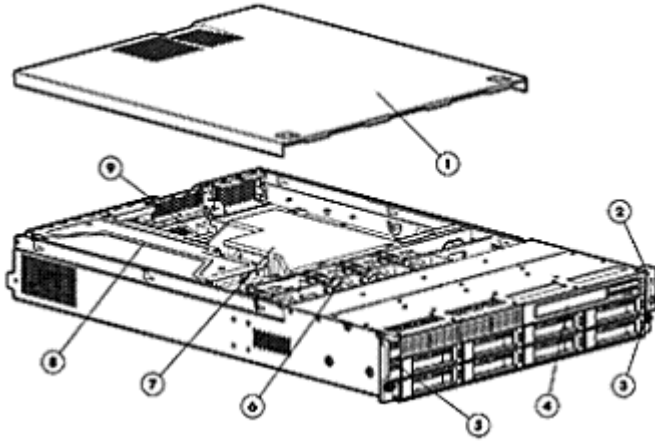


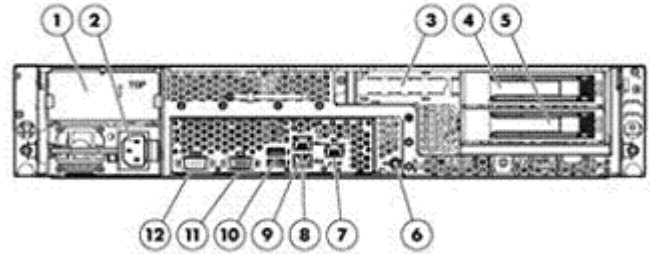
### Overview

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

### Standard Features

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

#### Processor

One of the following  
depending on Model

#### Six-Core Processors

Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) FIO

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® Processor X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) FIO

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

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

Intel® Xeon® Processor L5640 (2.26GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4) FIO

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

#### Quad -Core Processors

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

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

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

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

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

Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800), FIO

Intel® Xeon® Processor L5630 (2.13 GHz, 12M L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2/) FIO

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)

Intel® Xeon® Processor L5630 (2.13 GHz, 12ML L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2/) FIO

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.

Intel® Xeon® Processor L5520 (2.26 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)

Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)

#### Two -Core Processors

Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) FIO

**NOTE:** Available through Configure To Order only. See Factory Integration Models section for more details.



Standard Features

**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.

Cache Memory	12 MB Level 3 cache (L5630,E5620,X5650) 4 MB Level 3 cache (E5506)
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Chipset	Intel® 5520 Chipset <b>NOTE:</b> For more information regarding Intel chipsets, please see the following URL: <a href="http://www.intel.com/products/server/chipsets/">http://www.intel.com/products/server/chipsets/</a> .
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Upgradeability	Upgradeable to two processors
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Memory Protection	Advanced memory protection Mirroring Mode Lockstep Mode
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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)
	<b>NOTE:</b> Half DIMM slots are available when one processor is installed.	
	<b>NOTE:</b> 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: <a href="http://www.hp.com/go/ddr3memory-configurator">www.hp.com/go/ddr3memory-configurator</a> .	

Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
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### 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 PCIe8 (4) full-length/full-height slots (Optional).

Storage Controller	4HDD Models	HP Smart Array B110i SATA RAID <b>NOTE:</b> 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. <b>NOTE:</b> Embedded SATA controller support transfer rate up to 3Gb/s <b>NOTE:</b> 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) <b>NOTE:</b> 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) <b>NOTE:</b> Available upgrades: P410 with FBWC, 256MB with BBWC, 512MB with FBWC, Battery kit upgrade (for the 256MB cache), and Smart Array Advanced Pack (SAAP). <b>NOTE:</b> 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) <b>NOTE:</b> Available upgrades: P410, 512MB with FBWC, Battery kit upgrade (for the 256MB cache), and Smart Array Advanced Pack (SAAP). <b>NOTE:</b> Support transfer rate up to 6Gb/s SAS or 3Gb/s SATA
	<b>NOTE:</b> A minimum of 256 MB cache, battery kit, and Smart Array Advanced Pack License Key upgrade	



Standard Features

(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 selected for the system.

Internal Storage Devices	Diskette Drives	Via USB only
	Optical Drives	Optional HP Slim SATA DVD-ROM Optical Drive
		Optional HP Slim SATA DVD RW Optical Drive
	Drive Bays	<b>NOTE:</b> 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).
		Up to 14 Hot Plug SAS/SATA 3.5" drives
		Up to 25 Hot Plug SAS/SATA 2.5" drives
		<b>NOTE:</b> 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).
		<b>NOTE:</b> The addition of a Smart Array Controller requires the addition of a SAS/SATA Multi-lane cable (P/N 496013-B21).

Maximum Internal Storage	Hot Plug 3.5" SATA	28.0TB (14 x 2TB)
	Hot Plug 3.5" SAS	28.0TB (14 x 2TB)
	Hot Plug 2.5" SATA	12.5TB (25 x 500GB)
	Hot Plug 2.5" SAS	15.0TB (25 x 600GB)

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
		<b>NOTE:</b> In order to connect a USB device internally, the internal USB Cable G6 Kit must be used (P/N 536769-B21).
		<b>NOTE:</b> Please see the following URL for additional information regarding USB support:
		<a href="http://h18004.www1.hp.com/products/servers/platforms/usb-support.html">http://h18004.www1.hp.com/products/servers/platforms/usb-support.html</a> .

