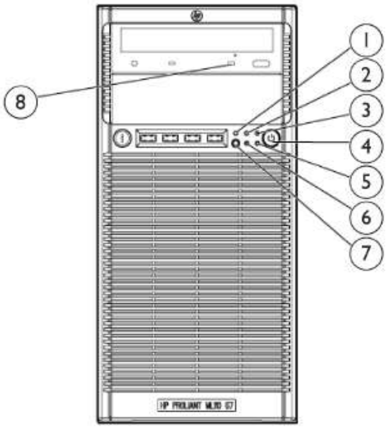

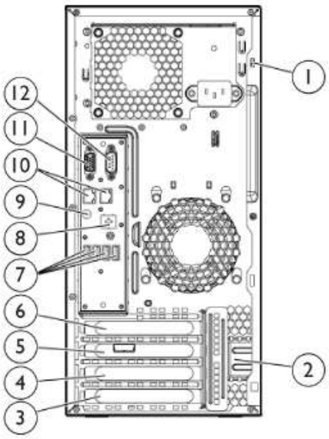

Front View

1. System Health LED
2. NIC ink / activity LEDs
3. Optional media drive activity LED
4. Power On / Standby button and system power LED
5. Power Status LED
6. NIC ink / activity LEDs
7. UID LED and button
8. Media Drive Activity LED

Rear View

1. Kensington lock notch
2. PCIe slot cover retainer latch
3. Slot 1 PCIe2x16
4. Slot 2 PCIe2x8
5. Slot 3 PCIe2x8
6. Slot 4 PCIe2x4
7. USB connectors (4)
8. iLO3 dedicated LAN port (optional)
9. UUID button
10. RJ-45 Ethernet connectors (2)
11. Video connector
12. Serial connector

What's New

- Support for Intel® Celeron® Dual-Core Processors

Standard Features

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 Processors

Intel® Xeon® E3-1280 (3.50GHz/4-core/8MB/95W, 1333, HT, Turbo 1/2/3/4) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® E3-1270 (3.40GHz/4-core/8MB/80W, 1333, HT, Turbo 1/2/3/4) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® E3-1240 (3.30GHz/4-core/8MB/80W, 1333, HT, Turbo 1/2/3/4) Processor

Intel® Xeon® E3-1230 (3.20GHz/4-core/8MB/80W, 1333, HT, Turbo 1/2/3/4) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® E3-1220 (3.10GHz/4-core/8MB/80W, 1333, Turbo 1/2/3/4) Processor

Dual-Core Processors

Intel® Core™ i3-2130 (3.40GHz/2-core/3MB/65W, 1333, HT) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Core™ i3-2120 (3.30GHz/2-core/3MB/65W, 1333, HT) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Core™ i3-2100 (3.10GHz/2-core/3MB/65W, 1333, HT) Processor

Intel® Pentium® G860 (3.0GHz/2-core/3MB/65W, 1333) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Pentium® G850 (2.90GHz/2-core/3MB/65W, 1333) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Pentium® G840 (2.80GHz/2-core/3MB/65W, 1333) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Pentium® G630 (2.70GHz/2-core/3MB/65W, 1333) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Pentium® G620 (2.60GHz/2-core/3MB/65W, 1333) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Celeron® G530 (2.40GHz/2-core/3MB/65W, 1333) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology.
NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 4, 3, 2, and 1 cores active.
NOTE: DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

Cache Memory
One of the following depending on Model

Integrated 1x8MB Level3 Intel® Smart Cache

Integrated 1x3MB Level3 Intel® Smart Cache

Standard Features

Chipset	Intel® C200 chipset **NOTE:** For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/	
Memory Protection	ECC	
Memory	Type	PC3-10600E unbuffered DDR3 ECC up to 1333MHz
	DIMM Slots	Total 4 DIMM slots
	Standard	2GB (1x2GB) or 4GB (2x2GB)
	Maximum	16GB
Network Controller	HP NC112i 1-Port Ethernet Server Adapter (x2)	

Expansion Slots #	Technology	Bus Width***	Connector Width	Bus Number*	Device Number**	Form Factor	Notes
1	PCIe G2	X16	X16			Full height, Full length slot	Gen.2, NHP
2	PCIe G2	X4	X8			Full height & Full-length slot	Gen.2, NHP
3	PCIe G2	X4	X8			Full height & Full-length slot	Gen.2, NHP
4	PCIe G2	X1	X1			Full height & Half-length slot	Gen.2, NHP

** 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.

Storage Controller	HP Embedded Smart Array B110i SATA RAID Controller (RAID 0/1/10) **NOTE:** Supports up to four (4) 3.0Gb/s SATA hard disk drives only **NOTE:** For set up instructions, please refer to the HP ProLiant ML100 series server user guide at: http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c01708878/c01708878.pdf **NOTE:** For general information about HP Smart Array B110i SATA RAID Controller, please go to: http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb110i/index.html

Standard Features

Internal Storage Devices	**Optical Drive**	DVD ROM DVD-RW
	Hard Drives One of the following depending on Model	1x250 GB NHP SATA 7200 rpm Drive (Entry Model) 1x250 GB NHP SATA 7200 rpm Drive (Base Model) Up to 4 HP SATA/SAS 3.5" drives supported. None ships standard (Performance Model)
Maximum Internal Storage One of the following depending on Model	**Non-Hot Plug SAS LFF**	8.0TB (4 x 2TB) 3.5" SAS
	Non-Hot Plug SATA LFF	16.0TB (4 x 4TB) 3.5" SATA
	Hot Plug SAS SFF	4.0TB (4x1TB) 2.5" SAS 8.0TB (8 x 1TB) 2.5" SAS
Interfaces	Parallel	0
	Serial	1
	Pointing Device (Mouse, USB)	1
	Graphics	1
	Keyboard (USB)	1
	USB 2.0 Ports	9 total (4 rear, 4 front panel, 1 internal)
	NOTE: 1 Dedicated USB port available for internal USB tape connectivity	
	Network RJ-45 (Ethernet)	2(10/100/1000 bits/s)
	Remote Management	iLO3 remote management support **NOTE:** If users do not purchase iLO dedicated NIC option card they can still use this port as shared NIC Port.
Industry Standard Compliance	ACPI V3.0b Compliant	
	PCI Express Rev 2.0	
	PXE Support	
	WOL Support	
	IPMI 2.0 compliance	
	DCMI 1.0	
	Microsoft® Logo certifications	
	Red Hat Enterprise Linux Logo certifications	
	SUSE Linux Enterprise Server Logo certifications	
	USB 2.0	
Server Power Cords	6' country specific, lowline NEMA power cord.	

