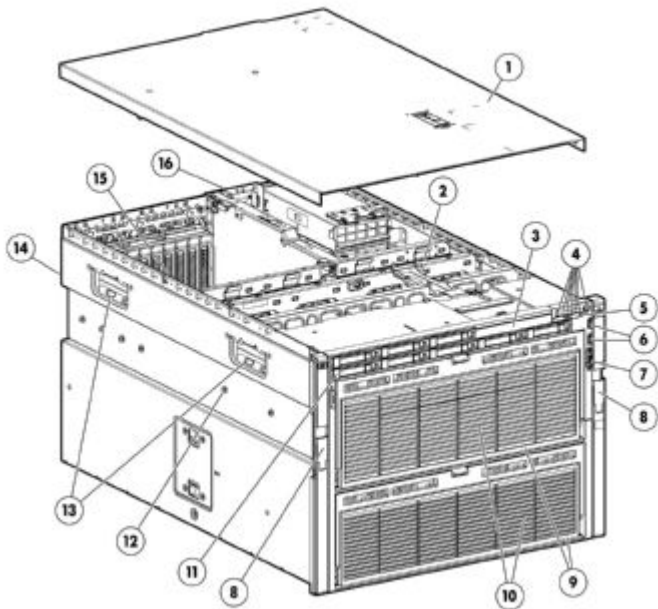


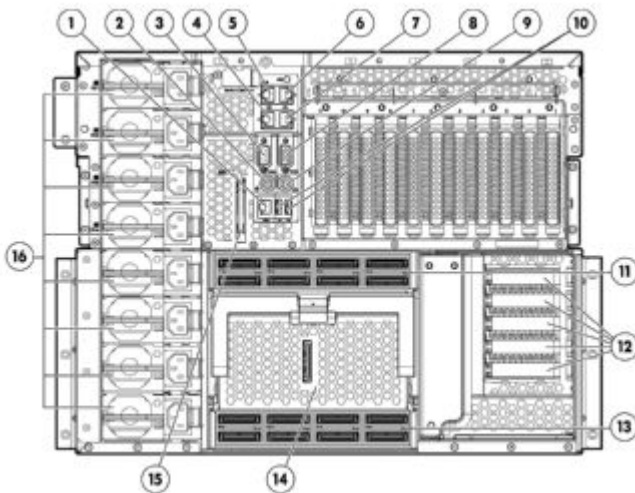
## Overview

HP ProLiant DL980 G7 with HP PREMA Architecture is an eight socket server built to handle the largest x86 enterprise environments with confidence. The DL980 G7 blends industry standard economies with advanced mission critical capabilities to deliver balanced scaling, self healing resiliency and breakthrough efficiencies needed in essential enterprise compute environments. Whether housing a single very large data intensive workload, or many consolidated or virtualized workloads to improve resource utilization, the DL980 G7 featuring PREMA Architecture with Smart CPU caching and a resilient system fabric, is designed to reduce bottlenecks, improve throughput and performance, as well as deliver enhanced reliability not previously available in an x86 environment.



### Front View:

1. Quick removal access panel
2. 8 hot plug redundant fans standard on all models, upper four fan positions shown, lower four not shown
3. DVD drive bay
4. Front panel LED display and Power button
5. Slide-out System Insight Display
6. Two front accessible USB 2.0 ports
7. One front video port
8. Quick release lever for fast server access
9. Upper and lower front accessible processor and memory drawer
10. Support for up to eight 8-core Intel Xeon processors (4 processors in upper and 4 processors in the lower drawer)
11. Support for up to 8 small form factor (SFF) SAS drives
12. Universal tool-less "Snap In" Sliding Rail Solution
13. Server lifting handles
14. 8U rack form factor
15. Up to 11 full height/full length slots supported
16. Hot Plug Redundant Power Supplies (4 or 8 depending on the model)



### Rear View:

1. Integrated Lights-Out 3 port
2. Mouse port
3. Serial port
4. Gigabit NIC port
5. Gigabit NIC port
6. Gigabit NIC port
7. Gigabit NIC port
8. Video port
9. Keyboard port
10. Two USB ports
11. Upper XNC ports
12. Up to 5 low profile slots supported
13. Lower XNC ports
14. XNC module
15. Service tool
16. Power supplies (4 or 8 depending on the model)

Standard Features

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

<b>Processor</b> Four or eight of the following processors depending on model	<b>Eight-Core Processors</b>
	Intel Xeon® X7560 Processor (2.26GHz, 24MB cache, 130W)
	Intel Xeon® X6550 Processor (2.00GHz, 18MB cache, 130W)
	<b>Six-Core Processors</b>
	Intel Xeon® E6540 Processor (2.00GHz, 18MB cache, 105W)
	<b>Four-Core Processors</b>
	Intel Xeon® E7520 Processor (1.86GHz, 18MB cache, 95W)
	<b>NOTE:</b> New Intel Microarchitecture with Intel Virtualization Technology FlexMigration.

<b>Cache Memory</b> One of the following depending on Model	24MB (1 x 24MB) Level 3 cache
	<b>NOTE:</b> For X7560 Processor only.
	18MB (1 x 18MB) Level 3 cache

<b>Chipset</b>	Industry Standard Intel® 7500 Chipset
	Hewlett-Packard DL980 G7 Node Controller
	<b>NOTE:</b> Up to three Industry Standard Intel® 7500 Chipsets with six high-speed interconnects up to 6.4GT/s.
	<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>

<b>Upgradeability</b>	Upgradeable to eight processors
-----------------------	---------------------------------

<b>Memory Protection</b>	Advanced ECC
	Mirrored Memory
	Online Spare Memory Rank

<b>Memory</b> One of the following depending on Model	Type	PC3-10600R Registered DIMMs (DDR3)
	Standard (E6540 Model)	128GB (16 x 8GB)
	Standard (X6550 Model)	256GB (32 x 8GB)
	Maximum	2TB (128 x 16GB)

<b>Network Controller</b>	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
	<b>NOTE:</b> Optional Dual Port 10GbE upgrade (replaces two 1G ports).

Standard Features

Expansion Slots							
<b>NOTE:</b> Up to 16 slots supported: 11 full length/full height and 5 low profile slots. Base I/O backplane configuration: 2 PCI-E 2.0 x8, 3 PCI-E x4. Optional full height/full length I/O backplanes - (choose only one): 2 PCI-E 2.0 x16, 1 PCI-E 2.0 x4, 2 PCI-X OR 4 PCI-E 2.0 x8, 1 PCI-E 2.0 x4, 1 PCI-E 1.1 x4. Optional low profile I/O backplane: 4 PCI-E 2.0 x8, 1 PCI-E 2.0 x4							
Expansion Slots with No Option Card	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	N/A	N/A	N/A	N/A	N/A	N/A
	2	N/A	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A	N/A
	4	N/A	N/A	N/A	N/A	N/A	N/A
	5	N/A	N/A	N/A	N/A	N/A	N/A
	6	N/A	N/A	N/A	N/A	N/A	N/A
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	
* 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).							
FL= Full length; FH = Full height; LP = low-profile.							

Expansion Slots with Combination PCI-X, PCI-e and 300W GPU I/O Expander	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	PCI-X	64-bit	N/A	0x72 (Device 1)	FH/FL	100MHz
	2	PCI-X	64-bit	N/A	0x72 (Device 2)	FH/FL	100MHz
	3	PCI Express Gen2	x16	x16	0x76	FH/FL	
	4	PCI Express Gen2	x4	x8	0x79	FH/FL	
	5	N/A	N/A	N/A	N/A	N/A	N/A
	6	PCI Express Gen2	x16	x16	0x84	FH/FL	
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	

Standard Features

	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	
<div><div>* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.</div><div>** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).</div><div>FL= Full length; FH = Full height; LP = low-profile.</div></div>							

Expansion Slots with Standard PCI-e option I/O Expander	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	PCI Express Gen1	x4	x8	0x71	FH/FL	
	2	PCI Express Gen2	x8	x16	0x74	FH/FL	
	3	PCI Express Gen2	x8	x16	0x77	FH/FL	
	4	PCI Express Gen2	x4	x8	0x7A	FH/FL	
	5	PCI Express Gen2	x8	x16	0x84	FH/FL	
	6	PCI Express Gen2	x8	x16	0x87	FH/FL	
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	
<div><div>* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.</div><div>** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).</div><div>FL= Full length; FH = Full height; LP = low-profile.</div></div>							

Standard Features

Expansion Slots with Low Profile I/O expander (PCI-e option)	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	
	12	PCI Express Gen2	x8	x16	0x71	LP	
	13	PCI Express Gen2	x8	x16	0x74	LP	
	14	PCI Express Gen2	x4	x8	0x77	LP	
	15	PCI Express Gen2	x8	x16	0x7A	LP	
	16	PCI Express Gen2	x8	x16	0x84	LP	

\* 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).

