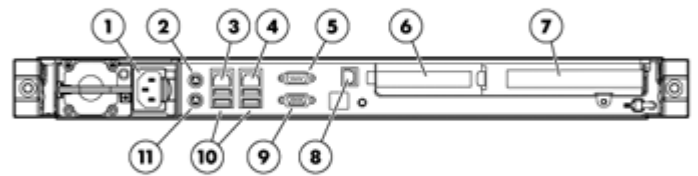
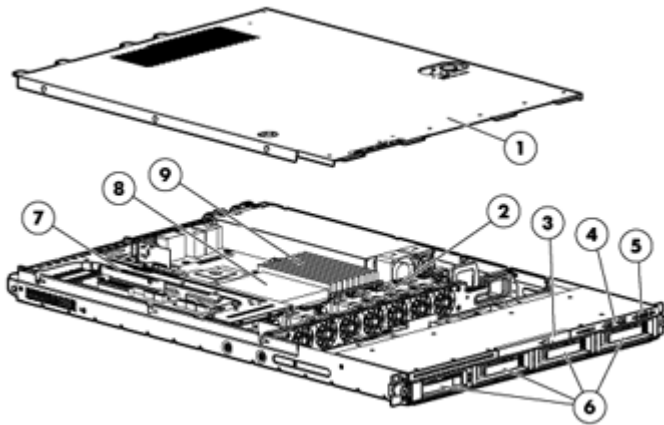


Overview

The HP ProLiant DL320 G6 Server is an enterprise rack-optimized server at an entry level price. The highly manageable 1 processor, 1U server is ideal for single-application IT infrastructure, web and edge-of-network applications.

The HP infrastructure management capabilities, combined with other Insight software, give the DL320 G6 enterprise-class management features. Support for 1 to 4 low-cost Serial ATA drives on an integrated RAID0/1/10 controller, with an optional upgrade to highly reliable hot plug SAS hard drives, gives the DL320 G6 flexibility to meet the needs of your datacenter. Plus, you get the cost-effective solution of a single-processor platform with options from the Intel® Xeon® Processor 5500 and 5600 sequences with turbo mode.



Front View-

1. Cover
2. Non Hot Plug Dual Rotor Fans
3. Optional Slim 9.5mm DVD ROM
4. USB connectors (2)
5. Power Button, UID button, and Front LED Indicators
6. Support for up to four SATA or SAS Hard Drives or SSD's
7. Two PCI-Express Slots (2 PCI-Express 2.0 x16 connectors standard)
8. Processor Socket (Intel Xeon, Core 2, Quad Core, and Six Core)
9. Nine DDR3 Memory Slots

Rear View-

1. Power supply
2. Mouse connector
3. NIC 1 Port/Shared iLO 2 Management Port
4. NIC 2 Port
5. Serial connector
6. PCI Express expansion slot 5, low-profile, half-length
7. PCI Express expansion slot 4, (optional PCI-X, full-length)
8. Dedicated Integrated Lights-Out 2 (ProLiant Onboard Administrator powered by integrated Lights-Out 2) management port (optional)
9. Video connector
10. USB connectors (4)
11. Keyboard connector

What's New

- Support for new HP hard drive

Standard Features

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

Processor

One of the following depending on Model

Six-Core Processors

Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Processor

Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) Processor

Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) Processor

Quad-Core Processors

Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W) Processor

Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) Processor

Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor

Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W, DDR3-800) Processor

Intel® Xeon® E5530 (2.40GHz/4-core/8MB/80W, DDR3 1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® E5640 (2.66GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® L5506 (2.13GHz/4-core/4MB/60W, DDR3-800) Processor

Intel® Xeon® L5609 (1.86GHz/4-core/12MB/40W, DDR3-1066) Processor

Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Dual-Core Processors

Intel® Xeon® E5502 (1.86GHz/2-core/4MB/80W, DDR3-800) Processor

Intel® Xeon® E5503 (2.00GHz/2-core/4MB/80W, DDR3-800) Processor

NOTE HT indicates that the processor model supports Intel® Hyper-Threading Technology.

NOTE Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 6, 4, 3, 2, and 1 cores active.

NOTE DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

NOTE For the Intel 5500 and 5600 Series, the letter preceding the model number indicates the performance/wattage of the processor. **E** denotes Enterprise Performance/Wattage (Mainstream) and **L** denotes Lower Wattage.

Cache Memory

One of the following depending on Model

4MB (1 x 4MB) Level 3 Cache

8MB (1 x 8MB) Level 3 Cache

12MB (1 x 12MB) Level 3 Cache

Chipset

Intel 5500 Chipset with up to 6.4GT/s QPI

NOTE For more information regarding Intel chipsets, please see the following URL -

<http://www.intel.com/products/server/chipsets/>.

Standard Features

| | |
|--------------------------|--|
| Memory Protection | Advanced ECC Mirroring mode Lock-step mode Online spare |
|--------------------------|--|

NOTE Xeon W3500 processor family does not support any of above advanced features.
NOTE Online spare is only supported on Xeon 5600 processor series.

| | | |
|--|-----------------------------------|--|
| Memory One of the following depending on Model | Type | DDR3 1067/1333 Registered (RDIMM) and Unbuffered (UDIMM) |
| | Standard (Entry Models) | 4 GB (2 x 2 GB) RDIMM |
| | Standard (High Efficiency Models) | 4 GB (2 x 2 GB) UDIMM |
| | Standard (Performance Models) | 6 GB (3 x 2 GB) RDIMM |
| | Maximum Memory | Up to 144 GB, using DDR3 Registered (RDIMM) memory, operating at 800MHz when fully populated at 3 DIMMs per Channel in 9 Slots. Up to 24 GB, using DDR3 Unbuffered (UDIMM) memory, operating at 1066MHz when fully populated at 2 DIMMs per Channel in 6 slots. |

| | |
|---------------------------|--|
| Network Controller | Embedded NC326i Dual Port Gigabit Server Adapter |
|---------------------------|--|

Expansion Slots

NOTE Two total slots. (1) Full length PCI Express x16 slot (x16 connector). Can be replaced with a full-length 64-bit /133MHz PCI-X slot. (1) Half-length, low-profile PCI Express x4 slot (x16 connector).

| Expansion Slots # | Technology | Bus Width** | Connector Width | Bus Number* | Form Factor | Notes |
|-------------------|-------------------------|-------------|-----------------|-------------|---|---|
| 5 (Standard) | PCIe | x4 | x16 | 10 | Low profile (half length, half height) slot | |
| 4 (Standard) | PCIe | x16 | x16 | 21 | Full length, full height slot | This PCIe slot can be replaced with optional PCI-X slot below |
| 4 (Optional) | PCI-X (133MHz, 3.3Volt) | 64-bit | Not applicable | 24 | Full length, full height slot | |

* Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number

** Indicates the number of physical electrical lanes running to the connector.

Standard Features

| | | |
|---|------------------------|---|
| Storage Controllers One of the following depending on Model | Entry Models | HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) NOTE - Transfer rate=3Gb/s SATA NOTE - SATA Hot Plug available via Hot Plug Advance Pack for B110i NOTE - Hot Plug SAS and SATA controllers available via PCI card option. |
| | High Efficiency Models | HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) NOTE - Transfer rate=3Gb/s SATA NOTE - SATA Hot Plug available via Hot Plug Advance Pack for B110i NOTE - Hot Plug SAS and SATA controllers available via PCI card option. |
| | Performance Models | HP Smart Array P410/256MB Controller (RAID 0/1/1+0/5/5+0) NOTE - Available upgrades- Battery Kit upgrade (for BBWC), 512MB with BBWC, Flash Backed Write Cache (FBWC), and Smart Array Advanced Pack (SAAP) |

| | | |
|---------------------------------|-----------------|---|
| Internal Storage Devices | Diskette Drive | None |
| | Optical Drive | None ship standard Optional-Optional DVD or DVD-RW drive |
| | Hard Drives | None ship standard |
| | Hard Drive Bays | Standard four 3.5" (Large Form Factor) hot-plug SATA or SAS hard drive bays ⁷ optional eight 2.5" (Small Form Factor) hot-plug SATA, SAS or SSD hard drive bays |

| | | | |
|---------------------------------|---|-------|-----------|
| Maximum Internal Storage | LFF SATA (4HDD models - requires optional 4HDD cage) | 12TB | 4 x 3TB |
| | LFF SAS (4HDD models - requires optional PCI controller) | 12TB | 4 x 3TB |
| | SFF SATA, SAS, (8HDD models - requires option PCI controller) | 8TB | 8 x 1TB |
| | LFF SATA SSD | 3.2TB | 8 x 400GB |
| | SFF SATA SSD | 3.2TB | 8 x 400GB |

| | | |
|-------------------|-------------------------|---|
| Interfaces | Serial | 1 |
| | Video | 1 |
| | Network RJ-45 | 2 |
| | Keyboard | 1 |
| | Pointing Device (Mouse) | 1 |
| | SD Slot | 1 |
| | USB 2.0 | 7 (2 front, 1 internal (optional), 4 rear) NOTE - In order to connect a USB device internally, the internal USB Cable G6 Kit must be used (536769-B21). |

