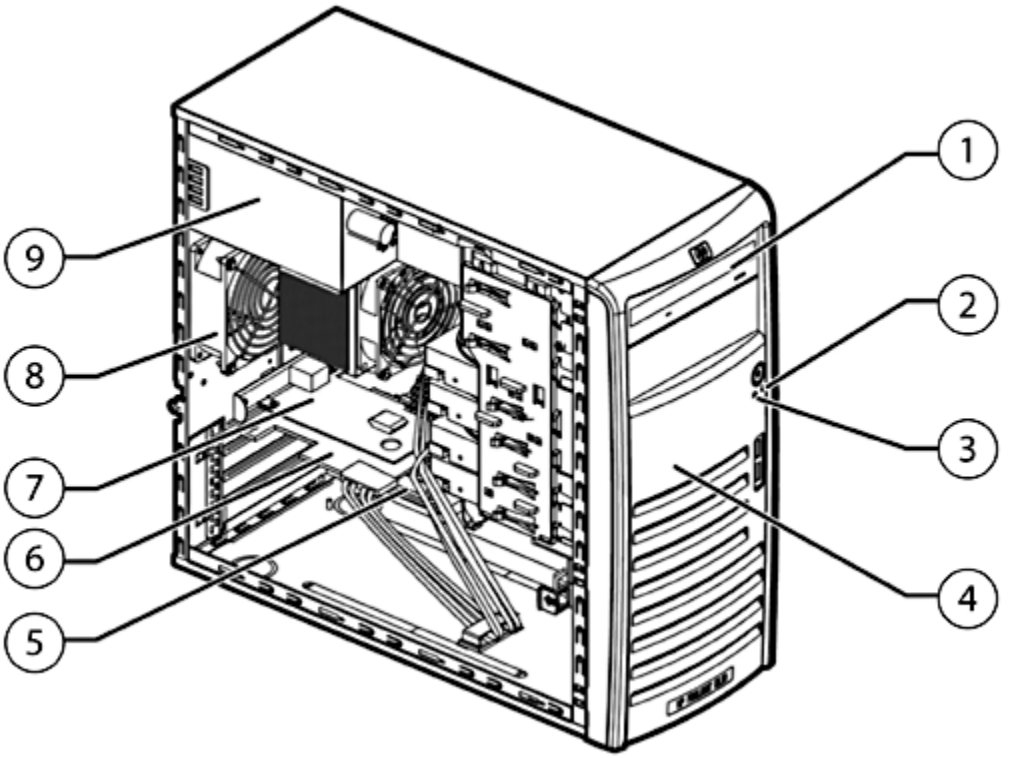
Overview



1. CD-ROM Drive
2. Power LED
3. Drive Activity LED
4. Well ventilated chassis design
5. Main System Board
6. HDD controller card (Optional)
7. HP LO 100c Management Card (Optional)
8. Rear System Fan
9. 370W Power Supply

What's New

- Processors:
  - Dual-Core Intel® Pentium D Processor 935 (3.2 GHz, 800 MHz FSB)
  - Dual-Core Intel® Pentium D Processor 945 (3.4 GHz, 800 MHz FSB)
- Storage Controller:
  - HP SC44Ge Host Bus Adapter
- Communications:
  - HP NC110T PCI Express Gigabit Server Adapter
- Internal Storage:
  - Support up to 1.2TB SAS max storage (4 x 300GB)

Overview

At A Glance

- **Processor**:
  - Dual-Core Intel® Xeon® processors 3000 sequence
  - Dual-Core Intel® Pentium® D processors 800 or 900 sequence
  - Single-Core Intel® Celeron® D processors
- **Memory**
  - 512 MB Standard / 8 GB Maximum of PC2-5300 DDR2 667 MHz ECC unbuffered Memory
- **Storage Controller**:
  - 4 Port SATA controller with Embedded RAID on Motherboard
  - HP 8 Internal Port SAS HBA with RAID
- **Internal Drive Support**:
  - 4 HDD Support:
    - 2TB SATA max storage (utilizing 500GB CTO HDD)
    - 1.2TB SAS max storage (4 x 300GB)
- **Network Controller**:
  - Embedded NC320i PCIe Gigabit Server Adapter
- **Expansion Slots**:
  - Two 32-bit/33MHz PCI at 3.3V slot
  - Two PCI-Express slots (x4 and x8, both in an x8 connector).
- **USB Ports**:
  - Six total USB ports (2 internal, 2 front, 2 rear)
- **Form Factor**:
  - Micro ATX tower
- **Management**:
  - Standard IPMI reporting
  - Lights Out 100c Remote Management Card (Optional)
- **Warranty**:
  - Protected by HP Services, including a one-year, limited warranty, Next Business Day 1 year on-site limited Global warranty - Certain restrictions and exclusions apply.

