# QuickSpecs

## Overview

The HP ProLiant ML330 G6 is a dual processor tower platform built on the latest Intel Xeon processors with QPI technology to create unique system architecture. This unique architecture allows the businesses to scale their businesses as needed so they can optimize their IT spending dollars. The HP ProLiant ML330 G6 delivers to businesses the industry's most powerful embedded management technology with the HP Integrated Lights-Out 2 (iLO 2) allowing them to manage the servers anytime and from anywhere.
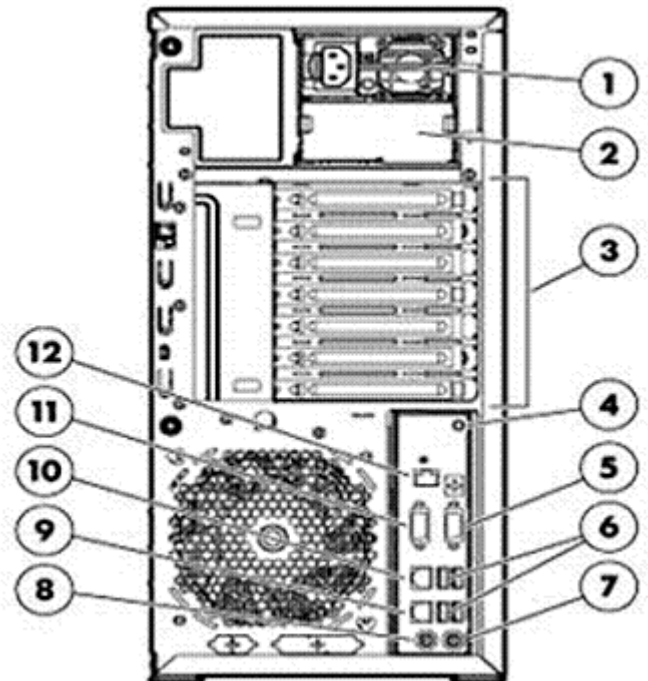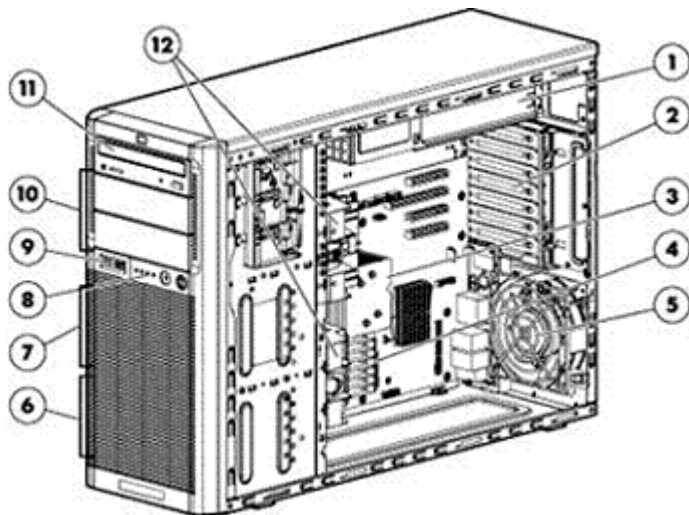


**Front View:**

1. Power supply
2. Expansion slots
3. First processor socket
4. Nine DIMM slots (for 1$^{st}$ processor)
5. Video port
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 (2)
11. Optical drive bay
12. Front system fans (2)

**Rear View:**

1. Power supply 1
2. Optional power supply for redundancy
3. Expansion slots
4. UID button/LED
5. Video ports
6. USB ports (4)
7. PS/2 keyboard port
8. PS/2 mouse port
9. Network port 1 (shared iLO management port)
10. Network port 2
11. Serial port
12. Dedicated iLO2 management port (optional)

# QuickSpecs

## Standard Features

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

| | |
|---|---|
| **Processor**<br>One of the following depending on Model | **Six-Core Processors**<br>Intel® Xeon® X5650 (2.66GHz/6-core/95W/12MB) Processor<br>Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) Processor<br>Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) Processor<br>**Quad-Core Processors**<br>Intel® Xeon® E5640 (2.66GHz/4-core/80W/12MB) Processor<br>Intel® Xeon® E5630 (2.53GHz/4-core/80W/12MB) Processor<br>Intel® Xeon® E5620 (2.40GHz/4-core/80W/12MB) Processor<br>Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W) Processor<br>Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) Processor<br>Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor<br>Intel® Xeon® E5540 (2.53GHz/4-core/8MB/80W) Processor<br>Intel® Xeon® E5530 (2.40GHz/4-core/8MB/80W) Processor<br>Intel® Xeon® E5520 (2.26GHz/4-core/8MB/80W) Processor<br>Intel® Xeon® E5507 (2.26 GHz/4-core/80W/4MB) Processor<br>Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) Processor<br>Intel® Xeon® E5504 (2.0GHz/4-core/4MB/80W) Processor<br>**Dual-Core Processors**<br>Intel® Xeon® E5503 (2.0GHz/2-core/80W/4MB) Processor<br>Intel® Xeon® E5502 (1.86GHz/2-core/4MB/80W) Processor<br>**NOTE:** For the Intel 5500 and 5600 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**<br>One of the following depending on Model | 12MB (1x 12MB) level 3 cache<br>**NOTE:** For X5600 and E5600 series processors.<br>8MB (1 x 8MB) Level 3 cache<br>**NOTE:** For E5606/E5607/E5540/E5530/E5520 processors.<br>4MB (1 x 4MB) Level 3 cache<br>**NOTE:** For E5603/E5507/E5506/E5504/E5503/E5502 processors. |
| **Chipset** | Intel® 5500 Chipset<br>**NOTE:** For more information regarding Intel® chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/. |
| **Upgradeability** | Upgradeable to 2 processors (2, 4, or 6 core) |
| **Memory Protection** | Mirroring<br>Lock-step mode<br>Advanced ECC<br>Online Spare (Requires X5600 or E5600 processor family)<br>**NOTE:** Xeon W3500 processor family does not support any of above advanced features. |

## Standard Features

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| **Memory** | Type | DDR3 Registered (RDIMM) and Unbuffered (UDIMM) |
| *One of the following depending on model* | Standard (Performance Model) | 6GB (3 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs |
| | Standard (Base Models) | 4GB (2 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs |
| | | 4GB (2 x 2GB) PC3-10600E (DDR3-1333) Unbuffered DIMMs |
| | Standard (Entry Models) | 2GB (1 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs |
| | | 2GB (1 x 2GB) PC3-10600E (DDR3-1333) Unbuffered DIMMs |
| | Maximum (RDIMM) | 192GB (12 DIMM slots x16GB) for Registered Memory configurations |
| | Maximum (UDIMM) | 48GB (12 DIMM slots x 4GB) 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.
**NOTE:** If only one processor is installed, only half the DIMM slots are available

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| **Network Controller** | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter |

### Expansion Slots

**NOTE:** 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).

| 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.

