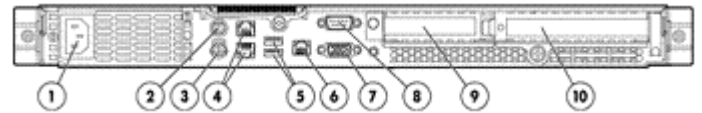
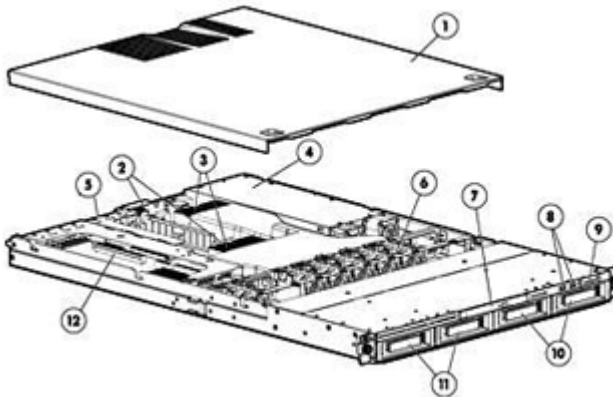


Overview

Hot Plug SAS/SATA or Non-Hot Plug SATA Models



Front View:

1. Access panel
2. Memory banks
3. Two (2) AMD Opteron 2300 series processors
4. Power supply
5. Low-profile PCI-Express or PCI-X slot
6. System fans
7. Optical drive bay
8. Front-panel USB 2.0 ports
9. Power switch/system status LEDs
10. Optional 3rd and 4th 3.5" hot-plug SAS/SATA or non-hot plug SATA hard drive bays
11. Standard 1st and 2nd 3.5" hot-plug SAS/SATA or non-hot plug SATA hard drive bays
12. Full height/full length PCI-Express or HTX slot

Rear View:

1. Power supply cable socket
2. PS/2 mouse port
3. PS/2 keyboard port
4. Two (2) RJ45 GbE LAN ports
5. Rear panel USB 2.0 ports
6. Lights-Out 100 10/100Mbps port
7. Video port
8. Serial port
9. Low-profile riser board assembly slot cover
10. Full-sized riser board assembly slot cover

What's New

- Support for SATA Hot Plug 3.5" Midline (MDL) Solid State Drives
- Support for SAS Hot Plug 3.5" Enterprise (ENT) Hard Drives

At A Glance

Introducing the HP ProLiant DL165G5, now available with the latest high performance Opteron Quad Core processors, increased storage by 2X and a new high efficiency power supply option.

- **Processors:**
 - Supports up to two AMD Opteron™ 2300 series Quad-Core processors
 - Supports DirectConnect Architecture
 - Supports Power Now
- **Memory:**
 - 8 DIMM slots supporting up to 32GB REG PC2-6400 DDR2-800 MHz memory with Advanced ECC
 - 8 DIMM slots supporting up to 64GB REG PC2-5300 DDR2-667 MHz memory with Advanced ECC
- **Internal Drive Support:**

Overview

- Internal storage capacity:
 - SATA Capacity: Support for up to 4.0TB (4 x 1TB) with Hot Plug Model. 3.0TB (4 x 750GB) with Non Hot Plug Model
 - SAS Capacity: Support for up to 4.0 TB (4 x 1TB) with Hot Plug Model
 - **NOTE:** Installation of the Hot Plug Backplane 1U 2S Kit (445985-B21) is required if ordering third or fourth Hard Drives for Hot Plug models only.
- **Network Controller:**
 - Embedded NC7782 dual-port gigabit server adapter
- **Storage Controllers:**
 - Non-Hot Plug SATA Models: HP Embedded SATA Controller
 - Hot Plug SATA/SAS Models: HP SC40Ge SAS HBA with RAID 0,1
 - **NOTE:** When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.
- **Expansion Slots:**
 - Standard - PCI-Express assembly includes:
 - Slot 1: full-length/full height PCI-Express x16
 - Slot 2: half-length/low-profile PCI-Express x4 (x8 connector)
 - Optional - PCI-X assembly includes:
 - Slot 2: half-length/low-profile PCI-X 133 (note: PCI-X slots are 64 bits; 133 MHz capable)
 - Optional - HTX assembly includes: Slot 1: full-length/full height HTX
- **" Infrastructure Management:**
 - HP ProLiant Lights Out 100i Remote Management support (IPMI 2.0 and SMASH support)
 - Virtual Media plus Virtual KVM support with LO100i Advanced license
- **USB Ports:**
 - Up to five USB ports (two front & two rear standard, 1 internal option)
- **Optical Drive:**
 - Support for one (optional): DVD-ROM, DVD/CD RW
- **Power Supply:**
 - 650W Power Supply standard (Non-Hot Plug, Autoswitching)
 - 500W High Efficiency Power Supply optional (Non-Hot Plug, Autoswitching)
- **Form Factor:**
 - Rack (1U)
 - Fixed mounting rails included with all models
- **Deployment/Serviceability:**
 - Tool-less access to all system components for easy in-rack serviceability
 - 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. Hardware diagnostic support and repair is available for one year 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 on-site 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

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

AMD Opteron™ processor Model 2393SE (3.1GHz, 105W ACP)

AMD Opteron™ processor Model 2389 (2.9GHz, 75W ACP)

AMD Opteron™ processor Model 2384 (2.7GHz, 75W ACP)

NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details.

AMD Opteron™ processor Model 2381 HE (2.5GHz, 55W ACP)

AMD Opteron™ processor Model 2380 (2.5GHz, 75W ACP)

HP 2377EE DL165G5/G5p Kit

AMD Opteron™ processor Model 23877 EE (2.3GHz, 50W ACP)

AMD Opteron™ processor Model 2376 (2.3GHz, 75W ACP)

NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details.

AMD Opteron™ processor Model 2374HE (2.2GHz, 55W ACP)

Upgradeability

Upgradeable to two processors

Chipset

ServerWorks HT2100 and HT1000

Cache Memory

Model Series 234x to 236x
128K dedicated L1 per core
512K dedicated L2 per core
2MB shared L3
Model Series 237x to 238x
6MB shared L3

Memory Protection

Advanced ECC

Memory

One of the following depending on Model

Type	REG PC2-6400 DIMMs (DDR2-800)
	REG PC2-5300 DIMMs (DDR2-667)
Standard	2 GB (2 x 1 GB)
Maximum	32 GB (8 x 4 GB)

Network Controller

Embedded NC7782 dual-port gigabit server adapter

Standard Features

Expansion Slots #	Technology	Bus Width**	Connector Width	Bus Number*	Form Factor	Notes
1	PCI Express	x16	x16	3	Full Height/Full Length	
1	HTX	N/A	N/A	9	Full Height/Full Length	
2	PCI Express	x4	x8	6	Low-profile	
2	PCI-X	64-bit, 133MHz	N/A	2	Low-profile	

* Default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.
 ** Slots are enumerated differently based on OS. MS OS's enumerate from lowest to highest Device ID by bus (starting with the lowest bus).