### Standard Features

Industry Standard Compliance	ACPI V2.0 Compliant
	PCI 2.2 Compliant
	PXE Support
	WOL Support
	Microsoft® Logo certifications
	IPMI 2.0 Compliant

### 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.

### 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.



Standard Features

Common Slot ProLiant	<p>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:</p> <ul style="list-style-type: none"><li>• 460Watts, Common Slot, 92% Efficiency</li><li>• 750Watts, Common Slot, 92% Efficiency</li><li>• 460Watts, Common Slot, 94% Efficiency</li><li>• 750Watts, Common Slot, 94% Efficiency</li></ul> <p>HP's ProLiant Common Slot Power supplies (460W &amp; 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.</p> <p>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.</p> <p>Redundant Power: Optional (1 + 1 or n+n redundant) power supplies can be purchased through power supply option kits.</p>
System Fans	<p>4 system fans ship standard; Non-hot plug, Non-redundant</p> <p><b>NOTE:</b> Redundant fan kit (P/N 516009-B21) available for purchase.</p>
Operating Systems and Virtualization Software Support for ProLiant Servers	<p>Microsoft Windows Server</p> <p>Microsoft Windows Server Hyper-V</p> <p>Red Hat Enterprise Linux (RHEL)</p> <p>SUSE Linux Enterprise Server (SLES)</p> <p>VMware ESX Server</p> <p>Citrix Essentials for XenServer (Retail)</p> <p><b>NOTE:</b> 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: <a href="http://www.hp.com/go/supportos">http://www.hp.com/go/supportos</a> and our driver download page <a href="http://www.hp.com/support/DL180G6">http://www.hp.com/support/DL180G6</a></p>
Graphics	<p>32MB* shared supporting all display resolutions up to 1600x1200 16bpp@75Hz</p> <p><b>NOTE:</b> 8MB is dedicated to video memory.</p>
Form Factor	<p>Rack (2U), (3.5 in/8.89 cm)</p>

### Standard Features

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](http://www.hp.com/go/coremanagement)

HP Systems Insight Manager

HP ProLiant 100 series Easy Set-up CDs: [www.hp.com/servers/easysetup](http://www.hp.com/servers/easysetup)

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](http://www.hp.com/servers/easysetup)





### Standard Features

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.

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>



Standard Features

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: <a href="http://www.hp.com/go/subscriberschoice">http://www.hp.com/go/subscriberschoice</a> 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: <a href="http://www.hp.com/go/support">http://www.hp.com/go/support</a> and from <a href="http://www.hp.com/servers/easysetup">www.hp.com/servers/easysetup</a> . Contains the following: <ul style="list-style-type: none"><li>• HP Insight Management Agents for Systems Insight Manager (SIM) Integration</li><li>• HP Systems Management Homepage</li><li>• Array Configuration Utility (ACU)</li><li>• Array Diagnostics Utility (ADU)</li><li>• HP Insight Diagnostics</li></ul>

Security	Power-on password Setup password Diskette boot control Secure Sockets Layer (SSL) Secure Shell (SSH)
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Warranty	<p>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.</p> <p><b>NOTE:</b> 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: <a href="http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html">http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html</a></p>
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Optional Features

HP Insight Control management software	HP Insight Control for Linux	<p>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.</p> <p>The HP Insight Control for Linux (IC-Linux) serves environments requiring a Linux-based management consoles. See <a href="http://www.hp.com/go/ic-linux">www.hp.com/go/ic-linux</a></p> <p>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: <a href="http://www.hp.com/services/insight">http://www.hp.com/services/insight</a></p>
	Insight Control server deployment	<p>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.</p> <p>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.</p> <p>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: <a href="http://www.hp.com/services/insight">http://www.hp.com/services/insight</a>.</p>
HPC Interconnect	<p><b>NOTE:</b> High Performance Computing (HPC) interconnect technologies are available for this server under the Cluster Platform product portfolio. These high-speed interconnects are fully supported by HP when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPC Clusters with InfiniBand or Gigabit Ethernet: <a href="http://www.hp.com/techservers/clusters/ucp/index.html">http://www.hp.com/techservers/clusters/ucp/index.html</a></p>	
	InfiniBand	PCI-Express Generation 2 adapters



### Optional Features

#### 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 MSAxxx, 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>.

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#### 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

#### Service and Support

#### **HP Care Pack Services: Packaged server and storage services for increased uptime, productivity and ROI**

When you buy HP server and storage products and solutions, it's also a good time to think about what levels of support you may need. Our portfolio of service options reduce deployment and management worries while helping you get the most out of your server and storage investments. We take a holistic approach to your environment, bridging servers, blades, storage, software and network infrastructures with our packaged HP Care Pack Services for servers and storage.

#### **Protect your business beyond warranty**

When it comes to robustness and reliability, standard computing equipment warranties have matured along with technology. Good news that can also create problems stemming from depending on standard warranties designed to only protect against product defects and some downtime causes. Using a standard approach to warranty uplifts, such as HP Care Pack Services, helps reduce downtime risks and provides operational consistency for mission-critical and standard business computing.

#### **HP Care Pack Services: Upgrading or extending standard server and storage warranties cost effectively**

HP Care Pack Services offer a standard reactive hardware and software support services suite sold separately, or combined with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of integrated proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition with HP Proactive Select, you can acquire the specific proactive constancy and technical services. HP Proactive Select menu offers a broad set of service options that you can mix and match depending on your specific requirements. Proactive service options include offers for server, storage, network, SAN device, software, environment and education services.

HP server and storage lifecycle support services offers a full spectrum of customer care-from technology support to complex migrations to complete managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education Services offer flexible, comprehensive training on to help your IT staff get the most out of your server and storage investments. HP Financial solutions extend innovative financing and cost-effective asset management programs-from purchase to equipment retirement.

Learn more: [www.hp.com/services/servers](http://www.hp.com/services/servers) and [www.hp.com/services/storage](http://www.hp.com/services/storage)

**NOTE:** Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>



### Service and Support

#### Recommended HP Care Pack Services for optimal satisfaction with your HP product

##### Recommended Services

##### **3-Year HP Hardware Support Onsite Service, 4-hour response, 13x5**

Delivers increased equipment availability and productivity with rapid remote support and onsite response for your HP server and storage hardware.

- Help improve or maintain system uptime
- Convenient onsite support
- Committed response time

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

##### **3-Year HP Hardware Support Onsite Service, next-day response, 9x5**

Provides high-quality remote assistance and onsite support for your covered hardware if required, helping you to improve product uptime.

- Help improve or maintain system uptime
- Convenient onsite support
- Reliable response time

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

##### **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.

- Expedited installation, with all service prerequisites met before the installation is performed
- Installation in accordance with manufacturer's specifications, enhancing the supportability of your HP-installed hardware and software
- Service delivery at a mutually scheduled time
- Allows your IT resources to stay focused on their core tasks and priorities
- Availability of an HP service specialist to answer questions during the onsite delivery of this service

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

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### Service and Support

#### Optional HP Care Pack Services that will enhance your HP product experience

##### Optional Services

##### **3-Year HP Hardware Support Onsite Service, 4-hour response, 24x7**

As an alternative to our recommended support level, for customers who need same day response service level 24x7.