Standard Features

| | |
|-------------------------------------|--------------------------------|
| Industry Standard Compliance | ACPI 2.0 Compliant |
| | PCI 3.0 Compliant |
| | PXE Support |
| | WOL Support |
| | Microsoft® Logo certifications |
| | USB 2.0 Support |
| | IPMI 2.0 |

| | | |
|---------------------------|---------------|--|
| Server Power Cords | North America | One 6' Highline (IEC-IEC) power cord ships standard |
| | Japan | One 6' Highline (IEC) power cord and one 6' Lowline power cord ship standard |
| | ROW | One 6' Highline (IEC) power cord ships standard |

NOTE—HP ProLiant DL320 G6 servers ship standard worldwide with a C13 to C14 2M Highline jumper cord. Japanese models also include a 2M Lowline power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific cord. Please see the following power cord matrix=<http://www.hp.com/go/powercordmatrix>

| | | |
|-----------------------|------------------------|---|
| Power Supplies | Entry Models | HP 400W Factory Integrated Power Supply, non-redundant |
| | High Efficiency Models | HP 500W Factory Integrated Power Supply Kit with Backplane, non-redundant |
| | Performance Models | HP 365W Hot Plug Redundant Power Supply Kit with Backplane, redundant |

| | |
|--------------------|---------------------------------|
| System Fans | 5 dual rotor fans ship standard |
|--------------------|---------------------------------|

| | |
|-------------------------|--|
| Required Cabling | For required cabling information, refer to the Web site at= www.hp.com/servers/proliantdl320-g6 . |
|-------------------------|--|

| | |
|---|---|
| Operating Systems and Virtualization Software Support for ProLiant Servers | Microsoft Windows Server |
| | Red Hat Enterprise Linux (RHEL) |
| | SUSE Linux Enterprise Server (SLES) |
| | Oracle Solaris |
| | NOTE —Support differences will exist between the SATA and SAS configurations. |
| | 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 including how to purchase from HP, please visit our OS Support Site at= www.hp.com/go/ossupport |

| | |
|-----------------|--|
| Graphics | Integrated ATI ES1000, 64 MB video standard |
| | <ul style="list-style-type: none"> • 16 bit color—maximum resolution of 1600 x 1200 • 32 bit color—maximum resolution of 1280 x 1024 |
| | NOTE —Maximum resolution available via iLO 2 remote console is 1280 x 1024. |

| | |
|--------------------|---|
| Form Factor | Rack (1U), (1.70 in/4.32 cm), 26.85" deep |
|--------------------|---|

| | | |
|------------------------------|---------------------|---|
| HP Insight management | HP Service Pack for | HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) |
|------------------------------|---------------------|---|



Standard Features

software

ProLiant

version 5 provide a new, comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support on each Service Pack for ProLiant.

The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM version 5 and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application has been re-written to provide a more straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP will recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.

The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.

The Service Pack for ProLiant (which includes HP SUM 5) can be downloaded from www.hp.com/go/spp/download. More information can be found <http://www.hp.com/go/spp> and <http://www.hp.com/go/hpsum>

HP Insight Foundation

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

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

Customers are urged to use the replacement product, HP Service Pack for ProLiant, instead of Insight Foundation Suite which is found at these location- www.hp.com/go/spp www.hp.com/go/spp/download



Standard Features

HP Integrated Lights-Out (iLO) for ProLiant

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

Intelligent Manageability

Automatic Server Recovery (ASR)
iLO 2 Advanced Pack (optional)
HP Systems Insight Manager
Integrated Management Log
Drive Parameter Tracking (with Smart Array Controllers)
Dynamic Sector Repairing (with Smart Array Controllers)
Pre-Failure Warranty (covers processors, SAS hard drives, and memory)
BIOS Serial Console
Front and Rear Unit ID (UID) button/LED

HP Insight Online

HP Insight Online is a new capability available through the HP Support Center portal for one stop, secure access to product and HP support information specific to your IT environment. Insight Online can automatically display devices remotely monitored by HP Insight Remote Support. With Insight Online's easy navigation you can efficiently track your IT support contracts and device status from anywhere and at anytime. www.hp.com/go/insightonline

Security

Power-on password
USB Port control
Removable optical drive assembly (optional)
Removable DVD-ROM Drive Assembly (optional)
Dedicated iLO2 port (optional)
Serial interface control
Administrator's password

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and parts repair is available for three years Next Business Day, with three year on-site support from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Expanded support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty—refer to the specific hard drive QuickSpecs for details.

NOTE: Server Warranty includes three year parts, three year labor, and three year on-site 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 software | HP Insight Control | <p>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. For more information, see http://www.hp.com/go/insightcontrol.</p> <p>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, see http://www.hp.com/services/insight.</p> |
| | HP Insight Dynamics for ProLiant | <p>HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. As a powerfully integrated by design toolkit to accelerate complex technology projects and simplify daily operations that ultimately enable IT Staff personnel to dynamically keep pace with the organizations changing business requirements. It enables them to plan capacity and power continuously, balance 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 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.</p> |

NOTE For more information, visit <http://www.hp.com/go/insightdynamics>

| | | |
|----------------------------------|-------------------------------|---|
| High Performance Clusters | HP Cluster Platforms | <p>HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and SUSE Linux Enterprise Server, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters</p> |
| | HP HPC Interconnects | <p>High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html</p> |
| | HP Cluster Management Utility | <p>HP Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used to manage large-scale Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu</p> |
| | HP HPC Linux Value Pack | <p>HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported specially priced software bundle for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform HPC</p> |



Optional Features

Enterprise Edition suite of tools including the LSF workload scheduler, the HP-MPI parallelization library. Also included are the HP Unified Parallel C compiler and the HP Shmem library, as well as the execution environments for the libraries and compiler. [HP HPC Linux Value Pack](#)

HP Proactive Insight experience

Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consist of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit www.hp.com/go/proactiveinsightexperience

HP Factory Express Capabilities

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 Simple Configurator

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require custom rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance. <http://www.hp.com/products/configurator>

Service and Support

Service and Support

HP Technology Services for Industry Standard Servers and BladeSystem

Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

What HP ProLiant and BladeSystem Services can do for you

HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs.

HP Technology Services meets business challenges with services offered in three packages - **Optimized Care Package, Standard Care Package, and Basic Care Package** - available for each product group. Such packaged solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support packages for servers, storage, networking and software.

Optimized Care

Optimized Care Package=Supports maintaining servers at optimum performance availability

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>

HP Installation and Startup for Insight Control Software

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 Critical Advantage

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

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA3-1772ENW>

Additional Services=Microsoft or Linux or VMware education courses + Facility & technology environmental assessment services + Energy Efficiency Design, Factory Express

Service and Support

Standard Care

Standard Care Package—Package that maintains high level of server availability

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>

HP Installation and Startup for Insight Control Software

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

Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf>

3-Year , HP 24x7 Software Support for Insight Control

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/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

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>

3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service

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>

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

Insight Remote Support

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

For more information

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

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

| | | |
|---|--|---|
| <p>HP ProLiant DL320 G6 E5603 1P 4GB-R B110i SATA RAID 400W PS Server 638328-xx1</p> | <p>Processor(s)</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drives</p> <p>Internal Storage</p> <p>Optical Drive</p> <p>Power Supply</p> <p>Fans</p> <p>Form Factor</p> <p>Warranty</p> | <p>(1) Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor</p> <p>4MB L3 Cache</p> <p>4 GB (2 x 2 GB) DDR3 RDIMM NOTE 9 DIMM slots.</p> <p>Embedded NC326i Dual Port Gigabit Server Adapter</p> <p>HP Smart Array B110i SATA RAID Controller (RAID 0/1/0+1)</p> <p>None ship standard</p> <p>Up to 4 x 2TB 3.5" Hot plug SATA/SAS, Maximum NOTE SATA Hot Plug requires Hot Plug Advance Pack for B110i NOTE SAS requires optional PCI Controller</p> <p>Optional</p> <p>HP 400W Factory Integrated Power Supply Kit</p> <p>5 dual rotor fans ship standard</p> <p>Rack (1U), (1.70 in/4.32 cm)</p> <p>Server Warranty includes three year parts, three year labor, and three year on-site support with next business day response.</p> |
|---|--|---|

High Efficiency Models

| | | |
|---|--|---|
| <p>HP ProLiant DL320 G6 L5609 1P 4GB-U B110i 4 LFF 500W PS High Efficiency Server 593498-xx1</p> | <p>Processor(s)</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drives</p> <p>Internal Storage</p> <p>Optical Drive</p> <p>Power Supply</p> <p>Fans</p> <p>Form Factor</p> <p>Warranty</p> | <p>(1) Intel® Xeon® L5609 (1.86GHz/4-core/12MB/40W, DDR3-1066) Processor</p> <p>12MB L3 Cache</p> <p>4 GB (2 x 2 GB) DDR3 UDIMM NOTE 9 DIMM slots.</p> <p>Embedded NC326i Dual Port Gigabit Server Adapter</p> <p>HP Smart Array B110i SATA RAID Controller (RAID 0/1/0+1)</p> <p>None ship standard</p> <p>Up to 4 x 2TB 3.5" Hot plug SATA/SAS, Maximum NOTE SATA Hot Plug requires Hot Plug Advance Pack for B110i NOTE SAS requires optional PCI Controller</p> <p>Optional</p> <p>HP 500W Factory Integrated Power Supply Kit with Backplane</p> <p>5 dual rotor fans ship standard</p> <p>Rack (1U), (1.70 in/4.32 cm)</p> <p>Server Warranty includes three year parts, three year labor, and three year on-site support with next business day response.</p> |
|---|--|---|



