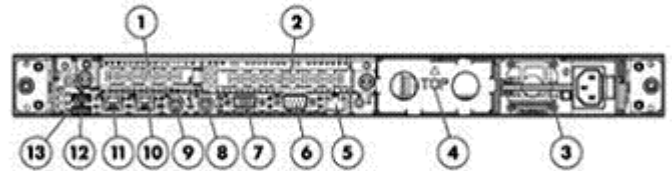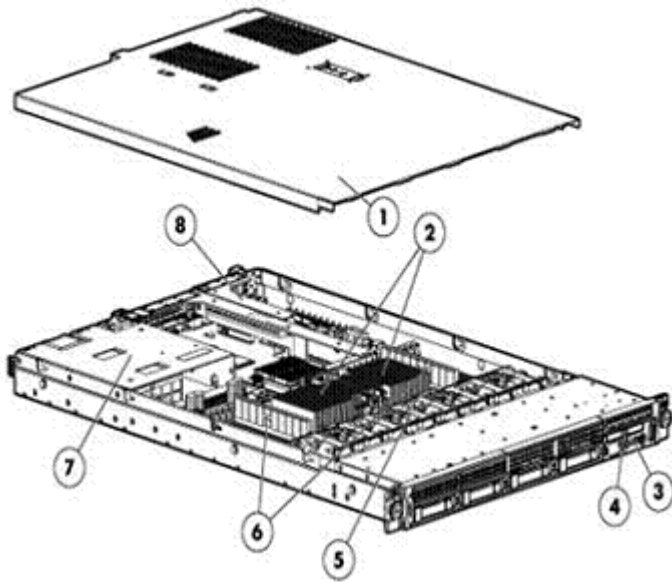## Overview

Front View⁼

1. Quick removal access panel with installation instructions
2. Up to two Intel Quad-Core processors
3. Video Connector
4. Slide-out System Insight Display
5. Removable fan modules for easy serviceability
6. Eighteen DIMM slots⁼DDR3 Registered (RDIMM)
7. 2 Redundant Common Slot Hot Plug Power Supplies (upgradeable option)
8. 2 PCI-E Slots

Rear View⁼

1. PCI Express expansion slot 1, low-profile, half-length
2. PCI Express expansion slot 2 full height full length x16 (16, 8, 4, 2, 1), 75W +EXT 75W (optional PCI-X card only support)
3. Power supply 1
4. Power supply 2
5. iLO 2 NIC connector
6. Serial connector
7. Video connector
9. Keyboard connector
10. NIC 2 connector
11. NIC 1 connector
12. USB connector
13. USB connector

At A Glance

Combining improved 1U compute performance, smart power and cooling management with infrastructure management tools and essential fault tolerance, the HP ProLiant DL360 G6 is optimized for space constrained installations.

Intel 5500 Series Xeon® Processors (Quad-Core), with choice of DDR3 Registered , Serial Attached SCSI (SAS), PCI Express Gen2 technology and ProLiant Onboard Administrator provide a high performance system, ideal for the full range of scale out applications.

What's more, the DL360 G6 steps up the fault tolerant in an ultra-dense platform with redundant power, redundant fans, mirrored memory and embedded RAID capability.

The DL380 G6 has been to NEBS Level 3 (GR-63 CORE & G1089 CORE). The certified configuration is a subset of the standard offering. The Server must also have its default fans setting changed to Telco mode. The guidelines for configuring a NEBS compliant DL360 G6 are outlined below. Instructions for conversion can be found at⁼
http⁼//bizsupport1.austin.hp.com/bc/docs/support/SupportManual/c02574355/c02574355.pdf