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>

##### **3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service, 6- or 24-hour**

As an alternative to our recommended support level, for customers who need committed call-to-repair for server hardware.

Provides your 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 or 24 hours of the initial service request to the HP Global Solution Center.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6636ENN>

##### **HP Proactive Select Service**

Customer needs on demand access to consulting, technical proactive services and education courses

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN>

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##### eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

##### **Support Portal**

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

##### **Features include:**

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: <http://www.hp.com/support>

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24



### Service and Support

X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

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#### Customer Technical Training

In today's cost-conscious business environment, IT professionals, developers, consultants and users face an interesting challenge: how to keep up with the latest technologies and expand important skills while delivering profitable results on current projects. To help address this challenge, HP offers innovative training solutions that help keep you up-to-date on virtualization, server, storage, Insight Control, Citrix, Microsoft® and open source/Linux-related topics-while spending less time away from business-critical activities.

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#### HP Services Awards

HP Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

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#### Additional Services Information

To learn more on HP ProLiant servers, HP BladeSystem servers and HP StorageWorks storage products, please contact your HP sales representative or HP Authorized Channel Partner. Or visit: [www.hp.com/services/proliant](http://www.hp.com/services/proliant) or [www.hp.com/services/bladeSystem](http://www.hp.com/services/bladeSystem) or <http://www.hp.com/hps/storage>





### Pre-configured Models

#### 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).

<b>HP DL180G6 E5504</b> <b>2x2GB 4LFF</b> 487502-xx1	<b>Processor</b>	Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800)
	<b>Cache Memory</b>	4MB shared L3 cache (E5504)
	<b>Memory</b>	4GB (2 x 2GB) PC3-10600E (UDIMM) <b>NOTE:</b> Total 12 DIMM slots
	<b>Network Controller</b>	HP NC362i Integrated Dual Port Gigabit Server Adapter
	<b>Storage Controller</b>	Embedded SATA Raid Standard RAID 0,1,10
	<b>Hard Drive</b>	1x 160GB Hot Plug SATA <b>NOTE:</b> Hot-plug functionality requires the addition of a Smart Array controller.
	<b>Internal Storage</b>	8.0TB (4 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 8.0TB (4 x 2TB Hot Plug 3.5" SAS hard drives), Maximum
	<b>Optical Drive</b>	None ship standard
	<b>Power Supply</b>	460W common slot, high efficiency power supply
	<b>Form Factor</b>	Rack (2U)
	<b>Warranty</b>	Server Warranty includes 3-Years Next Business Day Parts replacement, 0-Years Labor, 0-Years Onsite support

<b>HP DL180G6 L5520</b> <b>2x2GB 4LFF</b> 487506-xx1	<b>Processor</b>	Intel® Xeon® Processor L5520 (2.26 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2)
	<b>Cache Memory</b>	8MB shared L3 cache (L5520)
	<b>Memory</b>	4GB (2 x 2GB) PC3-10600E (UDIMM) <b>NOTE:</b> Total 12 DIMM slots
	<b>Network Controller</b>	HP NC362i Integrated Dual Port Gigabit Server Adapter
	<b>Storage Controller</b>	Embedded SATA Raid Standard RAID 0,1,10
	<b>Hard Drive</b>	1x 160GB Hot Plug SATA <b>NOTE:</b> Hot-plug functionality requires the addition of a Smart Array controller.
	<b>Internal Storage</b>	8.0TB (4 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 8.0TB (4 x 2TB Hot Plug 3.5" SAS hard drives), Maximum



### Pre-configured Models

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 DL180G6 E5506  
1x4GB 4LFF  
590637-xx1

Processor	Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800)
Cache Memory	4MB shared L3 cache (E5506)
Memory	4GB (1 x 4GB) PC3-10600R-9 (RDIMM) <b>NOTE:</b> 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	8.0TB (4 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 8.0TB (4 x 2TB 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

### Eight Drive Serial ATA (SATA) Models

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

HP DL180G6 E5620  
2x4GB 8LFF  
590638-xx1

Processor	Intel® Xeon® Processor E5620 (2.4 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
Cache Memory	8MB shared L3 cache
Memory	8GB (2 x 4GB) PC3-10600R-9 (RDIMM) <b>NOTE:</b> 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) <b>NOTE:</b> 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	16.0TB (8 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 16.0TB (8 x 2TB 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 DL180G6 E5520

Processor	Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-
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### Pre-configured Models

3x2GB 8LFF 487503-xx1		1066, HT, Turbo 1/1/2/2)
	Cache Memory	8MB shared L3 cache
	Memory	6GB (3 x 2GB) PC3-10600E (UDIMM) <b>NOTE:</b> 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) <b>NOTE:</b> 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	16.0TB (8 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 16.0TB (8 x 2TB 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 DL180G6 L5630 1x4 GB 8LFF 590636-xx1	Processor	Intel® Xeon® Processor L5630 (2.13 GHz, 12M L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2)
	Cache Memory	12MB shared L3 cache
	Memory	4GB (1 x 4GB) PC3L-10600R-9 (RDIMM) <b>NOTE:</b> 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) <b>NOTE:</b> 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	16.0TB (8 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 16.0TB (8 x 2TB 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

### 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 DL180G6 E5620 2x4GB 12LFF US 590639-xx1	Processor	Intel® Xeon® Processor E5620 (2.4 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
	Cache Memory	12MB shared L3 cache
	Memory	8GB (2 x 4GB) PC3-10600R-9 (RDIMM) <b>NOTE:</b> Total 12 DIMM slots



### Pre-configured Models

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) <b>NOTE:</b> 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	24.0TB (12 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 24.0TB (12 x 2TB Hot Plug 3.5" SAS hard drives), Maximum <b>NOTE:</b> 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

