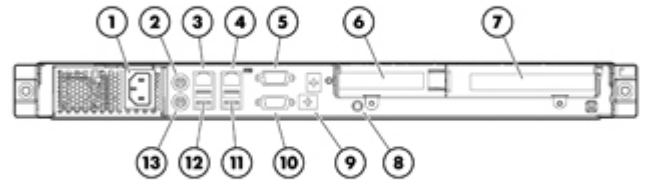
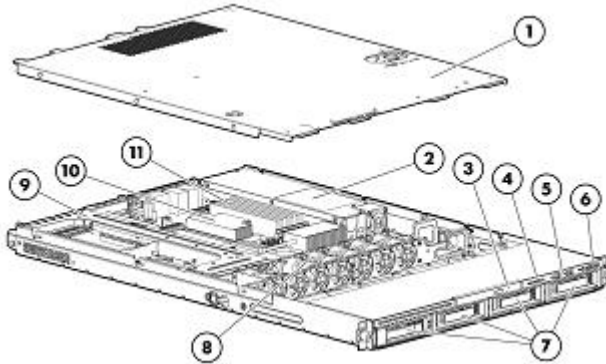


### Overview

The HP ProLiant DL120 G6 Server is an entry-level rack-optimized server providing you with all confidence of a HP ProLiant server. The single processor, 1U server is ideal for single-application IT infrastructure, web and edge-of-network applications. The HP ProLiant DL120 provides two PCI-Express slots with an optional 3rd x4 PCI-Express slot optional upgrades, including HP HBAs and Smart Array Controllers, provide support for SAS hard disk drives. DL120 G6 HP Lights Out 100i Remote Management provides cost-effective remote management from anywhere, anytime. Plus, you get the cost-effective solution of a single-processor platform with the performance advantages of quad-core technology.



#### Front View:

1. Cover
2. Power Supply (400 Watt)
3. Optional Slim 9.5mm DVD ROM
4. System ID Tag
5. Front USB connectors (2)
6. Power Button, UID Button, and Front LED Indicators
7. Support for up to four Non-Hot Plug SATA or Hot Plug SAS Hard Drives
8. Non Hot Plug Dual Rotor Fans (4)
9. Two PCI express Slots (one x16, one x4 Lanes)
10. Processor Socket (Intel® Xeon® Quad-Core)
11. Six PC3-10600E UB ECC DDR3 Memory Slots

#### Rear View:

1. Power supply cable socket
2. Mouse connector
3. NIC 1 connector
4. NIC 2 connector
5. Serial Connector
6. Expansion slot 2, PCI-e x8, Low-profile, Half-length
7. Expansion slot 1, PCI-e x16, Full height, Full-length
8. UID button/LED
9. Management NIC connector
10. Security - Trusted Platform Module Video connector
11. USB connectors (2)
12. USB connectors (2)
13. Keyboard connector

### What's New

- Support for HP NC365T 4-port Ethernet Server Adapter

### 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

#### Quad-Core Processors

Intel® Xeon® X3430 (2.40GHz/4-core/8MB/95W, 1333, Turbo 1/1/2/3) Processor

Intel® Xeon® X3440 (2.53GHz/4-core/8MB/95W, 1333, HT, Turbo 1/1/2/3) Processor

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

Intel® Xeon® X3450 (2.66GHz/4-core/8MB/95W, 1333, HT, Turbo 1/1/4/4) Processor

Intel® Xeon® X3460 (2.80GHz/4-core/8MB/95W, 1333, HT, Turbo 1/1/4/5) Processor

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

Intel® Xeon® X3470 (2.93GHz/4-core/8MB/95W, 1333, HT, Turbo 1/1/4/5) Processor

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

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

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

#### Dual-Core Processors

Intel® Celeron® G1101 (2.26GHz/2-core/2MB/73W, 1066) Processor

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

Intel® Pentium® G6950 (2.80GHz/2-core/3MB/73W, 1066, HT) Processor

Intel® Xeon® L3406 (2.26GHz/2-core/4MB/30W, 1066, HT, Turbo 2/2) Processor

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

Intel® Core™ i3-530 (2.93GHz/2-core/4MB/73W, 1333, HT) Processor

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

Intel® Core™ i3-540 (3.06GHz/2-core/4MB/73W, 1333, HT) Processor

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

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#### Cache Memory

Integrated 1x8MB Level3 Intel® Smart Cache

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#### Chipset

Intel® 3420 Chipset

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#### Memory Protection

ECC

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### Standard Features

<b>Memory</b> One of the following depending on Model	Type	DDR3 1066/1333MHz Unbuffered (UDIMM) and Registered (RDIMM) <b>NOTE:</b> Registered DIMMS (RDIMMs) are supported only with Xeon Processor family
	DIMM Slots	Total 6 DIMM slots
	Standard (Entry Model)	2GB (1x2GB) UDIMM
	Standard (Base Models)	2GB (1x2GB) UDIMM
	Standard (Performance Models)	4GB (2x2GB) RDIMM
	Maximum Memory	Supports up to 16GB DDR3 1066/1333 Unbuffered ECC DIMM or 16GB DDR3 800/1066/1333 Registered DIMM. Supports up to 4 UDIMMs or 6 dual rank RDIMMs

**NOTE:** Depending on the memory configuration and processor model, the memory speed may run at 1333MHz, 1066MHz, or 800MHz. Please see the Online Memory Configuration Tool at: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**Network Controller** Embedded HP NC107i PCI Express Gigabit Server Adapter (x2)

Expansion Slots	Technology	Bus Width***	Connector Width	Bus Number*	Device No.**	Form Factor	Notes
1 (Standard)	PCIe G2	X16	x16	0	1	Full length, full height slot	
2 (Standard)	PCIe G2	X4	x8	0	28	Half height, low profile slot	
1 (Optional)	PCI-X (133MHz, 3.3Volt)	64-bit	N/A	0	1	Full length, full height slot	

\* Default bus assignment (in decimal). 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)

\*\*\* Indicates the number of physical electrical lanes running to a PCI-e connector.

<b>Storage Controllers</b>	Entry and Base Model	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) <b>NOTE:</b> Transfer rate: 3Gb/s SATA <b>NOTE:</b> SATA Hot Plug available via Hot Plug Advance Pack for B110i <b>NOTE:</b> Hot Plug SAS and SATA controllers available via PCI card option. <b>NOTE:</b> Smart Array SAS Controller requires the HP CA ASSY 384SATA to MINI-SAS Kit (P/N 487734-B21) must be ordered. <b>NOTE:</b> Available upgrade: HP Smart Array Hot Plug Advance Pack for B110i.
	Performance Model	HP Smart Array P212/256MB Controller (RAID 0/1/1+0/5/5+0) <b>NOTE:</b> Available upgrades: Battery Kit upgrade (for BBWC), and Smart Array Advanced Pack (SAAP).