Standard Features

Processor One of the following depending on Model	Dual-Core Intel Pentium D Processor 945 (3.4 GHz, 800 MHz FSB)* Dual-Core Intel Pentium D Processor 935 (3.2 GHz, 800 MHz FSB)* Dual-Core Intel Pentium D processor 925 (3.0 GHz, 800MHz, FSB) Dual-Core Intel Pentium D processor 915 (2.8 GHz, 800MHz FSB) Dual-Core Intel Pentium D processor 820 (2.8 GHz, 800MHz FSB)* Dual-Core Intel Xeon processor 3050 (2.13 GHz, 1066MHz FSB)* Dual-Core Intel Xeon processor 3040 (1.86 GHz, 1066MHz FSB) Single-Core Intel Celeron D processor 352 (3.20 GHz, 533MHz FSB)* ***NOTE:** Processors available via CTO only.
Cache Memory One of the following depending on Model	1x2 MB shared Level 2 cache (Xeon sequence) 2x2 MB Level 2 cache (Pentium D 900 sequence) 2x1 MB Level 2 cache (Pentium D 800 sequence) 512KB Level 2 cache (Celeron D)
Chipset	Intel 3000
Memory Protection	Advanced ECC

Memory

Type	PC2-5300 unbuffered DDR2 SDRAM (667MHz)
Standard	512 MB
Maximum	8 GB

Network Controller Embedded NC320i PCIe Gigabit Server Adapter

Expansion Slots

Slot Number	Bus Speed	Hot Plug Y/N	PCI Voltage	Notes
4	x8 PCI Express	No	n/a	Full Height
3	x4 PCI Express	No	n/a	In a x8 slot Full Height
1/2	32bit/33MHz PCI	No	3.3V	Full Height

NOTE: Only one brace for full length cards provided.

Storage Controller
One of the following depending on Model
Integrated 4 port SATA controller with embedded RAID

Storage

CD-ROM	48x IDE (ATAPI) CD-ROM Drive	
Hard Drives	**SATA**	160GB SATA 7200 rpm Drive
	SAS	72GB SAS 1500 rpm Drive

Standard Features

Maximum Internal Storage	**Type**		
	SAS (Not-hot plug)	1.2TB	(4x300GB)
	SATA (Non-hot plug)	2TB	(4 x 500GB*)
	***NOTE**: Available CTO only.		
Interfaces	Parallel	0	
	Serial	2	
	Pointing Device (Mouse, PS2)	1	
	Graphics	1	
	Keyboard (PS2)	1	
	USB	6 total (2 rear, 2 front panel, 2 internal (one for USB Tape connectivity))	
		NOTE: Internal USB ports are optimal for the attachment of HP USB DAT Tape Drives **NOTE:** Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html	
	Network RJ-45 (Ethernet)	1	
	Management	Optional Lights-Out 100c Remote Management port	
Graphics	Integrated 2MB video controller		
Form Factor	Micro ATX Tower (4U)		
Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.3 Compliant PXE Support WOL Support IPMI 2.0 compliance		
Manageability	Embedded IPMI standard reporting Optional HP ProLiant Lights-Out 100c Remote Management Card		
Security	Power-on password Setup password		
Server Power Cords	12' country specific, lowline NEMA power cord. **NOTE:** Rack models ship standard with a 12' IEC cable. Most redundant power supply options ship with a 6' country specific power cord. Localized cables included with geographic specific models in other world regions.		

