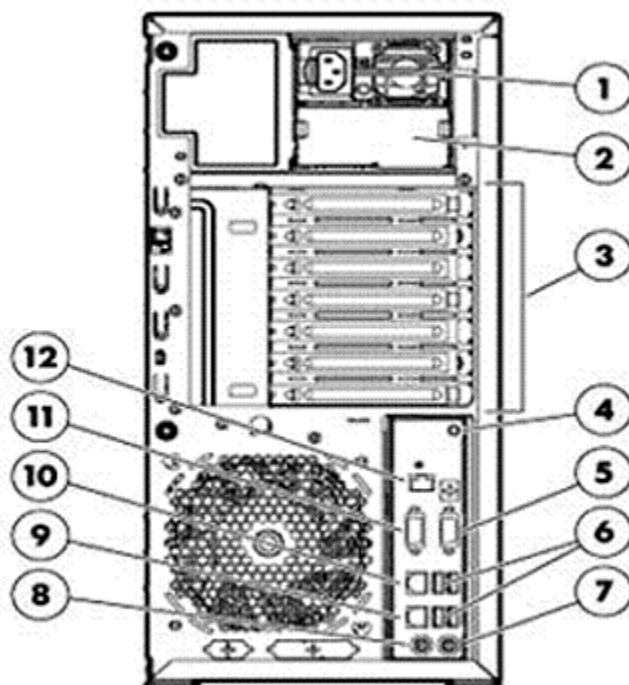
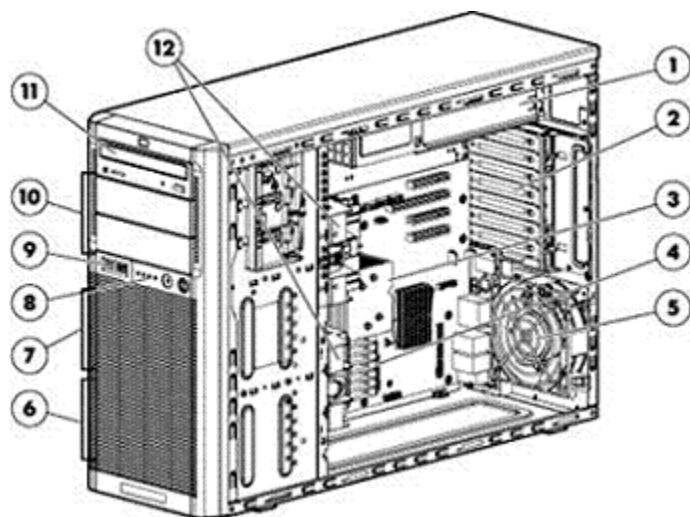


Overview



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)

What's New

- Supports the new Intel Xeon processors X5600/E5600 family with up to 2.66GHz at 6 cores turbo mode and latest E5500 series.

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 HP Integrated Lights-Out 2 (iLO 2) for ProLiant controller, allowing you to manage servers anytime and anywhere.

• Processors:

- Two Six Core/Quad core Intel® Xeon® X5600/E5600 processors
- Two Quad-Core/Dual-Core Intel® Xeon® E5500 processors

Overview

- One Quad-Core/Dual Core Intel® Xeon® W3500 processors
- Intel® 5500 chipset
- **Memory:**
 - 18 DIMM slots
 - Up to 192GB, using PC3-8500R DDR3 Registered (RDIMM) memory, operating at 800MHz when fully populated at 3 DIMMs per Channel in 18 slots.
 - Up to 48GB, 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 Models: Non hot plug model with embedded HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)
 - Base Models: Hot plug SAS/SATA model (SAS model integrated HP Smart Array P410/Zero memory SAS Controller (RAID 0/1/1+0)
 - Performance Models: Hot plug SATA model integrated HP Smart Array B110i SATA RAID controller hot plug advanced key
 - Available upgrades: 256MB, 512MB/1G with write back, Battery kit upgrade (for FB/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 16TB 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

NOTE: The 750W power supply requires RPS Enablement kit.
- **Redundancy:**
 - Optional Hot plug redundant power supply
 - Optional for optional redundant fan
- **Infrastructure Management:**
 - HP Integrated Lights-Out 2 (iLO 2) management processor for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
 - HP Insight Control a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
 - HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.
- **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

Overview

- **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 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

Six-Core Processors

Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 1/1/2/2/3/3)

Quad-Core Processors

Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo NA/1/1/2/2)

Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo NA/1/1/2/2)

Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo NA/1/1/2/2)

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 E5507 (2.26 GHz, 4MB L3 Cache, 80W, DDR3-800)

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)

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 E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)

Intel® Xeon® Processor E5502 (1.86 GHz, 4MB L3 Cache, 80W, DDR3-800)

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

12MB (1x 12MB) level 3 cache

NOTE: For processors X5600 and E5600.

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/>.