Overview

- **Processors**
  - Up to 2 Quad-Core Intel® Xeon® 5500 Series processor options
  - Intel® 5520 Chipset
- **Memory** (NEBS)
  - 18 DDR3 DIMM slots available
  - Up to 144GB, using 8GB Dual Rank PC3-8500R DDR3 Registered (RDIMM) memory, operating at 800MHz when fully populated at 2 DIMMs per Channel in 12 slots
    NOTE: If only one processor is installed, only half the DIMM slots are available.
    NOTE: when populating with the 16GB Memory Kits (Quad-Rank), only 8 DIMMs can be populated.
- **Storage Controller**
  - Base Model: HP Smart Array P410i/Zero Memory Controller (RAID 0/1/1+0)
- **Internal Drive Support**
  - Up to four (4) small form factor (SFF) hot-plug drive bays
  - Slimline media bay supporting DVD -ROM/DVD-RW (available only on 4 HDD models)
  - Optional DVD-on 4SFF HDD models only
- **Network Controller**
  - One HP NC382i Dual Port Multifunction Gigabit Server Adapter (two ports total) with TCP/IP Offload Engine, including support for Accelerated iSCSI
- **Expansion Slots**
  - Two PCI-Express Gen 2 expansion slots: (1) full-length, full-height slot; (1) low-profile slot
  - Optional PCI-X Riser expansion slot (for PCI-X card support only)
- **Ports**
  - USB 2.0 Support
  - 4 Total: (1) front, (1) internal and (2) rear accessible ports
  - 1 internal Secure Digital (SD) slot
- **Integrated Hypervisors** (Optional)
  - VMware virtualization technology
  - Citrix XenServer virtualization technology
- **Redundancy**
  - Multiple layers of fault tolerance through critical component redundancy (power supply and fan redundancy), mirrored memory, embedded RAID capability, and full-featured remote Lights-Out management
- **HP Unique Technology**
  - Built-In Thermal Logic Technologies
    - Sea of Sensors: Intelligent automated management of power and cooling systems to save energy costs
    - Dynamic Power Capping, customer set limits for reduced power usage within performance requirements
- **Power Source**
  - Dual Common Slot Bays for -48VDC Hot plug and Redundant Power supplies
- **Infrastructure Management**
  - Convenient slide-out Systems Insight Display for quick and easy front view server diagnostics, along with status LEDs, Automatic Server Recovery (ASR), ROM Based Setup Utility (RBSU)
  - HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
  - 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, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
  - HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's

Overview

changing business requirements.

- **Form Factor:**
  - 1U Rack form factor (1.75"), less than 28 inches (70.5 cm) deep
- **Operating Systems and Virtualization Software Support for ProLiant Servers:**
  - Supports Windows, RHEL, SLES, OEL, Solaris, NetWare, VMware, and Citrix XenServer
- **Deployment/Serviceability:**
  - Sliding rails for in rack servicing ship standard; optional 1U Cable Management Arm
  - Customer Self Repair (CSR): HP products are designed with many CSR parts to minimize repair time and allow for greater flexibility in performing defective parts replacement
- **Warranty:**
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.
    NOTE: Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at:
    http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

Processor One of the following depending on Model	**Quad-Core Processors** Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80 Watts, DDR3-1066, HT Turbo 1/1/2/2) Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80 Watts, DDR3-800) **NOTE:** HT indicates that the processor model supports Intel® /Hyper-Threading Technology **NOTE:** Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 4,3,2 and 1 cores active. **NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. **NOTE:** For the Intel 5500 Series, the letter preceding the model number indicated the performance/wattage of the processor. &X& denotes High Performance/Wattage, &E& denotes Enterprise Performance/Wattage (Mainstream) and &L& denotes Lower Wattage.

Cache Memory One of the following depending on Model	8MB (1 x 8MB) Level 3 cache on 5500 series **NOTE:** All 5500 series processor models have 8M L3 Cache except for those identified below. 4MB (1 x 4MB) Level 3 cache **NOTE:** For processor E5504.

Chipset	Intel® 5520 Chipset **NOTE:** For more information regarding Intel® chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/.

Memory Protection	Advanced ECC (multi-bit error protection) Mirroring mode Lock-step mode

Memory	Type	DDR3 Registered (RDIMM)
	Maximum NEBS (RDIMM)	144GB (18 x 8GB) for Registered Memory configurations

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

DDR3 memory options part number decoder

Standard Features
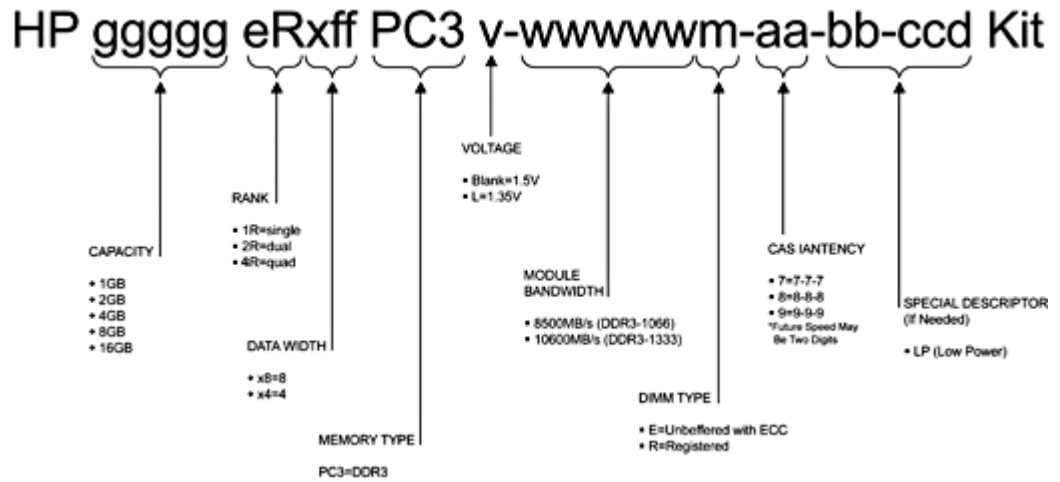
HP ggggg eRxff PC3 v-wwwwwm-aa-bb-ccd Kit