### Standard Features

<b>Internal Storage Devices</b>	Optical Drive	Optional 9.5mm DVD-ROM, or DVD-RW Drive	
	Hard Drives <i>One of the following depending on Model</i>	Entry Model	Up to 4 non-hot plug SATA/SAS 3.5" drives supported. 1x160GB non hot plug SATA 3.5" drive ships standard <b>NOTE:</b> SAS requires optional HBA or SA card
		Base Model (Cold Plug)	Up to 4 cold plug SATA/SAS 3.5" drives supported. None ships standard <b>NOTE:</b> SAS requires optional HBA or SA Controller card. <b>NOTE:</b> SATA Hot Plug available via Hot Plug Advance Pack for B110i.
	Performance Model (Hot Plug)	Up to 4 hot plug SATA/SAS 3.5" drives supported. None ships standard	

<b>Maximum Internal Storage</b> <i>One of the following depending on Model</i>	Hot Plug SAS	8.0TB	(4 x 2TB) 3.5" SAS
	Non-Hot Plug SATA	8.0TB	(4 x 2TB) 3.5" SATA

<b>Interfaces</b>	Serial	1	
	Pointing Device	1	
	Keyboard	1	
	Graphics	1 (rear)	
	Network RJ-45	2	
	USB 2.0	7 (2 front, 1 internal, 4 rear)	
		<b>NOTE:</b> Internal USB port (optional) for flexible storage, security, or USB drive key deployment. <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>	

<b>Industry Standard Compliance</b>	ACPI 3.0a
	PCI 2.3 Compliant
	PXE Support
	WOL Support
	Microsoft® Logo certifications
	USB 2.0
	IPMI 2.0
	DCMI 1.0

### Standard Features

<b>Server Power Cords</b>	North America Japan  ROW	One 6' Highline (IEC-IEC) power cord ships standard One 6' Highline (IEC) power cord and one 6' Lowline power cord ship standard One 6' Highline (IEC) power cord ships standard <b>NOTE:</b> HP ProLiant DL120 G6 server ship standard worldwide with a C13 to C14 2M Highline jumper cord. Japanese models also include a 2M Lowline power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific cord. Please see the following power cord matrix: <a href="http://www.hp.com/go/powercordmatrix">http://www.hp.com/go/powercordmatrix</a> .
<b>Power Supply</b>	Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant	
<b>System Fans</b>	4 dual rotor fans ship standard.	
<b>Required Cabling</b>	For required cabling information, refer to the Web site at: <a href="http://h10010.www1.hp.com/wwpc/us/en/sm/WF05a/15351-15351-3328412-241644-241475-3579703.html">http://h10010.www1.hp.com/wwpc/us/en/sm/WF05a/15351-15351-3328412-241644-241475-3579703.html</a> .	
<b>Operating Systems and Virtualization Software</b>	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) <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/DL120G6">http://www.hp.com/support/DL120G6</a>	
<b>Graphics</b>	64MB shared supports all display resolutions up to 1600 x 1200 16bpp @ 75Hz	
<b>Form Factor</b>	Rack (1U), (1.69 in/4.32 cm), 27.56" deep <b>NOTE:</b> New fixed mounting rails included with all models.	
<b>Embedded Manageability</b>	<b>HP ProLiant LO100</b>	HP ProLiant Lights-Out 100, simplifies server setup, control, and lights-out remote administration of ProLiant 100 Series servers and functions without additional software. It can be accessed from any location via LAN or Internet and works hand-in-hand with HP Systems Insight Manager (SIM), helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business. Advanced Licenses are required for Virtual KVM and Virtual Media feature activation.  Key features of LO100 are: <ul style="list-style-type: none"><li>● IPMI 2.0 &amp; SMASH CLP support</li><li>● ROM Setup Utility</li><li>● Improvements to virtual media with the addition of USB 2.0 drives and protocol support for much faster transfer speeds and DVD-ROM support plus simplified virtual media (floppy and CD with no FTTP server requirements)</li><li>● Enhanced browser interface and embedded KVM over IP provides OS-independent remote graphical console</li><li>● 24x7 Technical Support and Update (TSU) 1 year support and license upgrades included in Advanced license</li></ul>

### Standard Features

<b>Core Server Management</b>	<b>ProLiant 100 Series G6 Core Management Software for ProLiant 100 Series Servers</b>	<p><b>NOTE:</b> For more information, see: <a href="http://www.hp.com/go/lo100">http://www.hp.com/go/lo100</a></p> <p>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.</p>
		<p>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 ProLiant DL100 and SL100 G6 models support the SmartStart Scripting Toolkit (SSSTK), an automated scalable deployment utility.</p>
		<p>Information on core management supported on ProLiant 100 series G6 servers can be found at these URLs:</p>
		<ul style="list-style-type: none"> <li>● Core Management: <a href="http://www.hp.com/go/coremanagement">http://www.hp.com/go/coremanagement</a></li> <li>● HP ProLiant 100 series Easy Set-up CDs: <a href="http://www.hp.com/servers/easysetup">www.hp.com/servers/easysetup</a></li> </ul>
<b>Core Infrastructure Management</b>	HP Systems Insight Manager	<p>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.</p>
	Insight Management Agents	<p>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 <a href="http://www.hp.com/servers/easysetup">http://www.hp.com/servers/easysetup</a></p>
		<p>The following capabilities are enabled on the 100-series G6 servers by the SNMP agents:</p>
		<ul style="list-style-type: none"> <li>● Health monitoring capabilities, including monitoring for drives, fans, network, power supplies, and temperature</li> <li>● Alerting capabilities, including basic alert notification for Smart Array drive pre-failure only</li> <li>● Performance monitoring capabilities providing information on processor, memory, disk free space, network utilization</li> </ul>
	Easy Set-up CD	<p>For additional information, please see: <a href="http://www.hp.com/go/insight">http://www.hp.com/go/insight</a></p> <p>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:</p> <ul style="list-style-type: none"> <li>● Boot environment and GUI</li> <li>● Assisted Installation: Windows 2003 Server and Windows 2008 Server drivers</li> <li>● Manual installation: Windows 2003 Server, Windows 2008 Server, and Linux drivers (specific OS support varies by server).</li> </ul>



### Standard Features

- 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.

For additional information, please see:

<http://h18004.www1.hp.com/products/servers/management/toolkit/index.html>

#### Subscriber's Choice

Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at:

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

and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.

