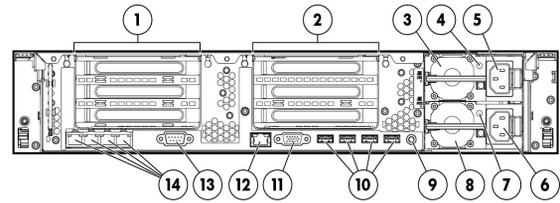
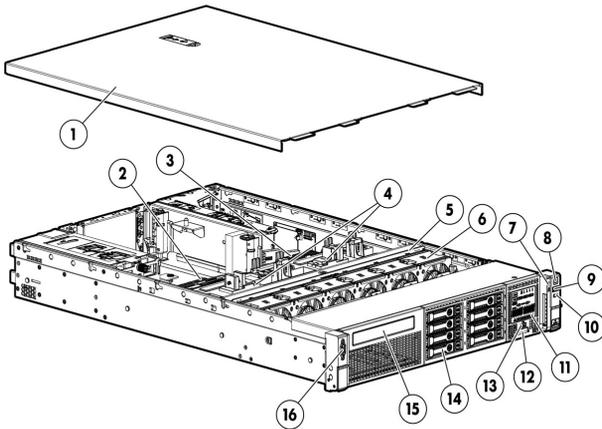


Overview

NEBS (GR-63 & GR-1089) and ETSI certified.

The HP ProLiant DL380p Gen8 sets the next generation standards of 2U 2-socket rack servers for the industry. With enhanced configuration flexibility, unmatched performance, and leading energy efficient design the DL380p Gen8 offers the perfect solution for the dynamic compute requirements of today's demanding datacenters.



Front View:

1. Quick removal access panel
2. Second Intel Processor
3. First Intel Processor
4. 24 DIMM slots: DDR3 Registered (RDIMM)
5. Air Baffle
6. Hot-plug fans, full N+1 redundancy
7. Health LED
8. Power On /Standby button and system power LED button
9. USB connector
10. Unit ID LED
11. Systems Insight Display
12. Asset Tag
13. USB connector
14. HD Bays
15. Optional Slim Optical Bay (SATA DVD-RW /ROM Optical Drive)
16. Video connector

Rear View:

1. PCIe Slots (Slots 1-3 top to bottom)
2. PCIe Slots (Slots 4-6 top to bottom)
3. Power supply 1
4. Power supply 1 Power LED
5. Power supply 1 Power connection (with Intelligent PDU communication)
6. Power supply 2 Power connection (with Intelligent PDU communication)
7. Power supply 2 Power LED
8. Power supply 2
9. Unit ID LED/Button
10. USB connectors (4)
11. Video connector
12. iLO connector
13. Serial connector
14. FlexibleLOM ports (Shown: 4 ports 1Gb each /Optional: 2 ports 10Gb each)

Standard Features

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

Processor

One of the following depending on Model

Base Processors

NOTE: All support up to 1333MHz DDR3 memory speeds.

Intel® Xeon® E5-2640 (2.50GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2630 (2.30GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2- 3/3/4/4/5/5)

Performance Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2680 (2.70GHz/8-core/20MB/8GT-s QPI/130W, DDR3-1600, HT, Turbo2- 4/4/5/5/5/7/8/8)

Intel® Xeon® E5-2670 (2.60GHz/8-core/20MB/8GT-s QPI/115W, DDR3-1600, HT, Turbo2- 4/4/5/5/6/6/7/7)

Intel® Xeon® E5-2667 (2.90GHz/6-core/15MB/8GT-s QPI/130W, DDR3-1600, HT, Turbo2- 3/3/3/4/5/6)

Intel® Xeon® E5-2665 (2.40GHz/8-core/20MB/8GT-s QPI/115W, DDR3-1600, HT, Turbo2- 4/4/5/5/6/6/7/7)

Intel® Xeon® E5-2660 (2.20GHz/8-core/20MB/8GT-s QPI/95W, DDR3-1600, HT, Turbo2- 5/5/6/6/7/7/8/8)

Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/8GT-s QPI/95W, DDR3-1600, HT, Turbo2- 4/4/5/5/5/7/8/8)

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

NOTE: Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 8, 7, 6, 5, 4, 3, 2 and 1 cores active.

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

NOTE: Up to 2 processors supported. Mixing different processor models is not supported.

NOTE: For the Intel® C600 Chipset E5-2600 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2600x v#, 2 = number of CPUs in a Node, 6 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number.

Cache Memory

One of the following depending on Model

20MB (1x20MB) Level 3

NOTE: For Eight-core processors.

15MB (1x15MB) Level 3

NOTE: For Six-core processors.

10MB (1x10MB) Level 3

NOTE: For Quad-core processors.

5MB (1x5MB) Level 3

NOTE: For Dual-core processors.

NOTE: All processor models above list the L3 Cache associated with that particular processor.

Standard Features

Chipset

Intel® C600 Series Chipset

Intel® E5-2600 Processor Family

NOTE: For more information regarding Intel chipsets, please see the following URL:
<http://www.intel.com/products/server/chipsets/>.

Upgradeability

Upgradeable to 2 processors (16 Cores)

Up to 24 DIMM slots available for higher Memory capacity

FlexibleLOM connector for 1 Gigabit or 10 Gigabit networking options

8SFF Hard drive bays (total of 16 with optional upgrade)

Optional 3 slot riser (x16, x8, x8), or 2 slot (x16, x16)

NOTE: To take advantage of the additional 3 PCI slot upgrade, the second processor must be installed.

Redundant Power Supply

Optical Drive (8SFF only)

On System Management Chipset

HP iLO (Firmware: HP iLO 4)

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

Memory Protection

Advanced ECC

NOTE: Advanced ECC uses single device data correction (SDDC) to detect and correct single and all multi-bit error that occurs within a single DRAM chip. Both x4 and x8 SDDC are supported (x8 requires lockstep mode).

Online Spare

NOTE: Memory online spare mode (also known as rank spare mode) detects a rank that is degrading and switches operation to the spare rank.

Lock-step mode

NOTE: Memory Lockstep mode is used to correct a single x8 DRAM device failure on a DIMM. The DIMMs in each paired memory channel must have identical HP part numbers.

