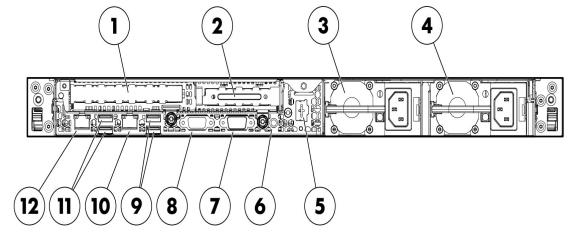
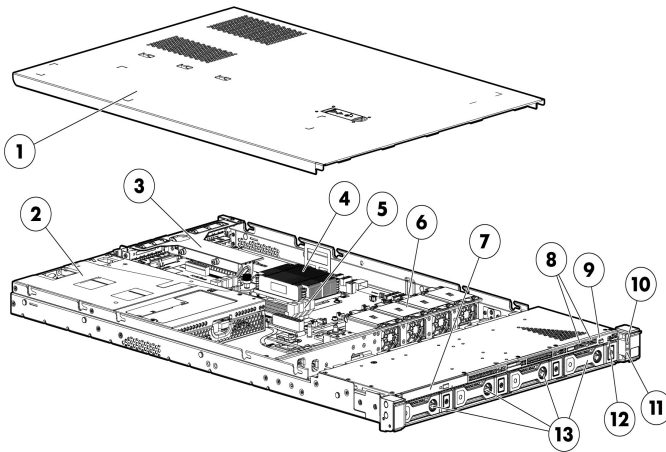


### Overview

The latest 1P rack server, HP ProLiant DL320e Gen8 Server series, is a new entry level rack-optimized platform, ideal for single-application IT infrastructure, web and edge-of-network applications. The ProLiant DL320e Gen8 Server is not only affordable but is more powerful by enabling powerful quad-core processor computing performance with larger memory & storage capacity, all in a small package.

The DL320e Gen8 supports the latest technology, such as Intel® Xeon® E3, Core i3 and Pentium processors, PCI-E Gen3, DDR3 1600MHz memory, up to 12TB internal storage, RAID solution as well as High Efficiency Hot Plug Redundant Power Supply Kit.

HP ProLiant DL320e Gen8 Server series supports HP iLO Management Engine, 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.



#### Front View:

1. Access Panel
2. Power Supply
3. PCI Riser Cage
4. Processor
5. DIMMs
6. Fans
7. Optical drive
8. 2 USB Connectors
9. UID LED button
10. Health LED
11. NIC status LED
12. Power On/Standby button and LED
13. Hard Drive Bays

#### Rear View:

1. Expansion slot 2, PCIe x16
2. Expansion slot 1, PCIe x8
3. Power Supply 2
4. Power Supply 1
5. Dedicated iLO port
6. UID LED button
7. Serial Connector
8. Video Connector
9. USB Connectors
10. NIC Connector 1
11. USB Connectors
12. NIC Connector 2

### 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

#### Entry Processors

Intel® Pentium® G630 (2.7GHz/2-core/3MB/65W) Processor

**NOTE:** Intel® Pentium® G630 processor, performance for 1600MHz memory is clocked down to 1066MHz.

Intel® Pentium® G2120 (3.1GHz/2-core/3MB/55W) Processor

**NOTE:** Intel® Pentium® G2120 Processor supports up to 1600MHz DDR3 memory speeds.

Intel® Pentium® G2100T (2.6GHz/2-core/3MB/35W) Processor

**NOTE:** Intel® Pentium® G2100T Processor supports up to 1600MHz DDR3 memory speeds.

#### Base Processors

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

Intel® Core™ i3-3220T (2.8GHz/2-core/3MB/35W, HT) Processor

Intel® Core™ i3-3240 (3.4GHz/2-core/3MB/55W, HT) Processor

#### Performance Processors

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

Intel® Xeon® E3-1220Lv2 (2.3GHz/2-core/3MB/17W, HT)

Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W, HT)

Intel® Xeon® E3-1230v2 (3.3GHz/4-core/8MB/69W, HT)

Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W, HT)

Intel® Xeon® E3-1270v2 (3.5GHz/4-core/8MB/69W, HT)

Intel® Xeon® E3-1290v2 (3.7GHz/4-core/8MB/87W, HT)

**NOTE:** HT indicates that the processor model supports Intel® /Hyper-Threading Technology (Depends on the processor).

**NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs and CPU installed (options for 1600, 1333, 1066MHz).

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#### Cache Memory

One of the following depending on Model

8MB (1x8MB) Level 3

**NOTE:** For Quad-core processors.

3MB (1x3MB) Level 3

**NOTE:** For Dual-core processors.

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#### Chipset

Intel® C204 Series Chipset

**NOTE:** For more information regarding Intel® chipsets, please see the following URL:

<http://www.intel.com/products/server/chipsets/>.

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### Standard Features

#### Upgradeability

Up to 4 DIMM slots available for higher Memory capacity  
Up to 8 SFF Hard Drive Bays; Or 4 LFF Hot plug or Non hot plug Drive Bay  
1 PCIe 2.0 expansion slot  
1 PCIe 3.0 I/O slot for additional communications and storage expansion (depends on processor)  
Redundant Power Supply  
Optical Drive Bay

#### On System Management Processor

HP iLO (Firmware: HP iLO 4)  
**NOTE:** For more information, visit: <http://www.hp.com/go/ilo>.

#### Memory Protection

ECC

#### Memory

One of the following depending on Model

Type	HP SmartMemory Unbuffered (UDIMM)
DIMM Slots Available	4 DIMMs (2 Channels/ 2 DIMMs per channel)
Standard (Entry Model)	2GB (1 x 2GB) UDIMM PC3-12800E (1600MHz)
Standard (Base Models)	4GB (1 x 4GB) UDIMM PC3-12800E (1600MHz)
Standard (Performance Models)	8GB (2 x 4GB) UDIMM PC3-12800E (1600MHz)
Maximum Capacity (UDIMM)	32GB (4 x 8GB@1600MHz)

**NOTE:** HP memory from previous generation servers are not fully compatible with the HP ProLiant DL320e 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\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

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

#### Network Controller

HP Ethernet 1Gb 2-port 330i Adapter  
**NOTE:** The HP ProLiant DL320e Gen8 server has an embedded dual-port network adapter . The server can be further upgraded with various networking products

