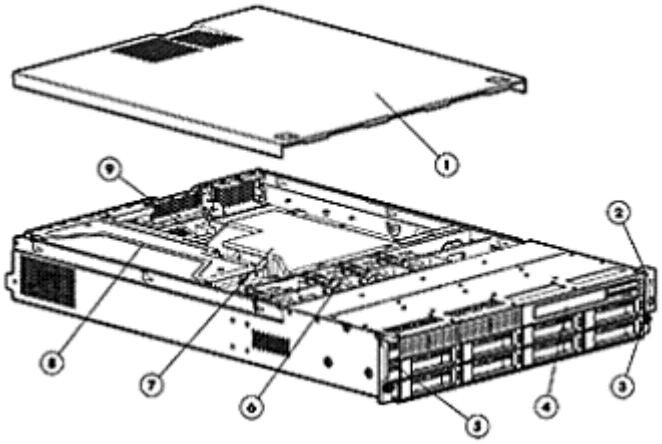
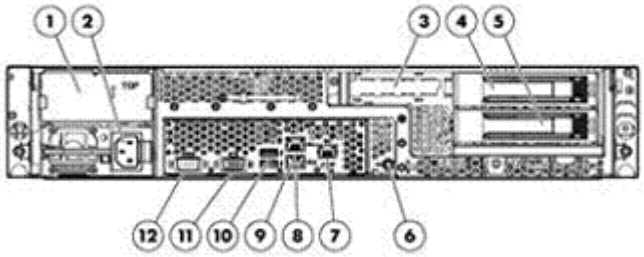
Overview

The HP ProLiant DL180 G6 is a low cost high capacity storage optimized 2-way server that delivers on a history of design excellence and 2U density for a variety of rack deployments and applications.





Front View:

1. Access panel
2. Front LED Indicators
3. Power on/off
4. Optional DVD-RW or DVD-ROM drive
5. Front USB Ports (2)
6. Non-Hot Plug Non Redundant fans (4 fans)
7. Air Baffle
8. PCI Cage
9. System Board

Rear View:

1. Redundant Power Supply Bay (Optional)
2. Power Supply Cable Socket
3. Low Profile Card Slot
4. PCI Expansion Card Slot
5. PCI Expansion Card Slot
6. UID LED Button
7. (Optional) LO100i 10/100 Mbps LAN port for IPMI management (RJ-45)
8. LAN Port
9. LAN Port
10. 2 Rear USB 2.0 Ports
11. VGA Port
12. Serial Port

What's New

- Support for 6G SAS Hot Plug Enterprise Performance and Mainstream Solid State Drives
- Support for HP NC552SFP 10Gb 2-port Ethernet Server Adapter

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® X5675 (3.06GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® X5670 (2.93GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

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, DDR3-1333, HT, Turbo 1/1/1/1/2/2) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W, DDR3-1333, HT, Turbo 1/1/1/1/2/2) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® L5640 (2.26GHz/6-core/12MB/60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Quad -Core Processors

Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W, DDR3-1333, HT, Turbo NA/NA/2/2/3/3) Processor

Intel® Xeon® E5640 (2.66GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

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

Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W, DDR3-1066) Processor

Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W, DDR3-1066) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W, DDR3-1066, HT, Turbo 1/1/2/2/) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® L5520 (2.26GHz/4-core/8MB/60W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® E5540 (2.53GHz/4-core/8MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® E5520 (2.26GHz/4-core/8MB/60W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

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

Intel® Xeon® E5504 (2.00GHz/4-core/4MB/80W, DDR3-800) Processor

Two -Core Processors

Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W, DDR3-800) Processor
NOTE: Available through Configure To Order only. See Factory Integration Models section for more details.

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

Standard Features

NOTE: For the Intel 5000 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.

Cache Memory One of the following depending on Model	12 MB Level 3 cache (L5630,E5620,X5650) 4 MB Level 3 cache (E5506)
Chipset	Intel® 5520 Chipset **NOTE:** For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/.
Upgradeability	Upgradeable to two processors
Memory Protection	Advanced memory protection Mirroring Mode Lockstep Mode

Memory

Type	DDR3 Registered (RDIMM) or Unbuffered (UDIMM)
DIMM slots	Total 12 DIMM slots
Standard (Entry Models)	4GB (1 x 4GB)
Standard (Base Models)	8GB (2 x 4GB)
Standard (Performance Models)	16GB (4 x 4GB)
Maximum (RDIMM)	192GB (12 x 16GB)
Maximum (UDIMM)	48GB (12 x 4GB)

NOTE: Half DIMM slots are available when one processor is installed.
NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1333MHz, 1066MHz, or 800MHz. Please see the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter

Standard Features

Expansion Slots	Slot Number	Bus Speed	Bus Number*	Device Number**	Hot Plug (Y/N)	Notes
	1	x16 PCI-Express	6	0	N	Low Profile
	2	x8 PCI-Express	5	0	N	Full Length Full Height
	3	x8 PCI-Express	4	0	N	Full Length Full Height
	4	x4 PCI-Express	3	0	N	Full Length Full Height
	2	PCI-X***	Dynamic	1	N	Full Length Full Height
	3	PCI-X***	Dynamic	2	N	Full Length Full Height

NOTE: All slots can accept universal keyed PCI cards.

NOTE: Support is limited to PCI-X cards only.

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.

** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).

*** PCI-X bus speed will be 100MHz in maximum and support two PCI-X/100MHz cards.

**** Slot 2 contains bus 4 and bus 5 because BIOS configures this x16 PCI-express.

NOTE: PCI-X support is limited to PCI-X cards only.

NOTE: Slot to two x8 PCI-express slot for production riser, this is valid only on Option1: 2 PCIe2x8 full-length/full-height PCI-Express slots (Optional) or Option 4: 2 PCIe2x8 and 1 PCIex8 (4) full-length/full-height slots (Optional).

Storage Controller One of the following depending on Model	4HDD Models	HP Smart Array B110i SATA RAID **NOTE:** To enable RAID on Embedded SATA, use the HP Smart Array B110i SATA RAID Controller, To enable use of the B110i, enter the ROM based setup utility(RBSU). The option for enabling RAID can be found in the Advanced section of the RBSU. **NOTE:** Embedded SATA controller support transfer rate up to 3Gb/s **NOTE:** A diskette drive or virtual FDD using LO100 Advanced Pack is needed to install storage controller drivers during a Windows operating system installation from a CD.
	8HDD Models	HP Smart Array P410/256MB Controller (RAID 0/1/1+0/5/5+0) **NOTE:** Support transfer rate up to 6Gb/s SAS or 3Gb/s SATA
	12HDD Models	HP Smart Array P212/256MB Controller (RAID 0/1/1+0/5/5+0) **NOTE:** Available upgrades: P410 with FBWC, 256MB with BBWC, 512MB with FBWC, Battery kit upgrade (for the 256MB cache), and Smart Array Advanced Pack (SAAP). **NOTE:** Support transfer rate up to 3Gb/s SAS or 3Gb/s SATA
	25HDD Models	HP Smart Array P410/256MB Controller (RAID 0/1/1+0/5/5+0) **NOTE:** Available upgrades: P410, 512MB with FBWC, Battery kit upgrade (for the 256MB cache), and Smart Array Advanced Pack (SAAP). **NOTE:** Support transfer rate up to 6Gb/s SAS or 3Gb/s SATA

NOTE: A minimum of 256 MB cache, battery kit, and Smart Array Advanced Pack License Key upgrade (P/N: 516471-B21) is required to enable RAID 6, 6+0

NOTE: To achieve highest possible stated transfer rate please make sure the firmware on the drive bays (backplanes) and HP Smart Array controller up to date. Latest firmware are available to download from HP support web site.

NOTE: All Hard drive bay options except 4LFF require HP Smart Array P410 or P212 controller.

NOTE: Full Height/ Full Length Riser Option is not available when the Rear 2LFF drive bays is

Standard Features

	selected for the system.	
Internal Storage Devices	Diskette Drives	Via USB only
	Optical Drives One of the following depending on Model	Optional HP Slim SATA DVD-ROM Optical Drive Optional HP Slim SATA DVD RW Optical Drive **NOTE:** Support in 4, 8, and 12 drive models. Optical drives can only be installed in 12 drive model and 25SFF drive bay system with rear option kit (P/N 515826-B21).
	Drive Bays One of the following depending on Model	Up to 14 Hot Plug SAS/SATA 3.5" drives Up to 25 Hot Plug SAS/SATA 2.5" drives **NOTE:** 4 Drive Models are Non-Hot Pluggable. Smart Array Controller must be added for Hot Plug drive capability. 4 Drive Models can be upgraded with the addition of a Smart Array Controller and a SAS/SATA Multi-lane cable (496013-B21). **NOTE:** The addition of a Smart Array Controller requires the addition of a SAS/SATA Multi-lane cable (P/N 496013-B21).
Maximum Internal Storage One of the following depending on Model	Hot Plug 3.5" SATA	42.0TB (14 x 3TB)
	Hot Plug 3.5" SAS	42.0TB (14 x 3TB)
	Hot Plug 2.5" SATA	25.0TB (25 x 1.0TB)
	Hot Plug 2.5" SAS	25.0TB (25 x 1.0TB)
	Hot Plug 2.5" SAS SSD	20.0TB (25 x 800GB)
Interfaces	Network RJ-45 (Ethernet)	2 10/100/1000 NIC ports (plus 1 dedicated for the HP ProLiant Lights Out 100i Remote Management)
	Serial	1
	Graphics	1
	USB	5 total ports: (2) front, (2) rear, (1) optional internal **NOTE:** In order to connect a USB device internally, the internal USB Cable G6 Kit must be used (P/N 536769-B21). **NOTE:** Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html.
Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support Microsoft® Logo certifications IPMI 2.0 Compliant	

Standard Features

Server Power Cords

One 6' Highline (IEC-IEC) power cord ships standard
NOTE: HP ProLiant DL servers no longer ship standard with NEMA power cords (P/N 163719-002) that allow connection to 110V US wall outlets in a home or office. ProLiant DL servers are primarily connected to PDU's in data center racks so they now ship standard with a PDU power cord (416151-B21). If a user wishes to power a ProLiant DL server using a 110V receptacle (NEMA-15), the NEMA power cord (P/N 227099-001) must be ordered separately.