Standard Features

Memory

One of the following depending on Model

Type	HP SmartMemory Registered (RDIMM)
DIMM Slots Available	24 (12 DIMM slots per processor /4 channels per processor/3 DIMMs per channel)

NOTE: HP memory from previous generation servers are not fully compatible with the HP ProLiant DL380p Gen8 Server.

NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html

NOTE: If only one processor is installed, only half the DIMM slots are available

NOTE: UDIMM max DIMM population is 16

NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz, 1333MHz, or 1066MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator.

Expansion Slots

Primary Riser (Standard)

Expansion Slots #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
1	PCIe Gen3	X16	X16	7	Full Length, Full Height Slot	
2	PCIe Gen3	X8	X8	10	Half Length, Full Height Slot	
3	PCIe Gen2	X4	X8	13	Half Length, Full Height Slot	

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

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

NOTE: When populating the second optional riser slot, the second processor must be installed.

NOTE: All slots support up to 150w PCIe cards, but an additional Power Cord Option is required (PN 669777-B21). See Option Section below for offering.

PCIe Riser (Optional Secondary)

Expansion Slots #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
4	PCIe Gen3	X16	X16	16	Full length, full height slot	
5	PCIe Gen3	X8	X8	20	Half length, full height slot	
6	PCIe Gen3	X8	X8	23	Half length, full height slot	

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

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

NOTE: When populating the second optional riser slot, the second processor must be installed.

Standard Features

NOTE: Slot 2 and slot 3 both support up to 150w PCIe cards, but an additional Power Cord Option is required (669777-B21). See Option Section below for offering.

PCIe Riser (Optional Secondary)	Expansion Slots #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
	4	PCIe Gen3	X16	X16	16	Full length, Full height slot	
	5	PCIe Gen3	X16	X16	16	Half Length, Full Height	

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

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

HP Server ROM

HP ROM (Read Only Memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- Processor and chipset status registers
- System memory, memory map, and memory initialization
- System hardware configuration (Integrated PCI devices and optional PCIe cards).
- Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU)).

NOTE: For further information, please refer to HP's RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu.

Standard Features

Internal Storage Devices	Diskette Drive	None
	Optical Drive	Ships standard in Performance Models Optional: DVD-ROM, DVD-RW
	Hard Drives	None ship standard
	Drive Bays	Standard: 8SFF drive bays total with Optical Bay Optional: +8SFF drive bay (total of 16SFF drive bays) NOTE: The Optical Drive bay is not available with +8SFF drive bay optional upgrade.

Maximum Internal Storage	Hot Plug SFF SAS	14.4TB	16 x 900GB (with optional SFF drive cage)
	Hot Plug SFF SAS SSD	12.8TB	16 x 800GB (with optional SFF drive cage)

Interfaces	Serial	1
	Video	2 (1 front, 1 back) not active simultaneously
	FlexibleLOM Network Ports	Some models come standard with 4 x 1GB ports while others come with 2 x 10GB ports (See HP Networking section below for more details and options).
	iLO remote management network port	1 Gb Dedicated
	SD slot	1 Internal Secure NOTE: The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.
	USB 2.0 Ports	Up to 7 total: up to 2 front, 4 back, 1 internal

Industry Standard Compliance	ACPI 2.0b Compliant PCIe 3.0 Compliant PXE Support WOL Support Microsoft® Logo certifications USB 2.0 Compliant
-------------------------------------	--

Server Power Cords	High voltage power cord ships standard with all part numbers. NOTE: HP ProLiant DL servers no longer ship standard with a 12-foot NEMA 5-15P to C13 power cords that allow connection to 110V US wall outlets in a home or office. ProLiant DL servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU 6-foot C-14 to C13 power cord (142258-001). If a user wishes to power a ProLiant DL server using a 110V receptacle (NEMA-15), the 12-foot NEMA 5-15 to C13 power cord must be ordered separately. Also available: 110 volt 6-Foot NEMA 5-15p to C13 (AF556A).
---------------------------	--

Standard Features

Power Specifications

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 or www.hp.com/go/hppoweradvisor.

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

Common Slot Power Supply

NOTE: Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.

HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HP CS power supply options provide efficiency ratings of up to 94% (80 Plus Platinum) and are available in three power output options - 460W, 750W, and 1200W - allowing the customer to "right-size" a power supply for their specific server configuration. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations.

NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail.

HP CS Platinum Plus power supplies are required when enabling HP's Intelligent Power Discovery (IPD) solution. IPD is the first technology to create an automated, energy-aware network between IT systems and facilities. This allows your company to reclaim millions of dollars in wasted power capacity and downtime costs across data centers. For more information on HP's IPD solution, go to www.hp.com/go/ipd.

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP Power Advisor can be accessed at: www.hp.com/go/hppoweradvisor.

NOTE: The 80 PLUS program is a unique forum that unites electric utilities, the computer industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on 80Plus.org.

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

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

System Fans

One of the following depending on Model

2P Models have (6) (N+1 redundancy standard)

1P Models have (4) (N+1 redundancy standard)

Standard Features

Required Cabling

For required cabling information, refer to the HP Web site at: www.hp.com/servers/dl380p-gen8.

Operating Systems and Virtualization Software Support for ProLiant Servers

[Microsoft Windows Server](#)
[Red Hat Enterprise Linux \(RHEL\)](#)
[SUSE Linux Enterprise Server \(SLES\)](#)
[Oracle Solaris](#)
[VMware](#)
[Citrix XenServer](#)

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport>

Graphics

Integrated Matrox G200 video standard

- 1280 x 1024 (32 bpp)
- 1920 x 1200 (16 bpp)

Form Factor

One of the following depending on Model

2U Rack form factor, ships with ball bearing rails and cable management system

8 SFF Drive Bay Version:

3.44 (8.74 cm) Height x 17.54" (44.55 cm) Width x 27.5" (69.85 cm) Length

On System Management

HP iLO Management Engine

HP iLO Management Engine is a complete set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HP iLO Management Engine comes standard on all HP ProLiant Gen8 Servers. HP iLO Management Engine portfolio includes:

- **HP iLO:** The HP iLO management processor is the core **foundation for HP iLO Management Engine**. **HP iLO for HP** ProLiant servers simplify server setup, engage health monitoring, power and thermal control, and promote remote administration for HP ProLiant ML, DL, BL and SL servers. Furthermore with the new HP iLO is the ability to access, deploy, and manage your server anytime from anywhere with your Smartphone device.
- **HP Agentless Management:** With HP iLO Management Engine in every HP ProLiant Gen8 server, the base hardware monitoring and alerting capability is built into the system (running on the HP iLO chipset) and starts working the moment that a power cord and an Ethernet cable is connected to the server.
- **HP Active Health System:** HP Active Health System is an essential component of the HP iLO Management Engine. It provides: Diagnostics tools/scanners wrapped into one; Always on, continuous monitoring for increased stability and shorter downtimes; Rich configuration history; Health and service alerts; Easy export and upload to Service and Support.
- **HP Intelligent Provisioning (previously known as SmartStart):** HP

Standard Features

Intelligent Provisioning offers the ability for out-of-the box single-server deployment and configuration without the need for media.