### Standard Features

Expansion Slots	Expansion Slots #	Technology	Bus Width*	Connector Width	Form Factor	Notes
	1	PCIe 2.0	x4	x8	Low profile slot	
	2	PCIe 3.0	x16	x16	Half-length, full-height slot	

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

**NOTE:** PCIe 3.0 support with Intel Xeon E3-1200v2 family only.

### 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](http://www.hp.com/support/rbsu).

### Standard Features

**Storage Controller**  
One of the following depending on Model

Entry Models	HP Dynamic Smart Array B120i Controller <b>NOTE:</b> Supports 3.0Gb/s SATA. <b>NOTE:</b> Supports RAID 0/1/10 only. It does not have FBWC support so cannot support advanced RAID (5 onwards). For FBWC, a standup Smart Array Controller card must be configured.
Base Models	HP Dynamic Smart Array B120i Controller <b>NOTE:</b> Supports 3.0Gb/s SATA. <b>NOTE:</b> Supports RAID 0/1/10 only. It does not have FBWC support so cannot support advanced RAID (5 onwards). For FBWC, a standup Smart Array Controller card must be configured.
Performance Models	HP Smart Array P222/512MB FBWC controller <b>NOTE:</b> P222 can support RAID 0/1/10/5/50. More advanced options available with Smart Array Advanced Pack 2.0.

NOTE: The DL320e Gen8 can support other advanced controllers as well, depending on model and configuration

NOTE: For set up instructions for HP Smart Array B120i SATA Controller please refer to the HP ProLiant DL300 series server user guide.

NOTE: For general information about HP Smart Array B120i SATA RAID Controller, please visit:  
<http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/dynamicsmartarray/index.html>

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### Internal Storage Devices

Diskette Drive	None
Optical Drive	Optional DVD-ROM, DVD-RW
Hard Drives One of the following depending on Model	None ship standard (Base Models and Performance Models) 1x NHP 500GB SATA 3.5" drive (Entry Models)
Hard Drive Bays	8 SFF drive bays or 4 LFF Non hot plug/Hot plug <b>NOTE:</b> HP ProLiant DL320e Series servers offer both SFF, and LFF versions in CTO. The Optical Drive bay is available with both models. <b>NOTE:</b> LFF versions are not an upgradeable option from SFF models, or vice versa, also between Non Hot Plug LFF and Hot Plug LFF. <b>NOTE:</b> All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server.

### Standard Features

<b>Maximum Internal Storage</b>	Hot Plug SFF SAS	8.0TB	8 x 1TB
	Hot Plug SFF SATA	8.0TB	8 x 1TB
	Hot Plug LFF SAS	12.0TB	4 x 3TB
	Hot Plug LFF SATA	12.0TB	4 x 3TB
	Hot Plug SFF SAS SSD	6.4TB	8 x 800GB
	Hot Plug SFF SATA SSD	3.2TB	8 x 400GB
	Hot Plug LFF SATA SSD	1.6 TB	4 x 400GB
	Non-Hot Plug LFF SATA	12 TB	4 x 3TB
	Non-Hot Plug LFF SAS	2.4TB	4 x 600GB

<b>Interfaces</b>	Serial	1
	Video	1 Rear standard video
	HP iLO Remote Management Network Port	1Gb Dedicated
	SD slot	1 Internal <b>NOTE:</b> 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	7 total: 4 rear, 2 front, 1 internal (Optional)

<b>Industry Standard Compliance</b>	ACPI 2.0b Compliant
	PCIe 3.0
	PXE Support
	WOL Support
	USB 2.0 Compliant

**Server Power Cords** All Pre-configured Models servers ship with a high voltage server to PDU power cord.  
**NOTE:** HP ProLiant DL servers no longer ship standard with a 12-foot NEMA 5-15P to C13 power cords (227099-001) 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. See Power Cords section for Worldwide Power Cord options.

**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](http://www.hp.com/go/proliant-energy-efficient) or [www.hp.com/go/hppoweradvisor](http://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](http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html)

### Standard Features

#### Common Slot Power Supply

**NOTE:** The default power supply for DL320e Gen8 server is a 350W Non Hot Plug, Non Redundant (ATX) power supply.

**NOTE:** To choose a Redundant Common Slot Power Supply option for the DL320e Gen8 server, a Factory Integrated Model must be chosen, beginning with a CTO server. Also, an HP DL320e Gen8 RPS Enablement FIO Kit (675451-B21) is required.

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. The 460W HP CS power supply option provides an efficiency rating of up to 94%. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations.

**NOTE:** Mixing of power supplies (for instance Common Slot Platinum Plus power supplies and Common Slot Gold 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](http://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](http://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](http://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\\_na/14209\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14209_na/14209_na.html)

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#### System Fans

4 fan modules ship standard, non-redundant

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#### Operating Systems and Virtualization Software Support for ProLiant Servers

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

**NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from HP, please visit our OS Support Site at: <http://www.hp.com/go/ossupport> and our driver download page: <http://www.hp.com/support/DL320eGen8>.

### Standard Features

#### 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

1U Rack form factor

8 SFF Drive Bay Version:

1.7" (4.32cm) Height x 17.11" (43.46cm) Width x 27.5" (69.90cm) Length

4 LFF Drive Bay Version:

1.7" (4.32cm) Height x 17.11" (43.46cm) Width x 29.5" (75.00cm) Length

#### On System Management

HP iLO Management Engine

HP iLO Management Engine is a comprehensive 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. The 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 and 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. The HP Active Health System monitors and records changes in the server hardware and system configuration. The Active Health System assists in diagnosing problems and delivering rapid resolution when system failures occur.
- **HP Intelligent Provisioning:** HP Intelligent Provisioning includes everything you need for painless system setup and deployment. All your HP Gen8 ProLiant servers and Gen8 ProLiant server blades are ready to set-up right out-of-the box. The firmware, drivers, and tools that you need to quickly get your systems online are embedded on a NAND flash chip on the server motherboard- no more SmartStart CDs or firmware DVDs needed. Intelligent Provisioning is agentless for improved performance, but you still have the ability to run agents if needed.
  - To start Intelligent Provisioning:
    - Press the F10 key during the ProLiant Gen8 server boot process (also known as power on self test or POST).
    - Please go to the Intelligent Provisioning website at [www.hp.com/go/intelligentprovisioning](http://www.hp.com/go/intelligentprovisioning) for additional information and to view usage videos.