CAPACITY
- 1GB
- 2GB
- 4GB
- 8GB
- 16GB

RANK
- 1R=single
- 2R=dual
- 4R=quad

DATA WIDTH
- x8=8
- x4=4

MEMORY TYPE

PC3=DDR3

VOLTAGE
- Blank=1.5V
- L=1.35V

MODULE BANDWIDTH
- 8500MB/s (DDR3-1066)
- 10600MB/s (DDR3-1333)

DIMM TYPE
- E=Unbuffered with ECC
- R=Registered

CAS lATENCY
- 7=7-7-7
- 8=8-8-8
- 9=9-9-9
- *Future Speed May Be Two Digits

SPECIAL DESCRIPTOR (if Needed)
- LP (Low Power)

Network Controller	One HP NC382i Dual Port Multifunction Gigabit Server Adapter (two ports total) with TCP/IP Offload Engine, including support for Accelerated iSCSI

Expansion Slots

Expansion Slots #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
1	PCI-e	x8	x8	4	Low profile slot	
2	PCI-e	x16	x16	7	Full length, full height slot	
2	PCI-X (133 MHz, 3.3 Voltage)	64-bit	x8	7		

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

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

NOTE: For external power requirements for PCI options a PCI Thermal-Power Kit (cable) is offered optionally for higher power requirements.

Storage Controller	Base Models	HP Smart Array P410i/Zero Memory Controller (RAID 0/1/1+0)

Storage	Diskette Drive	None Standard
	Optical Drive	None Standard
	One of the following depending on Model	**NOTE:** This option supported on 4 drive models only. Optional DVD-ROM, DVD-RW or Slimline floppy drive
	Hard Drives	None Standard
	Drive Bays	4 SFF Drive Bays standard **NOTE:** Only the 4 drive bay configuration has been NEBS certified.

Standard Features

Maximum Internal Storage Type	Hot Plug SAS	1.2TB	4 x 300GB SAS

Interfaces		
Keyboard	1	
Mouse	1	
Serial	1	
Video	1	
Network RJ-45	2	
iLO 2 remote management port	1	
SD slot	1	
USB 2.0 Ports	4 total: 2 rear, 1 front, 1 internal	
	NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html.	

Graphics	Integrated ATI ES1000, 32MB video standard
	• 16 bit color: maximum resolution of 1600 x 1200
	• 32 bit color: maximum resolution of 1280 x 1024
	NOTE: Maximum resolution available via iLO 2 remote console is 1280 x 1024.

Form Factor	1U Rack form factor (1.75&, less than 28 inches (70.5 cm) deep

HP Insight management software	HP Insight Foundation	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.
		HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: www.hp.com/go/foundation.
		The foundation pack includes:
		• HP SmartStart
		• HP Management
		• HP ProLiant Firmware Maintenance
		SmartStart version supported (minimum): SmartStart 8.20. http://www.hp.com/servers/smartstart
		NOTE: In an effort to support reducing our environmental impact, the HP

Standard Features

ProLiant Essentials Foundation Pack media will be available as a selectable option for this server at time of order of a CTO SKU. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.

HP Integrated Lights-Out 2 (iLO 2)	HP Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and the Insight Dynamics for ProLiant helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business. See www.hp.com/go/ProLiantOA
HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server─HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit─http─//www.hp.com/services/insight.
HP Insight Dynamics for ProLiant	HP Insight Dynamics for ProLiant, a product option, is advanced infrastructure management software that enables IT staff to instantly adjust their environments to meet dynamic business demands by provisioning, optimizing and protecting complex infrastructure in minutes. It's a powerful toolkit, integrated-by-design, that accelerates complex technology projects and simplifies daily operations, transforming data center economics. With Insight Dynamics IT professionals can plan capacity and power continuously, balance workloads across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location. **NOTE**─For more information, visit─ http─//www.hp.com/go/insightdynamics

