup instructions are located in the User Guide. CTO RAID set-up is not available. HP ProLiant ML100 Series Server User Guide: <a href="http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00260539/c00260539.pdf">http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00260539/c00260539.pdf</a>	

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

HP Processors	<b>Quad-Core Processor</b>	
	Intel® Xeon® processor X3370 (3.00GHz, 95W, 1333MHz FSB, 12MB), FIO	535026-L21
	Intel® Xeon® processor X3360 (2.83GHz, 95W, 1333MHz FSB, 12MB), FIO	493261-L21
	Intel® Xeon® processor X3330 (2.66 GHz, 95W, 1333 MHz FSB, 6MB), FIO	493259-L21
	Intel® Xeon® Processor X3220 (2.40 GHz, 95W, 1066 MHz FSB, 8MB), FIO	455069-L21
	Intel® Xeon® Processor X3210 (2.13 GHz, 95W, 1066 MHz FSB, 8MB), FIO	455068-L21
	<b>Dual-Core Processor</b>	
	Intel® Xeon® processor E3120 (3.16 GHz, 65W, 1333 MHz FSB, 6MB), FIO	492973-L21
	Intel® Xeon® processor E3110 (3.00 GHz, 65W, 1333 MHz FSB,6MB),FIO	464376-L21
	Intel® Core™ 2® processor E7400 (2.80 GHz, 65W, 1066MHz FSB, 3MB), FIO	533838-L21
	Intel® Pentium® processor E2160 (1.8GHz, 65W, 800 MHz FSB, 1MB), FIO	450359-L21
	<b>Single-Core Processor</b>	
	Intel® Celeron® processor 440 (2.0GHz, 35W, 800 MHz FSB, 512KB), FIO	455072-L21
HP Memory	HP 2GB (1x2GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450260-B21
	HP 1GB (1x1GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450259-B21



### Configuration Information-Factory Integrated Models

HP Optical Drives	HP Half-Height SATA DVD ROM Kit	447326-B21
	HP Half-Height SATA DVD-RW Optical Kit	447328-B21

#### HP Hard Drives

**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, and firmware) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

**NOTE:** Hard drives have either a one year or three year warranty; please refer to the specific hard drive QuickSpecs for details.

**NOTE:** Supports up to 4 hard drives.

#### SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507774-B21
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HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507772-B21
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HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458941-B21
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#### SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives

HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	571232-B21
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HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	458947-B21
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**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18004.www1.hp.com/products/quickspecs/13021\\_na/13021\\_na.html](http://h18004.www1.hp.com/products/quickspecs/13021_na/13021_na.html)

#### SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

HP 450GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	454234-B21
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HP 300GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417950-B21
--	------------

HP 146GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417855-B21
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### Step 3: Choose Additional Options for Factory Integration

HP Storage Controller	HP SC40Ge SAS HBA, FIO	449176-B21
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### Step 4: Choose Additional Options for Factory Integration

**NOTE:** For additional "Core Options" and "Additional Options", please refer to the "Options" sections below.



### Core Options

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

HP Memory	HP 2GB (1x2GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450260-B21
	HP 1GB (1x1GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450259-B21

HP Optical Drives	HP Half-Height SATA DVD ROM Kit	447326-B21
	HP Half-Height SATA DVD-RW Optical Kit	447328-B21

### HP Hard Drives

**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, and firmware) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

**NOTE:** Hard drives have either a one year or three year warranty; please refer to the specific hard drive QuickSpecs for details.

#### SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507774-B21
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HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507772-B21
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HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458941-B21
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#### SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives

HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	571232-B21
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HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	458947-B21
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**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/13021\\_na/13021\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html)

#### SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

HP 450GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	454234-B21
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HP 300GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417950-B21
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HP 146GB 3G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	417855-B21
--	------------

**NOTE:** Please see the for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12244\\_na/12244\\_na.html](http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html)

### HP Networking

HP NC110T PCI Express Gigabit Server Adapter	434905-B21
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HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
--	------------

HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
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**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: [www.hp.com/go/ProLiantNICs](http://www.hp.com/go/ProLiantNICs)