FL= Full length; FH = Full height; LP = low-profile.

Expansion Slots with Combination PCI-X, PCI-e and 300W GPU and Low Profile PCI-e I/O Expanders	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor	Notes
	1	PCI-X	64-bit	N/A	0x52 (Device 1)	FH/FL	100MHz
	2	PCI-X	64-bit	N/A	0x52 (Device 2)	FH/FL	100MHz
	3	PCI Express Gen2	x16	x16	0x56	FH/FL	
	4	PCI Express Gen2	x4	x8	0x59	FH/FL	
	5	N/A	N/A	N/A	N/A	N/A	N/A
	6	PCI Express Gen2	x16	x16	0x5C	FH/FL	
	7	PCI Express Gen2	x4	x8	0x05	FH/FL	
	8	PCI Express Gen2	x4	x8	0x08	FH/FL	

Standard Features

	9	PCI Express Gen2	x8	x16	0x0B	FH/FL	
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL	
	11	PCI Express Gen2	x8	x16	0x11	FH/FL	
	12	PCI Express Gen2	x8	x16	0xA1	LP	
	13	PCI Express Gen2	x8	x16	0xA4	LP	
	14	PCI Express Gen2	x4	x8	0xA7	LP	
	15	PCI Express Gen2	x8	x16	0xAA	LP	
	16	PCI Express Gen2	x8	x16	0xAD	LP	

\* 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).  
FL= Full length; FH = Full height; LP = low-profile.

Expansion Slots with Standard PCI-e and Low Profile PCI-e option I/O Expanders	Expansion Slot #	Technology	Width	Connector Width*	Bus Number(*)(**)	Form Factor
	1	PCI Express Gen1	x4	x8	0x51	FH/FL
	2	PCI Express Gen2	x8	x16	0x54	FH/FL
	3	PCI Express Gen2	x8	x16	0x57	FH/FL
	4	PCI Express Gen2	x4	x8	0x5A	FH/FL
	5	PCI Express Gen2	x8	x16	0x5D	FH/FL
	6	PCI Express Gen2	x8	x16	0x60	FH/FL
	7	PCI Express Gen2	x4	x8	0x05	FH/FL
	8	PCI Express Gen2	x4	x8	0x08	FH/FL
	9	PCI Express Gen2	x8	x16	0x0B	FH/FL
	10	PCI Express Gen2	x4	x8	0x0E	FH/FL
	11	PCI Express Gen2	x8	x16	0x11	FH/FL
	12	PCI Express Gen2	x8	x16	0xA1	LP
	13	PCI Express Gen2	x8	x16	0xA4	LP

Standard Features

	14	PCI Express Gen2	x4	x8	0xA7	LP
	15	PCI Express Gen2	x8	x16	0xAA	LP
	16	PCI Express Gen2	x8	x16	0xAD	LP

\* 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).  
FL= Full length; FH = Full height; LP = low-profile.

Expansion Slot Restrictions	Up to 16 I/O cards are supported within the DL980 server, however due to I/O port space limitations, no more than 11 of any combination of the following I/O cards may be installed in the DL980 server at one time: <ul style="list-style-type: none"><li>• HP NC360T PCI Express Dual Port Gigabit Server Adapter (PN 412648-B21)</li><li>• HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller (PN 462834-B21)</li><li>• HP Smart Array P411/256 2-ports Ext PCIe x8 SAS Controller (PN 462830-B21)</li><li>• HP Smart Array P411/1G FBWC 2-ports Ext PCIe x8 SAS Controller (PN 572531-B21)</li><li>• HP Smart Array P411/512 FBWC 2-ports Ext PCIe x8 SAS Controller (PN 578229-B21)</li><li>• HP Smart Array P812/1G FBWC 2-ports Int/2-ports Ext PCIe x8 SAS Controller (PN 487204-B21)</li><li>• HP SC08Ge 2-ports Ext PCIe x8 SAS Host Bus Adapter (PN 488765-B21)</li><li>• HP StorageWorks 81Q PCI-e FC HBA Single Port (PN AK344A)</li><li>• HP StorageWorks 81E PCI-e FC HBA Single Port (PN AJ762A)</li><li>• HP StorageWorks 82E PCI-e FC HBA Dual Port (PN AJ763A)</li><li>• HP StorageWorks 82Q PCI-e FC HBA Dual Port (PN AJ764A)</li><li>• HP StorageWorks FC2142 4Gb PCI-e HBA (PN A8002A)</li><li>• HP StorageWorks FC2242 Dual Channel 4Gb PCI-e HBA (PN A8003A)</li><li>• HP StorageWorks FC1142 4Gb PCI-e HBA (PN AE311A)</li><li>• HP StorageWorks FC1242 Dual Channel 4Gb PCI-e HBA (PN AE312A)</li></ul>					
-----------------------------	--	--	--	--	--	--

Storage Controller	HP Smart Array P410i controller with optional FBWC The Flash Backed Write Cache (FBWC) increases cache data retention capabilities from two days of existing battery backed write cache (BBWC) to infinite data retention. <ul style="list-style-type: none"><li>• Standard on 4P Models, optional on factory integrated models</li><li>• Transportable data protection</li><li>• Increases overall controller performance</li></ul>					
--------------------	---	--	--	--	--	--

Internal Storage Devices	Diskette Drive	None			
	Optical Drive	Slimline DVD-RW Drive standard			
	Hard Drives	None ship standard			
	Hard Disk Drive Backplane	Internal SAS backplane supports up to eight SFF hard disk drives			

Maximum Internal Storage	Hot Plug SFF SAS	4.8TB	8 x 600GB
--------------------------	------------------	-------	-----------



Standard Features

Interfaces	Serial	1
	Video	1 front; 1 rear
	SD slot	1
	Network RJ-45	4
	iLO 3 Remote Management	1
	Keyboard	1
	Pointing Device (Mouse)	1
	USB 2.0 Ports	6 total: 2 front (video); 2 rear (video, NIC); 2 internal
	<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>	

Industry Standard Compliance	ACPI 2.0. Compliant
	PCIE 2.0 Compliant
	PXE Support
	WOL Support
	Physical Address Extension (PAE) Support
	Microsoft® Logo certifications
	USB 2.0 Support

Server Power Cords	One 6' highline (IEC-IEC) power cord per power supply is shipped standard with each system.
	<b>NOTE:</b> If customers require a local power cord, they can check the power cord matrix for the appropriate country specific sku. Please see the following power cord matrix for details: <a href="http://www.hp.com/go/powercordmatrix">http://www.hp.com/go/powercordmatrix</a>

Power Supply	<b>NOTE:</b> Rear accessible Hot Plug Power Supplies with option for redundancy (Redundant power supplies are standard on some models).	
	E6540 4P Model:	(4) 1200W Common Slot Platinum Power Supplies (220VAC only)
	X6550 4P Model:	(8) 1200W Common Slot Platinum Power Supplies (220VAC only)
	<b>NOTE:</b> The HP ProLiant DL980 G7 requires four power supplies to operate. With four power supplies there is no power redundancy. Eight power supplies are required for power redundancy. The level of redundancy will be reported during the system power on.	