If customers require a local power cord, they can check the power cord matrix for the appropriate cord. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix

NOTE: Rack models ship standard with an IEC cable.
Localized cables included with geographic specific models in other world regions.

Common Slot Power Supply

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

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP offers Power Supply Options:

- 460Watts, Common Slot, 92% Efficiency
- 750Watts, Common Slot, 92% Efficiency
- 460Watts, Common Slot, 94% Efficiency
- 750Watts, Common Slot, 94% Efficiency

HP's ProLiant Common Slot Power supplies (460W & 750W) meet multiple Energy Efficiency Initiatives. Climate Savers Computing Initiative GOLD, ECOS Consulting 80PLUS GOLD and plans on offering models that meet the Energy Star for Server requirements when they are published.

HP's ProLiant Common Slot Power supplies (1200W) meet multiple Energy Efficiency Initiatives. Climate Savers Computing Initiative Bronze, ECOS Consulting 80PLUS Bronze Power Supply requirements.

Redundant Power: Optional (1+ 1 or n+n redundant) power supplies can be purchased through power supply option kits.

System Fans

4 system fans ship standard; Non-hot plug, Non-redundant
NOTE: Redundant fan kit (P/N 516009-B21) available for purchase.

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Microsoft Windows Server Hyper-V Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware ESX Server Citrix Essentials for XenServer (Retail) **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: http://www.hp.com/go/supportos and our driver download page http://www.hp.com/support/DL180G6
Graphics	32MB* shared supporting all display resolutions up to 1600x1200 16bpp@75Hz **NOTE:** 8MB is dedicated to video memory.
Form Factor	Rack (2U), (3.5 in/8.89 cm)

Embedded Manageability	**HP Lights-Out 100 (LO100) Advanced**	HP LO100 with Optional LO100 Advanced Licenses for Virtual KVM and Virtual Media. Features: • Embedded IPMI standard reporting System event log access • Remote Serial console (serial redirection) • Browser, Telnet access • SMASH-CLP compliant • IPMI 2.0 compliant • Secure Socket Layer Encryption • Secure Shell Encryption • Virtual media (Floppy, CD, USB 2.0) with Advanced License • Virtual KVM with Advanced License **NOTE:** For more information, see: http://www.hp.com/go/lo100
Core Server Management	**ProLiant 100 Series G6 Core Management Software**	HP provides management solutions that are designed to simplify a server's installation, configuration, and maintenance throughout the entire server lifecycle. This provides the customers with higher levels of operational efficiency and highly reliable systems. While ProLiant 100 series G6 servers do not support the Insight Foundation Suite for ProLiant, they support a key subset of this important suite software tools and utilities which are very suitable for this class of server: SIM, SMH, agents, providers, and a SmartStart 'like' deployment CD called Easy Set-up which greatly simplifies server set-up. Additionally the DL100 and SL100 G6 models support the SmartStart Scripting Toolkit (SSSTK), an automated scalable deployment utility. Information on core management supported on ProLiant 100 series G6 servers can be found at these URLS: • Core Management: www.hp.com/go/coremanagement HP ProLiant 100 series Easy Set-up CDs: www.hp.com/servers/easysetup

Standard Features

HP Systems Insight Manager

HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms.

Insight Management Agents

- HP Insight Management Agents and Insight Management Providers are available for HP Systems Insight Manager (SIM) Integration.

  ProLiant 100-series G6 servers can use the same SNMP based Insight Management Agents supported by other ProLiant servers. As a result, administrators can use HP Systems Insight Manager (SIM) 5.3 and greater to manage ProLiant 100-series G6 servers. Administrators can also use any other SNMP- based management tool. These agents are obtained as part of the ProLiant 100-series model-specific "Easy Set-up" CDs, or through: www.hp.com/servers/easysetup

  The following capabilities are enabled on the 100-series G6 servers by the SNMP agents:
- Health monitoring capabilities, including monitoring for drives, fans, network, power supplies, and temperature
- Alerting capabilities, including basic alert notification for Smart Array drive pre-failure only
- Performance monitoring capabilities providing information on processor, memory, disk free space, network utilization

NOTE: For additional information, please see: http://www.hp.com/go/insight

Easy Set-up CD

Easy Set-up CDs are available on all 100-series G6 servers and are also available as an ISO image web download. HP ProLiant Easy Set-up CDs provide easy, step-by-step, single and multi-server server utilities for the ProLiant 100-series G6 servers to streamline server setup for 100-series G6 servers. The user experience is consistent with SmartStart and offers the following capabilities:

- Boot environment and GUI
- Assisted Installation: Windows 2003 Server and Windows 2008 Server drivers
- Manual installation: Windows 2003 Server, Windows 2008 Server, and Linux drivers (specific OS support varies by server. Refer to each server's QuickSpecs for supported versions)
- HP Insight Diagnostics
- AutoRun
- Array Configuration Utility (ACU) has been combined with Array Diagnostics Utility (ADU) to offer both configuration of array controllers and storage devices and testing of array controller hardware
- SmartStart Scripting Toolkit (SSSTK) and Smart Components for software and drivers for DL100 and SL100 servers

NOTE: OS and SW available for Manual Installation are listed on each servers' QuickSpecs.

SmartStart Scripting Toolkit (SSSTK)

The SmartStart Scripting Toolkit is a server deployment product that delivers an unattended automated installation for high-volume server deployments. The SmartStart Scripting Toolkit includes a set of utilities for configuring and deploying servers in a customized, predictable, and unattended manner. These utilities enable you to duplicate the configuration of a source server on target servers with minimum user interaction.

Standard Features

	The Toolkit is designed for IT experts with experience in scripting operating system installations and configuring ProLiant server hardware. **NOTE:** For additional information, please see: http://h18004.www1.hp.com/products/servers/management/toolkit/index.html
Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
ROMPaq, software and latest drivers	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options; downloaded from Software and Drivers download pages website at: http://www.hp.com/go/support and from www.hp.com/servers/easysetup. Contains the following: • HP Insight Management Agents for Systems Insight Manager (SIM) Integration • HP Systems Management Homepage • Array Configuration Utility (ACU) • Array Diagnostics Utility (ADU) • HP Insight Diagnostics

Security

Power-on password
Setup password
Diskette boot control
Secure Sockets Layer (SSL)
Secure Shell (SSH)

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 replacement is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
NOTE: Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support. 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 Control management software	HP Insight Control for Linux	HP Insight Control for Linux, as a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. The Insight Control for Linux installs and license software modules that are integrated into HP System Insight Manager. The HP Insight Control for Linux (IC-Linux) serves environments requiring a Linux-based management consoles. See www.hp.com/go/ic-linux HP Insight Control include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight
	Insight Control server deployment	HP Insight Control server deployment is a deployment solution for HP ProLiant and Integrity servers hosted on a Windows CMS. It automates the process of deploying and provisioning server software, enabling companies to quickly and easily adapt to changing business demands. Insight Control server deployment includes software optimizations for HP servers, including the HP scripting toolkits, configuration jobs for leading industry-standard operating systems, sample unattended files, and HP server support packs that include software drivers, management agents, and important documentation. Deploying servers can be accomplished either through imaging or through scripting. Insight Control server deployment is hosted on a Windows server and is intended for heterogeneous environments deploying Windows, Linux, VMware ESX and Microsoft Hyper-V systems. Insight Control server deployment includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.
High Performance Clusters	HP Cluster Platforms	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 Novell SLES, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters
	HP HPC Interconnects	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
	HP Cluster Management Utility	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
	HP HPC Linux Value Pack	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 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

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

HP Enterprise Configurator

The HP eConfigure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator.

Service and Support

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

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

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

Optimized Care Package

Supports maintaining servers at optimum performance availability

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

3-Year HP 6 hour Hardware Support Onsite Call-to-Repair Service
Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center.
http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf

Additional Services: Software OS (Microsoft, Linux (SUSE/Red Hat) Installation and Start Up and Software Support) plus Microsoft or Linux education courses +30 Proactive Select Credits, Factory Express.

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

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

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

Service and Support

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

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

Insight Remote Support

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

For more information

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

Four Drive Serial ATA (SATA) Models

NOTE: For the Standard Features shipped in the "Factory Integrated Models", please see the "Configuration Information - Factory Integrated Models" section.
NOTE: Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.
NOTE: HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.
NOTE: If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.
NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.
NOTE: Upgrading from 4 Non-Hot Plug SATA hard drives to 4 Hot Plug SATA/SAS hard drives requires the addition of a storage controller and one Internal mini-SAS cable (P/N 496013-B21).
NOTE: Upgrading to 8 Hot Plug SATA/SAS hard drives requires the addition of a HP 2U G6 8HDD LFF DL18X KIT (P/N 506924-B21), storage controller (Smart Array P410/256MB recommended), and two Internal SATA/SAS cables (mini-SAS cable (P/N 496013-B21).