### Additional Options

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HP Entry Level Server Management	HP ProLiant ML100 G5 Lights-Out 100c Remote Management Card <b>NOTE:</b> Supports HP ProLiant DL180 G5, ML110 G5, ML115 G5 and ML150 G5 servers. <b>NOTE:</b> For additional information on Lights-Out 100c Remote Management Card, please see the QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/12468_na/12468_na.html">http://h18000.www1.hp.com/products/quickspecs/12468_na/12468_na.html</a>	445513-B21
<hr/>		
HP Storage Controllers	<b>SAS Controllers</b> <b>Smart Array E200 Controller</b> HP Smart Array E200/128 BBWC Controller <b>NOTE:</b> Supports RAID 0,1,1+0, 5/BBWC. <b>Optional Upgrades</b> HP Non-Hot Plug SAS/SATA 4-Port Cable Kit <b>NOTE:</b> The purchase of a SAS Storage Controller requires the purchase of HP SAS/SATA 4-Port Cable (P/N 457692-B21). <b>NOTE:</b> SAS Storage Controllers supports both SATA and SAS drives. <b>NOTE:</b> On SATA models with embedded RAID, setup instructions are located in the User Guide. CTO RAID set-up is not available. HP ProLiant ML100 Series Server User Guide: <a href="http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00260539/c00260539.pdf">http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00260539/c00260539.pdf</a> <b>SAS HBA</b> HP SC44Ge Host Bus Adapter <b>NOTE:</b> When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS. <b>NOTE:</b> Supports RAID 0,1. <b>SCSI HBA</b> HP SC11Xe U320 Host Bus Adapter <b>NOTE:</b> Supports Tape only, no RAID support. <b>NOTE:</b> Recommended HBA for SCSI tape drive connect. <b>NOTE:</b> Please see the following QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/12460_na/12460_na.html">http://h18000.www1.hp.com/products/quickspecs/12460_na/12460_na.html</a> (Smart Array E200 Controller) <a href="http://h18004.www1.hp.com/products/quickspecs/12617_na/12617_na.html">http://h18004.www1.hp.com/products/quickspecs/12617_na/12617_na.html</a> (SC44Ge HBA) <a href="http://h18004.www1.hp.com/products/quickspecs/12566_na/12566_na.html">http://h18004.www1.hp.com/products/quickspecs/12566_na/12566_na.html</a> (SC11Xe HBA)	411508-B21  457692-B21  416096-B21  412911-B21

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### Additional Options

#### Backup & Recovery Software

#### Data Protector Express

HP Data Protector Express 4.0 SP1 Backup Server BB117BA

HP Data Protector Express 4.0 SP1 for Microsoft Small Business Server BB118BA

HP Data Protector Express Backup Server 4.0 SP1 Upgrade from Data Protector Express Single Server Edition BB117BT

**NOTE:** Only one of these Data Protector Express base products is required. To see available options: <http://www.hp.com/go/dataprotectorexpress>

#### Tape Backup

**NOTE:** For the complete range of StorageWorks tape drives, autoloaders, libraries and media see: <http://www.hp.com/go/tape>. For hardware and software compatibility of HP StorageWorks tape backup products see: <http://www.hp.com/go/connect>.

HP StorageWorks DAT 320 USB Internal Tape Drive AJ825A

HP StorageWorks DAT 320 SAS Internal Tape Drive AJ830A

**NOTE:** Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.

HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive DW085A

**NOTE:** Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.

HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive EH847A

**NOTE:** Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.

HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Tape Autoloader AH558A

**NOTE:** Requires HP 1U Tape Autoloader Rack-Mount Kit (AH166A) for rack installation. Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.

HP StorageWorks MSL2024 Tape Library with one LTO-3 Ultrium 920 SAS Drive AH559A

**NOTE:** Connection using the HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.

#### Disk Backup

**NOTE:** For the complete range of StorageWorks D2D Backup Systems see: <http://www.hp.com/go/d2d>. For the complete range of StorageWorks RDX drives and media see: <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP StorageWorks disk backup products see: <http://www.hp.com/go/connect>.