Pre-configured Models

Performance Models

| | | |
|---|--|--|
| <p>HP ProLiant DL320 G6 E5630 2.53GHz 4-core 1P 6GB-R P410/256 Hot Plug SAS 4 LFF 400W RPS Server 593499-xx1</p> | <p>Processor(s)</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drives</p> <p>Internal Storage</p> <p>Optical Drive</p> <p>Power Supply</p> <p>Fans</p> <p>Form Factor</p> <p>Warranty</p> | <p>(1) Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor</p> <p>12MB L3 Cache</p> <p>6 GB (3 x 2 GB) DDR3 RDIMM NOTE=9 DIMM slots.</p> <p>Embedded NC326i Dual Port Gigabit Server Adapter</p> <p>HP Smart Array P410/256MB Controller</p> <p>None Ship standard</p> <p>4 x 2TB 3.5" Hot plug SATA/SAS, Maximum</p> <p>Optional</p> <p>HP 365W Hot Plug Redundant Power Supply Kit with Backplane</p> <p>5 dual rotor fans ship standard</p> <p>Rack (1U), (1.70 in/4.32 cm)</p> <p>Server Warranty includes three year parts, three year labor, and three year on-site support with next business day response.</p> |
|---|--|--|

| | | |
|-------------------------|---|--|
| Country Code Key | <p>xx=00</p> <p>xx=20</p> <p>xx=29</p> <p>xx=37</p> <p>xx=42</p> <p>xx=AA</p> | <p>U.S.</p> <p>Brazil</p> <p>Japan</p> <p>APD</p> <p>Europe</p> <p>PRC</p> |
|-------------------------|---|--|

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 DL320 G6 Configure-to-order Rack Server | 505768-B21 |
| | Includes | |
| | Embedded NC326i Dual Port Gigabit Server Adapter | |
| | 1 full length PCI Express x16 slot and 1 half length low profile PCI Express x4 slot | |
| | Integrated Lights-Out 2 (ProLiant Onboard Administrator powered by Integrated Lights-Out 2) embedded (shared NIC functionality standard) | |
| | HP Smart Array B110i SATA RAID Controller (RAID 0/1/0+1) | |
| | Rack (1U) form factor, (1.70 in/4.32 cm) | |
| | Fixed, mounting rails | |

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

| | | |
|------------------------------|---|------------|
| HP Processors | Six-Core Processors | |
| | HP DL320 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) FIO Processor Kit | 600743-L21 |
| | HP DL320 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) FIO Processor Kit | 638648-L21 |
| | HP DL320 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) FIO Processor Kit | 638647-L21 |
| | Quad-Core Processors | |
| | HP DL320 G6 Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W) FIO Processor Kit | 638646-L21 |
| | HP DL320 G6 Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) FIO Processor Kit | 638645-L21 |
| | HP DL320 G6 Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) FIO Processor Kit | 638644-L21 |
| | HP DL320 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) FIO Processor Kit | 600739-L21 |
| | HP DL320 G6 Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W) FIO Processor Kit | 600740-L21 |
| | HP DL320 G6 Intel® Xeon® L5609 (1.86GHz/4-core/12MB/40W) FIO Processor Kit | 600741-L21 |
| | HP DL320 G6 Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W) FIO Processor Kit | 600742-L21 |
| | NOTE Xeon E5500 DP family supports both Registered DIMMs and Unbuffered DIMMs. Xeon W3500 UP family supports only Unbuffered DIMMs. | |
| HP Drive Cage Options | HP 8 SFF G6 FIO Hard Drive Cage with Backplane | 515938-B21 |
| | NOTE This cage requires the P410 SAS array controller as a Primary Controller (See Step 3 below if P/N 515938-B21 is selected). | |
| | HP 4 Hard Drive Hot Plug Backplane G6 Kit | 512181-B21 |
| | NOTE This is a LFF Backplane kit. | |
| | NOTE SATA Hot Plug requires Hot Plug Advance Pack for B110i. | |
| | NOTE SAS requires optional PCI Controller. | |
| HP Power Supplies | HP 500W Factory Integrated Power Supply Kit with Backplane | 537150-B21 |
| | HP 460W Common Slot Gold Hot Plug Power Supply Kit | 503296-B21 |
| | NOTE To use the HP 460W Common Slot Gold Hot Plug Power Supply with this server, you will need to purchase the 460W Power Supply FIO Enablement Kit (PN 515740-B21). | |



Configuration Information - Factory Integrated Models

| | |
|---|------------|
| HP 400W Factory Integrated Power Supply Kit | 515739-B21 |
| HP 365W Redundant Power Supply Kit w/ Backplane | 532092-B21 |

Power Options

| | |
|---|------------|
| HP DL320 G6 460W Power Supply Unit FIO Enablement Kit | 515740-B21 |
|---|------------|

NOTE- Required to purchase if you choose to use the HP 460W Common Slot Gold Hot Plug Power Supply with this server.

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 |
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit | 627812-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 |
| HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit | 619488-B21 |

NOTE- Depending on the memory configuration and processor model the memory speed may run at 1066MHz or 800MHz. See the Online Memory Configuration Tool for details=<http://www.hp.com/go/ddr3memory-configurator>.

NOTE- Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see=www.hp.com/go/proliant-energy-efficient.

NOTE- PC3L is a low voltage memory

Configuration Information - Factory Integrated Models

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

| | | |
|-------------------------------|--|------------|
| HP Storage Controllers | NOTE - For additional Storage Controllers and Options see Additional Options in Step 4 below. Only FIO options are displayed in Step 3. | |
| | 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 |
| | NOTE - May be selected if P/N 515938-B21 selected in Step 2 above. | |
| | HP Smart Array P410/256 BBWC 2-ports Int PCIe x8 FIO SAS Controller | 491195-B21 |
| | NOTE - May be selected if P/N 515938-B21 selected in Step 2 above. | |
| | HP Smart Array P411/256 BBWC 2-ports Ext PCIe x8 FIO SAS Controller | 491193-B21 |
| HP Insight Software | HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License | 582765-B21 |

Step 4- Choose Additional Options for Factory Integration

NOTE- For additional options, please refer to the “Core Options” and “Additional Options” section below.

Core Options

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

HP Memory

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 X5600 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 X5600 series processors.

| | |
|---|------------|
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit | 627812-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 |
| HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit | 619488-B21 |

NOTE—Depending on the memory configuration and processor model the memory speed may run at 1066MHz or 800MHz. See the Online Memory Configuration Tool for details—<http://www.hp.com/go/ddr3memory-configurator>.

NOTE—Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see—www.hp.com/go/proliant-energy-efficient.

NOTE—PC3L is a low voltage memory

HP Optical Drives

| | |
|-------------------------------------|------------|
| HP 9.5mm SATA DVD-ROM Optical Drive | 481045-B21 |
| HP 9.5mm SATA DVD-RW Optical Drive | 481047-B21 |

HP Hard Drives

NOTE—The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

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

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

| | |
|---|------------|
| HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 619291-B21 |
| HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 581286-B21 |
| HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 581284-B21 |
| HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 507127-B21 |
| HP 300GB 6G SAS 15K rpm SFF (2.5-inch) Hot Plug Enterprise 3 yr Warranty Hard Drive | 627117-B21 |

Core Options

| | |
|---|------------|
| HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 512547-B21 |
| SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives | |
| HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 516828-B21 |
| HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 516816-B21 |
| HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive | 516814-B21 |
| SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives | |
| HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive | 605835-B21 |
| HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive | 507610-B21 |
| SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives | |
| HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive | 625031-B21 |
| 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 —SAS Hard Drives are only supported with optional SAS HBA or RAID cards. | |
| NOTE —Please see the QuickSpecs for Technical Specifications and additional information— | |
| http://h18000.www1.hp.com/products/quickspecs/12244..div/12244..div.html | |
| (Worldwide) | |
| SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives | |
| HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive | 625609-B21 |
| HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive | 507750-B21 |
| SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives | |
| HP 3TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive | 628059-B21 |
| HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive | 507632-B21 |
| HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive | 454146-B21 |
| HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive | 458928-B21 |
| SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives | |
| HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive | 571230-B21 |
| NOTE —SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information— | |
| http://h18000.www1.hp.com/products/quickspecs/13021..div/13021..div.html | |
| (Worldwide) | |
| SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives | |
| HP 400GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636597-B21 |
| HP 200GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636595-B21 |
| HP 100GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636593-B21 |
| SATA Hot Plug 3.5" Midline (MDL) Solid State Drives | |
| HP 400GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636611-B21 |
| HP 200GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636609-B21 |
| HP 100GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive | 636607-B21 |