HP ProLiant DL180 G6 E5606 1P 4GB-R 460W PS Entry Server 635199-xx1	**Processor**	(1) Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W, DDR3-800) Processor
	Cache Memory	8MB shared L3 cache
	Memory	4GB PC3-10600R-9(RDIMM) **NOTE:** Total 12 DIMM slots
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	Embedded SATA Raid Standard RAID 0,1,10
	Hard Drive	None ship standard
	Internal Storage	12.0TB (4 x 3TB Hot Plug 3.5" SATA hard drives), Maximum 12.0TB (4 x 3TB Hot Plug 3.5" SAS hard drives), Maximum
	Optical Drive	None ship standard
	Power Supply	460W common slot, high efficiency power supply
	Form Factor	Rack (2U)
	Warranty	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

HP ProLiant DL180 G6 E5506 1P 4GB-R B110i 4 LFF 460W PS Server 590637-xx1	**Processor**	(1) Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W, DDR3-800) Processor
	Cache Memory	4MB shared L3 cache (E5506)
	Memory	4GB (1 x 4GB) PC3-10600R-9 (RDIMM) **NOTE:** Total 12 DIMM slots
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array B110i SATA RAID Controller
	Hard Drive	None Ship Standard
	Internal Storage	12.0TB (4 x 3TB Hot Plug 3.5" SATA hard drives), Maximum 12.0TB (4 x 3TB Hot Plug 3.5" SAS hard drives), Maximum
	Optical Drive	None ship standard
	Power Supply	460W common slot, high efficiency power supply
	Form Factor	Rack (2U)
	Warranty	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

Pre-configured Models

Eight Drive Serial ATA (SATA) Models

NOTE: Supports up to 8 Hot Plug SATA or SAS Hard Drives.

HP ProLiant DL180 G6 E5620 1P 8GB-R P410/256 BBWC 8 LFF 460W PS Server 590638-xx1	**Processor**	(1) Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor
	Cache Memory	8MB shared L3 cache
	Memory	8GB (2 x 4GB) PC3-10600R-9 (RDIMM) **NOTE:** Total 12 DIMM slots
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P410/256MB BBWC Controller (RAID 0/1/1+0/5/5+0) **NOTE:** Smart Array Advanced Pack License Key upgrade (P/N 516471-B21) is required to enable RAID 6, 6+0
	Hard Drive	None ship standard
	Internal Storage	24.0TB (8 x 3TB Hot Plug 3.5" SATA hard drives), Maximum 24.0TB (8 x 3TB Hot Plug 3.5" SAS hard drives), Maximum
	Optical Drive	None ship standard
	Power Supply	460W common slot, high efficiency power supply
	Form Factor	Rack (2U)
	Warranty	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

HP ProLiant DL180 G6 L5630 1P 4GB-L P410/256 8 LFF 460W PS Server 590636-xx1	**Processor**	(1) Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W, DDR3-1066, HT, Turbo 1/1/2/2) Processor
	Cache Memory	12MB shared L3 cache
	Memory	4GB (1 x 4GB) PC3L-10600R-9 (RDIMM) **NOTE:** Total 12 DIMM slots
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P410 /256MB Controller (RAID 0/1/1+0/5/5+0) **NOTE:** A minimum of 256 MB cache, battery kit, and Smart Array Advanced Pack License Key upgrade (P/N 516471-B21) is required to enable RAID 6, 6+0
	Hard Drive	None ship standard
	Internal Storage	24.0TB (8 x 3TB Hot Plug 3.5" SATA hard drives), Maximum 24.0TB (8 x 3TB Hot Plug 3.5" SAS hard drives), Maximum
	Optical Drive	None ship standard
	Power Supply	460W common slot, high efficiency Platinum power supply
	Form Factor	Rack (2U)
	Warranty	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

Pre-configured Models

Twelve Drive Serial ATA (SATA) Models

NOTE: Internal Storage expandable to 14 SAS/SATA drives with 2 Rear Drive Option Kit (P/N 488234-B21)

HP ProLiant DL180 G6 E5620 1P 8GB-R P212/256 BBWC 12 LFF 750W PS Server 590639-xx1	**Processor**	(1) Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor
	Cache Memory	12MB shared L3 cache
	Memory	8GB (2 x 4GB) PC3-10600R-9 (RDIMM) **NOTE:** Total 12 DIMM slots
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P212 /256MB BBWC Controller (RAID 0/1/1+0/5/5+0) **NOTE:** Smart Array Advanced Pack License Key upgrade (P/N 516471-B21) is required to enable RAID 6, 6+0
	Hard Drive	None ship standard (up to 12 Hot Plug SATA or SAS drives supported)
	Internal Storage	36.0TB (12 x 3TB Hot Plug 3.5" SATA hard drives), Maximum 36.0TB (12 x 3TB Hot Plug 3.5" SAS hard drives), Maximum **NOTE:** Internal Storage expandable to 14 SAS/SATA drives with 2 Rear Drive Option Kit (P/N 488234-B21)
	Optical Drive	None ship standard
	Power Supply	750W common slot, high efficiency power supply
	Form Factor	Rack (2U)
	Warranty	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

Twenty Five Drive SAS Models

HP ProLiant DL180 G6 E5645 2P 16GB-R 750W RPS Perf Server 635200-xx1	**Processor**	(2) Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W, DDR3-1333, HT, Turbo 1/1/1/1/2/2) Processor
	Cache Memory	12MB shared L3 cache
	Memory	16GB (4 x 4GB) PC3-10600R-9 (RDIMM) **NOTE:** Total 12 DIMM slots
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P410/512MB FBWC Controller (RAID 0/1/1+0/5/5+0) **NOTE:** Smart Array Advanced Pack License Key upgrade (P/N 516471-B21) is required to enable RAID 6, 6+0
	Hard Drive	None Ship Standard
	Internal Storage	25.0TB (25 x 1.0TB Hot Plug 2.5" SATA hard drives), Maximum 25.0TB (25 x 1.0TB Hot Plug 2.5" SAS hard drives), Maximum
	Optical Drive	None ship standard
	Power Supply	(2)750 W common slot, redundant power supply
	Form Factor	Rack (2U)
	Warranty	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

HP ProLiant DL180 G6 X5650 2P 16GB-R P410/256 BBWC 25 SFF 750W PS Server 590640-xx1	**Processor**	(2) Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/3/3)
	Cache Memory	12MB shared L3 cache
	Memory	16GB (4 x 4GB) PC3-10600R-9 (RDIMM) **NOTE:** Total 12 DIMM slots
	Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
	Storage Controller	HP Smart Array P410/256MB BBWC Controller (RAID 0/1/1+0/5/5+0) **NOTE:** Smart Array Advanced Pack License Key upgrade (P/N 516471-B21) is required to enable RAID 6, 6+0
	Hard Drive	None Ship Standard

Pre-configured Models

	Internal Storage	25.0TB (25 x 1.0TB Hot Plug 2.5" SATA hard drives), Maximum 25.0TB (25 x 1.0TB Hot Plug 2.5" SAS hard drives), Maximum
	Optical Drive	None ship standard
	Power Supply	750 W common slot ,power supply
	Form Factor	Rack (2U)
	Warranty	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

Country Code Key	xx=00	U.S.
	xx=29	Japan
	xx=37	APD
	xx=42	Europe
	xx=AA	PRC

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

Hot Plug LFF Models

HP ProLiant DL180 G6 Configure-to-order Rack Server 507168-B21

Factory Integrated Model ships with:

HP NC362i Integrated Dual Port Gigabit Server Adapter

Three available PCI-Express slots:

Slot 1: x16 low-profile/half-height slot

Optional Slots 2, 3, & 4: 2x8 full-height/full length, 1x4 full-height/full length (Recommended)

NOTE: Optional PCI-X option kit includes: Slot 1 and 2: full-length/full-height PCI-X 100. PCI-X slots are 64 bits; 133 MHz capable if only one PCI-X card is installed in the server.
NOTE: Optional FL/FH option kit includes: Slot 1: full length/full height slot.

One HP SATA Embedded Cable Kit

One Highline IEC Power Cord

4 Non-Hot Plug Fans

Rack (2U), (3.5 in/8.89 cm)

Tool-less Fixed Rails

Hot Plug SFF Models

HP ProLiant DL180 G6 SFF Configure-to-order Server 594911-B21

Factory Integrated Model ships with:

HP NC362i Integrated Dual Port Gigabit Server Adapter

Three available PCI-Express slots:

Slot 1: x16 low-profile/half-height slot

Optional Slots 2, 3, & 4: 2x8 full-height/full length, 1x4 full-height/full length (Recommended)

NOTE: Optional PCI-X option kit includes: Slot 1 and 2: full-length/full-height PCI-X 100. PCI-X slots are 64 bits; 133 MHz capable if only one PCI-X card is installed in the server.
NOTE: Optional FL/FH option kit includes: Slot 1: full length/full height slot.

One HP SATA Embedded Cable Kit

One Highline IEC Power Cord

4 Non-Hot Plug Fans

Rack (2U), (3.5 in/8.89 cm)

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

HP Processors

NOTE: If 2 processors are desired, select one xxxxxx-L21 and one xxxxxxB21.