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

HP Insight management software

HP Service Pack for ProLiant (SPP)

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

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

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

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

Security

Power-on password
Serial interface control
Administrator's password

Standard Features

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: 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:

<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Optional Features

HP Insight management software

HP Insight Control

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

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 Matrix Operating Environment

The HP Matrix Operating Environment (Matrix OE) for ProLiant and Integrity servers is an integrated command center that helps you instantly adjust to dynamic business demands. This advanced infrastructure management software lets you reduce the cost of common data center tasks by up to 40 percent while keeping pace with your changing business.

The HP Matrix OE includes the automated provisioning, optimization, and recovery management capabilities for HP CloudSystem Matrix, the ideal platform for private cloud and Infrastructure as a Service (IaaS).

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

HP iLO Advanced License for ProLiant Servers

HP iLO management processors for HP ProLiant Gen8 servers virtualizes system controls to help simplify server setup, engage health monitoring and power and thermal control, and promote remote administration. HP iLO functions out-of-the-box without additional software installation and functions regardless of the servers' state of operation. Basic system board management functions, diagnostics, and essential Lights-Out functionality ships standard across all HP ProLiant Gen8 rack, tower and blade servers. The HP iLO can be accessed from any location via a web browser and works hand-in-hand with HP Systems Insight Manager, Insight Control, and HP Matrix Operating Environment, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service to the business.

Advanced functionality, such as graphical remote console, multi-user collaboration, and video record/playback can be activated with the optional HP iLO Advanced or HP iLO Advanced for BladeSystem licenses. The Advanced licensed features offer sophisticated remote administration of servers in dynamic data center and remote locations and can help significantly reduce cost associated with IT-related travel and unplanned downtime.

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

Optional Features

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 SUSE Linux Enterprise Server, 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 Insight Cluster Management Utility	HP Insight Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used for lifecycle management of hyperscale clusters of Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu
HP HPC Linux Value Pack	HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported option to HP Insight CMU, for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler and Platform Application Center, as well as the HP-MPI parallelization library. HP HPC Linux Value Pack

HP Insight Online

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

Factory Express Portfolio for Servers and Storage

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

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, EVA7xxx, 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>.

Optional Features

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. Foundation Care services deliver scalable support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for their business needs. New to this portfolio is HP Collaborative Support. If you are running business critical environments, HP offers Proactive Care or Critical Advantage. These services help deliver high levels of application availability through proactive service management and advanced technical response

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 support recommendations - **Optimized Care, Standard Care, and Basic Care** - available for each product group. Such support solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support recommendations for servers, storage, networking and software designed to meet your specific needs.

All three service recommendations include support services from the broader portfolio of Foundation Care and Proactive Care services.

Optimized Care

Optimized Care : 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.pdf>

HP Installation and Startup for Insight Control Software / HP SIM

Provides for the deployment and basic configuration of HP Insight Control or HP SIM (Systems Insight Manager) 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, Proactive Care

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your call and end to end until resolved, delivering a single point of contact for you. Helping you to resolve your hardware and software issues and minimizing downtime in your business critical environment.

Additional Services: Factory Express, Education Services, Proactive Select - 30 Credit Package

Service and Support

Standard Care

Standard Care : Service recommendation 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.pdf>

HP Installation and Startup for Insight Control Software / HP SIM

Provides for the deployment and basic configuration of HP Insight Control or HP SIM (Systems Insight Manager) 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, Collaborative Support

Provides problem resolution support across the stack of HW, firmware, and HP and 3rd party SW. In case the issue is with 3rd party SW, HP does known issue resolution. If HP cannot solve the issue, it will contact the third-party vendor and create a problem incident on your behalf.
<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-8232ENW.pdf>

Additional Services: Software support service with 24X7 availability with a 2 hour response, Training courses on Microsoft, Linux (Red Hat and SUSE), VMware, and HP Insight Software, 10 Proactive Select Credit package, Factory Express
<http://www8.hp.com/us/en/business-services/it-services.html?compURI=1078865>

Basic Care

Basic Care: 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.pdf>

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

Provides you with rapid remote support and if required an HP authorized technical engineer will be on site 24X7 begin hardware maintenance service within 4 hours of the service request being logged
<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf>

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

Provides remote 3-year software support service that delivers comprehensive software services, including access to HP technical resources and software updates
<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf>

Additional Services: Factory Express, Education Services, Proactive Select - 10 Credits

Insight Remote Support

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more
<http://www.hp.com/go/insightremotesupport>

Service and Support

HP Support Center

Personalized online support portal with access to information, tools and experts to support HP business products. Submit support cases online, chat with HP experts, access support resources or collaborate with peers. Learn more <http://www.hp.com/go/hpsc>

HP's Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HP Insight Remote Support and HP Support Center are available at no additional cost with a HP warranty, HP Care Pack or HP contractual support agreement.

**HP' Support Center Mobile App is subject to local availability*

Warranty / Service Coverage

For ProLiant servers and storage systems, the services cover HP-branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as external monitors up to 22" and tower UPS products; these items will be covered at the same service level and for the same coverage period as the server unless the maximum supported lifetime and/or the maximum usage limitation has been exceeded. Coverage of the UPS battery is not included; standard warranty terms and conditions apply.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by HP due to malfunction. It does not apply to any exchange of Disk or SSD/Flash Drives that have not failed. SSD/Flash Drives that are specified by HP as consumable parts and/or that have exceeded maximum supported lifetime and/or the maximum usage limit as set forth in the manufacturer's operating manual or the technical data sheet are not eligible for the defective media retention service feature option.