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|---|---|---|
| **Storage Controller** | Entry Models | Non hot plug SATA model with HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) |
| | Base Models | Hot plug SAS model with integrated HP Smart Array P410/Zero memory SAS Controller (RAID 0/1/1+0) |
| | | Hot plug SATA model with integrated HP Smart Array B110i SATA RAID controller and hot plug advanced key |
| | Performance Models | Hot plug SATA model with integrated HP Smart Array B110i SATA RAID controller and hot plug advanced key |

Available upgrades: 256MB, 512MB with BBWC, 512MB with FBWC, 1G with FBWC, Battery kit upgrade (for the 256MB cache), and Smart Array Advanced Pack (SAAP)

## Standard Features

| **Internal Storage Devices** | Diskette Drive | None |
|---|---|---|
| | Optical Drive | HP Half-Height SATA DVD-ROM Optical Drive |
| | Hard Drives | Hot Plug Model: None ship standard |
| | One of the following depending on Model | Non-Hot Plug Model: HP 250GB 3G SATA 7.2K NHP 3.5" ETY HDD |

| **Maximum Internal Storage** | Hot Plug LFF SATA | 16TB | 8 x 2TB |
|---|---|---|---|
| | Hot Plug LFF SAS | 16TB | 8 x 2TB |

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

| **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 |

| **Server Power Cords** | **NOTE:** If customers require a local power cord, they can check the power cord matrix for the appropriate county specific sku. Please see the following power cord matrix for details: http://www.hp.com/go/powercordmatrix |
|---|---|

| **Common Slot 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/hppoweradvisor |
|---|---|
| | HP has a new design for ProLiant power supplies. The new Common Slot (CS) Power Supply 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 or are compatible with high-efficiency HP CS Power Supplies. These power supplies are designed to provide high-efficiency power without degrading performance of the ProLiant server. HP CS Power Supplies options for this server 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 Advisor 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 CS Power supplies meet multiple Energy Efficiency Initiatives, including 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

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| **System Fans** | 3 fans ship standard. System supports a total of 4 fans.<br>**NOTE:** Does not include power supply or processor heat sink fans. Processor heat sink fans are packed in the processor option kit.<br>**NOTE:** If customer orders the standalone redundant fan option kit, he/she will receive two (2) fans in a two-fan packaged box. Only one (1) fan is required for system redundancy. The other one can be saved as a spare part. If customer orders the redundant fan kit along with the server, he/she will not be receiving the extra fan. |
| **Operating Systems and Virtualization Software Support for ProLiant Servers** | Microsoft Windows Server<br>Microsoft Windows Server Hyper V<br>Red Hat Enterprise Linux (RHEL)<br>SUSE Linux Enterprise Server (SLES)<br>VMware<br>Citrix Essentials for XenServer<br><br>**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. |
| **Graphics** | Integrated ATI RN50, 64MB video standard<br><br>● 16 bit color: maximum resolution of 1600 x 1200<br>● 32 bit color: maximum resolution of 1280 x 1024<br><br>**NOTE:** Maximum resolution available via HP Integrated Lights-Out 2 (iLO 2) remote console is 1280 x 1024. |
| **Form Factor** | Tower (5U)<br><br>**NOTE:** Rack mounting available via HP Tower to Rack Conversion Tray, Universal Kit. Please see the options section in this QuickSpecs:<br><br>● Square or round hole racks 24"- 36" deep, including HP Rack System /E and HP Systems<br>● Telco racks with 3rd part option kit from Rack Solutions www.hp.com/go/rackandpower |
| **HP Insight management** HP Insight Foundation software | 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.<br><br>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.<br><br>The foundation pack includes:<br><br>● HP SmartStart<br>● HP Management DVD<br>● HP ProLiant Smart Update Firmware DVD<br><br>SmartStart version supported (minimum): SmartStart 8.25<br>http://www.hp.com/servers/smartstart<br><br>**NOTE:** In an effort to support reducing our environmental impact, the HP ProLiant Essentials Foundation Pack media will be available as a |

*Standard Features*

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.

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| | HP Integrated Lights-Out 2 (iLO 2) | HP Integrated Lights-Out 2 (iLO 2) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO 2 functions without additional software and can be accessed from any location via a web browser. HP iLO 2 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 |

**Intelligent Manageability**

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)

**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

**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

*Optional Features*

**HP Insight management** HP Insight Control
**software**

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 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

**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

*Service and Support*

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| **Service and Support** | **HP Technology Services for Industry Standard Servers and BladeSystem**<br>Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.<br><br>**What HP ProLiant and BladeSystem Services can do for you**<br>HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs:.<br><br>HP Technology Services meets business challenges with services offered in three packages - **Optimized Care Package, Standard Care Package, and Basic Care Package** - available for each product group. Such packaged solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support packages for servers, storage, networking and software. |
| **Optimized Care** | **Optimized Care Package: Supports maintaining servers at optimum performance availability**<br><br>**HP ProLiant Server Hardware Installation**<br>Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner<br>http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN<br><br>**HP Installation and Startup for Insight Control Software**<br>Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf<br><br>**3-Year HP Critical Advantage**<br>Provides end-to-end infrastructure support solution for business critical applications running on virtualized/x86 infrastructures, enabling the customers to cost effectively build, operate, and continuously improve their IT environment<br>http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA3-1772ENW<br><br>**Additional Services**: Microsoft or Linux or VMware education courses + Facility & technology environmental assessment services + Energy Efficiency Design, Factory Express |

*Service and Support*

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| **Standard Care** | **Standard Care Package: Package that maintains high level of server availability** |
| | **HP ProLiant Server Hardware Installation**<br>Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner<br>http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN |
| | **HP Installation and Startup for Insight Control Software**<br>Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf |
| | **3-Year HP 6 hour Hardware Support Onsite Call-to-Repair Service**<br>Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center<br>http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf |
| | **3-Year , HP 24x7 Software Support for Insight Control**<br>Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers<br>http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf |
| | **Additional Services**: Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up, and Software Support; Install and Startup Services for Insight Control; Microsoft or Linux or VMware education courses; +30 Proactive Select Credits, Factory Express |
| **Basic Care** | **Basic Care Package: delivers minimum recommended support service level** |
| | **HP ProLiant Server Hardware Installation**<br>Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner<br>http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN |
| | **HP Installation and Startup for Insight Control Software**<br>Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf |
| | **3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service**<br>Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf |
| | **3-Year , HP 24x7 Software Support for Insight Control**<br>Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers<br>http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf |
| | **Additional Services**: Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); +10 Proactive Select Credits, Factory Express |

# QuickSpecs

*Service and Support*

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

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

# QuickSpecs

*Pre-configured Models*

**NOTE:** For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.
**NOTE:** Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
**NOTE:** HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
**NOTE:** If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
**NOTE:** Not all models are available in all regions. Check with your local country HP offices for availability.

## Entry Models

| **Quad-Core Models HP ProLiant ML330 G6 E5504 1P 2GB-R Non-hot Plug SATA 250GB 460W PS Entry Server** 504055-xx1 | | |
|---|---|---|
| | **Processor(s)** | (1) Intel® Xeon® E5504 (2.0GHz/4-core/4MB/80W) Processor |
| | **Cache Memory** | 4MB (1 x 4MB) Level 3 cache |
| | **Memory** | 2 GB (1 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs **NOTE:** 18 DIMM slots. |
| | **Network Controller** | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter |
| | **Storage Controller** | Embedded HP Smart Array B110i SATA RAID Controller (RAID 0/1/0+1) |
| | **Hard Drive** | One (1) 250GB 3G SATA 7.2K NHP 3.5" ETY HDD |
| | **Internal Storage** | (4) LFF Non Hot Plug SATA HDD Bays only |
| | **Optical Drive** | HP Half-Height SATA DVD-ROM Optical Drive |
| | **Power Supply** | 460 Watt power supply (NHP, Non Redundant) |
| | **Fans** | 3 fans ship standard |
| | **Accessories** | PS/2 Keyboard and Mouse ship standard |
| | **Form Factor** | Tower (5U) |
| | **Warranty** | Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. |