Six-Core Processors	
HP DL180 G6 Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W) FIO Processor Kit	636204-L21
HP DL180 G6 Intel® Xeon® X5670 (2.93GHz/6-core/12MB/95W) FIO Processor Kit	590619-L21
HP DL180 G6 Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W) FIO Processor Kit	590617-L21
HP DL180 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) FIO Processor Kit	590615-L21
HP DL180 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) FIO Processor Kit	636205-L21
HP DL180 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) FIO Processor Kit	636206-L21
HP DL180 G6 Intel® Xeon® L5640 (2.26GHz/6-core/12MB/60W) FIO Processor Kit	590607-L21
Quad-Core Processors	
HP DL180 G6 Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W) FIO Processor Kit	635692-L21
HP DL180 G6 Intel® Xeon® E5640 (2.66GHz/4-core/12MB/80W) FIO Processor Kit	590613-L21
HP DL180 G6 Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W) FIO Processor Kit	590611-L21
HP DL180 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) FIO Processor Kit	590609-L21
HP DL180 G6 Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) FIO Processor Kit	635583-L21
HP DL180 G6 Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) FIO Processor Kit	636207-L21
HP DL180 G6 Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W) FIO Processor Kit	590605-L21
HP DL180 G6 Intel® Xeon® L5520 (2.26GHz/4-core/8MB/60W) FIO Processor Kit	508344-L21
HP DL180 G6 Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) FIO Processor Kit	573909-L21
Dual-Core Processor	
HP DL180 G6 Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W) FIO Processor Kit	594118-L21

Configuration Information - Factory Integrated Models

HP Memory	**Registered 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) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	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
	Unregistered with ECC 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: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.	
	NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://h18004.www1.hp.com/products/servers/platforms/energyefficient/	
	NOTE: There is a maximum support limitation of 8 ranks per memory channel (maximum of 2 quad rank DIMMs per channel)	
HP Drive Cage Options	HP 2U G6 4HDD CAGE Kit, FIO	506926-B21
	HP 2U G6 8HDD CAGE Kit, FIO	506927-B21
	HP 2U G6 12HDD CAGE Kit, FIO	506928-B21
	HP 2U 8SFF HDD CAGE & BKPLN G6 FIO	534958-B21
	HP 2U G6 25 SFF CAGE FIO Kit	516011-B21
	NOTE: Selection of the 12 LFF or 25 SFF drive cage requires an HP Smart Array P212, P410 (any except Zero Memory) or P812 controller.	
	HP DL180 G6 Rear 2 Large Form Factor Drive Kit	488234-B21

HP Power Supplies

NOTE: Many HP ProLiant Servers now offer new power options, including Common Slot Power Supplies. These power supplies come in multiple power ratings and higher efficiency levels to offer the Right Size solution to fit your configuration. This provides improved power delivery and the advantage of reclaiming lost power. Prior to making a power supply selection it is "highly recommended" that the "HP Power Advisor" is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/proliant-energy-efficient

HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
HP 750W Common Slot Gold Hot Plug Power Supply Kit	512327-B21
HP 460W Common Slot Platinum Hot Plug Power Supply Kit	593188-B21
HP 750W Common Slot Platinum Hot Plug Power Supply Kit	593831-B21

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

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

HP Storage Controller

HP Smart Array P410/ZM 2-ports Int PCIe x8 FIO SAS Controller	462860-B21
HP Smart Array P411/256 BBWC 2-ports Ext PCIe x8 FIO SAS Controller	491193-B21
HP Smart Array P410/256 BBWC 2-ports Int PCIe x8 FIO SAS Controller	491195-B21
HP Smart Array P212/256 BBWC 1-ports Int/1-ports Ext PCIe x8 FIO SAS Controller	491191-B21

Step 4: Choose Additional Options for Factory Integration

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

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 Unique Options	HP DL180 G6 Redundant Fan Kit	516009-B21
	HP DL180 G6 Rear DVD Cage Kit **NOTE:** The x16 low profile slot is not available when this option is configured.	515826-B21
	HP Dedicated Management Port Kit	516006-B21
	HP Internal USB Cable G6 Kit **NOTE:** This option required to connect a USB device internally.	536769-B21
	HP DL180 G6 3 Slot x8 Full Height PCI-E Riser Kit **NOTE:** This option provides two x8 full-length/full-height slots as well as an additional x8 (x4 electrically) slot. This allows the DL180G6 to have a maximum of four (4) slots.	577668-B21
	HP DL180 G6 PCI-X Full Riser Kit **NOTE:** This option kit replaces the three internal expansion slots listed in step 1 base configuration. **NOTE:** Optional PCI-X option kit includes: Slot 1: full-length/full-height PCI-X 100; Slot 2: Full length/Full-height PCI-X 100. PCI-X slots are 64 bits; 133 MHz capable if only one PCI-X card is installed in the server.	488230-B21
	HP DL180 G6 2U 8 Hard Drive Large Form Factor Drive Kit **NOTE:** Upgrading to 8 Hot Plug SATA/SAS hard drives requires the addition of a storage controller (Smart Array P410/256MB recommended), two Internal ATA/SAS cables, (mini-SAS cable (496013-B21).	506924-B21
	HP DL180 G6 Rear 2 Large Form Factor Drive Kit **NOTE:** Supports 12 hard drive server models only. Hard Drives not included. **NOTE:** This option replaces the 2 Full Length, Full Height x8 PCIe slots.	488234-B21
	HP DL180 G6 2PCI-E x8 Full Height Upgradeable Option Kit **NOTE:** This option provides 2 Full Length, Full Height x8 PCIe slots.	497145-B21
	HP DL180 G6 PCI-E x16 Upgradeable Option Kit **NOTE:** This option replaces the 2 Full Length, Full Height x8 PCIe slots.	497143-B21

HP Processors	**Six-Core Processors**	
	HP DL180 G6 Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W) Processor Kit	636204-B21
	HP DL180 G6 Intel® Xeon® X5670 (2.93GHz/6-core/12MB/95W) Processor Kit	590619-B21
	HP DL180 G6 Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W) Processor Kit	590617-B21
	HP DL180 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) Processor Kit	590615-B21
	HP DL180 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) Processor Kit	636205-B21
	HP DL180 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) Processor Kit	636206-B21
	HP DL180 G6 Intel® Xeon® L5640 (2.26GHz/6-core/12MB/60W) Processor Kit	590607-B21
	Quad-Core Processors	
	HP DL180 G6 Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W) Processor Kit	635692-B21
	HP DL180 G6 Intel® Xeon® E5640 (2.66GHz/4-core/12MB/80W) Processor Kit	590613-B21
	HP DL180 G6 Intel® Xeon® E5630 (2.53GHz/4-core/12MB/80W) Processor Kit	590611-B21
	HP DL180 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) Processor Kit	590609-B21
	HP DL180 G6 Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) Processor Kit	635583-B21
	HP DL180 G6 Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor Kit	636207-B21
	HP DL180 G6 Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W) Processor Kit	590605-B21
	HP DL180 G6 Intel® Xeon® L5520 (2.26GHz/4-core/8MB/60W) Processor Kit	508344-B21
	HP DL180 G6 Intel® Xeon® E5540 (2.53GHz/4-core/8MB/80W) Processor Kit	508343-B21
	HP DL180 G6 Intel® Xeon® E5520 (2.26GHz/4-core/8MB/80W) Processor Kit	508342-B21
	HP DL180 G6 Intel® Xeon® E5506 (2.13GHz/4-core/4MB/80W) Processor Kit	573909-B21
	HP DL180 G6 Intel® Xeon® E5504 (2.00GHz/4-core/4MB/80W) Processor Kit	508341-B21

	Two-Core Processors	
	HP DL180 G6 Intel® Xeon® E5503 (2.0GHz/2-core/4MB/80W) Processor Kit	594118-B21
	NOTE: HT indicates that the processor model supports Intel® Hyper-Threading Technology. **NOTE:** Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 4, 3, 2, and 1 cores active. **NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. **NOTE:** For the Intel 5000 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.	
HP Memory	**Registered 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) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604506-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit	627812-B21
	Unregistered with ECC 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: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator **NOTE:** Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://h18004.www1.hp.com/products/servers/platforms/energyefficient/	

Core Options

HP Optical Drives	HP Slim 12.7mm SATA DVD-ROM Optical Drive	481041-B21
	HP Slim 12.7mm SATA DVD-RW Optical Drive	481043-B21
	NOTE: Optical drives can be installed in front, on 4 & 8 bay hard drive models. **NOTE:** Optical drives can be installed in 12 and 25 drive model with the addition of rear option kit (P/N 515826-B21).	
HP Hard Drives	**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, 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) 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 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
	HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21
	HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21
	SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives **NOTE:** 3G Hard Drives will operate at up to 3.0 Gb/s in 4 drive models that use the embedded controller.	
	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
	NOTE: If selecting more than 4 hard drives or if using SAS hard drives, a Smart Array controller and two SAS/SATA cables (P/N 464830-B21) are required.	
	SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Hot Plug 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 **NOTE:** 3G Hard Drives will operate at up to 3.0 Gb/s in 4 drive models that use the embedded controller.	
	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: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)

6G SAS Hot Plug Enterprise Performance Solid State Drives

HP 200GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive	632492-B21
HP 400GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive	632494-B21

6G SAS Hot Plug Enterprise Mainstream Solid State Drives

HP 200GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632502-B21
HP 400GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632504-B21
HP 800GB 6G SAS MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive	632506-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional specifications:
http://h18000.www1.hp.com/products/quickspecs/14038_div/14038_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
HP 160GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	530888-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
HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	458945-B21

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

SATA Hot Plug Midline (MDL) Solid State Drives

HP 60GB 3G SATA SFF (2.5-inch) Midline 1yr Warranty Solid State Drive	572071-B21
HP 120GB 3G SATA SFF (2.5-inch) Midline 1yr Warranty Solid State Drive	572073-B21

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

HP 60GB 3G SATA LFF (3.5-inch) Midline 1yr Warranty Solid State Drive	570761-B21
HP 120GB 3G SATA LFF (3.5-inch) Midline 1yr Warranty Solid State Drive	570763-B21

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/13415_div/13415_div.html (Worldwide)

Core Options

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 **NOTE:** Does not support Windows 2000.	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 NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21
	10 Gigabit Ethernet Adapters **NOTE:** No more than two10GbE I/O devices are supported in a single ProLiant server. **NOTE:** A minimum of two Gigabytes (2 GB) of server memory is required per each adapter. **NOTE:** Direct Attach Cable (DAC) for copper environments or fiber transceivers and cables for fiber-optic environments must be purchased separately.	
	HP NC522SFP Dual Port 10GbE Gigabit Server Adapter	468332-B21
	HP NC523SFP 10Gb 2-port Server Adapter	593717-B21
	HP NC550SFP Dual Port 10GbE Server Adapter	581201-B21
	HP NC552SFP 10Gb 2-port Flex-10 Server Adapter	614203-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs.	