Standard Features

Power Supply
One of the following depending on Model

350 Watts Non-Hot Plug, Non redundant Power Supply

460 Watts Common Slot Gold Hot Plug Power Supply

System Fans

One (1) - Non-redundant system fan ships standard

One (1) - Non-redundant PCIe fan ships standard

One (1) - Non-redundant CPU heatsink fan ships standard

Operating Systems and Virtualization Software Support for ProLiant Servers

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

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/ossupport and our driver download page http://www.hp.com/support/ML110G7

Graphics

Integrated Matrox G200eH, 16MB video standard

- 16 bit color: maximum resolution of 1920 x 1200
- 32 bit color: maximum resolution of 1280 x 1024

NOTE: iLO Remote Console is operational in all video mode and color depths. Remote Console viewing displays 15bpp or 32768 colors.
NOTE: The resolution and frequency limitations of the attached monitor will further limit the combinations of resolution and depth.

Form Factor

Micro ATX Tower (4U)
NOTE: Rack mounting available via HP Tower to Rack Conversion Tray, Universal Kit. Please see the options section in this QuickSpecs.

HP Insight management software

HP Insight Foundation suite for ProLiant

Insight Foundation is being baselined at version v8.70 which means the following:

- Its Media Kit (contains 2 SmartStart CDs, the Firmware DVD, and the Management DVD) will continue to ship with all supported ProLiant G7 or earlier BTO servers until the last supported server is no longer shipping.
- The Media Kit will not be updated past version 8.70.
- ProLiant G7 or earlier CTO servers are able to order the Media Kit with the understanding that the media is not updated. Please check specific server QuickSpecs for availability of CTO Kit.
- PSP and Firmware DVD downloads will be updated through 2Q 2012 at the HP Insight Foundation Suite for ProLiant downloads tab: http://www.hp.com/go/foundation

Customers are urged to use the replacement product, HP Service Pack for ProLiant, instead of Insight Foundation Suite which is found at these location:

- www.hp.com/go/spp
- www.hp.com/go/spp/download

HP Integrated Lights-Out 3 (3)

HP Integrated Lights-Out 3 (iLO) simplifies server setup, health monitoring, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO

Security

Power-on password

Setup password

Secure Sockets Layer (SSL)

Secure Shell (SSH)

iLO 3 (Integrated Lights-Out 3) has 12 customizable user accounts and SSL encryption

iLO 3 can be disabled via a Global Setting

iLO Advanced supports directory services integration

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. (3-1-1 warranty offered in Brazil only). 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 at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Optional Features

HP Proactive Insight experience	Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consist of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: www.hp.com/go/proactiveinsightexperience
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 MSAxxxx, 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 Simple Configurator	SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support	**HP Technology Services for Industry Standard Servers and BladeSystem** Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services. **What HP ProLiant and BladeSystem Services can do for you** HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs. HP Technology Services meets business challenges with services offered in three packages: **Optimized Care Package, Standard Care Package, and Basic Care Package** Available for each product group. Such packaged solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support packages for servers, storage, networking and software.
Optimized Care Package	**Supports maintaining servers at optimum performance availability** **HP ProLiant Server Hardware Installation** Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner. http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf **3-Year HP 6 hour Hardware Support Onsite Call-to-Repair Service** Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center. http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf **Additional Services** Software OS (Microsoft, Linux (SUSE/Red Hat) Installation and Start Up and Software Support) plus Microsoft or Linux education courses +30 Proactive Select Credits, Factory Express.

Service and Support

Standard Care Package

Package that maintains high level of server availability

HP ProLiant Server Hardware Installation
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf

3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service
Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf

Additional Services
Software OS (Microsoft, Linux (SUSE/Red Hat) Installation and Start Up and Software Support); +10 Proactive Select Credits, Factory Express.

Basic Care Package

Delivers minimum recommended support service level

HP ProLiant Server Hardware Installation
Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf

3-Year HP 13x5 4 hour Response, Hardware Support Onsite Service
Delivers increased equipment availability and productivity with rapid remote support and onsite response for your HP server and storage hardware.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf

Additional Services
Software OS (Microsoft, Linux (SUSE/Red Hat) Installation and Start Up and Software Support), Factory Express.

Insight Remote Support

The packages include HP Insight Remote Support that uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnoses, and problem resolution. It is available at no additional cost to all warranty, HP Care Pack Service, and service agreement customers.

For more information

To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner or visit: http://www.hp.com/services/proliant

SATA Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.
NOTE: Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
NOTE: HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
NOTE: If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.
NOTE: For general information about HP Smart Array B110i SATA RAID Controller, please visit:
http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb110i/index.html
NOTE: RAID setting requires the selection of an additional Smart Array Controller.

Entry Model	**Processor**	Intel® Core™ i3-2100 (3.10GHz/2-core/3MB/65W, 1333, HT) Processor
HP ProLiant ML110 G7 i3-2100 1P 2GB-U Non-hot Plug 250GB SATA 350W PS Server 626473-xx1	**Cache Memory**	3MB Intel® Smart Cache
	Memory	2GB (1 x 2GB) PC3-10600E DDR3 UB ECC **NOTE:** Total 4 DIMM slots.
	Network Controller	HP NC112i 1-Port Ethernet Server Adapter (x2)
	Storage Controller	HP Embedded Smart Array B110i SATA RAID Controller (4 ports for HDD)
	Hard Drive	1 x 250GB 3.5" Non-hot plug SATA
	Internal Storage	Up to 8.0TB (4 x 2.0TB) Non-hot plug LFF SATA (Maximum)
	Optical Drive	HP Half-Height 16x SATA DVD-ROM
	Power Supply	350 Watts Non-Hot Plug, Non redundant Power Supply
	Fans	One (1) - Non-redundant system fan ships standard One (1) - Non-redundant PCIe fan ships standard One (1) - Non-redundant CPU heatsink fan ships standard
	Management	HP Integrated Lights-Out Standard (iLO 3)
	Form Factor	Micro ATX Tower (4U)
	Warranty	Server Warranty includes 1 year parts, 1 year labor, 1-year on-site support with next business day response. (3-1-1 warranty offered in Brazil only).