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>

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: Factory Integrated Models must start with a CTO Server.

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

NOTE: All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.

Step 1: Base Configuration

HP Models	HP ProLiant DL380p Gen8 8 SFF Configure-to-order Server	653200-B21
	Factory Integrated Model ships with:	
	1 FlexibleLOM connector: (see Step 2: HP FlexibleLOM section below for NIC choices to populate the embedded connector)	
	Smart Array P420i Controller w/ Zero Memory (ZM)	
	I/O slots - 3 Slots come standard:	
	<ul style="list-style-type: none"> • Slot 1 - FL/FH x16 PCIe 3.0 (x16 connector) • Slot 2 - HL/FH x8 PCIe 3.0 (x8 connector) • Slot 3 - HL/FH x4 PCIe 2.0 (x8 connector) • Additional Slots may be added via selections from the PCI Information and Options subsection 	
	System Fans - 4 (2 additional fans included with second processor)	
	Drive Cage - 8-SFF (Second SFF drive cage optional)	
	USB - 4 Rear, 2 Front, 1 Internal, 1 SD slot	
	On system Server Management - (HP iLO 4) (embedded)	
	NOTE: For NEBS compliance, must order one Telco conversion kit (707865-B21)	
	NOTE: Power Supply & Rail Kit not included - choose from Step 2 section below	

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

HP Processors	NOTE: If two processors are desired, select one xxxxxx-L21 and one xxxxxx-B21	
	Base Processors	
	NOTE: All support up to 1333MHz DDR3 memory speeds.	
	HP DL380p Gen8 Intel® Xeon® E5-2640 (2.5GHz/6-core/15MB/95W) FIO Processor Kit	662246-L21/B21
	HP DL380p Gen8 Intel® Xeon® E5-2630 (2.3GHz/6-core/15MB/95W) FIO Processor Kit	662248-L21/B21
	HP DL380p Gen8 Intel® Xeon® E5-2620 (2.0GHz/6-core/15MB/95W) FIO Processor Kit	662250-L21/B21
	Performance Processors	
	NOTE: All support up to 1600MHz DDR3 memory speeds	
	HP DL380p Gen8 Intel® Xeon® E5-2680 (2.7GHz/8-core/20MB/130W) FIO Processor Kit	662228-L21/B21
	HP DL380p Gen8 Intel® Xeon® E5-2670 (2.6GHz/8-core/20MB/115W) FIO Processor Kit	662240-L21/B21
	HP DL380p Gen8 Intel® Xeon® E5-2665 (2.4GHz/8-core/20MB/115W) FIO Processor Kit	666509-L21/B21
	HP DL380p Gen8 Intel® Xeon® E5-2660 (2.2GHz/8-core/20MB/95W) FIO Processor Kit	662242-L21/B21

Configuration Information - Factory Integrated Models

	HP DL380p Gen8 Intel® Xeon® E5-2650 (2.0GHz/8-core/20MB/95W) FIO Processor Kit	662244-L21/B21
	HP DL380p Gen8 Intel® Xeon® E5-2637 (3.0GHz/2-core/5MB/80W) FIO Processor Kit	662224-L21/B21
HP Memory	<p>NOTE: HP memory from previous generation servers are not qualified or warranted with this HP ProLiant Server. HP SmartMemory is required to realize the memory performance improvements and enhanced functionality listed in this document for Gen8. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html</p> <p>Registered DIMMs (RDIMMs)</p>	
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
	HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
	HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21
	<p>NOTE: This memory kit available as a Factory Integrated Option only.</p> <p>NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.</p> <p>NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient</p> <p>NOTE: PC3L is a low voltage memory</p>	
HP Networking	<p>FlexLOM Adapters</p> <p>NOTE: The HP ProLiant DL380p Gen8 server requires one FlexLOM to be installed in the FlexLOM slot.</p>	
	HP 1GbE 4-port 331FLR Adapter FIO Kit	684208-B21
	HP 10GbE 2P 530FLR Adapter FIO Kit	684210-B21
	<p>NOTE: Please see the QuickSpecs for Technical Specifications and additional information: www.hp.com/go/ProLiantNICs.</p>	
HP Power Supplies	<p>NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.</p> <p>HP Common Slot Platinum Plus Power Supply Kits</p> <p>NOTE: The following Power Supplies offer 94% Efficiency with support for Intelligent Power Discovery.</p>	
	HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit	656363-B21
	<p>HP Common Slot -48VDC Power Supplies</p> <p>NOTE: The following Power Supplies offer 92% Efficiency.</p>	
	HP 750W Common Slot -48VDC Hot Plug Power Supply Kit	636673-B21

Configuration Information - Factory Integrated Models

NOTE: The HP 750W Common Slot -48VDC power supply has been designed with a terminal block connection allowing for custom design of power cords by the user. However, HP offers multiple cable options for this power supply which can be found at www.hp.com/products/powercords.

NOTE: Option Kits for AC power supplies include the power supply and one PDU IEC cable.

NOTE: Power Specification and Technical Content for supported power supplies can be found at:
http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

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. Contact your local sales representative for additional information.

HP Unique Options	HP 380/385 Gen8 8-SFF Cage/Bkpln Kit	662883-B21
	NOTE: With upgrade of 8SFF Cage/Bkpln (662883-B21), there is no Optical Drive support.	
	HP DL380/385 3 Slot PCI-E Riser Kit	653206-B21
	NOTE: For NEBS compliance, must order 1 Telco conversion (707865-B21)	
	NOTE: For NEBS compliance, if ordering optional riser, must order second Telco conversion kit (707865-B21)	
	HP DL380 Gen8 3 Slot 2x16 PCI-E Riser Kit	653208-B21

HP Optical Drives	HP 12.7mm Slim SATA DVD ROM JackBlack Optical Drive	652232-B21
	HP 12.7mm Slim SATA DVD RW JackBlack Optical Drive	652235-B21

HP Hard Drives

NOTE: The NEBS certified HP ProLiant DL380p Gen8 Smart Storage solutions are equipped with entirely re-designed Small Form Factor (SFF 2.5 in) hot plug carriers for HP Qualified Hard Drives and Solid State Drives. These new carriers provide status and activity indicators as well as caution indicators for "Do Not Remove".