HP InfiniBand	QLogic InfiniBand 4X QDR PCI-E G2 Dual Port HCA	583211-B21
	HP InfiniBand 4X QDR ConnectX-2 PCIe G2 Dual Port HCA	592520-B21
	HP InfiniBand 4X DDR ConnectX-2 PCIe G2 Dual Port HCA	592521-B21
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html	

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 Entry-Level Server Management	HP Lights-Out 100i (LO100i) Advanced including 1yr 24x7 Support Single Server License **NOTE:** For additional License Kits please see the Lights-Out 100i QuickSpecs at: www.hp.com/go/lo100.	530521-B21
HP Insight Software	**HP Insight Control for Linux**	
	HP Insight Control for Linux including 1yr 24x7 Support Electronic License **NOTE:** This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. **NOTE:** Electronic software is available in all countries except China and Japan. For China and Japan should order the physical equivalent.	TC213AAE
	HP Insight Control for Linux including 1yr 24x7 Support Single Server License	TC209A
	HP Insight Control for Linux Media Kit **NOTE:** This optional Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately. **NOTE:** This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ic-linux (click on Download button). **NOTE:** Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button). **NOTE:** Electronic software is available in all countries except China and Japan. For China and Japan should order the physical equivalent. **NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. **NOTE:** For additional License Kits, including electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html	TC208A
	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 **NOTE:** Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. **NOTE:** Electronic software is available in all countries except China and Japan. For China and Japan should order the physical equivalent. **NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. **NOTE:** For additional license kits please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html	452151-B21

Additional Options

High Performance Clusters	**HP Cluster Management Utility**	
	HP Cluster Management Utility Compute Node Flexible License **NOTE:** This part number can be used to purchase one certificate for multiple licenses 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.	QL803A
	HP Cluster Management Utility License and Media **NOTE:** Order a minimum of one license per cluster to purchase media including software and documentation, which will be delivered to the customer, and also licenses CMU management. No license key is delivered or required **NOTE:** For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html	433257-B21
	HP HPC Linux Value Pack	
	HP High Performance Computing Linux Value Pack 1 Processor Flexible License **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.	TC293B
	HP High Performance Computing Linux Value Pack Media Kit **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	TC294A
HP I/O Accelerator Options	HP 160GB Single Level Cell PCIe ioDrive for ProLiant Servers **NOTE:** A low-profile PCI bracket is included for use in low-profile slots.	600278-B21
	HP 320GB Multi Level Cell PCIe ioDrive for ProLiant Servers **NOTE:** A low-profile PCI bracket is included for use in low-profile slots.	600279-B21
	HP 320GB Single Level Cell PCIe ioDrive Duo for ProLiant Servers	600281-B21
	HP 640GB Multi Level Cell PCIe ioDrive Duo for ProLiant Servers	600282-B21
	HP 1.28TB Multi Level Cell PCIe IO Accelerator	641027-B21
	NOTE: For minimum system memory requirements please see the QuickSpecs referenced below. **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html (Worldwide)	
HP Graphics Options	HP Graphic Card Power Adapter Kit **NOTE:** The kit is applicable for 4LFF,8LFF and 8SFF cages . **NOTE:** The Graphic Power Adapter Kit can support up to 150 Watts.	533955-B21

Additional Options

HP Security - TPM	HP Trusted Platform Module Option	488069-B21
	NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline.	
	NOTE: For more information about TPM, 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**	
	HP Smart Array P212 Controller	
	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21
	HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462834-B21
	HP Smart Array P410 Controller	
	HP Smart Array P410/256 2-ports Int PCIe x8 SAS Controller	462862-B21
	HP Smart Array P410/512 BBWC 2-ports Int PCIe x8 SAS Controller	462864-B21
	HP Smart Array P410/1G FBWC 2-ports Int PCIe x8 SAS Controller	572532-B21
	HP Smart Array P410/512 FBWC 2-ports Int PCIe x8 SAS Controller	578230-B21
	HP 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 P411/1G FBWC 2-ports Ext PCIe x8 SAS Controller	572531-B21
	HP Smart Array P411/512 FBWC 2-ports Ext PCIe x8 SAS Controller	578229-B21
	Smart Array P800 Controller	
	HP Smart Array P800/512 BBWC 2-ports Int/2-ports Ext PCIe x8 SAS Controller	381513-B21
	HP 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 Internal SAS/SATA Multi-lane Cable Kit	464830-B21
	HP Mini SAS to Mini SAS 28in Cable Assembly	496013-B21
	NOTE: Supports internal drives on the DL180 G6 with the Smart Array P800 Controller.	
	HP 1GB Flash Backed Cache	534562-B21
	HP 256MB P-series Cache Upgrade	462968-B21
	NOTE: Supported on HP Smart Array P212 Controller only.	
	HP 512MB Flash Backed Write Cache	534916-B21
	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.	

Additional Options

	HP 8484 to Mini SAS 33in Cable Assembly **NOTE:** Cable for use connecting the Smart Array P800 Controller to internal hard disk drives on select HP ProLiant G6 Servers.	591734-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 Single Server License **NOTE:** This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.	516471-B21
	NOTE: Please see the 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)	
	SAS HBA	
	HP SC08Ge 2-ports Ext PCIe x8 SAS Host Bus Adapter **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC08Ge HBA)	488765-B21
	HP Modular Smart Array SC08e 2-ports Ext PCIe x8 SAS Host Bus Adapter **NOTE:** This is a 2 x4 External Port HBA. **NOTE:** This is only approved for the P2000 G3 SAS Modular Smart Array. **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13651_div/13651_div.html	614988-B21
	SCSI HBA	
	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter **NOTE:** Recommended HBA for SCSI tape drive connect.	412911-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SCSI HBA)	
HP Backup & Recovery Software	**Data Protector Express**	
	HP Data Protector Express V5.0 for 1 Server E-LTU	TC330AAE
	HP Data Protector Express V5.0 for 3 Servers E-LTU	TC331AAE
	HP Data Protector Express V5.0 for 10 Servers E-LTU	TC332AAE
	HP Basic Upgrade to Data Protector Express V5 for 1 Server E-LTU	TC333AAE
	NOTE: Only one of these Data Protector Express base products is required. To see available options: http://www.hp.com/go/dataprotectorexpress	

Additional Options

HP Tape Backup

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

HP StorageWorks DAT 160 SAS Internal Tape Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP P212 SAS Smart Array Controller (462828-B21) HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	Q1587A
HP StorageWorks DAT 320 SAS Internal Tape Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP P212 SAS Smart Array Controller (462828-B21) HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	AJ830A
HP StorageWorks Ultrium 448 SAS Internal Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP P212 SAS Smart Array Controller (462828-B21) recommended.	DW085A
HP StorageWorks Ultrium 920 SAS Internal Tape Drive **NOTE:** For installation into 1U SAS Rack-Mount Kit (AE459B) or 3U SAS Rack-Mount Kit (AG576B). No peripheral bay available for installation into the server. Connection using the HP P212 SAS Smart Array Controller (462828-B21) HP SC44Ge SAS Host Bus Adapter (416096-B21) recommended.	EH847A
HP StorageWorks 1/8 G2 Ultrium 920 SAS Autoloader **NOTE:** Requires HP 1U Tape Autoloader Rack-Mount Kit (AH166A) for rack installation. Connection using the HP P212 SAS Smart Array Controller (462828-B21) recommended.	AH558A
HP StorageWorks MSL2024 Ultrium 920 SAS Tape Library **NOTE:** Connection using the HP P212 SAS Smart Array Controller (462828-B21) recommended.	AH559A

HP Disk Backup

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

HP D2D Backup Systems with Backup Data Deduplication

HP StorageWorks D2D2502i Backup System **NOTE:** 1.5TB of usable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	EJ001B
HP StorageWorks D2D2504i Backup System **NOTE:** 3.0TB of usable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	EJ002B

USB Removable Media RDX Disk Backup Systems

HP StorageWorks RDX320 Internal Removable Disk Backup System **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.	AJ767A
HP StorageWorks RDX500 Internal Removable Disk Backup System **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.	AJ934A