#### ROMPaq, software and latest drivers

The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options; downloaded from Software and Drivers download pages website at: <http://www.hp.com/go/support> and from [www.hp.com/servers/easysetup](http://www.hp.com/servers/easysetup). Contains the following:

- HP Insight Management Agents for Systems Insight Manager (SIM) Integration
- HP Systems Management Homepage
- Array Configuration Utility (ACU)
- Array Diagnostics Utility (ADU)
- HP Insight Diagnostics

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#### Intelligent Manageability

HP ProLiant Lights-Out 100 with optional LO100 Advanced Licenses for Virtual KVM and Virtual Media.

Embedded IPMI standard reporting

Easy Set-up CD and ISO Image Web downloads

Array Configuration Utility (ACU)

Array Diagnostics Utility (ADU)

HP Insight Diagnostics

HP Insight Management Agents and Insight Management Providers for Systems Insight Manager (SIM) Integration

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### Standard Features

#### Security

- Power-on password
- Keyboard password
- USB Port control
- Removable DVD-ROM Drive Assembly (optional)
- Dedicated/Shared LO100 management NIC port
- Administrator's password

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#### Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>



### Optional Features

#### **HP Insight Control management software**      **Insight Control server deployment**

HP Insight Control server deployment is a deployment solution for HP ProLiant and Integrity servers hosted on a Windows CMS. It automates the process of deploying and provisioning server software, enabling companies to quickly and easily adapt to changing business demands. Insight Control server deployment includes software optimizations for HP servers, including the HP scripting toolkits, configuration jobs for leading industry-standard operating systems, sample unattended files, and HP server support packs that include software drivers, management agents, and important documentation. Deploying servers can be accomplished either through imaging or through scripting.

Insight Control server deployment is hosted on a Windows server and is intended for heterogeneous environments deploying Windows, Linux, VMware ESX and Microsoft Hyper-V systems.

Insight Control server deployment includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit:

<http://www.hp.com/services/insight>.

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#### **Factory Express Portfolio for Servers and Storage**

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

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

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

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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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## 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.

### Service and Support

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

#### 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 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 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/bladepystem](http://www.hp.com/services/bladepystem) or <http://www.hp.com/hps/storage>



### Pre-configured Models

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

**NOTE:** Not all models are available in all regions. Check with your local country HP offices for availability.

### Entry Model

<p><b>HP ProLiant DL120 G6 G6950 1P 2GB-U B110i NHP SATA 160GB LFF 400W PS ETY Server</b> 490930-xx1</p>	<p><b>Processor</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drives</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive</b></p> <p><b>Power Supply</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(1) Intel® Pentium® G6950 (2.80GHz/2-core/3MB/73W, 1066) Processor</p> <p>3MB Intel® Smart Cache</p> <p>2GB (1x2GB) PC3-10600E DDR3 UB ECC <b>NOTE: Total of 6 DIMM slots</b></p> <p>Embedded HP NC107i PCI Express Gigabit Server Adapter (x2)</p> <p>HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)</p> <p>1 x 160GB 3.5" Non-hot plug SATA</p> <p>Up to 4 large form factor Non-hot plug SATA</p> <p>None Ships Standard</p> <p>Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant</p> <p>1U</p> <p>Server Warranty includes 3 year Next Day Parts replacement, 0-Years Labor, 0-Years Onsite support. (3-1-1 warranty in APJ)</p>
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### Base Model

<p><b>HP ProLiant DL120 G6 X3430 1P 2GB-U B110i Cold Plug SATA 4 LFF 400W PS Base Svr</b> 490931-xx1</p>	<p><b>Processor</b></p> <p><b>Cache Memory</b></p> <p><b>Memory</b></p> <p><b>Network Controller</b></p> <p><b>Storage Controller</b></p> <p><b>Hard Drives</b></p> <p><b>Internal Storage</b></p> <p><b>Optical Drive</b></p> <p><b>Power Supply</b></p> <p><b>Form Factor</b></p> <p><b>Warranty</b></p>	<p>(1) Intel® Xeon® X3430 (2.40GHz/4-core/8MB/95W, 1333, Turbo 1/1/2/3) Processor</p> <p>8MB Intel® Smart Cache</p> <p>2GB (1x2GB) PC3-10600E DDR3 UB ECC <b>NOTE: Total of 6 DIMM slots</b></p> <p>Embedded HP NC107i PCI Express Gigabit Server Adapter (x2)</p> <p>HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)</p> <p>None Ships Standard</p> <p>Up to 4 large form factor Cold Plug drives <b>NOTE: Hot Plug support requires HP Smart Array Hot Plug Advance Pack for B110i or Smart Array Controller and HP CA ASSY 38" 4 SATA to MINI-SAS Kit (P/N 591475-B21).</b></p> <p>None Ships Standard</p> <p>Auto-sensing 400-Watt PFC Power Supply, CE Mark Compliant</p> <p>1U</p> <p>Server Warranty includes 3 year Next Day Parts replacement, 0-Years Labor, 0-Years Onsite support. (3-1-1 warranty in APJ)</p>
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### Pre-configured Models

#### Performance Model

<b>HP ProLiant DL120 G6 Processor X3450 1P 4GB-U P212/256 Hot Plug 4 LFF 400W PS Perf Server</b> 490932-xx1	<b>Processor</b>	(1) Intel® Xeon® X3450 (2.66GHz/4-core/8MB/95W, 1333, HT, Turbo 1/1/4/4) Processor
	<b>Cache Memory</b>	8MB Intel® Smart Cache
	<b>Memory</b>	4GB (2x2GB) PC3-10600R-9 DDR3 RDIMM <b>NOTE:</b> Total of 6 DIMM slots
	<b>Network Controller</b>	Embedded HP NC107i PCI Express Gigabit Server Adapter (x2)
	<b>Storage Controller</b>	HP Smart Array P212/256MB Controller
	<b>Hard Drives</b>	None Ships Standard
	<b>Internal Storage</b>	Up to 4 large form factor Hot Plug drives
	<b>Optical Drive</b>	None Ships Standard
	<b>Power Supply</b>	Autosensing 400-Watt PFC Power Supply, CE Mark Compliant
	<b>Form Factor</b>	1U
	<b>Warranty</b>	Server Warranty includes 3 year Next Day Parts replacement, 0-Years Labor, 0-Years Onsite support. (3-1-1 warranty in APJ)

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<b>Country Code Key</b>	xx=00	US
	xx=29	Japan
	xx=37	APD (Asia excluding Japan)
	xx=42	EURO
	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:** HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.