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 with SmartDrive SFF (2.5-inch) Enterprise Drives

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652589-B21
HP 600GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652583-B21
HP 450GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652572-B21
HP 300GB 6G SAS 10K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652564-B21
HP 300GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652611-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652605-B21
HP 72GB 6G SAS 15K rpm SFF (2.5-inch) SC Enterprise 3yr Warranty Hard Drive	652597-B21

SAS Hot Plug Smart Drive LFF (3.5-inch) Enterprise Drives

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

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

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

HP 800GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653109-B21
HP 400GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653105-B21

Core Options

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

Hard Drive Kits

HP SFF Gen8 Hard Drive Blank Kit	666987-B21
----------------------------------	------------

HP Networking

Gigabit Ethernet adapters

HP NC365T 4-port Ethernet Server Adapter	593722-B21
HP Ethernet 1Gb 4-port 331T Adapter	647594-B21

10 Gigabit Ethernet Adapters

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

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

HP Ethernet 10Gb 2-port NC560SFP+ Adapter	665249-B21
HP NC552SFP 10Gb 2-port Ethernet Server Adapter	614203-B21

FlexibleLOM Adapters

HP Ethernet 1Gb 4-port 331FLR Adapter	629135-B21
HP Ethernet 10Gb 2-port 530FLR-SFP+ Adapter	647581-B21

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

SFP+

HP X132 10G SFP+ LC SR Transceiver	J9150A
------------------------------------	--------

HP I/O Expansion Options

HP DL380p/385p Gen8 3 Slot PCI-E Riser Kit	653206-B21
HP DL380p Gen8 2 Slot 2x16 PCI-E Riser Kit	653208-B21

NOTE: For NEBS compliance, must order one Telco conversion (707865-B21)

NOTE: For NEBS compliance, if ordering optional riser, must order second Telco conversion kit (707865-B21)

Core Options

HP Power Supplies

NOTE: Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor.

HP Common Slot Platinum Plus Power Supply Kits

NOTE: The following Power Supplies offer 94% Efficiency with support for Intelligent Power Discovery.

HP 750W Common Slot Platinum Plus Hot Plug Power Supply Kit

656363-B21

HP Common Slot -48VDC Power Supplies

NOTE: The following Power Supplies offer 92% Efficiency.

HP 750W Common Slot -48VDC Hot Plug Power Supply Kit

636673-B21

NOTE: The HP 750W Common Slot -48VDC power supply has been designed with a terminal block connection allowing for custom design of power cords by the user. However, HP offers multiple cable options for this power supply which can found at www.hp.com/products/powercords.

NOTE: Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.

NOTE: Power Specification and Technical Content for supported power supplies can be found at:

http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

Additional Options

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

HP Insight Software

HP Insight Control

HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License T9074BAE

HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License 452148-B22

HP Insight Management Media Kit 436222-B21

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

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

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

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

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

HP 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: Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.

NOTE: 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 and Flexible-Quantity licenses can be used to purchase multiple licenses with a single set of activation keys.

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

Additional Options

HP iLO Advanced License	HP Integrated Lights-Out (iLO) Advanced for ProLiant Remote Management	
	HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License	512485-B21
	NOTE: For more information, visit: http://www.hp.com/go/ilo .	

High Performance Clusters

HP Cluster Management Utility	
HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
HP Insight Cluster Management Utility 3yr 24x7 Flexible License	BD476A
NOTE: These part numbers can be used to purchase one certificate for multiple licenses and support with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key. Customer also will receive a support agreement.	
HP Insight Cluster Management Utility Media	BD477A
NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html	
HP HPC Linux Value Pack	
HP High Performance Computing Linux Value Pack 1 Processor Flexible License	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	

Additional Options

HP Security	<p>HP Trusted Platform Module Option 488069-B21</p> <p>NOTE: The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: www.hp.com/go/TPM.</p> <p>NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.</p> <p>NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.</p>
	<p>HP 2U Security Bezel Kit (Passed NEBS testing, but does not have ground wire) 666988-B21</p>

HP Storage Controllers

SAS Controllers

Smart Array P420 Controller

NOTE: P420 requires (2) HP Mini SAS Straight to Straight 37in Cable Assemblies (P/N 662897-B21)

HP Smart Array P420/1GB FBWC 6Gb 2-ports Int SAS Controller	631670-B21
HP Smart Array P420/2GB FBWC 6Gb 2-ports Int SAS Controller	631671-B21

Optional Upgrades

HP 1GB P-series Smart Array Flash Backed Write Cache	631679-B21
HP 2GB P-series Smart Array Flash Backed Write Cache	631681-B21
HP 512MB P-series Smart Array Flash Backed Write Cache	661069-B21
HP Smart Array Advanced Pack 2.0 No Media 1 Server 1yr 24x7 Support Software	BC377A
HP Smart Array Advanced Pack 2.0 No Media Electronic Lic 1yr 24x7 Support Software	BC390AAE

HP Cable Options

HP Mini SAS Straight to Straight 37in Cable Assembly	662897-B21
--	------------

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

http://h18000.www1.hp.com/products/quickspecs/14227_div/14227_div.html
(Smart Array P222 Controller)

http://h18000.www1.hp.com/products/quickspecs/14228_div/14228_div.html
(Smart Array P420 Controller)

http://h18000.www1.hp.com/products/quickspecs/14229_div/14229_div.html
(Smart Array P421 Controller)

http://h18000.www1.hp.com/products/quickspecs/14341_div/14341_div.html
(Smart Array P822 Controller)

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

Additional Options

HP Power Cords

NOTE: HP ProLiant servers ships with an IEC-IEC power cord used for rack mounting with Power Distribution Units (PDUs).