Pre-configured Models

Base Model	**Processor**	Intel® Xeon® E3-1220 (3.10GHz/4-core/8MB/80W, 1333, Turbo 1/2/3/4) processor
HP ProLiant ML110 G7 E3-1220 1P 2GB-U Non-hot Plug 250GB SATA 350W PS Server 626474-xx1	**Cache Memory**	8MB Intel® Smart Cache
	Memory	2GB (1x2GB) PC3-10600E DDR3 UB ECC **NOTE:** Total 4 DIMM slots.
	Network Controller	HP NC112i 1-Port Ethernet Server Adapter (x2)
	Storage Controller	HP Embedded Smart Array B110i SATA RAID Controller (4 ports for HDD)
	Hard Drive	1 x 250GB Non-hot-plug LFF SATA
	Internal Storage	Up to 8.0TB (4 x 2.0TB) Non-hot plug LFF SATA (Maximum)
	Optical Drive	HP Half-Height 16x SATA DVD-ROM
	Power Supply	350 Watts Non-Hot Plug, Non redundant Power Supply
	Fans	One (1) - Non-redundant system fan ships standard One (1) - Non-redundant PCIe fan ships standard One (1) - Non-redundant CPU heatsink fan ships standard
	Management	HP Integrated Lights-Out Standard (iLO 3)
	Form Factor	Micro ATX Tower (4U)
	Warranty	Server Warranty includes 1 year parts, 1 year labor, 1-year on-site support with next business day response. (3-1-1 warranty offered in Brazil only).

Performance model	**Processor**	Intel® Xeon® E3-1240 (3.30GHz/4-core/8MB/80W, 1333, HT, Turbo 1/2/3/4) processor
HP ProLiant ML110 G7 E3-1240 1P 4GB-U Hot Plug SATA 460W RPS Server 626475-xx1	**Cache Memory**	8MB Intel® Smart Cache
	Memory	4GB (2x2GB) PC3-10600E DDR3 UB ECC **NOTE:** Total 4 DIMM slots.
	Network Controller	HP NC112i 1-Port Ethernet Server Adapter (x2)
	Storage Controller	HP Embedded Smart Array B110i SATA RAID Controller (4 ports for HDD)
	Hard Drive	None ship standard
	Internal Storage	Up to 8.0TB (4 x 2.0TB) hot plug LFF SATA (Maximum)
	Optical Drive	HP Half-Height 16x SATA DVD-RM
	Power Supply	HP 460W Common Slot Gold Hot Plug Power Supply **NOTE:** HP RPS Enablement Kit included. To enable redundancy an additional 460W PS (P/N 503296-B21) needs to be purchased.
	Fans	One (1) - Non-redundant system fan ships standard One (1) - Non-redundant PCIe fan ships standard One (1) - Non-redundant CPU heatsink fan ships standard
	Management	HP Integrated Lights-Out Standard (iLO 3)
	Form Factor	Micro ATX Tower (4U)
	Warranty	Server Warranty includes 1 year parts, 1 year labor, 1-year on-site support with next business day response. (3-1-1 warranty offered in Brazil only). **NOTE:** A HP Smart Array Hot Plug Advance Pack for B110i w/1y 24x7 Supp Physical 1 Svr LTU (TC421A) is required for Hot plug system.

Country Code Key		
	xx=00	NA
	xx=01	Australia
	xx=03	UK
	xx=04	Germany
	xx=05	France
	xx=37	AP
	xx=42	Euro
	xx=AA	PRC (Excludes 626473-xx1)

Configuration Information - Factory Integrated Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.
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 configurable product offerings and requirements.
NOTE: Configure-to-order (CTO) servers must start with a CTO Chassis.
NOTE: FIO indicates that this option is only available as a factory installable option.

Step 1: Base Configuration

HP Models	HP ProLiant ML110 G7 Hot Plug 4 LFF Configure-to-order Server	647337-B21
	Factory Integrated Models ship with: Embedded NC112i Gigabit Ethernet Server Adapter (x2) HP Integrated Lights-Out Standard (iLO 3) HP Embedded Smart Array B110i SATA RAID Controller (RAID 0/1/10), 4 ports for HDD **NOTE:** For set up instructions for HP Smart Array B110i SATA Controller please refer to the HP ProLiant ML100 series server user guide at: http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c01708878/c01708878.pdf **NOTE:** For general information about HP Smart Array B110i SATA RAID Controller, please visit: http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb110i/index.html Non hot-plug SAS/SATA 4 port cable PCA Power cord Micro ATX Tower (4U)	
	HP ProLiant ML110 G7 Hot Plug 8 SFF Configure-to-order Server	647338-B21
	Factory Integrated Models ship with: Embedded NC112i Gigabit Ethernet Server Adapter (x2) HP Integrated Lights-Out Standard (iLO 3) HP Embedded Smart Array B110i SATA RAID Controller (RAID 0/1/10), 4 ports for HDD **NOTE:** For set up instructions for HP Smart Array B110i SATA Controller please refer to the HP ProLiant ML100 series server user guide at: http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c01708878/c01708878.pdf **NOTE:** For general information about HP Smart Array B110i SATA RAID Controller, please visit: http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb110i/index.html Non hot-plug SAS/SATA 4 port cable PCA Power cord Micro ATX Tower (4U)	

Configuration Information - Factory Integrated Models

	HP ProLiant ML110 G7 Non-hot Plug 4 LFF Configure-to-order Server	647336-B21

Factory Integrated Models ship with:

Embedded NC 112i Gigabit Ethernet Server Adapter (x2)

HP Integrated Lights-Out Standard (iLO 3)

HP Embedded Smart Array B110i SATA RAID Controller (RAID 0/1/10), 4 ports for HDD

NOTE: For set up instructions for HP Smart Array B110i SATA Controller please refer to the HP ProLiant ML100 series server user guide at: http://bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c01708878/c01708878.pdf

NOTE: For general information about HP Smart Array B110i SATA RAID Controller, please visit: http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb110i/index.html

Non hot-plug SAS/SATA 4 port cable

PCA

Power cord

Micro ATX Tower (4U)

