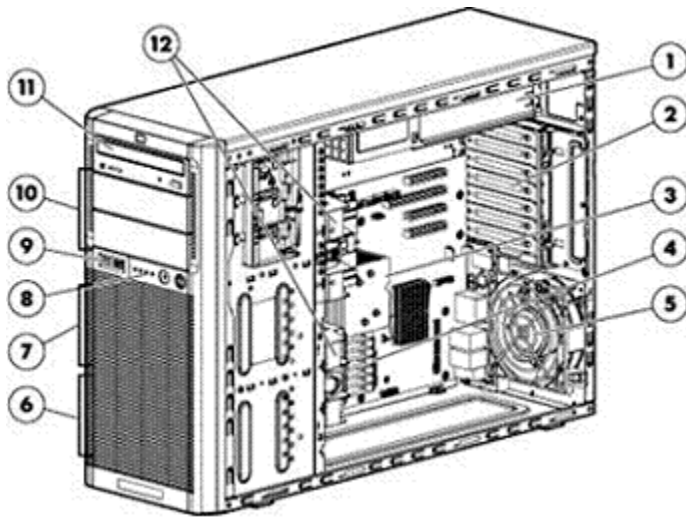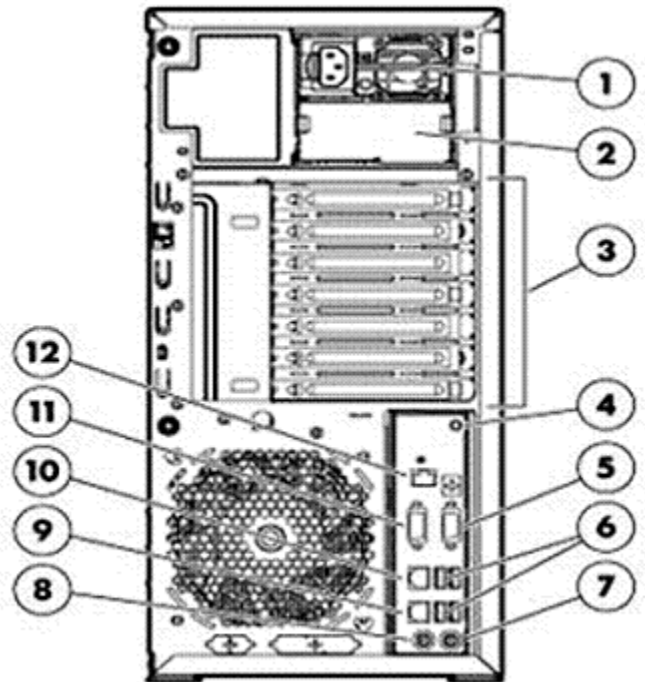Overview

Front View:

1. Power supply
2. Expansion slots
3. 1st Processor socket
4. Nine DIMM slots (for 1st processor)
5. Rear System Fan
6. Hard drive bays 5-8
7. Hard drive bays 1-4
8. LED indicators and power button
9. USB connectors (2)
10. Removable Media Bays
11. Optical drive bays
12. Front System Fans

Rear View:

1. Power supply 1
2. Power supply (blank) (for Redundant Optional)
3. Expansion slots
4. UID button/LED
5. Video ports
6. Four USB ports
7. Keyboard port
8. Mouse port
9. Network port 1(shared iLO management port)
10. Network port 2
11. Serial port
12. Dedicated iLO management port (optional)

At A Glance

Performance and manageability to scale your business.

The HP ProLiant ML330 G6 is a new dual processor tower platform which built on the latest Intel Xeon processors with QPI technology to create a unique system architecture. This unique architecture enables you to scale your business as needed and allows you to improve the efficiency of how you spend your IT dollars. ML330 G6 not only delivers excellent performance with the latest technology but it also incorporates the industry's most powerful embedded management technology with the ProLiant Onboard Administrator (powered by iLO 2 controller) allowing you to manage servers anytime and anywhere.

- Processors:
  - Two Quad-Core/Dual-Core Intel® Xeon® E5500 processors
  - One Quad-Core/Dual Core Intel® Xeon® W3500 processors
  - Intel® 5500 chipset
- Memory:
  - 18 DIMM slots

Overview

- Up to 144GB, using PC3-8500R DDR3 Registered (RDIMM) memory, operating at 800MHz when fully populated at 3 DIMMs per Channel in 18 slots.
- Up to 24GB, using PC3-10600E DDR3 Unbuffered (UDIMM) memory, operating at 1066MHz when fully populated at 2 DIMMs per Channel in 12 slots.
  NOTE: If only one processor is installed, only half the DIMM slots are available.

- Storage Controllers:
  - Entry Model: HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)
  - Base Model: HP Smart Array P410/Zero memory Controller (RAID 0/1/1+0)
  - Available upgrades: 256MB, 512MB with BBWC, Battery kit upgrade (for BBWC), and Smart Array Advanced Pack (SAAP)

- Internal Drive Support:
  - Up to eight (8) LFF (3.5") Hot Plug or four (4) Non Hot Plug Serial Attached SCSI (SAS) or Serial-ATA (SATA) hard drives
  - Maximum of 8TB of internal storage capacity

- Network Controller:
  - Embedded NC326i PCI Express Dual Port Gigabit Server Adapter

- Expansion Slots:
  - Four total expansion slots
  - One (1) PCI-Express x8 Gen1 (x1 speed); One (1) PCI-Express x16 Gen2 (x16 speed); Two (2) PCI-Express x8 Gen2 (x4 speed)
  - Optional PCI-X Expander provides additional two (2) 64-bit/100-MHz PCI-X slots by using a single PCI Express slot (only on slot 5)

- Ports:
  - USB 2.0 support
  - Eight total ports: (2) front; (4) rear; (2) internal (1 for Tape)
  - 1 internal Secure Digital (SD) slot

- Power Supply:
  - One 460 W Non-Hot Plug, Non-redundant Power Supply
  - Optional 750W Hot Plug redundant power supply

- Redundancy:
  - Optional Hot plug redundant power supply
  - Optional for optional redundant fan

- Infrastructure Management:
  - HP ProLiant Onboard Administrator (powered by the Integrated Light-Out 2 management processor) for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration
  - HP Insight Control (ICE) suites, as product options, deliver essential infrastructure management that can help save time and money by making it easy to deploy, monitor, control and optimize your IT infrastructure through a single, simple management console. ICE suites support both Windows and Linux-based servers and management consoles.
  - HP Insight Dynamics - VSE suite for ProLiant servers, a product option, is an integrated command center that enables you to continuously analyze and optimize your adaptive infrastructure. This advanced infrastructure management software lets you reduce the cost of common data center tasks by as much as 40 percent while keeping pace with your changing business

- Deployment/Serviceability:
  - Easy chassis entry and component access
  - Customer Self Repair (CSR): HP products are designed with many CSR parts to minimize repair time and allow for greater flexibility in performing defective parts replacement
  - HP Smart Start Tool

- Operating Systems and Virtualization Software Support for ProLiant Servers:
  - Supports Windows, RHEL, SLES, OEL, VMware, and HP Citrix Essentials for XenServer

- Security - Trusted Platform Module:
  - One (1) internal TPM 1.2 module connector

- Warranty:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP

Overview

Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. 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 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:

http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

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	Intel Xeon E5500 Family (DP)
	Quad-Core Processors
	Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
	Intel® Xeon® Processor E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
	Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
	Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)
	Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)
	Dual-Core Processors
	Intel® Xeon® Processor E5502 (1.86 GHz, 4MB L3 Cache, 80W, DDR3-800)
	Intel Xeon W3500 Family (UP)
	Quad-Core Processors
	Intel® Xeon® Processor W3540 (2.93 GHz, 8MB L3 Cache, 130W, DDR3-1066, HT, Turbo 1/1/1/2)
	Intel® Xeon® Processor W3520 (2.66 GHz, 8MB L3 Cache, 130W, DDR3-1066, HT, Turbo 1/1/1/2)
	Dual-Core Processors
	Intel® Xeon® Processor W3505 (2.53 GHz, 4MB L3 Cache, 130W, DDR3-1066)
	Intel® Xeon® Processor W3503 (2.40 GHz, 4MB L3 Cache, 130W, DDR3-1066)
	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. NOTE: For the Intel 5500 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.