| **Quad-Core Models HP ProLiant ML330 G6 E5603 1P 2GB-U B110i Non-hot Plug SATA 250GB 460W PS Server** 637079-xx1 | | |
|---|---|---|
| | **Processor(s)** | (1) Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor |
| | **Cache Memory** | 4MB (1 x 4MB) Level 3 cache |
| | **Memory** | 2 GB (1 x 2 GB) PC3-10600E (DDR3-1333) Unbuffered DIMMs **NOTE:** 12 DIMM slots. |
| | **Network Controller** | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter |
| | **Storage Controller** | Embedded HP Smart Array B110i SATA RAID Controller (RAID 0/1/0+1) |
| | **Hard Drive** | One (1) 250GB 3G SATA 7.2K NHP 3.5" ETY HDD |
| | **Internal Storage** | (4) LFF Non Hot Plug SATA HDD Bays only |
| | **Optical Drive** | HP Half-Height SATA DVD-ROM Optical Drive |
| | **Power Supply** | 460 Watt power supply (NHP, Non Redundant) |
| | **Fans** | 3 fans ship standard |
| | **Accessories** | PS/2 Keyboard and Mouse ship standard |
| | **Form Factor** | Tower (5U) |
| | **Warranty** | Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. |

## Base Models

| **Quad-Core Models HP ProLiant ML330 G6 E5506 1P 4GB-R P410/ZM Hot Plug SAS/SATA 460W PS Base Svr** 504056-xx1 | | |
|---|---|---|
| | **Processor(s)** | (1) Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) Processor |
| | **Cache Memory** | 4MB (1 x 4MB) Level 3 cache |
| | **Memory** | 4 GB (2 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs **NOTE:** 18 DIMM slots. |
| | **Network Controller** | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter |
| | **Storage Controller** | HP Smart Array P410/Zero memory Controller (RAID 0/1/0+1) |

*Pre-configured Models*

| | | |
|---|---|---|
| | **Hard Drive** | None ship standard |
| | **Internal Storage** | (4) LFF Hot Plug SATA/SAS HDD Bays; upgradeable to (8) |
| | **Optical Drive** | HP Half-Height SATA DVD-ROM Optical Drive |
| | **Power Supply** | 460 Watt power supply (NHP, Non Redundant) |
| | **Fans** | 3 fans ship standard |
| | **Accessories** | PS/2 Keyboard and Mouse ship standard |
| | **Form Factor** | Tower (5U) |
| | **Warranty** | Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. |

| | | |
|---|---|---|
| **Quad-Core Models HP ProLiant ML330 G6 E5507 1P 4GB-R B110i Hot Plug SATA LFF 460W PS Base Server** 600910-xx1 | **Processor(s)** | (1) Intel® Xeon® E5507 (2.26 GHz/4-core/80W/4MB) Processor |
| | **Cache Memory** | 4MB (1 x 4MB) Level 3 cache |
| | **Memory** | 4 GB (2 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs **NOTE:** 18 DIMM slots. |
| | **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** | (4) LFF Hot Plug SATA HDD Bays; upgradeable to (8) |
| | **Optical Drive** | HP Half-Height SATA DVD-ROM Optical Drive |
| | **Power Supply** | 460 Watt power supply (NHP, Non Redundant) |
| | **Fans** | 3 fans ship standard |
| | **Accessories** | PS/2 Keyboard and Mouse ship standard |
| | **Form Factor** | Tower (5U) |
| | **Warranty** | Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. |

| | | |
|---|---|---|
| **Quad-Core Models HP ProLiant ML330 G6 E5606 1P 4GB-U B110i 460W PS Server** 637080-xx1 | **Processor(s)** | (1) Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) Processor |
| | **Cache Memory** | 8MB (1 x 8MB) Level 3 cache |
| | **Memory** | 4 GB (2 x 2 GB) PC3-10600E (DDR3-1333) Unbuffered DIMMs **NOTE:** 12 DIMM slots. |
| | **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** | (4) LFF Hot Plug SATA HDD Bays; upgradeable to (8) |
| | **Optical Drive** | HP Half-Height SATA DVD-ROM Optical Drive |
| | **Power Supply** | 460 Watt power supply (NHP, Non Redundant) |
| | **Fans** | 3 fans ship standard |
| | **Accessories** | PS/2 Keyboard and Mouse ship standard |
| | **Form Factor** | Tower (5U) |
| | **Warranty** | Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. |

# QuickSpecs

*Pre-configured Models*

## Performance Model

**Quad-Core Models**
**HP ProLiant ML330 G6**
**E5620 1P 6GB-R B110i**
**Hot Plug SATA LFF**
**460W PS Perf Server**
600911-xx1

| | |
|---|---|
| **Processor(s)** | (1) Intel® Xeon® E5620 (2.40GHz/4-core/80W/12MB) Processor |
| **Cache Memory** | 12MB (1 x 12MB) Level 3 cache |
| **Memory** | 6 GB (3 x 2 GB) PC3-10600R (DDR3-1333) Registered DIMMs<br>**NOTE:** 18 DIMM slots. |
| **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** | (4) LFF Hot Plug SATA HDD Bays; upgradeable to (8) |
| **Optical Drive** | HP Half-Height SATA DVD-ROM Optical Drive |
| **Power Supply** | 460 Watt power supply (NHP, Non Redundant) |
| **Fans** | 3 fans ship standard |
| **Accessories** | PS/2 Keyboard and Mouse ship standard |
| **Form Factor** | Tower (5U) |
| **Warranty** | Server Warranty includes 3-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response. |

| **Country Code Key** | **Tower Code Key** | **Rack Code Key** |
|---|---|---|
| xx=00 | U.S. | U.S. |
| 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 |

# QuickSpecs

*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 configurable product offerings and requirements.
**NOTE:** Configure-to-order (CTO) servers must start with a CTO Chassis.
**NOTE:** FIO indicates that this option is only available as a factory installable option.

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

| | | |
|---|---|---|
| **HP Models** | HP ProLiant ML330 G6 Configure-to-order Tower Server | 504271-B21 |
| | **Includes:** | |

Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
Integrated Smart Array B110i SATA RAID Controller
Four (4) LFF HDD bays
Four (4) PCIe slots
Eight (8) USB ports
Tower Form Factor
PS/2 Keyboard and Mouse (selection required)

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

| | | |
|---|---|---|
| **HP Processors** | **Six-Core Processors** | |
| | HP ML330 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) FIO Processor Kit | 637700-L21 |
| | HP ML330 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) FIO Processor Kit | 637701-L21 |
| | **Quad-Core Processors** | |
| | HP ML330 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) FIO Processor Kit | 601052-L21 |
| | HP ML330 G6 Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W) FIO Processor Kit | 637702-L21 |
| | HP ML330 G6 Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) FIO Processor Kit | 637703-L21 |
| | HP ML330 G6 Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) FIO Processor Kit | 637704-L21 |
| | HP ML330 G6 Intel® Xeon® E5507 (2.26GHz/4-core/4MB/80W) FIO Processor Kit | 601051-L21 |
| | HP ML330 G6 Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) FIO Processor Kit | 535582-L21 |
| | HP ML330 G6 Intel® Xeon® E5504 (2.0GHz/4-core/4MB/80W) FIO Processor Kit | 535581-L21 |
| | **Dual-Core Processors** | |
| | HP ML330 G6 Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W) FIO Processor Kit | 601050-L21 |
| | **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 (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| | HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500658-B21 |
| | HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |

## Configuration Information - Factory Integrated Models

| | |
|---|---|
| HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit **NOTE:** Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors. | 604504-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit **NOTE:** Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors. | 604506-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| **Unbuffered with ECC DIMMs (UDIMMs)** | |
| HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500668-B21 |
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500670-B21 |
| HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory 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 supports up to 4 drives only and at least one NHP hard drive is required.
**NOTE:** Embedded B110i controller can be enabled with hot plug functionality with the purchase of Smart Array Hot Plug Advance Pack (TC421A) and at least 1 hot plug HDD.
**NOTE:** For 8 LFF Drive maximum support, 2 Hot Plug HDD Drive Cages 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 are only Required if Non-Hot Plug Drive Cage Option (P/N: 500448-B21) is selected.
**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 rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive | 516830-B21 |
| HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive | 516826-B21 |
| HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive | 516824-B21 |

**NOTE:** Non-hot plug SAS 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**

*Configuration Information - Factory Integrated Models*

| | | |
|---|---|---|
| | HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive | 458947-B21 |
| | **SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives** | |
| | HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive | 507774-B21 |
| | HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive | 507772-B21 |
| | HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive | 458941-B21 |
| **HP Power supplies** | **NOTE:** Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor. | |
| | HP 460W Factory Integrated Power Supply Kit | 500447-B21 |
| | HP 750W Common Slot Gold Hot Plug Power Supply Kit | 512327-B21 |
| | **NOTE:** The HP 750W power supply requires purchasing the Redundant Power Supply Enablement Kit (P/N 508544-B21). | |
| | **Power Options** | |
| | HP 5U G6 Redundant Power Supply Enablement Kit | 508544-B21 |
| | **NOTE:** The Redundant Power Supply Enablement kit does not integrate any power supply. Two (2) units of 750W power supply are required to achieve redundancy. | |

## Step 3: Choose Additional Factory Integratable Options

| | | |
|---|---|---|
| **HP Storage Controllers** | **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:** HP NHP Internal SAS/SATA 4 Port Cable Kit (487734-B21) is required when adding Smart Array P410 Controller on Non-Hot Plug SATA/SAS server models. | |
| | HP Smart Array P212/256 BBWC 1-ports Int/1-ports Ext PCIe x8 FIO SAS Controller | 491191-B21 |
| | HP Smart Array P410/ZM 2-ports Int PCIe x8 FIO SAS Controller | 462860-B21 |
| | HP Smart Array P410/256 BBWC 2-ports Int PCIe x8 FIO SAS Controller | 491195-B21 |
| | HP Smart Array P411/256 BBWC 2-ports Ext PCIe x8 FIO SAS Controller | 491193-B21 |
| | **NOTE:** SAS Controller supports RAID 0/1/1+0/5. | |
| **HP Insight Software** | HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License | 582765-B21 |
| | HP Insight Control for Linux including 1yr 24x7 Support ML/DL Bundle 1 Server FIO License | TC203A |

## Step 4: Choose Additional Options for Factory Integration

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

# QuickSpecs

*Core Options*

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

| HP Processors | | |
|---|---|---|
| | **Six-Core Processors** | |
| | HP ML330 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) Processor Kit | 603978-B21 |
| | HP ML330 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) Processor Kit | 637705-B21 |
| | HP ML330 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) Processor Kit | 637706-B21 |
| | **Quad-Core Processors** | |
| | HP ML330 G6 Intel® Xeon® E5640 (2.66GHz/4-core/12MB/80W) Processor Kit | 607122-B21 |
| | HP ML330 G6 Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W) Processor Kit | 603977-B21 |
| | HP ML330 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) Processor Kit | 603976-B21 |
| | HP ML330 G6 Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W) Processor Kit | 637707-B21 |
| | HP ML330 G6 Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) Processor Kit | 637708-B21 |
| | HP ML330 G6 Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor Kit | 637709-B21 |
| | HP ML330 G6 Intel® Xeon® E5540 (2.53GHz/4-core/8MB/80W) Processor Kit | 512716-B21 |
| | HP ML330 G6 Intel® Xeon® E5530 (2.40GHz/4-core/8MB/80W) Processor Kit | 512715-B21 |
| | HP ML330 G6 Intel® Xeon® E5520 (2.26GHz/4-core/8MB/80W) Processor Kit | 512714-B21 |
| | HP ML330 G6 Intel® Xeon® E5507 (2.26 GHz/4-core/4MB/80W) Processor Kit | 603975-B21 |
| | HP ML330 G6 Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) Processor Kit | 512713-B21 |
| | HP ML330 G6 Intel® Xeon® E5504 (2.0GHz/4-core/4MB/80W) Processor Kit | 512712-B21 |
| | **Dual-Core Processors** | |
| | HP ML330 G6 Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W) Processor Kit | 603974-B21 |
| | HP ML330 G6 Intel® Xeon® E5502 (1.86GHz/2-core/4MB/80W) Processor Kit | 512711-B21 |

**NOTE:** Each processor kit includes (1) processor/(1) heatsink/ (1) Processor board. The processor board is integrated with (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.

| HP Memory | | |
|---|---|---|
| | **Registered DIMMs (RDIMMs)** | |
| | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| | HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500658-B21 |
| | HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| | HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604504-B21 |

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

| | | |
|---|---|---|
| | HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| | HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604506-B21 |

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

| | | |
|---|---|---|
| | HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| | **Unbuffered with ECC DIMMs (UDIMMs)** | |

*Core Options*

| | | |
|---|---|---|
| | HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500668-B21 |
| | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500670-B21 |
| | HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory 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.<br>**NOTE:** PC3L is a low voltage memory. | |

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

| | | |
|---|---|---|
| **HP Drive Cage Options** | HP 5U Hot Plug HDD Drive Cage Kit | 487737-B21 |
| | **NOTE:** To reach maximum 8 LFF Drive support, it is required to purchase 2 Hot Plug HDD Drive Cages 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.<br>**NOTE:** Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.<br>**NOTE:** SAS Non-Hot Plug and SAS Hot Plug Models require HP SAS Smart Array Controller. | |
| | **SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives** | |
| | HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 516828-B21 |
| | HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 516816-B21 |
| | HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 516814-B21 |
| | **SAS Non-Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives** | |
| | HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive | 516830-B21 |
| | HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive | 516826-B21 |
| | HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive | 516824-B21 |
| | **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 |
| | **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:<br>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 |

## Core Options

| | | |
|---|---|---|
| HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive | | 458928-B21 |
| **SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives** | | |
| HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive | | 507774-B21 |
| HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive | | 507772-B21 |
| HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive | | 458941-B21 |
| **SATA 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 1yr Warranty Hard Drive | | 571232-B21 |
| HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty 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)

| | | |
|---|---|---|
| **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 NC365T 4-port Ethernet Server Adapter | 593722-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**
**NOTE:** No more than two 10GbE I/O devices are supported in a single ProLiant server.
**NOTE:** A minimum of two Gigabytes (2 GB) of server memory is required per each adapter.
**NOTE:** Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.

| | | |
|---|---|---|
| HP NC522SFP Dual Port 10GbE Server Adapter | | 468332-B21 |
| HP NC523SFP 10Gb 2-port Server Adapter | | 593717-B21 |
| HP NC550SFP Dual Port 10GbE Server Adapter | | 581201-B21 |

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

| | | |
|---|---|---|
| **HP I/O Expansion Options** | HP Dedicated iLO Management Port Option | 514206-B21 |
| | HP Non-Hot Plug 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 PCI-X Expander Kit (2 x 64-bit 100MHz PCI-X slots) | | 488413-B21 |

# QuickSpecs

## Core Options

**HP Power Supplies**

**NOTE:** Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.

HP 750W Common Slot Gold Hot Plug Power Supply Kit — 512327-B21
**NOTE:** The HP 750W power supply requires purchasing the Redundant Power Supply Enablement Kit (P/N 508544-B21).