Storage Controller	Non-Hot Plug SATA	HP Embedded SATA Controller
	Hot Plug SATA/SAS	HP SC40Ge SAS HBA with RAID 0,1 NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.

NOTE: A diskette drive is needed to install storage controller drivers during a Windows operating system installation from CD.

Storage	Diskette Drives	Via USB only
	Optical Drives	Optional 8x IDE (ATAPI) DVD-ROM drive, slim Optional 24x IDE (ATAPI) DVD-ROM/CDRW drive
	Hard Drives	Up to 4 Non-hot plug SATA 3.5" drives Up to 4 Hot plug SATA /SAS 3.5" drives

Maximum Internal Storage	Non-Hot Plug SATA	3.0TB	4 x 750GB
	Hot Plug SATA	4.0TB	4 x 1TB
	Hot Plug SAS	4.0TB	4 x 1TB

Interfaces	Parallel	None
	Network RJ-45(Ethernet)	Embedded NC7782 dual-port gigabit server adapter
	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB	Up to 5 (two front & two rear standard, 1 internal option) NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html .

Standard Features

Graphics	32MB shared supporting 1600x1200x16M resolution
Form Factor	Rack (1U), (1.75 in/4.45 cm)
Remote Management	Lights-Out 100i HP Lights-Out 100i Remote Management delivers affordable, entry level remote management capabilities for HP ProLiant 100 Series servers with embedded LO100i. It allows customers or their service providers to remotely manage ProLiant 100 Series servers remotely over a LAN or the Internet and consists of the following: <ul style="list-style-type: none">● LO100i Standard is embedded remote management and provides basic remote control via telnet, browser, and IPMI 2.0 and SMASH and comes standard on all DL100 series servers except for the DL180 G1 and G5 and the DL120 G5 servers.● LO100i Advanced Pack License are upgrades for all the features of LO100i Select plus Virtual KVM (graphical hardware-based, remote console).
	NOTE: Flexible and volume quantity (AKA) license kits are available for the Lights-Out 100i Advanced Pack licenses as well as Electronic License To Use (E-LTU). AKA Tracking licenses require a 100 unit minimum forecast at initial contract signing. For these additional part numbers, please refer to each software products. QuickSpecs at this link for more information: www.hp.com/go/lo100
Industry Standard Compliance	ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support Microsoft® Logo certifications IPMI 2.0 Compliant
Manageability	Embedded HP ProLiant Lights-Out 100i Remote Management, with licensable upgrades to Lights-Out 100i Advanced.
Security	Power-on password Setup password
UPS and PDU Power Cord Matrix	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 .

Standard Features

Power Supply 650 Watts, auto-switching, PFC (Power Factor Correcting)

System Fans 6 system fans ship standard; non-hot plug, non-redundant

Operating Systems and Virtualization Software Support for ProLiant Servers

- Microsoft Windows Server
- Microsoft Windows Server 2008 Hyper V
- Red Hat Enterprise Linux (RHEL)
- SUSE Linux Enterprise Server (SLES)
- Solaris 10 for x86/x64 based Systems
- Citrix Essentials for XenServer (Retail)

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/supportos> and our driver download page <http://www.hp.com/support/DL165G5>.

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 5,350 sq cm (830 square inches) 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 7 cm (2.75 inches)

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.

Rack Support The DL Fixed Rail System supports installation in racks with square or round mounting holes (including Compaq/HP 7000, 9000, 10000 and HP series), with an adjustment range of 24" - 36".

Telco Rack Kit Installation into Telco 2 post, and 4 post, or threaded holes racks requires a 3rd party option kit. For additional information, please visit: www.racksolutions.com.

Standard Features

HP Factory Express Capability

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

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

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

HP Enterprise Configurator

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

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 that are purchased at the same time or afterward and internal to the enclosure. It 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 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 Service** - 3 Year, 9x5 Next Business Day coverage, excluding HP holidays only
- **Deployment Service** - Hardware Installation only

Enhanced Service - Optimize service level to increase IT performance and availability

- **Support Service** - 3 Year 13x5 Same Business Day, 4-Hour response coverage
- **Deployment Service** - Installation and Start-up only

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.

For a complete listing of service offerings and information visit:

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

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

HPC Interconnects

NOTE: High Performance Computing (HPC) interconnect technologies are available for the DL165 G5 under the Cluster Platform product portfolio. These high-speed interconnects are fully supported by HP when they are part of these configure to order clusters. Solutions can be defined with a lot of flexibility with the help of configuration tools. Please visit the following URL to configure HPC Clusters with InfiniBand, Gigabit Ethernet or Myrinet Interconnects: <http://www.hp.com/techservers/clusters/ucp/index.html>

HPC Interconnects	InfiniBand	PCI-X and PCI-Express adapters
	Gigabit Ethernet	Use embedded ports or optional 10GbE NICs
	Myrinet XP	PCI-X Rev D, Rev E and Rev F adapters

Models

Non-Hot Plug Serial ATA (SATA) Models

<p>HP DL165G5 2374HE 2.2 GHz, 2GB, Non-Hot Plug SATA (1P) 507554-xx1</p>	<p>Processor(s) One of the following depending on model</p> <p>Cache Memory</p>	<p>(1) AMD Opteron™ processor Model 2374HE (2.2 GHz, 55W ACP) (1) AMD Opteron™ processor Model 2352 (2.1 GHz, 75W ACP) (1) AMD Opteron™ processor Model 2356 (2.3 GHz, 75W ACP)</p> <p>2MB shared Level 3 cache</p>
<p>HP DL165 G5 2346HE 1.8GHz, 2GB, Non-Hot Plug SATA (1P) 464207-xx1</p>	<p>Memory One of the following depending on model</p>	<p>2GB (2 x 1GB) Registered PC2-5300 Low Power DDR2 DIMMs (667MHz) with Advanced ECC capabilities 2GB (2 x 1GB) Registered PC2-5300 DDR2 DIMMs (667MHz) with Advanced ECC capabilities 4GB (2 x 2GB) Registered PC2-5300 DDR2 DIMMs (667MHz) with Advanced ECC capabilities</p>
<p>HP DL165 G5 2352 2.1 GHz, 2GB, Non-Hot Plug SATA (1P) 445153-xx1</p>	<p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drive</p>	<p>Embedded NC7782 dual-port gigabit server adapter</p> <p>HP Embedded SATA Controller</p> <p>(1) 160GB NHP SATA HDD</p>
<p>HP DL165G5 2356 2.3GHz, 4GB, Non-Hot Plug (1P) 445161-xx1</p>	<p>Internal Storage</p> <p>Optical Drive</p> <p>Form Factor</p>	<p>SATA: 3TB maximum</p> <p>Optional DVD-ROM, DVD/CD RW</p> <p>Rack (1U)</p>