Core Options

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—
<http://h18000.www1.hp.com/products/quickspecs/14038..div/14038..div.html>
 (Worldwide)

6G SAS ME Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 800GB 6G SAS Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Warranty Solid State Drive 690823-B21

HP 400GB 6G SAS Mainstream Endurance SFF 2.5-in ENT Mainstream 3yr Warranty Solid State Drive 690821-B21

HP 200GB 6G SAS Mainstream Endurance SFF 2.5-in Enterprise Mainstream 3yr Warranty Solid State Drive 690819-B21

6G SAS Hot Plug Enterprise Performance Solid State Drives

HP 400GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive 632494-B21

HP 200GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive 632492-B21

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—
<http://h18000.www1.hp.com/products/quickspecs/14038..div/14038..div.html>
 (Worldwide)

HP Networking

Gigabit Ethernet Adapters

HP NC112T PCI Express Gigabit Server Adapter 503746-B21

HP NC360T PCI-E Dual Port Gigabit Server Adapter 412648-B21

HP NC364T PCI-E Quad Port Gigabit Server Adapter 435508-B21

HP NC365T 4-port Ethernet Server Adapter 593722-B21

HP NC373F PCI-E Multifunction 1000SX Gigabit Svr Adapter 394793-B21

HP NC373T PCI-E Multifunction Gigabit Server Adapter 394791-B21

HP NC375T PCI Express Quad Port Gigabit Server Adapter 538696-B21

HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter 458492-B21

10 Gigabit Ethernet Adapters

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 NC523SFP 10Gb 2-port Server Adapter 593717-B21

HP NC550SFP Dual Port 10GbE Server Adapter 581201-B21

HP NC552SFP 10Gb 2-port Ethernet Server Adapter 614203-B21

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

HP I/O Expansion Options

HP DL320 G6 PCI-X Riser Kit 516230-B21

HP Dedicated iLO Management Port Option 514206-B21

Core Options

HP Power Supplies

HP Common Slot Gold Power Supplies

NOTE—The following Power Supplies offer up to 92% efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit 503296-B21

HP Multi-Output Power Supplies

HP 365W Redundant Power Supply Kit w/ Backplane 532092-B21

Additional Options

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

HP Insight Software

HP Insight Control

HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License 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 Management Media Kit 436222-B21

NOTE—HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.

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

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

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

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

HP Integrated Lights-Out (iLO) Advanced for ProLiant Remote Management

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License TA850AAE

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

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

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

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Flexible Quantity License 512486-B21

HP iLO Advanced Flexible Qty License with 3yr 24x7 Tech Support and Updates BD506A

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Tracking License 512487-B21

HP iLO Advanced Tracking License with 3yr 24x7 Tech Support and Updates BD507A

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

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—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

Additional Options

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>

High Performance Clusters

HP Cluster Management Utility

HP Insight Cluster Management Utility 1yr 24x7 Flexible License QL803B

HP Insight Cluster Management Utility 3yr 24x7 Flexible License BD476A

NOTE These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.

HP Insight Cluster Management Utility Media BD477A

NOTE For additional license kits please see the QuickSpecs at <http://h18004.www1.hp.com/products/quickspecs/12612„div/12612„div.html>

HP HPC Linux Value Pack

HP High Performance Computing Linux Value Pack 1 Processor Flexible License for ProLiant Servers TC293B

NOTE This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.

HP High Performance Computing Linux Value Pack Media Kit for ProLiant Servers TC294A

NOTE This part number can be used to purchase media including software and documentation, which will be delivered to the customer.

NOTE For additional license kits please see the QuickSpecs at <http://h18004.www1.hp.com/products/quickspecs/13485„div/13485„div.html>

HP Security

HP Trusted Platform Module Option 488069-B21

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

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

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

HP Storage Controllers

SAS Controllers

NOTE When using the following Smart Array Controllers the HP MS HP CA MiniSAS to MiniSAS 338 Cable Kit (P/N 496014-B21) is required.

Smart Array P212 Controller

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



Additional Options

| | |
|--|------------|
| HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller | 462834-B21 |
| Smart Array P410 Controller | |
| HP Smart Array P410/256 2-ports Int PCIe x8 SAS Controller | 462862-B21 |
| HP Smart Array P410/512 BBWC 2-ports Int PCIe x8 SAS Controller | 462864-B21 |
| HP Smart Array P410/512 FBWC 2-ports Int PCIe x8 SAS Controller | 578230-B21 |
| 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 |
| Optional Upgrades | |
| HP 256MB P-series Cache Upgrade | 462968-B21 |
| NOTE Supported on HP Smart Array P212 Controller only. | |
| HP 512MB P-Series Battery Backed Write Cache Upgrade | 462967-B21 |
| NOTE Supported on HP Smart Array P410 Controller and HP Smart Array P411 Controller only. | |
| HP 650 mAh P-Series Battery | 462969-B21 |
| NOTE To enable BBWC on the 256MB cache. | |
| NOTE Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only. | |
| HP 512MB Flash Backed Write Cache | 534916-B21 |
| HP 1GB Flash Backed Cache | 534562-B21 |
| HP Smart Array Hot Plug Advance Pack for B110i w/1y 24x7 Supp Physical 1 Svr LTU | TC421A |
| HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Electronic License | TA852AAE |
| HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Flexible Quantity Lic | 516474-B21 |
| NOTE Please see the following QuickSpecs for Technical Specifications and additional information- | |
| http://h18000.www1.hp.com/products/quickspecs/13203..div/13203..div.html (Smart Array P212 Controller) | |
| http://h18000.www1.hp.com/products/quickspecs/13201..div/13201..div.html (Smart Array P410 Controller) | |
| http://h18000.www1.hp.com/products/quickspecs/13202..div/13202..div.html (Smart Array P411 Controller) | |
| http://h18000.www1.hp.com/products/quickspecs/13200..div/13200..div.html (Smart Array Advanced Pack) | |
| SAS HBA | |
| 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 P2000 G3 SAS Modular Smart Array. | |

Additional Options

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—
<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—Please see the following QuickSpecs for Technical Specifications and additional information—
<http://h18000.www1.hp.com/products/quickspecs/12566..div/12566..div.html>
 (SC11Xe HBA)

HP Tape Backup

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

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

NOTE—Connection using HP Smart Array P212/Zero Memory Controller (462828-B21) recommended.

HP LTO-4 Ultrium 1760 SAS (1) in 1U Rack-mount Kit EH946B

NOTE—Connection using HP Smart Array P212/Zero Memory Controller (462828-B21) recommended.

HP LTO-4 Ultrium 1840 (1) SCSI Tape Drive in 3U Rack-mount Kit EH926A

HP LTO-5 Ultrium 3280 SAS Tape Drive in 3U Rackmount EJ013A

HP LTO-5 Ultrium 3000 SAS Tape Drive in 1U Rackmount EJ014A

NOTE—Connection using HP Smart Array P212/Zero Memory Controller (462828-B21) recommended.

HP 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader BL536A

NOTE—Requires HP 1U Tape Autoloader Rack Kit (AH166A) for rack installation.
 Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP MSL2024 1 LTO-4 Ultrium 1760 SAS Tape Library AK378A

HP MSL2024 1 LTO-5 Ultrium 3000 SAS Tape Library BL537A

NOTE—Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP MSL4048 2 LTO-4 Ultrium 1760 SAS Tape Library AK380A

HP MSL4048 2 LTO-5 Ultrium 3000 SAS Tape Library BL538A

NOTE—Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StoreEver LTO-6 Ultrium 6650 Tape Drive in 3U Rack-mount Kit COL98A

HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit COL99A

HP StoreEver LTO-6 Ultrium 6650 Internal Tape Drive EH963A

HP StoreEver LTO-6 Ultrium 6650 External Tape Drive EH964A

HP StoreEver LTO-6 Ultrium 6250 Internal Tape Drive EH969A

HP StoreEver LTO-6 Ultrium 6250 External Tape Drive EH970A

Additional Options

HP Disk Backup

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

HP D2D Backup Systems with Backup Data Deduplication

| | |
|---------------------------|--------|
| HP D2D2502i Backup System | EJ001C |
| HP D2D2504i Backup System | EJ002C |
| HP D2D4112 Backup System | EH993C |

HP RDX Removable Disk Backup Systems USB

| | |
|---|--------|
| HP RDX1000 USB3.0 Internal Disk Backup System | B7B67A |
| HP RDX320 USB3.0 Internal Disk Backup System | B7B62A |
| HP RDX500 USB3.0 Internal Disk Backup System | B7B64A |
| HP 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 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 StoreOnce 2620 iSCSI Backup | BB852A |
| HP StoreOnce 4220 Backup | BB855A |

HP Storage Options

NOTE—The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see <http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>