Standard Features

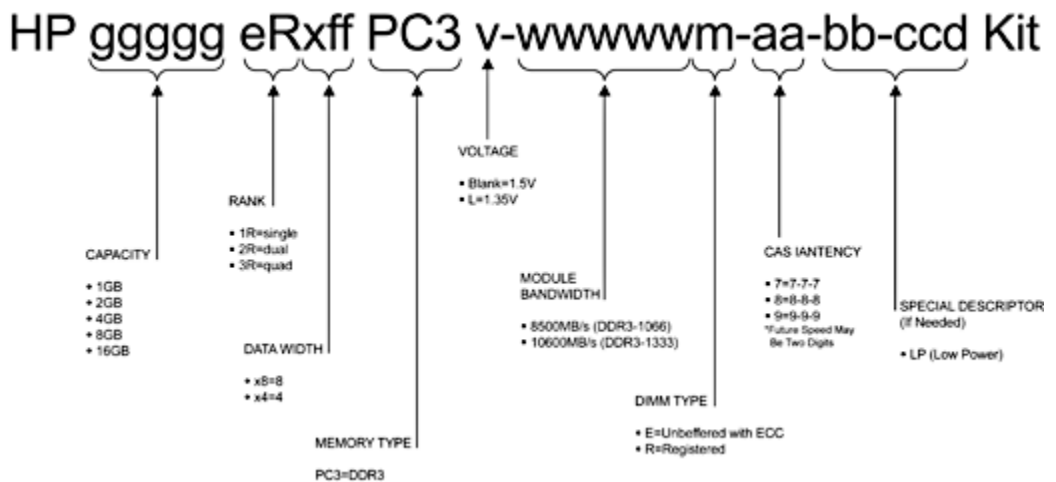
Upgradeability Upgradeable to 2 processors (4 or 8 or 12 cores)

Memory Protection Mirroring
 Lock-step mode
 Advanced ECC
 Online Spare (Requires X5600 or E5600 processor family)
NOTE: Xeon W3500 processor family does not support any of above advanced features.

Memory
 One of the following depending on model

Type	DDR3 Registered (RDIMM) and Unbuffered (UDIMM)
Standard (Performance)	6GB (3 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs
Standard (Base Models)	4GB (2 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs
Standard (Entry Models)	2GB (1 x 2GB) PC3-10600E (DDR3-1333) Registered DIMMs
Maximum (RDIMM)	192GB (18 x 8GB) for Registered Memory configurations
Maximum (UDIMM)	48GB (12x 2GB) 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.



Network Controller Embedded NC326i PCI Express Dual Port Gigabit Server Adapter

Standard Features

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.

Storage Controller

Entry Models	Non hot plug model with HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)
Base Models	Hot plug SAS model integrated HP Smart Array P410/Zero memory SAS Controller (RAID 0/1/1+0) Hot plug SATA model integrated HP Smart Array B110i SATA RAID controller hot plug advanced key
Performance Models	Hot plug SATA model integrated HP Smart Array B110i SATA RAID controller hot plug advanced key
Available upgrades: 256MB, 512MB/1GB with FB/BBWC, Battery kit upgrade (for FB/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	16TB	8 x 2TB
Hot Plug LFF SAS	16TB	8 x 2TB

Interfaces

Serial	1
Pointing Device (Mouse)	1
Graphics	1
Keyboard	1
Network RJ-45	3 (1 dedicated for HP Integrated Lights-Out 2 (iLO 2))
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>.

Standard Features

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 HP Integrated Lights-Out 2 (iLO 2) 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 www.hp.com/go/rackandpower

HP Insight management 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.

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 Factory Integrated Model. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.

HP Integrated Lights-Out (iLO)

HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, 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

HP Insight Control

HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.

Two versions of Insight Control are available, to serve environments

Standard Features

requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol

HP Insight Control includes 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 for ProLiant

HP Insight Dynamics for ProLiant, a product option, is advanced infrastructure management software that enables IT staff to instantly adjust their environments to meet dynamic business demands by provisioning, optimizing and protecting complex infrastructure in minutes. It's a powerful toolkit, integrated-by-design, that accelerates complex technology projects and simplifies daily operations, transforming data center economics. With Insight Dynamics IT professionals can plan capacity and power continuously, balance workloads across physical and virtual resources, and ensure cost-effective high availability. It also 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. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to 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>

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)
Dynamic power capping (with 750W PSU)

Standard Features

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

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. For more information about TPM, including a white paper, go to:

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.

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

NOTE: The 750W power supply requires RPS Enablement kit.

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.

Standard Features

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.