Standard Features

Power Supply	370 Watts
System Fans	1 – non-redundant system fan shipped standard 1 – non-redundant CPU heatsink fan shipped standard
OS Support	Microsoft Windows Server 2003: Standard & Enterprise Edition (32 and 64 bit) Microsoft Windows Small Business Server 2003 Microsoft Windows 2003 Server, Web Edition Novell NetWare 6.5 SBS (only after SP6 release) RedHat Enterprise Linux SUSE Linux Enterprise Server **NOTE:** For an up-to-date listing of the latest ML110 G4 OS support matrix, please see: http://www.hp.com/go/supportos **NOTE:** For an up-to-date listing of the latest drivers available for the HP server ML110 G4, please see: http://h18023.www1.hp.com/support/files/server/us/family/model/5769.html?lang=en&cc=us **NOTE:** Drivers may also found on the base media for some Linux OS's. When configuring your server, please consult your base media driver base, or visit HP.com at: http://h18023.www1.hp.com/support/files/server/us/index.html **NOTE:** For more Linux OS support & certification information, please visit our the ProLiant & Bladesystem Server Linux matrix http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html
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 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 ProLiant Smart Buys (NA only)	The HP Smart Buy program offers mainstream business solutions at competitive prices with excellent availability and superior HP quality. It offers a wide range of industry-leading HP products at compelling prices, allowing you to receive richer configurations with additional options. **NOTE:** ProLiant Smart Buys are available in NA only. For detailed specification information on ProLiant Smart Buys please click on the following link: ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf
HP Enterprise Configurator	The HP eCo-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.

Standard Features

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 one year 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: Limited warranty includes 1 year parts, 1 year labor, 1-year on-site support (3-1-1 warranty offered in AP only)

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.

Extended 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*

Committed Care – Cost-effective service options designed to extend HP Services committed response and guaranteed fix times, designed to speed problem resolution.

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

Committed Response – Highest HP Support service level recommend to help increase IT performance and availability with comprehensive, consistent 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 people 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

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

SATA Models

HP ML110G4 P925 512MB, NHP 160GB SATA (1P) 440288-xx1	**Processor(s)** One of the following depending on Model	One (1) Dual-Core Intel® Pentium® D Processor 925 (3.0 GHz, 800 MHz FSB) One (1) Dual-Core Intel Pentium D Processor 915 (2.8 GHz, 800MHz FSB) One (1) Dual-Core Intel Xeon 3040 Processor (1.86 GHz, 1066 MHz FSB)
HP ML110G4 P915 512MB, NHP 160GB SATA (1P) 417248-xx1	**Cache Memory** One of the following depending on Model	2 x 2MB Level 2 cache (Pentium 915 & Pentium 925) 1 x 2MB shared Level 2 cache (Xeon 3040)
HP ML110G4 3040 512MB, NHP 160GB SATA (1P) 417249-xx1	**Memory**	512 MB PC2-5300 ECC (DDR2-667Mhz) (1 x 512 MB)
	Storage Controller	HP Embedded 4 Port SATA Controller with embedded RAID
	Hard Drive	160GB SATA HDD
	Internal Storage	Maximum 1TB (4 x 250GB) SATA
	Optical Drive	48x CD-ROM
	Form Factor	Micro ATX Tower

SAS Models

HP ML110G4 3040, 512MB, NHP-SAS (1P) 432126-xx1	**Processor(s)** One of the following depending on Model	One (1) Dual-Core Intel® Xeon® 3040 Processor (1.86 GHz, 1066 MHz FSB)
	Cache Memory	1 x 2MB shared Level 2 cache (Xeon 3040)
	Memory	512 MB PC2-5300 ECC (DDR2-667Mhz) (1 x 512 MB)
	Storage Controller	HP 8 Internal Port SAS HBA with RAID (0,1)
	Hard Drive	72GB SAS HDD
	Internal Storage	Maximum 1.2TB (4 x 300GB) SAS
	Optical Drive	48x CD-ROM
	Form Factor	Micro ATX Tower

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

Configuration Information-Factory Integrated Models (North America Only)

NOTE: For Configure to Order requirements within EMEA region, please consult local Sales Contact.
NOTE: HP does not allow factory integration of options into standard models listed above.
Configure-to-order servers must start with a CTO Chassis.
NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.
NOTE: FIO indicates that this option is a Factory Installable Option.
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

Models	HP ProLiant ML110 G4 Tower Chassis (North America)	417710-B21
	Factory Integrated Models ship with:	
	Embedded NC320i PCIe Gigabit Server Adapter	
	Keyboard and Mouse	
	370 Watts, PFC (Power Factor Correcting)	
	Tower Form Factor (4U)	