Brocade Fibre Channel HBAs

| | |
|---|--------|
| HP 81B 8Gb 1-port PCIe Fibre Channel Host Bus Adapter | AP769B |
| HP 82B 8Gb 2-port PCIe Fibre Channel Host Bus Adapter | AP770B |
| HP 41B 4Gb 1-port PCIe Fibre Channel Host Bus Adapter | AP767B |
| HP 42B 4Gb 2-port PCIe Fibre Channel Host Bus Adapter | AP768B |

Emulex Fibre Channel HBAs

| | |
|--|--------|
| HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter | AJ762B |
| HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter | AJ763B |
| HP FC2142SR 4Gb 1-port PCIe Fibre Channel Host Bus Adapter | A8002B |
| HP FC2242SR 4Gb 2-port PCIe Fibre Channel Host Bus Adapter | A8003B |

QLogic Fibre Channel HBAs

| | |
|--|--------|
| HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter | AK344A |
| HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter | AJ764A |
| HP FC1142SR 4Gb 1-port PCIe Fibre Channel Host Bus Adapter | AE311A |
| HP FC1242SR 4Gb 2-port PCIe Fibre Channel Host Bus Adapter | AE312A |

Converged Network Adapter

| | |
|--|--------|
| HP CN1100E Dual Port Converged Network Adapter | BK835A |
| HP CN1000Q Dual Port Converged Network Adapter | BS668A |
| HP CN1000E Dual Port Converged Network Adapter | AW520B |

Additional Options

HP Disk Storage Systems **Disk Enclosures**

| | |
|-------------------------|--------|
| HP D2600 Disk Enclosure | AJ940A |
| HP 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> (Worldwide)

HP Uninterruptible Power Systems **HP Rack-mountable UPS**

HP R1500 G3 Uninterruptible Power Supply (UPS)

| | |
|---|--------|
| HP R1.5kVA G3 1U NA Uninterruptible Power System | AF469A |
| HP R1.5kVA G3 1U JP/TW Uninterruptible Power System | AF470A |
| HP R1.5kVA G3 1U INTL Uninterruptible Power System | AF471A |

NOTE Please see the QuickSpecs for additional information at <http://h18000.www1.hp.com/products/quickspecs/14059„div/14059„div.html> (Worldwide)

HP R/T3000 G2 Uninterruptible Power System (UPS)

| | |
|---|--------|
| HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System | AF466A |
| HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System | AF467A |
| HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System | AF468A |

NOTE Please see the QuickSpecs for additional information at <http://h18000.www1.hp.com/products/quickspecs/14058„div/14058„div.html> (Worldwide)

R5000 Uninterruptible Power System (UPS)

| | |
|---|--------|
| HP R5KVA 3U IEC309-32A High Voltage INTL Uninterruptible Power System | AF461A |
| HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System | AF460A |

NOTE Please see the QuickSpecs for additional information at <http://h18000.www1.hp.com/products/quickspecs/14109„div/14109„div.html> (Worldwide)

R7000 Uninterruptible Power System (UPS)

| | |
|--|--------|
| HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System | AF462A |
| HP R7KVA 4U IEC-32A High Voltage INTL Uninterruptible Power System | AF463A |
| HP R5KVA and R7KVA 3U Extended Runtime Module | AF464A |

NOTE Please see the QuickSpecs for additional information at <http://h18000.www1.hp.com/products/quickspecs/14110„div/14110„div.html> (Worldwide)

NOTE Additional HP Uninterruptible Power Systems (UPS) are available for this equipment. For information on all HP UPSs and accessories please go to www.hp.com/products/ups (Worldwide)

NOTE For additional information on sizing your HP UPS, 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 Power Distribution Units

HP Monitored Power Distribution Unit—Half Rack Version

| | |
|---|--------|
| HP 4.9kVA 24A Single Input Single Phase NA/JP Monitored Power Distribution Unit | AF914A |
| HP 7.3kVA 32A Single Input Single Phase INTL Monitored Power Distribution Unit | AF915A |

HP Monitored Power Distribution Unit—Full Rack Version

| | |
|---|--------|
| HP 8.6kVA 24A Single Input Three Phase NA/JP Monitored Power Distribution Unit | AF504A |
| HP 16.6kVA 40A Dual Input Single Phase NA/JP Monitored Power Distribution Unit | AF505A |
| HP 8.3kVA 40A Single Input Single Phase NA/JP Monitored Power Distribution Unit | AF506A |
| HP 22.1kVA 16A Dual Input Three Phase INTL Monitored Power Distribution Unit | AF507A |
| HP 11kVA 16A Single Input Three Phase INTL Monitored Power Distribution Unit | AF508A |
| HP 14.7kVA 32A Dual Input Single Phase INTL Monitored Power Distribution Unit | AF509A |
| HP 7.3kVA 32A Single Input Single Phase INTL Monitored Power Distribution Unit | AF510A |

NOTE—Please see the following QuickSpecs for additional information—

<http://h18000.www1.hp.com/products/quickspecs/12118„div/12118„div.html>
(Worldwide)

Modular Power Distribution Units 1U/0U (Up to 32 outlets)

NOTE—1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).

| | |
|---|------------|
| HP 2.8kVA 24A Low Voltage NA/JP Modular Power Distribution Unit | 252663-D71 |
|---|------------|

NOTE—This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.

| | |
|--|------------|
| HP 4.9kVA 24A High Voltage NA/JP Modular Power Distribution Unit | 252663-D72 |
|--|------------|

| | |
|--|------------|
| HP 8.3kVA 40A High Voltage NA/JP Modular Power Distribution Unit | 252663-D73 |
|--|------------|

| | |
|---|------------|
| HP 7.3kVA 32A High Voltage INTL Modular Power Distribution Unit | 252663-B31 |
|---|------------|

| | |
|---|------------|
| HP 3.6kVA 16A High Voltage INTL Modular Power Distribution Unit | 252663-B24 |
|---|------------|

NOTE—This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.

NOTE—Please see the following QuickSpecs for additional options including shorter jumper cables and country specific power cords—

<http://h18000.www1.hp.com/products/quickspecs/11041„div/11041„div.html>
(Worldwide)

NOTE—For additional information on HP Power Distribution Units including accessories please go to—www.hp.com/go/pdu.

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 Intelligent Power Distribution Units (iPDU)

iPDU Core Units

| | |
|--|--------|
| HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit | AF520A |
| HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit | AF522A |
| HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit | AF525A |
| HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit | AF526A |
| HP 11.4kVA 16A 415V Three Phase L22-20 NA Core Intelligent Power Distribution Unit | AF900A |
| HP 17.3kVA 24A 415V Three Phase L22-30 NA Core Intelligent Power Distribution Unit | AF902A |
| HP 17.3kVA 24A 415V Three Phase IEC309 NA Core Intelligent Power Distribution Unit | AF901A |
| HP 17.3kVA 48A 208V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit | AF535A |
| HP 17.3kVA 24A 415V Three Phase 12 Outlet Core NA/JP Intelligent Power Distribution Unit | AF537A |
| HP 22kVA 32A 400V Three Phase 12 Outlet Core INTL Intelligent Power Distribution Unit | AF538A |

iPDU Extension Bars

| | |
|---|--------|
| HP 5xC13 Intelligent PDU Extension Bar G2 Kit | AF547A |
| HP 5xC13 Outlets Power and UID LEDs Pair Standard Extension Bar | AF528A |

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

<http://h18000.www1.hp.com/products/quickspecs/13650„div/13650„div.html>
(Worldwide)

HP Rack Options

HP TFT7600 G2 KVM Console and Monitor (TFT7600 G2)

| | |
|---|--------|
| HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor | AZ870A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard UK Monitor | AZ871A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard DE Monitor | AZ872A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard FR Monitor | AZ873A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard IT Monitor | AZ874A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard ES Monitor | AZ875A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard DK Monitor | AZ876A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard NO Monitor | AZ877A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard SE/FI Monitor | AZ878A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard CH Monitor | AZ879A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard PT Monitor | AZ880A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard BE Monitor | AZ881A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard JP Monitor | AZ882A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard RU Monitor | AZ883A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard Intl Monitor | AZ884A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor | AZ885A |

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

<http://h18000.www1.hp.com/products/quickspecs/13731„div/13731„div.html>
(Worldwide)

| | |
|---|------------|
| HP USB BFR with PVC Free IN Keyboard/Mouse Kit | 672097-D63 |
| HP USB BFR with PVC Free AP-Intl Keyboard/Mouse Kit | 672097-373 |
| HP USB BFR with PVC Free Intl Keyboard/Mouse Kit | 672097-B33 |

Additional Options

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

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

<http://h18000.www1.hp.com/products/quickspecs/13972„div/13972„div.html>
(Worldwide)

HP Server Console Switches

| | |
|---|--------|
| HP Server Console 0x2x8 Port Analog Switch | AF616A |
| HP Server Console 0x2x16 Port Analog Switch | AF617A |
| HP TAA 0x2x16xKVM Server Console G2 Switch | AF626A |

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

| | |
|--|------------|
| HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software | AF618A |
| HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software | AF619A |
| HP KVM CAT5 1-pack USB Interface Adapter | 336047-B21 |