**NOTE:** FIO indicates that this option only available as a Factory Installable Option.

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

<b>Models</b>	HP ProLiant DL120 G6 Non-hot Plug Configure-to-order Server	490933-B21
	<b>Includes:</b>	
	Embedded NC107i Gigabit Server Adapter (x2)	
	1 full length PCI Express Gen2 x16 slot (x16 connector) and 1 half length low profile PCI Express x4 slot (x8 connector)	
	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)	
	Rack (1U) form factor, (1.7 in/4.32 cm)	
	Fixed, mounting rails	
	HP ProLiant DL120 G6 Hot Plug Configure-to-order Server	583183-B21
	<b>Includes:</b>	
	Embedded NC107i Gigabit Server Adapter (x2)	
	Hot-Plug drive cage, including cables	
	1 full length PCI Express x16 slot (x16 lane) and 1 half length low profile PCI Express x4 slot (x8 lane)	
	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)	
	Rack (1U) form factor, (1.7 in/4.32 cm)	
	Fixed, mounting rails	

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

<b>HP Processor</b>	<b>Quad-Core Processors</b>	
	HP DL120 G6 Intel® Xeon® X3430 (2.40GHz/4-core/8MB/95W) FIO Processor Kit	581869-L21
	HP DL120 G6 Intel® Xeon® X3440 (2.53GHz/4-core/8MB/95W) FIO Processor Kit	578471-L21
	HP DL120 G6 Intel® Xeon® X3450 (2.66GHz/4-core/8MB/95W) FIO Processor Kit	581870-L21
	HP DL120 G6 Intel® Xeon® X3460 (2.80GHz/4-core/8MB/95W) FIO Processor Kit	578473-L21
	HP DL120 G6 Intel® Xeon® X3470 (2.93GHz/4-core/8MB/95W) FIO Processor Kit	578475-L21
	<b>Dual-Core Processors</b>	
	HP DL120 G6 Intel® Pentium® G1101 (2.26GHz/2-core/2MB/73W) FIO Processor Kit	599309-L21
	HP DL120 G6 Intel® Pentium® G6950 (2.80GHz/2-core/3MB/73W) FIO Processor Kit	599308-L21
	HP DL120 G6 Intel® Xeon® L3406 (2.26GHz/2-core/4MB/30W) FIO Processor Kit	611530-L21
	HP DL120 G6 Intel® Core™ i3-530 (2.93GHz/2-core/4MB/73W) FIO Processor Kit	599310-L21
	HP DL120 G6 Intel® Core™ i3-540 (3.06GHz/2-core/4MB/73W) FIO Processor Kit	599311-L21

### Configuration Information - Factory Integrated Models

<b>HP Memory</b>	<b>Unbuffered with ECC DIMMs (UDIMM)</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
	<b>Registered DIMMs (RDIMM)</b>	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	<b>NOTE:</b> Registered DIMMS (RDIMMs) are supported only with Xeon Processor family.	
	<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://www.hp.com/go/proliant-energy-efficient">www.hp.com/go/proliant-energy-efficient</a>	
<b>HP Hard Drives</b>	<b>NOTE:</b> The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.	
	<b>NOTE:</b> Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	<b>NOTE:</b> The below Hard drives can only be selected with the Non-Hot Plug CTO Chassis (P/N 490933-B21)	
	<b>SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives</b>	
	HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507774-B21
	HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	507772-B21
	HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive	458941-B21
	<b>SATA Non-Hot Plug LFF (3.5-inch) Entry (ETY) Drives</b>	
	HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	571232-B21
	HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive	458947-B21
<b>HP Power Supplies</b>	HP 400W Factory Integrated Power Supply Kit	515739-B21
	HP 500W Power Supply Kit	583437-B21

### Step 3: Choose Additional Options for Factory Integration (only one of the following from each list unless otherwise noted)

<b>HP Storage Controllers SAS Controllers</b>	HP Smart Array P212/256 BBWC 1-ports Int/1-ports Ext PCIe x8 FIO SAS Controller	491191-B21
	HP Smart Array P411/256 BBWC 2-ports Ext PCIe x8 FIO SAS Controller	491193-B21



## *Configuration Information - Factory Integrated Models*

### **Step 4: Choose Additional Factory Integratable Options**

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

### Core Options

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

**HP Unique Options**      HP Internal USB Cable G6 Kit      536769-B21  
**NOTE:** This option required to connect a USB device internally.

**HP Memory**      **Unbuffered with ECC DIMMs (UDIMM)**

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

**Registered DIMMs (RDIMM)**

HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit      500656-B21

HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit      500660-B21

**NOTE:** Registered DIMMS (RDIMMs) are supported only with Xeon Processor family.

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

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

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

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

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

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive      516828-B21

HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive      516816-B21

HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive      516814-B21

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

HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive      507616-B21

HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive      507614-B21

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

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive      516830-B21



### Core Options

HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive 516826-B21

HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive 516824-B21

**NOTE:** 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)

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

HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 507632-B21

HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 454146-B21

HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 458928-B21

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

HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive 507774-B21

HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive 507772-B21

HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Midline 1yr Warranty Hard Drive 458941-B21

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

HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive 571230-B21

HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive 458945-B21

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

HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive 571232-B21

HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive 458947-B21

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

[http://h18000.www1.hp.com/products/quickspecs/13201\\_div/13201\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html) (Worldwide)

### HP Networking

HP NC112T PCI Express Gigabit Server Adapter 503746-B21

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

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

HP NC365T 4-port Ethernet Server Adapter 593722-B21

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

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

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

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

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

### HP I/O Expansion Options

HP DL320 G6 PCI-X Riser Kit 516230-B21

**NOTE:** For PCI-X Card support only.

**NOTE:** The PCI-X Riser option is available to convert the full-length, full-height PCI-Express slot to PCI-X slot for PCI-X cards only.

### HP Power Supplies

HP 500W Power Supply Kit 583437-B21



### Additional Options

<b>Entry-Level Server Management</b>	<p>HP Lights-Out 100i (LO100i) Advanced including 1yr 24x7 Support Electronic License</p> <p><b>NOTE:</b> Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate (xxxxxx-B2x) instead.</p>	TA859AAE
<b>HP Insight Software</b>	<p><b>HP Insight Control server deployment</b></p> <p>HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License T9082AAE</p> <p>HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License 452151-B21</p> <p><b>NOTE:</b> Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.</p> <p><b>NOTE:</b> Electronic software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.</p> <p><b>NOTE:</b> Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.</p> <p><b>NOTE:</b> Licenses ship without media. The Insight Software Media Kit can be ordered separately, or can be downloaded at:  <a href="http://www.hp.com/go/insightcontrol">http://www.hp.com/go/insightcontrol</a> (click on Download button).</p> <p><b>NOTE:</b> For additional license options please see the Insight Control QuickSpecs at:  <a href="http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html">http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html</a></p>	
<b>HP Security-TPM</b>	<p>HP Trusted Platform Module Option 488069-B21</p> <p><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.</p> <p><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></p> <p><b>NOTE:</b> ProLiant OS pre-installed units will come with the partition required for TPM deployment.</p> <p><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.</p>	