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

Processors	Single-Core Intel Celeron D processor 352 3.20 GHz/533MHz/512 MB L2 Cache, Factory Integrated	430934-L21
	Dual-Core Intel Pentium D processor 820 2.8 GHz/800MHz/2x1 MB L2 Cache, Factory Integrated	434081-L21
	Dual-Core Intel Pentium D processor 915 2.8 GHz/800MHz/2x2 MB L2 Cache, Factory Integrated	434080-L21
	Dual-Core Intel Pentium D processor 925 3.0 GHz/800MHz/2x2 MB L2 Cache, Factory Integrated	433357-L21
	Dual-Core Intel Pentium D Processor 935 3.2 GHz/800 MHz, 2x2 MB L2 Cache, Factory Integrated	440284-L21
	Dual-Core Intel Pentium D Processor 945 3.4 GHz/800 MHz/2x2 MB L2 Cache, Factory Integrated	440285-L21
	Dual-Core Intel Xeon processor 3040 1.86 GHz/1066MHz/1x2M L2 Cache, Factory Integrated	432125-L21
	Dual-Core Intel Xeon processor 3050 2.13 GHz/1066MHz/1x2M L2 Cache, Factory Integrated	430936-L21

Memory	2048 MB Unbuffered Advanced ECC PC2-5300 DDR2 (1 x 2048 MB), Dual Rank	432806-B21
	1024 MB Unbuffered Advanced ECC PC2-5300 DDR2 (1 x 1024 MB), Dual Rank	432804-B21
	512 MB Unbuffered Advanced ECC PC2-5300 DDR2 DIMM (1 x 512 MB), Single Rank	432803-B21

Configuration Information-Factory Integrated Models (North America Only)

Hard Drives	**Serial ATA** (SATA) – **Non-hot Plug HDD** (SATA or SAS Models)	
	HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD	383410-B21
	HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD	411275-B21
	HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD	411276-B21
	HP 500GB 1.5G SATA 7.2K NHP 3.5" HDD, FIO*	404469-B21
	***NOTE:** Factory Integrated Only	
	Serial Attached SCSI (SAS) **Non-Hot Plug** (SAS Models Only)	
	HP 300GB SAS 3.5" 15K NHP	431950-B21
	HP 146GB SAS 3.5" 15K NHP	432093-B21
	HP 72GB SAS 3.5" 15K NHP	432095-B21
Optical Drives	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	HP DVD+R/RW 8X HH	383974-B21
	HP ProLiant 48X CD	398972-B21
	DVD ROM Drive 16x	217053-B21
	NOTE: For the installation of Windows and other OS's, a floppy drive (DC361B) may be required to complete driver installation. A USB drive key may not work to complete driver installation.	

Step 3: Choose Additional Factory Integratable Options

Storage Controllers	HP SC44Ge Host Bus Adapter	416096-B21
	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 **NOTE:** PCI-X Interface (PCI 32bit/33MHz compatible)	374654-B21
	HP Smart Array E200/128 BBWC Controller	411508-B21
	NOTE: SAS Storage Controllers will run both SATA and SAS drives.	
	NOTE: The purchase of a SAS Storage Controller requires the purchase of HP SAS/SATA 4-Port Cable (P/N 430479-B21)	

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Options" section below.
NOTE: Some options may not be factory integratable. Please contact your local sales representative for additional information.

Operating Systems	**Pre-install Microsoft Windows 2003 SBS Standard Edition**	
	MS W2003 SBS R2 Std 1XX FIO Eng SW	432564-XX1
	MS W2003 SBS R2 Prm 1XX FIO Eng SW	432566-XX1

Configuration Information-Factory Integrated Models (North America Only)

Country Code Key	XX=00	NA
	XX=01	Australia
	XX=03	UK
	XX=04	Germany
	XX=05	France
	XX=06	Italy
	XX=07	Spanish
	XX=20	Brazil
	XX=21	Hungarian
	XX=22	Czech
	XX=24	Polish
	XX=33	Dutch
	XX=37	AP
	XX=42	Euro
	XX=AA	PRC
	XX=29	Japan
	XX=AB	Taiwan
	XX=AD	Korea