HP C13 - SEV-1011 CH 250V 10Amp 1.83m Power Cord	AF565A
HP C13 - DK-2.5A DK 250V 10Amp 1.83m Power Cord	AF566A
HP C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord	AF568A
HP C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord	AF570A
HP C13 - CEI-23-50 IT/CL 250V 10Amp 1.83m Power Cord	AF571A
HP C13 - SABS-164 ZA 250V 10Amp 2.5m Power Cord	AF567A
HP C13 - Nema 6-15P US 250V 15A JP 3.6m Power Cord	AON33A
HP C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord	AF556A

HP Storage Options

Storage Fibre Channel HBA

NOTE: For the complete listing of Fibre Channel Host Bus Adapters for Windows 2000, Windows Server 2003 and Linux, please see:

<http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>

Brocade Fibre Channel HBAs

HP 82B PCIe 8Gb Fibre Channel Dual Port Host Bus Adapter	AP770B
HP 82E PCIe 8GB Fibre Channel 2-port Host Bus Adapter	AJ763A
HP 82E PCIe 8GB Fibre Channel 2-port Host Bus Adapter	AJ764A

SAS Host Bus adapter

HP H221 Host Bus Adapter	650931-B21
--------------------------	------------

NOTE: Please see the QuickSpecs for technical specifications and additional information

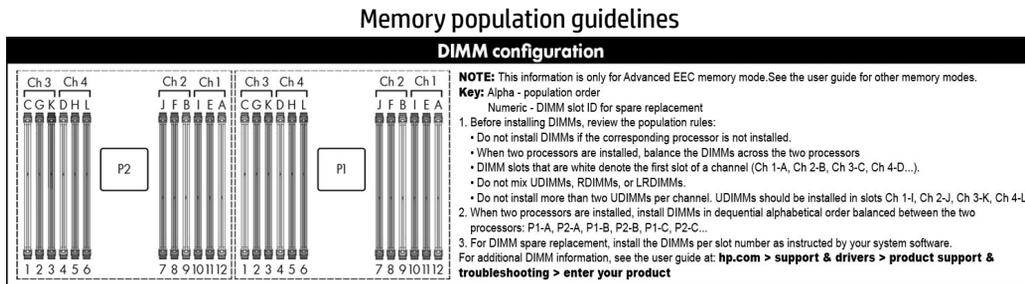
http://h18004.www1.hp.com/products/quickspecs/14222_div/14222_div.html

Memory

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

Memory Subsystem Architecture

Each Intel® Xeon® E5-2600 family processor socket contains four memory channels that support three DIMMs each for a total of twelve (12) DIMM per installed processor or a grand total of twenty-four (24) DIMMs for the server. Up to 32GB capacity DIMMs are supported for 768GB of memory (24 DIMM slots x 32GB per DIMM).



General Memory Population Rules and Guidelines:

- White DIMM slots denote the first slot of a channel. For 1 DPC (DIMM per channel) populate white slots only.
- Install DIMMs only if the corresponding processor is installed.
- If only one processor is installed in a two processor system, only half of the DIMM slots are available.
- To maximize performance, it is recommended to balance the total memory capacity between all installed processors and to load the channels similarly whenever possible.
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel. Heaviest load (DIMM with most ranks) within a channel goes furthest from the processor
- RDIMMs operating at either 1.35V or 1.5V may be mixed in any order, but the system will power them at the higher voltage.
- Do not mix RDIMMs, LRDIMMs, and UDIMMs.
- LRDIMMs are supported up to 3 DIMMs per channel.
- The Intel Xeon E5-2620 processor does not support DIMMs at 1.35V. Using the HP RBSU, 1.35V DIMMs can be changed to operate at 1.5V.
- DIMMs of different speeds may be mixed in any order; the server will select a common optimal speed.
- The maximum memory speed is a function of the memory type, memory configuration, and processor model.
- The maximum memory capacity is a function of the memory type and number of installed processors.
- HP memory from previous generation servers is not qualified on the DL380p Gen8 Server. Certain HP SmartMemory features such as memory authentication and enhanced performance may not be supported.
- To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html.
- For memory population rules and additional memory guidelines, please see the DL380p Gen8 user guide at <http://www.hp.com/support>.

Memory

DL380p Gen8 Supported Memory Bandwidth and Capacity										
DIMM Type	Registered DIMMS (RDIMMs)						Load Reduced (LRDIMMs)	Unbuffered with ECC DIMMs (UDIMMs)		
DIMM Rank	Single Rank (1R)			Dual Rank (2R)			Quad Rank (4R)	Single Rank (1R)	Dual Rank (2R)	
DIMM Capacity	4GB	4GB	8GB	8GB	16GB	16GB	32GB	2GB	4GB	8GB
DIMM Native Speed (MHz)	1333	1600	1600	1333	1333	1600	1333	1333	1333	1333
Voltage	LV	Std	Std	LV	LV	Std	LV	LV	LV	LV
SLOTS THAT CAN BE POPULATED										
24 slot servers	24	24	24	24	24	24	24	16	16	16
MAXIMUM CAPACITY (GB)*										
	96	96	192	192	384	384	768	32	64	128
POPULATED DIMM SPEED (MHz)										
1 DIMM Per Channel	1333	1333	1600	1066	1333	1600	1333**	1333	1333	1333
2 DIMM Per Channel	1333	1600	1600	1066	1333	1600	1333**	1333***	1333***	1333***
3 DIMM Per Channel	1066*	1066	1066	800	1066*	1066*	1066**	n/a	n/a	n/a

* For DDR3-1333 RDIMM, HP SmartMemory supports 2DPC@1333 and 3DPC@1066 running either 1.35V or 1.5V. Third party memory may only support 2DPC@1333 and 3DPC@1066 running at 1.5V

** LRDIMM enables 3 DIMMs per channel. HP SmartMemory supports up to 3DPC@1066 at 1.35V. Third party memory may only support up to 3DPC@1066 at 1.5V.

*** For UDIMMs, HP SmartMemory supports 2DPC@1333 at 1.35V. Third party memory may only support up to 2DPC@1066 at 1.5V.

Memory Speed by Processor Model

Processor Models	Supported Memory Speeds
E5-2690 E5-2680, E5-2670, E5-2667, E5-2665, E5-2660, E5-2650, E5-2650L, E5-2643	1600/1333/1066MHz
E5-2640, E5-2637, E5-2630, E5-2630L, E5-2620	1333/1066MHz
E5-2609, E5-2603	1066MHz

Standard and Maximum Memory Capacity (Pre-configured Models)

Pre Configured Models	Standard Memory	Maximum Memory Plus Optional Memory	Standard Memory Replaced with Optional Memory
Intel Xeon E5-2690, E5-2665, E5-2650	32GB (4x 8GB)	352GB (20x16GB, 4x8GB)	768GB (24 x 32GB)
Intel Xeon E5-2640, E5-2630, E5-2620	16GB (4x 4GB)	336GB (20x16GB, 4x4GB)	768GB (24 x 32GB)
Intel Xeon E5-2609	4GB (4x 4GB)	372GB (23x16GB, 1x4GB)	768GB (24 x 32GB)

Memory

DIMM slot and configuration diagrams

Population order; start with "A" first, "B" second, "C" third, etc.