### Additional Options

#### HP Storage Controllers SAS Controllers

##### Smart Array P212 Controller

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

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

##### Smart Array P411 Controller

HP Smart Array P411/256 2-ports Ext PCIe x8 SAS Controller 462830-B21

HP Smart Array P411/512 BBWC 2-ports Ext PCIe x8 SAS Controller 462832-B21

##### Optional Upgrades

HP 1GB Flash Backed Cache 534562-B21

HP 512MB Flash Backed Write Cache 534916-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

HP 256MB P-series Cache Upgrade 462968-B21

**NOTE:** Supported on HP Smart Array P212 Controller only.

HP 512MB P-Series Battery Backed Write Cache Upgrade 462967-B21

**NOTE:** Supported on HP Smart Array P411 Controller only.

HP 650 mAh P-Series Battery 462969-B21

**NOTE:** To enable BBWC on the 256MB cache.

**NOTE:** Supported on HP Smart Array P212 Controller, and HP Smart Array P411 only.

HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License 516471-B21

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

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

HP Mini 4 SATA to Mini SAS 38in Cable Assembly 591475-B21

##### SCSI HBA

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

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

[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)

[http://h18000.www1.hp.com/products/quickspecs/13200\\_div/13200\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13200_div/13200_div.html)  
(Smart Array Advanced Pack)

[http://h18000.www1.hp.com/products/quickspecs/12566\\_div/12566\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html)  
(SC11Xe HBA)

#### HP Backup & Recovery Data Protector Express

##### Software

HP Data Protector Express V5.0 for 1 Server E-LTU TC330AAE

HP Data Protector Express V5.0 for 3 Servers E-LTU TC331AAE

HP Data Protector Express V5.0 for 10 Servers E-LTU TC332AAE

HP Basic Upgrade to Data Protector Express V5 for 1 Server E-LTU TC333AAE

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

### Additional Options

#### HP Tape Backup

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

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

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.

HP StorageWorks DAT 320 USB in 1U Rack-mount Kit AP835B

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.

HP StorageWorks Ultrium 448 SAS Internal 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.

HP StorageWorks 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.

HP StorageWorks 1/8 G2 Ultrium 920 SAS Autoloader AH558A

**NOTE:** Requires HP 1U Tape Autoloader Rack-Mount Kit (AH166A) for rack installation.

HP StorageWorks MSL2024 Ultrium 920 SAS Tape Library AH559A

#### HP Disk Backup

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

##### HP D2D Backup Systems with Backup Data Deduplication

HP StorageWorks D2D2502i Backup System 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

##### USB Removable Media RDX Disk Backup Systems

HP StorageWorks RDX1000 Internal Removable Disk Backup System BV847A

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

HP StorageWorks RDX320 Internal Removable Disk Backup System AJ767A

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

HP StorageWorks RDX500 Internal Removable Disk Backup System AJ934A

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

### Additional Options

<b>HP Storage Options</b>	<p><b>SCSI HBA</b>            HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter AH627A  <b>NOTE:</b> Recommended HBA for MSL SCSI Tape Library connect.</p>
<hr/>	
<b>HP Uninterruptible Power Systems</b>	<p><b>HP Rack-mountable UPS</b></p> <p><b>HP Rack-Mountable R5500 UPS</b>            HP R5500 6000VA INTL 3U Rackmount Uninterruptible Power System AF416A            HP R5500 5000kVA NA/JP 3U Rackmount Uninterruptible Power System AF426A  <b>NOTE:</b> Please see QuickSpecs Technical Specifications and additional information:  <a href="http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html">http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html</a>            (Worldwide)</p> <p><b>HP R/T3000 G2 Uninterruptible Power System (UPS)</b>            HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System AF466A            HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System AF467A            HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System AF468A  <b>NOTE:</b> Please see the QuickSpecs for additional information:  <a href="http://h18000.www1.hp.com/products/quickspecs/14058_div/14058_div.html">http://h18000.www1.hp.com/products/quickspecs/14058_div/14058_div.html</a>            (Worldwide)</p> <p><b>HP R/T3000 UPS</b>            HP R/T3000 3300VA High Voltage NA/JPN 2U Rackmount Uninterruptible Power System AF453A            HP R/T3000 3300VA INTL 2U Rackmount Uninterruptible Power System AF454A  <b>NOTE:</b> Please see QuickSpecs Technical Specifications and additional information:  <a href="http://h18000.www1.hp.com/products/quickspecs/10671_div/10671_div.html">http://h18000.www1.hp.com/products/quickspecs/10671_div/10671_div.html</a>            (Worldwide)</p> <p><b>HP R1500 G3 Uninterruptible Power Supply (UPS)</b>            HP R1.5kVA G3 1U NA Uninterruptible Power System AF469A            HP R1.5kVA G3 1U JP/TW Uninterruptible Power System AF470A            HP R1.5kVA G3 1U INTL Uninterruptible Power System AF471A</p> <p><b>HP UPS R1500 G2</b>            HP R1500 G2 1440VA Low Voltage NA 1U Rackmount Uninterruptible Power System AF419A            HP R1500 G2 1440VA INTL 1U Rackmount Uninterruptible Power System AF418A            HP R1500 G2 1200kVA Low Voltage JP 1U Rackmount Uninterruptible Power System AF421A  <b>NOTE:</b> Please see QuickSpecs Technical Specifications and additional information:  <a href="http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html">http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html</a>            (Worldwide)  <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>.</p>

### Additional Options

<b>HP Power Distribution Units</b>	<b>HP Monitored Power Distribution Unit: Full Rack Version</b>	
	HP Single Input 3 Phase 24A Monitored Power Distribution Unit	AF504A
	HP Single Input 1 Phase 40A Monitored Power Distribution Unit	AF506A
	HP Single Input 3 Phase 16A Monitored Power Distribution Unit	AF508A
	HP Single Input 1 Phase 32A INT Monitored Power Distribution Unit	AF510A
	<b>HP Monitored Power Distribution Unit: Half Rack Version</b>	
	HP Single Input 1 Phase 24A Monitored Power Distribution Unit	AF914A
	HP Single Input 1 Phase 32A Monitored Power Distribution Unit	AF915A
	<b>Modular Power Distribution Units 1U/0U (Up to 32 outlets)</b>	
	<b>NOTE:</b> 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).	
	HP 24A High Voltage Modular Power Distribution Unit	252663-D72
	HP 40A High Voltage NA/JP Modular Power Distribution Unit	252663-D73
	HP 32A High Voltage Modular Power Distribution Unit	252663-B31
	HP 16A High Voltage Modular Power Distribution Unit	252663-B24

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

**NOTE:** Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords:  
[http://h18000.www1.hp.com/products/quickspecs/11041\\_div/11041\\_div.html](http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.html)  
 (Worldwide)

**NOTE:** For additional information on HP Power Distribution Units including accessories please go to: [www.hp.com/go/pdu](http://www.hp.com/go/pdu).

