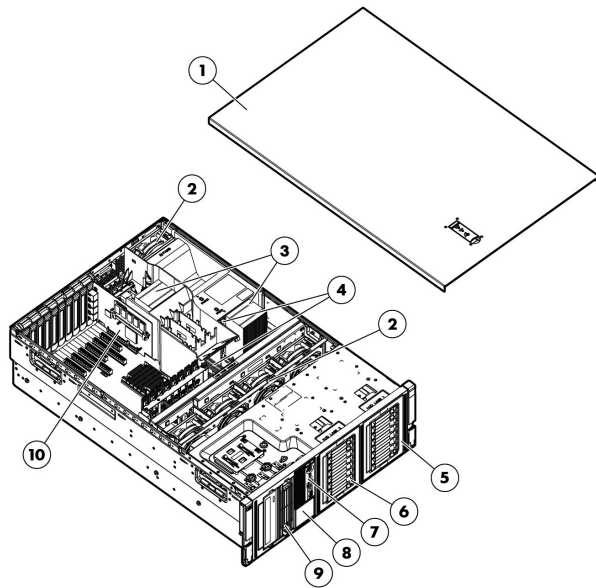


QuickSpecs

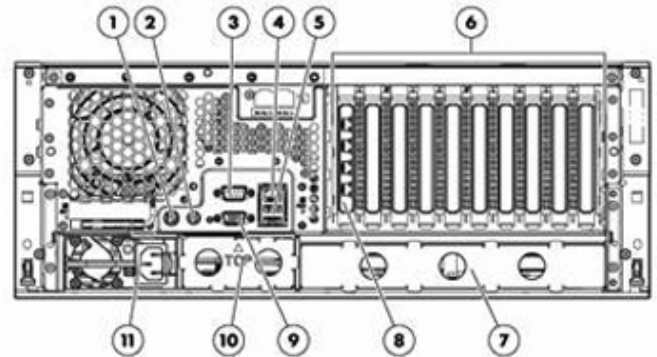
HP Business Data Warehouse Appliance

Overview



Front View:

1. Quick removal access panel
2. Five Hot-plug fans (standard)
3. Intel Six-Core Processor (Includes two processors)
4. Eighteen slots for DDR3 Registered Memory
5. SAS/SATA drive cage
6. SAS/SATA drive cage
7. Power on/standby button, video connector and two USB connectors
8. System Insight Display
9. Removal media bay
10. 9 Available PCI-Express Gen2 slots



Rear View:

1. Mouse connector
2. Keyboard connector
3. Serial connector
4. iLO 2 connector
5. Two USB connectors
6. 9 Available PCI-Express Gen2 expansion slots; PCI-X (optional)
7. PCI-X Expansion slot riser bay
8. Four NIC connectors
9. Video connector
10. Power supply bay 2
11. Add back in power supply bay 1 (populated)

At A Glance

The HP Business Data Warehouse Appliance, optimized for Microsoft® SQL Server® 2008 R2 Enterprise edition was designed in partnership with Microsoft, and is optimized, tuned and integrated to deliver high performance, throughput, and capacity for data marts and small-scale data warehouses

Taking the guesswork out of the hardware and architectural decisions for data warehouses with these requirements, the HP Business Data Warehouse Appliance is built on the HP ProLiant DL370 (4U rack optimized chassis) to deliver industry-leading management tools, leading performance, and the latest energy efficient technologies for data warehouse workloads with light concurrency usage profiles, and data warehouse volumes of up to 5 TB (based on 3.5 compression).

The HP Business Data Warehouse Appliance includes (PN 652632-B21):

- **Processor**

Overview

- (2) Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Processors
- **Cache Memory**
 - 12MB (1 x 12MB) L3 cache
- **Memory**
 - 96GB (12 x 8GB) RDIMM
- **Network Controller**
 - HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
- **PCI-Express Slots**
 - 10 PCI-Express Gen2 expansion slots - (6) available
- **Storage Controllers**
 - HP Smart Array P410i/1 GB with FBWC
 - HP Smart Array P410/1GB with FBWC
 - HP Smart Array P812/1G with FBWC
- **Hard Drives**
 - (2) 300GB 6G SAS 10K rpm SFF Drives
 - (22) 600GB 6G SAS 10K rpm SFF Drives
- **Internal Storage**
 - (3) 8 bay, SFF drive cages installed with (2) SFF SAS HD Bays (300 GB) and (22) SFF SAS (600 GB)
- **Power Supply**
 - (2) HP 750W Common Slot High Efficiency Power Supply Kits (hot plug, redundant)
- **Fans**
 - (5) Fully Redundant Hot Plug Fans
- **Software**
 - Microsoft Windows Server® 2008 R2 SP1 Enterprise Edition (including license)
 - Microsoft SQL Server 2008 R2 Enterprise edition (license required)
- **Insight Control**
 - HP Insight Control No Media single server license, including 3 years of 24x7 Technical Support and Updates
- **Support**
 - 3 year HP Support Plus 24 (24X7 hardware and software support with 4 hour on-site hardware response time)
- **Deployment**
 - Sliding rails for in rack servicing ship standard
- **Form Factor**
 - 4U Rack