HP DL180G6 E5540  
6x2GB 12LFF US  
487507-xx1

Processor	(2) Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
Cache Memory	8MB shared L3 cache
Memory	12GB (6 x 2GB) PC3-10600R (RDIMM) <b>NOTE:</b> Total 12 DIMM slots
Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter
Storage Controller	HP Smart Array P212 /256MB Controller (RAID 0/1/1+0/5/5+0) <b>NOTE:</b> The 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 (up to 12 Hot Plug SATA or SAS drives supported)
Internal Storage	24.0TB (12 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 24.0TB (12 x 2TB Hot Plug 3.5" SAS hard drives), Maximum <b>NOTE:</b> 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

HP DL180G6 E5520  
3x2GB 12LFF  
487508-xx1

Processor	Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2)
Cache Memory	8MB shared L3 cache
Memory	6GB (3 x 2GB) PC3-10600E (UDIMM) <b>NOTE:</b> Total 12 DIMM slots
Network Controller	HP NC362i Integrated Dual Port Gigabit Server Adapter



### Pre-configured Models

Storage Controller	HP Smart Array P212 /256MB Controller (RAID 0/1/1+0/5/5+0) <b>NOTE:</b> The 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 (up to 12 Hot Plug SATA or SAS drives supported)
Internal Storage	24.0TB (12 x 2TB Hot Plug 3.5" SATA hard drives), Maximum 24.0TB (12 x 2TB Hot Plug 3.5" SAS hard drives), Maximum <b>NOTE:</b> 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 DL180G6 X5650 4x4GB 25SFF US 590640-xx1	Processor	(2) Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/3/3)
	Cache Memory	12MB shared L3 cache
	Memory	16GB (4 x 4GB) PC3-10600R-9 (RDIMM) <b>NOTE:</b> 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) <b>NOTE:</b> 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	12.5TB (25 x 500GB Hot Plug 2.5" SATA hard drives), Maximum 15.0TB (25 x 600GB 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



### Configuration Information - Factory Integrated Models

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

**NOTE:** 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 Hot Plug SAS/SATA Rack CTO Chassis

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 Hot Plug SAS/SATA Rack CTO Chassis

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)



Configuration Information - Factory Integrated Models

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 xxxxx-L21 and one xxxxxB21.

Six-Core Processors

Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3), FIO	590619-L21
Intel® Xeon® Processor X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3), FIO	590617-L21
Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3), FIO	590615-L21
Intel® Xeon® Processor L5640 (2.26GHz, 12MB L3 Cache , 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4), FIO	590607-L21

Quad-Core Processors

Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	590613-L21
Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	590611-L21
Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	590609-L21
Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	508343-L21
Intel® Xeon® Processor E5520 (2.26 GHz, 8MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	508342-L21
Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800), FIO	573909-L21
Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800), FIO	508341-L21
Intel® Xeon® Processor L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	590605-L21
Intel® Xeon® Processor L5520 (2.26 GHz, 8MB L3 Cache, 60W, DDR3-1066, HT, Turbo 1/1/2/2), FIO	508344-L21

Dual-Core Processor

Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800), FIO	594118-L21
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### Configuration Information - Factory Integrated Models

HP Memory	<b>Registered RDIMMs</b>	
	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 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	516423-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	<b>Unregistered with ECC UDIMMs</b>	
	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
	<b>NOTE:</b> 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: <a href="http://www.hp.com/go/ddr3memory-configurator">www.hp.com/go/ddr3memory-configurator</a> .	
	<b>NOTE:</b> Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <a href="http://h18004.www1.hp.com/products/servers/platforms/energyefficient/">http://h18004.www1.hp.com/products/servers/platforms/energyefficient/</a>	
	<b>NOTE:</b> 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
	<b>NOTE:</b> 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 2U Rear 2-Bay LFF Hard Drive Kit	488234-B21





Configuration Information - Factory Integrated Models

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](http://www.hp.com/go/proliant-energy-efficient)

HP 460W HE 12V Hot Plug AC Power Supply Kit	503296-B21
HP 750W Common Slot High Efficiency Power Supply Kit	512327-B21
HP 460W Common Slot Platinum Power Supply Kit	593188-B21
HP 750W Common Slot Platinum 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 P410/ZM FIO Smart Array Controller	462860-B21
	HP Smart Array P411/256 MB w/ Battery FIO	491193-B21
	HP Smart Array P410/256 MB w/ Battery FIO	491195-B21
	HP Smart Array P212/256 MB w/ Battery FIO	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.



### Core Options

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

HP Unique Options	HP DL180G6 Redundant Fan Kit	516009-B21
	HP DL180G6 Rear DVD Cage Kit	515826-B21
	<b>NOTE:</b> The x16 low profile slot is not available when this option is configured.	
	HP Dedicated Management Port Kit	516006-B21
	HP Internal USB Cable G6 Kit	536769-B21
	<b>NOTE:</b> This option required to connect a USB device internally.	
	HP DL180 G6 3PCI-E x8, Full Height Kit	577668-B21
	<b>NOTE:</b> 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.	
	HP PCI-X Full Riser DL180 G6 Kit	488230-B21
	<b>NOTE:</b> This option kit replaces the three internal expansion slots listed in step 1 base configuration.	
	<b>NOTE:</b> 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.	
	HP 2U G6 8HDD LFF DL18X KIT	506924-B21
	<b>NOTE:</b> 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).	
	HP DL180G6 Rear 2LFF Kit	488234-B21
	<b>NOTE:</b> Supports 12 hard drive server models only. Hard Drives not included.	
	<b>NOTE:</b> This option replaces the 2 Full Length, Full Height x8 PCIe slots.	
	HP KIT 2PCI-E x8, FH, DL180G6	497145-B21
	<b>NOTE:</b> This option provides 2 Full Length, Full Height x8 PCIe slots.	
	HP KIT PCI-E x16, DL180G6	497143-B21
<b>NOTE:</b> This option replaces the 2 Full Length, Full Height x8 PCIe slots.		