#### USB Removable Media RDX Disk Backup Systems

HP StorageWorks RDX320 Internal Removable Disk Backup System AJ767A

**NOTE:** 320GB of disk capacity per data cartridge.

HP StorageWorks RDX500 Internal Removable Disk Backup System AJ934A

**NOTE:** 500GB of disk capacity per data cartridge.

HP StorageWorks RDX750 Internal Removable Disk Backup System AW577A

**NOTE:** 750GB of disk capacity per data cartridge.



### Additional Options

HP Uninterruptible Power Systems	<b>HP Tower UPS</b>	
	<b>HP T1000 G3 UPS Models</b>	
	HP T1000 G3 UPS	AF448A
	<b>HP T1500 G3 UPS Models</b>	
	HP T1500 G3 UPS	AF450A
	<b>HP T750 G2 UPS Models</b>	
	HP T750 G2 UPS	AF446A
	<b>NOTE:</b> Please see QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/13160_na/13160_na.html">http://h18000.www1.hp.com/products/quickspecs/13160_na/13160_na.html</a>	
	<b>HP T750 UPS</b>	
	HP T750J UPS	AF456A
<b>NOTE:</b> Please see QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/12192_na/12192_na.html">http://h18000.www1.hp.com/products/quickspecs/12192_na/12192_na.html</a> <b>NOTE:</b> For additional information on sizing your server, please reference: <a href="http://www.upssizer.com">http://www.upssizer.com</a>		

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HP Rack Options	<b>HP KVM Switch Options</b>	
	HP 1x4 Console Switch	AF611A
	HP PS2 Server Console Cable, 6 foot, 2-Pack	AF612A
	HP USB Server Console Cable, 6 foot, 2-Pack	AF613A
	<b>NOTE:</b> required for supporting USB peripherals. <b>NOTE:</b> For additional information regarding KVM Switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a>	
	<b>Rack Kits</b>	
	Monitor/Utility Shelf	253449-B21
ProLiant Rack Enabling Kit	417705-B21	

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HP USB and SD Options	HP USB 2-Button Optical Mouse ALL	DC172B
	HP USB 04 Standard Keyboard	DT528A#ABA

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### Additional Options

HP Care Pack Services	<b>Hardware Services Next Business Day On-Site Service</b>	
	9-Hour x 5-Day Coverage, 3 Years, Electronic	U4433E
	<b>Hardware Services - 4-Hour On-site Service</b>	
	13-Hour x 5-Day Coverage, 3 Years, Electronic	U4434E
	24-Hour x 7-Day Coverage, 3 Years, Electronic	U4435E
	<b>Hardware Services 6-Hour Call to Repair On-Site Service</b>	
	6-Hour Call to Repair, On-Site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4436E
	<b>Hardware Installation</b>	
	Hardware Installation, Electronic	U4444E
	<b>NOTE:</b> For more information, customer/resellers can contact: <a href="http://www.hp.com/services/carepack">http://www.hp.com/services/carepack</a>	



### Memory

#### HP ProLiant ML110 G5 Models

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

#### Standard Memory

SATA Models:

1 GB of PC2-6400 DDR2 SDRAM running at 800MHz with ECC capabilities memory installed.

#### Standard Memory Plus Optional Memory

Up to 6 GB memory is available with the optional installation of 2 x 2 GB + 2 x 1 GB PC2-6400 un-buffered ECC DDR2 SDRAM DIMM Memory kits.

#### Standard Memory Replaced with Optional Memory

Up to 8GB of memory is available with the removal of the standard 1 GB of memory and the optional installation of 4x 2 GB PC2-6400 un-buffered ECC DDR2 SDRAM DIMM Memory kits.

**NOTE:** The below chart does not represent all possible memory configurations.

**NOTE:** For best performance, it is recommended that customer installs memory in identical pairs (Slots 1 and 3 are interleaving pair. Slots 2 and 4 are interleaving pair).