Cache Memory One of the following depending on Model	8MB (1 x 8MB) Level 3 cache NOTE: For processors E5540/E5530/E5520/W3540/W3520.
	4MB (1 x 4MB) Level 3 cache NOTE: For processors E5506/E5504/E5502/W3505/W3503.

Chipset	Intel® 5500 Chipset NOTE: For more information regarding Intel® chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/.

Upgradeability	Upgradeable to 2 processors (4 or 8 cores)

Standard Features

Memory Protection	Mirroring
	Lock-step mode
	Advanced ECC
	NOTE: Xeon W3500 processor family does not support any of above advanced features.

Memory	Type	DDR3 Registered (RDIMM) and Unbuffered (UDIMM)
One of the following depending on model	Standard (Base Models)	4 GB (2 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs
	Standard (Entry Models)	2 GB (1 x 2 GB) PC3-10600E (DDR3-1333) Registered DIMMs
	Maximum (RDIMM)	144 GB (18 x 8 GB) for Registered Memory configurations
	Maximum (UDIMM)	24 GB (12x 2 GB) for Unbuffered Memory configurations

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1333MHz, 1066MHz, or 800MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.
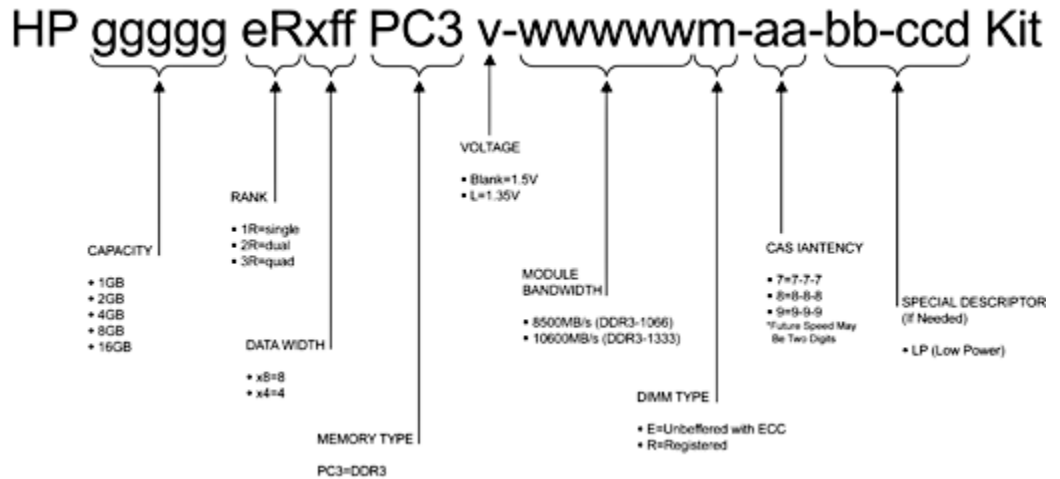
HP ggggg eRxff PC3 v-wwwwwm-aa-bb-ccd Kit

VOLTAGE
- Blank=1.5V
- L=1.35V

RANK
- 1R=single
- 2R=dual
- 3R=quad

CAPACITY
- 1GB
- 2GB
- 4GB
- 8GB
- 16GB

DATA WIDTH
- x8=8
- x4=4

MEMORY TYPE
PC3=DDR3

MODULE BANDWIDTH
- 8500MB/s (DDR3-1066)
- 10600MB/s (DDR3-1333)

DIMM TYPE
- E=Unbuffered with ECC
- R=Registered

CAS IATENCY
- 7=7-7-7
- 8=8-8-8
- 9=9-9-9
- *Future Speed May Be Two Digits

SPECIAL DESCRIPTOR (If Needed)
- LP (Low Power)

Network Controller	Embedded NC326i PCI Express Dual Port Gigabit Server Adapter

Expansion Slots

Expansion Slot #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
6	PCI Express Gen2	x4	x8	4	Standard Height/ Half Length	
5	PCI Express Gen2	x4	x8	10	Standard Height/ Half Length	
4	PCI Express Gen2	x16	x16	13	Standard Height/Length	
3	PCI Express Gen1	x1	x8	7	Standard Height/Length	

* Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number
** Indicates the number of physical electrical lanes running to the connector.

Standard Features

Storage Controller	Entry Model	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)
	Base Models	HP Smart Array P410/Zero memory Controller (RAID 0/1/1+0)
	Available upgrades: 256MB, 512MB with BBWC, Battery kit upgrade (for BBWC), and Smart Array Advanced Pack (SAAP)	

Storage	Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
	Hard Drives	Hot Plug Model: None ship standard
		HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD

Maximum Internal Storage	Hot Plug LFF SATA	8TB	8 x 1TB
	Hot Plug LFF SAS	8TB	8 x 1TB

Interfaces	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	Network RJ-45	3 (1 dedicated for ProLiant Onboard Administrator)
	SD Slot	1 (internal)
	USB 2.0 Ports	8 (2 front, 4 rear, 2 internal)
		NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html.

Graphics	Integrated ATI RN50, 64MB video standard

- 16 bit color: maximum resolution of 1600 x 1200
- 32 bit color: maximum resolution of 1280 x 1024

NOTE: Maximum resolution available via ProLiant Onboard Administrator remote console is 1280 x 1024.

Form Factor	Tower (5U)

NOTE: Rack mounting available via HP Tower to Rack Conversion Tray, Universal Kit. Please see the options section in this QuickSpecs:

- Square or round hole racks 24"- 36" deep, including HP Rack System /E and HP Systems
- Telco racks with 3rd part option kit from Rack Solutions
  http://www.racksolutions.com/hp

HP Insight Software	HP Insight Foundation	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.

Standard Features

HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: www.hp.com/go/foundation.

The foundation pack includes:

- HP SmartStart
- HP Management
- HP ProLiant Firmware Maintenance

SmartStart version supported (minimum): SmartStart 8.25
http://www.hp.com/servers/smartstart

NOTE: In an effort to support reducing our environmental impact, the HP ProLiant Essentials Foundation Pack media will be available as a selectable option for this server at time of order of a CTO SKU. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.

ProLiant Onboard Administrator	HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and the Insight Dynamics-VSE suite helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business. See www.hp.com/go/ProLiantOA
HP Insight Control suites	HP Insight Control suites, as product options, deliver essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. Insight Control suites install and license software modules that are integrated into HP System Insight Manager.

Two Insight Control suites are available, to serve environments requiring either Linux-based or Windows-based management consoles: HP Insight Control suite for Linux, and HP Insight Control suite. See www.hp.com/go/insightcontrol

HP Insight Control suites include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.

HP Insight Dynamics - VSE suite	The HP Insight Dynamics - VSE suite for ProLiant, a product option, is an integrated command center that enables you to continuously analyze and optimize your adaptive infrastructure. This advanced infrastructure management software that allows you to analyze and optimize your adaptive infrastructure to manage physical and virtual resources in the same way. HP Insight Dynamics - VSE gives you a powerful toolkit to accelerate complex technology projects and simplify daily operations. It enables you to plan capacity and power continuously, balance across physical and virtual resources, ensure cost-effective high availability, and provision infrastructure

Standard Features

consistently.

HP Insight Orchestration, an optional extension to Insight Dynamics - VSE, enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements.

HP Insight Recovery, also an optional extension for Insight Dynamics - VSE, enables cost-effective disaster recovery for physical and virtual environments. Application environments can be reactivated in minutes with the touch of a button to a remote location

NOTE: For more information, visit:
http://www.hp.com/go/insightdynamics,
http://www.hp.com/go/insightorchestration,
http://www.hp.com/go/insightrecovery

Industry Standard Compliance	ACPI V2.0 Compliant PCI-Express Gen2 PXE Support WOL Support PCI-X 1.0a Compliant Microsoft® Logo certifications USB 2.0
System Management	HP Systems Insight Manager SmartStart Redundant ROM System Firmware Update ROMPaq ProLiant RBSU (ROM-Based Setup Utility) Automatic Server Recovery-2 (ASR-2) Dynamic Sector Repairing (with Smart Array Controller) Drive Parameter Tracking (with Smart Array Controller) Pre-Failure Warranty (covers processors, memory, and SAS hard drives)
Security	Power-on password Setup password Serial interface control Power switch security Front bezel/side access panel Lock Padlock and Kensington lock available Keyboard/Mouse/USB port lock

Standard Features

Security - Trusted Platform Module

Trusted Platform Module option kit

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. In addition,

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 loosing the key could result in data loss.