### HP Processors

#### Six-Core Processors

HP DL180 G6 Intel® Xeon® X5670 (2.93GHz/6-core/95W/12MB) Processor Kit	590619-B21
HP DL180 G6 Intel® Xeon® X5660 (2.80GHz/6-core/95W/12MB) Processor Kit	590617-B21
HP DL180 G6 Intel® Xeon® X5650 (2.66GHz/6-core/95W/12MB) Processor Kit	590615-B21
HP DL180 G6 Intel® Xeon® L5640 (2.26GHz/6-core/60W/12MB) Processor Kit	590607-B21

#### Quad-Core Processors

HP DL180 G6 Intel® Xeon® E5640 (2.66GHz/4-core/80W/12MB) Processor Kit	590613-B21
HP DL180 G6 Intel® Xeon® E5630 (2.53GHz/4-core/80W/12MB) Processor Kit	590611-B21
HP DL180 G6 Intel® Xeon® E5620 (2.40GHz/4-core/80W/12MB) Processor Kit	590609-B21
HP DL180 G6 Intel® Xeon® L5630 (2.13GHz/4-core/40W/12MB) Processor Kit	590605-B21
HP DL180 G6 Intel® Xeon® L5520 (2.26GHz/4-core/80W/12MB) Processor Kit	508344-B21
HP DL180 G6 Intel® Xeon® E5540 (2.53GHz/4-core/80W/12MB) Processor Kit	508343-B21
HP DL180 G6 Intel® Xeon® E5520 (2.26GHz/4-core/80W/12MB) Processor Kit	508342-B21
HP DL180 G6 Intel® Xeon® E5506 (2.13GHz/4-core/80W/12MB) Processor Kit	573909-B21
HP DL180 G6 Intel® Xeon® E5504 (2.00GHz/4-core/80W/12MB) Processor Kit	508341-B21



### Core Options

#### Two-Core Processors

HP DL180 G6 Intel® Xeon® E5503 (2.0GHz/2-core/80W/4MB) 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 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit 516423-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

#### 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](http://www.hp.com/go/ddr3memory-configurator)

**NOTE:** Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see:

<http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>



### Core Options

HP Optical Drives	HP Slim SATA DVD-ROM Optical Drive	481041-B21
	HP Slim SATA DVDRW 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 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:** Please see the QuickSpecs for Technical Specifications and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12244\\_div/12244\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html)  
(Worldwide)

**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 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
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#### 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.



### Core Options

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
<b>SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives</b>	
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
<b>SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives</b>	
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
<b>SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives</b>	
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
<b>NOTE: Please see the QuickSpecs for Technical Specifications and additional specifications:</b>	
<a href="http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html">http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html</a> (Worldwide)	
<b>SATA Hot Plug Midline (MDL) Solid State Drives</b>	
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
<b>SATA Hot Plug 3.5" Midline (MDL) Solid State Drives</b>	
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
<b>NOTE: Please see the QuickSpecs for Technical Specifications and additional information:</b>	
<a href="http://h18000.www1.hp.com/products/quickspecs/13415_div/13415_div.html">http://h18000.www1.hp.com/products/quickspecs/13415_div/13415_div.html</a> (Worldwide)	

### HP Networking

#### Gigabit Ethernet Adapters

HP NC112T PCIe Gigabit Server Adapter	503746-B21
HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
<b>NOTE: Does not support Windows 2000.</b>	
HP NC365T 4-port Ethernet Server Adapter	593722-B21
HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21

#### 10 Gigabit Ethernet Adapters

**NOTE:** No more than two 10GbE I/O devices are supported in a single ProLiant server.

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

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

HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21
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Core Options

HP NC550SFP Dual Port 10GbE Server Adapter	581201-B21
<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://www.hp.com/go/ProLiantNICs">www.hp.com/go/ProLiantNICs</a> .	

HP InfiniBand

QLogic IB 4X QDR PCI-e G2 Dual-port HC	583211-B21
HP IB 4X QDR CX-2 PCI-e G2 Dual Port HCA	592520-B21
HP IB 4X DDR CX-2 PCI-e G2 Dual Port HCA	592521-B21
<b>NOTE:</b> Please see the QuickSpecs for additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html">http://h18000.www1.hp.com/products/quickspecs/13078_div/13078_div.html</a>	



### 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 LO100i Advanced Pack, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates <b>NOTE:</b> For additional License Kits please see the Lights-Out 100i QuickSpecs at: <a href="http://www.hp.com/go/lo100">www.hp.com/go/lo100</a> .	530521-B21
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HP Insight Software	<b>HP Insight Control for Linux</b>	
	HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic <b>NOTE:</b> 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. <b>NOTE:</b> 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, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	TC209A
	HP Insight Control for Linux, Media pack (DVD) - No licenses included <b>NOTE:</b> 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. <b>NOTE:</b> This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: <a href="http://www.hp.com/go/ic-linux">http://www.hp.com/go/ic-linux</a> (click on Download button). <b>NOTE:</b> Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: <a href="http://www.hp.com/go/ic-linux">http://www.hp.com/go/ic-linux</a> (click on Download button). <b>NOTE:</b> Electronic software is available in all countries except China and Japan. For China and Japan should order the physical equivalent. <b>NOTE:</b> 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. <b>NOTE:</b> For additional License Kits, including electronic licensing options, please see the QuickSpecs at: <a href="http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html">http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html</a>	TC208A
	<b>HP Insight Control server deployment</b>	
	HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates	T9082AAE
	HP Insight Control server deployment 1-Server License including 1 year 24x7 Technical Support and Updates <b>NOTE:</b> Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at: <a href="http://www.hp.com/go/insightupdates">http://www.hp.com/go/insightupdates</a> . <b>NOTE:</b> Electronic software is available in all countries except China and Japan. For China and Japan should order the physical equivalent. <b>NOTE:</b> Customer will receive a license entitlement certificate, which must be	452151-B21



### Additional Options

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](http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html)

HP I/O Accelerator Options	HP 160GB SLC PCIe ioDrive	600278-B21
	<b>NOTE:</b> A low-profile PCI bracket is included for use in low-profile slots.	
	<b>NOTE:</b> A minimum of 4 GB of system memory is required per card	
	HP 320GB MLC PCIe ioDrive	600279-B21
	<b>NOTE:</b> A low-profile PCI bracket is included for use in low-profile slots.	
	<b>NOTE:</b> A minimum of 8 GB of system memory is required per card	
	HP 320GB SLC PCIe ioDrive Duo	600281-B21
	<b>NOTE:</b> A minimum of 8 GB of system memory is required per card	
	HP 640GB MLC PCIe ioDrive Duo	600282-B21
	<b>NOTE:</b> A minimum of 16 GB of system memory is required per card	
	<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:	
	<a href="http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html">http://h18000.www1.hp.com/products/quickspecs/13587_div/13587_div.html</a> (Worldwide)	

HP Graphics Options	HP Graphic Card Power Adapter Kit	533955-B21
	<b>NOTE:</b> The kit is applicable for 4LFF, 8LFF and 8SFF cages. The Graphic Power Adapter Kit can support up to 150 Watts.	