Hot Plug Serial ATA (SATA)/Serial Attached SCSI (SAS) Models

<p>HP DL165G5 2380 2.5 GHz, 4GB, Hot Plug (1P) 507555-xx1</p>	<p>Processor(s) One of the following depending on model</p>	<p>(1) AMD Opteron™ processor Model 2380 (2.5 GHz, 75W ACP) (1) AMD Opteron™ processor Model 2346HE (1.8 GHz, 55W ACP) (1) AMD Opteron™ processor Model 2352 (2.1 GHz, 75W ACP) (1) AMD Opteron™ processor Model 2356 (2.3 GHz, 75W ACP)</p>
<p>HP DL165G5 2346HE (1P) 1.8 GHz, 2GB, Hot Plug 464208-xx1</p>	<p>Cache Memory</p> <p>Memory One of the following depending on model</p>	<p>2MB shared Level 3 cache (Processor Series 234x to 236x) 6MB shared Level 3 cache (Processor Series 237x to 238x)</p> <p>2 GB (2 x 1GB) Registered PC2-5300 DDR2 DIMMs (667MHz) with Advanced ECC capabilities 4GB (2 x 2GB) Registered PC2-5300 DDR2 DIMMs (667MHz) with Advanced ECC capabilities 4GB (2 x 2GB) Registered PC2-6400 DDR2 DIMMs (800MHz) with Advanced ECC capabilities</p>
<p>HP DL165 G5 2352 2.1 GHz, 2 GB Hot Plug SAS/SATA (1P) 445164-xx1</p>	<p>Network Controller</p>	<p>Embedded NC7782 dual-port gigabit server adapter</p>
<p>HP DL165G5 2356 2.3 GHz, 4 GB, Hot Plug (1P) 445162-xx1</p>	<p>Storage Controller</p> <p>Hard Drive</p> <p>Internal Storage One of the following depending on model</p> <p>Optical Drive</p> <p>Form Factor</p>	<p>HP 4 Internal Port SAS HBA with RAID</p> <p>None ship standard (up to 4 Hot Plug SATA or SAS drives supported)</p> <p>SATA: 4.0TB Maximum SAS: 4.0TB Maximum</p> <p>Optional DVD-ROM, DVD/CD RW</p> <p>Rack (1U)</p>

Models

Country Code Key	xx = 00	U.S.
	xx = 20	Brazil (Model 445164-201 only)
	xx = 29	Japan
	xx = 37	APD
	xx = 42	Euro
	xx = AA	PRC

Configuration Information - Factory Integrated Models

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

NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order servers must start with a CTO Chassis.

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

Step 1: Base Configuration

Non-Hot Plug SATA Model

HP ProLiant DL165 G5 Non-Hot Plug SATA Rack Chassis 445147-B21

Factory Integrated Model ships with:

Embedded NC7782 dual-port gigabit server adapter
Two available PCI-Express slots, including one full-length/full height and one low-profile/half height slot
HP embedded SATA controller
650 Watt Power Supply
6 Fixed, Non-Redundant Fans
Rack (1U), (1.75 in / 4.45 cm)
Fixed Mounting Rails

Hot Plug SATA/SAS Model

HP ProLiant DL165 G5 Hot Plug SATA/SAS Rack Chassis 445148-B21

Factory Integrated Model ships with:

Embedded NC7782 dual-port gigabit server adapter
One full-length/full height PCI-Express slot. Low-profile/half height slot houses the SATA/SAS storage controller
650 Watt Power Supply
6 Fixed, Non-Redundant Fans
Rack (1U), (1.75 in / 4.45 cm)
Fixed Mounting Rails

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

Processors	AMD Opteron™ processor Model 2393SE (3.1GHz, 105W ACP), FIO	500062-L21
	AMD Opteron™ processor Model 2389 (2.9GHz, 75W ACP), FIO	500049-L21
	AMD Opteron™ processor Model 2384 (2.7GHz, 75W ACP), FIO	500064-L21
	AMD Opteron™ processor Model 2381 HE (2.5GHz, 55W ACP), FIO	500058-L21
	AMD Opteron™ processor Model 2380 (2.5GHz, 75W ACP), FIO	500060-L21
	AMD Opteron™ processor Model 2377 EE (2.3GHz, 50W ACP), FIO	536530-L21
	AMD Opteron™ processor Model 2376 (2.3GHz, 75W ACP), FIO	500056-L21
	AMD Opteron™ processor Model 2374HE (2.2 GHz, 55W ACP), FIO	500051-L21

Configuration Information - Factory Integrated Models

Memory

NOTE: Processors 2374 HE and above use PC2-6400 memory except for 8GB DIMMs which remain PC2-5300 (408855-B21 and 495605-B21). PC2-5300 memory (except for kits 408855-B21 and 495605-B21) can only be used with processor models 2360 SE and below.

1 GB REG PC2-5300 2 x 512 MB Single Rank Kit	408850-B21
2 GB REG PC2-6400 2 x 1 GB Kit	497763-B21
2 GB REG PC2-5300 2 x 1 GB Single Rank Kit	408851-B21
2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
4 GB REG PC2-6400 2 x 2 GB Kit	497765-B21
4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
4 GB REG PC2-5300 2 x 2 GB Dual Rank Kit	408853-B21
8 GB REG PC2-6400 2 x 4 GB Kit	497767-B21
8 GB REG PC2-6400 2 x 4 GB Low Power Kit	504351-B21
8 GB REG PC2-5300 2 x 4 GB Dual Rank Kit	408854-B21
8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
16 GB REG PC2-5300 2 x 8 GB Kit	408855-B21
64 GB REG PC2-5300 8 x 8 GB Kit	495605-B21

Hard Drive

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, 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.

NOTE: Required only if P/N 445147-B21 selected in Step 1.

Serial-ATA (SATA) Non-Hot Plug Hard Drives (Non-Hot Plug Models Only)

SATA Non-Hot Plug 3.5" Entry (ETY) Drives

HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD	458947-B21
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SATA Non-Hot Plug 3.5" Midline (MDL) Drives

HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD	462595-B21
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HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD	458941-B21
--	------------

HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD	458939-B21
--	------------

3.5" SATA Non-Hot Plug Drives

HP 500GB 1.5G SATA 7.2K NHP 3.5" HDD, FIO	404469-B21
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HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD	411276-B21
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HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD	411275-B21
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NOTE: The previous generation of 1.5G SATA drives are still supported.

Configuration Information - Factory Integrated Models

Storage Controllers	NOTE: Required only if P/N 445148-B21 selected in Step 1.	
	HP Smart Array E500/256MB Controller with Battery, FIO	462105-B21
	NOTE: Customers can only order one Smart Array E500/256MB Controller and one Battery-backed write cache upgrade (P/N 383280-B21) for the HP ProLiant DL165 G5 server based on battery space.	
	HP Smart Array E200/128 BBWC Controller	411508-B21
	HP SC44Ge Host Bus Adapter	416096-B21
	NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.	
	HP SC40Ge 4INT PCIe SAS RAID Half Height HBA, FIO	449363-B21
	NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required.	
	Battery-backed write cache upgrade	383280-B21
	NOTE: RAID 5 support. When installing a battery-backed write cache module, the HP Smart Array E500 must be installed in the full-length PCI slot.	