### Standard Features

- Use the Service Pack for ProLiant (SPP) at [www.hp.com/go/spp](http://www.hp.com/go/spp) to get firmware and software updates.

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

**NOTE:** For information on Client System Support, please visit the HP iLO Feature Comparison Site at: <http://www.hp.com/go/compareilo>

#### HP Insight Management 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](http://www.hp.com/go/spp/download). More information can be found: [www.hp.com/go/spp](http://www.hp.com/go/spp) and <http://www.hp.com/go/hpsum>

### Standard Features

#### Security

Power-on password  
Administrator's password

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#### Warranty

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

**NOTE:** Server Warranty includes 1-Year Parts, 1-Year Labor, 1-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](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 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 Insight Dynamics, 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>

HP Service Pack for ProLiant

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### Optional Features

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.

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#### 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. <a href="http://www.hp.com/go/clusters">http://www.hp.com/go/clusters</a> .
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. <a href="http://www.hp.com/techservers/clusters/ucp/index.html">http://www.hp.com/techservers/clusters/ucp/index.html</a>
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. <a href="http://www.hp.com/go/cmu">http://www.hp.com/go/cmu</a>
HP HPC Linux Value Pack	HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported option to HP Insight CMU, bundle 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. <a href="#">HP HPC Linux Value Pack</a>

### Optional Features

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

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

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

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

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

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#### **HP Simple Configurator**

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, 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.

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#### 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>

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#### 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

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#### 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

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#### 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.

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#### 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:** Maximum speed supported depends on the CPU installed. Entry model will support maximum speed of 1600 MHz.

Please see Memory Population Table or the Online Memory Configuration Tool at: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** All Pre-configured Models come populated with some hard drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit.

### Entry Models

<b>HP ProLiant DL320e Gen8 G2120 1P 2GB-U Non-hot Plug SATA 4 LFF 350W PS Server</b> 675420-001	<b>Processor(s)</b>	(1) Intel® Pentium® G2120 (3.1GHz/2-core/3MB/55W) Processor
	<b>Cache Memory</b>	3MB (1x3MB) Level3
	<b>Memory</b>	2GB (1 x 2GB) Unbuffered DIMMs PC3-12800E (1600MHz)
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b>	(1) 500GB 3.5" Non-hot plug SATA
	<b>Internal Storage</b>	4 LFF HDD Bays; includes 3 LFF hard drive blanks
	<b>Optical Drive Bay</b>	None ships standard
	<b>PCI-Express Slots</b>	1 PCIe3 x16 and 1 PCIe2 x8
	<b>Power Supply</b>	350 Watts Non-Hot Plug, Non redundant Power Supply
	<b>Fans</b>	4 fan modules ship standard, non-redundant
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP Insight Control
	<b>Form Factor</b>	1U, HP Friction Rail Kit
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.

### Pre-configured Models

#### Base Models

<b>HP ProLiant DL320e Gen8 E3-1220v2 1P 4GB-U Hot Plug 4 LFF 350W PS Server</b> 675421-001	<b>Processor(s)</b>	(1) Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W, HT) Processor
	<b>Cache Memory</b>	8MB (1x8MB) Level3
	<b>Memory</b>	4GB (1 x 4GB) Unbuffered DIMMs PC3-12800E (1600MHz)
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b>	None ship standard <b>NOTE:</b> Only SATA 3 Gbit/s data transmission guaranteed without HP Smart Array Card.
	<b>Internal Storage</b>	4 LFF HDD Bays; includes 3 LFF hard drive blanks
	<b>Optical Drive Bay</b>	None ships standard
	<b>PCI-Express Slots</b>	1 PCIe3 x16 and 1 PCIe2 x8
	<b>Power Supply</b>	350 Watts Non-Hot Plug, Non redundant Power Supply
	<b>Fans</b>	4 fan modules ship standard, non-redundant
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP Insight Control
	<b>Form Factor</b>	1U, HP Friction Rail Kit
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.

#### Performance Models

<b>HP ProLiant DL320e Gen8 E3-1240v2 3.4GHz 4-core 1P 8GB-U P222 Hot Plug 4 LFF 350W PS US Server</b> 675422-001	<b>Processor(s)</b>	(1) Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W, HT) Processor
	<b>Cache Memory</b>	8MB (1x8MB) Level3
	<b>Memory</b>	8GB (2 x 4GB) Unbuffered DIMMs PC3-12800E (1600MHz)
	<b>Network Controller</b>	HP Smart Array P222/512MB FBWC Controller
	<b>Storage Controller</b>	HP Smart Array P222/512 FBWC Controller
	<b>Hard Drive</b>	None ship standard
	<b>Internal Storage</b>	4 LFF HDD Bays; includes 3 LFF hard drive blanks
	<b>Optical Drive Bay</b>	None ships standard
	<b>PCI-Express Slots</b>	1 PCIe2 x8 available
	<b>Power Supply</b>	350 Watts Non-Hot Plug, Non redundant Power Supply
	<b>Fans</b>	4 fan modules ship standard, non-redundant
	<b>Management</b>	HP iLO Management Engine (standard) HP Insight Control Standard
	<b>Form Factor</b>	1U, HP Friction Rail Kit
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response

### Smart Buys

<b>HP ProLiant DL320e Gen8 E3-1220v2 1P 4GB-U Non-hot Plug 4 LFF 350W PS Server</b> 687520-S01	<b>Processor(s)</b>	(1) Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W, HT)
	<b>Cache Memory</b>	8MB (1x8MB) Level3
	<b>Memory</b>	4GB (1 x 4GB) Unbuffered DIMMs PC3-12800E (1600MHz)
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b>	(1) HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Midline Hard Drive
	<b>Internal Storage</b>	4 LFF HDD Bays; includes 3 LFF hard drive blanks
	<b>Optical Drive Bay</b>	None ships standard
	<b>PCI-Express Slots</b>	1 PCIe2 x16 and 1 PCIe2 x8
	<b>Power Supply</b>	350 Watts Non-Hot Plug, Non redundant Power Supply
	<b>Fans</b>	4 fan modules ship standard, non-redundant
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP Insight Control
	<b>Form Factor</b>	1U, HP Friction Rail Kit
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-Year Onsite support with next business day response.