System Fans	8 Hot plug, redundant fans ship standard
-------------	--

Required Cabling	For required cabling information, refer to the HP Web site at: <a href="http://www.hp.com/servers/dl980">www.hp.com/servers/dl980</a>
------------------	---

Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server
	Microsoft Windows Server Hyper V
	Red Hat Enterprise Linux (RHEL)
	SUSE Linux Enterprise Server (SLES)
	Oracle Solaris
	VMware
<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, please visit our Support Matrix at: <a href="http://www.hp.com/go/ossupport">http://www.hp.com/go/ossupport</a> and our driver download page <a href="http://www.hp.com/support/DL980G7">www.hp.com/support/DL980G7</a> .	



## Standard Features

Graphics	Integrated ATI ES1000 with 32MB embedded video SDRAM Max Resolution 1280 x 1024 x 16M color	
Form Factor	Rack (8U = 14 inches) Ships with Quick Deploy Sliding Rail System, an ambidextrous cable management arm and quick release levers for fast and easy serviceability and in-rack tool-less access to major components.	
HP Insight management software	HP Insight Foundation	<p>Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.</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 customer with higher levels of operational efficiency and highly reliable systems: <a href="http://www.hp.com/go/foundation">www.hp.com/go/foundation</a>.</p> <p>The foundation pack includes:</p> <ul style="list-style-type: none"><li>• HP SmartStart</li><li>• HP Management DVD</li><li>• HP ProLiant Smart Update Firmware DVD</li></ul> <p>SmartStart version supported (minimum): SmartStart 8.5 <a href="http://www.hp.com/servers/smartstart">http://www.hp.com/servers/smartstart</a></p> <p><b>NOTE:</b> In an effort to support reducing our environmental impact, the HP Insight Foundation Suite for ProLiant media will be available as a selectable option for this server at time of order of a CTO SKU. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.</p>
HP Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. HP iLO can be purchased stand-alone and it also is included with the purchase of HP Insight Control. For more information, visit: <a href="http://www.hp.com/go/iLO">www.hp.com/go/iLO</a>

## Standard Features

Intelligent Manageability	HP Systems Insight Manager
	SmartStart
	Redundant ROM
	Remote Flash ROM
	Management Agents
	Integrated Management Log (IML)
	Automatic Server Recovery-2 (ASR-2)
	ROM-Based Setup Utility (RBSU)
	Dynamic Sector Repairing (with Smart Array Controllers)
	Drive Parameter Tracking (with Smart Array Controllers)
	Pre-Failure Warranty (covers processors, SAS hard drives and memory)
	Redundant/adaptive load balancing NIC Support
	Hot Spare Boot
<b>NOTE:</b> Upon the event of a failed processor in a multi-processing environment, the system will automatically reboot and use the remaining good processor(s).	

Security	Power-on password
	Keyboard password
	External USB port enable/disable
	Network Server Mode
	Serial interface control
	Administrator's password
	Removable CD-ROM or DVD drive

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 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.</p>
	<p><b>NOTE:</b> Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: <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>

Optional Features

HP Insight management software

HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.

Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See [www.hp.com/go/insightcontrol](http://www.hp.com/go/insightcontrol)

HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <http://www.hp.com/services/insight>.

HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. As a powerfully integrated by design toolkit to accelerate complex technology projects and simplify daily operations that ultimately enable IT Staff personnel to dynamically keep pace with the organizations changing business requirements. It enables them to plan capacity and power continuously, balance across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location.

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

High Performance Clusters

HP Cluster Platforms HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and Novell SLES, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. <http://www.hp.com/go/clusters>

HP HPC Interconnects High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. <http://www.hp.com/techservers/clusters/ucp/index.html>

HP Cluster Management Utility HP Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used to manage large-scale Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. <http://www.hp.com/go/cmu>

HP HPC Linux Value HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-



Optional Features

Pack	supported specially priced software bundle for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform HPC Enterprise Edition suite of tools including the LSF workload scheduler, the HP-MPI parallelization library. Also included are the HP Unified Parallel C compiler and the HP Shmem library, as well as the execution environments for the libraries and compiler. <a href="#">HP HPC Linux Value Pack</a>
------	---

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>.

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 Technology Services for Industry Standard Servers and BladeSystem

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

#### What HP ProLiant and BladeSystem Services can do for you

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

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

### Optimized Care

#### Optimized Care Package: Supports maintaining servers at optimum performance availability

##### HP ProLiant Server Hardware Installation

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

##### HP Installation and Startup for Insight Control Software

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

##### 3-Year HP Critical Advantage

Provides end-to-end infrastructure support solution for business critical applications running on virtualized/x86 infrastructures, enabling the customers to cost effectively build, operate, and continuously improve their IT environment. <http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA3-1772ENW>

**Additional Services:** Data Center Transformation Services

### Standard Care

#### Standard Care Package: Package that maintains high level of server availability

##### HP ProLiant Server Hardware Installation

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

##### HP Installation and Startup for Insight Control Software

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

##### 3-Year HP 6 hour Hardware Support Onsite Call-to-Repair Service

Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center. <http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6636ENN>

## Service and Support

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

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers. <http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf>

**Additional Services:** Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); Microsoft or Linux or VMware education courses; +60 Proactive Select Credits

---

### Basic Care

**Basic Care Package:** delivers minimum recommended support service level

#### HP ProLiant Server Hardware Installation

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

#### HP Installation and Startup for Insight Control Software

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

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

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers. <http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

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

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers. <http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf>

**Additional Services:** Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support); +30 Proactive Select Credits, Factory Express.

---

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

---

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



Pre-configured Models

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

**NOTE:** Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.

**NOTE:** HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

**NOTE:** If you desire a custom configuration please see "Configuration Information - Factory Integrated Models" section of this QuickSpecs.

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

<b>HP ProLiant DL980 G7 E6540 2.0GHz 6 Core 4P Rack Server</b> AM445A	<b>Processor(s)</b>	(4) Intel Xeon® E6540 Processor (2.00GHz, 18MB cache, 105W)
	<b>Cache Memory</b>	18MB (1 x 18MB) Level 3 cache
	<b>Memory</b>	128GB (16 x 8GB) PC3-10600R Registered DIMMs (DDR3)
	<b>Network Controller</b>	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
	<b>Storage Controller</b>	HP Smart Array P410i Controller with 512MB FBWC
	<b>Hard Drives</b>	None ship standard
	<b>Internal Storage</b>	4.8TB max (with optional 600GB SAS hard drives)
	<b>Optical Drive</b>	Slimline DVD-RW Drive standard
	<b>Power Supply</b>	Four 1200W Common Slot Platinum power supplies standard Optional upgrade to eight power supplies for redundancy
	<b>Fans</b>	8 Hot plug, redundant fans ship standard
	<b>Integrated Lights-Out</b>	HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board)
	<b>Insight Control</b>	HP Insight Control No Media single server license, including 1 year of 24x7 Technical Support
	<b>Form Factor</b>	Rack 8U
	<b>Warranty</b>	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response

<b>HP ProLiant DL980 G7 X6550 2.0GHz 8 Core 4P Rack Server</b> AM444A	<b>Processor(s)</b>	(4) Intel Xeon® X6550 Processor (2.00GHz, 18MB cache, 130W)
	<b>Cache Memory</b>	18MB (1 x 18MB) Level 3 cache
	<b>Memory</b>	256GB (32 x 8GB) PC3-10600R Registered DIMMs (DDR3)
	<b>Network Controller</b>	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
	<b>Storage Controller</b>	HP Smart Array P410i Controller with 512MB FBWC
	<b>Hard Drives</b>	None ship standard
	<b>Internal Storage</b>	4.8TB max (with optional 600GB SAS hard drives)
	<b>Optical Drive</b>	Slimline DVD-RW Drive standard
	<b>Power Supply</b>	Eight 1200W Common Slot Platinum power supplies standard (fifth - eighth power supply are for redundancy)
	<b>Fans</b>	8 Hot plug, redundant fans ship standard
	<b>Integrated Lights-Out</b>	HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board)
	<b>Insight Control</b>	HP Insight Control No Media single server license, including 1 year of 24x7 Technical Support
	<b>Form Factor</b>	Rack 8U
	<b>Warranty</b>	Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response.