Step 3: Choose Additional Factory Integratable Options

Power Supplies	HP 500W High Efficiency Multi-output Power Supply Kit, FIO	536928-B21
	NOTE: Selection of the 500W High Efficiency Power Supply Unit will remove the 650 Watt standard power supply.	
	HP 1200W High Efficiency Power Supply Kit, FIO	453650-B21
	NOTE: Selection of the 1200W High Efficiency Power Supply Unit will remove the 650 Watt standard power supply and requires the purchase of Power Supply Backplane (P/N 453652-B21)	
	Power Options	
	Power Supply Backplane	453652-B21
	NOTE: This backplane must be ordered with the high efficiency power supply (P/N 453650-B2).	

Step 4: Choose Additional Options for Factory Integration

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

Core Options

NOTE: Some options may not be available for factory integration. Please contact an HP sales representative for additional information.

Processor	AMD Opteron™ processor Model 2393SE (3.1GHz, 105W ACP)	500062-B21
	AMD Opteron™ processor Model 2389 (2.9GHz, 75W ACP)	500049-B21
	AMD Opteron™ processor Model 2384 (2.7GHz, 75W ACP)	500064-B21
	AMD Opteron™ processor Model 2381 HE (2.5GHz, 55W ACP)	500058-B21
	AMD Opteron™ processor Model 2380 (2.5GHz, 75W ACP)	500060-B21
	AMD Opteron™ processor Model 2377 EE (2.3GHz, 50W ACP)	536530-B21
	AMD Opteron™ processor Model 2376 (2.3GHz, 75W ACP)	500056-B21
	AMD Opteron™ processor Model 2374HE (2.2 GHz, 55W ACP)	500051-B21
	AMD Opteron™ processor Model 2360 SE (2.5GHz, 105W ACP)	445983-B21
	AMD Opteron™ processor Model 2356 (2.3 GHz, 75W ACP)	445981-B21
	AMD Opteron™ processor Model 2354 (2.2 GHz, 75W ACP)	445974-B21
	AMD Opteron™ processor Model 2352 (2.1 GHz, 75W ACP)	445971-B21
	AMD Opteron™ processor Model 2346HE (1.8 GHz, 55W ACP)	464210-B21
	AMD Opteron™ processor Model 2344 HE (1.7 GHz, 55W ACP)	492086-B21

Memory (DIMMs)

NOTE: Processors 2374 HE and above use PC2-6400 memory except for 8GB DIMMs which remain PC2-5300 (408855-B21 and 495605-B21). PC2-5300 memory (except for kits 408855-B21 and 495605-B21) can only be used with processor models 2360 SE and below.

1 GB REG PC2-5300 2 x 512 MB Single Rank Kit	408850-B21
2 GB REG PC2-6400 2 x 1 GB Kit	497763-B21
2 GB REG PC2-5300 2 x 1 GB Single Rank Kit	408851-B21
2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
4 GB REG PC2-6400 2 x 2 GB Kit	497765-B21
4 GB REG PC2-5300 2 x2 GB Low Power Single Rank Kit	483401-B21
4 GB REG PC2-5300 2 x 2 GB Dual Rank Kit	408853-B21
8 GB REG PC2-6400 2 x 4 GB Kit	497767-B21
8 GB REG PC2-6400 2 x 4 GB Low Power Kit	504351-B21
8 GB REG PC2-5300 2 x 4 GB Dual Rank Kit	408854-B21
8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
16 GB REG PC2-5300 2 x 8 GB Kit	408855-B21
64 GB REG PC2-5300 8 x 8 GB Kit	495605-B21

Optical Drives

DVD-ROM Drive Optical Drive	447889-B21
DVD/CD RW Drive Optical Drive	447891-B21

Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, 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.



Core Options

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

Serial-ATA (SATA) Non-Hot Plug Hard Drives (Non-Hot Plug Models Only)

SATA Non-Hot Plug 3.5" Entry (ETY) Drives

HP 160GB 3G SATA 7.2K NHP 3.5" ETY HDD 458947-B21

SATA Non-Hot Plug 3.5" Midline (MDL) Drives

HP 750GB 3G SATA 7.2K NHP 3.5" MDL HDD 462595-B21

HP 500GB 3G SATA 7.2K NHP 3.5" MDL HDD 458941-B21

HP 250GB 3G SATA 7.2K NHP 3.5" MDL HDD 458939-B21

Serial-ATA (SATA) Hot Plug Hard Drives (SATA/SAS Hot Plug Models Only)

SATA Hot Plug Entry 3.5" (ETY) Drives

HP 160GB 3G SATA 7.2K 3.5" ETY HDD 458945-B21

SATA Hot Plug Midline 3.5" (MDL) Drives

HP 1TB 3G SATA 7.2K 3.5" MDL HDD 454146-B21

HP 750GB 3G SATA 7.2K 3.5" MDL HDD 458930-B21

HP 500GB 3G SATA 7.2K 3.5" MDL HDD 458928-B21

HP 250GB 3G SATA 7.2K 3.5" MDL HDD 458926-B21

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

http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide).

3.5" SATA Hot Plug Drives

HP 750GB 1.5G SATA 7.2K 3.5" HDD 432341-B21

HP 500GB 1.5G SATA 7.2K 3.5" HDD 395473-B21

HP 250GB 1.5G SATA 7.2K 3.5" HDD 349239-B21

HP 160GB 1.5G SATA 7.2K 3.5" HDD 349238-B21

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

HP 120GB 3G SATA 3.5in MDL 1y Wty SSD 570763-B21

HP 60GB 3G SATA 3.5in MDL 1y Wty SSD 570761-B21

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

http://h18000.www1.hp.com/products/quickspecs/13145_div/13145_div.html (Worldwide)

3.5" SATA Non-Hot Plug Drives

HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD 411276-B21

HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD 411275-B21

NOTE: The previous generation of 1.5G SATA drives are still supported.

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

http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html (Worldwide)

SAS Hot Plug 3.5" Enterprise (ENT) Drives

HP 600GB 6G SAS 15K 3.5" DP ENT HDD 516828-B21

Core Options

HP 450GB 6G SAS 15K 3.5" DP ENT HDD	516816-B21
HP 450GB 3G SAS 15K 3.5" DP ENT	454232-B21
HDDHP 450GB 3G SAS 15K 3.5" DP ENT HDD	454232-B21
HP 300GB 6G SAS 15K 3.5" DP ENT HDD	516814-B21
HP 300GB 3G SAS 15K 3.5" DP ENT HDD	416127-B21
HP 146GB 3G SAS 15K 3.5" DP ENT HDD	384854-B21
SAS Hot Plug 3.5" Midline (MDL) Drives	
HP 1TB 3G SAS 7.2K 3.5" DP MDL HDD	461137-B21
HP 750GB 3G SAS 7.2K 3.5" DP MDL HDD	461135-B21

NOTE: The purchase of SAS HBA or array controller is required.