HP Security - TPM	HP Trusted Platform Module Option Kit	488069-B21
	<b>NOTE:</b> 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.	
	<b>NOTE:</b> For more information about TPM, including a white paper, go to <a href="http://www.hp.com/go/TPM">www.hp.com/go/TPM</a>	
	<b>NOTE:</b> ProLiant OS pre-installed units will come with the partition required for TPM deployment.	
	<b>NOTE:</b> 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	





### Additional Options

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
<b>HP Smart Array P411 Controller</b>	
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
<b>Smart Array P800 Controller</b>	
HP Smart Array P800/512 BBWC 2-ports Int/2-ports Ext PCIe x8 SAS Controller	381513-B21
<b>HP Smart Array P812 Controller</b>	
HP Smart Array P812/1G FBWC 2-ports Int/2-ports Ext PCIe x8 SAS Controller	487204-B21
<b>Optional Upgrades</b>	
HP Internal SAS/SATA Multi-lane Cable Kit	464830-B21
HP Mini SAS to Mini SAS 28in Cable Assembly	496013-B21
<b>NOTE:</b> 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
<b>NOTE:</b> 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
<b>NOTE:</b> Supported on HP Smart Array P410 Controller and HP Smart Array P411 Controller only.	
HP 650 mAh P-Series Battery	462969-B21
<b>NOTE:</b> To enable BBWC on the 256MB cache.	
<b>NOTE:</b> Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.	
HP 8484 to Mini SAS 33in Cable Assembly	591734-B21
<b>NOTE:</b> Cable for use connecting the Smart Array P800 Controller to internal hard disk drives on select HP ProLiant G6 Servers.	
HP Smart Array Hot Plug Advanced Pack for B110i No Media 1-Server license including 1yr 24x7 Technical Support	TC421A
HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License	516471-B21
<b>NOTE:</b> 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.	
<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information:	
<a href="http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html">http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html</a> (Smart Array P212 Controller)	
<a href="http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html">http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html</a>	



## Additional Options

(Smart Array P410 Controller)

[http://h18000.www1.hp.com/products/quickspecs/13202\\_div/13202\\_div.html](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

488765-B21

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

[http://h18000.www1.hp.com/products/quickspecs/13082\\_div/13082\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13082_div/13082_div.html)

(SC08Ge HBA)

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

614988-B21

**NOTE:** This is a 2 x4 External Port HBA.

**NOTE:** This is only approved for the HP Storage Works 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](http://h18000.www1.hp.com/products/quickspecs/13651_div/13651_div.html)

### SCSI HBA

HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter

412911-B21

**NOTE:** Recommended HBA for SCSI tape drive connect.

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

[http://h18000.www1.hp.com/products/quickspecs/12566\\_div/12566\\_div.html](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 StorageWorks tape drives, autoloaders, libraries and media see: <http://www.hp.com/go/tape>. For hardware and software compatibility of HP StorageWorks tape backup products see: <http://www.hp.com/go/connect>.

HP StorageWorks DAT 160 SAS Internal Tape Drive

Q1587A

**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.

HP StorageWorks 1U USB Rack-Mount Kit with one DAT 320 USB Tape Drive

AP835A

HP StorageWorks DAT 320 SAS Internal Tape Drive

AJ830A

**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.

HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive

DW085A

**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.

HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive

EH847A

**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.

HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Tape Autoloader

AH558A

**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.

HP StorageWorks MSL2024 Tape Library with one LTO-3 Ultrium 920 SAS Drive

AH559A

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

### HP Disk Backup

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

**HP StorageWorks D2D Backup Systems with Backup Data Deduplication**

HP StorageWorks D2D2502i Backup System

EJ001B

**NOTE:** 1.5TB of 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.

HP StorageWorks D2D2504i Backup System

EJ002B

**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.

**USB Removable Media RDX Disk Backup Systems**



### Additional Options

HP StorageWorks RDX320 Internal Removable Disk Backup System <b>NOTE:</b> 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 <b>NOTE:</b> 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 StorageWorks RDX750 Internal Removable Disk Backup System <b>NOTE:</b> For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 750GB of disk capacity per data cartridge.	AW577A

### HP StorageWorks Options

<b>StorageWorks Fibre Channel HBA</b>	
<b>NOTE:</b> The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: <a href="http://h18006.www1.hp.com/storage/saninfrastructure/hba.html">http://h18006.www1.hp.com/storage/saninfrastructure/hba.html</a> .	
<b>Brocade Fibre Channel HBAs</b>	
HP 81B PCIe 8Gb FC Single Port HBA	AP769A
HP 82B PCIe 8Gb FC Dual Port HBA	AP770A
HP 41B PCIe 4Gb FC Single Port HBA	AP767A
HP 42B PCIe 4Gb FC Dual Port HBA	AP768A
<b>Emulex Fibre Channel HBAs</b>	
HP StorageWorks 81E 8Gb SP PCI-e FC HBA	AJ762A
HP 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
HP StorageWorks FC2242SR Dual Channel 4Gb PCI-e FC HBA	A8003A
<b>QLogic Fibre Channel HBAs</b>	
HP StorageWorks 81Q PCI-e FC HBA	AK344A
HP 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA	AE312A
<b>StorageWorks SCSI HBA</b>	
HP U320e SCSI Host Bus Adapter	AH627A
<b>NOTE:</b> Recommended for MSL SCSI Tape Library connect.	
<b>StorageWorks Converged Network Adapter</b>	
HP CN1000E 2P Converged Network Adapter	AW520A