UPS and PDU Power Cord Matrix

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.

Power Supply

460W Non-Redundant Power Supply, Non-hot plug
750W Hot plug, Redundant Power supply

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your need. The HP Power Advisor is located at " www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor

HP has a new design for ProLiant power. The new Common Slot Power Supply bay. This design provides the customer with commonality in power supplies across multiple platforms to save on the cost of spares and allows HP to offer multiple power solutions to fit the customers' needs. Many HP ProLiant Servers come with Common Slot, High Efficiency and Right-Size Power Supplies. Common Slot (CS) designates commonality of the power supply across multiple ProLiant servers. HP's new Common Slot power supplies are designed for highest efficiency to provide power efficiency without degrading performance of the ProLiant. Power Supplies will have efficiency ratings up to 92%. There are three Right Size power options available, depending on the configuration of your server. To make sure you select the correct power supply to meet your configuration, we suggest that you use the HP Power Calculator to decide the "Right-Size" for your configuration. All HP Common Slot power sources are UL, CE Mark Compliant, Hot Plug and Redundant.

HP's ProLiant Common Slot Power supplies (750W) meet multiple Energy Efficiency Initiatives. Climate Savers Computing Initiative GOLD, ECOS Consulting 80PLUS GOLD and they meet the standard specifications for Energy Star for Servers Power Supply requirements.

System Fans

3 fans ship standard, 4 fans total supported (optional (1) redundant fan)
NOTE: Does not include power supply or processor heat sink fans. Processor heat sink fans packed in processor kit.
NOTE: There are two fans packed in the Redundant Fan Kit, only 1 is required for system redundant function. The other one can be saved as a spare part.

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Microsoft Windows Server Hyper V Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Enterprise Linux (OEL) VMware Citrix Essentials for XenServer 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 www.hp.com/support/ML330G6.

Factory Express Portfolio for Servers and Storage	HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the 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 Enterprise Configurator	The HP eConfigure-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

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Service and Support	HP Care Pack services provide total care and support expertise with committed response designed to meet your IT and business needs. HP Care Pack services include coverage for the HP branded hardware options qualified for the server and purchased at the same time or afterward that are internal to the enclosure. This also includes the 22" and smaller external monitors and tower UPS options up to 3kVA. These items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included, and standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack. To fully 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 your business. Whether an SMB, or large global corporation, HP has a ProLiant server support offer to help you speedily deploy and maximize system uptime. Recommended Service - simplify ProLiant solution implementation, maintenance, and management. • Support - 3-Year 4-Hour response 24x7 Same Business Day Coverage only • Deployment Service - Installation and Start up only

Standard Features

Enhanced Service - optimize service level to increase IT performance and availability.

- Support - 3-Year Support Plus 24 only

Refer to the information on "Installation & Start-Up" for service on 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, excluding 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: Please note that SFF tower or rack models can only be configured with SFF 2.5" SAS or SATA hard drives and LFF tower or rack models can be only configured with LFF 3.5" SAS or SATA hard drives.

HP ML330 G6 Entry Model Quad-Core Models HP ML330T06 E5504 LFF Non Hot Plug 504055-xx1	Processor	(1) Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800
	Cache Memory	4MB (1 x 4MB) Level 3 cache
	Memory	2 GB (1 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs
	Network Controller	Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array B110i SATA RAID Controller (RAID 0/1/0+1)
	Hard Drive	HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD
	Internal Storage	4TB LFF SAS 4TB LFF SATA
	Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
	PCI-Express Slots	Four expansion slots (four PCI-Express)
	Power Supply	460 Watt power supply (NHP, Non Redundant)
	Fans	3 fans ship standard
	Form Factor	Tower (5U)

HP ML330 G6 Base Models Quad-Core Models HP ML330T06 E5506 LFF Hot Plug 504056-xx1	Processor	(1) Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)
	Cache Memory	4MB (1 x 4MB) Level 3 cache
	Memory	4 GB (2 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs
	Network Controller	Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P410/Zero memory Controller (RAID 0/1/0+1)
	Hard Drive	None ship standard
	Internal Storage	8TB LFF SAS 8TB LFF SATA
	Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive
	PCI-Express Slots	Four expansion slots (four PCI-Express)
	Power Supply	460 Watt power supply (NHP, Non Redundant)
	Fans	3 fans ship standard
	Form Factor	Tower (5U)

Models

Country Code Key	Tower Code Key	Rack Code Key
XX=00	U.S. English	U.S. English
XX=01	Australia	N/A
XX=03	UK	N/A
XX=04	Germany	N/A
XX=05	France	N/A
XX=20	Brazil	N/A
XX=29	Japan	Japan
XX=37	APD	APD
XX=42	Europe	Europe
XX=AA	PRC	PRC

Configuration Information - Factory Integrated Models

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

NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.

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

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

Models	HP ML330G6 CTO Chassis	504271-B21

Includes:

Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
Integrated Smart Array B110i SATA RAID Controller
One PCI-Express x6 Gen1 (x4 speed); One PCI-Express x16 Gen2 (x16 speed); Two PCI-Express x8 Gen2 (x4 speed)
Eight USB ports
Tower Form Factor
Keyboard
2-button Mouse

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

Processors

Intel Xeon E5500 Family (DP)

Quad-Core Processors

Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 FIO Kit	535585-L21
Intel® Xeon® Processor E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 FIO Kit	535584-L21
Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 FIO Kit	535583-L21
Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 FIO Kit	535582-L21
Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 FIO Kit	535581-L21

Dual-Core Processors

Intel® Xeon® Processor E5502 (1.86 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 FIO Kit	535580-L21

Intel Xeon W3500 family (UP)

Quad-Core Processors

Intel® Xeon® Processor W3540 (2.93 GHz, 8MB L3 Cache, 130W, DDR3-1066, HT, Turbo 1/1/1/2) ML330G6 FIO Kit	512718-L21
Intel® Xeon® Processor W3520 (2.66 GHz, 8MB L3 Cache, 130W, DDR3-1066, HT, Turbo 1/1/1/2) ML330G6 FIO Kit	512717-L21

Dual-Core Processors

Intel® Xeon® Processor W3505 (2.53 GHz, 4MB L3 Cache, 130W, DDR3-1066) ML330G6 FIO Kit	573362-L21

Configuration Information - Factory Integrated Models

	Intel® Xeon® Processor W3503 (2.40 GHz, 4MB L3 Cache, 130W, DDR3-1066) ML330G6 FIO Kit	573363-L21
	NOTE: Xeon E5500 DP family supports both Registered DIMMs and Unbuffered DIMMs. Xeon W3500 UP family supports only Unbuffered DIMMs.	
Base Memory	Registered DIMMs (RDIMMs)	
	HP 2GB 2Rx8 PC3-10600R-9 Kit	500656-B21
	HP 4GB 2Rx4 PC3-10600R-9 Kit	500658-B21
	HP 4GB 4Rx8 PC3-8500R-7 LP Kit	500660-B21
	HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21
	HP 8GB 2Rx4 PC3-10600R-9 Kit	500662-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 1GB 1Rx8 PC3-10600E-9 Kit	500668-B21
	HP 2GB 2Rx8 PC3-10600E-9 Kit	500670-B21
	NOTE: For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.	
Hard Drive Cage	Non-Hot Plug HDD Model	
	HP SATA 5U G6 Module FIO Kit	500448-B21
	Hot Plug HDD Model	
	HP Hot Plug HDD Drive Cage Kit	487737-B21
	NOTE: Hot Plug SATA/SAS model and Non-hot plug SAS model requires a HP SAS Controller. NOTE: Non-Hot Plug Model only supports up to total 4 drives.	
Optical Drive	HP Half-Height SATA DVD-ROM Optical Drive	447326-B21
	HP Half-Height SATA DVD RW Optical Drive	447328-B21
Hard Drives	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) 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.	
	SAS Non-Hot Plug 3.5" Enterprise (ENT) Drives	
	HP 600GB 3G SAS 15K NHP 3.5" DP ENT HDD	516830-B21
	HP 450GB 6G SAS 15K NHP 3.5" DP ENT HDD	516826-B21
	HP 450GB 3G SAS 15K NHP 3.5" DP ENT HDD	454234-B21
	HP 400GB 3G SAS 10K NHP 3.5" DP ENT HDD	508232-B21
	HP 300GB 6G SAS 15K NHP 3.5" DP ENT HDD	516824-B21
	HP 300GB 3G SAS 15K NHP 3.5" DP ENT HDD	417950-B21
	HP 146GB 3G SAS 15K NHP 3.5" DP ENT HDD	417855-B21
	NOTE: SAS non-hot plug drives require the Non-Hot Plug Internal SAS/SATA 4 port Cable kit (P/N 487734-B21) and a HP SAS/Smart Array Controller.	
	SATA Non-Hot Plug Entry (ETY) Drives	
	HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD	458947-B21
	SATA Non-Hot Plug Midline (MDL) Drives	
	HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD	462595-B21