When one processor is installed, install DIMMs in sequential alphabetic order: A, B, C, D, E, F ...

When two processors are installed, install DIMMs in sequential alphabetic order: CPU1-A, CPU2-A,CPU1-B,CPU2-B,CPU1-C, CP2-C

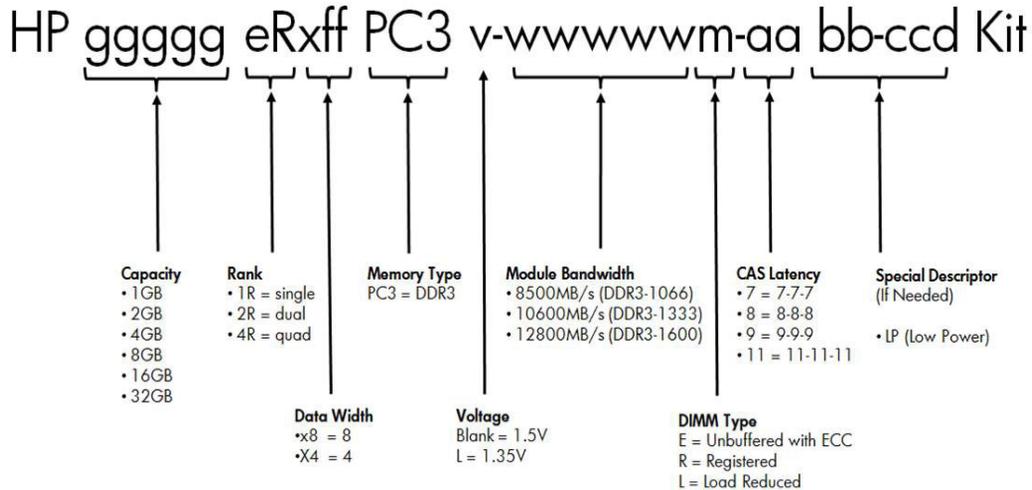
24 DIMM SLOTS (12 per CPU node)					
	slot #	population order	slot #	population order	
Chnl 3	1	C	1	C	Chnl 3
	2	G	2	G	
	3	K	3	K	
Chnl 4	4	D	4	D	Chnl 4
	5	H	5	H	
	6	L	6	L	
CPU1				CPU2	
Chnl 2	7	J	7	J	Chnl 2
	8	F	8	F	
	9	B	9	B	
Chnl 1	10	I	10	I	Chnl 1
	11	E	11	E	
	12	A	12	A	

NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB
- 32GB = 32768MB

DDR3 memory options part number decoder

Memory



Following are memory options available from HP:

HP Memory

NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html (Worldwide)

Registered DIMMs (RDIMMs)

HP 4GB (1x4GB) Single Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647893-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647897-B21
HP 16GB (1x16GB) Dual Rank x4 PC3L-10600R (DDR3-1333) Registered CAS-9 Low Voltage Memory Kit	647901-B21
HP 4GB (1x4GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647895-B21
HP 8GB (1x8GB) Single Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	647899-B21
HP 16GB (1x16GB) Dual Rank x4 PC3-12800R (DDR3-1600) Registered CAS-11 Memory Kit	672631-B21

Unbuffered with ECC DIMMs (UDIMMs)

HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21

Load Reduced DIMMs (LRDIMMs)

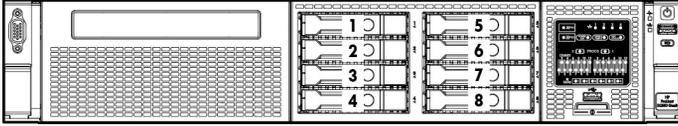
HP 32GB (1x32GB) Quad Rank x4 PC3L-10600L (DDR3-1333) Load Reduced CAS-9 Low Voltage Memory Kit	647903-B21
---	------------

Memory

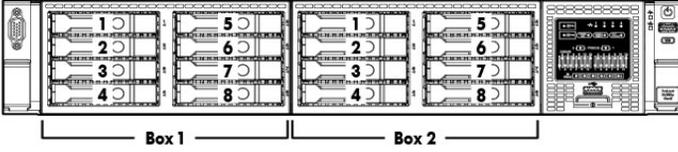
NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.

NOTE: PC3L is a low voltage memory.

Storage



1-8 Eight SFF SAS hot plug drive bays



1-16 Sixteen SFF SAS hot plug drive bays

NOTE: This configuration does not support optical drive.

Technical Specifications

System Unit	Dimensions (H x W x D) (with bezel)	SFF Drives: 3.38 x 17.54 x 27.25 in (8.59 x 44.55 x 69.22 cm)	
	Weight (approximate)	Maximum (all LFF hard drives, power supply, and processor installed)	60.00 lb (27.27 kg)
		Minimum (one SFF hard drive, power supply, and processor installed, ODD not installed)	47.18 lb (21.45 kg)
Input Requirements (per power supply)	Input Requirements (per power supply)	Rated Line Voltage	100 to 120 VAC 200 to 240 VAC
		Rated Input Current	For 1200 W Power Supply: 10 A (at 100 VAC), 4.9 A (at 200 VAC) For 750 W Power Supply: 8.9 A (at 100 VAC), 4.3 A (at 200 VAC) For 460 W Power Supply: 5.5 A (at 100 VAC), 2.6 A (at 200 VAC)
		Rated Input Frequency	50 to 60 Hz
		Rated Input Power	For 1200 W Power Supply: 930 W (at 100 VAC), 1348 W (at 200 VAC) For 750 W Power Supply: 857 W (at 100 VAC), 824 W (at 200 VAC) For 460 W Power Supply: 526 W (at 100 VAC), 505 W (at 200 VAC)
		BTU Rating	Maximum
Power Supply Output (per power supply)	Rated Steady-State Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC) For 750 W Power Supply: 750 W (at 100 to 120 VAC), 750 W (at 200 to 240 VAC)	

Technical Specifications

		For 460 W Power Supply: 460 W (at 100 to 120 VAC), 460 W (at 200 to 240 VAC)
	Maximum Peak Power	For 1200 W Power Supply: 800 W (at 100 VAC), 900 W (at 120 VAC), 1200 W (at 200 to 240 VAC) For 750 W Power Supply: 750 W (at 100 to 120 VAC), 750 W (at 200 to 240 VAC) For 460 W Power Supply: 460 W (at 100 to 120 VAC), 460 W (at 200 to 240 VAC)
System Inlet Temperature	Operating	10° to 40°C (50° to 104°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	10% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
	Non-operating	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). The listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels. NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.	