<b>HP ProLiant DL320e Gen8 E3-1240v2 1P 8GB-U Hot Plug 4 LFF 350W PS Server</b> 687519-S01	<b>Processor(s)</b>	Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W, HT)
	<b>Cache Memory</b>	8MB (1x8MB) Level3
	<b>Memory</b>	8GB (2 x 4GB) Unbuffered DIMMs PC3-12800E (1600MHz)
	<b>Network Controller</b>	HP Ethernet 1Gb 2-port 330i Adapter
	<b>Storage Controller</b>	HP Dynamic Smart Array B120i Controller
	<b>Hard Drive</b>	None ship standard
	<b>Internal Storage</b>	4 LFF HDD Bays; includes 3 LFF hard drive blanks
	<b>Optical Drive Bay</b>	None ships standard
	<b>PCI-Express Slots</b>	1 PCIe2 x16 and 1 PCIe2 x8
	<b>Power Supply</b>	350 Watts Non-Hot Plug, Non redundant Power Supply
	<b>Fans</b>	4 fan modules ship standard, non-redundant
	<b>Management</b>	HP iLO Management Engine (standard) Optional: HP Insight Control
	<b>Form Factor</b>	1U, HP Friction Rail Kit
	<b>Warranty</b>	Server Warranty includes 1-Year Parts, 1-Year Labor, 1-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:** 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 (choose one of the following configurable models)

#### HP Models

HP ProLiant DL320e Gen8 Hot Plug 4 LFF Configure-to-order Server

675597-B21

**NOTE:** All 6G SATA/SAS Drives listed in HDD section are tested and supported for both 3G and 6G speed. A HP Smart Array Controller is required for 6G HDD.

**Factory Integrated Model ships with:**

1U Chassis with 4 LFF Hot Plug Drive Cage

HP Ethernet 1Gb 2-port 330i Adapter

HP iLO Management Engine (standard)

HP Dynamic Smart Array B120i SATA Controller (RAID 0/1/10)

**NOTE:** For set up instructions for HP Dynamic Smart Array B120i SATA Controller please refer to the HP ProLiant DL300 series server user guide

**NOTE:** For general information about HP Dynamic Smart Array B120i SATA Controller, please visit:

<http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb120i/index.html>

HP ProLiant DL320e Gen8 Hot Plug 8 SFF Configure-to-order Server

675598-B21

**Factory Integrated Model ships with:**

1U Chassis with 8 SFF Hot Plug Drive Cage

HP Ethernet 1Gb 2-port 330i Adapter

HP iLO Management Engine (standard)

HP Dynamic Smart Array B120i SATA Controller (RAID 0/1/10)

**NOTE:** For set up instructions for HP Dynamic Smart Array B120i SATA Controller please refer to the HP ProLiant DL300 series server user guide

**NOTE:** For general information about HP Dynamic Smart Array B120i SATA Controller, please visit:

<http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb120i/index.html>

HP ProLiant DL320e Gen8 Non-hot Plug 4 LFF Configure-to-order Server

675596-B21

**NOTE:** All 6G SATA/SAS Drives listed in HDD section are tested and supported for both 3G and 6G speed. A HP Smart Array Controller is required for 6G HDD.

**Factory Integrated Model ships with:**

1U Chassis with 4 LFF Non hot plug Drive Cage

HP Ethernet 1Gb 2-port 330i Adapter

HP iLO Management Engine (standard)

HP Dynamic Smart Array B120i SATA Controller (RAID 0/1/10)

**NOTE:** For set up instructions for HP Dynamic Smart Array B120i SATA Controller please refer to the HP ProLiant DL300 series server user guide

**NOTE:** For general information about HP Dynamic Smart Array B120i SATA Controller, please visit:

### Configuration Information - Factory Integrated Models

<http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/smartarrayb120i/index.html>

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

#### HP Processors

##### Entry Processors

**NOTE:** All support up to 1600MHz DDR3 memory speeds except Intel® Pentium® G630 which supports up to 1066MHz DDR3 memory speeds

HP DL320e Gen8 Intel® Pentium® G630 (2.7GHz/2-core/3MB/65W) FIO Processor Kit	682797-L21
HP DL320e Gen8 Intel® Pentium® G2120 (3.1GHz/2-core/3MB/55W) FIO Processor Kit	703278-L21
HP DL320e Gen8 Intel® Pentium® G2100T (2.6GHz/2-core/3MB/35W) FIO Processor Kit	703280-L21

##### Base Processors

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

HP DL320e Gen8 Intel® Core™ i3-3220T (2.8GHz/2-core/3MB/35W) FIO Processor Kit	700792-L21
HP DL320e Gen8 Intel® Core™ i3-3240 (3.4GHz/2-core/3MB/55W) FIO Processor Kit	700786-L21

##### Performance Processors

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

HP DL320e Gen8 Intel® Xeon® E3-1220Lv2 (2.3GHz/2-core/3MB/17W) FIO Processor Kit	682789-L21
HP DL320e Gen8 Intel® Xeon® E3-1220v2 (3.1GHz/4-core/8MB/69W) FIO Processor Kit	682787-L21
HP DL320e Gen8 Intel® Xeon® E3-1230v2 (3.3GHz/4-core/8MB/69W) FIO Processor Kit	682785-L21
HP DL320e Gen8 Intel® Xeon® E3-1240v2 (3.4GHz/4-core/8MB/69W) FIO Processor Kit	682783-L21
HP DL320e Gen8 Intel® Xeon® E3-1270v2 (3.5GHz/4-core/8MB/69W) FIO Processor Kit	682781-L21
HP DL320e Gen8 Intel® Xeon® E3-1290v2 (3.7GHz/4-core/8MB/87W) FIO Processor Kit	682777-L21

#### 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\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** HP memory from previous generation servers are not fully compatible with new Active Health features on the DL320e Gen8 Server.

##### Unbuffered with ECC DIMMs (UDIMMs)

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit/S-Buy	647905-S21
HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit/S-Buy	647907-S21

### Configuration Information - Factory Integrated Models

HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit 669324-B21

HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit 647909-B21

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

**NOTE:** Depending on the memory configuration and processor model, 1600MHz and 1333MHz memory may operate at a lower speed. Please see the "Memory" section later in this document and the Online Memory Configuration Tool for details at [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** For additional memory rules and guidelines, see the "Memory" section later in this document.