Configuration Information - Factory Integrated Models

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

**NOTE:** Configure-to-order (CTO) servers must start with a CTO Chassis.

**NOTE:** FIO indicates that this option is only available as a factory installable option.

Step 1: Base Configuration

HP Models	HP ProLiant DL980 G7 Configure-to-order Server	AM426A
	<b>Factory Integrated Model ships with:</b>	
	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter	
	Eight HP Memory Boards	
	Five PCI-express slots	
	HP Smart Array P410i/Zero Memory Controller	
	Four 1200W Common Slot Platinum hot-plug power supplies	
	Eight redundant hot plug fans	
	SFF SAS drive cage	
	HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board)	
	Rack form factor, 8U	

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

HP Processors	<b>NOTE:</b> Each processor kit contains four processors.	
	<b>NOTE:</b> If eight processors are desired select one xxxxxx-L21 and one xxxxxx-B21. Additionally one HP DL980 CPU Assembly (P/N: AM442A) will be required.	
	<b>Eight-Core Processors</b>	
	HP DL980 G7 Intel® Xeon® X7560 (2.27GHz/8-core/24MB/130W) FIO 4-processor Kit	597871-L21
	<b>NOTE:</b> QPI speed is 6.4GT/s	
	HP DL980 G7 Intel® Xeon® X6550 (2GHz/8-core/18MB/130W) FIO 4-processor Kit	597870-L21
	<b>NOTE:</b> QPI speed is 6.4GT/s	
	<b>Six-Core Processors</b>	
	HP DL980 G7 Intel® Xeon® E6540 (2GHz/6-core/18MB/105W) FIO 4-processor Kit	597869-L21
	<b>NOTE:</b> QPI speed is 6.4GT/s	
HP Memory	<b>Four-Core Processors</b>	
	HP DL980 G7 Intel® Xeon® E7520 (1.86GHz/4-core/18MB/95W)) FIO 4-processor Kit	597868-L21
	<b>NOTE:</b> QPI speed is 4.8GT/s	
	<b>Registered DIMMs (RDIMMs)</b>	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
HP Optical Drives	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP DL580G7/DL980G7 Memory Cartridge	588141-B21
	HP Slim SATA DVD-ROM Optical Drive	481041-B21
	HP Slim SATA DVD RW Optical Drive	481043-B21



Configuration Information - Factory Integrated Models

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

HP Insight Software	HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License	582765-B21
	HP Insight Control for Linux including 1yr 24x7 Support ML/DL Bundle 1 Server FIO License	TC203A

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" 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 DL580 G7 PCI Express Kit	588137-B21
	<b>NOTE:</b> Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4 and one PCI-E 1.1 x4.	
	HP DL580 G7 PCI-X Combo Express Kit	588139-B21
	<b>NOTE:</b> Adds two PCI-E 2.0 x16, one PCI-E 2.0 x4 and two PCI-X.	
	<b>NOTE:</b> Suggested Slot placement:	
	<ol style="list-style-type: none"><li>Slot 3 PCIe2 x 16 (16,8,4,2,1)</li><li>Slot 6 PCIe2 x 16 (16,8,4,2,1)</li><li>Slot 9 PCIe2 x 16 (8,4,2,1)*</li><li>Slot 11 PCIe2 x 16 (8,4,2,1)*</li></ol>	
	Slot 9 and 11 are physically a x16 slot but will operate electrically at x8	
	HP DL980 LP PCIe I/O Expansion Module	AM434A
	<b>NOTE:</b> Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4.	
	HP DL980 G7 CPU Installation Assembly Kit	AM442A
	<b>NOTE:</b> Required for 8p configurations only.	

HP Processors	<b>NOTE:</b> Each processor kit contains four processors. 8P configurations require one HP DL980 CPU Assembly (P/N: AM442A)	
	<b>Eight-Core Processors</b>	
	HP DL980 G7 Intel® Xeon® X7560 (2.27GHz/8-core/24MB/130W) 4-processor Kit	597871-B21
	<b>NOTE:</b> QPI speed is 6.4GT/s	
	HP DL980 G7 Intel® Xeon® X6550 (2GHz/8-core/18MB/130W) 4-processor Kit	597870-B21
	<b>NOTE:</b> QPI speed is 6.4GT/s	
	<b>Six-Core Processors</b>	
	HP DL980 G7 Intel® Xeon® E6540 (2GHz/6-core/18MB/105W) 4-processor Kit	597869-B21
	<b>NOTE:</b> QPI speed is 6.4GT/s	
	<b>Four-Core Processors</b>	
	HP DL980 G7 Intel® Xeon® E7520 (1.86GHz/4-core/18MB/95W)) 4-processor Kit	597868-B21
	<b>NOTE:</b> QPI speed is 4.8GT/s	

HP Memory	<b>Registered DIMMs (RDIMMs)</b>	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP DL580G7/DL980G7 Memory Cartridge	588141-B21
	<b>NOTE:</b> Eight memory boards come standard in all pre-configured and CTO models. A maximum of 16 memory boards are supported in the server (requires installation of the HP DL980 CPU Assembly P/N: AM442A).	

HP Optical Drives	HP Slim SATA DVD-ROM Optical Drive	481041-B21
	HP Slim SATA DVD RW Optical Drive	481043-B21

Core Options

HP Hard Drives

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

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

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

HP 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 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-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 Midline (MDL) Solid State Drives

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

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

HP Networking

Gigabit Ethernet Adapters

HP NC112T PCI Express 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:</b> There is a maximum of five NC364T PCI Express Quad Port Gigabit Server Adapter NICs allowed in this server.	
HP NC375T PCI Express Quad Port Gigabit Server Adapter	538696-B21
HP NC365T Ethernet Quad Port Server Adapter	593722-B21
HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21

10 Gigabit Ethernet Adapters

**NOTE:** The DL980 G7 can support up to four NC550SFP or four NC523SFP per server under Windows Server 2008, R2, RHEL 5.5 and SLES 11

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

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

HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21
HP NC523SFP 10Gb 2-port Server Adapter	593717-B21
HP NC524SFP Dual Port 10GbE Server Adapter	489892-B21
HP NC550SFP Dual Port 10GbE Server Adapter	581201-B21

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

Smart-mini DIMM Module



Core Options

	HP 512MB DDR2 244P Mini DIMM Module Kit	519808-B21
	<b>NOTE:</b> By plugging the Smart-mini DIMM Module to the HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter, TCP/IP Offload Engine (TOE) for Windows is enabled/supported.	
HP InfiniBand	HP IB 4X DDR CX-2 PCI-e G2 Dual Port HCA	592521-B21
	HP IB 4X QDR CX-2 PCI-e G2 Dual Port HCA	592520-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>	
HP I/O Expansion Options	HP DL580 G7 PCI-X Combo Express Kit	588139-B21
	<b>NOTE:</b> Adds two PCI-E 2.0 x16, one PCI-E 2.0 x4 and two PCI-X.	
	<b>NOTE:</b> Suggested Slot placement:	
	<ol style="list-style-type: none"><li>1. Slot 3 PCIe2 x 16 (16,8,4,2,1)</li><li>2. Slot 6 PCIe2 x 16 (16,8,4,2,1)</li><li>3. Slot 9 PCIe2 x 16 (8,4,2,1)*</li><li>4. Slot 11 PCIe2 x 16 (8,4,2,1)*</li></ol> Slot 9 and 11 are physically a x16 slot but will operate electrically at x8	
	HP DL580 G7 PCI Express Kit	588137-B21
	<b>NOTE:</b> Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4 and one PCI-E 1.1 x4.	
	HP DL980 LP PCIe I/O Expansion Module	AM434A
	<b>NOTE:</b> Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4.	
HP Power Supplies	<b>NOTE:</b> 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: <a href="http://www.hp.com/go/hppoweradvisor">www.hp.com/go/hppoweradvisor</a>	
	HP 1200W Common Slot Platinum Hot Plug Power Supply Kit	578322-B21

Additional Options

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

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

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

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

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

**NOTE:** Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at:

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

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

**HP Insight Control for Linux**

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

**NOTE:** Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: <http://www.hp.com/go/ic-linux> (click on Download button).