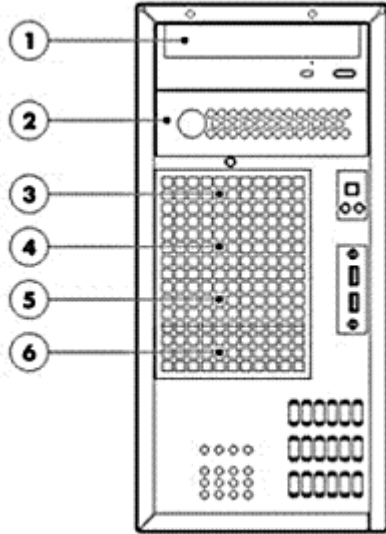
Memory		Slot			
		1	2	3	4
Standard	1 GB	1 GB	Empty	Empty	Empty
Optional	6 GB	1 GB	2 GB	1 GB	2 GB
Maximum	8 GB	2 GB	2 GB	2 GB	2 GB

Following are memory options available from HP:

HP Memory	HP 2GB (1x2GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450260-B21
	HP 1GB (1x1GB) Dual Rank PC2-6400 (DDR2-800) Unbuffered Memory Kit	450259-B21



## Storage



1 16x SATA DVD-ROM

2 Removable Media Bays (5.25" each)

3, 4, 5, Four Non-Hot Plug Drive Bays  
6

## Drive Support

	Quantity Supported	Position Supported	Controller
<b>Removable Media</b>			
DVD Drive	2	1 or 2	Integrated SATA
DVD-RW Drive	2	1 or 2	Integrated SATA

### Hard Drives (SATA Models only)

**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, and firmware) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

**NOTE:** Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

#### SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
2TB 3G 7.2K 1TB 3G 7.2K 500GB 3G 7.2K	Up to 4	3,4,5,6	6 Port SATA controller with Embedded RAID on Motherboard <b>NOTE:</b> Transfer rate: 3 Gb/s SATA

#### SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
250GB 3G 7.2K 160GB 3G 7.2K	Up to 4	3,4,5,6	6 Port SATA controller with Embedded RAID on Motherboard <b>NOTE:</b> Transfer rate: 3 Gb/s SATA

### Hard Drives (SAS Models only)

#### SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives



## Storage

	Quantity Supported	Position Supported	Controller
450GB 3G 15K DP 300GB 3G 15K DP 146GB 3G 15K DP	Up to 4	3,4,5,6	HP 4 Internal Port SAS HBA SC40Ge with RAID (0,1) <b>NOTE:</b> When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.

### Maximum Storage Capacity – SATA/SAS Models

Internal	SATA	8.0TB (4 x 2TB)
	SAS	1.8TB (4 x 450GB)

### Tape and Disk Backup

**NOTE:** For the complete range of StorageWorks tape drives, autoloaders, libraries and media, including the internal fitting models, see: <http://www.hp.com/go/tape>. For the complete range of StorageWorks D2D Backup Systems see: <http://www.hp.com/go/d2d>. For the complete range of StorageWorks RDX drives and media see: <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP StorageWorks disk and tape backup products see: <http://www.hp.com/go/connect>.

	Position	Recommended Controller	Part Number
<b>HP StorageWorks SCSI Tape Drives</b> LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160	Internal or External	HP SC11Xe Host Bus Adapter  Please check the full compatibility information at: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a>	412911-B21
<b>HP StorageWorks SCSI Rack Mount Kits</b> 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter  Please check the full compatibility information at: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a>	412911-B21
<b>HP StorageWorks USB Tape Drives</b> DAT 40 DAT 72 DAT 160 DAT 320	Internal or External	USB 2.0 Port	N/A
<b>HP StorageWorks USB Rack Mount Kits</b> 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
<b>HP StorageWorks SAS Tape Drives</b>	Internal or External	HP SC44Ge SAS Host Bus Adapter	416096-B21



## Storage

DAT 160  
 DAT 320  
 LTO-2 Ultrium 448  
 LTO-3 Ultrium 920  
 LTO-4 Ultrium 1760  
 LTO-4 Ultrium 1840  
 LTO-5 Ultrium 3000  
 LTO-5 Ultrium 3280