**NOTE:** Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link:  
[www.hp.com/products/powercords](http://www.hp.com/products/powercords).

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<b>HP Intelligent Power Distribution Units (iPDU)</b>	<b>iPDU Core Units</b>	
	HP 24A NA/JP Core Only Intelligent Modular Power Distribution Unit	AF520A
	HP 24A 3 Phase NA/JP Core Only Intelligent Modular Power Distribution Unit	AF522A
	HP 32A Intl Core Only Intelligent Modular Power Distribution Unit	AF525A
	HP 16A 3 Phase Intl Intelligent Modular Power Distribution Unit	AF526A

**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information:  
[http://h18000.www1.hp.com/products/quickspecs/13650\\_div/13650\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13650_div/13650_div.html)  
 (Worldwide)

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### Additional Options

#### HP Rack Series

#### Rack 10000 G2 Series

HP 10642 G2 1200mm deep Shock Rack	AF092A
HP 10647 G2 1200mm deep Shock Rack	AF094A
HP 10642 G2 Pallet Universal Rack	AF001A
HP 10642 G2 Shock Universal Rack	AF002A

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

[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).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

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

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

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

### Additional Options

#### HP Rack Options

#### HP KVM Switch Options

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

HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software AF619A

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

[http://h18000.www1.hp.com/products/quickspecs/13475\\_div/13475\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13475_div/13475_div.html)  
(Worldwide)

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

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

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

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

[http://h18000.www1.hp.com/products/quickspecs/13474\\_div/13474\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13474_div/13474_div.html)  
(Worldwide)

#### HP Serial Console Server Options

HP Server Console 0x2x8 Port Analog Switch AF616A

HP Server Console 0x2x16 Port Analog Switch AF617A

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

[http://h18000.www1.hp.com/products/quickspecs/11834\\_div/11834\\_div.html](http://h18000.www1.hp.com/products/quickspecs/11834_div/11834_div.html)  
(Worldwide)

**NOTE:** 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: <http://www.hp.com/go/kvm>.

**NOTE:** For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <http://www.hp.com/go/kvm>.

#### HP Care Pack Services Hardware Services On-site Service

HP 3 year 4 hour 13x5 ProLiant DL120 Hardware Support UJ252E

HP 3 year 4 hour 24x7 ProLiant DL120 Hardware Support UJ253E

#### Hardware Services Next Business Day On-Site Service

HP 3 year Next business day ProLiant DL120 Hardware Support UJ251E

#### Installation Services

HP 3 year 6 hour 24x7 Call to Repair ProLiant DL120 Hardware Support UJ254E

HP Installation ProLiant DL120 Service UJ261E

**NOTE:** For more information, customer/resellers can contact:

<http://www.hp.com/hps/>

### Memory

#### HP ProLiant DL120 G6 Models

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

#### Standard Memory

SATA Models:

4GB of PC3-10600E DDR3 UDIMM running at 1333MHz with ECC capabilities memory installed.

SAS Models

4GB of PC3-10600R RDIMM running at 1333MHz

#### Standard Memory Plus Optional Memory

Up to 16 GB memory is available with the optional installation of 4 x 4GB PC3-10600E UDIMM ECC DDR3 SDRAM DIMM Memory kits, operating at 1333MHz when fully populated at 2 DIMMs per Channel in 4 slots

Up to 12GB memory is available with the optional installation of 6 x 2GB PC3-10600R RDIMM DDR3 SDRAM DIMM Memory kits, operating at 1333MHz when fully populated at 3 DIMMs per Channel in 6 slots

Up to 16 GB memory is available with the optional installation of 4 x 4GB PC3-8500R RDIMM DDR3 DIMM Memory kits, operating at 1066MHz when fully populated at 2 DIMMs per Channel in 4 slots

**NOTE:** The below chart does not represent all possible memory configurations.

**NOTE:** For best performance, it is recommended that customer installs memory in identical pairs (Slots 1 and 3 are interleaving pair. Slots 2 and 4 are interleaving pair).

Some DIMM installation guidelines are summarized below:

- For the HP ProLiant DL120 G6 server with six (6) memory slots
- There are two (2) channels per server
- There are three (3) DIMM slots for each memory channel; six (6) total slots
- Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
- Memory channel 2 consists of the three (3) DIMMs that are furthest from the processor
- Different processor (CPU) has different memory support
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- It is not required, but it is recommended to load the channels similarly if possible
- Support up to 4 DIMMs (2 DIMMs per channel) max 8GB PC3 10600E (DDR3 1333 MHz)
- Support up to 4 DIMMs ( 2 DIMMs per channel) max 16GB PC3-8500R (DDR3-1066 MHz)
- Support up to 6 DIMMs (3 DIMMs per channel) max 12GB PC3-10600R (DDR3-1333 MHz). Support single, double and quad ranks of DIMM
- Populate DIMMs from heaviest load (double-rank) to lightest load (single-rank) within a channel
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the CPU
- No mixing DIMM voltage; all DIMMs must be the same voltage

The UDIMM installing sequence:

	DIMM1E	DIMM2C	DIMM3A	DIMM4F	DIMM5D	DIMM6B
1 DIMMs	Empty	Empty	DIMM	Empty	Empty	Empty
2 DIMMs	Empty	Empty	DIMM	Empty	Empty	DIMM
4 DIMMs	Empty	DIMM	DIMM	Empty	DIMM	DIMM

The RDIMM installing sequence:

	DIMM1E	DIMM2C	DIMM3A	DIMM4F	DIMM5D	DIMM6B
1 DIMMs	Empty	Empty	DIMM	Empty	Empty	Empty
2 DIMMs	Empty	Empty	DIMM	Empty	Empty	DIMM
4 DIMMs	Empty	DIMM	DIMM	Empty	DIMM	DIMM
6 DIMMs	DIMM	DIMM	DIMM	DIMM	DIMM	DIMM

### Memory

Following are memory options available from HP:

<b>HP Memory</b>	<b>Unbuffered with ECC DIMMs (UDIMM)</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
	<b>Registered DIMMs (RDIMM)</b>	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21

**NOTE:** Registered DIMMS (RDIMMs) are supported only with Xeon Processor family.

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

### Storage

1- 4 Four SATA or SAS drive bays



A Optical Drive Bay: Optional DVD-ROM, or DVD-RW drive

### Drive Support

	Quantity Supported	Position Supported	Controller
<b>Removable Media</b>			
9.5mm IDE DVD-ROM or DVD-RW Drive	Up to 1	A	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) <b>NOTE:</b> Transfer rate:3Gb/s SATA

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

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

#### SAS Hot Plug 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 DP	Up to 4	1-4	HP Smart Array P212 Controller <b>NOTE:</b> Support for transfer rates up to 3 Gb/s