Options

Memory	2048 MB Unbuffered Advanced ECC PC2-5300 DDR2 (1x2048 MB), Dual Rank	432806-B21
	1024 MB Unbuffered Advanced ECC PC2-5300 DDR2 (1x1024 MB), Dual Rank	432804-B21
	512 MB Unbuffered Advanced ECC PC2-5300 DDR2 (1x512 MB), Single Rank	432803-B21
Optical Drives	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	48X CD-ROM Option, Carbon	398972-B21
	DVD-RW Drive Option Kit	383974-B21
	1.44 MB USB Diskette Drive	DC361B
	NOTE: For the installation of Windows and other OS's, a floppy drive may be required to complete driver installation. A USB drive key may not work to complete driver installation.	
Hard Drives	**Serial – ATA** (SATA) **– Non-Hot Plug** (SATA Models Only)	
	HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD	383410-B21
	HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD	411275-B21
	HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD	411276-B21
	NOTE: When purchasing systems with the 500GB Non-Hot Plug SATA drives, please reference the Configuration Information Section of this QuickSpecs to order via Configuration to Order.	
	NOTE: The purchase of additional SATA hard drives requires the purchase of additional HP 1-Port SATA RAID Cables, (P/N 413748-21)	
	Serial Attached SCSI (SAS) **Non-Hot Plug** (SAS Models Only)	
	HP 300GB SAS 3.5" 15K NHP	431950-B21
	HP 146GB SAS 3.5" 15K NHP	432093-B21
	HP 72GB SAS 3.5" 15K NHP	432095-B21
	NOTE: The purchase of SAS hard drives requires the purchase of HP Internal SAS/SATA 4-Port Cable (P/N 430479-B21). This cable is standard in the SAS BTO model.	
Storage Controllers	HP SC44Ge Host Bus Adapter	416096-B21
	HP SC11Xe Host Bus Adapter	412911-B21
	HP 8 Internal Port SAS HBA with RAID	347786-B21
	NOTE: PCI-X Interface (PCI 32bit/33MHz compatible)	
	HP Smart Array E200/128 BBWC Controller	411508-B21
	128MB Battery-Backed Write Cache Enabler	351580-B21
	NOTE: Supports the Smart Array E200 Controller, Smart Array 641 Controller and Smart Array 642 Controller.	
	HP 1-Port SATA RAID Cable	413748-B21
	NOTE: The purchase of SATA hard drives requires the purchase of the HP 1-Port SATA RAID Cable (P/N 430479-B21) for each additional hard drive.	
	HP Internal SAS/SATA 4-Port Cable	430479-B21
	NOTE: The purchase of a SAS Storage Controller requires the purchase of HP SAS/SATA 4-Port Cable (P/N 430479-B21)	

Options

Communications	HP NC110T PCI Express Gigabit Server Adapter	434905-B21
	HP NC150T PCI 4-port Gigabit Combo Switch Adapter	367132-B21
	HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
	Agere 2006 PCI Hi-Speed 56K Modem	440519-B21
Tape Drives	**NOTE:** Installation of SCSI internal tape drives in a ML110 G4 model requires SCSI controller kit (PN: 374654-B21).	
	NOTE: For complete listing of tape drive offerings see: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html	
	USB Tape Drives	
	HP StorageWorks DAT 24 USB Internal Tape Drive (Carbonite)	DW069A
	HP StorageWorks DAT 40 USB Internal Tape Drive (Carbonite)	DW022A
	HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite)	DW026A
	DAT Tape Drives	
	HP StorageWorks DAT 40 SCSI Internal Tape Drive (Carbon)	C5686C
	HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)	Q1522B
HP Data Protector Express Software	HP DP Express Backup Server Upgrade for ProLiant Software	BB117AP
	HP DP Express Package for Microsoft Small Business Server	BB118AA
	NOTE: Please see the HP Data Protector Express QuickSpecs for additional information regarding the purchase of HP Data Protector Express software: http://h18000.www1.hp.com/products/quickspecs/12337_div/12337_div.html (Worldwide)	
	NOTE: To obtain a free licensed copy of HP Data Protector Express for ProLiant edition software, please visit the "Protect Your Data" link accessible from your ProLiant server's System Management Homepage (SMH) software (SmartStart 7.5 or later).	
Installation of Server into Racks	ProLiant Rack Enabling Kit	417705-B21
Lights Out Management Card	Lights-Out Management Card Kit for ML110 G4	418280-B21
UPS	HP T1000 UPS, JPN/TWN	AF404A
	HP T1000 UPS, NA	AF403A
	HP T1000 UPS, INTL	AF405A
	HP T750 UPS, Low Voltage (NA/JPN)	378439-D71
	HP T750 UPS, High Voltage (INTL)	378439-B31