Please check the full compatibility information at:  
<http://www.hp.com/go/connect>

**HP StorageWorks SAS  
 Rack Mount Kits**  
 1U Rack-Mount Kit  
 3U Rack-Mount Kit

External

HP SC44Ge SAS Host Bus Adapter

416096-B21

Please check the full compatibility information at:  
<http://www.hp.com/go/connect>

**HP StorageWorks SCSI  
 Tape Autoloaders**  
 DAT 72x10 Autoloader  
 1/8 G2 Autoloader

External

HP SC11Xe Host Bus Adapter

412911-B21

Please check the full compatibility information at:  
<http://www.hp.com/go/connect>

**HP StorageWorks SCSI  
 Tape Libraries**  
 MSL2024  
 MSL4048  
 MSL8096  
 MSL6000

External

HP U320e SCSI Dual Channel Controller

AH627A

Please check the full compatibility information at:  
<http://www.hp.com/go/connect>

**HP StorageWorks SAS  
 Tape Autoloaders and  
 Libraries**  
 1/8 G2 Autoloader  
 MSL2024  
 MSL4048  
 MSL8096

External

HP SC44Ge SAS Host Bus Adapter

416096-B21

Please check the full compatibility information at:  
<http://www.hp.com/go/connect>

**HP StorageWorks Fibre  
 Channel Tape Libraries**  
 MSL2024  
 MSL4048  
 MSL8096  
 MSL6000

External

Please consult the EBS connectivity matrix at:  
<http://www.hp.com/go/ebs> for connectivity information and the  
 supported Fibre Channel HBAs shown in this QuickSpecs.

**HP StorageWorks USB  
 RDX Removable Disk  
 Backup System**  
 RDX160  
 RDX320  
 RDX500  
 RDX750

External

USB 2.0 port

N/A



## Power Specifications

<b>Part Number</b>	445067-001
<b>Operational Input Voltage Range (Vrms)</b>	100 to 127 and 200 to 240 V auto ranging
<b>Frequency Range (Nominal) (Hz)</b>	50 to 60 Hz

<b>Nominal Input Voltage (Vrms)</b>	<b>100</b>	<b>120</b>	<b>200</b>	<b>230</b>	<b>240</b>
Max Rated Output Wattage Rating	365	365	365	365	365
Nominal Input Current (A rms)	6	N/A	3	N/A	N/A
Max Rated Input Wattage Rating (Watts)	N/A	N/A	N/A	N/A	N/A
Max. Rated VA (Volt-Amp)	600	N/A	N/A	N/A	N/A
Efficiency (%)	>65%	>65%	>65%	>65%	>65%
Power Factor	N/A	N/A	N/A	N/A	N/A
Leakage Current (mA)	N/A	<0.45mA	N/A	N/A	N/A
Maximum Inrush Current (A peak)	N/A	No component was damaged and input fuse shall not blow	N/A	No component was damaged and input fuse shall not blow	N/A
Maximum Inrush Current duration (mS)	N/A	N/A	N/A	N/A	N/A



## System Specifications

	<b>Power **</b>
<b>HP ProLiant ML110 G5 Fully Configured</b>	(see **)
Fully Loaded System output Wattage (W)	365W
Fully Loaded System Input Current (A rms)	6A @ 100V, 3A @ 200V
Fully Loaded System Thermal (BTU- Hr)	1915BTU
Fully Loaded System VA (Volt-Amp)	600 VA
System Leakage with all power supplies loaded (mA)	0.45mA@120V
System Inrush Current with all power supplies loaded (A)	<150A@ 240Vac
Power cord requirements	Nema 5-15P to IEC320-C13
	IEC320-C13 to IEC320-C14
	**Power shown is for a fully configured system consisting of (1) CPU, (4) double-sided DIMMs, (4) HDDs, (1) DVD-ROM, (4) PCI cards, and (1) power supply.
<b>Power Cords (13 Cord Sets)</b>	<b>Power Cord Part Number</b>
	121565-001