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

| | |
|---|--------|
| HP 1x4 USB/PS2 KVM Console Switch | AF611A |
| HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software | AF620A |
| HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software | AF621A |
| HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software | AF622A |

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

<http://h18000.www1.hp.com/products/quickspecs/13474„div/13474„div.html>
(Worldwide)

Additional Options

| | | |
|------------------------------|---|------------|
| HP USB and SD Options | HP 4GB Secure Digital High Capacity Flash Media Kit | 580387-B21 |
| | NOTE -Blank USB and SD media device is supported for use with VMware and Citrix. USB/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 Kit | 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 Internal USB Cable G6 Kit | 536769-B21 |

HP Care Pack Services

Hardware Services On-site Service

| | |
|--|--------|
| HP 3 year Next business day ProLiant DL320 Hardware Support | U4479E |
| HP 3 year 4 hour 13x5 ProLiant DL320 Hardware Support | U4480E |
| HP 3 year 4 hour 24x7 ProLiant DL320 Hardware Support | U4481E |
| HP 3 year 6 hour 24x7 Call to Repair ProLiant DL320 Hardware Support | U4482E |

Installation & Start-up Services

| | |
|---|--------|
| HP Install ProLiant DL320 Service | U4490E |
| HP Startup ProLiant DL320 Service | U4491E |
| HP Installation of ProLiant Add On/In Options Service | UH745E |

Support Plus 24

| | |
|--|--------|
| HP 3 year Support Plus 24 Microsoft ProLiant DL320 Service | U4493E |
| HP 3 year Support Plus 24 SuSE ProLiant DL320 Service | U6309E |

NOTE-For more information, customer/resellers can contact=<http://www.hp.com/hps/>

Memory

NOTE—Memory configurations listed do not apply to **Factory Integrated Models**.

DDR3 memory population guidelines

NOTE—Charts do not represent all possible memory configurations.

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 nine (9) memory slots—
- There are three (3) channels per processor, per server.
- There are three (3) DIMM slots for each memory channel—nine (9) 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).
- To maximize performance, balance the total memory capacity between all installed processors.
- It is not required, but it is recommended to load the channels similarly if possible.
- You can only have up to eight (8) ranks installed per channel.
- You can only install two quad-rank DIMMs per channel.
- You can only install two UDIMMs per channel—if available, the third slot in the channel must remain empty.
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel.
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the chipset.
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically.
- For lock-step mode, channel 3 must be unpopulated. DIMMs in channels 1 and 2 will be installed in pairs. The paired slots will be 1,4—2,5—3,6 on a 3DPC system or 1,4—2,5— on a 2DPC system.
- No mixing DIMM voltage—all DIMMs must be the same voltage.

DDR3 DIMM slot/capacity/populated speed table

| DIMM Type -> | Registered (RDIMMs) | | | | | | | Unbuffered with ECC (UDIMMs) | | |
|------------------------------------|---------------------|----------------|------|------|----------------|-----------------|------|------------------------------|----------------|------|
| | Single Rank (1R) | Dual Rank (2R) | | | Quad Rank (4R) | | | Single Rank | Dual Rank (2R) | |
| DIMM Rank -> | 4GB | 2GB | 4GB | 8GB | 8GB | 16GB | 4GB | 16 GB | 1GB | 2GB |
| DIMM Capacity -> | 1333 | 1333 | 1333 | 1066 | 1333 | 1333 | 1066 | 1066 | 1333 | 1333 |
| DIMM Native Speed (MHz) -> | | | | | | | | | | |
| SLOTS THAT CAN BE POPULATED | | | | | | | | | | |
| 9 slot servers | 9 | 9 | 9 | 9 | 9 | 9 | 6 | 6 | 6 | 6 |
| MAXIMUM CAPACITY (GB) | | | | | | | | | | |
| 9 slot servers | 36 | 18 | 36 | 72 | 72 | 144 | 24 | 96 | 6 | 12 |
| POPULATED DIMM SPEED (MHz) | | | | | | | | | | |
| 1 DIMM Per Channel | 1333 | 1333 | 1333 | 1066 | 1333 | 1333 | 1066 | 1066 | 1333 | 1333 |
| 2 DIMM Per Channel | 1333 | 1333 | 1333 | 1066 | 1333 | 1066/ 1333** | 800 | 800 | 1066 | 1066 |
| 3 DIMM Per Channel | 800 | 800 | 800 | 800 | 800 | 800*** | n/a* | n/a* | n/a* | n/a* |

* - not supported by HP at this time.
 **2DPC—LV runs at 1066, Std voltage runs at 1333
 ***3DPC—LV/Std voltage runs at 800



Memory

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 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, at the maximum speed will be 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.

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

Standard memory configuration

- 6GB, consisting of three (3) 2GB dual-rank PC3-10600 RDIMMs

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

Memory

Standard memory plus optional memory

- 102GB, consisting of three (3) 2GB RDIMMs plus six (6) 16GB RDIMMs
- 3x 2GB dual-rank PC3-10600 RDIMMs
- 6x 16GB dual-rank PC3-10600 RDIMMs

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

Standard memory replaced with optional memory

RDIMM maximum configuration

- 144GB, consisting of nine (9) 16GB dual-rank PC3-10600 RDIMMs

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

UDIMM maximum configuration (2 UDIMMs per Channel limit)

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

Memory

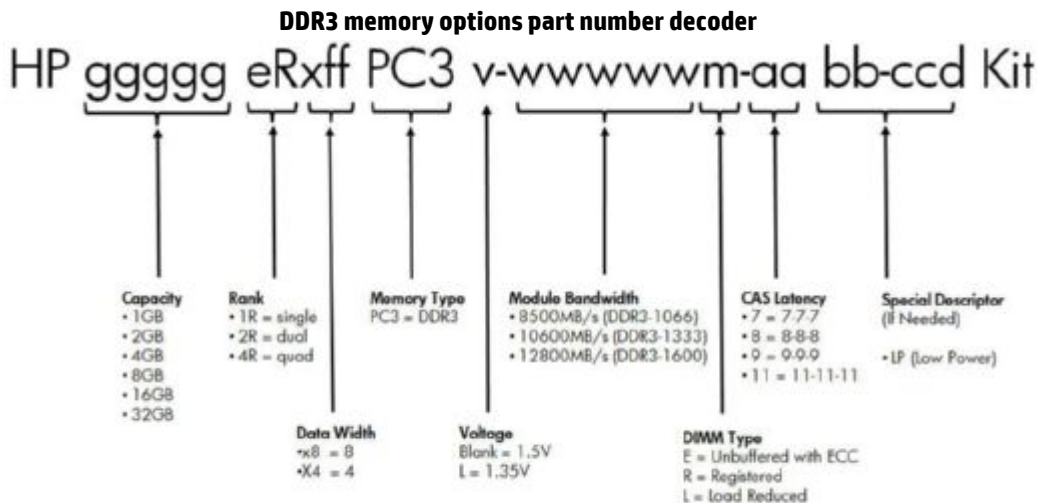
| | | CPU1 | |
|--------|--|--------|------------|
| | | slot # | |
| Chnl 1 | | 1 | G=empty |
| | | 2 | D=4GB DIMM |
| | | 3 | A=4GBDIMM |
| Chnl 2 | | 4 | H=empty |
| | | 5 | E=4GB DIMM |
| | | 6 | B=4GB DIMM |
| Chnl 3 | | 7 | I=empty |
| | | 8 | F=4GB DIMM |
| | | 9 | C=4GBIMM |

NOTES

Memory configurations above do not apply to Factory Integrated Models.
Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

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



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 |



Memory

| | |
|---|------------|
| 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 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-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) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit | 627812-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 |
| HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit | 619488-B21 |
| NOTE -Depending on the memory configuration and processor model the memory speed may run at 1066MHz or 800MHz. See the Online Memory Configuration Tool for details= http://www.hp.com/go/ddr3memory-configurator . | |
| NOTE -Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see= www.hp.com/go/proliant-energy-efficient . | |
| NOTE -PC3L is a low voltage memory | |

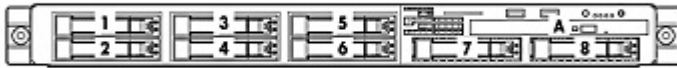
Storage

1-4 Four SATA or SAS drive bays



A Optional 9.5mm DVD-ROM, or DVD-RW drive

1-8 Eight Hot-plug SATA/SAS hard drive bays



A Optional 9.5mm DVD-ROM, or DVD-RW drive

Drive Support

| | Quantity Supported | Position Supported | Controller |
|-------------------------------------|--------------------|--------------------|-----------------------------|
| Removable Media | | | |
| HP 9.5mm SATA DVD-ROM Optical Drive | Up to 1 | A | HP embedded SATA Controller |
| HP 9.5mm SATA DVD RW Optical Drive | Up to 1 | A | HP embedded SATA Controller |

Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

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

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

| | Quantity Supported | Position Supported | Controller |
|------------------|--------------------|--------------------|---|
| 900GB 6G SAS 10K | Up to 8 | 1-8 | HP Smart Array P410/256 MB Controller |
| 600GB 6G SAS 10K | | | HP Smart Array P410/512 MB with BBWC Controller |
| 450GB 6G SAS 10K | | | |
| 300GB 6G SAS 10K | | | |
| 300GB 6G SAS 15K | | | |
| 146GB 6G SAS 15K | | | |
| 72GB 6G SAS 15K | | | |

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

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

Storage

| | | | |
|------------------|---------|-----|---|
| 600GB 6G SAS 15K | Up to 4 | 1-4 | HP Smart Array P212/Zero Memory Controller |
| 450GB 6G SAS 15K | | | HP Smart Array P212/256 MB Controller |
| 300GB 6G SAS 15K | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB with BBWC Controller |

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

| | Quantity Supported | Position Supported | Controller |
|-----------------|--------------------|--------------------|---|
| 1TB 6G SAS 7.2K | Up to 8 | 1-8 | HP Smart Array P410/256 MB Controller |
| 500GB 7.2K SFF | | | HP Smart Array P410/512 MB with BBWC Controller |

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

| | Quantity Supported | Position Supported | Controller |
|-------------------|--------------------|--------------------|---|
| 3TB 6G SAS 7.2K | Up to 4 | 1-4 | HP Smart Array P212/Zero Memory Controller |
| 2TB 6G SAS 7.2K | | | HP Smart Array P212/256 MB Controller |
| 1TB 6G SAS 7.2K | | | HP Smart Array P410/256 MB Controller |
| 1TB 3G SAS 7.2K | | | HP Smart Array P410/512 MB with BBWC Controller |
| 750GB 3G SAS 7.2K | | | |

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

| | Quantity Supported | Position Supported | Controller |
|--------------------|--------------------|--------------------|---|
| 1TB 3G SATA 7.2K | Up to 8 | 1-8 | HP Smart Array P410/256 MB Controller |
| 500GB 3G SATA 7.2K | | | HP Smart Array P410/512 MB with BBWC Controller |

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

| | Quantity Supported | Position Supported | Controller |
|--------------------|--------------------|--------------------|---|
| 3TB 3G SATA 7.2K | Up to 4 | 1-4 | HP Smart Array B110i SATA RAID Controller with RAID 0/1/1+0 support |
| 2TB 3G SATA 7.2K | | | HP Smart Array P212/Zero Memory Controller |
| 1TB 3G SATA 7.2K | | | HP Smart Array P212/256 MB Controller |
| 500GB 3G SATA 7.2K | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB with BBWC Controller |

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

| | Quantity Supported | Position Supported | Controller |
|--------------------|--------------------|--------------------|---|
| 250GB 3G SATA 7.2K | Up to 4 | 1-4 | HP Smart Array B110i SATA RAID Controller with RAID 0/1/1+0 support |
| | | | HP Smart Array P212/Zero Memory Controller |
| | | | HP Smart Array P212/256 MB Controller |
| | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB with BBWC Controller |

Storage

SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives

NOTE—SSD drives requires SFF drive cage.

| | Quantity Supported | Position Supported | Controller |
|-----------------|--------------------|--------------------|---|
| 400GB 3.0G SATA | 8 | 1-8 | HP Smart Array P410/256 MB Controller |
| 200GB 3.0G SATA | | | HP Smart Array P410/512 MB with BBWC Controller |
| 100GB 3.0G SATA | | | |

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

| | Quantity Supported | Position Supported | Controller |
|-----------------|--------------------|--------------------|--|
| 400GB 3.0G SATA | 4 | 1-4 | HP Smart Array P212/Zero Memory Controller |
| 200GB 3.0G SATA | | | HP Smart Array P212/256 MB Controller |
| 100GB 3.0G SATA | | | HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB with BBWC Controller |

6G SAS Hot Plug Enterprise Performance Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|---|
| 200GB 6G SAS SLC SFF | Up to 8 | 1-8 | HP Smart Array P212/Zero Memory Controller |
| 400GB 6G SAS SLC SFF | | | HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB with BBWC Controller |

6G SAS Hot Plug Enterprise Mainstream Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|--|
| 800GB 6G SAS MLC SFF | Up to 8 | 1-8 | HP Smart Array P212/Zero Memory Controller |
| 400GB 6G SAS MLC SFF | | | HP Smart Array P212/256 MB Controller |
| 200GB 6G SAS MLC SFF | | | HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB with BBWC Controller |

External Storage

| | Quantity Supported | Position Supported | Host Controller or Adapter |
|----------------------|--------------------|--------------------|--|
| D2600 Disk Enclosure | Up to 4 | External | HP Smart Array P212/256 MB Controller |
| | Up to 8 | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |
| 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 P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

Storage

Maximum Storage Capacity (SAS drives)

| | |
|----------|--------------------------|
| Internal | 12TB (4 x 3TB) |
| External | 128TB (1 x (16x8 x 1TB)) |
| Total | 140TB |

NOTE—In order to implement integrated SATA RAID with Smart Start 8.20 on Windows 2003, the use of a floppy drive is necessary.

Maximum Storage Capacity (SATA Drives)

| | |
|----------|---------------------------|
| Internal | 12TB (4 x 3TB) |
| External | 128TB (1 x (16+8) x 1TB)) |
| Total | 140TB |

Tape and Disk Backup

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

| | Position Supported | Controller | Controller Part Number |
|----------------------------|--------------------|---|------------------------|
| HP SCSI Tape Drives | External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter | 412911-B21 |
| LTO-1 Ultrium 232 | | | |
| LTO-2 Ultrium 448 | | | |
| LTO-3 Ultrium 920 | | | |
| LTO-3 Ultrium 960 | | | |
| LTO4 Ultrium 1760 | | | |
| LTO-4 Ultrium 1840 | | | |
| DAT 40 | | | |
| DAT 72 | | | |
| DAT 160 | | | |
| 1U Rack-Mount Kit | | | |
| 3U Rack-Mount Kit | | | |
| | | NOTE —Please check the full compatibility information at http://www.hp.com/storage/SPOCK | |
| HP USB Tape Drives | External | USB 2.0 Port | N/A |
| DAT 40 | | | |
| DAT 72 | | | |
| DAT 160 | | | |
| DAT 320 | | | |
| 1U USB Rack-Mount Kit | | | |
| HP SAS Tape Drives | External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller | 462828-B21 |
| DAT 160 | | | |
| DAT 320 | | | |
| LTO-2 Ultrium 448 | | | |
| LTO-3 Ultrium 920 | | | |

Storage

LTO-4 Ultrium 1760
 LTO-4 Ultrium 1840
 LTO-5 Ultrium 3000
 LTO-5 Ultrium 3280
 1U Rack-Mount Kit
 3U Rack-Mount Kit

NOTE—Please check the full compatibility information at <http://www.hp.com/storage/SPOCK>

| | | | |
|--|----------|---|------------|
| HP SCSI Tape Autoloaders DAT 72x10 Autoloader 1/8 G2 Autoloader | External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter NOTE —Please check the full compatibility information at http://www.hp.com/storage/SPOCK | 412911-B21 |
|--|----------|---|------------|

| | | | |
|---|----------|--|--------|
| HP SCSI Tape Libraries, External MSL2024 MSL4048 MSL8096 MSL6000 | External | HP U320e SCSI Dual Channel Host Bus Adapter NOTE —Please check the full compatibility information at http://www.hp.com/storage/SPOCK | AH627A |
|---|----------|--|--------|

| | | | |
|--|----------|--|------------|
| HP SAS Tape Autoloaders and Libraries 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096 | External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller NOTE —Please check the full compatibility information at http://www.hp.com/storage/SPOCK | 462828-B21 |
|--|----------|--|------------|

| | | | |
|--|----------|---|-----|
| HP Fibre Channel Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000 | External | Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpecs. | N/A |
|--|----------|---|-----|

| | | | |
|--|----------|--------------|-----|
| HP USB RDX Removable Disk Backup System RDX160 RDX320 RDX500 RDX750 RDX1TB | External | USB 2.0 Port | N/A |
|--|----------|--------------|-----|

| | | | |
|---|----------|---|-----|
| HP D2D Backup Systems, iSCSI D2D2500i D2D4000i | External | Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended. | N/A |
|---|----------|---|-----|

| | | | |
|--|----------|--|-----|
| HP D2D Backup Systems, Fibre Channel D2D4000fc | External | Direct server attach is not supported, requires connection via SAN fabric. See http://www.hp.com/storage/SPOCK | N/A |
|--|----------|--|-----|