For more information about the HP Business Data Warehouse Appliance, see: <http://www.hp.com/solutions/microsoft/bdw>

For more information about HP ProLiant servers see: <http://h18004.www1.hp.com/products/servers/platforms>

For more information about the HP ProLiant DL370 G6 see:

http://h18004.www1.hp.com/products/quickspecs/13242_div/13242_div.html

For more information about HP Insight software, see: <http://www.hp.com/go/insight>

For information about HP services see: www.hp.com/services/microsoft

For more information about Microsoft software see: <http://www.microsoft.com/sql>

How to Order

How to order the HP Business Data Warehouse Appliance The method for purchasing is simple. You need only order one SKU to get a complete solution which includes preconfigured hardware and software components from HP, operating system and application software from Microsoft, and 3 years of HP support.

The Business Data Warehouse Appliance (PN: 652632-B21) includes all of the HP hardware, HP software, and Microsoft Windows Server 2008 R2 SP1 Enterprise Edition and components. Microsoft SQL Server R2 2008 Enterprise edition is preinstalled and preconfigured, though customers must acquire the licenses separately. Customers may purchase those licenses from HP, other suppliers, or leverage previously purchased volume licenses. In addition, 3 year HP Support Plus 24 (24x7 hardware and software support with 4 hour on-site hardware response time) covering all components of the appliance, including Microsoft software (Windows Server 2008 R2 SP1 Enterprise Edition and SQL Server 2008 R2 Enterprise edition).

Standard Features

HP Business Data Warehouse Appliance software

The HP Business Data Warehouse Appliance comes standard with software from both HP and Microsoft. Windows Server 2008 R2 Enterprise Edition is included, with licenses. SQL Server 2008 R2 Enterprise edition is preinstalled, licenses may be purchased from HP or other suppliers; or customers can leverage previously purchased volume licenses. HP Support Plus 24 for all components is a standard part of the solution.

The unique HP Business Data Warehouse Appliance Quick Deployment Tool automates the SQL Server 2008 R2 Enterprise edition installation tasks, as well as optimizes the software configuration to host a data warehouse. Only a few short questions need to be answered to initiate the silent installation process; and the appliance will be ready to use in less than an hour.

Also included is the HP Business Data Warehouse DDL and Data Load Wizard to assist with database creation and database loading, helping to remove complexity with the ever increasing volumes of data businesses are managing.

Plug-ins for both Microsoft System Center and HP System Insight Manager support online updates and make management easy, using tools our customers know - iLO and Onboard Administrator giving complete management capabilities even when working remotely.

NOTE: Your use of Microsoft SQL Server 2008 R2 Enterprise edition software provided on this server hardware is subject to the terms and conditions of the Volume License program agreement under which you have acquired licenses to these Microsoft products. You may not use the above software without first acquiring valid server and/or client access licenses from Microsoft or its authorized distributor or reseller. For more information see <http://www.microsoft.com/sqlserver/en/us/get-sql-server/how-to-buy.aspx> Microsoft Windows Server 2008 R2 Enterprise Edition software provided on this server hardware is subject to the Microsoft Software License Terms provided to you by Hewlett-Packard Company or its authorized reseller. The genuine Certificate of Authenticity label affixed to the server hardware identifies licensed software

Processor Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Processor

Cache Memory 12MB (1 x 12MB) Level 3 cache

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
Mirroring mode
Lockstep mode
Online Spare mode

QuickSpecs

HP Business Data Warehouse Appliance

Standard Features

Memory	Type	DDR3 Registered (RDIMM)
	Standard	96GB (12 x 8GB) RDIMM

NOTE: The memory speed is 1333MHz.

Network Controller	HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
---------------------------	---------------------------------------------------------------------

Expansion Slots

NOTE: Six (6) available PCI-Express Gen2 expansion slots to provide you with the latest I/O performance.