**NOTE:** Electronic licenses can be used to purchase multiple licenses with a single activation key, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

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

**NOTE:** For additional License Kits, including electronic licensing options, please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/13019\\_div/13019\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html)

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

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

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

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

**NOTE:** For additional license kits, including electronic delivery options, please see the QuickSpecs at:





### Additional Options

[http://h18000.www1.hp.com/products/quickspecs/12362\\_div/12362\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html)

#### HP Insight Control server deployment

HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License T9082AAE

HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License 452151-B21

**NOTE:** Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at:

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

**NOTE:** Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

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

**NOTE:** For additional license kits please see the Insight Control QuickSpecs at: [http://h18004.www1.hp.com/products/quickspecs/12631\\_div/12631\\_div.html](http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html)

### High Performance Clusters

#### HP Cluster Management Utility

HP Cluster Management Utility Compute Node Flexible License QL803A

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

HP Cluster Management Utility License and Media 433257-B21

**NOTE:** Order a minimum of one license per cluster to purchase media including software and documentation, which will be delivered to the customer, and also licenses CMU management. No license key is delivered or required.

**NOTE:** For additional license kits please see the QuickSpecs at:

[http://h18004.www1.hp.com/products/quickspecs/12612\\_div/12612\\_div.html](http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html)

#### HP HPC Linux Value Pack

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

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

HP High Performance Computing Linux Value Pack Media Kit TC294A

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

**NOTE:** For additional license kits please see the QuickSpecs at:

[http://h18004.www1.hp.com/products/quickspecs/13485\\_div/13485\\_div.html](http://h18004.www1.hp.com/products/quickspecs/13485_div/13485_div.html)

### HP Graphics Options

HP DL580/DL585/DL980 G7 Power Cable Kit 631660-B21

**NOTE:** The HP ProLiant DL980 G7 can support up to 4 (225W) or 3 (300W) Graphic Cards and/or GPGPU Accelerator Options

**NOTE:** An option kit will be required per Graphic Card and/or GPGPU Accelerator Options.

**NOTE:** Depending on the number of GPGPUs required, customers will need to purchase the following I/O expansion boards: DL580G7 PCI-X / PCI Express I/O Exp. Kit: PN: 588139-B21 (Adds two PCI-E 2.0 x16, one PCI-E 2.0 x4 and two PCI-X).



### Additional Options

<b>HP I/O Accelerator Options</b>	HP 160GB SLC PCIe ioDrive	600278-B21
	<b>NOTE:</b> A low-profile PCI bracket is included for use in low-profile slots.	
	HP 320GB MLC PCIe ioDrive	600279-B21
	<b>NOTE:</b> A low-profile PCI bracket is included for use in low-profile slots.	
	HP 320GB SLC PCIe ioDrive Duo	600281-B21
	HP 640GB MLC PCIe ioDrive Duo	600282-B21
	HP 1.28TB MLC PCIe ioDrive Duo	641027-B21
	<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)	

<b>HP Security - TPM</b>	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. 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

#### Smart Array P212 Controller

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 FBWC 2-ports Ext PCIe x8 SAS Controller	578229-B21
HP Smart Array P411/1G FBWC 2-ports Ext PCIe x8 SAS Controller	572531-B21

#### Smart Array P812 Controller

HP Smart Array P812/1G FBWC 2-ports Int/4-ports Ext PCIe x8 SAS Controller	487204-B21
--	------------

#### Optional Upgrades

**NOTE:** Maximum of two battery or FBWC kits (for Smart Array Controllers) can be installed in upper full height/full length (FH/FL) I/O slot area. Maximum of one battery or FBWC kit (for Smart Array Controller) can be installed in lower low profile (LP) I/O slot area.

HP 650 mAh P-Series Battery	462969-B21
-----------------------------	------------

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

HP 1GB Flash Backed Cache	534562-B21
---------------------------	------------

HP 512MB Flash Backed Write Cache	534916-B21
-----------------------------------	------------

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

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

## Additional Options

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

[http://h18000.www1.hp.com/products/quickspecs/13203\\_div/13203\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html)

(Smart Array P212 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)

[http://h18000.www1.hp.com/products/quickspecs/13558\\_div/13558\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13558_div/13558_div.html)

(Smart Array P812 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)

### SAS HBA

HP SC08Ge 2-ports Ext PCIe x8 SAS Host Bus Adapter

488765-B21

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

614988-B21

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

**NOTE:** This is only approved for the HP StorageWorks P2000 G3 SAS Modular Smart Array.

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

[http://h18004.www1.hp.com/products/quickspecs/13082\\_div/13082\\_div.html](http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html)

(SC08Ge HBA)

[http://h18004.www1.hp.com/products/quickspecs/13651\\_div/13651\\_div.html](http://h18004.www1.hp.com/products/quickspecs/13651_div/13651_div.html)

(SC08e 6Gb HBA)

### HP Power Cords

HP 1.83m 10A C13 CH Power Cord

AF565A

HP 1.83m 10A C13 DK Power Cord

AF566A

HP 1.83m 10A C13 EU Power Cord

AF568A

HP 1.83m 10A C13 UK Power Cord

AF570A

HP 1.83m C13 IT/CL Power Cord

AF571A

HP 2.5m C13 So Africa Power Cord

AF567A

### 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 320 USB (1) in 1U Rack-mount Kit

AP835A

HP StorageWorks DAT 320 SAS Internal Tape Drive

AJ830A

**NOTE:** For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks Ultrium 920 SAS Internal Tape Drive

EH847A

**NOTE:** For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

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

EH919A

**NOTE:** For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks LTO-4 Ultrium 1840 SAS Internal Tape Drive

EH860A

**NOTE:** For installation into 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

### Additional Options

HP StorageWorks LTO-5 Ultrium 3280 SAS Internal Tape Drive	EH899A
<b>NOTE:</b> For installation into 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	
HP StorageWorks 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader	BL536A
<b>NOTE:</b> Requires HP 1U Tape Autoloader Rack Kit (AH166A) for rack installation. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	
HP StorageWorks MSL2024 1 LTO-5 Ultrium 3000 SAS Tape Library	BL537A
<b>NOTE:</b> Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	
HP StorageWorks MSL4048 2 LTO-5 Ultrium 3000 SAS Tape Library	BL538A
<b>NOTE:</b> Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.	
HP StorageWorks MSL8096 2 LTO-5 Ultrium 3000 SAS Tape Library	BL539A
<b>NOTE:</b> Connection using HP P212 Smart Array Controller SAS (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 D2D2504i Backup System	EJ002B
<b>NOTE:</b> 3.0TB of useable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.	

HP StorageWorks D2D4112 Backup System	EH993B
<b>NOTE:</b> 9.0TB (expandable to 18.0TB) of useable network disk backup capacity. Fibre Channel SAN connected appliance. Direct server attach is not supported, requires connection via SAN fabric.	

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

HP StorageWorks RDX500 Internal Removable Disk Backup System	AJ934A
<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.	