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

HP Processors	**Quad-Core Processor**	
	HP ML110 G7 Intel® Xeon® E3-1280 (3.50GHz/4-core/8MB/95W) FIO Processor Kit	645836-L21
	HP ML110 G7 Intel® Xeon® E3-1270 (3.40GHz/4-core/8MB/80W) FIO Processor Kit	639704-L21
	HP ML110 G7 Intel® Xeon® E3-1240 (3.30GHz/4-core/8MB/80W) FIO Processor Kit	639703-L21
	HP ML110 G7 Intel® Xeon® E3-1230 (3.20GHz/4-core/8MB/80W) FIO Processor Kit	639702-L21
	HP ML110 G7 Intel® Xeon® E3-1220 (3.10GHz/4-core/8MB/80W) FIO Processor Kit	639701-L21
	Dual-Core Processor	
	HP ML110 G7 Intel® Core™ i3-2130 (3.40GHz/2-core/3MB/65W) FIO Processor Kit	663405-L21
	HP ML110 G7 Intel® Xeon® i3-2120 (3.30GHz/2-core/3MB/65W) FIO Processor Kit	643290-L21
	HP ML110 G7 Intel® Xeon® i3-2100 (3.10GHz/2-core/3MB/65W) FIO Processor Kit	643288-L21
	HP ML110 G7 Intel® Pentium® G860 (3.0GHz/2-core/3MB/65W) FIO Processor Kit	663404-L21
	HP ML110 G7 Intel® Pentium® G850 (2.90GHz/2-core/3MB/65W) FIO Processor Kit	656604-L21
	HP ML110 G7 Intel® Pentium® G840 (2.80GHz/2-core/3MB/65W) FIO Processor Kit	656603-L21
	HP ML110 G7 Intel® Pentium® G630 (2.70GHz/2-core/3MB/65W) FIO Processor Kit	663403-L21
	HP ML110 G7 Intel® Pentium® G620 (2.60GHz/2-core/3MB/65W) FIO Processor Kit	656602-L21
	HP ML110 G7 Intel® Celeron G530 (2.40GHz/2-core/2MB/65W) FIO Processor Kit	663402-L21
HP Memory	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
	NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.	
HP Power Supplies	HP 350W Factory Integrated Power Supply Kit	646146-B21

	HP 460W Common Slot Gold Hot Plug Power Supply Kit **NOTE:** To upgrade to the HP 460W Common Slot Gold Hot Plug Power Supply and to add support for redundant power supplies, customers need to purchase one HP RPS G7 4U Enablement Kit (P/N 637464-B21). **NOTE:** If RPS option is enabled on the system, the combination of all Internal Media Drives cannot exceed 1.	503296-B21
	Power Options	
	HP RPS G7 4U Enablement Kit	637464-B21

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

HP Storage Controllers	HP Smart Array P410/256 BBWC 2-ports Int PCIe x8 FIO SAS Controller	491195-B21
	HP Smart Array P410/ZM 2-ports Int PCIe x8 FIO SAS Controller	462860-B21
	HP Smart Array P212/256 BBWC 1-ports Int/1-ports Ext PCIe x8 FIO SAS Controller	491191-B21
HP Insight Software	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	C6N36A
HP ProLiant Foundation Pack Software	HP ProLiant Foundation Pack Single Release Factory Integrated Software	534516-B21

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 integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Memory	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
	NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.	
HP Optical Drives	HP Half-Height SATA DVD-ROM Optical Drive	447326-B21
	HP Half-Height SATA DVD-RW Optical Drive	447328-B21
HP Drive Cage Options	HP 4U LFF Hot Plug Drive Cage Kit	637216-B21
	HP 4U SFF Hot Plug Drive Cage Kit	637460-B21
	NOTE: Above drive cage functional, HDDs, cable and backplane are included. **NOTE:** This LFF drive cage is for field upgrade only - from NHP LFF to HP LFF. **NOTE:** The SFF drive cage is for field upgrade only. This is used to upgrade from NHP LFF or HP LFF to HP SFF. **NOTE:** A HP Smart Array Hot Plug Advance Pack for B110i w/1y 24x7 Supp Physical 1 Svr LTU (TC421A) is required for any Hot plug system in addition to the drive cage kit.	
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; refer to the specific hard drive QuickSpecs for details.	
	SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive	625609-B21
	HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	507750-B21
	SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	507632-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	454146-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458928-B21
	SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives	
	HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	571230-B21
	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
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507772-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458941-B21
	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

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html
(Worldwide)

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
HP 1.2TB 6G SAS 10K SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	693648-B21
HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	619291-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	605835-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516828-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516816-B21
HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	516814-B21
SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	605835-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507616-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507614-B21
SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives **NOTE:** Support for SAS non-hot plug drives requires HP SAS/Smart Array Controller. See Step 3 below.	
HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516830-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516826-B21
HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516824-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html
(Worldwide)

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive	625609-B21
HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	507750-B21
SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives	
HP 4TB 3G SATA 7.2k rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	694374-B21
HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	507632-B21
HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	454146-B21

Core Options

	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458928-B21
	SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives	
	HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	571230-B21
	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
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507772-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458941-B21
	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
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)	
HP Networking	HP NC112T PCI Express Gigabit Server Adapter	503746-B21
	HP NC360T PCI-E Dual Port Gigabit Server Adapter	412648-B21
	HP NC365T 4-port Ethernet Server Adapter	593722-B21
	HP NC373T PCI-E Multifunction Gigabit Server Adapter	394791-B21
	HP NC375T PCI Express Quad Port Gigabit Server Adapter	538696-B21
	HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs	
HP I/O Expansion Options	HP Dedicated iLO Management Port Option	514206-B21
HP Power Supplies	HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
	NOTE: To upgrade to the HP 460W Common Slot Gold Hot Plug Power Supply and to add support for redundant power supplies, customers need to purchase one HP RPS G7 4U Enablement Kit (P/N 637464-B21). **NOTE:** If RPS option is enabled on the system, the combination of all Internal Media Drives cannot exceed 1.	
	Power Options	
	HP RPS G7 4U Enablement Kit	637464-B21

Additional Options

NOTE: Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Insight Software

HP Insight Control

HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License	C6N28AAE
HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License	C6N27A
HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License	C6N36AAE
HP Insight Control Server Provisioning Media Kit	BD883A
HP Insight Management Media Kit	C6N31A

NOTE: Insight Software DVD media without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Insight Dynamics, HP Insight Control for Microsoft System Center, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.

NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.

NOTE: Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.

NOTE: For additional license options please see the Insight Control QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html

HP Insight Control server deployment

HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License	T9082AAE
HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License	452151-B21

NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html

HP Integrated Lights-Out (iLO) Advanced

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License	TA850AAE
HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21

NOTE: This license allows 1 server to be deployed and managed via HP iLO Advanced. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.

HP iLO Advanced Electronic License with 3yr 24x7 Tech Support and Updates	BD506AAE
HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates	BD505A

NOTE: For additional license kits, including electronic delivery options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14276_div/14276_div.html

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HP Security (TPM)

HP Trusted Platform Module Option	488069-B21

NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline.

NOTE: For more information about TPM, please visit: www.hp.com/go/TPM

NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.

NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

HP Storage Controllers

SAS Controllers

NOTE: Support for SAS hard drives/tape drive requires selection of a SAS controller.

NOTE: Support for hardware RAID requires selection of a SAS controller.