HP Storage Options	**Fibre Channel HBA**	
	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 StorageWorks 81B PCIe 8Gb Fibre Channel Single Port Host Bus Adapter	AP769A
	HP StorageWorks 82B PCIe 8Gb Fibre Channel Dual Port Host Bus Adapter	AP770A
	HP StorageWorks 41B PCIe 4Gb Fibre Channel Single Port Host Bus Adapter	AP767A
	HP StorageWorks 42B PCIe 4Gb Fibre Channel Dual Port Host Bus Adapter	AP768A
	Emulex Fibre Channel HBAs	
	HP StorageWorks 81E 8Gb Single Port PCI-e Fibre Channel Host Bus Adapter	AJ762A
	HP StorageWorks 82E 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter	AJ763A
	HP StorageWorks FC2142SR 4Gb PCIe Host Bus Adapter	A8002A
	HP StorageWorks FC2242SR 4Gb PCIe DC Host Bus Adapter	A8003A
	QLogic Fibre Channel HBAs	
	HP StorageWorks 81Q PCI-e Fibre Channel Host Bus Adapter	AK344A
	HP StorageWorks 82Q 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter	AJ764A
	HP StorageWorks FC1142SR 4Gb PCIe Host Bus Adapter	AE311A
	HP StorageWorks FC1242SR 4Gb PCIe DC Host Bus Adapter	AE312A
	SCSI HBA	
	HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter **NOTE:** Recommended for MSL SCSI Tape Library connect.	AH627A
	Converged Network Adapter	
	HP StorageWorks CN1000E Dual Port Converged Network Adapter	AW520A
	HP CN1000Q Dual Port Converged Network Adapter	BS668A
HP Disk Storage Systems	**MSA SAN Storage Arrays**	
	HP StorageWorks MSA60 Array **NOTE:** Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html	418408-B21
	HP StorageWorks MSA70 Array **NOTE:** Please see the QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html	418800-B21

Additional Options

HP Uninterruptible Power Systems	**HP Rack-mountable UPS**	
	HP Rack-Mountable R5500 UPS	
	HP R5500 6000VA INTL 3U Rackmount Uninterruptible Power System	AF416A
	HP R5500 5000kVA NA/JP 3U Rackmount Uninterruptible Power System	AF426A
	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 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
	Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/14058_div/14058_div.html (Worldwide)	
	HP R/T3000 UPS	
	HP R/T3000 3300VA High Voltage NA/JPN 2U Rackmount Uninterruptible Power System	AF453A
	HP R/T3000 3300VA INTL 2U Rackmount Uninterruptible Power System	AF454A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13417_div/13417_div.html (Worldwide)	
	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: http://h18000.www1.hp.com/products/quickspecs/14059_div/14059_div.html (Worldwide)	
	HP R1500 G2 UPS	
	HP R1500 G2 1440VA Low Voltage NA 1U Rackmount Uninterruptible Power System	AF419A
	HP R1500 G2 1440VA INTL 1U Rackmount Uninterruptible Power System	AF418A
	HP R1500 G2 1200kVA Low Voltage JP 1U Rackmount Uninterruptible Power System	AF421A
	NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html (Worldwide)	
	NOTE: For additional information on all HP Uninterruptible Power Systems and accessories please go to: www.hp.com/products/ups (Worldwide)	
	NOTE: For additional information on sizing your server, please reference: http://www.upssizer.com	
	NOTE: Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords.	

Additional Options

HP Power Distribution Units	**Monitored PDUs**	
	HP Monitored Power Distribution Unit: Full Rack Version	
	HP Single Input 3 Phase 24A Monitored Power Distribution Unit	AF504A
	HP Dual Input 1 Phase 40A Monitored Power Distribution Unit	AF505A
	HP Single Input 1 Phase 40A Monitored Power Distribution Unit	AF506A
	HP Single Input 3 Phase 16A Monitored Power Distribution Unit	AF508A
	HP Single Input 1 Phase 32A INT Monitored Power Distribution Unit	AF510A
	HP Monitored Power Distribution Unit: Half Rack Version	
	HP Single Input 1 Phase 24A Monitored Power Distribution Unit	AF914A
	HP Single Input 1 Phase 32A Monitored Power Distribution Unit	AF915A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12118_div/12118_div.html (Worldwide)	
	Modular PDUs 1U/0U (Up to 28 outlets)	
	HP 24A High Voltage Modular Power Distribution Unit	252663-D72
	HP 40A High Voltage NA/JP Modular Power Distribution Unit	252663-D73
	HP 16A High Voltage Modular Power Distribution Unit	252663-B24
	HP 32A High Voltage Modular Power Distribution Unit	252663-B31
	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.	
HP Intelligent Power Distribution Units (iPDU)	**iPDU Core Units**	
	HP 24A NA/JP Core Only Intelligent Modular Power Distribution Unit	AF520A
	HP 24A 3 Phase NA/JP Core Only Intelligent Modular Power Distribution Unit	AF522A
	HP 32A Intl Core Only Intelligent Modular Power Distribution Unit	AF525A
	HP 16A 3 Phase Intl Intelligent Modular Power Distribution Unit	AF526A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12118_div/12118_div.html (Worldwide)	

Additional Options

HP Rack Series	**HP Rack 10000 G2 Series** (Carbon/Graphite Metallic)	
	HP 10642 G2 1200mm deep Shock Rack	AF092A
	HP 10647 G2 1200mm deep Shock Rack	AF094A
	HP 10642 G2 Pallet Universal Rack	AF001A
	HP 10642 G2 Shock Universal Rack	AF002A

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

NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html (Worldwide)

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

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

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

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

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

NOTE: HP ProLiant DL rack models have fixed rails which provide support for racks with round mounting holes and tool-free support for racks with square mounting holes (including Compaq/HP 7000, 9000, 10000 and HP series), with an adjustment range of 26" - 36".

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

Additional Options

HP Rack Options	**HP Server Console Switches**	
	HP Server Console 0x2x8 Port Analog Switch	AF616A
	HP Server Console 0x2x16 Port Analog Switch	AF617A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html (Worldwide)	
	HP 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
	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 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software	AF620A
	HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software	AF621A
	HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software	AF622A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13474_div/13474_div.html (Worldwide)	
	Rack Kits	
	HP Rack Cable Management Velcro Clips	379820-B21
HP USB and SD Options	HP USB-P/S2 Mouse	DC369A
	HP USB 04 Standard Keyboard	DT528A#ABA
HP Care Pack Services	**Hardware Services 4-Hour On-site Service**	
	HP 3 year 4 hour 13x5 ProLiant DL18x Hardware Support	UH271E
	HP 3 year 4 hour 24x7 ProLiant DL18x Hardware Support	UH272E
	Hardware Services Next Business Day On-Site Service	
	HP 3 year Next business day ProLiant DL18x Hardware Support	UH270E
	Hardware Services 6-Hour Call to Repair On-Site Service	
	HP 3 year 6 hour 24x7 Call to Repair ProLiant DL18x Hardware Support	UH273E
	HP Installation ProLiant DL18x Service	UH301E
	NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/carepack.	

Memory

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

HP ProLiant DL180 G6

Standard Memory (depending on model)

4GB (1 x 4GB) PC3-10600R-9 Registered memory, with Advanced ECC Capabilities Memory installed.
8GB (2 x 4GB) PC3-10600R-9 Registered memory, with Advanced ECC Capabilities Memory installed.
16GB (4 x 4GB) PC3-10600R-9 Registered memory, with Advanced ECC Capabilities Memory installed.

Maximum Memory

Up to 192GB memory is available with the optional installation of PC3-8500R Registered DIMM memory kits.

NOTE: Charts do not represent all possible memory configurations.

DDR3 memory population guidelines

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

Some DIMM installation guidelines are summarized below:

- For servers with twelve (12) memory slots
- There are three (3) channels per processor; six (6) channels per server
- There are two (2) DIMM slots for each memory channel; twelve (12) total slots
- Memory channel 1 consists of the two (2) DIMMs that are closest to the processor
- Memory channel 3 consists of the two (2) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- If any Quad rank DIMMs are installed, all channels are limited to only 2 DIMMs per channel.
- You can only install two quad-rank DIMMs per channel
- You can 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
- If mixing DIMM voltage is a requirement, please note that the DIMMs will run at 1.5V since all 1.35V are capable of supporting 1.5V operations
- Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.
- 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

Memory

DIMM Type ->	Registered DIMMS (RDIMMs)							Unbuffered with ECC DIMMs (UDIMMs)		
DIMM Rank ->	Single Rank (1R)	Dual Rank (2R)				Quad Rank (4R)		Single Rank (1R)	Dual Rank (2R)	
DIMM Capacity ->	4GB	2GB	4GB	8GB	16GB	4GB	16GB	1GB	2GB	4GB
DIMM Native Speed (MHz) ->	1333	1333	1333	1333	1333	1066	1066	1333	1333	1333
Voltage	LV/Std	Std	Std	LV/Std	LV/Std	Std	Std	Std	Std	Std
	SLOTS THAT CAN BE POPULATED									
12 slot servers	12	12	12	12	12	12	12	12	12	12
	MAXIMUM CAPACITY (GB)									
12 slot servers	48	24	48	96	192	48	192	12	24	48
	POPULATED DIMM SPEED (MHz)									
1 DIMM Per Channel	1333	1333	1333	1333	1333	1066	1066	1333	1333	1333
2 DIMM Per Channel	1333*	1333*	1333*	1333*	1066/ 1033**	800	800	1066	1066	1066
* Supported with BIOS update via ROM Based Setup Utility (RBSU). UDIMM support is on 12-slot server. **2DPC: LV runs at 1066, Std voltage runs at 1333										

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, 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.