## Additional Options

### HP StorageWorks Options

#### StorageWorks Fibre Channel HBA

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

#### Brocade Fibre Channel HBAs

HP StorageWorks 81B PCIe 8Gb Fibre Channel Single Port Host Bus Adapter	AP769A
HP StorageWorks 82B PCIe 8Gb Fibre Channel Dual Port Host Bus Adapter	AP770A
HP StorageWorks 41B PCIe 4Gb Fibre Channel Single Port Host Bus Adapter	AP767A
HP StorageWorks 42B PCIe 4Gb Fibre Channel Dual Port Host Bus Adapter	AP768A

#### Emulex Fibre Channel HBAs

HP StorageWorks 81E 8Gb Single Port PCI-e Fibre Channel Host Bus Adapter	AJ762A
HP StorageWorks 82E 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter	AJ763A
HP StorageWorks FC2142SR 4Gb PCIe Host Bus Adapter	A8002A
HP StorageWorks FC2242SR 4Gb PCIe DC Host Bus Adapter	A8003A

#### QLogic Fibre Channel HBAs

HP StorageWorks 81Q PCI-e Fibre Channel Host Bus Adapter	AK344A
HP StorageWorks 82Q 8Gb Dual Port PCI-e Fibre Channel Host Bus Adapter	AJ764A
HP StorageWorks FC1142SR 4Gb PCIe Host Bus Adapter	AE311A
HP StorageWorks FC1242SR 4Gb PCIe DC Host Bus Adapter	AE312A

#### StorageWorks SCSI HBA

HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter	AH627A
--	--------

**NOTE:** Recommended HBA for MSL SCSI Tape Library connect.

#### StorageWorks Converged Network Adapter

HP StorageWorks CN1000E 2P Converged Network Adapter	AW520A
<b>NOTE:</b> There is a maximum of two CN1000E 2P Converged Network Adapters allowed in this server.	
HP CN1000Q 2P Converged Network Adapter	BS668A

### HP Disk Storage Systems

#### MSA SAN Storage Arrays

HP StorageWorks 50 Modular Smart Array	364430-B21
--	------------

**NOTE:** Please see the QuickSpecs for additional options and configuration information at: [http://h18000.www1.hp.com/products/quickspecs/12245\\_div/12245\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12245_div/12245_div.html) (Worldwide)

#### Disk Enclosures

HP StorageWorks D2600 Disk Enclosure	AJ940A
HP StorageWorks D2700 Disk Enclosure	AJ941A

**NOTE:** Please see the QuickSpecs for additional options and configuration information at: [http://h18000.www1.hp.com/products/quickspecs/13404\\_div/13404\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html) (Worldwide)

## Additional Options

### HP Uninterruptible Power Systems

#### HP Rack-Mountable R5500 UPS

HP R5500 6000VA INTL 3U Rackmount Uninterruptible Power System	AF416A
HP R5500 5000kVA NA/JPN 3U Rackmount Uninterruptible Power System	AF426A

**NOTE:** Please see the QuickSpecs for additional information:  
[http://h18000.www1.hp.com/products/quickspecs/11871\\_div/11871\\_div.html](http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html)  
 (Worldwide)

#### HP R/T3000 Uninterruptible Power System (UPS)

HP R/T3000 3300VA High Voltage NA/JPN 2U Rackmount Uninterruptible Power System	AF453A
HP R/T3000 3300VA INTL 2U Rackmount Uninterruptible Power System	AF454A

**NOTE:** Please see the QuickSpecs for additional information:  
[http://h18000.www1.hp.com/products/quickspecs/13417\\_div/13417\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13417_div/13417_div.html)  
 (Worldwide)

**NOTE:** For additional information on HP Uninterruptible Power Systems please go to: [www.hp.com/servers/rackups](http://www.hp.com/servers/rackups).

**NOTE:** For additional information on sizing your server, please reference: <http://www.upssizer.com>.

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

### HP Power Distribution Unit

#### 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

#### 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

**NOTE:** Please see the following QuickSpecs for 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)

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

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

HP Modular Power Distribution Units (mPDU), High Volt Model, 32A (200-240 VAC) (Int'l)	252663-B31
--	------------

HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW)	252663-B24
---	------------

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

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

[http://h18000.www1.hp.com/products/quickspecs/11041\\_div/11041\\_div.html](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).

## Additional Options

### HP Rack Series

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

HP 10642 G2 Pallet Universal Rack	AF001A
HP 10642 G2 Shock Universal Rack	AF002A
HP 10647 G2 Pallet Universal Rack	AF031A
HP 10642 G2 1200mm deep Shock Rack	AF092A
HP 10647 G2 1200mm deep Shock Rack	AF094A

**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). 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.

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



### Additional Options

#### HP Rack Options

#### HP KVM Switch Options

2x1Ex16 IP Console SwitchG2 with Virtual Media	AF621A
4x1Ex32 IP Console SwitchG2 with Virtual Media	AF622A
2x16 Server Console Switch G2 with Virtual Media	AF618A
2x32 Server Console Switch G2 with Virtual Media	AF619A
PS/2 Virtual Media Interface Adapter, 1 pack	AF604A
<b>NOTE: Requires PS/2 and one USB port on server.</b>	
Server console switch 0x2x8	AF616A
Server console switch 0x2x16	AF617A
PS/2 Interface Adapter, 1 pack	262588-B21
PS/2 Interface Adapter, 8 pack	262587-B21
<b>NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL:</b>	
<a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .	
HP 1x4 Console Switch	AF611A
PS2 Server Console Cable, 6 ft, 2 pack	AF612A

#### HP USB and SD Options

HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
HP USB 04 Standard Keyboard	DT528A#ABA
HP 4GB Secure Digital Flash Media Kit	580387-B21
<b>NOTE: Blank SD media device is supported for use with VMware. SD media must be installed in the internal slot of the ProLiant server. Learn more at:</b>	
<a href="http://www.hp.com/go/proliantvirtualization">http://www.hp.com/go/proliantvirtualization</a> .	
HP 2GB USB Flash Media Drive Key	608447-B21
<b>NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to <a href="#">HP VMware Getting Started Guide</a> for installation instructions.</b>	

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

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UV301E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UV298E
<b>6-Hour Call to Repair, On-site Service 7-Day x 24-Hour Coverage, 3 Years (U.S. Part Number)</b>	
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UV292E
<b>Installation &amp; Start-up Services</b>	
Hardware Installation, Electronic	UV304E
Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays, Electronic	U4618E
Installation and Startup for Essentials Rapid Deployment Pack, Electronic	U5683E
<b>Support Plus 24</b>	
Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UX131E
Onsite HW support 24x7, 4hr response and RedHat AS O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UX132E



### *Additional Options*

Onsite HW support 24x7, 4hr response and SuSE O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic

UX133E

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

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

### Memory

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

#### HP ProLiant DL980 G7 Models

#### Memory Subsystem Architecture

Intel Xeon 7500 and 6500 series memory architecture is designed to take advantage of multiple stages of memory interleaving to reduce latency and increase bandwidth.

Each Intel Xeon 7500 and 6500 series processor contains two Memory Controllers as shown in the Processor/Memory interconnect figure below. Each Memory controller has two Scalable Memory Interface (SMI) buses operating in lockstep where each SMI bus connects to a memory buffer. The purpose of the buffer is to convert SMI to DDR3. Each buffer has two DDR3 channels and can support up to four DIMMs for a total of eight DIMMs per cartridge.

- The number of DIMMs or ranks does not affect memory frequency, but can affect memory bandwidth and performance. All DIMMs will run at the highest possible frequency for a given processor.
- DDR3 memory speed is a function of the processors QPI bus speed such that
  - Processors with a QPI speed of 6.4GT will run memory at 1066MHz
  - Processors with a QPI speed of 4.8GT will run memory at 800 MHz

#### DIMM Installation guidelines

Each memory cartridge can support up to 8 DIMMs, for a system total of 128 DIMMs. When installing DIMM modules in the Memory Cartridge observe the following minimum guidelines:

- UDIMMs are not supported
- Minimum allowable configuration is 16 DIMMs (two DIMMs on each of the two cartridges connected to processor one through four).
- DIMMs must be installed as Quads (four DIMMs with identical characteristics). For configuration simplicity HP recommends using identical part numbered DIMMs throughout when possible.
- DIMM Quads MUST be populated in sequence by letter designation. Install DIMMs 1A and 8A on each cartridge first, followed by DIMMs 3B and 6B on each cartridge, then DIMMs 2C and 7C, and finally DIMMs 4D and 5D last.
- Maximum performance is achieved by balancing DIMM Quads by letter groupings across all memory cartridges. All 1A and 8A DIMMs should be installed (preferably with the same size DIMMs in all memory cartridges across the entire system) first, followed by the B DIMMs, C DIMMs and D DIMMs.