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

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

Communications

Gigabit Ethernet Adapters

HP NC112T PCIe Gigabit Server Adapter	503746-B21
HP NC360T PCI Express Dual Port Gigabit Server Adapter	412648-B21
HP NC364T PCI Express Quad Port Gigabit Server Adapter	435508-B21
HP NC373F PCI Express Multifunction Gigabit Server Adapter	394793-B21
HP NC373T PCI Express Multifunction Gigabit Server Adapter	394791-B21
HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter	458492-B21

10 Gigabit Ethernet Adapters

HP NC522SFP Dual Port 10GbE Server Adapter	468332-B21
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NOTE: A minimum of two Gigabytes (2 GB) of server memory is required per each NC522SFP adapter.

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

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

Additional Options

Remote Management	HP Lights-Out 100i Advanced Pack	
	HP LO100i Advanced Pack, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	530521-B21
	NOTE: Flexible and volume quantity (AKA) license kits are available for the Lights-Out 100i Advanced Pack licenses as well as Electronic License To Use (E-LTU). AKA Tracking licenses require a 100 unit minimum forecast at initial contract signing. For these additional part numbers, please refer to QuickSpecs at this link for more information: www.hp.com/go/lo100	
HP Insight Software	HP Insight Rapid Deployment software	
	HP Insight Rapid Deployment software No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	452151-B21
	NOTE: This license allows 1 server to be deployed. 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: For additional license kits including electronic delivery options, please see the Rapid Deployment Software QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html	
Graphic Cards	HP NVIDIA Quadro FX3700 512MB PCI-e Kit	490062-B21
	NOTE: Use Slot 2, PCI-E x16 Full Length Slot.	
	HP NVIDIA Quadro FX1700 512MB PCI-e Kit	490646-B21
	NOTE: Use Slot 2, PCI-E x16 Full Length Slot.	
	NOTE: At this time, these graphic cards are supported on Linux and Windows.	
Hot Plug HDD Backplane Option	Hot Plug HDD Backplane 1U 2S Kit	445985-B21
	NOTE: Installation of the Hot Plug Backplane 1U 2S Kit (445985-B21) is required if ordering third or fourth Hard Drives for Hot Plug models only.	
Storage Controllers	NOTE: The addition of storage controllers for internal hard drive use is intended for use ONLY with the Hot Plug SATA/SAS Model Chassis (445148-B21).	
	SAS Controllers	
	Smart Array E200 Controller	
	HP Smart Array E200/128 BBWC Controller	411508-B21
	Smart Array E500 Controller	
	HP Smart Array E500/256MB Controller	435129-B21
	NOTE: Standard RAID 0,1, 1+0.	
	NOTE: Customers can only order one Smart Array E500/256MB Controller and one Battery-backed write cache upgrade (P/N 383280-B21) for the HP ProLiant DL165 G5 server based on battery space.	
	Smart Array P400 Controller	

Additional Options

HP Smart Array P400/256MB Controller	405132-B21
NOTE: Customers can only order one Smart Array P400/256MB Controller and one Battery-backed write cache upgrade (P/N 383280-B21) for the HP ProLiant DL165 G5 server based on battery space.	
HP Smart Array P400/512MB BBWC Controller	411064-B21
NOTE: Customers can only order one Smart Array P400/512MB BBWC Controllers for the HP ProLiant DL165 G5 server based on battery space.	
Smart Array P800 Controller	
HP Smart Array P800/512 BBWC Controller	381513-B21
NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12460_div/12460_div.html (Smart Array E200 Controller) http://h18000.www1.hp.com/products/quickspecs/12700_div/12700_div.html (Smart Array E500 Controller) http://h18000.www1.hp.com/products/quickspecs/12400_div/12400_div.html (Smart Array P400 Controller) http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller)	
Optional Upgrades	
Battery-backed write cache upgrade	383280-B21
NOTE: Contains battery only. For Smart Array P400 Controller. NOTE: RAID 5 support. When installing a battery-backed write cache module, the HP Smart Array E500 must be installed in the full-length PCI slot.	
512MB Battery-backed write cache upgrade	405148-B21
NOTE: Contains battery and memory module. For Smart Array P400 Controller.	
Riser Board Kits	
HP HTX Riser Board Kit	445987-B21
HP PCI-X L/P Riser Kit	452698-B21
NOTE: Replaces the standard Half Height (LP) PCI Express slot with a Half Height (LowProfile) PCI-X slot.	
SAS HBA	
HP 8 Internal Port SAS HBA with RAID	347786-B21
NOTE: For use with Hot Plug SAS/SATA models. NOTE: The selection HP 8 Internal Port SAS HBA with RAID requires the purchase of the LowProfile PCI-X Riser Option kit (P/N 452698-B21).	
HP SC44Ge Host Bus Adapter	416096-B21
NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. NOTE: PCI-Express SAS HBA. NOTE: Please see the following QuickSpecs for Technical Specifications and additional information: http://h18004.www1.hp.com/products/quickspecs/12332_div/12332_div.html (8 Internal Port SAS HBA) http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html (SC44Ge HBA)	
SCSI HBA	

Additional Options

HP SC11Xe Host Bus Adapter	412911-B21
NOTE: Recommended HBA for SCSI tape drive connect.	
NOTE: Please see the following QuickSpecs for Technical Specifications additional information: http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA)	

HPC Specific Options	HP IB 4X DDR PCI-e Dual Port HCA	448397-B21
	HP IB 4X DDR PCI-e Dual Port 0 Memory HCA	483513-B21
	HP 10 GbE PCI-e G2 Dual Port Adapter	516937-B21
	NOTE: For HPC interconnect adapters please see the HPC Interconnect section of this QuickSpecs.	

Tape Storage

NOTE: For the complete listing of Tape Drive offerings, please see:
<http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>

Tape Drives

USB Rack-Mount Tape Solutions

HP StorageWorks 1U USB Rack-Mount Kit with one DAT 160 USB Tape Drive	AG703A
NOTE: Pre-configured with one DAT 160 USB tape drive.	

SAS Rack-Mount Tape Solutions

NOTE: HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape.

HP StorageWorks 1U SAS Rack-Mount Kit with one LTO-4 Ultrium 1760	EH946A
NOTE: Pre-configured with one LTO-4 Ultrium 1760 SAS tape drive.	

HP StorageWorks 1U SAS Rack-Mount Kit	AE459A
NOTE: Supports up to (2) half-height SAS tape drives.	

HP StorageWorks DAT 160 SAS Internal Tape Drive	Q1587A
NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A).	

HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive	DW085A
NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A).	

HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive	EH847A
NOTE: Mounts inside the 1U SAS Rack-Mount Kit (AE459A).	