Options

USB Options	HP 1GB Drive Key II- USB 2.0 Flash Drive	AG382AA
	HP 512MB DriveKey II- USB Flash Drive	ED516AA
	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP USB 04 Standard Keyboard	DT528A#xxx
	USB 2.0 4-port HUB	DG954A
HP KVM Switch Options	HP 1x4 Console Switch	AF611A
	HP PS2 Server Console Cable, 6 foot, 2-Pack	AF612A
	HP USB Server Console Cable, 6 foot, 2-Pack **NOTE:** required for supporting USB peripherals.	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

Service and Support, HP Care Pack, and Warranty Information

Service and Support Offerings (HP Care Pack Services)	**Hardware Services 4-Hour On-site Service**	
	13-Hour x 5-Day Coverage, 3 Years	U4434E
	24-Hour x 7-Day Coverage, 3 Years	U4435E
	Hardware Services Next Business Day On-Site Service	
	9-Hour x 5-Day Coverage, 3 Years	U4433E
	Hardware Services 6 Hour Call-to-Repair	
	24-Hour x 7-Day Coverage, 3 Years, 6 Hour Call-to-Repair	U4436E
	Hardware Installation Service	
	HP Install ProLiant ML110 Service	U4444E
	NOTE: For more information, customer/resellers can contact http://www.hp.com/services/carepack.	

HP ProLiant ML110 G4 Models

Standard Memory

512 MB of PC2-5300 DDR2 SDRAM running at 512 MB with Advanced ECC capabilities Memory installed (1 x 512 MB SDRAM DIMM).

Standard Memory Plus Optional Memory

Up to 5120 MB memory is available with the optional installation of PC2-5300 un-buffered ECC DDR2 SDRAM DIMM Memory kits.

Standard Memory Replaced with Optional Memory

Up to 8192 MB of memory is available with the removal of the standard 512 MB of memory and the optional installation of PC2-5300 un-buffered ECC DDR2 SDRAM DIMM Memory kits.

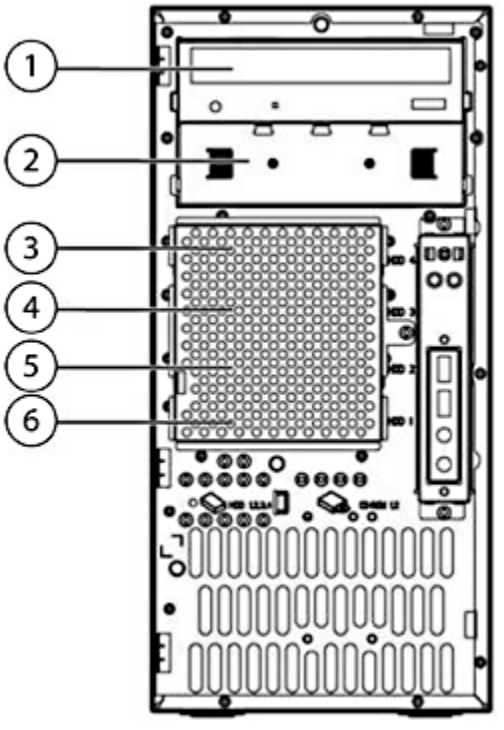
NOTE: The below chart does not represent all possible memory configurations.
NOTE: In memory configurations requiring 2 DIMM and 4 DIMM configurations, the memory must be paired for optimal performance. This means that DIMMs in slot 1 and 3 have to be identical, in slot 2 and 4 have to be identical. (For example, the Optional memory configuration shown below)

Memory		Slot			
		4	3	2	1
Standard	**512 MB**	**Empty**	**Empty**	**Empty**	**512 MB**
Optional	**5120 MB**	**2048 MB**	**512 MB**	**2048 MB**	**512 MB**
Maximum	**8192 MB**	**2048 MB**	**2048 MB**	**2048 MB**	**2048 MB**

Following are memory options available from HP:

2048 MB Unbuffered Advanced ECC PC2-5300 DDR2 (1 x 2048 MB), Dual Rank	432806-B21
1024 MB Unbuffered Advanced ECC PC2-5300 DDR2 (1 x 1024 MB), Dual Rank	432804-B21
512 MB Unbuffered Advanced ECC PC2-5300 DDR2 DIMM (1 x 512 MB), Single Rank	432803-B21