AMP modes Online Sparing and Memory Mirroring have further requirements beyond these listed here. Please refer to the user guide for additional memory configuration requirements.

#### Memory Cartridge population guidelines

This server contains 8 memory cartridge slots within each processor memory drawer. Observe the following guidelines:

- A memory cartridge must be installed in each slot.
- To maximize performance distribute the total memory capacity evenly between all memory cartridges.
- When operating the system in 40-bit address mode and installing 64x 16GB DIMMs (1TB total memory), the 64 DIMMs must be spread evenly across all 16 memory cartridges, or some of the memory will not be recognized.
- Memory configurations larger than 1TB require the use of 44-bit addressing mode.

#### Hemisphere mode

The Xeon EX architecture incorporates hemisphere mode, a high performance interleaving technology. Hemisphere mode allows interleaving between the two processor memory controllers internal to each processor.

The DL980 G7 always uses Hemisphere mode. This requires that for each processor, the two memory cartridges attached to the processor have matching memory configurations. If the two memory configurations are not equal, the DL980 G7 will ignore (waste) the extra memory in the larger configuration.

#### Memory Performance Optimization

The DL980 G7 supports 128 DIMMs across eight multi-core processors. While there are many DIMM population configurations that can support any desired total memory size, optimal performance can only be achieved when DIMMs are populated to take advantage of the Xeon EX architecture. The largest contributor to performance is to populate each DDR3 channel in each memory cartridge. To achieve this, the minimum DIMM count per cartridge is four. Maximum bandwidth is reached by fully populating all memory cartridges with the maximum number of eight DIMMs per cartridge.

## Memory

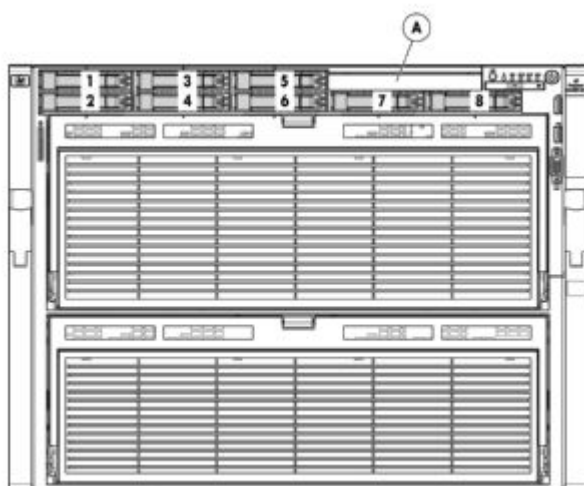
- The more ranks per DIMM the higher the performance, so Quad rank DIMMs perform better than dual rank DIMMs.
- Performance is best when the installed DIMMs are all of equal size.

**NOTE:** Memory configurations listed do not apply to "Factory Integrated Models". Only registered (RDIMM) speeds of 1066 or 1333 running at 1066 are supported. UDIMMs are not supported.

The following memory options are available from HP:

HP Memory	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	HP DL580G7/DL980G7 Memory Cartridge	588141-B21

## Storage



A DVD drive bay

1-8 SFF SAS internal drive cage

## Drive Support

	Quantity Supported	Position Supported	Controller
<b>Removable Media</b>			
HP Slimline DVD Optical drive	1	A	Integrated SATA
HP Slim SATA DVD RW Optical Drive	1	A	Integrated SATA

### Hard Drives

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

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

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

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 10K DP	Up to 8	1-8	HP Smart Array P410i (standard on server)
450GB 6G SAS 10K DP			HP Smart Array P812/1GB FBWC Controller
300GB 6G SAS 10K DP			
146GB 6G SAS 15K DP			
72GB 6G SAS 15K DP			

### SATA Hot Plug Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller
60GB 3G SATA SFF	Up to 8	1-8	HP Smart Array P410i (standard on server)
120GB 3G SATA SFF			HP Smart Array P812/1GB FBWC Controller

## Storage

### External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
D2600 Disk Enclosure	Up to 4	External	HP Smart Array P212/ 256 MB Controller
	Up to 8	External	HP Smart Array P411/256 MB Controller
			HP Smart Array P411/512 MB BBWC Controller
			HP Smart Array P411/1G FBWC Controller
			HP Smart Array P812 Controller
D2700 Disk Enclosure	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 BBWC Controller
			HP Smart Array P411/1G FBWC Controller
			HP Smart Array P812 Controller

### Maximum Storage Capacity - (External SAS Enclosure Attached)

Internal	4.8TB (8 x 600GB SFF SAS Drives)
External	960TB (80 MSA60 enclosures x 12 drive bays each x 1TB SATA Drives)

### Tape and Disk-Based Backup

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

	Position Supported	Controller	Controller Part Number
<b>HP StorageWorks USB Tape Drives</b>	External	USB 2.0 Port	N/A
DAT 40			
DAT 72			
DAT 160			
DAT 320			
1U USB Rack-Mount Kit			
<b>HP StorageWorks SAS Tape Drives</b>	External	HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller	462828-B21
DAT 160			
DAT 320			
LTO-2 Ultrium 448			
LTO-3 Ultrium 920			
LTO-4 Ultrium 1760			
LTO-4 Ultrium 1840			
LTO-5 Ultrium 3000			
LTO-5 Ultrium 3280			
1U Rack-Mount Kit			
3U Rack-Mount Kit			
<b>HP StorageWorks SCSI Tape Libraries</b>	External	HP StorageWorks U320e SCSI Dual Channel Host Bus Adapter	AH627A
MSL2024			
MSL4048			
MSL8096			
MSL6000			

### Storage

<b>HP StorageWorks SAS Tape Autoloaders and Libraries</b> 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
<b>HP StorageWorks USB RDX Removable Disk Backup System</b> RDX160 RDX320 RDX500 RDX750	External	USB 2.0 port	N/A
<b>HP StorageWorks 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 StorageWorks 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

HP 1200W Common Slot Platinum Hot Plug Power Supply Kit					
Part Number	578322-B21				
Input Voltage Range ( V rms )	200 to 240				
Frequency Range (Nominal) ( Hz )	50/60				
Nominal Input Voltage ( Vrms )	<b>200</b>	<b>208</b>	<b>220</b>	<b>230</b>	<b>240</b>
Maximum Rated Output Wattage Rating	1200	1200	1200	1200	1200
Nominal Input Current ( A rms )	6.7	6.5	6.1	5.8	5.6
Maximum Rated Input Wattage Rating ( Watts )	1290	1290	1290	1290	1290
Maximum Rated VA ( Volt-Amp )	1345	1345	1345	1345	1345
Efficiency ( % )	93	93	93	93	93
Power Factor	0.97				
Leakage Current ( mA )	0.83	0.87	0.92	0.96	1.00
Maximum Inrush Current ( A peak )	30				
Maximum Inrush Current duration ( mS )	10				
Maximum British Thermal Unit Rating ( BTU-Hr )	4403	4403	4403	4403	4403

To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL:  
[www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient) or [www.hp.com/go/hppoweradvisor](http://www.hp.com/go/hppoweradvisor)



## Technical Specifications

<b>System Unit Rack</b>	<b>Dimensions</b> (H x W x D) 13.92 x 19.0 x 34.5 in (35.36 x 48.26 x 87.63 cm) (with bezel and XNC cables installed)	
	<b>Weight</b> (approximate)	Maximum (all hard drives, power supplies, and processors installed) 205 lb (93 kg)
		Minimum (one hard drive, power supply, and processor installed) 165 lb (75 kg)
	<b>Input Requirements</b> (per power supply)	Rated Line Voltage 200 - 240 VAC
		Rated Input Current 6.6A @ 200-240VAC
		Rated Input Frequency 50 - 60 Hz +/- 3hz
		Rated Input Power 1375W @ 200-240VAC
	<b>BTU Rating</b>	Maximum 14,330 BTU/hr (worst case configuration and utilization)
	<b>Power Specifications</b>	Maximum 4200 W (worst case configuration and utilization)
	<p><b>NOTE:</b> To review typical system power ratings use the HP Power Advisor which is available online 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> <p>- Click on the system of interest. Example: DL980 G7</p> <p>- Follow the instructions of the next screens.</p>	
	<b>Power Supply Output</b> (per power supply)	Rated Steady-State Power 1200W @ 200 - 240VAC
		Maximum Peak Power 1440W @ 200 - 240VAC
	<b>System Inlet Temperature</b>	Operating 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	<b>Relative Humidity</b> (non-condensing)	Operating 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	<b>Altitude</b>	Operating 3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	<b>Acoustic Noise</b>	Listed are the declared A-Weighted sound power levels (LWAd) and

Technical Specifications

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).