Additional Options

HP Disk Storage Systems	MSA SAN Storage Arrays	
	HP StorageWorks MSA60 Array	418408-B21
	<b>NOTE:</b> Please see the QuickSpecs for additional options and configuration information at: <a href="http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html">http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html</a>	
	HP StorageWorks MSA70 Array	418800-B21
	<b>NOTE:</b> Please see the QuickSpecs for additional options and configuration information at: <a href="http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html">http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html</a>	
	HP Uninterruptible Power Systems	
	HP Rack-mountable UPS	
	HP R1500 G2 UPS	
	HP R1.5 VA 1U UPS NA	AF419A
	HP R1.5 VA 1U UPS INTL	AF418A
	HP, R1.5kVA UPS, 1U, JPN/TW	AF421A
	HP R/T3000 UPS	
	HP R/T3000 UPS, High voltage, NA/JPN	AF453A
	HP R/T3000 UPS, High voltage, detachable inlet cord INTL	AF454A
	HP Rack-Mountable R5500 UPS	
	HP R5500 3U Intl UPS	AF416A
	HP R5500 3U NA/JP UPS	AF426A
	<b>NOTE:</b> For additional information on all HP Uninterruptible Power Systems and accessories please go to: <a href="http://www.hp.com/products/ups">www.hp.com/products/ups</a> (Worldwide)	
	<b>NOTE:</b> For additional information on sizing your server, please reference: <a href="http://www.upssizer.com">http://www.upssizer.com</a>	
	<b>NOTE:</b> 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: <a href="http://www.hp.com/products/powercords">www.hp.com/products/powercords</a> .	



### Additional Options

#### HP Power Distribution Units

##### Monitored PDUs

##### HP Monitored Power Distribution Unit: Full Rack Version

HP 8.6 kVA S1324 Monitored PDU- single input, 3Ø, 24A (NA/JPN) AF504A

HP 8.3 S1140 Monitored PDU- single input, 1Ø, 40A (NA/JPN) AF506A

HP 11 kVA S1316 Monitored PDU- single input, 3Ø, 16A (INTL) AF508A

HP 7.3 kVA S1132 Monitored PDU- single input, 1Ø, 32A (INTL) AF510A

##### HP Monitored Power Distribution Unit: Half Rack Version

HP 4.9 kVA S124 Monitored PDU- single input, 1Ø, 24A (NA/JPN) AF914A

HP 7.3 kVA S132 Monitored PDU- single input, 1Ø, 32A (INTL) AF915A

##### Modular PDUs 1U/0U (Up to 28 outlets)

4.9 kVA Modular PDU, 24A, NA/JPN 252663-D72

8.3 kVA Modular PDU, 40A, NA/JPN 252663-D73

3.6 kVA Modular PDU, 16A, INTL 252663-B24

7.3 kVA Modular PDU, 32A, INTL 252663-B31

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

[http://h18000.www1.hp.com/products/quickspecs/12118\\_div/12118\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12118_div/12118_div.html)  
(Worldwide)

**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](http://www.hp.com/products/powercords).

#### HP Rack Series

##### HP Rack 10000 G2 Series (Carbon/Graphite Metallic)

HP Universal Rack 10642 G2 Pallet ALL AF001A

HP Universal Rack 10642 G2 Shock ALL 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](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).



Additional Options

- 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:** For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: <http://www.hp.com/servers/dl180>.

**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](http://www.hp.com/go/rackandpower).

HP Rack Options

HP KVM Switch Options		
HP 0x2x8 KVM Server Console G2 Switch		AF616A
HP 0x2x16 KVM Server Console G2 Switch		AF617A
<b>NOTE:</b> Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .		
HP Serial Console Server Options		
0x2x16 KVM Server Console G2 Switch with Virtual Media and CAC		AF618A
0x2x32 KVM Server Console G2 Switch with Virtual Media and CAC		AF619A
1x1Ex8 KVM IP Console Switch G2 with Virtual Media and CAC		AF620A
2x1Ex16 KVM IP Console Switch G2 with Virtual Media and CAC		AF621A
4x1Ex32 KVM IP Console Switch G2 with Virtual Media and CAC		AF622A
<b>NOTE:</b> Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .		
<b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .		
Rack Kits		
HP Rack Cable Management Velcro Clips		379820-B21

## Additional Options

HP USB and SD Options	HP External USB CD/DVD R/RW Optical Drive	FS943AA#ABA
	HP USB-PS/2 Mouse	DC369A
	HP USB 04 Standard Keyboard	DT528A#ABA
	HP 2GB USB Flash Media Drive Key Kit	608447-B21
<b>NOTE:</b> HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to <a href="#">HP VMware Getting Started Guide</a> for installation instructions.		

HP Care Pack Services	<b>Hardware Services 4-Hour On-site Service</b>	
	13-Hour x 5-Day Coverage, 3 Years, Electronic	UH271E
	24-Hour x 7-Day Coverage, 3 Years, Electronic	UH272E
	<b>Hardware Services Next Business Day On-Site Service</b>	
	9-Hour x 5-Day Coverage, 3 Years, Electronic	UH270E
	<b>Hardware Services 6-Hour Call to Repair On-Site Service</b>	
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UH273E
	<b>Hardware Installation, Electronic</b>	UH301E
<b>NOTE:</b> For more information, customer/resellers can contact: <a href="http://www.hp.com/services/carepack">http://www.hp.com/services/carepack</a> .		





### 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](http://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	8GB	4GB	16GB	1GB	2GB	4GB
DIMM Native Speed (MHz) ->	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
Voltage	LV/Reg	Reg	Reg	Reg	LV/Reg	Reg	Reg	Reg	Reg	Reg
SLOTS THAT CAN BE POPULATED										
12 slot servers	12	12	12	12	12	12	12	12	12	12
MAXIMUM CAPACITY (GB)										
12 slot servers	48	24	48	96	96	48	192	12	24	48
POPULATED DIMM SPEED (MHz)										
1 DIMM Per Channel	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
2 DIMM Per Channel	1333*	1333*	1333*	1066	1333*	800	800	1066	1066	1066

\* Supported with BIOS update via ROM Based Setup Utility (RBSU). UDIMM support is on 12-slot server.

### 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	



## Memory

### Standard memory configuration (1 CPU model)

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

	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	



## Memory

### UDIMM maximum configuration (1 CPU model)

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

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	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

	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.