Standard Features

Industry Standard Compliance	ACPI 2.0b Compliant PCI 2.2 Compliant WOL Support Microsoft® Logo certifications PXE Support USB 1.1 and 2.0 Compliant SMBIOS 2.6.1
Security	Power-on password Keyboard password Diskette drive control Diskette boot control QuickLock, Network Server Mode Removable CD and Diskette Drive Assembly Serial interface control Administrator's password Integrated Lights-Out has 12 customizable user accounts and SSL encryption Integrated Lights-Out can be disabled via a Global Setting iLO Advance Pack supports directory services integration and two-factor authentication
System Fans	4 fan modules must be used for Telco operation Fan redundancy standard with all modules **NOTE:** The processor option kit contains 1 additional fan module, when upgrading from a 1 processor to two processor models. A Fan Module Option kit must be purchased separately for NEBS compliant operation. See HP PCI Thermal Power Kit (519254-B21) in the Core Options section. The BIOS default setting must be changed for Telco operation, please see for instructions on changing the setting.
Required Cabling	For required cabling information, refer to the Web site at: http://h18000.www1.hp.com/products/servers/proliantdl360/.

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server

Microsoft Windows Server Hyper-V

Red Hat Enterprise Linux (RHEL)

SUSE Linux Enterprise Server (SLES)

Oracle Enterprise Linux (OEL)

Oracle Solaris

NetWare

VMware

Citrix XenServer

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at http://www.hp.com/go/ossupport and our driver download page www.hp.com/support/DL360G6.

Rack Airflow Requirements

Rack 10000 G2 series Cabinets

The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 G2 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

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

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: www.hp.com/servers/dl360.

Rack Kit

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

Telco Rack Support

Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions at www.hp.com/go/rackandpower

Standard Features

Factory Express Portfolio for Servers and Storage

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

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

HP Enterprise Configurator

The HP eConfigure-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require &custom&rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. http–//www.hp.com/products/configurator

Service and Support

HP Care Pack services provide total care and support expertise with committed response designed to meet your IT and business needs.

HP Care Pack services include coverage for the HP branded hardware options qualified for the server and purchased at the same time or afterward that are internal to the enclosure. This also includes the 22&and smaller external monitors and tower UPS options up to 3kVA. These items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included, and standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

To fully capitalize on your HP ProLiant servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions, provides a range of support services designed to meet the varying needs of your business. Whether an SMB, or large global corporation, HP has a ProLiant server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - simplify ProLiant solution implementation, maintenance, and management.

- **Support** - 3-Year 4-Hour response 24x7 Same Business Day Coverage only
- **Deployment Service** - Installation and Start up only

Enhanced Service - optimize service level to increase IT performance and availability.

- **Support** - 3-Year Support Plus 24 only

Refer to the information on &Installation & Start-Up&for service on ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet–to be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

Standard Features

NOTE: For a complete listing of service offerings and information visit:

http://www.hp.com/services/proliantservices

http://www.hp.com/go/proliant/carepack

Configuration Information - Factory Integrated Models

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

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

Step 1: Base Configuration

HP Models	HP ProLiant DL360 G6 Rack CTO Chassis	484184-B21

Factory Integrated Model ships with:

HP NC382i Dual Port Multifunction Gigabit Server Adapter
HP Smart Array P410i/Zero Memory Controller
Integrated Lights-Out 2 (iLO 2) embedded
2 PCIe G2 Slots - 1 full-length x16 and 1 low-profile x8 PCI-Express
4 bay Hot-Plug SAS/SATA Drives(Factory Options for up to 8)
4 USB ports(1-front,1-internal, 2-rear)
1 Internal Secure Digital(SD) slot
3 fan modules: fan redundancy standard
1U Rack form factor (1.75"), less than 28 inches (70.5 cm) deep

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

HP Processors	**Quad-Core Processors**	
	Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80 Watts, DDR3-1066, HT Turbo 1/1/2/2), FIO	505880-L21
	Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80 Watts, DDR3-800), FIO	507682-L21

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

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

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

NOTE: For the Intel 5500 Series, the letter preceding the model number indicated the performance/wattage of the processor. X denotes High Performance/Wattage, E denotes Enterprise Performance/Wattage (Mainstream), and L denotes Lower Wattage.

HP Memory	**Registered DIMMs (RDIMMs)**	
	For NEBS certification a maximum of 16 x 8GB Dual Rank RDIMMs or 10 x 16GB Quad Rank RDIMMs may be used.	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	516423-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21

Configuration Information - Factory Integrated Models

	NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.	
	NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: www.hp.com/go/proliant-energy-efficient	
HP Power Supplies	HP 1200W-48V DC Common Slot Power Supply	437573-B21
	NOTE: DC power supplies contain a -48V DC power cord designed for in rack DC power rectifiers.	

Step 3: Choose Additional Factory Integratable Options

HP Insight Software	HP Insight Control, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates	582765-B21
	HP Insight Control for Linux, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates	TC203A

Step 4: Choose Additional Options for Factory Integration

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

Core Options

NOTE: Some options may not be factory integratable. Contact your local sales representative for additional information.