**NOTE:** For more information on ProLiant Energy Efficient Features, see:

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

**NOTE:** PC3L is a low voltage memory.

### 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](http://www.hp.com/go/hppoweradvisor).

HP 350W 1U Factory Integrated Power Supply Kit 675450-B21

#### HP Common Slot Platinum Plus Power Supply Kits

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

HP 460W Common Slot Platinum Plus Hot Plug Power Supply Kit 656362-B21

#### HP Common Slot Gold Power Supplies

**NOTE:** The following Power Supplies offer 92% efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit 503296-B21

HP DL320e Gen8 Factory Integrated RPS Enablement Kit 675451-B21

**NOTE:** When selecting Common Slot power supply options for the DL320e Gen8 server, a HP DL320e Gen8 RPS Enablement FIO Kit (675451-B21) is required for HP common slot redundant power supply configurations.

**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\\_na/14209\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14209_na/14209_na.html)

### Configuration Information - Factory Integrated Models

#### Step 3: Choose Additional Factory Integratable Options

<b>HP USB Kit</b>	HP Gen8 FIO Internal USB Kit	662961-B21
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#### HP Rail Kits

**NOTE:** Gen8 rail kits have changed significantly from prior generation rail kits. Please take a moment to review the installation documentation that comes with the server to help you with the installation of your Gen8 server.

**NOTE:** Rail kits are optional for Gen8 and are no longer included standard with the server. Customers have the option to purchase their server without a rail kit.

**CAUTION:** HP recommends that at least two people are used for all rack server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

HP 1U Friction Gen8 FIO Rail Kit	663200-B21
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**NOTE:** Kit contains non-telescoping friction rails which do not allow for in rack serviceability. The HP 1U Gen8 Cable Management Arm is not available when using Friction Rails. Caution: HP recommends that a minimum of two people is required for all Rack Server installations. Please refer to your installation instructions for proper tools and number of people to use for any installation.

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#### HP Insight Software

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

<b>HP Unique Options</b>	HP DL320e Gen8 Mini SAS Cable Kit	685018-B21
	<b>NOTE:</b> HP DL320e Gen8 mini SAS cable kit would be required for the server to be compatible with 4LFF Hot Plug drives, H222 and P222 controllers.	
	HP Dedicated iLO Management Port Kit	674845-B21

### 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\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** HP memory from previous generation servers are not fully compatible with SmartMemory features in Gen8 Servers.

#### Unbuffered with ECC DIMMs (UDIMMs)

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669320-B21
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HP 2GB (1x2GB) Single Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647905-B21
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HP 4GB (1x4GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669322-B21
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HP 4GB (1x4GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647907-B21
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HP 8GB (1x8GB) Dual Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit	669324-B21
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HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit	647909-B21
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**NOTE:** All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: [www.hp.com/go/ddr3memory-configurator](http://www.hp.com/go/ddr3memory-configurator).

**NOTE:** Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient).

**NOTE:** PC3L is a low voltage memory.

### HP Optical Drives

HP 9.5mm SATA DVD-ROM JackBlack Optical Drive	652238-B21
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HP 9.5mm SATA DVD-RW JackBlack Optical Drive	652241-B21
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### 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 with SmartDrive SFF (2.5-inch) Enterprise Drives



### Core Options

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

#### **SAS Hot Plug SmartDrive SFF (2.5-inch) Midline Drives**

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652749-B21
HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	652745-B21

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

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652620-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) SC Enterprise 3yr Warranty Hard Drive	652615-B21

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

HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652766-B21
HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652757-B21
HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	652753-B21

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

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516830-B21
HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Non-hot Plug Dual Port Enterprise 3yr Warranty Hard Drive	516826-B21

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

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

#### **6G SATA Hot Plug with SmartDrive SFF (2.5-inch) Midline (MDL) Drives**

HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655710-B21
HP 500GB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive	655708-B21

#### **6G SATA Hot Plug with SmartDrive LFF (3.5-inch) Midline (MDL) Drives**

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	628061-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658079-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	657750-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) SC Midline 1yr Warranty Hard Drive	658071-B21

#### **6G SATA Non-Hot Plug LFF (3.5-inch) Midline (MDL) Drives**

HP 3TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	628065-B21
HP 2TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659339-B21
HP 1TB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659337-B21
HP 500GB 6G SATA 7.2K rpm LFF (3.5-inch) Non-hot plug Midline 1yr Warranty Hard Drive	659341-B21

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

[http://h18000.www1.hp.com/products/quickspecs/13021\\_na/13021\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html)

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

### Core Options

HP 800GB 6G SAS MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653109-B21
<b>6G SAS SLC Hot Plug SFF (2.5-inch) Enterprise Performance Solid State Drives</b>	
HP 400GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653082-B21
HP 200GB 6G SAS SLC SFF (2.5-inch) SC Enterprise Performance 3yr Warranty Solid State Drive	653078-B21
<b>3G SATA MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives</b>	
HP 400GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653120-B21
HP 200GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653118-B21
HP 100GB 3G SATA MLC SFF (2.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653112-B21
<b>3G SATA MLC Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives</b>	
HP 400GB 3G SATA MLC LFF (3.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653126-B21
HP 200GB 3G SATA MLC LFF (3.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653124-B21
HP 100GB 3G SATA MLC LFF (3.5-inch) SC Enterprise Mainstream 3yr Warranty Solid State Drive	653122-B21
<b>NOTE:</b> Please see the QuickSpecs for Technical Specifications and additional information: <a href="http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html">http://h18000.www1.hp.com/products/quickspecs/14038_na/14038_na.html</a>	
<b>Hard Drive Kits</b>	
<b>NOTE:</b> All Factory Integrated Models will be populated with sufficient hard drive blanks based on the number of initial hard drives ordered with the server.	
<b>NOTE:</b> The part numbers for single HDD blanks below are provided should the customer require replacement HDD blanks for their server.	
<b>NOTE:</b> The mixing of standard SAS drives with SAS SSD drives is supported within the server, but limits the RAID configuration to two separate RAID 0 volumes. Mixing of other drives types is not supported.	
HP LFF Gen8 Hard Drive Blank Kit	666986-B21
HP SFF Gen8 Hard Drive Blank Kit	666987-B21