### Technical Specifications

<b>System Unit</b>	<b>Dimensions</b> (HxWxD) (with feet)	14.5 x 6.9 x 16.8 in (36.7 x 17.5 x 42.6 cm)	
	<b>Weight</b> (approximate)	Maximum	39 lb (17.5 kg) (all hard drives, power supplies, and processors installed)
Minimum		23.81 lb (10.8 kg) (one hard drive, power supply, and processor installed)	
<b>Input Requirements</b> (per power supply)	Rated Line Voltage	90 to 132 VAC, 180 to 264 VAC	
	Rated Input Current	6 A (at 100 VAC), 3 A (at 200 VAC)	
	Rated Input Frequency	47 to 63 Hz	
	Rated Input Power	600 W (at 100 VAC), 600 W (at 200 VAC)	
<b>Power Supply Output</b> (per power supply)	Rated Steady-State Power	365 W (at 100 VAC), 365 W (at 200 VAC)	
	Maximum Peak Power	385 W (at 100 VAC), 385 W (at 200 VAC)	
<b>System Inlet Temperature</b>	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).	
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).	
<b>Relative Humidity</b> (non-condensing)	Operating	10% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.	
	Non-operating	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.	
<b>Altitude</b>	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).	
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).	
<b>Acoustic Noise</b>	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when		



### Technical Specifications

the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).

#### SATA Model

Idle

*L<sub>WA</sub>d* 4.2 Bels

*L<sub>pAm</sub>* 26 dBA

Operating

*L<sub>WA</sub>d* 5.1 Bels

*L<sub>pAm</sub>* 34 dBA

#### SAS Model

Idle

*L<sub>WA</sub>d* 5.2 Bels

*L<sub>pAm</sub>* 34 dBA

Operating

*L<sub>WA</sub>d* 5.7 Bels

*L<sub>pAm</sub>* 40 dBA

Emissions Classification  
(EMC)

FCC Rating

Class B

Normative Standards

CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

**NOTE:** Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

HP 160GB 3G SATA  
7.2K rpm LFF (3.5-inch)  
Non-hot Plug Entry 1yr  
Warranty Hard Drive

458947-B21

**Capacity**

160,041 MB

**Height**

1.0 in. (26.1 mm)

Maximum drive dimension

**Width**

4.0 in (101.6 mm)

**Depth**

5.787 in (147.0 mm)

Maximum drive dimension

**Interface**

Serial ATA

**Transfer Rate**  
(Maximum)

3Gb/s

**Native Command**  
**Queuing**

N/A

**Seek Time**

(typical reads, including  
settling)

Single Track

2.0 ms

Average

<11 ms

Full-Stroke

23.0 ms

Rotational Speed

7,200 rpm



### Technical Specifications

<b>Physical Configuration</b>	Bytes/Sector	512
	Logical Blocks	312,581,808
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	

#### 16X Max SATA DVD-ROM Disk Drive

<b>Applicable Disk</b>	CD-ROM, CD-XA, CD-DA (Mode 1, Mode 2, Form 1 and 2) Photo CD (Single and Multi-session) CD-R, CD-RW Mixed Mode (Audio and Data combined) DVD-ROM DVD-R/RW, DVD+R/RW CD-R, CD-RW, DVD-ROM, DVD+R, DVD+RW	
	<b>Capacity</b>	4.7 GB (DVD-5) 8.54 GB (DVD-9)
<b>Block Size</b>	DVD Media	2,048 bytes
<b>Interface</b>	SATA	
<b>Access Times (typical)</b>	Random	<140 ms
	Full-Stroke	<250 ms
<b>Data Transfer Rate</b>	Sustained	8100 to 21600 KB/s (6X to 16X)
	Bus Rate	1.5 Gbps
<b>Cache Buffer</b>	128 KB	
<b>Start-up Time (typical)</b>	< 7 seconds	
<b>Stop Time</b>	< 4 seconds	
<b>Laser Parameters</b>	Type	Semiconductor Laser GaAlAs
	Wave Length	780 ± 25 nm
<b>Operating Conditions</b>	Temperature	41° to 122° F (5° to 50° C)
	Humidity	10% to 90%
<b>Dimensions</b>	(HxWxD, maximum)	1.7 x 5.85 x 8.11 in (42.9 x 150 x 195 mm)
	Weight	2.64 lb (1.2 kg)