HP Unique Options	HP DL360 SL 12.7mm SATA DVD	532066-B21
	HP DL360 SL 12.7mm SATA DVD-RW Optical kit	532068-B21

NOTE: Integrated DVD/Optical drive option is supported on 4 Hard drive models only.

	PCI-X Riser option	518824-B21

NOTE: To convert full-length PCI-Express slot to PCI-X slot. This option kit is limited to PCI-X card support only.

HP Processors (2nd)

Quad-Core Processors

Intel® Xeon® Processor E5540 (2.53 GHz, 8MB L3 Cache, 80 Watts,DDR3-1066,HT Turbo 1/1/2/2)	505880-B21
Intel® Xeon® Processor E5504 (2.00 GHz, 4MB L3 Cache, 80 Watts,DDR3-800)	507682-B21

NOTE: Up to 2 processors supported.

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

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

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

NOTE: For the Intel 5500 Series, the letter preceding the model number indicated the performance/wattage of the processor. && denotes High Performance/Wattage; && denotes Enterprise Performance/Wattage (Mainstream); and && denotes Lower Wattage.

HP Memory

Registered DIMMs (RDIMMs)

HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	516423-B21
HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21

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

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

Core Options

HP Optical Drives	HP DL360 SL 12.7mm SATA DVD	532066-B21
	HP DL360 SL 12.7mm SATA DVD-RW Optical kit	532068-B21

NOTE: Integrated DVD/Optical drive option is supported on 4 Hard drive models only.

HP Hard Drives

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

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

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

HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
HP 300GB 3G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	492620-B21
HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
HP 146GB 3G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	504062-B21
HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21
HP 146GB 3G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	418367-B21
HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21
HP 72GB 3G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	418371-B21

SATA Hot Plug Midline (MDL) Solid State Drives

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

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

HP Networking

Gigabit Ethernet Adapters

HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21

10 Gigabit Ethernet Adapters

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

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

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

HP NC550SFP Dual Port 10GbE Server Adapter	581201-B21

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

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Core Options

HP Cooling Options	HP PCI Thermal Power Kit	519254-B21

NOTE: Required for NEBS Certification.

NOTE: Instructions for changing Fan setting to Telco mode maybe found at XXXX

Additional Options

HP Insight Software	**HP Insight Control**	
	HP Insight Control, Single-Server License including 1 year of 24x7 Technical Support and Updates	452148-B22
	HP Insight Control suite, No Media, Electronic License including 1 year of 24x7 Technical Support and Updates	T9074BAE
	HP Insight Control, Electronic License for bundling with ProLiant ML/DL server, including 1 year of 24x7 Technical Support and Updates	TC278AAE
	HP Insight Control, Tracking License for bundling with ProLiant ML/DL server, including 1 year of 24x7 Technical Support and Updates	TC275A
	HP Insight Software Media Kit	436222-B21

NOTE: Insight Software DVD media without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Insight Dynamics, HP Insight Control for Microsoft System Center, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.

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

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

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

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

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

HP Insight Control for Linux

	HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic	TC213AAE
	HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	TC209A
	HP Insight Control for Linux, Media pack (DVD) - No licenses included	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 software is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent.

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

NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html

Additional Options

HP Integrated Lights-Out (iLO) Advanced

HP Integrated Lights-Out Advanced, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	512485-B21
HP ProLiant Essentials Integrated Lights-Out Advanced Pack, Electronic, including 1 year of 24x7 Technical Support and Updates	TA850AAE

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

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

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

http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html

HP Insight Control server deployment

HP Insight Control server deployment Electronic License including 1 year 24x7 Technical Support and Updates	T9082AAE
HP Insight Control server deployment 1-Server License including 1 year 24x7 Technical Support and Updates	452151-B21

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

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

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

NOTE: For additional license kits please see the Insight Control QuickSpecs at

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

Additional Options

HP Storage Controllers	**NOTE:** The DL360 G6 Server comes standard with an integrated P410i Smart Array Controller designed to mange up to 4 SFF hard drives from HP. For additional capabilities and capacities HP offers additional Smart Arrays.	
	Optional Upgrades	
	256 MB Cache Module	462968-B21
	NOTE: Supported on HP Smart Array P212 Controller and HP Smart Array P410i Controller.	
	512MB BBWC	462967-B21
	1G Flash Backed Write Cache	534562-B21
	NOTE: Supported on the Smart Array P410i Controller only.	
	512MB Flash Backed Write Cache	534916-B21
	NOTE: Supported on the Smart Array P410i Controller only.	
	SAS HBA	
	HP SC08Ge Host Bus Adapter	488765-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html (SC08Ge HBA)	