SCSI Rack-Mount Tape Solutions

NOTE: SCSI Controller required. HP recommends purchasing the HP SC11Xe HBA (412911-B21) for a dedicated SCSI HBA for tape.

HP StorageWorks 1U SCSI Rack-mount kit with one LTO-2 Ultrium 448 SCSI Tape Drive (Carbonite)	DW028B
NOTE: Pre-configured with one LTO-2 Ultrium 448 SCSI tape drive.	

HP StorageWorks 1U SCSI Rack-mount kit with one LTO-3 Ultrium 920	EH903A
NOTE: Pre-configured with one LTO-3 Ultrium 920 SCSI tape drive.	

HP StorageWorks 3U SCSI Rack-Mount with 1 LTO-4 Ultrium 1840 Tape Drive	EH926A
NOTE: Pre-configured with one LTO-4 Ultrium 1840 SCSI tape drive.	

For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: <http://www.hp.com/go/connect>

Tape Autoloaders



Additional Options

HP StorageWorks DAT Autoloader

HP StorageWorks DAT 72x10 tape autoloader AE313B

HP StorageWorks 1/8 G2 Tape Autoloader

HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader AK377A

HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader AH558A

HP StorageWorks 1/8 G2 LTO-2 Ultrium 448 Tape Autoloader AH164A

HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit AH166A

NOTE: Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions.

NOTE: Please reference the QuickSpecs for Technical Specifications and <http://www.hp.com/go/automation> for additional information needed to create a complete solution; reference current compatibility information at: <http://www.hp.com/go/ebs>.

Tape Libraries

HP StorageWorks MSL2024 Tape Library

HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library AJ033A

HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library AK378A

HP StorageWorks MSL2024 1 LTO-3 Ultrium 960 SCSI Drive Library AG115A

HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library AH559A

HP StorageWorks MSL2024 1 LTO-2 Ultrium 448 SCSI Drive Library AG116A

HP StorageWorks MSL4048 Tape Library

HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library AJ035A

HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library AK380A

HP StorageWorks MSL4048 1 LTO-3 Ultrium 960 SCSI Drive Library AG322A

HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library AH560A

Disk-Based Backup

RDX Removable Disk Backup

HP StorageWorks RDX160 External Removable Disk Backup System AJ766A

NOTE: 160GB of Disk Storage

HP StorageWorks RDX320 External Removable Disk Backup System AJ768A

NOTE: 320GB of Disk Storage

HP StorageWorks RDX500 External Removable Disk Backup System AJ935A

NOTE: 500GB of Disk Storage

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

http://h18000.www1.hp.com/products/quickspecs/13036_div/13036_div.html

D2D Backup

HP StorageWorks D2D120 Backup System with Data Protector Express Software Kit EH924A

NOTE: 2TB of Disk Storage

HP StorageWorks D2D130 Backup System with LTO-3 Ultrium 920 SAS Tape Drive EH952A

NOTE: 3TB of Disk Storage

HP StorageWorks D2D2503i Backup System EH945A

NOTE: 3TB of Disk Storage.

Additional Options

HP StorageWorks D2D2504i Backup System	EJ002A
HP StorageWorks D2D4004i Backup System	EH938A
NOTE: 4.5TB of Disk Storage	
NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://www.hp.com/go/d2d .	

StorageWorks Options

StorageWorks Fibre Channel HBA

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

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

Brocade Fibre Channel HBAs

HP 81B PCIe 8Gb FC Single Port HBA	AP769A
HP 82B PCIe 8Gb FC Dual Port HBA	AP770A
HP 41B PCIe 4Gb FC Single Port HBA	AP767A
HP 42B PCIe 4Gb FC Dual Port HBA	AP768A

Emulex Fibre Channel HBAs

HP StorageWorks 81E 8Gb SP PCI-e FC HBA	AJ762A
HP 82E 8Gb Dual-port PCI-e FC HBA	AJ763A
HP StorageWorks FC2142SR 4Gb PCI-e HBA	A8002A
HP StorageWorks FC2242SR Dual Channel 4 Gb PCI-e HBA	A8003A

QLogic Fibre Channel HBAs

HP StorageWorks 81Q PCI-e FC HBA	AK344A
HP StorageWorks 82Q 8Gb Dual Port PCI-e FC HBA	AJ764A
HP StorageWorks FC1142SR 4Gb PCI-e HBA	AE311A
HP StorageWorks FC1242SR Dual Channel 4 Gb PCI-e HBA	AE312A

StorageWorks SCSI HBA

HP U320e SCSI Host Bus Adapter	AH627A
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NOTE: Recommended HBA for MSL SCSI Tape Library connect.

NOTE: Recommended Dual Channel Ultra320 SCSI Controller for connecting multi-drive MSL tape libraries to ProLiant servers.

Additional Options

HP StorageWorks Modular Smart Array	HP StorageWorks 50 Modular Smart Array	
	HP StorageWorks 50 Modular Smart Array	364430-B21
	NOTE: Rack-mountable 10 SFF drive enclosure with single I/O module, redundant hot plug power supplies and hot plug fans. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12245_div/12245_div.html (Worldwide)	
HP StorageWorks Modular Smart Array	HP StorageWorks 60 Modular Smart Array	
	HP StorageWorks 60 Modular Smart Array	418408-B21
	NOTE: Rack-mountable 12-drive (3.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12627_div/12627_div.html (Worldwide)	
HP StorageWorks Modular Smart Array	HP StorageWorks 70 Modular Smart Array	
	HP StorageWorks 70 Modular Smart Array	418800-B21
	NOTE: Rack-mountable 25-drive (2.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies. NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12652_div/12652_div.html (Worldwide)	
Uninterruptible Power Systems	HP Rack-mountable UPS	
	HP R1500 G2 UPS	
	HP, R1.5kVA UPS, 1U, NA	AF419A
	HP, R1.5kVA UPS, 1U, INTL	AF418A
	HP, R1.5kVA UPS, 1U, JPN/TW	AF421A
	NOTE: Please see QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12507_div/12507_div.html (Worldwide) NOTE: For additional information on sizing your server, please reference: http://www.upssizer.com	
	HP R3000 UPS Uninterruptible Power System	
HP R3000 UPS	AF444A	
NOTE: The R3000v is available in China and India only. NOTE: Please see UPS QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13129_div/13129_div.html (Worldwide)		

Additional Options

HP Rack Series	HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	
	10642 G2 (42U) Rack Cabinet 1200mm Deep - Shock Pallet	AF034A
	10642 G2 (42U) Rack Cabinet 1200mm Deep - Pallet	AF038A
	10647 G2 (47U) Rack Cabinet 1200mm Deep - Shock Pallet	AF044A
	10647 G2 (47U) Rack Cabinet 1200mm Deep - Pallet	AF045A

NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: <http://www.hp.com/go/kvm>.

NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.

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

http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html (Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: <http://www.hp.com/go/rackandpower>.