### Core Options

#### HP Networking

##### Gigabit Ethernet Adapters

HP NC112T PCI Express Gigabit Server Adapter	503746-B21
HP NC365T 4-port Ethernet Server Adapter	593722-B21
HP Ethernet 1Gb 2-port 361T Adapter	652497-B21
HP Ethernet 1Gb 4-port 331T Adapter	647594-B21
HP Ethernet 1Gb 2-port 332T Adapter	615732-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 NC523SFP 10Gb 2-port Server Adapter	593717-B21
HP NC552SFP 10Gb 2-port Ethernet Server Adapter	614203-B21
HP Ethernet 10Gb 2-port 560SFP+ Adapter	665249-B21

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

#### 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](http://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 460W Common Slot Platinum Plus Hot Plug Power Supply Kit	656362-B21
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##### HP Common Slot Gold Power Supplies

**NOTE:** The following Power Supplies offer 92% efficiency.

HP 460W Common Slot Gold Hot Plug Power Supply Kit	503296-B21
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**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\\_na/14209\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14209_na/14209_na.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 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 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](http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html)

#### HP Insight Control for Linux

HP Insight Control for Linux w/1yr 24x7 Supp ML/DL/SL Bundle Electronic 1 Svr LTU TC203AAE

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

### Additional Options

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

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### High Performance Clusters

<b>HP Cluster Management Utility</b>	
HP Insight Cluster Management Utility 1yr 24x7 Flexible License	QL803B
HP Insight Cluster Management Utility 3yr 24x7 Flexible License	BD476A
<b>NOTE:</b> 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
<b>NOTE:</b> For additional license kits please see the QuickSpecs at <a href="http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html">http://h18004.www1.hp.com/products/quickspecs/12612_na/12612_na.html</a> .	
<b>HP HPC Linux Value Pack</b>	
HP High Performance Computing Linux Value Pack 1 Processor Flexible License for ProLiant Servers	TC293B
<b>NOTE:</b> 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.	
<b>NOTE:</b> For additional license kits please see the QuickSpecs at <a href="http://h18004.www1.hp.com/products/quickspecs/13485_na/13485_na.html">http://h18004.www1.hp.com/products/quickspecs/13485_na/13485_na.html</a> .	
HP High Performance Computing Linux Value Pack Media Kit for ProLiant Servers	TC294A
<b>NOTE:</b> This part number can be used to purchase media including software and documentation, which will be delivered to the customer.	

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### Additional Options

<b>HP Security</b>	HP Trusted Platform Module Option	488069-B21
	<p><b>NOTE:</b> The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: <a href="http://www.hp.com/go/TPM">www.hp.com/go/TPM</a>.</p> <p><b>NOTE:</b> ProLiant OS pre-installed units will come with the partition required for TPM deployment.</p> <p><b>NOTE:</b> The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.</p>	
	HP 1U Security Gen8 Bezel Kit	664918-B21

### HP Storage Controllers

#### SAS Controllers

##### Smart Array P222 Controller

HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller 631667-B21

##### Smart Array P420 Controller

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

##### Smart Array P421 Controller

HP Smart Array P421/1GB FBWC 6Gb 2-ports Ext SAS Controller 631673-B21

HP Smart Array P421/2GB FBWC 6Gb 2-ports Ext SAS Controller 631674-B21

#### Optional Upgrades

HP 2GB P-series Smart Array Flash Backed Write Cache 631681-B21

HP DL320e Gen8 Mini SAS Cable Kit 685018-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

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

[http://h18000.www1.hp.com/products/quickspecs/14227\\_na/14227\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14227_na/14227_na.html)  
(Smart Array P222 Controller)

[http://h18000.www1.hp.com/products/quickspecs/14228\\_na/14228\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14228_na/14228_na.html)  
(Smart Array P420 Controller)

[http://h18000.www1.hp.com/products/quickspecs/14229\\_na/14229\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14229_na/14229_na.html)  
(Smart Array P421 Controller)

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

#### Host Bus Adapter

HP H220 Host Bus Adapter 650933-B21

HP H221 Host Bus Adapter 650931-B21

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

### Additional Options

HP H222 Host Bus Adapter 650926-B21

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

[http://h18004.www1.hp.com/products/quickspecs/14336\\_na/14336\\_na.html](http://h18004.www1.hp.com/products/quickspecs/14336_na/14336_na.html)  
(HBA 220)

[http://h18004.www1.hp.com/products/quickspecs/14222\\_na/14222\\_na.html](http://h18004.www1.hp.com/products/quickspecs/14222_na/14222_na.html)  
(HBA 221)

[http://h18004.www1.hp.com/products/quickspecs/14337\\_na/14337\\_na.html](http://h18004.www1.hp.com/products/quickspecs/14337_na/14337_na.html)  
(HBA 222)

#### SCSI HBA

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

**NOTE:** Please see the following QuickSpecs for additional information:

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

### HP Backup & Recovery Software

#### HP Data Protector Express

HP Basic Upgrade to Data Protector Express V6 for 1 Server E-LTU TC333BAE

HP Data Protector Express V6.0 for 10 Server E-LTU TC332BAE

HP Data Protector Express V6.0 for 1 Server E-LTU TC330BAE

HP Data Protector Express V6.0 for 3 Server E-LTU TC331BAE

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

### HP Tape Backup

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

HP 1/8 G2 Ultrium 920 SAS Autoloader AH558A

HP MSL2024 1 LTO-5 Ultrium 3000 SAS Tape Library BL537A

HP MSL2024 Ultrium 920 SAS Tape Library AH559A

### HP Storage Options

#### Fibre Channel HBA

**NOTE:** The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see:

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

#### QLogic Fibre Channel HBAs

HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter AK344A

HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter AJ764A

#### Converged Network Adapter

HP CN1000Q Dual Port Converged Network Adapter BS668A

### Additional Options

#### HP Disk Storage Systems **Disk Enclosures**

##### **HP D2000 Disk Enclosures**

HP D2600 Disk Enclosure

AJ940A

HP D2700 Disk Enclosure

AJ941A

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

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#### HP Uninterruptible Power **HP Tower UPS**

##### **Systems**

##### **HP T1500 G3 UPS Models**

HP T1500 G3 1400VA NA Tower Uninterruptible Power System

AF450A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/13160\\_na/13160\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13160_na/13160_na.html)

##### **HP Rack-mountable UPS**

##### **HP R1500 G3 Uninterruptible Power Supply (UPS)**

HP R1.5kVA G3 1U NA Uninterruptible Power System

AF469A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14059\\_na/14059\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14059_na/14059_na.html)

##### **HP R/T3000 G2 Uninterruptible Power System (UPS)**

HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System

AF466A

HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System

AF467A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14058\\_na/14058\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14058_na/14058_na.html)

##### **R5000 Uninterruptible Power System (UPS)**

HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System

AF460A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14109\\_na/14109\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14109_na/14109_na.html)

##### **R7000 Uninterruptible Power System (UPS)**

HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System

AF462A

**NOTE:** Please see the QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/14110\\_na/14110\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14110_na/14110_na.html)

**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 HP UPS, 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).



### Additional Options

#### HP Power Distribution Units

##### Monitored PDUs

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

HP 17.3kVA 24A Dual Three Phase NA/JP Monitored Power Distribution Unit

AF503A

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

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

**NOTE:** Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units.

Please see the following link: [www.hp.com/products/powercords](http://www.hp.com/products/powercords).