HP Backup & Recovery Software	**HP Data Protector Express**	
	HP Data Protector Express 4.0 SP1 Backup Server	BB117BA
	HP Data Protector Express 4.0 SP1 for Microsoft Small Business Server	BB118BA
	HP Data Protector Express Backup Server 4.0 SP1Upgrade from Data Protector Express Single Server Edition	BB117BT
	NOTE: One of these Data Protector Express base products is required. To see available options: http://www.hp.com/go/dataprotectorexpress	

HP StorageWorks Options	**StorageWorks Fibre Channel HBA**	
	NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html	
	HP StorageWorks 82E PCI-e FC HBA Dual Port	AJ763A
	HP StorageWorks FC2142 4Gb PCI-e HBA	A8002A
	HP StorageWorks FC2242 Dual Channel 4Gb PCI-e HBA	A8003A
	HP StorageWorks 82Q PCI-e FC HBA Dual Port	AJ764A

Additional Options

HP Care Pack Services

Hardware Services 4-Hour On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	U4496E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4497E

Hardware Services 6-Hour Call to Repair On-site Service

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4498E

Hardware Services Next Business Day On-Site Service

Hardware Installation, Electronic	U4506E
Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays, Electronic	U4507E

Support Plus

Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic	U4508E

Support Plus 24

Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4509E
Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U6310E

NOTE: For more information, customer/resellers can contact http://www.hp.com/services/carepack.

Memory

DDR3 memory population guidelines

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

Some DIMM installation guidelines are summarized below‐

- For servers with eighteen (18) memory slots‐
  - There are three (3) channels per processor‐six (6) channels per server
  - There are three (3) DIMM slots for each memory channel‐eighteen (18) total slots
  - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
  - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
  - Unbuffered memory (UDIMMs) have not been NEBS tested
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- You can only have up to eight (8) ranks installed per channel
- You can only install two quad-rank DIMMs per channel
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the chipset
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically
- For lock-step mode, channel 3 must be unpopulated. DIMMs in channels 1 and 2 will be installed in pairs. The paired slots will be 1,4‐2,5‐3‐6 on a 3DPC system or 1,4‐2,5‐on a 2DPC system
- No mixing DIMM voltage‐all DIMMs must be the same voltage

DIMM Type ->	Registered Dimms (RDIMMs)						Unbuffered with ECC DIMMs (UDIMMs)	
DIMM Rank ->	Dual Rank (2R)				Quad Rank (4R)		Single Rank (1R)	Dual Rank (2R)
DIMM Capacity ->	2GB	4GB	8GB	8GB	4GB	16GB	1GB	2GB
DIMM Native Speed (MHz) ->	1333	1333	1333	1066	1066	1066	1333	1333
SLOTS THAT CAN BE POPULATED								
9 slot servers	9	9	9	9	6	6	6	6
12 slot servers	12	12	12	12	12	12	12	12
16 slot servers	16	16	16	16	12	12	12	12
18 slot servers	18	18	18	18	12	12	12	12
MAXIMUM CAPACITY (GB)								
9 slot servers	18	36	72	72	24	96	6	12
12 slot servers	24	48	96	96	48	192	12	24
16 slot servers	32	64	128	128	48	192	12	24

Memory

18 slot servers	36	72	144	144	48	192	12	24
POPULATED DIMM SPEED (MHz)								
1 DIMM Per Channel	1333	1333	1333	1066	1066	1066	1333	1333
2 DIMM Per Channel	1333*	1333*	1333*	1066	800	800	1333*	1333*
3 DIMM Per Channel	800	800	800	800	n/a	n/a	n/a	n/a
* - supported with ROM update via ROM Based Setup Utility (RBSU). UDIMM support is only on 12-slot servers.								

NOTES:

- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, you still run at 1066MHz
- If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, you run at 1066MHz
- If you install 3DPC in one channel (if applicable) and 1DPC in all other channels, you run at 800MHz
- 95 Watt CPU's are required for 1333MHz DIMM speeds. All other CPU's are capable of up to 1066MHz
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs - 1333 refers to DDR3-1333, etc.

DIMM slot and configuration diagrams
Basic memory slot & population diagram

- Population order - start with **A** first, **B** second, **C** third, etc.