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>

Standard Features

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

HP Care Pack services include coverage for the HP branded hardware options qualified for the server 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 12kVA. 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

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/services/carepack>

Models

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

<p>HP ML330 G6 Entry Model</p> <p>Quad-Core Models HP ML330T06 E5504 LFF Non Hot Plug 504055-xx1</p>	<p>Processor</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drive</p> <p>Internal Storage</p> <p>Optical Drive</p> <p>PCI-Express Slots</p> <p>Power Supply</p> <p>Fans</p> <p>Form Factor</p>	<p>(1) Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)</p> <p>4MB (1 x 4MB) Level 3 cache</p> <p>2 GB (1 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs</p> <p>Embedded NC326i PCI Express Dual Port Gigabit Server Adapter</p> <p>Embedded HP Smart Array B110i SATA RAID Controller (RAID 0/1/0+1)</p> <p>HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD</p> <p>8TB LFF SAS 8TB LFF SATA</p> <p>HP Half-Height SATA DVD-ROM Optical Drive</p> <p>Four expansion slots (four PCI-Express)</p> <p>460 Watt power supply (NHP, Non Redundant)</p> <p>3 fans ship standard</p> <p>Tower (5U)</p>
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<p>HP ML330 G6 Base Models</p> <p>Quad-Core Models HP ML330T06 E5506 LFF Hot Plug 504056-xx1</p>	<p>Processor</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drive</p> <p>Internal Storage</p> <p>Optical Drive</p> <p>PCI-Express Slots</p> <p>Power Supply</p> <p>Fans</p> <p>Form Factor</p>	<p>(1) Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)</p> <p>4MB (1 x 4MB) Level 3 cache</p> <p>4 GB (2 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs</p> <p>Embedded NC326i PCI Express Dual Port Gigabit Server Adapter</p> <p>HP Smart Array P410/Zero memory Controller (RAID 0/1/0+1)</p> <p>None ship standard</p> <p>4TB LFF SAS 8TB LFF SATA</p> <p>HP Half-Height SATA DVD-ROM Optical Drive</p> <p>Four expansion slots (four PCI-Express)</p> <p>460 Watt power supply (NHP, Non Redundant)</p> <p>3 fans ship standard</p> <p>Tower (5U)</p>
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Models

HP ML330 G6 Base Models Quad-Core Models HP ML330T06 E5507 LFF Hot Plug 600910-xx1	Processor	(1) Intel® Xeon® Processor E5507 (2.26 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	Embedded HP Smart Array B110i SATA RAID Controller Hot plug advanced key (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)

HP ML330 G6 Performance Models Quad-Core Models HP ML330T06 E5620 LFF Hot Plug 600910-xx1	Processor	(1) Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066)
	Cache Memory	12MB (1 x 12MB) Level 3 cache
	Memory	6 GB (3 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs
	Network Controller	Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
	Storage Controller	Embedded HP Smart Array B110i SATA RAID Controller Hot plug advanced key (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)

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)

HP 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 x8 Gen1 (x1 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 otherwise noted)

HP Processors	Six-Core Processors	
	Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4) FIO	601054-L21
	Quad-Core Processors	
	Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) FIO	607120-L21
	Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) FIO	601053-L21
	Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) FIO	601052-L21
	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 E5507 (2.26 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 FIO Kit	601051-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
	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 E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 FIO Kit	601050-L21

Configuration Information - Factory Integrated Models

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

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

Intel® Xeon® Processor W3503 (2.40 GHz, 4MB L3 Cache, 130W, DDR3-1066) 573363-L21
ML330G6 FIO Kit

NOTE: Xeon E5500 DP family supports both Registered DIMMs and Unbuffered DIMMs. Xeon W3500 UP family supports only Unbuffered DIMMs.

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 4GB 1Rx4 PC3-10600R-9 Kit 593339-B21

HP 4GB 1Rx4 PC3L-10600R-9 Kit 604504-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

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

HP 8GB 2Rx4 PC3-10600R-9 Kit 500662-B21

HP 8GB 2Rx4 PC3L-10600R-9 Kit 604506-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 16GB 4Rx4 PC3-8500R-7 Kit 500666-B21

Unbuffered with ECC DIMMs (UDIMMs)

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

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

HP 4GB 2Rx8 PC3-10600E-9 Kit 500672-B21

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

NOTE: PC3L is a low voltage memory.

HP Drive Cage Options 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 SATA or SAS RAID Controller.

NOTE: Non-Hot Plug Model only supports up to total 4 drives.

NOTE: Hot plug SATA model requires HP Smart Array B110i SATA RAID controller hot plug advanced key (515471-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.

HP 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 LFF (3.5-inch) Enterprise (ENT) Drives

HP 600GB 6G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive 516830-B21

Configuration Information - Factory Integrated Models

HP 450GB 6G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	516826-B21
HP 450GB 3G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	454234-B21
HP 300GB 6G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	516824-B21
HP 300GB 3G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	417950-B21
HP 146GB 3G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	417855-B21
HP 600GB 6G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	516830-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 LFF (3.5-inch) Entry (ETY) Drives

HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1y Wty Hard Drive	458947-B21
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SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HP 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	462595-B21
HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458941-B21
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458939-B21

HP 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

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
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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.