#### HP Rack Options

##### HP USB Keyboard and Mouse

HP USB BFR with PVC Free US Keyboard/Mouse Kit

631341-B21

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

[http://h18000.www1.hp.com/products/quickspecs/13972\\_na/13972\\_na.html](http://h18000.www1.hp.com/products/quickspecs/13972_na/13972_na.html)

##### HP Server Console Switches

HP Server Console 0x2x8 Port Analog Switch

AF616A

HP Server Console 0x2x16 Port Analog Switch

AF617A

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

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

##### HP Server Console Switch G2 with Virtual Media & CAC

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

AF618A

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

AF619A

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

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

##### HP 1x4 USB/PS2 KVM Console Switch

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

AF620A

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

AF621A

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

AF622A

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

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

##### Rail Kits

HP 1U Gen8 Cable Management Arm

663203-B21

HP 1U Small Form Factor Ball Bearing Gen8 Rail Kit

663201-B21

HP 1U Large Form Factor Ball Bearing Gen8 Rail Kit

663202-B21

### Additional Options

<b>HP USB and SD Options</b>	HP 4GB Secure Digital High Capacity Flash Media Kit	580387-B21
	<p><b>NOTE:</b> Blank SD media device is supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at: <a href="http://www.hp.com/go/proliantvirtualization">http://www.hp.com/go/proliantvirtualization</a>.</p>	
	HP 2GB USB Flash Media Drive Key Kit	608447-B21
	<p><b>NOTE:</b> HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.</p>	
<hr/>		
<b>HP Care Pack Services</b>	HP 3 year Next business day ProLiant DL320e Hardware Support	U6E91E
	HP 3 year Next business day with Defective Media Retention ProLiant DL320e Hardware Support	U6E92E
	HP 3 year Next business day ProLiant DL320e Collaborative Support	U6E93E
	HP 3 year Next business day with Defective Media Retention ProLiant DL320e Collaborative Support	U6E94E
	HP 3 year Next business day ProLiant DL320e Proactive Care Service	U6E95E
	HP 3 year Next business day with Defective Media Retention ProLiant DL320e Proactive Care Service	U6E96E
	HP 3 year 4 hour 13x5 ProLiant DL320e Hardware Support	U6E97E
	HP 3 year 4 hour 13x5 with Defective Media Retention ProLiant DL320e Hardware Support	U6E98E
	HP 3 year 4 hour 24x7 ProLiant DL320e Hardware Support	U6E99E
	HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant DL320e Hardware Support	U6F00E
	HP 3 year 4 hour 24x7 ProLiant DL320e Collaborative Support	U6F01E
	HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant DL320e Collaborative Support	U6F02E
	HP 3 year 4 hour 24x7 ProLiant DL320e Proactive Care Service	U6F03E
	HP 3 year 4 hour 24x7 with Defective Media Retention ProLiant DL320e Proactive Care Service	U6F04E
	HP 3 year 6 hour Call to Repair 24x7 ProLiant DL320e Hardware Support	U6F05E
	HP 3 year 6 hour Call to Repair 24x7 w /Defective Media Retention ProLiant DL320e Hardware Support	U6F06E
	HP 3 year 6 hour Call to Repair 24x7 ProLiant DL320e Collaborative Support	U6F07E
	HP 3 year 6 hour Call to Repair 24x7 w/Defective Media Retention ProLiant DL320e Collaborative Sup	U6F08E
	HP 3 year 6 hour Call to Repair 24x7 ProLiant DL320e Proactive Care Service	U6F09E
	HP 3 year 6 hour Call to Repair 24x7 w/Defective Media Retention ProLiant DL320e Proactive Care SVC	U6F10E
	HP Installation ProLiant DL320e Service	U6F51E
HP Installation non Standard Hours ProLiant DL320e Service	U6F52E	
HP Startup ProLiant DL320e Service	U6F53E	

### Additional Options

HP Startup non Standard Hours ProLiant DL320e Service	U6F54E
HP 3 year 24 hour Call to Repair 24x7 ProLiant DL320e Hardware Support	U6F55E
HP 3 year 24 hour Call to Repair 24x7 w/Defective Media Retention ProLiant DL320e Hardware Support	U6F56E

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

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

### Memory

#### HP SmartMemory

New HP SmartMemory now provides additional protection for your servers. With HP Authentication it can verify that you have true HP Qualified Memory in your HP ProLiant Gen8 server. With HP SmartMemory your new HP ProLiant server can take advantage of additional Gen8 enhancements in performance, durability and future manageability support through HP Active Health System

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool:

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

#### Memory Subsystem Architecture

Intel Processor socket supports 2 channels and 2 DIMMs per channel. Total max. memory up to 32GB DDR3 PC3-12800E1600MHz.

#### Standard Memory Plus Optional Memory

Up to 32 GB memory is available with the optional installation of 4 x 8GB PC3-12800E UDIMM ECC DDR3 UDIMM Memory kits, operating at 1600MHz when fully populated at 2 DIMMs per Channel in 4 slots.