Expansion Slots #	Technology	Bus Width	Connector Width	Form Factor	Notes
1	PCIe	x4	x8	Half length, full height	
2	PCIe2	x4	x8	Full Length/Full Height	
3	PCIe2	x16	x16	Full Length/Full Height	Utilized by P410/1G FBWC
4	PCIe2	x4	x8	Full Length/Full Height	
5	PCIe2	x4	x8	Full Length/Full Height	
6	PCIe2	x8	x16	Full Length/Full Height	Utilized by SAS Expander Card
7	PCIe2	x4	x8	Full Length/Full Height	
8	PCIe2	x16	x16	Full Length/Full Height	Utilized by P812/1G FBWC
9	PCIe2	x4	x8	Full Length/Full Height	
10	PCIe2	X8	X8	Half length, full height	Utilized by NIC controller NC375i

Storage Controllers	HP Smart Array P410i/1G FBWC Controller
	HP Smart Array P410/1G FBWC Controller
	HP Smart Array P812/1G FBWC Controller

Internal Storage Devices	Diskette Drive	None Ship Standard
	Hard Drives	(2) 300GB 6G SAS 10K rpm SFF Drives (Ships Standard) (22) 600GB 6G SAS 10K rpm SFF Drives (Ships Standard)
	Hard Drive Bays	(24) SFF SAS Hard Drive Bays Standard

NOTE: Three 8 SFF drive cages standard.



QuickSpecs

HP Business Data Warehouse Appliance

Standard Features

Interfaces

Serial	1 (rear)
Video	1 (+1 front video on rack models)
Network RJ-45 (Ethernet)	4 (rear)
ILO 2.0 remote management port	1
Keyboard	1
Pointing Device (Mouse)	1
SD slot	1
USB 2.0 Ports	5 (2 on the rear, 2 on the front, 1 internal)
Dedicated USB 2.0 Port	1 (available for DAT USB tape connectivity)

NOTE: Internal USB ports are optimal for the attachment of HP DAT USB Internal Tape Drives

Industry Standard Compliance

ACPI V2.0 Compliant
 PCI-Express Gen2
 PXE Support
 WOL Support
 Microsoft® Logo certifications
 USB 2.0 Support
 SMBIOS 2.6.1

Server Power Cords

High voltage power cord ships standard with all part numbers. Localized cables included with geographic specific models in other world regions.

NOTE: ProLiant DL servers no longer ship standard with NEMA power cords (187335-001) that allow connection to 110V US wall outlets in a home or office. ProLiant DL servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant DL server using a 110V receptacle (NEMA-15), the above NEMA power cord must be ordered separately.

Common Slot Power Supplies

The Common Slot (CS) Power Supply provides the customer with commonality in power supplies across multiple platforms to save on the cost of spares and allows HP to offer multiple power solutions to fit the customers' needs. Many HP ProLiant Servers come with or are compatible with high-efficiency HP CS Power Supplies. These power supplies are designed to provide high-efficiency power without degrading performance of the ProLiant server. All HP Common Slot power supplies are hot-plug and meet the requirements for UL and CE Mark Compliance.

It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs.

HP's ProLiant Common Slot Power supplies (750W) meet multiple Energy Efficiency Initiatives including Climate Savers Computing Initiative (CSCI) GOLD and ECOS Consulting/80PLUS GOLD certifications.

Standard Features

System Fans	(5) Hot Plug redundant fans ship standard	
Operating System	Microsoft Windows Server 2008 R2 SP1 Enterprise Edition NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server including how to purchase from HP, please visit our OS Support Site at: http://www.hp.com/go/ossupport and our driver download page http://www.hp.com/support/ML370G6 .	
Required Cabling	For storage device cabling information, refer to the HP ProLiant DL370 G6 Server User Guide: http://www.hp.com/support/DL_ML370G6_UG_en	
Graphics	Integrated ATI RN50, 64 MB video standard <ul style="list-style-type: none"> • 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. Graphics Cards: Supports up to 3 x 300W Graphic Cards via HP ML370 G6 and DL370 G6 Graphic Card Cable Kit, 537721-B21 NOTE: Please see the HP Power Advisor for estimated power consumption of your individual system configuration prior to installing GPUs. The HP Power Advisor is located at: www.hp.com/go/hppoweradvisor . NOTE: 2 PCIe Gen2 x16 (mechanical/electrical); 1 PCIe Gen2 x16 (mechanical) x8 (electrical)	
Form Factor	4U Rack Optimized Chassis and (7 in, 17.8 cm) NOTE: Redesigned 4U Rack Optimized Chassis to better meet our customer's density requirements.	
HP Insight management software	HP Insight Control	HP Insight Control, included with every HP Business Data Warehouse Appliance, 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. 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 Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO

Standard Features

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 DVD
- HP ProLiant Smart Update Firmware DVD

SmartStart version supported (minimum): SmartStart 8.20
<http://www.hp.com/servers/smartstart>

Configuration Information - Factory Integrated Models

NOTE: This section lists the standard features included in the HP Business Data Warehouse Appliance

NOTE: All components are factory integrated.