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

Standard memory configuration (1 CPU model)

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

QuickSpecs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G‡empty	1	G‡empty	Chnl 1
	2	D‡empty	2	D‡empty	
	3	A‡2GB DIMM	3	A‡empty	
Chnl 2	4	H‡empty	4	H‡empty	Chnl 2
	5	E‡empty	5	E‡empty	
	6	B‡2GB DIMM	6	B‡empty	
Chnl 3	7	I‡empty	7	I‡empty	Chnl 3
	8	F‡empty	8	F‡empty	
	9	C‡2GB DIMM	9	C‡empty	

Standard memory plus optional memory (1 CPU model)

- 54GB, consisting of three (3) 2GB RDIMMs plus six (6) 8GB RDIMMs
    - 3x 2GB dual-rank PC3-10600 RDIMMs
    - 6x 8GB dual-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G‡8GB DIMM	1	G‡empty	Chnl 1
	2	D‡8GB DIMM	2	D‡empty	
	3	A‡2GB DIMM	3	A‡empty	
Chnl 2	4	H‡8GB DIMM	4	H‡empty	Chnl 2
	5	E‡8GB DIMM	5	E‡empty	
	6	B‡2GB DIMM	6	B‡empty	
Chnl 3	7	I‡8GB DIMM	7	I‡empty	Chnl 3
	8	F‡8GB DIMM	8	F‡empty	
	9	C‡2GB DIMM	9	C‡empty	

Standard memory replaced with optional memory (1 CPU model)
RDIMM maximum configuration

- 72GB, consisting of nine (9) 8GB dual-rank PC3-8500 RDIMMs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G‡8GB DIMM	1	G‡empty	Chnl 1
	2	D‡8GB DIMM	2	D‡empty	
	3	A‡8GB DIMM	3	A‡empty	
Chnl 2	4	H‡8GB DIMM	4	H‡empty	Chnl 2
	5	E‡8GB DIMM	5	E‡empty	
	6	B‡8GB DIMM	6	B‡empty	
Chnl 3	7	I‡8GB DIMM	7	I‡empty	Chnl 3
	8	F‡8GB DIMM	8	F‡empty	

Standard memory replaced with optional memory (2 CPU model)
RDIMM maximum configuration

- 192GB, consisting of twelve (12) 16GB quad-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	G‡empty	1	G‡empty	Chnl 1
	2	D‡16GB DIMM	2	D‡16GB DIMM	
	3	A‡16GB DIMM	3	A‡16GB DIMM	
Chnl 2	4	H‡empty	4	H‡empty	Chnl 2
	5	E‡16GB DIMM	5	E‡16GB DIMM	
	6	B‡16GB DIMM	6	B‡16GB DIMM	
Chnl 3	7	I‡empty	7	I‡empty	Chnl 3
	8	F‡16GB DIMM	8	F‡16GB DIMM	
	9	C‡16GB DIMM	9	C‡16GB DIMM	

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

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

Memory

Following are memory options available from HP:

HP Memory	Registered DIMMs (RDIMMs)	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Quad Rank x8 PC3-8500 (DDR3-1066) Registered CAS-7 Low Power Memory Kit	500660-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	516423-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21

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

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

Storage

1-4	4 x SFF SAS Hot Pluggable Hard Drives
A	Optical Media Bay
5, 6	Blanks (HDD Bays will not function)

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
HP DL360 SL 12.7mm SATA DVD-RW	1	Slim Line Bay	Integrated SATA
HP DL360 SL 12.7mm SATA DVD	1	Slim Line Bay	Integrated SATA

NOTE: DVD/Optical drive options supported on 4 hard drive models only.

Hard Drives
NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.
NOTE: Hard drives have either a one year or three year warranty–refer to the specific hard drive QuickSpecs for details.

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

	Quantity Supported	Position Supported	Controller
300GB 6G SAS 10K DP	4	1-4	HP Smart Array P410i/Zero Memory Controller
300GB 3G SAS 10K DP			HP Smart Array P410i/256 MB Controller
146GB 6G SAS 15K DP			HP Smart Array P410i/512 MB BBWC Controller
146GB 3G SAS 15K DP			HP Smart Array P411/256 MB Controller
146GB 6G SAS 10K DP			
146GB 3G SAS 10K DP			
72GB 6G SAS 15K DP			
72GB 3G SAS 15K DP			

SATA Hot Plug Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller
60GB 3.0G SATA SSD	4	1-4	HP Smart Array P410i/Zero Memory Controller
120GB 3.0G SATA SSD			HP Smart Array P410i/256 MB Controller
			HP Smart Array P410i/512 MB BBWC Controller

QuickSpecs

Power Specifications

HP 1200W 48VDC CS HE Power Supply Kit			
Part Number	437573-B21		
Input Voltage Range (V rms)	36-72		
Frequency Range (Nominal) (Hz)	DC		
Nominal Input Voltage (Vrms)	**36**	**48**	**72**
Maximum Rated Output Wattage Rating	1200	1200	1200
Nominal Input Current (A rms)	38	28	19
Maximum Rated Input Wattage Rating (Watts)	1380	1350	1365
Maximum Rated VA (Volt–Amp)	1380	1350	1365
Efficiency (%)	87	89	88
Power Factor	N/A		
Leakage Current (mA)	N/A		
Maximum Inrush Current (A peak)	20	25	35
Maximum Inrush Current duration (mS)	1	1	3
Maximum British Thermal Unit Rating (BTU-Hr)	4713	4610	4662