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

	Quantity Supported	Position Supported	Controller
2TB 6G SAS 7.2K 1TB 6G SAS 7.2K	Up to 4	1-4	HP Smart Array P212 Controller <b>NOTE:</b> Support for transfer rates up to 3 Gb/s

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

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K DP 450GB 6G SAS 15K DP	Up to 4	1-4	HP Smart Array P212 Controller <b>NOTE:</b> Support for transfer rates up to 3 Gb/s

### Storage

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

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K	Up to 4	1-4	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) <b>NOTE:</b> Transfer rate:3Gb/s SATA <b>NOTE:</b> Smart Array Hot Plug Advanced Pack for B110i needs to be purchased to enable Hot Plug
1TB 3G SATA 7.2K			
750GB 3G SATA 7.2K			
500GB 3G SATA 7.2K			
250GB 3G SATA 7.2K			

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

	Quantity Supported	Position Supported	Controller
2TB 3G SATA 7.2K	Up to 4	1-4	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) <b>NOTE:</b> Transfer rate:3Gb/s SATA <b>NOTE:</b> Smart Array Hot Plug Advanced Pack for B110i needs to be purchased to enable Hot Plug
1TB 3G SATA 7.2K			
500GB 3G SATA 7.2K			

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

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 7.2K	Up to 4	1-4	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) <b>NOTE:</b> Transfer rate:3Gb/s SATA
160GB 3G SATA 7.2K			

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

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 7.2K	Up to 4	1-4	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) <b>NOTE:</b> Transfer rate:3Gb/s SATA
160GB 3G SATA 7.2K			

#### SATA Non-Hot Plug LFF (3.5-inch) Drives

	Quantity Supported	Position Supported	Controller
250GB 1.5G SATA 7.2K	Up to 4	1-4	HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0) <b>NOTE:</b> Transfer rate:3Gb/s SATA
160GB 1.5G SATA 7.2K			

#### Maximum Storage Capacity - (SAS drives)

Internal	8.0TB (4 x 2TB SAS)
External	28.0TB (1 x (14 x 2TB SAS))
Total	36.0TB

#### Maximum Storage Capacity - (SATA Drives)

Internal	8.0TB (4 x 2TB SATA)
External	24.0TB [1 x (12 x 2TB SATA)]
Total	32.0TB

**NOTE:** In order to implement integrated SATA RAID with Easy 'set-up CD' on Windows 2000/2003, the use of a floppy drive is necessary.

#### Tape and Disk Backup

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

HP SCSI Tape Drives	Position	Recommended Controller	Part Number
	External	HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus	412911-B21



## Storage

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

Adapter

### HP USB Tape Drives

DAT 40  
 DAT 72  
 DAT 160  
 DAT 320  
 1U USB Rack-Mount Kit

External

USB 2.0 Port

N/A

### HP SAS Tape Drives

DAT 160  
 DAT 320  
 LTO-2 Ultrium 448  
 LTO-3 Ultrium 920  
 LTO-4 Ultrium 1760  
 LTO-4 Ultrium 1840  
 LTO-5 Ultrium 3000  
 LTO-5 Ultrium 3280  
 1U Rack-Mount Kit  
 3U Rack-Mount Kit

External

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

462828-B21

### HP SCSI Tape Autoloaders

DAT 72x10 Autoloader  
 1/8 G2 Autoloader

External

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

412911-B21

### HP SCSI Tape Libraries

MSL2024  
 MSL4048  
 MSL8096  
 MSL6000

External

HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter

AH627A

### HP SAS Tape Autoloaders and Libraries

1/8 G2 Autoloader  
 MSL2024  
 MSL4048  
 MSL8096

External

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

462828-B21

### HP Fibre Channel Tape Libraries

MSL2024  
 MSL4048  
 MSL8096  
 MSL6000

External

Please consult the EBS connectivity matrix at: <http://www.hp.com/go/ebs> for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpecs.



### Storage

<b>HP USB RDX Removable Disk Backup System</b> RDX160 RDX320 RDX500 RDX750	External	USB 2.0 port	N/A
<b>HP D2D Backup Systems, iSCSI</b> D2D2500i D2D4000i	External	Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	
<b>HP D2D Backup Systems, Fibre Channel</b> 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

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

<b>HP 500W Power Supply Kit</b>	583437-B21					
Input Voltage Range (Vrms)	100 to 240					
Frequency Range (Nominal) (Hz)	47/63					
Nominal Input Voltage (Vrms)	<b>100</b>	<b>120</b>	<b>200</b>	<b>220</b>	<b>230</b>	<b>240</b>
Maximum Rated Output Wattage	500	500	500	500	500	500
Nominal Input Current (A rms)	5.74	4.99	2.86	2.58	2.46	2.36
Max Rated Input Wattage Rating (Watts)	568	568	562	556	556	556
Max. Rated VA (Volt-Amp)	574	574	573	567	567	567
Efficiency (%) at Max. Rated Output Wattage	88	88	89	90	90	90
Power Factor	0.99	0.99	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.42	0.50	0.81	0.91	0.95	1.00
Maximum Inrush Current (A peak)	30	30	30	30	30	30
Maximum Inrush Current duration (mS)	20	20	20	20	20	20
Maximum British Thermal Unit Rating (BTU-Hr)						