Storage



1	48x IDE (ATAPI) CD-ROM
2	Removable Media Bays (1.6" each)
3, 4, 5, 6	Four (4) Non-Hot Plug Drive Bays

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
DVD + CDRW Drive	2	1 or 2	Integrated IDE (ATAPI)
DVD-RW Drive	2	1 or 2	Integrated IDE (ATAPI)

Hard Drives (SATA Models only)

SATA 1.5Gb – Non-Hot Plug

	Quantity Supported	Position Supported	Controller
3.5-inch 80GB 7.2K, SATA 160GB 7.2K, SATA 250GB 7.2K SATA 500GB 7,2K SATA	Up to 4	3,4,5,6	4 Port SATA controller with Embedded RAID on Motherboard

Storage

Hard Drives (SAS Models only)

SAS – Non-Hot Plug

	Quantity Supported	Position Supported	Controller
3.5-inch 72GB 15K, SAS 145GB 15K SAS 300GB 15K SAS	Up to 4	3,4,5,6	HP 8 Internal Port SAS HBA with RAID (0,1)

Maximum Storage Capacity – SATA/SAS Models

Internal	**SATA**	1TB (4x250GB (BTO) 2TB (4 x 500GB (CTO)
	SAS	1.2TB (4x300GB)
Total	**SATA**	1TB (4x250GB (BTO) 2TB (4 x 500GB (CTO)
	SAS	1.2TB (4x300GB)

Tape Drives

NOTE: A SCSI controller needs to be purchased to operate internal SCSI devices in the SATA Models.
NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following:
http://h18000.www1.hp.com/products/quickspecs/Division/10233.html (Worldwide)

	Position Supported	Controller	Controller/HBA Option Kit Part Number
Internal USB Tape Drives DAT 24 USB DAT 40 USB DAT 72 USB	2	USB 2.0 port	N/A
External USB Tape Drives DAT 24 USB DAT 40 USB DAT 72 USB	External	USB 2.0 port	N/A
Internal SCSI Tape Drives DAT 40 DAT 72	2	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21
External SCSI Tape Drives DAT 40 DAT 72	External	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21

Power Specifications

Part Number	416121-001
Spare Kit	419029-001
Operational Input Voltage Range (Vrms)	100 to 127 and 200 to 240 V auto ranging
Frequency Range (Nominal) (Hz)	50 to 60 Hz

Nominal Input Voltage (Vrms)	**100**	**115**	**208**	**220**	**230**	**240**
Max Rated Output Wattage Rating	N/A	370	N/A	N/A	370	N/A
Nominal Input Current (A rms)	N/A	8	N/A	N/A	4	N/A
Max Rated Input Wattage Rating (Watts)	N/A	N/A	N/A	N/A	N/A	N/A
Max. Rated VA (Volt-Amp)	N/A	N/A	N/A	N/A	N/A	N/A
Efficiency (%)	N/A	>65%	N/A	N/A	>65%	N/A
Power Factor	N/A	N/A	N/A	N/A	N/A	N/A
Leakage Current (mA)	0.25mA (at 60HZ)	N/A	N/A	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	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	N/A

System Specifications

	Power **
HP ProLiant ML110 G4 Fully Configured	(see **)
Fully Loaded System output Wattage (W)	370W
Fully Loaded System Input Current (A rms)	8A @ 115V, 4A @ 230V
Fully Loaded System Thermal (BTU-Hr)	1907BTU
Fully Loaded System VA (Volt-Amp)	920
System Leakage with all power supplies loaded (mA)	0.75mA@240V 0.45mA@120V
System Inrush Current with all power supplies loaded (A)	80A
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) CD-ROM, (1) DVD-ROM, (4) PCI cards, and (1) power supply.