Configuration Information - Factory Integrated Models

Step 3: Choose Additional Factory Integratable Options

HP Storage Controllers	HP P212 /256 FIO SA Cntrlr w/Battery	491191-B21
	HP P410/ZM FIO Smart Array Controller	462860-B21
	HP P410/256 FIO SA Cntrlr w/Battery	491195-B21
	HP P411/256MB BBWC Smart Array Controller FIO Kit	491193-B21
	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.		
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 Smart Array Advanced Pack No Media 1-Server license including 1yr 24x7	516471-B21	
NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.		
HP Smart Array Hot Plug Advance Pack for B110i w/1yr 24x7 Supp Physical 1 Svr LTU	TC421A	
HP Insight Software	HP Insight Control suite, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates	582765-B21
	HP Insight Control for Linux, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates	TC203A

Step 4: Choose Additional Options for Factory Integration

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

Core Options

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

HP Processors

Six-Core Processors

Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3/4/4) ML330G6 Processor Kit 603978-B21

Quad-Core Processors

Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 Processor Kit 607122-B21

Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 Processor Kit 603977-B21

Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) ML330G6 Processor Kit 603976-B21

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 E5507 (2.26 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 Processor Kit 603975-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 E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) ML330G6 Processor Kit 603974-B21

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.

NOTE: Xeon E5500 DP family supports both Registered DIMMs and Unbuffered DIMMs. Xeon W3500 UP family supports only Unbuffered DIMMs.

Core Options

HP Memory	<p>Registered DIMMs (RDIMMs)</p> <p>HP 2GB 2Rx8 PC3-10600R-9 Kit 500656-B21</p> <p>HP 4GB 2Rx4 PC3-10600R-9 Kit 500658-B21</p> <p>HP 4GB 4Rx8 PC3-8500R-7 LP Kit 500660-B21</p> <p>HP 4GB 1Rx4 PC3-10600R-9 Kit 593339-B21</p> <p>HP 4GB 1Rx4 PC3L-10600R-9 Kit 604504-B21</p> <p>NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.</p> <p>HP 8GB 2Rx4 PC3-8500R-7 Kit 516423-B21</p> <p>HP 8GB 2Rx4 PC3-10600R-9 Kit 500662-B21</p> <p>HP 8GB 2Rx4 PC3L-10600R-9 Kit 604506-B21</p> <p>NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.</p> <p>HP 16GB 4Rx4 PC3-8500R-7 Kit 500666-B21</p> <p>Unbuffered with ECC DIMMs (UDIMMs)</p> <p>HP 1GB 1Rx8 PC3-10600E-9 Kit 500668-B21</p> <p>HP 2GB 2Rx8 PC3-10600E-9 Kit 500670-B21</p> <p>NOTE: For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.</p> <p>NOTE: PC3L is a low voltage memory.</p>
HP Optical Drives	<p>HP Half-Height SATA DVD-ROM Optical Drive 447326-B21</p> <p>HP Half-Height SATA DVD RW Optical Drive 447328-B21</p>
HP Drive Cage Options	<p>HP 5U Hot Plug HDD Drive Cage Kit 487737-B21</p> <p>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.</p>
HP Hard Drives	<p>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.</p> <p>NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.</p> <p>NOTE: SATA Hot Plug models require HP SAS Smart Array Controller.</p> <p>NOTE: SAS Non-Hot Plug and SAS Hot Plug Models require HP SAS Smart Array Controller.</p> <p>SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives</p> <p>HP 600GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 516828-B21</p> <p>HP 450GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 516816-B21</p> <p>HP 450GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 454232-B21</p> <p>HP 300GB 6G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 516814-B21</p> <p>HP 300GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 416127-B21</p>

Core Options

HP 146GB 3G SAS 15K LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	384854-B21
SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives	
HP 600GB 6G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	516830-B21
HP 450GB 6G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	516826-B21
HP 450GB 3G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	454234-B21
HP 300GB 6G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	516824-B21
HP 300GB 3G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	417950-B21
HP 146GB 3G SAS 15K LFF (3.5-inch) Non-hot Plug Dual Port ENT 3y Wty Hard Drive	417855-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
HP 1TB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	461137-B21
HP 750GB 3G SAS 7.2K rpm LFF(3.5-inch) Dual Port Midline 1yr Warranty Hard Drive	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 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 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458930-B21
HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458928-B21
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive	458926-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 1y Wty Hard Drive	507774-B21
HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	507772-B21
HP 750GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	462595-B21
HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458941-B21
HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1y Wty Hard Drive	458939-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
HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	458945-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 1y Wty Hard Drive	571232-B21

Core Options

HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1y Wty Hard Drive 458947-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)

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

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

http://h18000.www1.hp.com/products/quickspecs/13415_div/13415_div.html (Worldwide)

HP Networking

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 NC375T PCI Express Quad Port Gigabit Server Adapter 538696-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.

HP NC550SFP Dual Port 10GbE Server Adapter 581201-B21

NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each NC550SFP 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

Core Options

HP Power Supplies

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

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).

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.