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

Technical Specifications

System Unit			
	Dimensions (H x W x D) (with bezel)	1.70 x 16.78 x 27.25 in (4.32 x 42.62 x 69.22 cm)	
	Weight (approximate)	Maximum (all hard drives, power supplies, and processors installed)	39.5 lb (17.92 kg)
		Minimum (one hard drive, power supply, and processor installed)	32 lb (14.51 kg)
	Power Specifications	To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL- www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor - Click on the system of interest. Example- DL360 G6 - Follow the instructions of the next screens.	
	System Inlet Temperature	Operating	10° to 35° C (50° to 95° F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8° F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10° C/hr (18° F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30° C (86° F). NEBS short term operating temperature, 55° C
		Non-operating	-40° to 70° C (-40° to 158° F). Maximum rate of change is 20° C/hr (36° F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28° C (82.4° F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7° C (101.7° F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23° C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	

Technical Specifications

Idle (Single Processor, Note 1)

L WAd	4.3 B Average Bystander
L pAm	27 dBA

Operating

L WAd	4.8 B Average Bystander
L pAm	32 dBA

Idle (Dual Processors, Note 2)

L WAd	4.9 B Average Bystander
L pAm	33 dBA

Operating

L WAd	5.4 B Average Bystander
L pAm	38 dBA

NOTES:

Note 1) Configuration tested included an Intel X5520 quad-core 2.27GHz processor, one 72GB SAS HDD, four 250GB 5400 rpm SATA hard drives, six system fans, three 4GB(2x2GB) DIMM's, and one power supply (1P SKU).

Note 2) Configuration tested included two Intel X5520 quad-core 2.27GHz processors, one 72GB SAS HDD, four 250GB 5400 rpm SATA hard drives, eight system fans, six 4GB(2x2GB) DIMM's, and one power supply (2P SKU).

Note 3) Values are subject to change without notification and are for reference only.

Note 4) Performance of system, options, and ancillary equipment will vary depending on the system configuration.

Note 5) 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.

Technical Specifications

Smart Array P410i Controller	**Dimensions**	Embedded
	Disk Drive and Enclosure Interface - Transfer rate	6Gb/s SAS (Serial Attached SCSI)
		3Gb/s SATA (Serial ATA)
	SAS Connectors	2 internal (Mini-SAS) x8 wide port connectors
	Cache Memory Speed	DDR2-800MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	x8 5G PCIe 2.0 provides 4GB/s maximum bandwidth
	SAS Speed	x8 3G SAS provides 2.4GB/s maximum bandwidth
	Cache Memory	40-bit 256MB ECC protected cache (72-bit 512MB BBWC module upgrades available)ǂtransportable with battery-backed upgrade
	Logical Drives Supported	Up to 64 logical drives
	Maximum Logical Drive Capacity	Greater than 2TB
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding)

NOTE: RAID 6, 6+0 can be enabled with either

- Minimum of 256 MB cache, Battery kit and Smart Array Advanced Pack License key option upgrades
- Minimum of 512 MB BBWC and Smart Array Advanced Pack License key option upgrades

RAID 5, 5+0 (Distributed Data Guarding)
NOTE: The 256 MB is required to enable RAID 5, 5+0 support of the Smart Array P410i

RAID 1+0 (Striping & Mirroring)

RAID 0 (Striping)

	Upgradeable Firmware	Upgradeable Firmware with recovery ROM feature

Embedded NC382i Dual Port Multifunction Gigabit Server Adapter	**Network Interface**	10Base-T/100Base-TX/1000Base-TX	
	Compatibility	IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
		IEEE 802.3ad 1000Base-TX	
		IEEE 802.1p 100Base-TX	
		IEEE 802.1q 100Base-TX	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Controller	BCM5709C	
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s
		10Base-T (Full-Duplex)	20 Mb/s
		100Base-TX (Half-Duplex)	100 Mb/s
		100Base-TX (Full-Duplex)	200 Mb/s

Technical Specifications

		1000Base-TX (Half and Full-Duplex)	2000 Mb/s
	Connector	Two RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP‡up to 328 ft (100 m)
		100Base-TX	Category 5 or higher UTP‡up to 328 ft (100 m)
		1000BaseTX	Category 5 or higher UTP‡up to 328 ft (100 m)

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to‡ http‡//www.hp.com/go/green. To recycle your product, please go to‡ http‡//www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at‡http‡//www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.