Power Cords (13 Cord Sets)	**Power Cord Part Number**
Country	
APD	100614-009, 100613-008, 139867-004, 187487-004 (India)
Brazil	285052-001
Australia	100661-001
Euro	100614-009
France	100614-009
Germany	100614-009
Japan	139867-004
PRC	286496-001
UK	100613-008
US, Taiwan	121565-001

Technical Specifications

System Unit	**Dimensions** (HxWxD) (with feet)	14.46 x 6.88 x 16.76 in (36.7 x 17.5 x 42.6 cm)	
	Weight (approximate)	23.15 lb (10.5 kg)	
	Input Requirements (per power supply)	Range Input Voltage	100 to 127 VAC/200 to 240 VAC
		Normal Line Voltage	115 or 230 VAC
	Line Frequency	50 to 60 Hz	
	Rated Input Current	load 8A at 115VAC, 4A at 230VAC	
	BTU Rating	1907 BTU	
	SCSI Connectors (SCSI Models only)	One internal LVD/SE connector for U160 devices, plus two internal SE connectors for legacy devices.	
	Power Supply Output Power (per power supply)	Rated Steady-State Power	370W
		Maximum Peak Power	370W
	Temperature Range	Operating	50° to 95° F (10° to 35° C)
		Shipping	-40° to 140° F (-40° to 60° C)
	Relative Humidity (non-condensing)	Operating	10% to 90%
		Non-operating	10% to 90%
	Acoustic Noise	Idle (Fixed Disk Drives Spinning)	
		L WAd (BELS)	5.5
		Operating (Random Seeks to Fixed Disks)	
		L WAd (BELS)	6.0

HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD 411275-B21	**160GB 7,200 rpm**	**Capacity**	160,041 MB	
		Height	1.0 in. (26.1 mm)	
		Width	4.0 in. (101.6 mm)	
		Interface	Serial ATA	
		Transfer rate synchronous (maximum)	1.5 Gb/s	
		Seek time (typical reads, including settling)	Single track	0.9 ms
			Average	9.0 ms
			Full-stroke	17.8 ms
			Rotational speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	312,581,808
		Operating Temperature	41° to 131° F (5° to 55° C)	

Technical Specifications

NHP 72GB 3G SAS 15K 3.5" HDD 431950-B21	72GB 15K	**Capacity**	73,407,856,856	
		Height	1.0 in (25.4mm)	
		Width	4.0 in. (101.6 mm)	
		Interface	SAS	
		Transfer rate synchronous (maximum)	3 Gb/sec	
		Seek time (typical reads, including settling)	Single track	0.27 ms
			Average	3.5 ms
			Full-stroke	3.5 ms
			Rotational speed	15,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	143,374,737
		Operating Temperature	50° to 95° F (10° to 35° C)	

48X Max IDE (ATAPI) CD-ROM Drive 398972-B21	**Disk**	Applicable Disk	CD-ROM, CD-XA, CD-DA (Mode 1, Mode 2, Form 1 and 2) Photo CD (Single and Multi-session) Mixed Mode (Audio and Data combined) CD-R
		Capacity	540MB (Mode 1, 12 cm) 650MB (Mode 2, 12 cm)
	Block Size	Mode 1	2,048 bytes, 1024 bytes
		Mode 2	2,340 bytes, 2,336 bytes, 1024 bytes
		CD-DA	2,352 bytes
		CD-XA	2,328 bytes
	Interface	IDE (ATAPI)	
	Access Times (typical)	Random	<100 ms
		Full-Stroke	<150 ms
	Data Transfer Rate	Sustained	3000 to 7200 KB/s (20X to 48X)
		Burst	150 KBps to 7,200 KBps
		Bus Rate	16.7 MBps
	Cache Buffer	128 KB	
	Start-up Time (typical)	< 7 seconds	
	Stop Time	< 4 seconds	
	Laser Parameters	Type	Semiconductor Laser GaA1As
		Wave Length	780 ± 25 nm
	Operating Conditions	Temperature	41° to 122° F (5° to 50° C)
		Humidity	10% to 90%
	Dimensions	(HxWxD, maximum)	1.63 x 5.75 x 7.87 in (41.3 x 146 x 200 cm)
		Weight	2.64 lb (1.2 kg)

Technical Specifications

4 port Embedded SATA controller	**SATA Protocol**	SATA 1.5Gb/s	
	SATA Ports	4 internal	
	Port transfer rate	1.5 Gb/s total	
	Maximum Capacity	up to 2 TB (4 x 500GB non hot plug SATA HDD)	
	RAID Levels Supported	RAID 1+0 (Striping & Mirroring) RAID 1 (Mirroring) RAID 0 (Striping)	
	Logical RAID Volumes Supported		
Embedded NC320i PCIe Gigabit Server Adapter	**Network Interface**	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	Single lane (x1), 100MHz PCI Express Reference Clock	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	Connector	RJ-45 connector	
	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.