Configuration Information - Factory Integrated Models

	HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD	458941-B21
	HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD	458939-B21
Power supply	It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your need. The HP Power Advisor is located at: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor	
	HP 460W Power Supply, FIO Kit	500447-B21
	HP 750W CS HE Power Supply	512327-B21
	NOTE: The HP 750W power supply requires purchasing the Redundant Power Supply Enablement Kit (P/N 508544-B21).	
	HP Redundant Power Supply Enablement Kit	508544-B21
	NOTE: The Redundant Power Supply Enablement kit does not integrate any power supply. To enable full Redundancy, it requires 2 units of 750W Power supply.	

Step 3: Choose Additional Factory Integratable Options

Storage Controllers	HP Smart Array P212/Zero Memory Controller	462828-B21
	HP Smart Array P212/256MB Controller	462834-B21
	HP P212 /256 FIO SA Cntrlr w/Battery	491191-B21
	256 MB Cache Module	462968-B21
	HP Smart Array P410/256MB Controller	462862-B21
	HP P410/ZM FIO Smart Array Controller	462860-B21
	HP P410/256 FIO SA Cntrlr w/Battery	491195-B21
	HP Smart Array P410/512MB with BBWC	462864-B21
	512MB BBWC	462967-B21
	NOTE: To support RAID 5, HP P410 requires at least 256MB Cache	
	NOTE: To support RAID 6, HP P410 requires at least 256MB Cache + Battery + SAAP or 512MB BBWC + Smart Array Advanced Pack (SAAP) license key. Smart Array P411 Controller.	
	HP P411/256MB BBWC Smart Array Controller FIO Kit	
	NOTE: SAS Controller supporting RAID 0/1/1+0/5.	
	Optional Upgrades	
	256 MB Cache Upgrade	462968-B21
	NOTE: Supported HP Smart Array P212 and P410/ZM Controllers only.	
	512MB BBWC	462967-B21
	NOTE: Supported on HP Smart Array P410 Controller and HP Smart Array P411 Controller only.	
	Battery Kit upgrade	462969-B21
	NOTE: To enable BBWC on the 256MB cache.	
	NOTE: Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.	
Insight Control suite	HP Insight Control suite, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates	582765-B21

Step 4: Choose Additional Options for Factory Integration

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

QuickSpecs

Core Options

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

Processors	Intel Xeon DP 5500 Family	
	Quad-Core Processors	
	Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 Processor Kit	512716-B21
	Intel® Xeon® Processor E5530 (2.40 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 Processor Kit	512715-B21
	Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 Processor Kit	512714-B21
	Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 Processor Kit	512713-B21
	Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800 ML330G6 Processor Kit	512712-B21
	Dual-Core Processors	
	Intel® Xeon® Processor E5502 (1.86 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 Processor Kit	512711-B21

NOTE: Each Processor Kit includes (1) processor/(1) heatsink/ (1) Processor board. The Processor board integrated (1) processor socket and (9) DIMM slots.
NOTE: When two (2) Xeon E5500 processors are installed, the system QPI will be locked at 4.8 GT/s.

Memory	Registered DIMMs (RDIMMs)	
	HP 2GB 2Rx8 PC3-10600R-9 Kit	500656-B21
	HP 4GB 2Rx4 PC3-10600R-9 Kit	500658-B21
	HP 4GB 4Rx8 PC3-8500R-7 LP Kit	500660-B21
	HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 1GB 1Rx8 PC3-10600E-9 Kit	500668-B21
	HP 2GB 2Rx8 PC3-10600E-9 Kit	500670-B21

NOTE: For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

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

NOTE: Please note that some of the earlier BTO models may not support adding SATA Optical Drives. To ensure compatibility of the SATA Optical Drives, please add additional optical drives only on models with Quad-Core 5400 Series.

Hard Drive Cage	HP 5U Hot Plug HDD Drive Cage Kit	487737-B21

NOTE: To reach maximum 8 LFF Drive support, it is required to purchase 2 Hot Plug HDD Drive Cage kit and Smart Array controller 8 ports or 2x 4 ports.

Hard Drives	NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller,

Core Options

firmware, and the server backplane) 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.

NOTE: SATA Hot Plug models require HP SAS Smart Array Controller.

NOTE: SAS Non-Hot Plug and SAS Hot Plug Models require HP SAS Smart Array Controller.

SAS Hot Plug 3.5" Enterprise (ENT) Drives

HP 600GB 6G SAS 15K 3.5" DP ENT HDD	516828-B21
HP 450GB 6G SAS 15K 3.5" DP ENT HDD	516816-B21
HP 450GB 3G SAS 15K 3.5" DP ENT HDD	454232-B21
HP 300GB 6G SAS 15K 3.5" DP ENT HDD	516814-B21
HP 300GB 3G SAS 15K 3.5" DP ENT HDD	416127-B21
HP 146GB 3G SAS 15K 3.5" DP ENT HDD	384854-B21
HP 72GB 3G SAS 15K 3.5" DP ENT HDD	384852-B21

SAS Non-Hot Plug 3.5" Enterprise (ENT) Drives

HP 600GB 3G SAS 15K NHP 3.5" DP ENT HDD	516830-B21
HP 450GB 6G SAS 15K NHP 3.5" DP ENT HDD	516826-B21
HP 450GB 3G SAS 15K NHP 3.5" DP ENT HDD	454234-B21
HP 400GB 3G SAS 10K NHP 3.5" DP ENT HDD	508232-B21
HP 300GB 6G SAS 15K NHP 3.5" DP ENT HDD	516824-B21
HP 300GB 3G SAS 15K NHP 3.5" DP ENT HDD	417950-B21
HP 146GB 3G SAS 15K NHP 3.5" DP ENT HDD	417855-B21

SAS Hot Plug 3.5" Midline (MDL) Drives

HP 1TB 3G SAS 7.2K 3.5" DP MDL HDD	461137-B21
HP 750GB 3G SAS 7.2K 3.5" DP MDL HDD	461135-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 Midline (MDL) Drives

HP 1TB 3G SATA 7.2K 3.5" MDL HDD	454146-B21
HP 750GB 3G SATA 7.2K 3.5" MDL HDD	458930-B21
HP 500GB 3G SATA 7.2K 3.5" MDL HDD	458928-B21
HP 250GB 3G SATA 7.2K 3.5" MDL HDD	458926-B21

SATA Non-Hot Plug 3.5" Midline (MDL) Drives

HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD	462595-B21
HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD	458941-B21
HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD	458939-B21

SATA Hot Plug Entry (ETY) Drives

HP 160GB 3G SATA 7.2K 3.5" ETY HDD	458945-B21

SATA Non-Hot Plug Entry (ETY) Drives

HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD	458947-B21

Core Options

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

HP 60GB 3G SATA 3.5in MDL 1y Wty SSD	570761-B21
HP 120GB 3G SATA 3.5in MDL 1y Wty SSD	570763-B21

Communications

Gigabit Ethernet Adapters

HP NC112T PCIe Gigabit Server Adapter	503746-B21
HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
HP NC382T PCIe Dual Port Multifunction Gigabit Server Adapter	458492-B21

10 Gigabit Ethernet Adapters

HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21

NOTE: A minimum of 2 GB of server memory is required per each NC522SFP adapter.