HP Cooling 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 Software	HP Insight Control	
	HP Insight Control, Single-Server License including 1 year of 24x7 Technical Support and Updates	452148-B22
	HP Insight Control suite, No Media, Electronic License including 1 year of 24x7 Technical Support and Updates	T9074BAE
	HP Insight Control, Electronic License for bundling with ProLiant ML/DL server, including 1 year of 24x7 Technical Support and Updates	TC278AAE
	HP Insight Control, Tracking License for bundling with ProLiant ML/DL server, including 1 year of 24x7 Technical Support and Updates	TC275A
	<p>NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.</p> <p>NOTE: Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.</p> <p>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.</p> <p>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.</p> <p>NOTE: For additional license options please see the Insight Control QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html</p>	
	HP Insight Control for Linux	
	HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic	TC213AAE
	HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	TC209A
	HP Insight Control for Linux, Media pack (DVD) - No licenses included	TC208A
	<p>NOTE: Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.</p> <p>NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button).</p> <p>NOTE: Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.</p> <p>NOTE: Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single set of activation keys.</p> <p>NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html</p>	
	HP Integrated Lights-Out (iLO) Advanced	
	HP Integrated Lights-Out Advanced, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	512485-B21
	HP ProLiant Essentials Integrated Lights-Out Advanced Pack, Electronic, including 1 year of 24x7 Technical Support and Updates	TA850AAE
	HP Insight Software Media Kit	436222-B21
	<p>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.</p> <p>NOTE: This license allows 1 server to be deployed and managed via HP iLO</p>	

Additional Options

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

NOTE: For additional license kits, including electronic delivery options, please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html

HP Insight Control server deployment

HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates T9082AAE

HP Insight Control server deployment 1-Server License including 1 year 24x7 Technical Support and Updates 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: Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

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 Port Options

HP iLO 2 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.

HP Hot plug internal SATA to mini SAS cable kit 600732-B21

NOTE: This cable needed when upgrade from non-hot plug SATA to hot plug SATA.

HP PCI-X Expander Kit

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

HP Security - TPM

HP Trusted Platform Module Option Kit 488069-B21

HP Storage Controllers SAS Controllers

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

HP Smart Array P410/512MB with FBWC 578230-B21

HP Smart Array P410/1G with FBWC 572532-B21

Smart Array P411 Controller

HP Smart Array P411/256MB Controller 462830-B21

HP Smart Array P411/512MB BBWC 462832-B21

HP Smart Array P411/512MB Flash Backed Write Cache 578229-B21

HP Smart Array P411/1G Flash Backed Write Cache 572531-B21



Additional Options

Smart Array P812 Controller

HP Smart Array P812/1G Flash Backed Cache Controller 487204-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

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.

HP 8484 to Mini SAS 33in Cable Assy 591734-B21

NOTE: Needed to support internal drives on the HP ProLiant ML330 G6 when using a Smart Array P800.

512MB Flash Backed Write Cache 534916-B21

1G Flash Backed Write Cache 534562-B21

HP Smart Array Advanced Pack No Media 1-Server license including 1yr 24x7 Technical Support 516471-B21

NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.

NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.

HP Smart Array Hot Plug Advance Pack for B110i w/1yr 24x7 Supp Physical 1 Svr LTU TC421A

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)

http://h18000.www1.hp.com/products/quickspecs/13558_div/13558_div.html

(Smart Array P812 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)

Additional Options

Backup & Recovery Software

HP Data Protector Express

HP Data Protector Express 4.0 SP1 Backup Server BB117BA

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

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

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

Tape Backup

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

Rack-Mount Tape Solutions

HP StorageWorks DAT 320 USB Internal Tape Drive AJ825A

HP StorageWorks DAT 320 SAS Internal Tape Drive AJ830A

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

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

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

HP StorageWorks LTO-4 Ultrium 1760 SAS Internal Tape Drive EH919A

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

HP StorageWorks LTO-4 Ultrium 1840 SAS Internal Tape Drive EH861A

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

HP StorageWorks LTO-5 Ultrium 3000 SAS Internal Tape Drive EH958A

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

HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader AK377A

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

HP StorageWorks MSL2024 Tape Library with one LTO-4 Ultrium 1760 SAS Drive AK378A

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

HP StorageWorks MSL4048 Tape Library with two LTO-4 Ultrium 1760 SAS Drives AK380A

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

Additional Options

Disk Backup

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

HP StorageWorks D2D Backup Systems with Backup Data Deduplication

HP StorageWorks D2D2502i Backup System EJ001A

NOTE: 1.5TB of useable 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.

HP StorageWorks D2D2503i Backup System EH954A

NOTE: 2.25TB of useable 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.

HP StorageWorks D2D4004i Backup System EH938A

NOTE: 3.0TB (expandable to 7.5TB) of useable 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.

HP StorageWorks D2D4112fc Backup System EH993A

NOTE: 9.0TB (expandable to 18.0TB) of useable network disk backup capacity. Fibre Channel SAN connected appliance. Direct server attach is not supported, requires connection via SAN fabric.