Power Specifications

| HP 500W Factory Integrated Power Supply Kit with Backplane | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|-----|
| Part Number | 537150-B21 | | | | | | |
| Input Voltage Range (Vrms) | 100 to 240 | | | | | | |
| Frequency Range (Nominal) (Hz) | 47/63 | | | | | | |
| Nominal Input Voltage (Vrms) | 100 | 120 | 200 | 220 | 230 | 240 | |
| Maximum Rated Output Wattage | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Nominal Input Current (A rms) | 5.74 | 4.99 | 2.86 | 2.58 | 2.46 | 2.36 | |
| Max Rated Input Wattage Rating (Watts) | 568 | 568 | 562 | 556 | 556 | 556 | |
| Max. Rated VA (Volt-Amp) | 574 | 574 | 573 | 567 | 567 | 567 | |
| Efficiency (%) at Max. Rated Output Wattage | 88 | 88 | 89 | 90 | 90 | 90 | |
| Power Factor | 0.99 | 0.99 | 0.98 | 0.98 | 0.98 | 0.98 | |
| Leakage Current (mA) | 0.42 | 0.50 | 0.81 | 0.91 | 0.95 | 1.00 | |
| Max. Inrush Current (A peak) | 30 | | | | | | |
| Max. Inrush Current duration (mS) | 20 | | | | | | |
| Maximum British Thermal Unit Rating (BTU-Hr) | | | | | | | |

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

Power Specifications

| HP 400W Factory Integrated Power Supply Kit | | | | | | | |
|--|------------|------------|------------|------------|------------|------------|------------|
| Part Number | 515739-B21 | | | | | | |
| Input Voltage Range (Vrms) | 100 to 240 | | | | | | |
| Frequency Range (Nominal) (Hz) | 50/60 | | | | | | |
| Nominal Input Voltage (Vrms) | 100 | 120 | 200 | 208 | 220 | 230 | 240 |
| Maximum Rated Output Wattage | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Nominal Input Current (A rms) | 5.5 | 5.0 | 2.5 | 2.4 | 2.3 | 2.2 | 2.1 |
| Max Rated Input Wattage Rating (Watts) | 510 | 500 | 480 | 480 | 480 | 480 | 480 |
| Max. Rated VA (Volt-Amp) | 520 | 520 | 500 | 500 | 500 | 500 | 500 |
| Efficiency (%) at Max. Rated Output Wattage | 83.0 | 84.0 | 86.0 | 86.0 | 87.0 | 87.0 | 87.0 |
| Power Factor | 0.97 | | | | | | |
| Leakage Current (mA) | 0.75 | 0.75 | 0.85 | 0.90 | 0.95 | 0.95 | 1.00 |
| Max. Inrush Current (A peak) | 35 | | | | | | |
| Max. Inrush Current duration (mS) | 20 | | | | | | |
| Maximum British Thermal Unit Rating (BTU-Hr) | 1739 | 1705 | 1636 | 1636 | 1636 | 1636 | 1636 |

| HP 365W Hot Plug Redundant Power Supply Kit with Backplane | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|
| Part Number | 532092-B21 | | | | | | |
| Input Voltage Range (Vrms) | 100 to 240 | | | | | | |
| Frequency Range (Nominal) (Hz) | 50/60 | | | | | | |
| Nominal Input Voltage (Vrms) | 100 | 120 | 200 | 208 | 220 | 230 | 240 |
| Maximum Rated Output Wattage | 320 | 320 | 360 | 360 | 360 | 360 | 360 |
| Nominal Input Current (A rms) | 4.15 | 3.41 | 2.23 | 2.16 | 2.03 | 1.94 | 1.86 |
| Max Rated Input Wattage Rating (Watts) | 412 | 406 | 445 | 445 | 444 | 443 | 443 |
| Max. Rated VA (Volt-Amp) | 413 | 407 | 447 | 447 | 446 | 446 | 445 |
| Efficiency (%) at Max. Rated Output Wattage | 77.4 | 78.5 | 80.5 | 80.6 | 80.7 | 80.8 | 81 |
| Power Factor | 0.99 | | | | | | |
| Leakage Current (mA) | 0.75 | 0.75 | 0.85 | 0.90 | 0.95 | 0.95 | 1.00 |
| Max. Inrush Current (A peak) | 35 | | | | | | |
| Max. Inrush Current duration (mS) | 20 | | | | | | |
| Maximum British Thermal Unit Rating (BTU-Hr) | 1354 | 1334 | 1462 | 1462 | 1459 | 1456 | 1456 |

NOTE—To review typical system power ratings use the Active Answers Power Advisor which is available via the online tool located at URL=www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor.

Technical Specifications

| | | | |
|--|--|--|-------------------|
| System Unit | Dimensions (H x W x D) (with bezel) | 1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.19 cm) | |
| | Weight (approximate) | Maximum (four hard drives, power supply, and processor installed) | 29.95 lb (13.6kg) |
| | | Minimum (one hard drive, power supply, and processor installed) | 25.52lb (11.6kg) |
| Input Requirements (per power supply) | Range Line Voltage | 90 - 132 VAC, 180 - 264 VAC | |
| | Rated Input Current | 6 A (at 100 VAC), 3 A (at 200 VAC) | |
| | Rated Input Frequency | 47 to 63 Hz | |
| | Rated Input Power | 486 W (at 100 VAC), 479 W (at 200 VAC) | |
| BTU Rating | Maximum | 1836 BTU/hr (at 100 VAC), 1706 BTU/hr (at 200 VAC) | |
| Power Specifications | <p>NOTE- To review typical system power ratings use the HP Power Advisor which is available online located at url=www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor</p> <ul style="list-style-type: none"> - Click on the system of interest. Example=DL320 G6 - Follow the instructions of the next screens. | | |
| Power Supply Output (per power supply) | Rated Steady-State Power | 400 W (at 100 VAC), 400 W (at 200 VAC) | |
| | Maximum Peak Power | 400 W (at 100 VAC), 400 W (at 200 VAC) | |
| System Inlet Temperature | Operating | 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F). | |
| | Non-operating | -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr). | |
| Relative Humidity (non-condensing) | Operating | 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing. | |
| | Non-operating | 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing. | |
| Altitude | Operating | 3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min). | |

Technical Specifications

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| | Non-operating | 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min). |
| Acoustic Noise | Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). | |
| | Idle | |
| | LWAd | 6.25 B |
| | LpAm | 51.4dBA |
| | Operating | |
| | LWAd | 6.25 B |
| | LpAm | 51.4 dBA |
| Emissions Classification (EMC) | FCC Rating | Class A |
| | Normative Standards | CISPR 22 [†] EN55022 [†] EN55024 [†] FCC CFR 47, Pt 15 [†] ICES-003 [†] CNS13438 [†] GB9254 [†] K22 [†] K24 [†] EN 61000-3-2 [†] EN 61000-3-3 [†] EN 60950-1 [†] IEC 60950-1 |
| | 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. | |

| | | | |
|-------------------------------------|---|---------------------|--|
| Power Supply | Input voltage specifications | Rated input voltage | 100 VAC to 240 VAC |
| | Input Specifications | Rated input line | 90 VAC to 264VAC |
| | | Frequency range | 47 to 63 Hz |
| | | Rated input power | @ 115V input, Rated input power = 486W (assume output wattage=450W) @ 230V input, Rated input power = 479W (assume output wattage=450W) |
| | | Rated input current | 6 A, 3 A (110 V, 220 V) |
| | BTU Rating | Steady state power | 420W (rated) |
| | | | 1710 BTU/hr |
| | Ambient temperature range | Operating | 50° to 118° F (10° to 48° C) |
| | | Non-operating | -40° to 158° F (-40° to 70° C) |
| | Relative humidity (non-condensing) | Operating | 55% to 85% |
| | | Non-operating | 5% to 95% |
| | Dielectric voltage withstand | Input to output | 1800 VAC/minute |
| | | Input to ground | 1800 VAC/minute |
| Maximum Wet Bulb Temperature | | 106.3° F (41.3° C) | |

Technical Specifications

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|---|--|---|
| Integrated Serial ATA Controller | Simultaneous drive transfer channels | 4 channels |
| | Transfer rate synchronous (maximum theoretical) | 150 MB/s per channel |
| | Data transfer method | HP Smart Array B110i SATA RAID Controller (non-RAID mode) HP Smart Array B110i SATA RAID Controller (RAID Mode) |
| | Drive support | Serial ATA |
| | Data transfer modes | Legacy Mode Combined Mode |
| | Protocol | Serial ATA |
| | Feature | NCQ (Native Command Queuing)†AHCI (Advanced Host Controller Interface) |
| | RAID levels supported | 0, 1, 1+0 |
| | RAID Features | Supports multiple logical volumes Setup through ROM based Array Configuration Utility Installation scripting support NOTE: This controller does not support Hot Plug functions or LED functions. |
| | RAID OS Support | Microsoft Windows Server 2003/2008 NOTE: In order to implement integrated SATA RAID with Smart Start 8.20 on Windows 2003/2008, the use of a floppy drive is necessary. Linux (Red Hat, SuSE, UnitedLinux) |

| | | | |
|---|--|--|-----------|
| Embedded NC326i Dual Port Gigabit Server Adapter | Network Interface | 10Base-T/ 100Base-TX/ 1000Base-TX | |
| | Compatibility | IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX | |
| | Data Transfer Method Controller | Four lane (x4), 100MHz PCI Express Reference Clock BCM5715 | |
| | 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) | 2000 Mb/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) | |

Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to <http://www.hp.com/go/green>. To recycle your product, please go to <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.