**Power Options**

HP 5U G6 Redundant Power Supply Enablement Kit — 508544-B21
**NOTE:** The Redundant Power Supply Enablement kit does not integrate any power supply. Two (2) units of 750W power supply are required to achieve redundancy.

**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.

**NOTE:** If customer orders the standalone redundant fan option kit, he/she will receive two (2) fans in a two-fan packaged box. Only one (1) fan is required for system redundancy. The other one can be saved as a spare part.
If customer orders the redundant fan kit along with the server, he/she will not be receiving the extra fan.

# QuickSpecs

## Additional Options

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

| HP Insight Software | HP Insight Control | |
|---|---|---|
| | HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License | T9074BAE |
| | HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License | TC278AAE |
| | HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License | 452148-B22 |
| | HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Tracking License | TC275A |
| | HP Insight Software Media Kit | 436222-B21 |

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

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

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

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

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

### HP Insight Control for Linux

| | | |
|---|---|---|
| HP Insight Control for Linux including 1yr 24x7 Support Electronic License | | TC213AAE |
| HP Insight Control for Linux including 1yr 24x7 Support Single Server License | | TC209A |
| HP Insight Control for Linux Media Kit | | TC208A |

**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.

**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).

**NOTE:** Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

**NOTE:** Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single set of activation keys.

**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

### HP Integrated Lights-Out (iLO) Advanced

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

**NOTE:** This license allows 1 server to be deployed and managed via HP iLO Advanced. Customer will receive a printed license entitlement certificate via

*Additional Options*

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:** Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.
**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 including 1yr 24x7 Support Electronic License | T9082AAE |
| HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License | 452151-B21 |

**NOTE:** Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates.
**NOTE:** 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 Security - TPM** | HP Trusted Platform Module Option Kit | 488069-B21 |

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

**HP Storage Controllers** **SAS Controllers**
**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.

**Smart Array P800 Controller**

| | |
|---|---|
| HP Smart Array P800/512 BBWC 2-ports Int/2-ports Ext PCIe x8 SAS Controller | 381513-B21 |

**Smart Array P212 Controller**

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

**Smart Array P410 Controller**
**NOTE:** HP NHP Internal SAS/SATA 4 Port Cable Kit (487734-B21) is required when adding Smart Array P410 Controller on Non-Hot Plug SATA/SAS server models.

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

# QuickSpecs

## Additional Options

| | |
|---|---|
| HP Smart Array P410/1G FBWC 2-ports Int PCIe x8 SAS Controller | 572532-B21 |
| **Smart Array P411 Controller** | |
| HP Smart Array P411/256 2-ports Ext PCIe x8 SAS Controller | 462830-B21 |
| HP Smart Array P411/512 BBWC 2-ports Ext PCIe x8 SAS Controller | 462832-B21 |
| HP Smart Array P411/512 FBWC 2-ports Ext PCIe x8 SAS Controller | 578229-B21 |
| HP Smart Array P411/1G FBWC 2-ports Ext PCIe x8 SAS Controller | 572531-B21 |
| **Smart Array P812 Controller** | |
| HP Smart Array P812/1G FBWC 2-ports Int/4-ports Ext PCIe x8 SAS Controller | 487204-B21 |
| **Upgrade Options** | |
| HP Mini SAS to Mini SAS 33in Cable Assembly | 496014-B21 |
| **NOTE:** This cable option kit is needed to upgrade from hot plug SATA to hot plug SAS. | |
| 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 256MB P-series Cache Upgrade | 462968-B21 |
| **NOTE:** Supported on HP Smart Array P212 and P410/ZM Controllers only. | |
| HP 512MB P-Series Battery Backed Write Cache Upgrade | 462967-B21 |
| HP 650 mAh P-Series Battery | 462969-B21 |
| **NOTE:** To enable BBWC on the 256MB cache.<br>**NOTE:** Supported on HP Smart Array P212, P410, and P411 Controllers only. | |
| HP 8484 to Mini SAS 33in Cable Assembly | 591734-B21 |
| **NOTE:** Cable used to connect the Smart Array P800 Controller to internal hard disk drives on selected HP ProLiant G6 Servers. | |
| HP 512MB Flash Backed Write Cache | 534916-B21 |
| HP 1GB Flash Backed Cache | 534562-B21 |
| HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License | 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/1y 24x7 Supp Physical 1 Svr LTU | TC421A |
| **NOTE:** Please see the following QuickSpecs additional information:<br>http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller)<br>http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html (Smart Array P212 Controller)<br>http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html (Smart Array P410 Controller)<br>http://h18000.www1.hp.com/products/quickspecs/13202_div/13202_div.html (Smart Array P411 Controller)<br>http://h18000.www1.hp.com/products/quickspecs/13558_div/13558_div.html (Smart Array P812 Controller)<br>http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html (Smart Array Advanced Pack)<br>http://h18000.www1.hp.com/products/quickspecs/13495_div/13495_div.html (Smart Array Hot Plug Advance Pack for B110i) | |
| **SAS HBA** | |
| HP SC08Ge 2-ports Ext PCIe x8 SAS Host Bus Adapter | 488765-B21 |

## Additional Options

| | | |
|---|---|---|
| | HP Modular Smart Array SC08e 2-ports Ext PCIe x8 SAS Host Bus Adapter | 614988-B21 |

**NOTE:** This is a 2 x4 External Port HBA
**NOTE:** This is only approved for the HP StorageWorks P2000 G3 SAS Modular Smart Array.

**NOTE:** Please see the HBA QuickSpecs for additional information:
http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC08Ge HBA)
http://h18004.www1.hp.com/products/quickspecs/13651_div/13651_div.html (SC08e 6Gb HBA)

**SCSI HBA**

| | |
|---|---|
| HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter | 412911-B21 |

**NOTE:** Recommended for SCSI tape drive connection.

**NOTE:** Please see the following QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)

| | | |
|---|---|---|
| **HP Backup & Recovery Software** | **Data Protector Express** | |
| | HP Data Protector Express V5.0 for 1 Server E-LTU | TC330AAE |
| | HP Data Protector Express V5.0 for 3 Servers E-LTU | TC331AAE |
| | HP Data Protector Express V5.0 for 10 Servers E-LTU | TC332AAE |
| | HP Basic Upgrade to Data Protector Express V5 for 1 Server E-LTU | TC333AAE |

**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 160 SCSI Internal Tape Drive | Q1573A |
| HP StorageWorks DAT 160 USB Internal Tape Drive | Q1580A |
| HP StorageWorks DAT 320 USB Internal Tape Drive | AJ825A |
| 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.

| | |
|---|---|
| HP StorageWorks DAT 320 SAS Internal Tape Drive | AJ830A |

**NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection.

| | |
|---|---|
| HP StorageWorks Ultrium 448 SAS Internal Drive | DW085A |

**NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection.

| | |
|---|---|
| HP StorageWorks Ultrium 920 SAS Internal Tape Drive | EH847A |

**NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection.

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

**NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection.

| | |
|---|---|
| HP StorageWorks LTO-4 Ultrium 1840 SAS External WW Drive | EH861A |

**NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection.

| | |
|---|---|
| HP StorageWorks LTO-5 Ultrium 3000 SAS Internal Tape Drive | EH957A |

**NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection.

*Additional Options*

| | | |
|---|---|---|
| | HP StorageWorks LTO-5 Ultrium 3000 SAS External Tape Drive | EH958A |
| | **NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection. | |
| | HP StorageWorks 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader | BL536A |
| | **NOTE:** Requires HP 1U Tape Autoloader Rack Kit (AH166A) for rack installation. | |
| | **NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection. | |
| | HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Tape Library | AK378A |
| | HP StorageWorks MSL2024 1 LTO-5 Ultrium 3000 SAS Tape Library | BL537A |
| | **NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection. | |
| | HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Tape Library | AK380A |
| | HP StorageWorks MSL4048 2 LTO-5 Ultrium 3000 SAS Tape Library | BL538A |
| | **NOTE:** Recommended to use HP P212 SAS Smart Array Controller (462828-B21) for connection. | |

**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 | | EJ001B |
| **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 D2D2504i Backup System | | EJ002B |
| **NOTE:** 3.0TB 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 D2D4112 Backup System | | EH993B |
| **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 RDX160 Internal Removable Disk Backup System | | AJ765A |
| **NOTE:** 160GB of disk capacity per data cartridge. | | |
| 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 RDX 1TB Internal Removable Disk Backup System | | BV847A |
| **NOTE:** For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 1 TB of disk capacity per data cartridge. | | |

# QuickSpecs

*Additional Options*

| | | |
|---|---|---|
| **HP StorageWorks Options** | **StorageWorks SCSI HBA** | |
| | HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter | AH627A |
| | **NOTE:** Recommended HBA for MSL SCSI Tape Library connect. | |

| | | |
|---|---|---|
| **HP Disk Storage Systems** | **MSA SAN Storage Arrays** | |
| | HP StorageWorks 60 Modular Smart Array | 418408-B21 |
| | **NOTE:** Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html | |
| | HP StorageWorks 70 Modular Smart Array | 418800-B21 |
| | **NOTE:** Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html (Worldwide) | |
| | **Disk Enclosures** | |
| | HP StorageWorks D2600 Disk Enclosure | AJ940A |
| | HP StorageWorks D2700 Disk Enclosure | AJ941A |
| | **NOTE:** Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html | |

| | | |
|---|---|---|
| **HP Uninterruptible Power Systems** | **HP Tower UPS** | |
| | **HP T1000 G3 UPS Models** | |
| | HP T1000 G3 1000VA NA Tower Uninterruptible Power System | AF448A |
| | HP T1000 G3 1000VA INTL Tower Uninterruptible Power System | AF449A |
| | HP T1000J JP Uninterruptible Power System | AF457A |
| | **HP T1500 G3 UPS Models** | |
| | HP T1500 G3 1400VA NA Tower Uninterruptible Power System | AF450A |
| | HP T1500 G3 1400VA INTL Tower Uninterruptible Power System | AF451A |
| | HP T1500J JP Uninterruptible Power System | 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 | |
| | **NOTE:** Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords. | |

## Additional Options

| | | |
|---|---|---|
| **HP Rack Series** | **HP Rack 10000 G2 Series** (Carbon/Graphite Metallic) | |
| | HP 10642 G2 Pallet Universal Rack | AF001A |
| | HP 10642 G2 Shock Universal Rack | 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.

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

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

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

**NOTE:** Quick deploy rail system provides tool-free support for racks with square or round mounting holes (including Compaq/HP 7000, 9000, 10000 G2 and HP series), with an adjustment range of 24" - 36". The ambidextrous cable management arm can be mounted on either the left or right side for improved cable management.

| | | |
|---|---|---|
| **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 |

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

# QuickSpecs

*Additional Options*

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|---|---|---|
| | **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 |
| | HP USB 04 Standard Keyboard | DT528A#ABA |
| | HP 4GB Secure Digital 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

| | | |
|---|---|---|
| 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) | | |
| DIMM Rank | 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:**

- 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

*Memory*

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 two (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 RDIMM | 3 | A; empty | |
| | | | | | |
| Chnl 2 | 4 | H; empty | 4 | H; empty | Chnl 2 |
| | 5 | E; empty | 5 | E; empty | |
| | 6 | B; 2GB RDIMM | 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 | |

**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

*Memory*

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

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

- 96GB, consisting of six (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 RDIMM | 2 | D; empty | |
| | 3 | A; 16GB RDIMM | 3 | A; empty | |
| | | | | | |
| Chnl 2 | 4 | H; empty | 4 | H; empty | Chnl 2 |
| | 5 | E; 16GB RDIMM | 5 | E; empty | |
| | 6 | B; 16GB RDIMM | 6 | B; empty | |
| | | | | | |
| Chnl 3 | 7 | I; empty | 7 | I; empty | Chnl 3 |
| | 8 | F; 16GB RDIMM | 8 | F; empty | |
| | 9 | C; 16GB RDIMM | 9 | C; empty | |

**UDIMM maximum configuration (1 CPU model)**

- 24GB, consisting of six (6) 4GB 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 UDIMM | 2 | D; empty | |
| | 3 | A; 4GB UDIMM | 3 | A; empty | |
| | | | | | |
| Chnl 2 | 4 | H; empty | 4 | H; empty | Chnl 2 |
| | 5 | E; 4GB UDIMM | 5 | E; empty | |
| | 6 | B; 4GB UDIMM | 6 | B; empty | |
| | | | | | |
| Chnl 3 | 7 | I; empty | 7 | I; empty | Chnl 3 |
| | 8 | F; 4GB UDIMM | 8 | F; empty | |
| | 9 | C; 4GB UDIMM | 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

*Memory*

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

**UDIMM maximum configuration (2 CPU model)**

- 48GB, consisting of twelve (12) 4GB 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 UDIMM | 2 | D; 4GB UDIMM | |
| | 3 | A; 4GB UDIMM | 3 | A; 4GB UDIMM | |
| | | | | | |
| Chnl 2 | 4 | H; empty | 4 | H; empty | Chnl 2 |
| | 5 | E; 4GB UDIMM | 5 | E; 4GB UDIMM | |
| | 6 | B; 4GB UDIMM | 6 | B; 4GB UDIMM | |
| | | | | | |
| Chnl 3 | 7 | I; empty | 7 | I; empty | Chnl 3 |
| | 8 | F; 4GB UDIMM | 8 | F; 4GB UDIMM | |
| | 9 | C; 4GB UDIMM | 9 | C; 4GB UDIMM | |