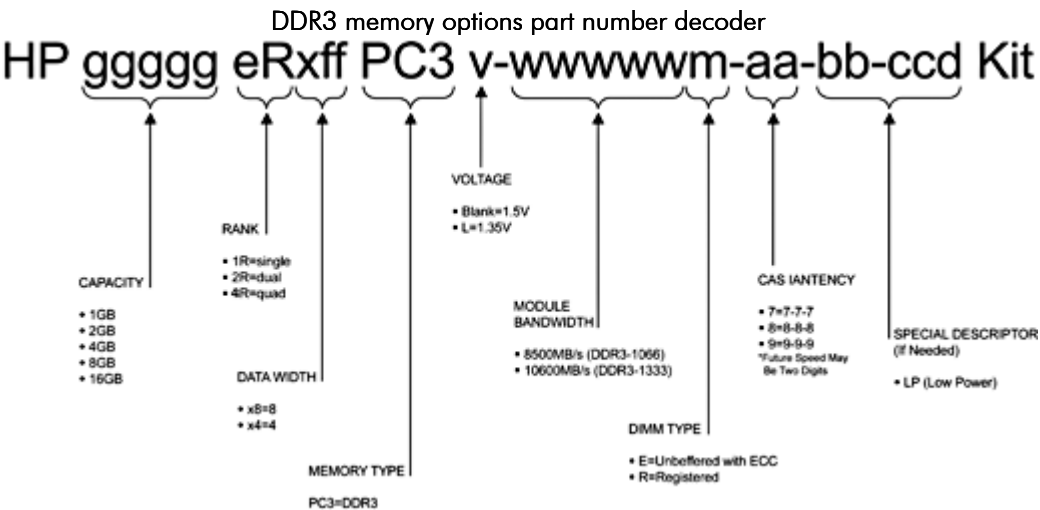
- 1GB = 1024MB



Memory

- 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](http://www.hp.com/go/ddr3memory-configurator)



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 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit		516423-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
Unregistered with ECC UDIMMs		
HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit		500668-B21



Memory

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](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: <http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>



Storage

8 Drive Cage with DVD-Drive bay



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

12 Drive Cage



- 1-12Twelve 3.5" Hot Plug SAS/SATA Hard Drive Bays

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

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
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	<b>NOTE: Smart Array P212 Controllers recommended.</b> 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

### Storage

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
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	<b>NOTE: Smart Array P212 Controllers recommended.</b> 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
60GB 3.0G SATA SSD 120GB 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





### Storage

Up to 25 with 25  
drive cage

1-25

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 P212/256 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
60GB 3.0G SATA SSD	Up to 8 with 8	1-8
120GB 3.0G SATA SSD	drive cage	

#### 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 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
500GB 6G SAS 7.2K	Up to 8 with 8	1-8
	drive cage	

#### Controller

HP Smart Array P212/Zero Memory Controller  
HP Smart Array P212/256 MB Controller  
HP Smart Array P410/256 MB Controller  
HP Smart Array P410/512 MB BBWC Controller  
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
2TB 6G SAS 7.2K	Up to 8 with 8	1-8
1TB 6G SAS 7.2K	drive cage	

#### Controller

HP Smart Array P212/Zero Memory Controller  
HP Smart Array P212/256 MB Controller  
HP Smart Array P410/256 MB Controller  
HP Smart Array P410/512 MB BBWC Controller  
HP Smart Array P410/512 MB FBWC Controller  
HP Smart Array P410/1G FBWC Controller



### Storage

Up to 14 with 12  
drive cage +  
Rear Drive Cage

1-14

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

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

	Quantity Supported	Position Supported	Controller
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



### Storage

#### 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

#### Tape and Disk Backup

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

	Position	Recommended Controller	Part Number
HP StorageWorks SCSI Tape Drives	External	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter	412911-B21
LTO-1 Ultrium 232			
LTO-2 Ultrium 448			
LTO-3 Ultrium 920			
LTO-3 Ultrium 960			
LTO4 Ultrium 1760			
LTO-4 Ultrium 1840			
DAT 40			
DAT 72			
DAT 160			
1U Rack-Mount Kit			
3U Rack-Mount Kit			
HP StorageWorks USB Tape Drives	External	USB 2.0 Port	N/A
DAT 40			
DAT 72			
DAT 160			
DAT 320			
1U USB Rack-Mount Kit			

HP StorageWorks SAS	External	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS	462828-B21
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### Storage

#### 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

Controller

#### HP StorageWorks 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 StorageWorks SCSI Tape Libraries

MSL2024  
 MSL4048  
 MSL8096  
 MSL6000

External

HP U320e SCSI Dual Channel Controller

AH627A

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

#### HP StorageWorks 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 StorageWorks 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 StorageWorks USB RDX Removable Disk Backup System

RDX160  
 RDX320  
 RDX500  
 RDX750

External

USB 2.0 port

N/A



Storage

HP StorageWorks 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 StorageWorks D2D Backup Systems, Fibre Channel D2D4000fc	External	Direct server attach is not supported, requires connection via SAN fabric. See: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a>



## Power Specifications

HP 460W HE 12V Hot Plug AC 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 High Efficiency 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 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 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  
 Brazil HP 1.83m 10A C13 NBR14136 Power Cord

AF590A  
 AF591A



Technical Specifications

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)	
		BTU Rating	Rated Input Frequency	50 to 60 Hz	
			Rated Input Power	460 & 750 watt - 852 W	
	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: <a href="http://www.hp.com/go/proliant-energy-efficient">www.hp.com/go/proliant-energy-efficient</a> <ul style="list-style-type: none"><li>Click on the system of interest. Example: DL180 G6</li><li>Follow the instructions of the next screens.</li></ul>			
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.			





Technical Specifications

		System performance may be reduced if operating with a fan fault or above 30°C (86°F).	
Relative Humidity (non-condensing)	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).	
	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.	
Altitude	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.	
	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).	
Acoustic Noise	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).	
	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

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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		

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Technical Specifications

HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive 458945-B21	160GB 7,200 rpm		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)		
<hr/>						
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. <b>NOTE:</b> 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) <b>NOTE:</b> 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) <b>NOTE:</b> 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) <b>NOTE:</b> 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) <b>NOTE:</b> 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	<p>Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.