HP StorageWorks RDX Removable Disk Backup Systems USB

HP StorageWorks RDX320 Internal Removable Disk Backup System AJ767A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 320GB of disk capacity per data cartridge.

HP StorageWorks RDX500 Internal Removable Disk Backup System AJ934A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 500GB of disk capacity per data cartridge.

HP StorageWorks RDX750 Internal Removable Disk Backup System AW577A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 750GB of disk capacity per data cartridge.

HP StorageWorks Options

StorageWorks SCSI HBA

HP U320e SCSI Host Bus Adapter AH627A

NOTE: Recommended HBA for MSL SCSI Tape Library connect.

HP Disk Storage Systems

Disk Enclosures

HP StorageWorks D2700 Disk Enclosure AJ941A

NOTE: Please see the QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html

Additional Options

HP Uninterruptible Power Systems

HP Tower UPS

HP T1000 G3 UPS Models

HP T1000 G3 UPS, NA AF448A

HP T1000 G3 UPS, INTL AF449A

HP T1000J UPS, Japan AF457A

HP T1500 G3 UPS Models

HP T1500 G3 UPS, NA AF450A

HP T1500 G3 UPS, INTL AF451A

HP T1500J UPS, Japan AF458A

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/13160_div/13160_div.html
(Worldwide)

NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/products/ups.

NOTE: For additional information on sizing your server, please reference:

<http://www.upssizer.com>

HP Rack Series

HP Rack 10000 G2 Series (Carbon/Graphite Metallic)

10642 G2 (42U) Rack Cabinet - Pallet AF001A

10642 G2 (42U) Rack Cabinet - Shock Pallet AF002A

NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.

NOTE: Please see the 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>.

HP Rack Options

HP Server Console Switches

HP Server console switch 0x2x8 AF616A

HP Server console switch 0x2x16 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 Server Console Switch G2 with Virtual Media & CAC

0x2x16 KVM Server Console G2 Switch with Virtual Media and CAC AF618A

0x2x32 KVM Server Console G2 Switch with Virtual Media and CAC 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 IP Console Switch G2 with Virtual Media & CAC

1x1Ex8 KVM IP Console Switch G2 with Virtual Media and CAC AF620A

2x1Ex16 KVM IP Console Switch G2 with Virtual Media and CAC AF621A

4x1Ex32 KVM IP Console Switch G2 with Virtual Media and CAC AF622A

Additional Options

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

HP USB and SD 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 SD Flash Media Kit 580387-B21

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

HP 2GB USB Flash Media Drive Key 608447-B21

NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to **HP VMware Getting Started Guide** for installation instructions.

HP Care Pack Services Hardware Services On-site Service

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
- If any Quad rank DIMMs are installed, all channels are limited to only 2 DIMMs 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
- Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors
- If mixing DIMM voltage is a requirement, please note that the DIMMs will run at 1.5V since all 1.35V are capable of supporting 1.5V operations

DIMM slot/capacity/populated speed table										
DIMM Type	Registered DIMMS (RDIMMs)							Unbuffered with ECC DIMMs (UDIMMs)		
	Single Rank (1R)	Dual Rank (2R)				Quad Rank (4R)		Single Rank (1R)	Dual Rank (2R)	
DIMM Capacity	4GB	2GB	4GB	8GB	8GB	4GB	16GB	1GB	2GB	4GB
DIMM Native Speed (MHz)	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
Voltage	LV/Reg	Reg	Reg	Reg	LV/Reg	Reg	Reg	Reg	Reg	Reg
SLOTS THAT CAN BE POPULATED										
18 slot servers	18	18	18	18	18	12	12	12	12	12
MAXIMUM CAPACITY (GB)										
	72	36	72	144	144	48	192	12	24	48
POPULATED DIMM SPEED (MHz)										
1 DIMM Per Channel	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
2 DIMM Per Channel	1333*	1333*	1333*	1066	1333*	800	800	1333	1333	1333*
3 DIMM Per Channel	800	800	800	800	800	n/a	n/a	n/a	n/a	n/a

NOTES:



Memory

- PC3-10600 DIMMs have a maximum speed of 1333MHz. PC3-8500 DIMMs have a maximum speed of 1066MHz
- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- 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, the maximum speed will be 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, the maximum speed will be 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
- Maximum memory speed will also depend on the processor installed. 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; 8GB DIMM	9	C; empty	

Standard memory replaced with optional memory (1 CPU model)

RDIMM maximum configuration

- 96GB, consisting of nine (6) 16GB dual-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; 16GB DIMM	2	D; empty	
	3	A; 16GB DIMM	3	A; empty	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; 16GB DIMM	5	E; empty	
	6	B; 16GB DIMM	6	B; empty	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; 16GB DIMM	8	F; empty	
	9	C; 16GB DIMM	9	C; empty	

UDIMM maximum configuration (1 CPU model)