NOTE: Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs

Power Supplies

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your need. The HP Power Advisor is located at:
www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor

CAUTION: Optional Power Supplies used for Redundancy "must" match the original supplied power supply. Upgrades for more power headroom, when replacing the original power supplies must match if purchased for redundancy. Option Kits contain optional power supply, an IEC power cable and PDU IEC cables. In ProLiant Servers that have more than one power slot (bay), only same size power supplies are recommended. If non-matched power supplies are inserted you will get errors and operation will fail.

HP 750W CS HE Power Supply	512327-B21

NOTE: The HP 750W power supply requires purchasing the Redundant Power Supply Enablement Kit (P/N 508544-B21).

Power Options

HP Redundant Power Supply Enablement Kit	508544-B21

NOTE: The Redundant Power Supply Enablement kit does not integrate any power supply. To enable full Redundancy, it requires 2 units of 750W Power supply.

Core Options

HP 5U G6 Redundant fan kit   513927-B21

NOTE: Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.

Additional Options

HP Insight Control suites	**HP Insight Control suite**	
	HP Insight Control Environment, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	452148-B22
	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 and Update Service.	
	HP Insight Control Management Software Media Kit	436222-B21
	NOTE: Insight Software DVD media without licenses. Contains HP Systems Insight Manager and Insight software products and components licensed by the Insight Control suite. Uses an integrated installer to perform quick and accurate software installation and updates.	
	NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
	HP Insight Control suite for Linux (ICE-LX)	
	HP Insight Control suite for Linux, Media pack (DVD) - No licenses included	464422-B22
	NOTE: This optional Media pack DVD contains the ISO image for HP Insight Control Environment for Linux, HP System Insight Manager, HP Insight Power Manager, HP Insight Virtual Machine Management software, and an integrated installer. Servers must be acquired separately.	
	NOTE: This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ice-linux (click on Download button).	
	HP Insight Control suite for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	464423-B22
	NOTE: This part number can be used to purchase one (1) license with a single activation key. 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 and Update Service.	
	NOTE: One certificate is shipped for each license.	
	NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html	

Port Options	HP iLO2 PORT OPT KIT	514206-B21
	HP NHP Internal SAS/SATA 4 port cable kit	487734-B21
	NOTE: SAS non-hot plug drives require the Non-Hot Plug Internal SAS/SATA 4 port Cable kit (P/N 487734-B21) and a HP SAS/Smart Array Controller.	

PCI-X Expander Kit	HP PCI-X Expander Kit (2 x 64-bit 100MHz PCI-X slots)	488413-B21

Security	HP Trusted Platform Module Option Kit	488069-B21

Additional Options

Storage Controllers	SAS Controllers	
	Smart Array P800 Controller	
	HP Smart Array P800/512 BBWC Controller	381513-B21
	NOTE: Supports internal or external drive attach.	
	Smart Array P212 Controller	
	HP Smart Array P212/Zero Memory Controller	462828-B21
	HP Smart Array P212/256MB Controller	462834-B21
	Smart Array P410 Controller	
	HP Smart Array P410/256MB Controller	462862-B21
	HP Smart Array P410/512MB with BBWC	462864-B21
	Smart Array P411 Controller	
	HP Smart Array P411/256MB Controller	462830-B21
	HP Smart Array P411/512MB BBWC	462832-B21
	Upgrade Options	
	256 MB Cache Module	462968-B21
	NOTE: Supported on HP Smart Array P212 and P410/ZM Controllers only.	
	512MB BBWC	462967-B21
	NOTE: When used with the embedded HP Smart Array P410i controller, this battery module also requires a 24 inch SFP Battery Cable (496029-B21).	
	Battery Kit upgrade	462969-B21
	NOTE: To enable BBWC on the 256MB cache.	
	NOTE: Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.	
	NOTE: Please see the following QuickSpecs additional information: http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller) http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html (Smart Array P212 Controller) http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html (Smart Array P410 Controller) http://h18000.www1.hp.com/products/quickspecs/13202_div/13202_div.html (Smart Array P411 Controller)	
	SAS HBA	
	HP SC08Ge Host Bus Adapter	488765-B21
	NOTE: Please see the HBA QuickSpecs for additional information: http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC08Ge HBA)	
	SCSI HBA	
	HP SC11Xe Host Bus Adapter	412911-B21
	NOTE: Recommended HBA for SCSI tape drive connect.	
	NOTE: Please see the following QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)	

QuickSpecs

Additional Options

Tape Storage	NOTE: For the complete listing of Tape Drive offerings, please see: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html	
	Tape Drives	
	USB Tape Drives	
	HP StorageWorks DAT 160 USB Internal Tape Drive	Q1580A
	SAS Tape Drives	
	NOTE: HP recommends purchasing the HP Smart Array P212 Controller (462828-B21) for a dedicated SAS HBA for tape.	
	HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive	DW085A
	HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive	EH847A
	HP StorageWorks LTO-4 Ultrium 1760 SAS Internal Tape Drive	EH919A
	HP StorageWorks 1/8 G2 Tape Autoloader	
	HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader	AK377A
	HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader	AH558A
	HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit	AH166A
	NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions.	
	NOTE: Please reference the Tape Autoloader QuickSpecs at: http://www.hp.com/go/automation for additional information needed to create a complete solution.	
	HP StorageWorks MSL2024 Tape Library	
	HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library	AK378A
	HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library	AH559A
	HP StorageWorks MSL4048 Tape Library	
	HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library	AK380A
	HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library	AH560A
	NOTE: Please reference the MSL Tape Library QuickSpecs at: http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at: http://www.hp.com/go/ebs.	
Disk-Based Backup	RDX Removable Disk Backup	
	HP StorageWorks RDX500 Internal Removable Disk Backup System	AJ934A
	NOTE: Please see the HP RDX Removable Disk Backup System QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13036_div/13036_div.html	
	D2D Backup	
	HP StorageWorks D2D2502i Backup System NOTE: 2 TB raw capacity/1.5 TB useable capacity.	EJ001A
	HP StorageWorks D2D2504i Backup System NOTE: 4 TB raw capacity/3 TB useable capacity.	EJ002A
	NOTE: Please see the HP D2D Backup Systems QuickSpecs for additional information: http://www.hp.com/go/d2d.	

Additional Options

StorageWorks Options	StorageWorks SCSI HBA	
	HP U320e SCSI Host Bus Adapter	AH627A
	NOTE: Recommended HBA for MSL SCSI Tape Library connect.	

HP StorageWorks Modular Smart Array	MSA SAN Storage Arrays	
	HP StorageWorks 50 Modular Smart Array	364430-B21
	NOTE: Please see the Modular Smart Array 50 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12245_div/12245_div.html (Worldwide)	
	HP StorageWorks 60 Modular Smart Array	418408-B21
	NOTE: Please see the Modular Smart Array 60 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html (Worldwide)	
	HP StorageWorks 70 Modular Smart Array	418800-B21
	NOTE: Please see the Modular Smart Array 70 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html (Worldwide)	
	HP 2012sa Single Controller Modular Smart Array	AJ752A
	HP 2012sa Dual Controller Modular Smart Array	AJ753A
	NOTE: Please see the Modular Smart Array 2000sa QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/13045_div/13045_div.html (Worldwide)	

Uninterruptible Power Systems	HP Tower UPS	
	HP T1000v Uninterruptible Power System	
	HP T1000v UPS	AF404A
	NOTE: The T1000v is available in China and India only.	
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13130_div/13130_div.html (Worldwide)	
	HP T1500 G3 UPS Models	
	HP T1500 G3 UPS, NA/JPN	AF450A
	HP T1500 G3 UPS, INTL	AF451A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html (Worldwide)	
	HP R/T 2200 G2 UPS	
	HP, R/T 2200 UPS NA	AF409A
	HP, R/T 2200 UPS JPN	AF410A
	HP, R/T 2200 UPS INTL	AF411A

Additional Options

	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13179_div/13179_div.html (Worldwide)	
	HP Rack-mountable UPS	
	HP R3000v Uninterruptible Power System	
	HP R3000v UPS	AF444A
	NOTE: The R3000v is available in China and India only.	
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13129_div/13129_div.html (Worldwide)	
	HP Rack-Mountable R5500 UPS	
	HP R5500 VA UPS, INTL	AF416A
	HP R5500 VA UPS, NA/JPN	AF426A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html (Worldwide)	
	NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups.	
HP Rack Series	HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	
	10642 G2 (42U) Rack Cabinet 1200mm Deep - Shock Pallet	AF034A
	10642 G2 (42U) Rack Cabinet 1200mm Deep - Pallet	AF038A
	10647 G2 (47U) Rack Cabinet 1200mm Deep - Shock Pallet	AF044A
	NOTE: Due to handling and shipping requirements, AF044A is only orderable through HP Factory Express. It is not for direct sales. Customer site surveys are required before an order is approved. CTO orders may require additional lead time.	
	10647 G2 (47U) Rack Cabinet 1200mm Deep - Pallet	AF045A
	NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.	
	NOTE: xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels).	
	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.	