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

**NOTE:** For best performance, it is recommended that customer installs memory in identical pairs

General Memory Population Rules and Guidelines:

- The HP ProLiant DL320e Gen8 Server has four memory slots
- There are two channels per server with two DIMM slot per channel
- Memory channel A consists of the two (2) DIMMs that are closest to the processor
- Memory channel B consists of the two (2) DIMMs that are furthest from the processor
- Different types of processors have different types of memory support.
- Support for single/dual-rank 1333/1600 MT/s ECC UDIMM (unbuffered DIMMS)
- The server supports up to 32 GB (4 x 8-GB) for Unbuffered DIMMs
- No support for LV-DIMMs; RDIMMs; Non-ECC UDIMMs
- Do not install DIMMs if the processor is not installed
- Populate DIMMs from heaviest load (double-rank) to lightest load (single-rank)
- Always use HP qualified DIMM

Farthest DIMM (either CHA or CHB) should always be populated first

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### Memory

The UDIMM installing sequence:

Memory		Slot			
		DIMM1C	DIMM2A	DIMM3D	DIMM4B
<b>Standard</b> (Entry Model)	<b>2 GB</b>	Empty	2 GB	Empty	Empty
<b>Standard</b> (Base Model)	<b>4 GB</b>	Empty	4 GB	Empty	Empty
<b>Standard</b> (Performance Model)	<b>8 GB</b>	Empty	4 GB	Empty	4 GB
<b>Maximum</b>	<b>32 GB</b>	8 GB	8 GB	8 GB	8 GB

### Memory Speed by Processor Model

Processor Models	Supported Memory Speeds
E3-1220, E3-1220Lv2, E3-1230v2, E3-1240v2, E3-1270v2, E3-1290v2, i3-3220T, i3-3240, G2120, G2100 T	1600/1333MHz
G630	1066MHz

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\\_na/14225\\_na.html](http://h18000.www1.hp.com/products/quickspecs/14225_na/14225_na.html)

**NOTE:** HP memory from previous generation servers are not fully compatible with the DL320e Gen8 Server.

#### Unbuffered with ECC DIMMs (UDIMMs)

HP 2GB (1x2GB) Single Rank x8 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit 669320-B21

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 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit 669322-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 PC3-12800E (DDR3-1600) Unbuffered CAS-11 Memory Kit 669324-B21

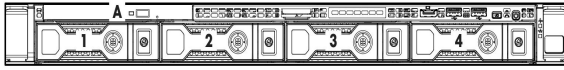
HP 8GB (1x8GB) Dual Rank x8 PC3L-10600E (DDR3-1333) Unbuffered CAS-9 Low Voltage Memory Kit 647909-B21

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

**NOTE:** Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: [www.hp.com/go/proliant-energy-efficient](http://www.hp.com/go/proliant-energy-efficient).

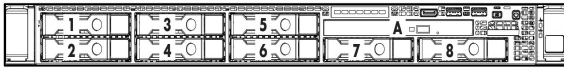
**NOTE:** PC3L is a low voltage memory.

### Storage



1 - 4 4 x 3.5" (LFF) SAS/SATA hard drive bays

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



1 - 8 8 x 2.5" (SFF) SAS/SATA hard drive bays

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

### External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
D2600 Disk Enclosure	Up to 4	External	HP Smart Array P222/512MB FBWC Controller
	Up to 8	External	HP Smart Array P421/1GB FBWC Controller HP Smart Array P421/2GB FBWC Controller
D2700 Disk Enclosure	Up to 2	External	HP Smart Array P222/512MB FBWC Controller
	Up to 4	External	HP Smart Array P421/1GB FBWC Controller HP Smart Array P421/2GB FBWC Controller

### Technical Specifications

<b>System Unit</b>	<b>Dimensions</b> (H x W x D)	8 SFF	1.7 x 17.11 x 27.5 inches (4.32 x 43.46 x 69.90 cm)
		4 LFF	1.7 x 17.11 x 29.5 inches (4.32 x 43.46 x 75.0 cm)
	<b>Weight</b> (approximate)	Maximum (all hard drives, power supply, and processor installed)	8 SFF/4 LFF - 16.2/16.8 kg, 35.7/37.0 lb
		Minimum (one hard drive, power supply, and processor installed)	8 SFF/4 LFF - 10.9/11.9 kg, 24.0/26.2 lb
	<b>Input Requirements</b> (HP ProLiant 350 W power supply)	Rated Line Voltage	100 to 120 VAC
		Rated Input Current	6 Amps (at 100VAC) to 3 Amps (at 200 VAC)
		Rated Input Frequency	50 to 60 Hz
	<b>Power Supply Output</b> (per power supply)	Rated Steady-State Power	350 W (at 100 to 120 VAC), 350 W (at 200 to 240 VAC)
		Maximum Peak Power	400 W (at 100 to 120 VAC), 400 W (at 200 to 240 VAC)
	<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 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 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	3048 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 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	

### Technical Specifications

with ISO 9296 (ECMA 109).

#### Idle (Note 1)

LWAd	5.0 B
LpAm	35 dB Average Bystander

#### Operating

LWAd	5.1 B
LpAm	35 dB Average Bystander

**NOTE:** Values are subject to change without notification and are for reference only.

**NOTE:** Performance of system, options, and ancillary equipment will vary depending on the system configuration.

**NOTE:** Levels presented do not account for non-Hewlett-Packard installed hardware.

#### 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.

#### HP Dynamic Smart Array B120i Controller

<b>Dimensions</b>	Embedded
<b>Disk Drive Interface - Transfer rate</b>	Up to 3Gb/s SATA
<b>SATA Connectors</b>	4 internal connectors w/hot plug support
<b>Server Interface</b>	PCIe 2.0
<b>SATA Speed</b>	3Gb/s SATA links
<b>Logical Drives Supported</b>	Zero Memory, Up to 2 logical volumes (6 physical drives)
<b>Host Memory Addressing</b>	64-bit, supporting greater than 4GB server memory space
<b>Hot Plug Support</b>	Yes
<b>RAID Support</b>	RAID 0 (Striping), RAID 1 (Mirroring) RAID 1+0 (Striping & Mirroring)



### Technical Specifications

<b>HP Ethernet 1Gb 2-port 330i Adapter</b>	<b>Compatibility</b>	IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX
	<b>Data Transfer Method</b>	PCI Express, four lanes (x8)
	<b>Controller</b>	BCM5717
	<b>Network Transfer Rate</b>	10Base-T (Half-Duplex)
		10Base-T (Full-Duplex)
		100Base-TX (Half-Duplex)
		100Base-TX (Full-Duplex)
<b>Connector</b>	1000Base-TX (Half and Full-Duplex)	
	RJ-45	
<b>Cable Support</b>	10Base-T	
	100Base-TX	
	1000BaseTX	

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

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