Idle	1P SKU	2P SKU
LWAd	4.1 B	4.7 B
LpAm	22 dBA	28 dBA
Operating	1P SKU	2P SKU
LWAd	4.1 B	4.7 B

Technical Specifications

	LpAm	22 dBA	28 dBA
Emissions Classification (EMC)	FCC Rating	Class A	
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1	
	NOTE: Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.		
	NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.		

HP iLO 4 On System Management

Architecture	PCI Express based health and remote management ASIC
Processor	Embedded ARM processor core operating at 400MHz
Upgradeability	Firmware upgradeable via Flash ROM
Video Support	1920 x 1200 (16 bpp) DVR max resolution
Interfaces	Integrated SVGA video core with 16MB of dedicated video RAM Supporting a wide variety of video resolutions including: 1600x1200x16bpp 1920x1200x16bpp 1280x1024x32bpp HP iLO video redirection available in all supported video modes
Interfaces	One Dedicated* Out-of-band Ethernet Connection (10/100/1000 Most Servers - ML, DL, SL and 10/100 for BL) *Optional Module on some servers One Additional Industry Standard NC-SI Sideband Ethernet Connection (10/100/1000 ML, DL, SL)
Memory	16 MB Flash 2Gbit DDR-3 DRAM with ECC detection/correction
Operating System Support	Microsoft Windows 2008 R2 Microsoft Windows 2008 (32 bit and 64 bit) Microsoft Windows Server 2008 Standard Edition (32 bit and 64 bit) Microsoft Windows Server 2008 Enterprise Edition (32 bit and 64 bit) Red Hat Enterprise Linux 6.0 (32 bit and 64 bit) Red Hat Enterprise Linux 5.0 (32 bit and 64 bit) SUSE LINUX Enterprise Server 11 (32 bit and 64 bit) SUSE LINUX Enterprise Server 10 (32 bit and 64 bit) VMware ESX 4.2 VMware ESXi 5.0 Red Hat Enterprise Desktop 5.00 SUSE Linux Enterprise Desktop 11 SUSE Linux Enterprise Desktop 10
Client System Support	Windows 7 (32bit and 64bit) Windows Vista
Client Browser Tested	Microsoft Internet Explorer 9 Microsoft Internet Explorer 8 Firefox 7.0 (on supported Windows and Linux systems)

Technical Specifications

	Firefox 6.0 (on supported Windows and Linux systems) NOTE: for the latest OS/Browsers supported, please refer
	Firefox 3.6 (on supported Windows and Linux systems)
Command Line Support	Secure Shell and serial port access
	Secure Shell version 2
Security	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
Directory Support Services	Active Directory (Windows Server 2003, 2008)
Driver Support	HP ProLiant iLO 4 Management Controller Driver Package
Management protocols supported	SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML

HP Smart Array P420i Controller

Dimensions	Embedded
Disk Drive and Enclosure Interface - Transfer Rate	6Gb/s SAS (Serial Attached SCSI) 3Gb/s SATA (Serial ATA)
SAS Connectors	2 internal 4X connectors
Cache Memory Speed	DDR2-800MHz with 40 or 72-bit wide bus
Server Interface	x4 PCIe 2.0 provides 2GB/s maximum bandwidth
SAS Speed	(8) 6Gb/s SAS links provide 4.8GB/s maximum bandwidth
Cache Memory	Zero Memory RAID has no cache memory 40-bit 256MB ECC protected cache (battery upgrade available) 72-bit 512MB BBWC or 72-bit 512MB and 1G FBWC Zero Memory, Up to 2 logical volumes (8 physical drives)
Logical Drives Supported	Up to 64 logical drives with cache
Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
RAID Support	RAID 6, 6+0 (Advanced Data Guarding) NOTE: RAID 6, 6+0 can be enabled with one of the following combinations: <ul style="list-style-type: none"> • 256 MB cache, Battery kit and Smart Array Advanced Pack License key option upgrades • 512 MB BBWC/FBWC and Smart Array Advanced Pack License key option upgrades • 1G FBWC and Smart Array Advanced Pack License key option upgrades RAID 5, 5+0 (Distributed Data Guarding) NOTE: A minimum of 512MB cache is required to enable RAID 5, 5+0 support RAID 1+0 (Striping & Mirroring) RAID 0 (Striping), RAID 1 (Mirroring)

Technical Specifications

HP Ethernet 1Gb 4-port 331FLR Adapter	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX	
		EEE 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, four lanes (x4)	
	Controller	BCM5709C	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
10Base-T (Full-Duplex)		20 Mb/s	
100Base-TX (Half-Duplex)		100 Mb/s	
100Base-TX (Full-Duplex)		200 Mb/s	
1000Base-TX (Half and Full-Duplex)		2000Mb/s	
Connector	Two 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)	
	1000BaseTX	Category 5 or higher UTP; up to 328 ft (100 m)	

HP Ethernet 10Gb 2-port 530FLR-SFP+ Adapter	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX	
		EEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3ad 1000Base-TX	
		IEEE 802.1p 100Base-TX	
		IEEE 802.1q 100Base-TX	
	Data Transfer Method	PCI Express, eight lanes (x4)	
	Controller	BCM5709C	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
100Base-TX (Half-Duplex)		100 Mb/s	
100Base-TX (Full-Duplex)		200 Mb/s	
1000Base-TX (Half and Full-Duplex)		2000Mb/s	
Connector	Two RJ-45		
Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)	

Technical Specifications

100Base-TX Category 5 or higher UTP;
up to 328 ft (100 m)

1000BaseTX Category 5 or higher UTP;
up to 328 ft (100 m)

Environment-friendly Products and Approach

End-of-life Management and Recycling

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

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

© Copyright 2013 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

Microsoft and Windows NT are US registered trademarks of Microsoft Corporation.

Intel, the Intel logo, Xeon and Xeon Inside are trademarks of Intel Corporation in the U.S. and other countries.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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