- 24GB, consisting of six (6) 4GB dual-rank PC3-10600 UDIMMs

Memory

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

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

- 192GB, consisting of eighteen (12) 16GB dual-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G; empty	1	G; empty	Chnl 1
	2	D; 16GB DIMM	2	D; 16GB DIMM	
	3	A; 16GB DIMM	3	A; 16GB DIMM	
Chnl 2	4	H; empty	4	H; empty	Chnl 2
	5	E; 16GB DIMM	5	E; 16GB DIMM	
	6	B; 16GB DIMM	6	B; 16GB DIMM	
Chnl 3	7	I; empty	7	I; empty	Chnl 3
	8	F; 16GB DIMM	8	F; 16GB DIMM	
	9	C; 16GB DIMM	9	C; 16GB DIMM	

UDIMM maximum configuration (2 CPU model)

- 48GB, consisting of twelve (12) 2GB dual-rank PC3-10600 UDIMMs

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

Memory

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:

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 4GB 1Rx4 PC3-10600R-9 Kit	593339-B21
HP 4GB 1Rx4 PC3L-10600R-9 Kit	604504-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 8GB 2Rx4 PC3-8500R-7 Kit	516423-B21
HP 8GB 2Rx4 PC3-10600R-9 Kit	500662-B21
HP 8GB 2Rx4 PC3L-10600R-9 Kit	604506-B21

NOTE: Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors.

HP 16GB 4Rx4 PC3-8500R-7 Kit	500666-B21
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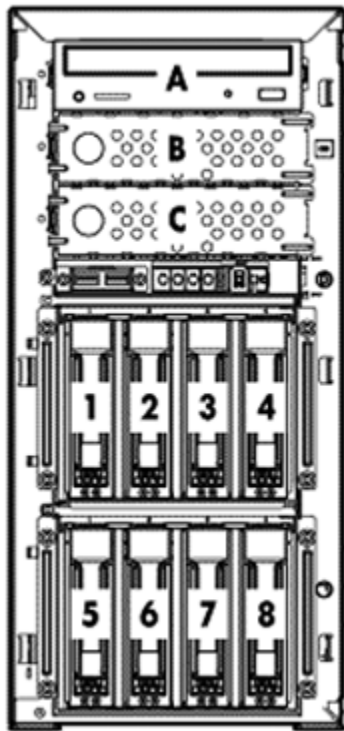
Unbuffered with ECC DIMMs (UDIMMs)

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.

NOTE: PC3L is a low voltage memory.

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

	Quantity Supported	Position Supported	Controller
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Storage

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 LFF (3.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
2TB 6G SAS 7.2K DP	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
1TB 3G SAS 7.2K DP			HP Smart Array P212/ 256 MB Controller
750GB 3G SAS 7.2K DP			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 LFF (3.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
1TB 3G SATA 7.2K			HP Smart Array P212/ 256 MB Controller
750GB 3G SATA 7.2K			HP Smart Array P410/256 MB Controller
500GB 3G SATA 7.2K			HP Smart Array P410/512 MB BBWC Controller
250GB 3G SATA 7.2K			HP Smart Array Hot Plug Advance Pack for B110i

SATA Non-Hot Plug LFF (3.5-inch) 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
			HP Smart Array B110i SATA RAID controller

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

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 7.2K	Up to 8	1-8	HP Smart Array P212/Zero Memory Controller
160GB 3G SATA 7.2K			HP Smart Array P212/ 256 MB Controller
			HP Smart Array P410/256 MB Controller
			HP Smart Array P410/512 MB BBWC Controller
			HP Smart Array Hot Plug Advance Pack for B110i

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

	Quantity Supported	Position Supported	Controller
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Storage

250GB 3G SATA 15K	Up to 4	1-4	Embedded Smart Array B110i SATA RAID Controller
160GB 3G SATA 15K			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
			HP Smart Array B110i SATA RAID Controller

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

	Quantity Supported	Position Supported	Controller
60GB 3.0G SATA SSD	Up to 8	1-8	Embedded Smart Array B110i SATA RAID Controller
120GB 3.0G SATA SSD			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
			HP Smart Array Hot Plug Advance Pack for B110i

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	16.0TB (8 x 2TB SAS hard drives)
Total	16.0TB (8 x 2TB SAS hard drives)

Maximum Storage Capacity - SATA Models

Internal	16.0TB (8 x 2TB SATA drives)
Total	16.0TB (8 x 2TB SATA drives)

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
D2700 Disk Enclosure	Up to 2	External	HP Smart Array P212/ 256 MB Controller
	Up to 4		HP Smart Array P411/256 MB Controller
			HP Smart Array P411/512 MB BBWC Controller

Tape and Disk Backup

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

	Position Supported	Controller	Controller/HBA Option Kit Part Number
HP StorageWorks SCSI Tape Drives	Internal or External	HP SC11Xe Host Bus Adapter	412911-B21
LTO-1 Ultrium 232			