HP Rack Options	HP KVM Switch Options	
	HP 1x4 Console Switch	AF611A
	HP PS2 Server Console Cable, 6 foot, 2-Pack	AF612A
	HP USB Server Console Cable, 6 foot, 2-Pack	AF613A
	NOTE: required for supporting USB peripheral	
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm	

USB Options	HP USB Internal Cable Kit	451363-B21
	1.44MB External USB Floppy Drive All	DC141B
	USB Floppy Drive	DC361B
	USB P/S2 Optical Mouse	DC369A
	USB Standard Keyboard All	DT528A#

Service and Support Offerings (HP Care Pack Services)	Hardware Services 4-Hour On-site Service	
	13-Hour x 5-Day Coverage, 3 Years, Electronic	U9509E
	24-Hour x 7-Day Coverage, 3 Years, Electronic	U9510E
	Hardware Services Next Business Day On-Site Service	
	9-Hour x 5-Day Coverage, 3 Years, Electronic	U9508E
	Hardware Services 6-Hour Call to Repair On-Site Service	
	9-Hour x 5-Day Coverage, 3 Years, Electronic	U9511E
	Hardware Installation, Electronic	U9520E
	NOTE: For more information, customer/resellers can contact: http://www.hp.com/services/carepack	

Memory

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

NOTE: Processors 2374 HE and above use PC2-6400 memory except for 8GB DIMMs which remain PC2-5300 (408855-B21 and 495605-B21). PC2-5300 memory (except for kits 408855-B21 and 495605-B21) can only be used with processor models 2360 SE and below.

HP ProLiant DL165 G5 (all models)

Standard Memory

2 GB (2 x 1 GB) PC2-5300 DIMM memory, with Advanced ECC Capabilities memory installed.

Maximum Memory

Up to 64GB memory is available with the optional installation of PC2-5300 Registered DIMM memory kits.

Memory should be installed in pairs and matched for optimum performance.

NOTE: Chart does not represent all possible memory configurations.

Memory	Slot							
	1	2	3	4	5	6	7	8
Standard (2 GB)	1 GB	1 GB	Empty	Empty	Empty	Empty	Empty	Empty
Maximum (64 GB)	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB	8 GB

Following are memory options available from HP:

1 GB REG PC2-5300 2 x 512 MB Single Rank Kit	408850-B21
2 GB REG PC2-6400 2 x 1 GB Kit	497763-B21
2 GB REG PC2-5300 2 x 1 GB Single Rank Kit	408851-B21
2 GB REG PC2-5300 2 x 1 GB Low Power Single Rank Kit	483399-B21
4 GB REG PC2-6400 2 x 2 GB Kit	497765-B21
4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
4 GB REG PC2-5300 2 x 2 GB Dual Rank Kit	408853-B21
8 GB REG PC2-6400 2 x 4 GB Kit	497767-B21
8 GB REG PC2-6400 2 x 4 GB Low Power Kit	504351-B21
8 GB REG PC2-5300 2 x 4 GB Dual Rank Kit	408854-B21
8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
16 GB REG PC2-5300 2 x 8 GB Kit	408855-B21
64 GB REG PC2-5300 8 x 8 GB Kit	495605-B21

Storage



- 1-4 Non-hot plug 3.5" SATA or Hot-plug SAS/SATA hard drive bays
- A Optional DVD-ROM, or DVD/CD RW

Drive Support

Removable Media

	Quantity Supported	Position Supported	Controller
DVD-ROM	Up to 1	A	Integrated IDE (ATAPI) (optional)
DVD/CD RW	Up to 1	A	Integrated IDE (ATAPI) (optional)

Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, 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.

SATA Non-Hot Plug 3.5" Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
160GB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller

SATA Non-Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
750GB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller
500GB 3G SATA 7.2K			
250GB 3G SATA 7.2K			

3.5" SATA Non-Hot Plug Drives

	Quantity Supported	Position Supported	Controller
500GB 1.5G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller
250GB 1.5G SATA 7.2K			
160GB 1.5G SATA 7.2K			

SATA Hot Plug Entry (ETY) Drives (3.5")

NOTE: Installation of the Hot Plug Backplane 1U 2S Kit (445985-B21) is required if ordering third or fourth Hard Drives for Hot Plug models only.

	Quantity Supported	Position Supported	Controller
160GB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller

Storage

3.5" SATA Hot Plug Drives

	Quantity Supported	Position Supported	Controller
750GB 1.5G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller
500GB 1.5G SATA 7.2K			
250GB 1.5G SATA 7.2K			
160GB 1.5G SATA 7.2K			

SATA Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1TB 3G SATA 7.2K	Up to 4	1-4	HP Embedded SATA Controller
750GB 3G SATA 7.2K			
500GB 3G SATA 7.2K			
250GB 3G SATA 7.2K			

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

	Quantity Supported	Position Supported	Controller
120GB 3G SATA	Up to 4	1-4	HP SC40Ge 4-Port Internal SAS HBA with RAID 0, 1 NOTE: When using the SC40Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s SATA, 3 Gb/s SAS
60GB 3G SATA			
			HP Smart Array P400 Controller HP Smart Array P800 Controller

SAS Hot Plug 3.5" Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
600GB 6G SAS 15K	Up to 4	1-4	HP 4 Internal Port SAS HBA with RAID
450GB 6G SAS 15K			
450GB 3G SAS 15K			
300GB 3G SAS 15K			
146GB 3G SAS 15K			

SAS Hot Plug 3.5" Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
1 TB 3G SAS 7.2K	Up to 4	1-4	HP 4 Internal Port SAS HBA with RAID
750GB 3G SAS 7.2K			

Storage

Tape and Disk-Based Backup

NOTE: For a complete listing of compatible tape and disk-based backup offerings, please visit: <http://www.hp.com/go/connect>

NOTE: SAS Tape Drives: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

	Position Supported	Controller	Controller Part Number
HP StorageWorks SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC11Xe Host Bus Adapter	412911-B21
HP StorageWorks USB Tape Drives, External DAT 40 USB DAT 72 USB DAT 160 USB 1U USB Rack-Mount Kit	External	USB 2.0 Port	N/A
HP StorageWorks SAS Tape Drives, External DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS LTO-4 Ultrium 1840 SAS 1U Rack-Mount Kit 3U Rack-Mount Kit	External	HP SC44Ge Host Bus Adapter	416096-B21
HP StorageWorks SCSI Tape Automation, External DAT 72x10 Autoloader 1/8 G2 Autoloader MSL2024 MSL4048	External	HP SC11Xe Host Bus Adapter HP U320e SCSI Host Bus Adapter NOTE: Recommended for MSL tape libraries.	412911-B21 AH627A