12 DIMM SLOTS (6 per CPU node)					
	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D	1	D	Chnl 1
	2	A	2	A	
Chnl 2	3	E	3	E	Chnl 2
	4	B	4	B	
Chnl 3	5	F	5	F	Chnl 3
	6	C	6	C	

Standard memory configuration (1 CPU model)

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

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: empty	1	D: empty	Chnl 1
	2	A: 2GB DIMM	2	A: empty	
Chnl 2	3	E: empty	3	E: empty	Chnl 2
	4	B: 2GB DIMM	4	B: empty	
Chnl 3	5	F: empty	5	F: empty	Chnl 3
	6	C: 2GB DIMM	6	C: empty	

Standard memory plus optional memory (1 CPU model)

- 30GB, consisting of three (3) 2GB RDIMMs plus three (3) 8GB RDIMMs
  - 3x 2GB dual-rank PC3-10600 RDIMMs
  - 3x 8GB dual-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 8GB DIMM	1	D: empty	Chnl 1
	2	A: 2GB DIMM	2	A: empty	
Chnl 2	3	E: 8GB DIMM	3	E: empty	Chnl 2
	4	B: 2GB DIMM	4	B: empty	
Chnl 3	5	F: 8GB DIMM	5	F: empty	Chnl 3
	6	C: 2GB DIMM	6	C: empty	

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

- 96GB, consisting of six (6) 16GB quad-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 16GB DIMM	1	D: empty	Chnl 1
	2	A: 16GB DIMM	2	A: empty	
Chnl 2	3	E: 16GB DIMM	3	E: empty	Chnl 2
	4	B: 16GB DIMM	4	B: empty	
Chnl 3	5	I: 16GB DIMM	5	I: empty	Chnl 3
	6	C: 16GB DIMM	6	C: empty	

UDIMM maximum configuration (1 CPU model)

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

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 4GB DIMM	1	D: empty	Chnl 1
	2	A: 4GB DIMM	2	A: empty	
Chnl 2	3	E: 4GB DIMM	3	E: empty	Chnl 2
	4	B: 4GB DIMM	4	B: empty	
Chnl 3	5	F: 4GB DIMM	5	F: empty	Chnl 3
	6	C: 4GB DIMM	6	C: empty	

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

- 192GB, consisting of twelve (12) 16GB quad-rank PC3-8500 RDIMMs and twelve (12) 16 GB dual rank PC3L-10600R-9 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 16GB DIMM	1	D: 16GB DIMM	Chnl 1
	2	A: 16GB DIMM	2	A: 16GB DIMM	
Chnl 2	3	E: 16GB DIMM	3	E: 16GB DIMM	Chnl 2
	4	B: 16GB DIMM	4	B: 16GB DIMM	
Chnl 3	5	F: 16GB DIMM	5	F: 16GB DIMM	Chnl 3
	6	C: 16GB DIMM	6	C: 16GB DIMM	

UDIMM maximum configuration (2 CPU model)

- 48GB, consisting of twelve (12) 4GB dual-rank PC3-10600 UDIMMs

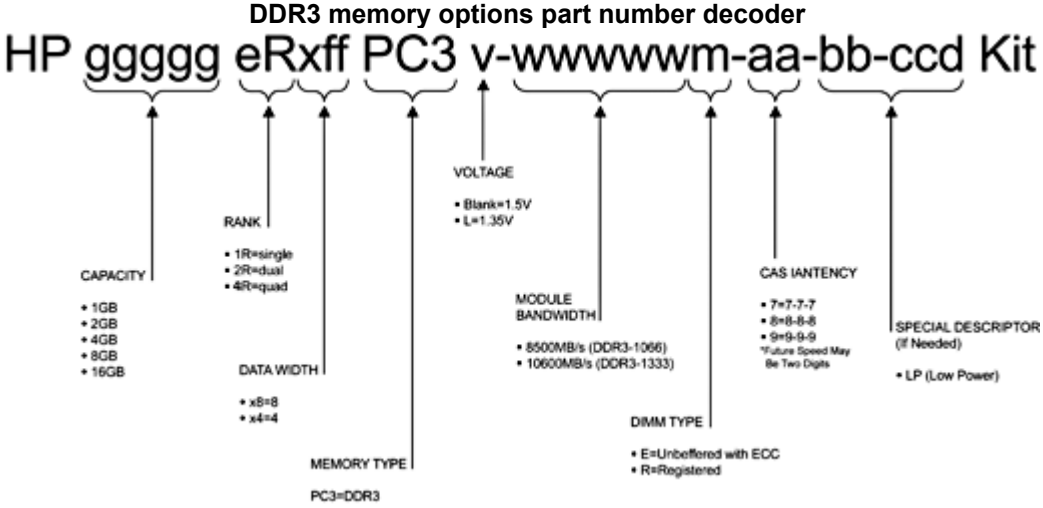
	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 4GB DIMM	1	D: 4GB DIMM	Chnl 1
	2	A: 4GB DIMM	2	A: 4GB DIMM	
Chnl 2	3	E: 4GB DIMM	3	E: 4GB DIMM	Chnl 2
	4	B: 4GB DIMM	4	B: 4GB DIMM	
Chnl 3	5	F: 4GB DIMM	5	F: 4GB DIMM	Chnl 3
	6	C: 4GB DIMM	6	C: 4GB DIMM	

NOTE: 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

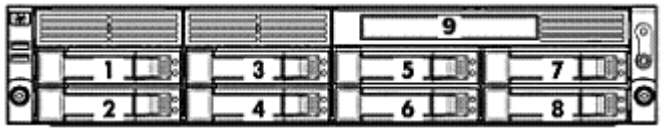
DDR3 memory options part number decoder



HP Memory	**Registered 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) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604506-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit	627812-B21
	Unregistered with ECC 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

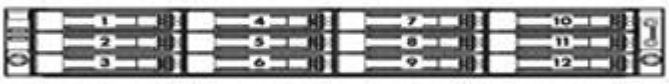
NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.
NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://h18004.www1.hp.com/products/servers/platforms/energyefficient/

8 Drive Cage with DVD-Drive bay



1-8	Eight 3.5" Hot Plug SAS/SATA Hard Drive Bays
9	DVD-ROM, DVD RW

12 Drive Cage



1-12	Twelve 3.5" Hot Plug SAS/SATA Hard Drive Bays
13-14 (Not Shown)	Two Rear 3.5" Hot Plus SAS/SATA Hard Drive Bays

Drive Support

Removable Media

	Quantity Supported	Position Supported	Controller
DVD-ROM	Up to 1	9	Integrated IDE (ATAPI) (optional)
DVD RW	Up to 1	9	Integrated IDE (ATAPI) (optional)

Hard Drives

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

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

	Quantity Supported	Position Supported	Controller
1.0TB 3G SATA 7.2K 500GB 3G SATA 7.2K 160GB 3G SATA 7.2K	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller
	Up to 25 with 25 drive cage	1-25	**NOTE:** Smart Array P212 Controllers recommended. HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller HP Smart Array Hot Plug Advance Pack for B110i

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

	Quantity Supported	Position Supported	Controller

Storage

2TB 3G SATA 7.2K 1TB 3G SATA 7.2K 500GB 3G SATA 7.2K	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller
	Up to 14 with 12 drive cage + Rear Drive Cage	1-14	**NOTE:** Smart Array P212 Controllers recommended. HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller HP Smart Array Hot Plug Advance Pack for B110i

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

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 7.2K 160GB 3G SATA 7.2K	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller
	Up to 14 with 12 drive cage + Rear Drive Cage	1-14	HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller HP Smart Array Hot Plug Advance Pack for B110i

SATA Hot Plug Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller
120GB 3.0G SATA SSD 60GB 3.0G SATA SSD	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller
	Up to 25 with 25 drive cage	1-25	HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array Hot Plug Advance Pack for B110i

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

	Quantity Supported	Position Supported	Controller
120GB 3.0G SATA SSD	Up to 8 with 8	1-8	HP Smart Array P410/256 MB Controller

Storage

60GB 3.0G SATA SSD	drive cage		HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array B110i Hot Plug Advance Pack for B110i

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

	Quantity Supported	Position Supported	Controller
1.0TB 6G SAS 7.2K 500GB 6G SAS 7.2K	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller
	Up to 25 with 25 drive cage	1-25	HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller

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

	Quantity Supported	Position Supported	Controller
3TB 3G SATA 7.2K 3TB 6G SAS 7.2K 2TB 6G SAS 72K 1TB 6G SAS 7.2K	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller
	Up to 14 with 12 drive cage + Rear Drive Cage	1-14	HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller

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

	Quantity Supported	Position Supported	Controller
900GB 6G 10K SAS 600GB 6G 10K SAS 450GB 6G 19K SAS 300GB 6G 10K SAS 146GB 6G 15K SAS 146GB 6G 10K SAS 72GB 6G 15K SAS	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller
	Up to 25 with 25 drive cage	1-25	HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller

			HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller

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

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K DP 450GB 6G SAS 15K DP 300GB 6G SAS 15K	Up to 8 with 8 drive cage	1-8	HP Smart Array P212/Zero Memory Controller HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller
	Up to 14 with 12 drive cage + Rear Drive Cage	1-14	HP Smart Array P212/256 MB Controller HP Smart Array P410/256 MB Controller HP Smart Array P410/512 MB BBWC Controller HP Smart Array P410/512 MB FBWC Controller HP Smart Array P410/1G FBWC Controller HP Smart Array P812/1G FBWC Controller HP Smart Array P800/512 BBWC Controller