Additional Options

HP Rack Options	HP KVM Switch Options	
	2x1x16 IP Console Switch with Virtual Media	AF601A
	4x1x16 IP Console Switch with Virtual Media	AF602A
	2x16 Server Console Switch with Virtual Media	AF600A
	PS/2 Virtual Media Interface Adapter, 1 pack	AF604A

NOTE: Requires PS/2 and one USB port on server.

	Server Console Switch (KVM), 0 x 2 x 8 port	AF616A
	Server Console Switch (KVM), 0 x 2 x 16 port	AF617A
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21

NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.

	HP 1x4 Console Switch	AF611A
	PS2 Server Console Cable, 6 ft, 2 pack	AF612A

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.

Rack Kit	HP Tower to Rack Conversion Tray, Universal Kit	417705-B21

SD Options	HP 4GB SD Flash Media Kit	580387-B21

NOTE: Blank SD media device is supported for use with ProLiant iVirtualization. USB media must be installed in the internal slot of the ProLiant server. Learn more at http://www.hp.com/go/proliantvirtualization.

USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B
	HP USB 04 Standard Keyboard	DT528A#ABA
	HP 4GB USB Flash Media Key Kit	580385-B21

NOTE: Blank USB media device is supported for use with ProLiant iVirtualization. USB media must be installed in the internal slot of the ProLiant server. Learn more at http://www.hp.com/go/proliantvirtualization.

Additional Options

Service and Support Offerings (HP Care Pack Services)	Hardware Services On-site Service	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 1 Year	UM867E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 1Year	UM868E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 1 Year	UM869E
	Hardware Services	
	Next Day Service, 3 Year	UM870E
	4-Hour Service, 5-Day x 13-Hour Coverage, 3 Years	UM872E
	4-Hour Service, 7-Day x 24-Hour Coverage, 3Years	UM874E
	6-Hour Call to Repair, Service, 7-Day x 24-Hour Coverage, 3 Year	UM876E
	Other Services	
	4-Hour Service, 5-Day x 13-Hour Coverage, 4 Years	UM880E
	4-Hour Service, 7-Day x 24-Hour Coverage, 4Years	UM882E
	4-Hour Service, 5-Day x 13-Hour Coverage, 5 Years	UM888E
	4-Hour Service, 7-Day x 24-Hour Coverage, 5Years	UM890E
	Support Plus	
	Support Plus, MS, 3Years	UM894E

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

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".
DDR3 memory population guidelines
For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:
www.hp.com/go/ddr3memory-configurator

Some DIMM installation guidelines are summarized below:

- For servers with eighteen (18) memory slots:
  - There are three (3) channels per processor; six (6) channels per server
  - There are three (3) DIMM slots for each memory channel; eighteen (18) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- You can only have up to eight (8) ranks installed per channel
- You can only install two quad-rank DIMMs per channel
- You can only install two UDIMMs per channel; if available, the third slot in the channel must remain empty
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the chipset
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically
- For lock-step mode, channel 3 must be unpopulated. DIMMs in channels 1 and 2 will be installed in pairs. The paired slots will be 1,4; 2,5; 3;6 on a 3DPC system or 1,4; 2,5; on a 2DPC system
- No mixing DIMM voltage; all DIMMs must be the same voltage

DIMM slot/capacity/populated speed table									
DIMM Type ->	Registered Dimms (RDIMMs)						Unbuffered with ECC DIMMs (UDIMM			
DIMM Rank ->	Dual Rank (2R)			Quad Rank (4R)			Single Rank (1R)		Dual Rank (2R)	
DIMM Capacity ->	2GB	4GB	8GB	2GB	4GB	8GB	1GB	2GB	1GB	2GB
DIMM Native Speed (MHz) ->	1333	1333	1066	*	1066	*	1333	*	*	1333
SLOTS THAT CAN BE POPULATED										
18/12 slot servers	18	18	18	*	12	*	12	*	*	12
						*				
MAXIMUM CAPACITY (GB)										
18/12 slot servers	36	72	144	*	48	*	12	*	*	24
POPULATED DIMM SPEED (MHz)										
1 DIMM Per Channel	1333	1333	1066	*	1066	*	1333	*	*	1333
2 DIMM Per Channel	1066	1066	1066	*	800	*	1066	*	*	1066
3 DIMM Per Channel	800	800	800	*	*	*	*	*	*	*

* - not supported by HP at this time.

NOTES:

- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities

Memory

- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, you still run at 1066MHz
- If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, you run at 1066MHz
- If you install 3DPC in one channel (if applicable) and 1DPC in all other channels, you run at 800MHz
- 95 Watt CPU's are required for 1333MHz DIMM speeds. All other CPU's are capable of up to 1066MHz
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc.

DIMM slot and configuration diagrams

Basic memory slot & population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

18 DIMM SLOTS (9 per CPU node)					
	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 0	1	G	1	G	Chnl 0
	2	D	2	D	
	3	A	3	A	
Chnl 1	4	H	4	H	Chnl 1
	5	E	5	E	
	6	B	6	B	
Chnl 2	7	I	7	I	Chnl 2
	8	F	8	F	
	9	C	9	C	

Standard memory configuration (1 CPU model)

- 4GB, consisting of three (2) 2GB dual-rank PC3-10600 RDIMMs (Base model)

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; empty	2	D; empty	
	3	A; 2GB DIMM	3	A; empty	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; empty	5	E; empty	
	6	B; 2GB DIMM	6	B; empty	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; empty	8	F; empty	
	9	C; empty	9	C; empty	

Memory

Standard memory plus optional memory (1 CPU model)

- 60GB, consisting of two (2) 2GB RDIMMs plus seven (7) 8GB RDIMMs
    - 2x 2GB dual-rank PC3-10600 RDIMMs
    - 7x 8GB dual-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; 8GB DIMM	1	G; empty	Chnl 1
	2	D; 8GB DIMM	2	D; empty	
	3	A; 2GB DIMM	3	A; empty	
Chnl 2	4	H; 8GB DIMM	4	H; empty	Chnl 2
	5	E; 8GB DIMM	5	E; empty	
	6	B; 2GB DIMM	6	B; empty	
Chnl 3	7	I; 8GB DIMM	7	I; empty	Chnl 3
	8	F; 8GB DIMM	8	F; empty	
	9	C; 2GB DIMM	9	C; empty	

Standard memory replaced with optional memory (1 CPU model)
RDIMM maximum configuration

- 72GB, consisting of nine (9) 8GB dual-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; 8GB DIMM	1	G; empty	Chnl 1
	2	D; 8GB DIMM	2	D; empty	
	3	A; 8GB DIMM	3	A; empty	
Chnl 2	4	H; 8GB DIMM	4	H; empty	Chnl 2
	5	E; 8GB DIMM	5	E; empty	
	6	B; 8GB DIMM	6	B; empty	
Chnl 3	7	I; 8GB DIMM	7	I; empty	Chnl 3
	8	F; 8GB DIMM	8	F; empty	
	9	C; 8GB DIMM	9	C; empty	

UDIMM maximum configuration (1 CPU model)

- 12GB, consisting of six (6) 2GB dual-rank PC3-10600 UDIMMs

QuickSpecs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; 2GB DIMM	2	D; empty	
	3	A; 2GB DIMM	3	A; empty	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; 2GB DIMM	5	E; empty	
	6	B; 2GB DIMM	6	B; empty	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; 2GB DIMM	8	F; empty	
	9	C; 2GB DIMM	9	C; empty	

Standard memory replaced with optional memory (2 CPU model)
RDIMM maximum configuration