### Technical Specifications

<b>HP 4 Internal Port SAS Host Bus Adapter</b> (SAS/SATA HP Model)	<b>SATA Protocol</b>	SATA 1.5Gb/s
	<b>SATA Ports</b>	4 internal
	<b>Port transfer rate</b>	1.5 Gb/s total
	<b>Maximum Capacity</b>	up to 4.0TB (4 x 1TB Non-Hot Plug SATA HDD)
	<b>RAID Levels Supported</b>	RAID 1 (Mirroring) RAID 0 (Striping)
	<b>Logical RAID Volumes Supported</b>	2
	<b>Dimensions (excluding bracket)</b>	6.6 x 2.5 x 0.6 in (16.8 x 6.4 x 1.6 cm)
	<b>Disk Drive and Enclosure Protocol Support</b>	3 Gbps SAS (Serial Attached SCSI) 1.5 Gbps SATA (Serial Advanced Technology Attachment)
	<b>Architecture</b>	64-bit
	<b>SAS Connectors</b>	1 internal SFF8484 x4 Wide SAS Connectors 12 Gbps per x4 Wide SAS Port (4 x 3 Gbps)
	<b>Data Transfer Method</b>	PCI-Express x8 - 2 GB/s maximum bandwidth
	<b>PCI Bus Speed</b>	PCI-Express x8
	<b>Simultaneous Drive Transfer Ports</b>	1 x4 Wide SAS Connectors
	<b>Port Transfer Rate</b>	12 Gb/s per x4 Wide SAS Port (4 x 3 Gb/s)
	<b>Software upgradeable Firmware</b>	Yes
	<b>Maximum Capacity</b>	1.2TB (4 x 300GB)
	<b>Memory Addressing</b>	64-bit, supporting servers memory greater than 4 GB
	<b>Logical Drives Supported</b>	Up to 2 Logical Volumes Up to 10 drives total in all RAID volumes Up to 2 Drives per RAID 1 Up to 4 Drives per RAID 0
	<b>RAID Support</b>	RAID 1 (Mirroring) RAID 0 (Striping)
	<b>Upgradeable Firmware</b>	4-MB flashable ROM
	<b>Disk Drive and Enclosure Protocol Support</b>	3 Gbps SAS and 1.5 Gbps SATA



### Technical Specifications

HP SC40Ge SAS Host Bus Adapter with RAID	RAID Support	RAID 1 (Mirroring) RAID 0 (Striping)	
	Logical Drives Supported	Up to 2 Logical Volumes Up to 10 drives total in all RAID volumes Up to 2 Drives per RAID 1 Up to 8 Drives per RAID 0	
	Maximum Capacity	3.6TB (8 x 450GB)	
	Data Transfer Method	PCI-Express x8 - 2 GB/s maximum bandwidth	
	Port Transfer Rate	12 Gb/s per x4 Wide SAS Port (4 x 3 Gb/s)	
	Simultaneous Drive Transfer Ports	2 x4 Wide SAS Connectors	
	Protocols	3 Gbps SAS and 1.5 Gbps SATA 1.5 Gbps SATA (Serial Advanced Technology Attachment)	
	External SAS Connectors	None	
	Internal SAS Connectors	2 internal SFF8484 x4 SAS Connectors	
	Upgradeable Firmware	4MB flashable ROM	
	Embedded NC105i PCIe Gigabit Server Adapter	Network Interface	Integrated 10/100/1000BASE-T Transceiver Combines a triple-speed IEEE 802.3TM – Compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver.
		Data Transfer Method	Compliant to x1 PCIe Specification
		Controller	BCM5722
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
Connector	1000Base-TX (Half and Full-Duplex)	2000Mb/s	
	RJ-45 connector		
Cable Support	Performs all the physical layer functions for 10BASE-T, 100BASE-T, and 1000BASE-T Ethernet on standard Category 5 UTP		



### Technical Specifications

#### Environment-friendly Products and Approach

#### End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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