### Technical Specifications

<b>System Unit</b>	<b>Dimensions</b> (H x W x D) 4.32 x 44.81 x 70.0 mm (1.69" x 17.64" x 27.56") (with bezel)									
	<b>Weight</b> (approximate)	<table border="0"> <tr> <td>Maximum</td> <td>31.49 lb (14.3kg)</td> </tr> <tr> <td colspan="2">(four hard drives, power supply, and processor installed)</td> </tr> <tr> <td>Minimum</td> <td>28.2lb (12.8kg)</td> </tr> <tr> <td colspan="2">(one hard drive, power supply, and processor installed)</td> </tr> </table>	Maximum	31.49 lb (14.3kg)	(four hard drives, power supply, and processor installed)		Minimum	28.2lb (12.8kg)	(one hard drive, power supply, and processor installed)	
Maximum	31.49 lb (14.3kg)									
(four hard drives, power supply, and processor installed)										
Minimum	28.2lb (12.8kg)									
(one hard drive, power supply, and processor installed)										
	<b>Input Requirements</b> (per power supply)	<table border="0"> <tr> <td>Range Line Voltage</td> <td>90 - 132 VAC, 180 - 264 VAC</td> </tr> <tr> <td>Rated Input Current</td> <td>6 A (at 100 VAC), 3 A (at 200 VAC)</td> </tr> <tr> <td>Rated Input Frequency</td> <td>47 to 63 Hz</td> </tr> <tr> <td>Rated Input Power</td> <td>&lt;550W (at 100 VAC) 550W (at 200 VAC)</td> </tr> </table>	Range Line Voltage	90 - 132 VAC, 180 - 264 VAC	Rated Input Current	6 A (at 100 VAC), 3 A (at 200 VAC)	Rated Input Frequency	47 to 63 Hz	Rated Input Power	<550W (at 100 VAC) 550W (at 200 VAC)
Range Line Voltage	90 - 132 VAC, 180 - 264 VAC									
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Maximum	1314 BTU/hr (at 100 VAC), 1314 BTU/hr (at 200 VAC)									
	<b>Power Specifications</b>	<p>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> or <a href="http://www.hp.com/go/hppoweradvisor">www.hp.com/go/hppoweradvisor</a></p> <ul style="list-style-type: none"> <li>- Click on the system of interest. Example: DL120 G6</li> <li>- Follow the instructions of the next screens.</li> </ul>								
	<b>Power Supply Output</b> (per power supply)	<table border="0"> <tr> <td>Rated Steady-State Power</td> <td>400 W (at 100 VAC), 400 W (at 200 VAC)</td> </tr> <tr> <td>Maximum Peak Power</td> <td>430 W (at 100 VAC), 430 W (at 200 VAC)</td> </tr> </table>	Rated Steady-State Power	400 W (at 100 VAC), 400 W (at 200 VAC)	Maximum Peak Power	430 W (at 100 VAC), 430 W (at 200 VAC)				
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	<b>System Inlet Temperature</b>	<table border="0"> <tr> <td>Operating</td> <td>10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).</td> </tr> <tr> <td>Non-operating</td> <td>-30° to 65°C (-22° to 149°F). Maximum rate of change is 20°C/hr (36°F/hr).</td> </tr> </table>	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).	Non-operating	-30° to 65°C (-22° to 149°F). Maximum rate of change is 20°C/hr (36°F/hr).				
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### Technical Specifications

	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
<b>Acoustic Noise</b>	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	Idle	
	LWAd	6.30 B
	LpAm	44.1 dBA
	Operating	
	LWAd	6.34 B
	LpAm	44.4 dBA
<b>Emissions Classification (EMC)</b>	<b>FCC Rating</b>	Class A
	<b>Normative Standards</b>	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

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

<b>Power Supply</b>	<b>Input voltage specifications</b>	Rated input voltage	100 VAC to 240 VAC
	<b>Input Specifications</b>	Rated input line	90 VAC to 264VAC
		Frequency range	47 to 63 Hz
		Rated input power	@ 115V input, Rated input power = 500W (assume output wattage=400W) @ 230V input, Rated input power = 500W (assume output wattage=400W)
		Rated input current	6 A, 3 A (110 V, 220 V)
		Steady state power	400W (rated)
	<b>BTU Rating</b>	1710 BTU/hr	
	<b>Ambient temperature range</b>	Operating	41° to 122° F (5° to 50° C)
		Non-operating	-40° to 167° F (-40° to 75° C)
	<b>Relative humidity (non-condensing)</b>	Operating	5% to 95%
		Non-operating	5% to 95%
	<b>Dielectric voltage withstand</b>	Input to output	2150 VDC minimum, withstand 1 min
		Input to ground	2150 VDC minimum, withstand 1 min
<b>Maximum Wet Bulb Temperature</b>	104° F (40° C)		

### Technical Specifications

<b>HP Smart Array B110i SATA RAID Controller (RAID 0/1/1+0)</b>	<b>Simultaneous drive transfer channels</b>	4 channels		
	<b>Transfer rate synchronous (maximum theoretical)</b>	150 MB/s per channel; 300 MB/s in RAID 0 pair		
	<b>Data transfer method</b>	Intel® 82801IR Integrated Serial ATA Host Controller (non-RAID mode) Intel® 82801IR Integrated Serial ATA Host Controller (RAID Mode)		
	<b>Drive support</b>	Serial ATA		
	<b>Data transfer modes</b>	Legacy Mode Combined Mode		
	<b>Protocol</b>	Serial ATA		
	<b>Feature</b>	NCQ (Native Command Queuing); AHCI (Advanced Host Controller Interface)		
	<b>RAID levels supported</b>	0, 1		
	<b>RAID Features</b>	Supports multiple logical volumes Setup through ROM based Array Configuration Utility Installation scripting support <b>NOTE:</b> This controller does not support Hot Plug functions or LED functions.		
	<b>RAID OS Support</b>	Microsoft Windows Server 2003 <b>NOTE:</b> In order to implement integrated SATA RAID with Smart Start 7.90 on Windows 2000/2003, the use of a floppy drive is necessary. Linux (Red Hat, SuSE, UnitedLinux)		
	<b>Embedded HP NC107i PCIe Gigabit Server Adapter</b>	<b>Network Interface</b>	10Base-T/ 100Base-TX/ 1000Base-TX	
			Combines a triple-speed IEEE 802.3TM - Compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver.	
		<b>Ports</b>	Single Port	
<b>Compatibility</b>		IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX		
<b>Data Transfer Method Controller</b>		Four lane (x4), 100MHz PCI Express Reference Clock BCM5723		
<b>Network Transfer Rate</b>		10Base-T (Half-Duplex)	10 Mb/s	
		10Base-T (Full-Duplex)	20 Mb/s	
		100Base-TX (Half-Duplex)	100 Mb/s	
		100Base-TX (Full-Duplex)	200 Mb/s	
		1000Base-TX (Half and Full-Duplex)	2000Mb/s	
<b>Connector</b>	RJ-45 connector			
<b>Cable Support</b>	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)		
	10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)		

### Technical Specifications

<p><b>HP 160GB 3G SATA 7.2K rpm LFF (3.5-inch) Non-hot Plug Entry 1yr Warranty Hard Drive</b></p>	<p>458947-B21</p>	<p><b>Capacity</b> 160,041MB</p> <p><b>Height</b> 1.028 in. (26.1 mm) Maximum drive dimension</p> <p><b>Width</b> 4.00 in (101.6 mm)</p> <p><b>Depth</b> 5.787 in (147.0 mm) Maximum drive dimension</p> <p><b>Interface</b> Serial ATA</p> <p><b>Transfer Rate (Maximum)</b> 3Gb/s</p> <p><b>Native Command Queuing</b> Supported</p> <p><b>Seek Time</b> Single Track 2.0 ms (typical reads, including settling) Average &lt;11 ms Full-Stroke 22.0 ms Rotational Speed 7,200 rpm</p> <p><b>Physical Configuration</b> Bytes/Sector 512 Logical Blocks 312,581,808</p> <p><b>Operating Temperature</b> 50° to 95° F (10° to 35° C) (system inlet air temperature)</p>
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**Environment-friendly Products and Approach**

**End-of-life Management and Recycling**

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

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

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