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

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

**DDR3 memory options part number decoder**
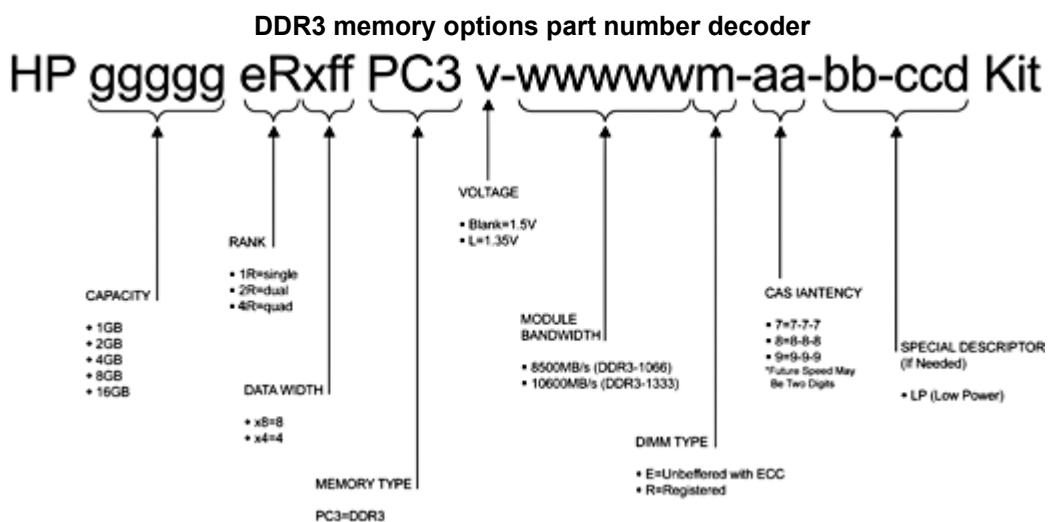
*Memory*

**Following are memory options available from HP:**

| HP Memory | | |
|---|---|---|
| | **Registered DIMMs (RDIMMs)** | |
| | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| | HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500658-B21 |
| | HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| | HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit **NOTE:** Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors. | 604504-B21 |
| | HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| | HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit **NOTE:** Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors. | 604506-B21 |
| | HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| | **Unbuffered with ECC DIMMs (UDIMMs)** | |
| | HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500668-B21 |
| | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500670-B21 |
| | HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory 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.

*Storage*
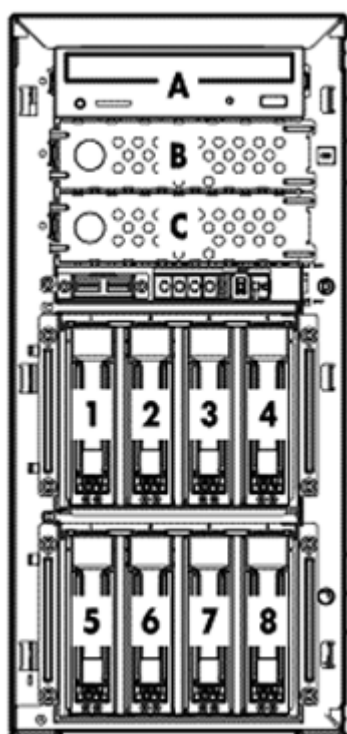


| | |
|---|---|
| A | Optical Drive |
| B,C | Removable Media Bays (2)- 1 full-height drive or 2 half-height drives |
| 1-4 | 4 x 3.5" (LFF) Hot plug or Non hot-plug SATA/SAS hard drive bays (Standard) |
| 5-8 | 4 x 3.5" (LFF) Hot plug SATA/SAS hard drive bays (Optional) |

## Drive Support

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| **Removable Media** | | | |
| SATA DVD-ROM Optical Drive | Up to 2 | A, B | Integrated SAS Controller |
| SATA DVD RW Optical Drive | Up to 2 | A, B | 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 P800/512 BBWC Controller |
| 450GB 6G SAS 15K DP | | | HP Smart Array P212/Zero Memory Controller |
| 300GB 6G SAS 15K DP | | | 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 P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

# QuickSpecs

*Storage*

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

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| 600GB 6G SAS 15K DP<br>450GB 6G SAS 15K DP<br>300GB 6G SAS 15K DP | Up to 8 | 1-8 | HP Smart Array P800/512 BBWC Controller<br>HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller |

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

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| 2TB 6G SAS 7.2K DP<br>1TB 6G SAS 7.2K DP | Up to 8 | 1-8 | HP Smart Array P800/512 BBWC Controller<br>HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache 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.

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

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| 2TB 3G SATA 7.2K<br>1TB 3G SATA 7.2K<br>500GB 3G SATA 7.2K | Up to 8 | 1-8 | HP Smart Array P800/512 BBWC Controller<br>HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller<br>HP Smart Array Hot Plug Advance Pack for B110i |

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

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|

## Storage

| 2TB 3G SATA 7.2K<br>1TB 3G SATA 7.2K<br>500GB 3G SATA 15K | Up to 4 | 1-4 | Embedded Smart Array B110i SATA RAID Controller<br>HP Smart Array P800/512 BBWC Controller<br>HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller |
|---|---|---|---|

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

| | Quantity<br>Supported | Position<br>Supported | Controller |
|---|---|---|---|
| 250GB 3G SATA 7.2K<br>160GB 3G SATA 7.2K | Up to 8 | 1-8 | HP Smart Array P800/512 BBWC Controller<br>HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller |

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

| | Quantity<br>Supported | Position<br>Supported | Controller |
|---|---|---|---|
| 250GB 3G SATA 15K<br>160GB 3G SATA 15K | Up to 4 | 1-4 | Embedded Smart Array B110i SATA RAID Controller<br>HP Smart Array P800/512 BBWC Controller<br>HP Smart Array P212/Zero Memory Controller<br>HP Smart Array P212/ 256 MB Controller<br>HP Smart Array P410/256 MB Controller<br>HP Smart Array P410/512 MB BBWC Controller<br>HP Smart Array P410/512 MB FBWC Controller<br>HP Smart Array P410/1G FBWC Controller<br>HP Smart Array P411/256 MB Controller<br>HP Smart Array P411/512 MB BBWC Controller<br>HP Smart Array P411/512 MB FBWC Controller<br>HP Smart Array P411/1G FBWC Controller<br>HP Smart Array P812/1G Flash Backed Cache Controller |

## Storage

**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 |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC 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** <br> LTO-1 Ultrium 232 <br> LTO-2 Ultrium 448 <br> LTO-3 Ultrium 920 <br> LTO-3 Ultrium 960 <br> LTO4 Ultrium 1760 <br> LTO-4 Ultrium 1840 <br> DAT 40 <br> DAT 72 <br> DAT 160 | Internal or External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter <br><br> HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter <br><br> **NOTE:** Please check the full compatibility information at: http://www.hp.com/go/connect | 412911-B21 <br><br><br> AH627A |
| **HP StorageWorks SCSI Rack Mount Kits** <br> 1U Rack-Mount Kit <br> 3U Rack-Mount Kit | External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter | 412911-B21 |
| **HP StorageWorks USB Tape Drives** <br> DAT 40 <br> DAT 72 <br> DAT 160 <br> DAT 320 | Internal or External | USB 2.0 Port | N/A |