Storage

LTO-2 Ultrium 448			
LTO-3 Ultrium 920		HP U320e SCSI Dual Channel Controller	AH627A
LTO-3 Ultrium 960			
LTO4 Ultrium 1760			
LTO-4 Ultrium 1840			
DAT 40			
DAT 72			
DAT 160			
HP StorageWorks SCSI Rack Mount Kits	External	HP SC11Xe Host Bus Adapter	412911-B21
1U Rack-Mount Kit			
3U Rack-Mount Kit			
HP StorageWorks USB Tape Drives	Internal or External	USB 2.0 Port	N/A
DAT 40			
DAT 72			
DAT 160			
DAT 320			
HP StorageWorks USB Rack Mount Kits	External	USB 2.0 Port	N/A
1U USB Rack-Mount Kit			
HP StorageWorks SAS Tape Drives	Internal or External	HP SC44Ge SAS Host Bus Adapter	416096-B21
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			
HP StorageWorks SAS Rack Mount Kits	External	HP SC44Ge SAS Host Bus Adapter	416096-B21
1U Rack-Mount Kit			
3U Rack-Mount Kit			
HP StorageWorks SCSI Tape Autoloaders, External	External	HP SC11Xe Host Bus Adapter HP U320e SCSI Dual Channel Controller	412911-B21 AH627A
DAT 72x10 Autoloader			
1/8 G2 Autoloader			
HP StorageWorks SCSI Tape Libraries, External	External	HP U320e SCSI Dual Channel Controller	AH627A
MSL2024			
MSL4048			
MSL8096			
MSL6000			

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

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

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<http://www.hp.com/go/connect>

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<http://www.hp.com/go/connect>

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<http://www.hp.com/go/connect>



Storage

<p>HP StorageWorks SAS Tape Autoloaders and Libraries, External 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096</p>	External	HP SC44Ge SAS Host Bus Adapter	416096-B21
<p>NOTE: Please check the full compatibility information at: http://www.hp.com/go/connect</p>			
<p>HP StorageWorks Fibre Channel Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000</p>	External	<p>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 QuickSpec.</p>	
<p>HP StorageWorks USB RDX Removable Disk Backup System RDX160 RDX320 RDX500 RDX750</p>	Internal or External	USB 2.0 port	N/A
<p>HP StorageWorks D2D Backup Systems, iSCSI D2D2500i D2D4000i</p>	External	<p>Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.</p>	
<p>HP StorageWorks D2D Backup Systems, Fibre Channel D2D4000fc</p>	External	<p>Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect</p>	

Power Specifications

460W PSU Part Number	500447-B21					
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	460	460	460	460	460	460
Nominal Input Current (A rms)	10	10	5	5	5	5
Max Rated Input Wattage Rating (Watts)	760	760	700	700	700	700
Max. Rated VA (Volt-Amp)	850	850	830	830	830	830
Efficiency (%)	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	200	208	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

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)	<p>Maximum: 30 kg (All hard drives, power supplies and processors installed)</p> <p>Minimum: 16 Kg (One hard drive, power supply and processor installed)</p>
	Input Requirements (per power supply)	<p>Rated Line Voltage 100 to 240 VAC</p> <p>Rated Input Current 7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC)</p> <p>Rated Input Frequency 50 to 60 Hz</p> <p>Rated Input Power 852 W</p>
	BTU Rating	<p>Maximum 460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC)</p> <p>750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC)</p> <p>1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC)</p>
	Power Specifications	<p>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-efficient or www.hp.com/go/hppoweradvisor</p> <p>- Click on the system of interest. Example: ML330 G6</p> <p>- Follow the instructions of the next screens.</p>
	Power Supply Output (per power supply)	<p>Rated Steady-State Power 460 (750) W (at 100 VAC), 460 (750) W (at 200 VAC)</p> <p>Maximum Peak Power 460 (750) W (at 100 VAC), 460 (750) W (at 200 VAC)</p> <p>NOTE: See Power Supply Specifications tables for complete details on 460W PSU and optional 750W.</p>
	System Inlet Temperature	<p>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).</p> <p>Non-Operating -22° to 140° F (-30° to 60° C)</p>
	Relative Humidity (non-condensing)	<p>Operating 10% to 90% relative humidity (Rh), 82.4°F (28°C) maximum wet bulb temperature, non-condensing.</p> <p>Non-operating** 10% to 95% relative humidity (Rh), 101.7°F (38.7°C) maximum wet bulb temperature, non-condensing.</p>

Technical Specifications

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 Architecture	3.0 Gbps SATA 64-bit
	SAS Connectors	4 internal x1 SATA connectors
	Software Upgradeable Firmware	Yes. HP Smart Array hot plug Advanced Pack No Media 1-Server license including 1yr 24x7 Technical Support
	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
Physical Configuration	Rotational Speed	7,200 rpm	
	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	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Controller	BCM5715C	
	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	<p>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.</p> <p>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.</p>
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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.



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