NOTE: Software is preinstalled and preconfigured. Licenses are not included for SQL Server 2008 R2 Enterprise edition and must be ordered separately.

NOTE: 3 year HP Support Plus 24 is included for the HP components and may be upgraded to higher support levels

Step 1: Order HP's Business Data Warehouse Appliance

HP Business Data Warehouse Appliance	HP Business Data Warehouse Appliance	652632-B21
	HP Business Data Warehouse Appliance configuration includes the following:	

- **Processor**
 - (2) Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Processors
- **Cache Memory**
 - 12MB (1 x 12MB) L3 cache
- **Memory**
 - 96GB (12 x 8GB) RDIMM
- **Network Controller**
 - HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter
- **PCI-Express Slots**
 - 10 PCI-Express Gen2 expansion slots - (6) available
- **Storage Controllers**
 - HP Smart Array P410i/1 GB with FBWC
 - HP Smart Array P410/1GB with FBWC
 - HP Smart Array P812/1G with FBWC
- **Hard Drives**
 - (2) 300GB 6G SAS 10K rpm SFF Drives
 - (22) 600GB 6G SAS 10K rpm SFF Drives
- **Internal Storage**
 - (3) 8 bay, SFF drive cages installed with (2) SFF SAS HD Bays (300 GB); (22) SFF SAS (600 GB)
- **Power Supply**
 - (2) HP 750W Common Slot High Efficiency Power Supply Kits (hot plug, redundant)
- **Fans**
 - (5) Fully Redundant Hot Plug Fans
- **Software**
 - Microsoft Windows Server® 2008 R2 SP1 Enterprise Edition (including license)
 - Microsoft SQL Server 2008 R2 Enterprise edition (license required)
- **Insight Control**
 - HP Insight Control No Media single server license, including 3 years of 24x7 Technical Support and Updates
- **Support**
 - 3 year HP Support Plus 24 (24x7 hardware and software support with 4 hour on-site hardware response time)
- **Deployment**
 - Sliding rails for in rack servicing ship standard
- **Form Factor**
 - 4U Rack

Configuration Information - Factory Integrated Models

Step 2: Choose HP Care Pack Support

HP Service and Support 3year HP Support Plus 24 is included with HP Business Data Warehouse Appliance. Customers have the opportunity to upgrade to Proactive 24 Service or Critical Service, or to add Proactive Select to these reactive support Care Packs.

To upgrade support levels, one of the following support offers may be selected:

- **HP Support Plus 24 - 4yr or 5yr**
 - For a higher return on your server and storage technology, our 3-year combined reactive support service delivers integrated onsite hardware/software support services available 24x7x365, including access to HP technical resources, 4-hour response onsite hardware support and software updates.
- **HP Critical Advantage - 3yr, 4yr, or 5yr**
 - Provides an assigned account team to deliver support and maintain uptime of business-critical, virtualized environments. An end-to-end infrastructure support solution (x86 server, OS/hypervisor, storage and network support), Critical Advantage provides flexible reactive hardware service levels, proactive services, and access to the Global Mission Critical Solution Center for business critical applications running on virtualized x86 infrastructures. Choose between Level 2 for 24x7 reactive or Level 3 for 6 hour Call-to- Repair.
- **HP Proactive 24 Service - 3yr, 4yr or 5yr**
 - Provides improved stability, availability and operational effectiveness with an integrated hardware and software support service that combines industry-leading reactive technical assistance with proactive account services, giving your IT manage support from a team of service specialists.
- **HP Critical Service - 3yr, 4yr or 5yr**
 - Provides comprehensive proactive and reactive support designed for businesses that run essential mission-critical applications where downtime is not an option.
- **HP Proactive Select - 3yr, 4yr, or 5yr**
 - Provides an assigned account support manager focused on technical and operational improvements specific to your business environment and proactive service credits that can be redeemed for the service activities of your choice. In addition, you can select HP Priority Connect as an HP Proactive Select menu option to gain priority incident-based access to expert reactive support from the HP Global Mission Critical Solution Center.