Smart Array P212 Controller

HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21
HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462834-B21

Smart Array P410 Controller

HP Smart Array P410/256 2-ports Int PCIe x8 SAS Controller	462862-B21
HP Smart Array P410/512 BBWC 2-ports Int PCIe x8 SAS Controller	462864-B21
HP Smart Array P410/1G FBWC 2-ports Int PCIe x8 SAS Controller	572532-B21
HP Smart Array P410/512 FBWC 2-ports Int PCIe x8 SAS Controller	578230-B21

Optional Upgrades

HP 1GB Flash Backed Cache	534562-B21
HP 512MB Flash Backed Write Cache	534916-B21
HP 256MB P-series Cache Upgrade	462968-B21
HP 512MB P-Series Battery Backed Write Cache Upgrade	462967-B21
HP 650 mAh P-Series Battery	462969-B21

NOTE: Required to enable BBWC on the 256MB cache.

NOTE: Please see the following QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html
(Smart Array P212 Controller)
http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html
(Smart Array P410 Controller)

	HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License	516471-B21
	HP Smart Array Hot Plug Advance Pack for B110i w/1y 24x7 Supp Physical 1 Svr LTU	TC421A
	NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/13200_div/13200_div.html (Worldwide)	
	SCSI HBA	
	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter **NOTE:** Supports SCSI Tapes only, no RAID support. **NOTE:** HBA is recommended for SCSI tape drive support. **NOTE:** Please see the following QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)	412911-B21
HP Backup & Recovery Software	HP Data Protector Express V6.0 for 1 Server E-LTU	TC330BAE
	HP Data Protector Express V6.0 for 3 Server E-LTU	TC331BAE
	HP Data Protector Express V6.0 for 10 Server E-LTU	TC332BAE
	HP Basic Upgrade to Data Protector Express V6 for 1 Server E-LTU	TC333BAE
	NOTE: One of these Data Protector Express base products is required. To see available options: http://www.hp.com/go/dataprotectorexpress	
HP Tape Backup	**NOTE:** For the complete range of tape drives, autoloaders, libraries and media see: http://www.hp.com/go/tape. For hardware and software compatibility of HP tape backup products see: http://www.hp.com/go/connect.	
	HP DAT 320 USB Internal Tape Drive	AJ825A
	HP DAT 320 SAS Internal Tape Drive **NOTE:** Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	AJ830A
	HP StoreEver LTO-2 Ultrium 448 SAS Internal Tape Drive **NOTE:** Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	DW085B
	HP StoreEver LTO-3 Ultrium 920 SAS Internal Tape Drive **NOTE:** Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	EH847B
	HP 1/8 G2 Ultrium 920 SAS Autoloader **NOTE:** Requires HP 1U Tape Autoloader Rack-Mount Kit (AH166A) for rack installation. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	AH558A
	HP MSL2024 Ultrium 920 SAS Tape Library **NOTE:** Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	AH559A

Additional Options

HP Disk Backup	**NOTE:** For the complete range of D2D Backup Systems see: http://www.hp.com/go/d2d. For the complete range of RDX drives and media see: http://www.hp.com/go/rdx. For hardware and software compatibility of HP disk backup products see: http://www.hp.com/go/connect.	
	HP D2D Backup Systems with Backup Data Deduplication	
	NOTE: These are network connected appliances with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	
	HP D2D2502i Backup System **NOTE:** 1.5TB of usable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	EJ001B
	HP D2D2504i Backup System **NOTE:** 3.0TB of usable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	EJ002B
	USB Removable Media RDX Disk Backup Systems	
	HP RDX320 Internal Removable Disk Backup System **NOTE:** 320GB of disk capacity per data cartridge.	AJ767A
	HP RDX500 Internal Removable Disk Backup System **NOTE:** 500GB of disk capacity per data cartridge.	AJ934A
	HP RDX1000 Internal Removable Disk Backup System **NOTE:** 1TB of disk capacity per data cartridge.	BV847A
	HP RDX1000 USB3.0 Internal Disk Backup System	B7B67A
	HP RDX500 USB3.0 Internal Disk Backup System	B7B64A
	HP RDX320 USB3.0 Internal Disk Backup System	B7B62A
HP Uninterruptible Power Systems	**HP Tower UPS**	
	HP T750 G2 UPS Models	
	HP T750 G2 750VA INTL Tower Uninterruptible Power System	AF447A
	HP T750 G2 750VA NA Tower Uninterruptible Power System	AF446A
	HP T750J JP Uninterruptible Power System	AF456A
	HP T1000 G3 UPS Models	
	HP T1000 G3 1000VA INTL Tower Uninterruptible Power System	AF449A
	HP T1000 G3 1000VA NA Tower Uninterruptible Power System	AF448A
	HP T1000J JP Uninterruptible Power System	AF457A
	NOTE: For additional information regarding HP Uninterruptable Power Systems, please see the following URL: www.hp.com/go/rackandpower (Worldwide) **NOTE:** For additional information on sizing your server, please reference: http://www.upssizer.com	
	NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.	

Additional Options

HP Rack Series

HP Rack 10000 G2 Series (Graphite Metallic)

HP 10642 G2 1200mm deep Shock Rack	AF092A

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 color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html (Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower (Worldwide)

NOTE: The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 G2 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: Support for all 2 and 4 post Telco racks and threaded hole racks requires an additional option kit from Rack Solutions. The Rack Solutions brackets can be purchased at: www.hp.com/go/rackandpower.

HP Rack Options

HP USB BFR with PVC Free US Keyboard/Mouse Kit	631341-B21
HP USB BFR with PVC Free UK Keyboard/Mouse Kit	631344-B21
HP USB BFR with PVC Free FR Keyboard/Mouse Kit	631346-B21
HP USB BFR with PVC Free ES Keyboard/Mouse Kit	631348-B21
HP USB BFR with PVC Free DE Keyboard/Mouse Kit	631358-B21
HP USB BFR with PVC Free JP Keyboard/Mouse Kit	631360-B21
HP USB BFR with PVC Free IT Keyboard/Mouse Kit	631362-B21
HP USB BFR with PVC Free CN Keyboard/Mouse Kit	631364-B21
HP USB BFR with PVC Free AE Keyboard/Mouse Kit	638212-B21
HP USB BFR with PVC Free RU Keyboard/Mouse Kit	638214-B21
HP USB BFR with PVC Free AP-Intl Keyboard/Mouse Kit	672097-373
HP USB BFR with PVC Free Intl Keyboard/Mouse Kit	672097-B33

Additional Options

HP USB BFR with PVC Free PT Keyboard/Mouse Kit	672097-133
HP USB BFR with PVC Free TR Keyboard/Mouse Kit	672097-143
HP USB BFR with PVC Free CZ Keyboard/Mouse Kit	672097-223
HP USB BFR with PVC Free FI Keyboard/Mouse Kit	672097-353
HP USB BFR with PVC Free SE Keyboard/Mouse Kit	672097-103
HP USB BFR with PVC Free CH Keyboard/Mouse Kit	672097-113
HP USB BFR with PVC Free KR Keyboard/Mouse Kit	672097-KD3
HP USB BFR with PVC Free AP-Intl Keyboard/Mouse Kit	672097-373