- 144GB, consisting of eighteen (18) 8GB dual-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; 8GB DIMM	1	G; 8GB DIMM	Chnl 1
	2	D; 8GB DIMM	2	D; 8GB DIMM	
	3	A; 8GB DIMM	3	A; 8GB DIMM	
Chnl 2	4	H; 8GB DIMM	4	H; 8GB DIMM	Chnl 2
	5	E; 8GB DIMM	5	E; 8GB DIMM	
	6	B; 8GB DIMM	6	B; 8GB DIMM	
Chnl 3	7	I; 8GB DIMM	7	I; 8GB DIMM	Chnl 3
	8	F; 8GB DIMM	8	F; 8GB DIMM	
	9	C; 8GB DIMM	9	C; 8GB DIMM	

UDIMM maximum configuration (2 CPU model)

- 24GB, consisting of twelve (12) 2GB dual-rank PC3-10600 UDIMMs

QuickSpecs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; 2GB DIMM	2	D; 2GB DIMM	
	3	A; 2GB DIMM	3	A; 2GB DIMM	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; 2GB DIMM	5	E; 2GB DIMM	
	6	B; 2GB DIMM	6	B; 2GB DIMM	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; 2GB DIMM	8	F; 2GB DIMM	
	9	C; 2GB DIMM	9	C; 2GB DIMM	

NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB

Following are memory options available from HP:

Memory   Registered DIMMs (RDIMMs)

HP 2GB 2Rx8 PC3-10600R-9 Kit   500656-B21

HP 4GB 2Rx4 PC3-10600R-9 Kit   500658-B21

HP 4GB 4Rx8 PC3-8500R-7 LP Kit   500660-B21

HP 8GB 2Rx4 PC3-8500R-7 Kit   516423-B21

Unbuffered with ECC DIMMs (UDIMMs)

HP 1GB 1Rx8 PC3-10600E-9 Kit   500668-B21

HP 2GB 2Rx8 PC3-10600E-9 Kit   500670-B21

NOTE: For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

Storage
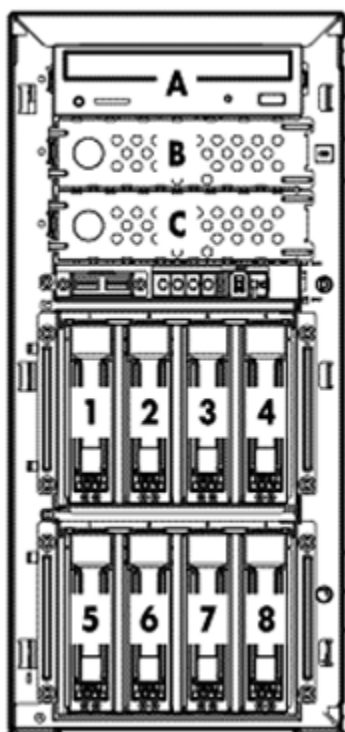
A	Optical Drive
B,C	Removable Media Bays- 1 full-height drive or 2 half-height drives
1-4	4 x 3.5" (LFF) Hot plug or Non hot-plug SATA/SAS hard drive bays (Standard)
5-8	4 x 3.5" (LFF) Hot plug SATA/SAS hard drive bays (Optional)

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
SATA DVD-ROM Drive	Up to 1	A	Integrated SAS Controller
HP Half-Height SATA DVD RW Optical Drive	Up to 1	A	Integrated SATA Controller

Hard Drives

NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.

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

NOTE: Supports up to Eight (8) SAS/SATA hard drives via 2nd Hot plug Hard Disk Drive module option kit and HP Smart Array P410 Controller.

SAS Hot Plug 3.5" Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K DP	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
450GB 6G SAS 15K DP			HP Smart Array P212/ 256 MB Controller
450GB 3G SAS 15K DP			HP Smart Array P410/256 MB Controller
300GB 6G SAS 15K DP			HP Smart Array P410/512 MB BBWC Controller
300GB 3G SAS 15K DP			
146GB 3G SAS 15K DP			

Storage

SAS Non-Hot Plug 3.5" Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K DP	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
450GB 6G SAS 15K DP			HP Smart Array P212/ 256 MB Controller
450GB 3G SAS 15K DP			HP Smart Array P410/256 MB Controller
300GB 6G SAS 15K DP			HP Smart Array P410/512 MB BBWC Controller
300GB 3G SAS 15K DP			
146GB 3G SAS 15K DP			

SAS Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1TB 3G SAS 7.2K DP	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
750GB 3G SAS 7.2K DP			HP Smart Array P212/ 256 MB Controller
			HP Smart Array P410/256 MB Controller
			HP Smart Array P410/512 MB BBWC Controller

NOTE: Transfer rates of drives are dependent on the maximum transfer rate supported by the HBA or Controller. Refer to the HBA or Controller technical specifications for details.

SATA Hot Plug Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1TB 3G SATA 7.2K	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
750GB 3G SATA 7.2K			HP Smart Array P212/ 256 MB Controller
500GB 3G SATA 7.2K			HP Smart Array P410/256 MB Controller
250GB 3G SATA 7.2K			HP Smart Array P410/512 MB BBWC Controller

SATA Non-Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
750GB 3G SATA15K	Up to 4	1-4	Embedded Smart Array B110i SATA RAID Controller
500GB 3G SATA 15K			HP Smart Array P212/Zero Memory Controller
250GB 3G SATA 15K			HP Smart Array P212/ 256 MB Controller
			HP Smart Array P410/256 MB Controller
			HP Smart Array P410/512 MB BBWC Controller

SATA Hot Plug Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
160GB 3G SATA 7.2K	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
			HP Smart Array P212/ 256 MB Controller
			HP Smart Array P410/256 MB Controller
			HP Smart Array P410/512 MB BBWC Controller

SATA Non-Hot Plug Entry (ETY) Drives

Storage

	Quantity Supported	Position Supported	Controller
160GB 3G SATA 15K	Up to 4	1-4	Embedded Smart Array B110i SATA RAID Controller HP Smart Array P212/Zero Memory Controller HP Smart Array P212/ 256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller
60GB 3.0G SATA SSD 120GB 3.0G SATA SSD	Up to 8	1-8	Embedded Smart Array B110i SATA RAID Controller HP Smart Array P212/Zero Memory Controller HP Smart Array P212/ 256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller

NOTE: To support 8 drives, the purchase of the optional HP HDD cage and possibly purchase a second SATA/SAS controller are required.
NOTE: SAS non-hot plug drives require the Non-Hot Plug Internal SAS/SATA 4 port Cable kit (P/N 487734-B21) and a HP SAS/Smart Array Controller.
NOTE: Hot Plug SATA/SAS model and Non-hot plug SAS model requires A HP SAS Controller.

Maximum Storage Capacity - SAS Models

Internal	8.0TB (8 x 1TB SAS hard drives)
Total	8.0TB (8 x 1TB SAS hard drives)

Maximum Storage Capacity - SATA Models

Internal	8.0TB (8 x 1TB SATA drives)
Total	8.0TB (8 x 1TB SATA drives)

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
60 Modular Smart Array	Up to 4	External	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/ 256 MB Controller
	Up to 8	External	HP Smart Array P411/256 MB Controller HP Smart Array P411/512 MB BBWC Controller HP Smart Array P800 Controller
70 Modular Smart Array	Up to 2	External	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/ 256 MB Controller
	Up to 4	External	HP Smart Array P411/256 MB Controller HP Smart Array P411/512 MB BBWC Controller HP Smart Array P800 Controller
HP 2000sa Modular Smart Array Controller	Up to 4	External	HP SC08Ge Host Bus Adapter

Storage

Tape and Disk-Based Backup

NOTE: For a complete listing of compatible tape and disk-based backup offerings, please visit: www.hp.com/go/connect.