Emissions Classification (EMC)	Idle	
	L WAd	7.5 Bels
	L pAm	59.7 dB
	Operating	
	L WAd	7.5 Bels
	L pAm	59.7 dB
	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1
	<b>NOTE:</b> 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.	

HP Slim SATA DVD RW Optical Drive		Shipping Dimensions		3.97 x 7.81 x 10.75 in (10.08 x 19.84 x 27.31 cm)			
		Shipping Weight		5 lb (2.27 kg)			
		Disk		Applicable Disk		DVD-ROM	
						DVD-R (Read Only)	
						DVD-R DL	
						DVD-RW	
						DVD+R	
						DVD+R DL	
						DVD+RW	
						DVD RAM	
						CD-ROM XA	
						CD-ROM Mode-1 data disc	
						CD-ROM Mode-2 data disc	
						CD Audio disc	
						CD-Extra	
						CD-RW	
						CD-R	
						Photo CD	
						CD-I	
						CD-DA	
		Capacity				DVD-ROM	
						DVD-SL	
						4.7 GB/side	
						DVD-DL	
						8.5 GB/side	
						Double Sided	
						9.40 GB/side	
						DVD+/-R	
						4.7 GB/side	
						DVD +/-RW	
						4.7 GB/side	
						DVD-RAM	
						5.2 GB/side	
						CD-ROM	
						Mode-1	
						650 MB (550 MB)	
						Mode-2	
						742 MB (640 MB)	

### Technical Specifications

	<b>Block Size</b>	DVD	2,048 bytes
		CD	2,352 (Mode-0)
			2352, 2340, 2336, 2048 bytes (Mode-1)
			2352, 2340, 2336, 2048 bytes (Mode-2)
	<b>Diameter</b>	120 mm (4.7 in), 80 mm (3.1 in) (with adapter at vertical mounting mode)	
<b>Loading Mechanism</b>	Tray type Manual Load		
<b>Interface</b>	SATA 1.5		
<b>Access Times</b> (typical)	Random	DVD-ROM < 120 ms, CD-ROM < 110 ms	
	Full-Stroke	DVD-ROM < 250 ms, CD-ROM < 210 ms	
<b>Data Transfer Rate</b> (sustained)	DVD-ROM	Single Layer	10.8 MB/sec. Max.
	CD-ROM	3.6 MB/sec. Max.	
<b>Cache Buffer</b>	2 MB		
<b>Spin-up Time</b> (typical)	less than 15 seconds		
<b>MTBF</b>	60,000 Power On Hours (POH)		
<b>Ambient Temperature</b>	Operating	-41° to 122° F (5° to 50° C)	
	Storage/Transportation	-401° to 140° F (-30° to 60° C)	
<b>Dimensions</b>	(HxWxD, maximum)	0.5 x 5.2 x 5.45 in (12.7 x 132 x 138 mm)	
<b>Option Kit Contents</b>	DVD-RW drive with installation guide, warranty card, registration card		

<b>Integrated Lights-Out 3 Standard (integrated on system board)</b>	<b>Architecture</b>	PCI Express based health and remote management ASIC
	<b>Processor</b>	PCI Express RISC processor core running at 250MHz
	<b>Upgradeability</b>	Option firmware upgradeable via flash ROM
	<b>Video Support</b>	1600 x 1200 DVR max resolution
	<b>Interfaces</b>	One Ethernet Sideband connection (10/100/1000 Mb/s)
		One Ethernet network connection (10/100 Mb/s)
	<b>Memory</b>	128-MB DDR with ECC
	<b>Operating System Support</b>	Microsoft Windows Server 2008 R2 Enterprise Edition (64 bit)
		Microsoft Windows Server 2008 Enterprise Edition (64 bit)
		Red Hat Enterprise Linux 5.5 (64 bit)
		SUSE LINUX Enterprise Server 11 (64 bit)
		SUSE LINUX Enterprise Server 10 (64 bit)
<b>Client System Support</b>		VMware ESX 4.1
		Microsoft Windows 7
		Microsoft Windows XP Professional Edition
		Microsoft Windows Vista Business and Ultimate Editions
		Red Hat Enterprise Desktop 5.00
		SUSE Linux Enterprise Desktop 11
		SUSE Linux Enterprise Desktop 10

Technical Specifications

	<b>Client Browser Support</b>	Microsoft Internet Explorer 8 Microsoft Internet Explorer 7 Microsoft Internet Explorer 6 Firefox 3.5 (on supported Windows and Linux systems) Firefox 3.0 (on supported Windows and Linux systems)
	<b>Command Line Support</b>	Secure Shell and serial port access Secure Socket Layer Secure Shell version 2
	<b>Security</b>	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface AES encryption of video RC4 encryption of video
	<b>Directory Support Services</b>	Active Directory v1.0 (Windows 2003)
	<b>Driver Support</b>	HP ProLiant iLO 3 Management Controller Driver
	<b>Management protocols supported</b>	SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML
	<hr/>	
	<b>Smart Array P410i Controller</b>	
	<b>Disk Drive and Enclosure Interface</b>	6Gb/s SAS (Serial Attached SCSI)
	<b>SAS Connectors</b>	2 internal (mini SAS) x8 wide port connectors
	<b>Cache Memory Speed</b>	DDR2-800MHz with 40 or 72-bit wide bus provides up to 4.2GB/s maximum bandwidth
	<b>Server Interface</b>	x4 PCIe provides 2GB/s maximum bandwidth.
	<b>SAS Speed</b>	x8 6G SAS provides 4.8GB/s maximum bandwidth.
	<b>Cache Memory</b>	72-bit 512MB or 1GB Flash backed write cache transportable with flash upgrade.
	<b>Logical Drives Supported</b>	Up to 64 logical drives
	<b>Maximum Logical Drive Capacity</b>	Greater than 2TB
	<b>Host Memory Addressing</b>	64-bit, supporting greater than 4GB server memory space
	<b>RAID Support</b>	RAID 6, 6+0 (Advanced Data Guarding) <b>NOTE:</b> RAID 6, 6+0 can be enabled with either: <ul style="list-style-type: none"><li>Minimum of 512MB FBWC and Smart Array Advanced Pack License Key option upgrades</li></ul>
		RAID 5, 5+0 (Distributed Data Guarding) <b>NOTE:</b> A minimum of 512MB FBWC is required to enable RAID 5, 5+0 support of the Smart Array P410i
		RAID 1+0 (Striping & Mirroring) RAID 0 (Striping)

HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX	
		IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
		IEEE 802.3ad 1000Base-TX	
		IEEE 802.1p 100Base-TX	
		IEEE 802.1q 100Base-TX	
		Data Transfer Method	PCI-Express 2.0 (x8)
	Controller	Qlogic/NetXen NX3031	
	Network Transfer Rate	10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s
		1000Base-TX (Full-Duplex)	2000 Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4, or 5 UTP; up to 328 ft (100 m)
		100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
1000Base-TX		Category 5 or higher UTP; up to 328 ft (100 m)	

<b>Environment-friendly Products and Approach</b>	<b>End-of-life Management and Recycling</b>	<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>
---	---	--

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