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13972_div/13972_div.html (Worldwide)

HP KVM Switch Options

HP Server Console 0x2x8 Port Analog Switch	AF616A
HP Server Console 0x2x16 Port Analog Switch	AF617A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html (Worldwide)

HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software	AF618A
HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software	AF619A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13475_div/13475_div.html (Worldwide)

HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13474_div/13474_div.html (Worldwide)

Rack Kit

HP Tower to Rack Conversion Tray Universal Kit	417705-B21

Additional Options

HP Care Pack Services	**Hardware Services Next Business Day On-Site Service**	
	HP 3 year Next business day ProLiant ML110 Hardware Support	U4433E
	Hardware Services - 4-Hour On-site Service	
	HP 3 year 4 hour 13x5 ProLiant ML110 Hardware Support	U4434E
	HP 3 year 4 hour 24x7 ProLiant ML110 Hardware Support	U4435E
	Hardware Services 6-Hour Call to Repair On-Site Service	
	HP 3 year 6 hour 24x7 Call to Repair ProLiant ML110 Hardware Support	U4436E
	Hardware Installation	
	HP Install ProLiant ML110 Service	U4444E
	NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/carepack.	

Memory

HP ProLiant ML110 G7 Models

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

Standard Memory

SATA Models:
2GB or 4 GB of PC3-10600E DDR3 UDIMM running up to 1333MHz with memory kits installed.

Standard Memory with Optional Memory

Up to 8GB of memory is available with the installation of standard and optional memory, 4x 2 GB PC3-10600E un-buffered ECC DDR3 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 1C and 3D are interleaving pair. Slots 2A and 4B are interleaving pair).

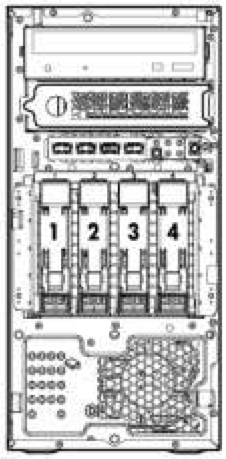
Memory		**Slot**			
		DIMM1C	**DIMM2A**	**DIMM3D**	**DIMM4B**
Standard (Entry Model)	**2 GB**	Empty	2 GB	Empty	Empty
Standard (Base Model)	**2 GB**	Empty	2 GB	Empty	Empty
Standard (Performance Model)	**4 GB**	Empty	2 GB	Empty	2 GB
Maximum	**16 GB**	4 GB	4 GB	4 GB	4 GB

Following are memory options available from HP:

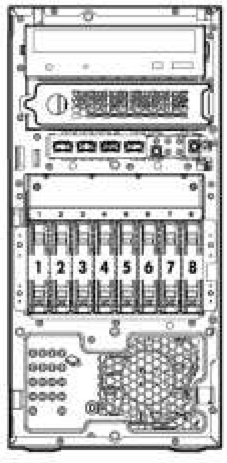
HP Memory	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21

NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

Storage

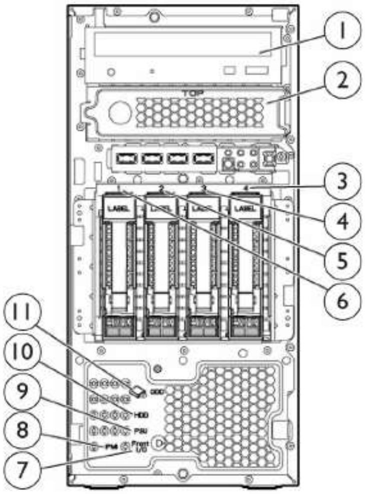


1. - 4. Drive bays - Large Form Factor (LFF)

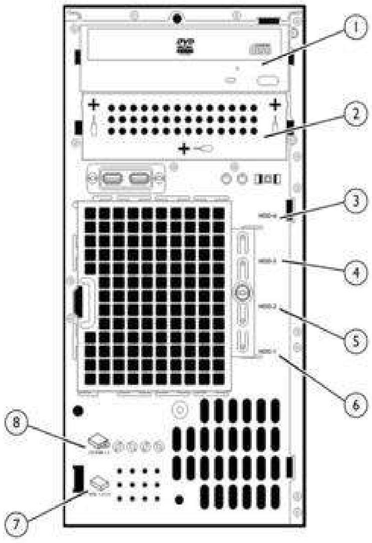


1. - 8. Drive bays - Small Form Factor (SFF)

Storage



1. 1st removable media drive
2. 2nd removable media drive
3. 4th SAS/SATA hard drive
4. 3rd SAS/SATA hard drive
5. 2nd SAS/SATA hard drive
6. 1st SAS/SATA hard drive
7. Front I/O spare screw
8. IPMI spare screw
9. PSU module spare screws
10. HDD care spare screws
11. ODD spare screw



1. 1st removable media drive
2. 2nd removable media drive
3. 4th SAS/SATA hard drive
4. 3rd SAS/SATA hard drive
5. 2nd SAS/SATA hard drive
6. 1st SAS/SATA hard drive
7. HDD spare screws
8. Removable media drive spare screws

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
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.

Storage

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
1TB 3G SATA 7.2K 500GB 3G SATA 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
250GB 3G 7.2K 160GB 3G 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

	Quantity Supported	Position Supported	Controller
4TB 3G 7.2K 2TB 3G 7.2K 1TB 3G 7.2K 500GB 3G 7.2K	Up to 4	3,4,5,6	Smart Array B110i SATA RAID Controller (RAID 0/1/10) **NOTE:** Hardware RAID support requires purchase of HP Smart Array P212 Controller.

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	Smart Array B110i SATA RAID Controller (RAID 0/1/10) **NOTE:** Hardware RAID requires purchase of HP Smart Array P212 Controller.

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
1TB 3G SATA 7.2K 500GB 3G SATA 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
2TB 3G 7.2K 1TB 3G 7.2K 500GB 3G 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
250GB 3G 7.2K 160GB 3G 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
2TB 3G 7.2K 1TB 3G 7.2K 500GB 3G 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
250GB 3G 7.2K 160GB 3G 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

Hard Drives (SAS Models only)

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller

1.2TB 6G SAS 10K 900GB 6G SAS 10K 300GB 6G SAS 15K 146GB 6G SAS 15K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K 450GB 6G SAS 15K 300GB 6G SAS 15K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
1TB 6G SAS 7.2K 500GB 6G SAS 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K 450GB 6G SAS 15K 300GB 6G SAS 15K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
2TB 6G SAS 7.2K 1TB 6G SAS 7.2K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

Storage

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K 450GB 6G SAS 15K 300GB 6G SAS 15K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

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

NOTE: SAS non-hot plug drives require HP SAS/Smart Array Controller.