Storage

HP StorageWorks SAS Tape Automation, External 1/8 G2 Autoloader MSL2024 MSL4048	External	HP SC44Ge Host Bus Adapter	416096-B21
HP StorageWorks Fibre Tape Automation, External MSL2024 MSL4048 MSL8096	External	Please consult the EBS connectivity matrix at: http://www.hp.com/go/ebs for detailed connectivity information.	N/A
HP StorageWorks RDX Removable Disk Backup System, External RDX160 RDX320 RDX500	External	USB 2.0 port	N/A
HP StorageWorks D2D Backup Systems D2D120 D2D130 D2D2503i D2D2504i D2D4004i	External	Embedded Network Controller	N/A

External Storage

	Quantity Supported	Position Supported	Controller
50 Modular Smart Array	Up to 4	External	HP Smart Array E500/256MB Controller
	Up to 4		HP Smart Array P800/512 BBWC Controller
60 Modular Smart Array	Up to 4	External	HP Smart Array E500/256MB Controller
	Up to 8		HP Smart Array P800/512 BBWC Controller
70 Modular Smart Array	Up to 4	External	HP Smart Array E500/256MB Controller
	Up to 4		HP Smart Array P800/512 BBWC Controller

Power Specifications

Operational Input Voltage Range (Vrms) 90Vac to 264Vac full range at 25oC ambient

Frequency Range (Nominal) (Hz) 47 Hz to 63 Hz

Power Output 650W Nominal

Server Power Cords One 6' Highline (IEC-IEC) power cord ships standard

NOTE: HP ProLiant DL servers no longer ship standard with NEMA power cords (163719-002) that allow connection to 110V US wall outlets in a home or office. HP ProLiant DL servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant DL server using a 110V receptacle (NEMA-15), the NEMA power cord (227099-001) must be ordered separately.

If customers require a local power cord, they can check the power cord matrix for the appropriate cord. Please see the following power cord matrix: <http://www.hp.com/go/powercordmatrix>.

Technical Specifications

System Unit	Dimensions (H x W x D) (with bezel)	1.70 x 17.64 x 26.85 in (4.32 x 44.80 x 68.20 cm)	
	Weight (approximate)	Maximum	37.00 lb (16.78 kg)
		(all hard drives, power supplies, and processors installed)	
	Input Requirements (per 650W power supply)	Minimum	30.00 lb (13.69 kg)
		(one hard drive, power supply, and processor installed)	
		Rated Line Voltage	100-127 VAC, 200-240 VAC
		Rated Input Current	10.0 A (at 115 VAC), 5.5 A (at 230 VAC)
	BTU Rating	Rated Input Frequency	47 to 63 Hz
		Rated Input Power	852.16 W (at 100 VAC), 805.03W (at 200 VAC)
	Power Specifications	Maximum	2217.89 BTU/hr (at 100 VAC), 2217.89 BTU/hr (at 200 VAC)
To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient			
Power Supply Output (per power supply)	- Click on the system of interest. Example: DL165 G5		
	- Follow the instructions of the next screens.		
Optional High Efficiency Power Supply Specifications	Rated Steady-State Power	650 W (at 100 VAC), 650 W (at 200 VAC)	
	Maximum Peak Power	700 W (at 100 VAC), 700 W (at 200 VAC)	
Input Requirements (per power supply)	Rated Line Voltage	90-132 VAC, 200-240 VAC	
	Rated Input Current	9.4 A (at 115 VAC), 7.8 A (at 230 VAC)	
BTU Rating	Rated Input Frequency	47 to 63 Hz	
	Rated Input Power	1075 W (at 100 VAC), 1375W (at 200 VAC)	
	Maximum	3070.93 BTU/hr (at 100 VAC), 4094.57 BTU/hr (at 200 VAC)	
	To review typical system power ratings use the Power Advisor which is available via the online tool located at URL: www.hp.com/go/proliant-energy-efficient		
Power Specifications	- Click on the system of interest. Example: DL165 G5		
	- Follow the instructions of the next screens.		

Technical Specifications

Power Supply Output (per power supply)	Rated Steady-State Power	900 W (at 100 VAC), 1200 W (at 200 VAC)
	Maximum Peak Power	900 W (at 100 VAC), 1200 W (at 200 VAC)
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).
	Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
	Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Acoustic Noise	Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	Idle	
	LWAd	6.82 B
	LpAm	51.93 dBA
	Operating	
	LWAd	6.84 B
	LpAm	51.93 dBA
Emissions Classification (EMC)	FCC Rating	Class A
	Normative Standards	CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1

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

Technical Specifications

HP 160GB 1.5G SATA 160-GB 7.2K
7.2K NHP 3.5" ETY HDD
458947-B21

Capacity	160,041 MB
Height	1.028 in (2.61 cm)
Width	4.0 in (10.16 cm)
Depth	5.787 in (147.0 mm)
Interface	Serial ATA
Transfer Rate	1.5Gb/s
Synchronous (Maximum)	
Native Command Queuing	N/A
Seek Time (typical reads, including settling)	Single Track 2.0 ms Average <11 ms Full-Stroke 23.0 ms
	Rotational Speed 7,200 rpm
Physical Configuration	Bytes/Sector 512 Logical Blocks 312,581,808
Operating Temperature	41° to 131° F (5° to 55° C)

Embedded SATA Controller	Drives Supported	Up to 4 SATA devices
	Channels	4 1.5Gb SATA
	Storage Capacity	3.0TB internal storage
	Data Transfer Method	32-bit/33-MHz PCI bus-master
	Maximum SATA Channel Transfer Rate	1.5Gb/s per channel
	Maximum Transfer Rate per PCI Bus (peak)	266 MB/s per channel
	Protocols	SATA PIO Mode[0-4]
	Cable	SATA
	Internal ATA Connectors	Four SATA connectors

Technical Specifications

HP 4 Internal Port SAS HBA with RAID	Drives Supported	Up to 4 SATA/SAS drives		
	Channels	4		
	Storage Capacity	1.8TB SAS, 3.0TB SATA		
	Data Transfer Method	PCI-Express		
	Maximum SAS Channel Transfer Rate	3Gb/s per channel		
	Maximum SAS transfer rate	300Mb/sec per port		
	Protocols Supported	SSP, STP, SMP		
	Internal Connectors	1 SAS		
<hr/>				
Embedded NC7782 dual-port gigabit server adapter	Network Interface	10Base-T/ 100Base-TX/ 1000Base-TX		
	Compatibility	IEEE 802.3 10Base-T IEEE 802.3 1000Base-T IEEE 802.3 100Base-TX		
	Data Transfer Method	PCI-X		
	Network Transfer Rate	10Base-T (Half-Duplex)	10 Mb/s	
		10Base-T (Full-Duplex)	20 Mb/s	
		100Base-TX (Half-Duplex)	100 Mb/s	
		100Base-TX (Full-Duplex)	200 Mb/s	
		1000Base-TX (Half and Full-Duplex)	2000 Mb/s	
	Connector	RJ-45		
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)	
10/100/1000Base-TX		Category 5 UTP (2 Pair); up to 328 ft (100 m)		
<hr/>				
Environment-friendly Products and Approach	End-of-life Management and Recycling	<p>Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: 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.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: 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.</p>		

Technical Specifications

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