	Position Supported	Controller	Controller/HBA Option Kit Part Number
Internal USB Tape Drives DAT 40 USB DAT 72 USB DAT 160 USB	B,C	USB 2.0 Port	N/A
USB Tape Drives, External DAT 40 USB DAT 72 USB DAT 160 USB 1U Rack-Mount Kit	External	USB 2.0 Port	N/A
SCSI Tape Drives, Internal LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 DAT 40 DAT 72 DAT 160	B,C	HP SC11Xe Host Bus Adapter	412911-B21
SCSI Tape Drives, Internal LTO-3 Ultrium 960 LTO-4 Ultrium 1840	B+C	HP SC11Xe Host Bus Adapter	412911-B21
SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 960 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21
SAS Tape Drives, Internal DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS	B,C	HP Smart Array P212/Zero Memory (ZM) Controller	462828-B21

Storage

SAS Tape Drives, Internal LTO-4 Ultrium 1840 SAS	B+C	HP Smart Array P212/Zero Memory (ZM) Controller	462828-B21
SAS Tape Drives, External DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS LTO-4 Ultrium 1840 SAS 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP Smart Array P212/Zero Memory (ZM) Controller	462828-B21
SCSI Tape Automation, External DAT 72x10 Autoloader 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096 MSL6000	External	HP SC11Xe Host Bus Adapter	412911-B21
SAS Tape Automation, External 1/8 G2 Autoloader MSL2024 MSL4048	External	HP Smart Array P212/Zero Memory (ZM) Controller	462828-B21
HP StorageWorks Fibre Tape Automation, External MSL2024 MSL4048 MSL8096 MSL6000	External	Please consult the EBS connectivity matrix at: http://www.hp.com/go/ebs for detailed connectivity information	N/A
HP StorageWorks RDX Removable Disk Backup System, Internal RDX160 RDX320 RDX500	B,C	USB 2.0 Port	N/A
HP StorageWorks D2D Backup Systems D2D120 D2D130 D2D2500i D2D4000i	External	Embedded Network Controller	N/A

Power Specifications

460W PSU Part Number	466610-001					
Operational Input Voltage Range (Vrms)	90 to 135					
Frequency Range (Nominal) (Hz)	47 to 66 Hz					
Nominal Input Voltage (Vrms)	100	115	208	220	230	240
Max Rated Output Wattage Rating (optional 750W RPS)	460	460	460	460	460	460
Nominal Input Current (A rms)	10	10	5	5	5	5
Max Rated Input Wattage Rating (Watts) (optional 750W RPS)	760	760	700	700	700	700
Max. Rated VA (Volt-Amp) (optional 750W RPS)	850	850	830	830	830	830
Efficiency (%) (optional 750W RPS)	65	65	65	65	65	65
Power Factor	0.9	0.9	0.9	0.9	0.9	0.9
Leakage Current (mA)	3.5	3.5	3.5	3.5	3.5	3.5
Maximum Inrush Current (A peak)	450	450	450	450	450	450
Maximum Inrush Current duration (mS)						

HP 750W Power Supply Part Number - AC 750W PSU	512327-B21						
Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	100	120	208	200	220	230	240
Maximum Rated Output Wattage	750	750	750	750	750	750	750
Nominal Input Current (A rms)	8.9	7.4	4.3	4.1	3.9	3.7	3.6
Max Rated Input Wattage Rating (Watts)	857	847	824	825	820	820	820
Max. Rated VA (Volt-Amp)	894	884	859	859	854	854	854
Efficiency (%) at Max. Rated Output Wattage	87.5	88.5	91	91	91.5	91.5	91.5
Power Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30	30	30	30	30	30	30
Max. Inrush Current duration (mS)	20	20	20	20	20	20	20
Maximum British Thermal Unit Rating (BTU-Hr)	2925	2892	2812	2812	2797	2797	2797

NOTE: It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your need.
The HP Power Advisor is located at: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor

QuickSpecs

HP ProLiant ML330 Generation 6

Technical Specifications

System Unit	Tower Dimensions (H x W x D) (W/O foot stand)		7.87 x 16.81 x 24.13 in (200 x 427 x 613 mm)
	Tower Weight (approximate)	Maximum: (All hard drives, power supplies and processors installed)	30 kg
		Minimum: (One hard drive, power supply and processor installed)	16 Kg
	Input Requirements (per power supply)	Rated Line Voltage	100 to 240 VAC
		Rated Input Current	7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	852 W
	BTU Rating	Maximum	460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC) 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC) 1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC)
	Power Specifications		To review typical system power ratings use the Power Calculator which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficiency or www.hp.com/go/hppoweradvisor - Click on the system of interest. Example: ML330 G6 - Follow the instructions of the next screens.
	Power Supply Output (per power supply)	Rated Steady-State Power	460 (750) W (at 100 VAC), 460 (750) W (at 200 VAC)
		Maximum Peak Power	460 (750) W (at 100 VAC), 460 (750) W (at 200 VAC) NOTE: See Power Supply Specifications tables for complete details on 460W PSU and optional 750W.
	System Inlet Temperature	Operating	50° to 95° F (10° to 35° C) at sea level with an altitude derating of 1.8°F per 1,000 ft (1.0° C per every 305 m) above seal level to a maximum of 10,000 ft (3050 m) no direct sustained sunlight . Maximum rate of change is 18°F/hr (10°C/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 86°F (30°C).
		Non-Operating	-22° to 140° F (-30° to 60° C)
	Relative Humidity (non-condensing)	Operating	10% to 90% relative humidity (Rh), 82.4°F (28°C) maximum wet bulb temperature, non-condensing.

DA - 13361   Worldwide QuickSpecs — Version 9 — 10.19.2009   Page 39

Technical Specifications

	Non-operating**	10% to 95% relative humidity (Rh), 101.7°F (38.7°C) maximum wet bulb temperature, non-condensing.
Altitude	Operating	10,000 ft (3000m). Maximum allowable altitude change rate is 1°C per 300m.
	Non-Operating	30,000 ft (9144m). Maximum allowable altitude change rate is 1°C per 300m.
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
(Fixed Disk Drives
Spinning)

	L WAd (BELS)	460W SPS (w/ non-redundant fan): 4.9B
		460W SPS (w/ redundant fan): 5.1B
		750W RPS (w/ non-redundant fan): 5.1B
		750W RPS (w/ redundant fan): 5.3B
	L-pAm	460W SPS (w/ non-redundant fan): 31.4 dBA
		460W SPS (w/ redundant fan): 33.7 dBA
		750W RPS (w/ non-redundant fan): 33.4 dBA
		750W RPS (w/ redundant fan): 33.8 dBA

Operating
(Random Seeks to Fixed
Disks)

	L WAd (BELS)	460W SPS (w/ non-redundant fan): 4.9B
		460W SPS (w/ redundant fan): 5.2B
		750W RPS (w/ non-redundant fan): 5.3B
		750W RPS (w/ redundant fan): 5.4B
	L WAd (BELS)	460W SPS (w/ non-redundant fan): 31.4 dBA
		460W SPS (w/ redundant fan): 33.9 dBA
		750W RPS (w/ non-redundant fan): 34.6 dBA
		750W RPS (w/ redundant fan): 35.2 dBA

NOTE: The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

Emissions Classification (EMC)	FCC Rating	Class B
	Normative Standards	CISPR 22; EN55022; EN55024; 47 CFR, FCC Rules and Regulations Part 15 Subpart B;VCCI Class B ITE; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3.

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.

Technical Specifications

HP Smart Array B110i SATA RAID Controller (RAID 0,1,10)	Dimensions	N/A (embedded)	
	Disk Drive and Enclosure Protocol Support	3.0 Gbps SATA	
	Architecture	64-bit	
	SAS Connectors	4 internal x1 SATA connectors	
	Software Upgradeable Firmware	Yes	
	Maximum Capacity	2TB	
	Memory Addressing	6GB (maximum)	
	Logical Drives Supported	2 (maximum)	
	RAID Support	RAID 1 (Mirroring) RAID 0 (Striping) RAID 10	

HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD	Capacity	250,059MB	
	Height*	1.028 in (26.1 mm)	
	Width	4.00 in (101.6 mm)	
	Depth*	5.787 in (147.0 mm)	
	Interface	Serial ATA	
	Transfer Rate (Maximum)	3Gb/s	
	Native Command Queuing	N/A	
	Seek Time (typical reads, including settling)	Single Track	1.0 ms
		Average	<8.5 ms
		Full-Stroke	17.0 ms
		Rotational Speed	7,200 rpm
	Physical Configuration	Bytes/Sector	512
		Logical Blocks	488,397,168
	Operating Temperature	41° to 131° F (5° to 55° C)	

* Maximum drive dimension

Technical Specifications

Embedded NC326i PCI Express Dual Port Gigabit Server Adapter	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX	
		IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

| 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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