6G SAS Hot Plug Enterprise Performance Solid State Drives

	Quantity Supported	Position Supported	Controller
400GB 6G SAS SLC 200GB 6G SAS SLC	Up to 4	1-4	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812/1G Flash Backed Cache Controller

6G SAS Hot Plug Enterprise Mainstream Solid State Drives

	Quantity Supported	Position Supported	Controller
800GB 6G SAS MLC 400GB 6G SAS MLC 200GB 6G SAS MLC	Up to 4	1-4	HP Smart Array P212 Controller HP Smart Array P410 Controller HP Smart Array P812/1G Flash Backed Cache Controller

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External Storage

	Quantity Supported	Position Supported	Controller
60 Modular Smart Array	Up to 4	External	HP Smart Array P212/256 MB Controller HP Smart Array P800/512 BBWC Controller
	Up to 8	External	HP Smart Array P411/256 MB Controller HP Smart Array P411/512 FBWC Controller HP Smart Array P411/512 MB FBWC Controller HP Smart Array P411/1G FBWC Controller HP Smart Array P812/1G Flash Backed Cache Controller HP Smart Array P800/512 BBWC Controller
70 Modular Smart Array	Up to 2	External	HP Smart Array P212/256 MB Controller
	Up to 4	External	HP Smart Array P411/256 MB Controller HP Smart Array P411/512 MB FBWC Controller HP Smart Array P411/512 MB FBWC Controller HP Smart Array P411/1G FBWC Controller HP Smart Array P812/1G Flash Backed Cache Controller HP Smart Array P800/512 BBWC Controller

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Storage

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/go/connect.

	Position	Recommended Controller	Part Number
HP SCSI Tape Drives LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21
HP USB Tape Drives DAT 40 DAT 72 DAT 160 DAT 320 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP SAS Tape Drives DAT 160 DAT 320 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 LTO-5 Ultrium 3000 LTO-5 Ultrium 3280 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21
HP SCSI Tape Autoloaders DAT 72x10 Autoloader 1/8 G2 Autoloader	External	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21
HP SCSI Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000	External	HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter	AH627A
HP SAS Tape Autoloaders and Libraries 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096	External	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21

HP Fibre Channel Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000	External	Please consult the EBS connectivity matrix at: http://www.hp.com/go/ebs for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpecs.	
HP USB RDX Removable Disk Backup System RDX160 RDX320 RDX500 RDX750	External	USB 2.0 port	N/A
HP D2D Backup Systems, iSCSI D2D2500i D2D4000i	External	Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	
HP D2D Backup Systems, Fibre Channel D2D4000fc	External	Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect	

Power Specifications

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

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

Power Specifications

HP 460W Common Slot Platinum Hot Plug Power Supply Kit							
Part Number	593188-B21						
Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	**100**	**120**	**208**	**200**	**220**	**230**	**240**
Maximum Rated Output Wattage	460	460	460	460	460	460	460
Nominal Input Current (A rms)	5.3	4.3	2.5	2.4	2.3	2.2	2.1
Max Rated Input Wattage Rating (Watts)	512	505	493	493	492	492	491
Max. Rated VA (Volt-Amp)	526	518	506	506	505	505	504
Efficiency (%) at Max. Rated Output Wattage	89.8	91.2	93.2	93.3	93.5	93.6	93.6
Power Factor	0.985						
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30						
Max. Inrush Current duration (mS)	20						
Maximum British Thermal Unit Rating (BTU-Hr)	1747	1722	1683	1682	1679	1678	1677

HP 750W Common Slot Platinum Hot Plug Power Supply Kit							
Part Number	593831-B21						
Input Voltage Range (Vrms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	**100**	**120**	**208**	**200**	**220**	**230**	**240**
Maximum Rated Output Wattage	750	750	750	750	750	750	750
Nominal Input Current (A rms)	8.6	7.1	4.2	4.0	3.8	3.6	3.4
Max Rated Input Wattage Rating (Watts)	841	828	809	808	807	806	805
Max. Rated VA (Volt-Amp)	863	850	830	829	828	827	826
Efficiency (%) at Max. Rated Output Wattage	89.2	90.6	92.7	92.8	93.0	93.1	93.2
Power Factor	0.985						
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30						
Max. Inrush Current duration (mS)	20						
Maximum British Thermal Unit Rating (BTU-Hr)	2868	2825	2761	2757	2753	2749	2747

Optional Country Power Cords and Jumper Cords

WW	HP 2m 15A C20 C13 Universal Jumper Cord	AF590A
Brazil	HP 1.83m 10A C13 NBR14136 Brazil Power Cord	AF591A

System Unit	**Dimensions** (H x W x D) (with bezel)	3.45" x 17.64" x 28.23" in (8.76 x 44.80 x 71.71 cm)		
	Weight (approximate)	**Maximum** (all hard drives, power supplies, and processors installed)	45.0 lb (16.80 kg)	
		Minimum (one hard drive, power supply, and processor installed)	32.0 lb (11.94 kg)	
	Input Requirements (per power supply)	**Rated Line Voltage**	90 -- 132 VAC, 180 - 264 V	
		Rated Input Current	460 Watt	7.1 A (at 120 VAC) 3.5 A (at 240 VAC)
			750 Watt	7.4 A (at 120 VAC) 3.6 A (at 240 VAC)
		Rated Input Frequency	50 to 60 Hz	
		Rated Input Power	460 & 750 watt - 852 W	
	BTU Rating	**Maximum**	460 Watt	1773 BTU/hr (at 120 VAC) 1715 BTU/hr (at 240 VAC)
			750 Watts	2892 BTU/hr (at 120 VAC) 2797 BTU/hr (at 240 VAC
	Power Specifications	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient • Click on the system of interest. Example: DL180 G6 • Follow the instructions of the next screens.		
	Power Supply Output (per power supply)	**Rated Steady-State Power**	460 W (at 100 VAC) 750 W (at 100 VAC) 460 W (at 200 VAC) 750 W (at 200 VAC)	
		Maximum Peak Power	460 W (at 100 VAC) 750 W (at 100 VAC) 460 W (at 200 VAC) 750 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 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 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**	3050 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).
		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	5.3 B
		LpAm	38 dBA
		Operating	
		LWAd	5.3 B
		LpAm	38 dBA

NC362i Integrated Dual Port Gigabit Server Adapter	**Network Interface**	Integrated 10/100/1000BASE-T Transceiver Combines a triple-speed IEEE 802.3TM - Compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver.	
	Data Transfer Method	Compliant to x1 PCIe Specification	
	Controller	Intel® 82576	
	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	Performs all the physical layer functions for 10BASE-T, 100BASE-T, and 1000BASE-T Ethernet on standard Category 5 UT	

Technical Specifications

HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive	458945-B21	**Capacity**	160,041MB	
		Height	1.04 in (26.4 mm)	
		Width	4.36 in (110.7 mm)	
		Depth	7.25 in (184.2 mm)	
		Interface	Serial ATA	
		Transfer Rate (Maximum)	3Gb/s	
		Native Command Queuing	Supported	
		Seek Time (typical reads, including settling)	Single Track	2.0 ms
			Average	<11 ms
			Full-Stroke	23.0 ms
			Rotational Speed	7,200 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	312,581,808
		Operating Temperature	41° to 131° F (5° to 55° C)	

Smart Array P212 Controller	**Disk Drive and Enclosure Interface**	3G SAS (Serial Attached SCSI) 1.5G SATA (Serial ATA)
	SAS Connectors	1 internal/1 external (Mini-SAS) x8 wide port connectors
	Cache Memory Speed	DDR-2/533 MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe 2.0 provides 2GB/s maximum bandwidth.
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth.
	Cache Memory	40-bit 256MB ECC protected cache; transportable with battery-backed upgrade. **NOTE:** The 256MB cache is not battery-backed or transportable.
	Logical Drives Supported	Up to 32 logical volumes
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding) **NOTE:** A minimum of 256 MB cache, battery kit, and Smart Array Advanced Pack License Key upgrade is required to enable RAID 6, 6+0 RAID 5, 5+0 (Distributed Data Guarding) **NOTE:** The 256 MB & Battery Kit upgrade is required to enable RAID 5, 5+0 support RAID 1, 1+0 (Striping & Mirroring) RAID 0 (Striping)

Technical Specifications

Smart Array P410/410i Controller	**Disk Drive and Enclosure Interface**	6Gb/s SAS (Serial Attached SCSI) 3Gb/s SATA (Serial ATA)
	SAS Connectors	2 internal (Mini-SAS) x8 wide port connectors
	Cache Memory Speed	DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 2.5G PCIe 2.0 provides 2GB/s maximum bandwidth
	SAS Speed	x8 6Gb/s SAS provides 24.8GB/s maximum bandwidth
	Cache Memory	40-bit 256MB ECC protected cache (72-bit 512MB BBWC module upgrades available); transportable with battery-backed upgrade
	Logical Drives Supported	Up to 64 logical drives
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding) **NOTE:** The minimum of 256 MB cache, battery kit, and Smart Array Advanced Pack License Key upgrade is required to enable RAID 6, 6+0 RAID 5, 5+0 (Distributed Data Guarding) **NOTE:** The 256 MB is required to enable RAID 5, 5+0 support of the Smart Array P410i RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)

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.