	Quantity Supported	Position Supported	Controller
600GB 6G 15K 450GB 6G 15K 300GB 6G 15K	Up to 4	3,4,5,6	Smart Array P212 Controller **NOTE:** Transfer rates of drives are dependent on the maximum transfer rate supported by the Controller. Refer to the Controller technical specifications for details.

Maximum Storage Capacity - SATA/SAS Models

Internal	**SATA**	8.0TB (4 x 2TB)
	SAS	8.0TB (4 x 2TB)

Tape and Disk-Based Backup

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

	Position	Recommended Controller	Part Number
HP SCSI Tape Drives 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 Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21
HP SCSI Rack Mount Kits 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21

Storage

HP USB Tape Drives DAT 40 DAT 72 DAT 160 DAT 320	Internal or External	USB 2.0 Port	N/A
HP USB Rack Mount Kits 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP SAS Tape Drives 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	Internal or External	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21
HP SAS Rack Mount Kits 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21
HP SCSI Tape Autoloaders DAT 72x10 Autoloader 1/8 G2 Autoloader	External	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21
HP SCSI Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000	External	HP U320e SCSI Dual Channel Host Bus Adapter	AH627A
HP SAS Tape Autoloaders and Libraries 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096	External	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21
HP 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.	

Storage

HP USB RDX Removable Disk Backup System RDX160 RDX320 RDX500 RDX750 RDX 1TB	Internal or External	USB 2.0 port	N/A
HP D2D Backup Systems, iSCSI D2D2500i D2D4000i	External	Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	
HP D2D Backup Systems, Fibre Channel D2D4000fc	External	Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect	

Power Specifications

HP 350W Factory Integrated Power Supply Kit							
Part Number	646146-B21						
Operational Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	**100**	**120**	**200**	**208**	**220**	**230**	**240**
Max Rated Output Wattage Rating	350	350	350	350	350	350	350
Nominal Input Current (A rms)	4.7	3.9	2.3	2.2	2.0	1.9	1.9
Max Rated Input Wattage Rating (Watts)	475	465	450	450	450	450	450
Max. Rated VA (Volt-Amp)	476	466	456	455	455	455	456
Efficiency (%)	73.7	75.2	77.8	77.8	77.8	77.8	77.8
Power Factor	0.99	0.99	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	<3.5						
Maximum Inrush Current (A peak)	20						
Maximum Inrush Current duration (mS)	N/A	N/A	N/A			N/A	N/A
Maximum British Thermal Unit Rating (BTU-Hr)	1551	1517	1493	1493	1493	1493	1493

HP 460W Common Slot Gold Hot Plug Power Supply Kit							
Part Number	503296-B21						
Input Voltage Range (V rms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	**100**	**120**	**200**	**208**	**220**	**230**	**240**
Max Rated Output Wattage Rating	460	460	460	460	460	460	460
Nominal Input Current (A rms)	5.5	4.5	2.6	2.5	2.4	2.3	2.2
Max Rated Input Wattage Rating (Watts)	526	520	505	505	503	503	503
Max. Rated VA (Volt-Amp)	548	542	527	527	524	524	524
Efficiency (%)	87.5	88.5	91	91	91.5	91.5	91.5
Power Factor	0.97						
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Maximum Inrush Current (A peak)	30						
Maximum Inrush Current duration (mS)	20						
Maximum British Thermal Unit Rating (BTU-Hr)	1794	1773	1725	1725	1715	1715	1715

System Specifications

	Power **
HP ProLiant ML110 G7 Fully Configured	(see **)
Fully Loaded System output Wattage (W)	350W
Fully Loaded System Input Current (A rms)	5A @ 100V, 2.5A @ 200V
Fully Loaded System Thermal (BTU- Hr)	1658
Fully Loaded System VA (Volt-Amp)	490 VA
System Leakage with all power supplies loaded (mA)	0.45mA@110V 0.45mA@220V
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.

	Power **
HP ProLiant ML110 G7 Fully Configured	(see **)
Fully Loaded System output Wattage (W)	460W
Fully Loaded System Input Current (A rms)	5.5A @ 100V, 2.6A @ 200V
Fully Loaded System Thermal (BTU- Hr)	1794
Fully Loaded System VA (Volt-Amp)	548
System Leakage with all power supplies loaded (mA)	0. 5mA@110V 0.92mA@220V
System Inrush Current with all power supplies loaded (A)	30A/20mS @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.

System Specifications

Power Cords (13 Cord Sets)	**Power Cord Part Number**
Country	
Taiwan	393312-001
Japan	139867-005
India	397138-002
Brazil	285052-001
Australia	100661-001
Euro	100614-009
PRC	286496-001
UK	100613-008
US	121565-001
ITL	109197-008

NOTE: To review typical system power ratings use the Active Answers HP Power Advisor which is available via the online tool located at URL: http://www.hp.com/go/hppoweradvisor

To drill down to calculators:
- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: ML110 G7
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

Technical Specifications

System Unit	**Dimensions** (HxWxD) (with feet)	14.4 x 6.9 x 18.6 in (36.7 x 17.5 x 47.25 cm)	
	Weight (approximate)	Hot Plug LFF Full Loading Single Package weight	20.60kg (45.32 lb)
		Hot Plug LFF Full Loading without Package	16.20kg. (35.64 lb)
		Hot Plug LFF light Loading without Package	13.80kg. (30.36 lb)
		Hot Plug SFF Full Loading Single Package weight	21.40kg (47.08 lb)
		Hot Plug SFF Full Loading without Package	17.00kg. (37.4 lb)
		Hot Plug SFF light Loading without Package	14.60kg. (32.12 lb
		Non Hot Plug LFF Full Loading Single Package weight	19kg (41.8 lb)
		Non Hot Plug LFF Full Loading without Package	14.60kg. (32.12 lb)
		Non Hot Plug LFF light Loading without Package	12.20kg. (26.84 lb)
	350W Input Requirements (per power supply)	Rated Line Voltage	90 to 132 VAC, 180 to 264 VAC
		Rated Input Current	5 A (at 100 VAC), 2.5 A (at 200 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	486W (at 100 VAC), 480 W (at 200 VAC)
	Power Specifications	To review typical power ratings use the Power Advisor which is available via the online tool located at URL: http://www.hp.com/go/hppoweradvisor	
	Power Supply Output (per power supply)	Rated Steady-State Power	350 W (at 100 VAC), 350 W (at 200 VAC)
		Maximum Peak Power	350 W (at 100 VAC), 350 W (at 200 VAC)
	460W Input Requirements (per power supply)	Rated Line Voltage	90 to 132 VAC, 180 to 264 VAC
		Rated Input Current	5.5 A (at 100 VAC), 2.6 A (at 200 VAC)
		Rated Input Frequency	47 to 63 Hz
		Rated Input Power	526W (at 100 VAC), 505 W (at 200 VAC)
	Power Specifications	To review typical power ratings use the Power Advisor which is available via the online tool located at URL: http://www.hp.com/go/hppoweradvisor	