## Storage

| | | | |
|---|---|---|---|
| **HP StorageWorks USB Rack Mount Kits**<br>1U USB Rack-Mount Kit | External | USB 2.0 Port | N/A |
| **HP StorageWorks SAS Tape Drives**<br>DAT 160<br>DAT 320<br>LTO-2 Ultrium 448<br>LTO-3 Ultrium 920<br>LTO-4 Ultrium 1760<br>LTO-4 Ultrium 1840<br>LTO-5 Ultrium 3000<br>LTO-5 Ultrium 3280 | Internal or External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller<br><br><br>**NOTE:** Please check the full compatibility information at:<br>http://www.hp.com/go/connect | 462828-B21 |
| **HP StorageWorks SAS Rack Mount Kits**<br>1U Rack-Mount Kit<br>3U Rack-Mount Kit | External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller<br>**NOTE:** Please check the full compatibility information at:<br>http://www.hp.com/go/connect | 462828-B21 |
| **HP StorageWorks SCSI Tape Autoloaders, External**<br>DAT 72x10 Autoloader<br>1/8 G2 Autoloader | External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter<br>HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter<br>**NOTE:** Please check the full compatibility information at:<br>http://www.hp.com/go/connect | 412911-B21<br><br>AH627A |
| **HP StorageWorks SCSI Tape Libraries, External**<br>MSL2024<br>MSL4048<br>MSL8096<br>MSL6000 | External | HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter<br><br>**NOTE:** Please check the full compatibility information at:<br>http://www.hp.com/go/connect | AH627A |
| **HP StorageWorks SAS Tape Autoloaders and Libraries, External**<br>1/8 G2 Autoloader<br>MSL2024<br>MSL4048<br>MSL8096 | External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller<br><br>**NOTE:** Please check the full compatibility information at:<br>http://www.hp.com/go/connect | 462828-B21 |
| **HP StorageWorks Fibre Channel Tape Libraries**<br>MSL2024<br>MSL4048<br>MSL8096<br>MSL6000 | External | Please consult the EBS connectivity matrix at:<br>http://www.hp.com/go/ebs for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpec. | |
| **HP StorageWorks USB RDX Removable Disk Backup System**<br>RDX160<br>RDX320<br>RDX500 | Internal or External | USB 2.0 port | N/A |

## Storage

RDX750
RDX1TB

| **HP StorageWorks D2D Backup Systems, iSCSI**<br>D2D2500i<br>D2D4000i | External | Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended. |
| --- | --- | --- |
| **HP StorageWorks D2D Backup Systems, Fibre Channel**<br>D2D4000fc | External | Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect |

*Power Specifications*

| HP 460W Factory Integrated Power Supply Kit | 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 Common Slot Gold Hot Plug Power Supply Kit | | | | | | | |
|---|---|---|---|---|---|---|---|
| Part Number | 512327-B21 | | | | | | |
| Input Voltage Range ( V rms ) | 100 to 240 | | | | | | |
| Frequency Range (Nominal) ( Hz ) | 50/60 | | | | | | |
| Nominal Input Voltage ( Vrms ) | **100** | **120** | **200** | **208** | **220** | **230** | **240** |
| Maximum Rated Output Wattage Rating | 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 |
| Maximum Rated Input Wattage Rating ( Watts ) | 857 | 847 | 824 | 824 | 820 | 820 | 820 |
| Maximum Rated VA ( Volt-Amp ) | 894 | 884 | 859 | 854 | 854 | 854 | |
| Efficiency ( % ) | 87.5 | 88.5 | 91 | 91 | 91.5 | 91.5 | 91.5 |
| Power Factor | 0.97 | | | | | | |
| Leakage Current ( mA ) | 0.42 | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current ( A peak ) | 30 | | | | | | |
| Maximum Inrush Current duration ( mS ) | 20 | | | | | | |
| Maximum British Thermal Unit Rating ( BTU-Hr ) | 2925 | 2892 | 2812 | 2812 | 2797 | 2797 | 2797 |

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

# QuickSpecs

*Technical Specifications*

| | | |
|---|---|---|
| **System Unit** | **Dimensions**<br>(H x W x D)<br>(W/O foot stand) | 7.87 x 16.81 x 24.13 in (200 x 427 x 613 mm) |
| | **Weight**<br>(approximate) | Maximum:<br>(All hard drives, power supplies and processors installed) — 66.14 lb (30 kg) |
| | | Minimum:<br>(One hard drive, power supply and processor installed) — 35.27 lb (16 kg) |
| | **Input Requirements**<br>(per power supply) | Rated Line Voltage — 100 to 240 VAC |
| | | Rated Input Current — 7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC) |
| | | Rated Input Frequency — 50 to 60 Hz |
| | | Rated Input Power — 852 W |
| | **BTU Rating** | Maximum — 460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC)<br>750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC)<br>1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC) |
| | **Power Specifications** | To review typical system power ratings use the Power Calculator which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor<br><br>- Click on the system of interest. Example: ML330 G6<br>- Follow the instructions of the next screens. |
| | **Power Supply Output**<br>(per power supply) | Rated Steady-State Power — 460 (750) W (at 100 VAC),<br>460 (750) W (at 200 VAC) |
| | | Maximum Peak Power — 460 (750) W (at 100 VAC),<br>460 (750) W (at 200 VAC)<br>**NOTE:** See Power Supply Specifications tables for complete details on 460W PSU and optional 750W. |
| | **System Inlet Temperature** | Operating — 50° to 95° F (10° to 35° C) at sea level with an altitude derating of 1.8°F per 1,000 ft (1.0° C per every 305 m) above seal level to a maximum of 10,000 ft (3050 m) no direct sustained sunlight . Maximum rate of change is 18°F/hr (10°C/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 86°F (30°C). |
| | | Non-Operating — -22° to 140° F (-30° to 60° C) |
| | **Relative Humidity**<br>(non-condensing) | Operating — 10% to 90% relative humidity (Rh), 82.4°F (28°C) maximum wet bulb temperature, non-condensing. |
| | | Non-operating** — 10% to 95% relative humidity (Rh), 101.7°F (38.7°C) maximum wet bulb temperature, non-condensing. |

# QuickSpecs

*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<br>460W SPS (w/ redundant fan): 5.1B<br>750W RPS (w/ non-redundant fan): 5.1B<br>750W RPS (w/ redundant fan): 5.3B |
| L-pAm | 460W SPS (w/ non-redundant fan): 31.4 dBA<br>460W SPS (w/ redundant fan): 33.7 dBA<br>750W RPS (w/ non-redundant fan): 33.4 dBA<br>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<br>460W SPS (w/ redundant fan): 5.2B<br>750W RPS (w/ non-redundant fan): 5.3B<br>750W RPS (w/ redundant fan): 5.4B |
| L WAd (BELS) | 460W SPS (w/ non-redundant fan): 31.4 dBA<br>460W SPS (w/ redundant fan): 33.9 dBA<br>750W RPS (w/ non-redundant fan): 34.6 dBA<br>750W RPS (w/ redundant fan): 35.2 dBA<br>**NOTE:** The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels. |

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

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

*Technical Specifications*

| **HP Smart Array B110i SATA RAID Controller (RAID 0,1,10)** | **Dimensions** | N/A (embedded) |
| --- | --- | --- |
| | **Disk Drive and Enclosure Protocol Support** | 3.0 Gbps SATA |
| | **Architecture** | 64-bit |
| | **SAS Connectors** | 4 internal x1 SATA connectors |
| | **Software Upgradeable Firmware** | Yes. 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" ETY 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** | Supported | |
| | **Seek Time** (typical reads, including settling) | Single Track | 2.0 ms |
| | | Average | 11 ms |
| | | Full-Stroke | 21.0 ms |
| | | Rotational Speed | 7,200 rpm |
| | **Physical Configuration** | Bytes/Sector | 512 |
| | | Logical Blocks | 488,397,168 |
| | **Operating Temperature** (system inlet air temperature) | 50° to 95° F (10° to 35° C) | |

*Technical Specifications*

| Embedded NC326i PCI Express Dual Port Gigabit Server Adapter | Network Interface Compatibility | 10Base-T/100Base-TX/1000Base-TX |  |
|---|---|---|---|
| | | IEEE 802.3 10Base-T | |
| | | IEEE 802.3ab 1000Base-T | |
| | | IEEE 802.3u 100Base-TX | |
| | Data Transfer Method | PCI Express, four lanes (x4) | |
| | 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 | Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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