Technical Specifications

Power Supply Output (per power supply)	Rated Steady-State Power	460 W (at 100 VAC), 460 W (at 200 VAC)
	Maximum Peak Power	460 W (at 100 VAC), 460 W (at 200 VAC)
System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 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 may shut down if operating with a fan fault or above 42°C °(107.6°F).
	Non-operating	-35° to 65°C (-31° to 149°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	10% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
	Non-operating	10% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 609 m/min (2000 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 609 m/min (2000 ft/min).
Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when 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).	
	Idle	
	L *WAd*	4.4 Bels
	L *pAm*	27.1 dBA
	Operating	
	L *WAd*	4.4 Bels
	L *pAm*	27.2 dBA
	NOTE: The listed sound levels above apply to standard SATA configurations. Additional options may result in increased sound levels.	
Emissions Classification (EMC)	**FCC Rating**	Class B
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

Technical Specifications

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.

Integrated Lights-Out Standard (iLO 3) integrated on system board	**Architecture**	PCI Express based health and remote management ASIC
	Processor	PCI Express RISC processor core running at 250MHz
	Upgradeability	Option firmware upgradeable via Flash ROM.
	Video Support	1600 x 1200 DVR max resolution
	Interfaces	One Ethernet Sideband connection (10/100/1000 Mb/s)
	Memory	128-MB SDRAM with ECC
	Operating System Support	Microsoft Windows 2008 R2 Microsoft Windows 2008 (32 bit and 64 bit) Microsoft Windows Server 2008 Standard Edition (32bit and 64bit) Microsoft Windows Server 2008 Enterprise Edition (32bit and 64bit) Red Hat Enterprise Linux 5.5 (32 bit and 64 bit) Red Hat Enterprise Linux 6(32 bit and 64 bit) SUSE LINUX Enterprise Server 11 (32bit and 64bit) SUSE LINUX Enterprise Server 10 (32bit and 64bit)
	Client System Support	Microsoft Windows 7 Microsoft Windows XP Professional Edition Microsoft Windows Vista Business and Ultimate Editions Red Hat Enterprise Desktop 5.00 SUSE Linux Enterprise Desktop 11 SUSE Linux Enterprise Desktop 10
	Client Browser Support	Microsoft Internet Explorer 8 Microsoft Internet Explorer 7 Microsoft Internet Explorer 6 Firefox 3.5 (on supported Windows and Linux systems) Firefox 3.0 (on supported Windows and Linux systems)
	Command Line Support	Secure Shell and serial port access
	Security	Secure Socket Layer Secure Shell version 2 (Password and certificate) Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface AES encryption of video RC4 encryption of video
	Directory Support Services	Active Directory v1.0 (Windows 2008)
	Driver Support	HP ProLiant iLO 3 Management Controller Driver Package iLO Management Channel Interface Driver
	Management protocols supported	SNMP, IPMI 2.0 (System and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML

HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	**571232-B21**	**Capacity**	250,059MB	
		Height Maximum drive dimension	1.028 in. (26.1 mm)	
		Width	4.00 in (101.6 mm)	
		Depth Maximum drive dimension	5.787 in (147.0 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	11 ms
			Full-Stroke	21.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	488,397,168
		Operating Temperature (system inlet air temperature)	50° to 95° F (10° to 35° C)	

HP Half-Height 16X Max SATA DVD-ROM Optical Drive	**Disk**	Applicable Disk	CD-ROM, CD-XA, CD-DA (Mode 1, Mode 2, Form 1 and 2)
			Photo CD (Single and Multi-session)
			Mixed Mode (Audio and Data combined)
			CD-R, CD-RW, DVD-ROM, DVD+R, DVD+RW
		Capacity	4.7 GB (DVD-5)
			8.54 GB (DVD-9)
	Block Size	DVD Media	2,048 bytes
	Interface	SATA	1.5Gb/s
	Access Times (typical)	Random	<140 ms
		Full-Stroke	<250 ms
	Data Transfer Rate	Sustained	21600 KB/s (16X) Maximum
	Cache Buffer	2MB Minimum	
	Start-up Time (typical) (Not including tray in)	< 7 seconds	
	Stop Time (Not including tray in)	< 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)	1.7 x 5.85 x 8.11 in (42.9 x 150 x 195 mm)
		Weight	2.64 lb (1.2 kg)

HP Half-Height 16X Max SATA DVD-RW Optical Drive	**Disk**	Applicable Disk	CD-ROM, CD-XA, CD-DA (Mode 1, Mode 2, Form 1 and 2)
			Photo CD (Single and Multi-session)
			Mixed Mode (Audio and Data combined)
			CD-R, CD-RW, DVD-ROM, DVD+R, DVD+RW
		Capacity	4.7 GB (DVD-5)
			8.54 GB (DVD-9)
	Block Size	DVD Media	2,048 bytes
	Interface	SATA	1.5Gb/s
	Access Times (typical)	Random	<140 ms
		Full-Stroke	<250 ms
	Data Transfer Rate	Sustained	21600 KB/s (16X) Maximum
	Cache Buffer	2MB Minimum	
	Start-up Time (typical) (Not including tray in)	< 7 seconds	
	Stop Time (Not including tray in)	< 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)	1.7 x 5.85 x 8.11 in (42.9 x 150 x 195 mm)
		Weight	2.64 lb (1.2 kg)

HP NC112i 1-port Ethernet Server Adapter	**Network Interface**	10Base-T/ 100Base-TX/ 1000Base-TX
	Ports	Single Port
		802.3, 802.3u, 802.3x, 802.3ab, 802.3ad, 802.1p, 802.1Q PCIe Rev. 2.0 (2.5 GHz) x1 FCC (U.S. only) Class B DOC (Canada) Class B CE EN 55024, EN55022 Class B VCCI Class II UL 1950 CSA 950 EN 60950 CE ACPI 1.0 MicroSoft WHQL (Windows Hardware Quality Labs)

	Data Transfer Method	Singlelane (x1)	
	Controller	Intel 82574L	
	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)

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.