HP Support Plus 24 - 4yr or 5yr

4yr Support Plus 24	HA110A4
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5yr Support Plus 24	HA110A5
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HP Proactive 24 Service - 3yr, 4yr or 5yr

3yr Proactive 24 Service	HA111A3
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4yr Proactive 24 Service	HA111A4
--------------------------	---------

5yr Proactive 24 Service	HA111A5
--------------------------	---------

HP Critical Service - 3yr, 4yr or 5yr

3yr Critical Service	HA112A3
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4yr Critical Service	HA112A4
----------------------	---------

5yr Critical Service	HA112A5
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Power Specifications

HP 750W Common Slot Gold Hot Plug Power Supply Kit							
Part Number	512327-B21						
Input Voltage Range (V rms)	100 to 240						
Frequency Range (Nominal) (Hz)	50/60						
Nominal Input Voltage (Vrms)	100	120	200	208	220	230	240
Maximum Rated Output Wattage Rating	750	750	750	750	750	750	750
Nominal Input Current (A rms)	8.9	7.4	4.3	4.1	3.9	3.7	3.6
Maximum Rated Input Wattage Rating (Watts)	857	847	824	824	820	820	820
Maximum Rated VA (Volt-Amp)	894	884	859	854	854	854	
Efficiency (%)	87.5	88.5	91	91	91.5	91.5	91.5
Power Factor	0.97						
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Maximum Inrush Current (A peak)	30						
Maximum Inrush Current duration (mS)	20						
Maximum British Thermal Unit Rating (BTU-Hr)	2925	2892	2812	2812	2797	2797	2797

To review typical system power ratings use the Active Answers 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

To drill down to calculators:

- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: ML370 G6
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

QuickSpecs

HP Business Data Warehouse Appliance

Technical Specifications

System Unit	Rack Dimensions (H x W x D) (with bezel)	6.88 x 19.03 x 27.53 in (17.48 x 48.34 x 69.93 cm)		
	Rack Weight (approximate)	Maximum	85.69 lb (38.87 kg)	
		(All hard drives, power supply, and processor installed)		
		Minimum	55.12 lb (25.00 kg)	
		(one hard drive, power supply, and processor installed)		
	Input Requirements (per power supply)	Rated Line Voltage	90 - 132 VAC, 180 - 264 VAC	
		Rated Input Current	7.5A (at 100 VAC), 3.8A (at 200 VAC)	
		Rated Input Frequency	47 to 63 Hz	
		Rated Input Power	980W (at 100 VAC) 1035W (at 120 VAC) 1170W (at 240 VAC)	
	BTU Rating	Maximum	750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC)	
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			
Power Supply Output (per power supply)	- Click on the system of interest. Example: ML370 G6			
	- Follow the instructions of the next screens.			
	Rated Steady-State Power	460 W (at 100 VAC)		
System Inlet Temperature	Maximum Peak Power	460 W (at 200 VAC) 460 W (at 100 VAC) 460 W (at 200 VAC)		
	Operating	NOTE: See Power Supply Specifications tables for complete details on 750W Power Supply Options.		
		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).			
	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.		
Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.		

QuickSpecs

HP Business Data Warehouse Appliance

Technical Specifications

	Non-operating	10 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
Altitude	Operating	3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
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	
	L WAd	4.6 B for 1P Non-Redundant; 4.9 B for 2P Redundant
	L pAm	28 dB for 1P Non-Redundant; 31 dB for 2P Redundant
	Operating	
	L WAd	4.7 B for 1P Non-Redundant; 5.0 B for 2P Redundant
L pAm	29 dB for 1P Non-Redundant; 32 dB for 2P Redundant	
NOTE: The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.		
Emissions Classification (EMC)	FCC Rating	Class B
	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)
	SAS Connectors	2 internal 4X connectors
	Cache Memory Speed	DDR2-800MHz with 40 or 72-bit wide bus
	Server Interface	x4 PCIe 2.0 provides 2GB/s maximum bandwidth
	SAS Speed	8 6Gb/s SAS links provide 4.8GB/s maximum bandwidth
	Cache Memory	Zero Memory RAID has no cache memory 40-bit 256MB ECC protected cache 1G FBWC Zero Memory, Up to 2 logical volumes (8 physical drives)
	Logical Drives Supported	Up to 64 logical drives with cache
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding) NOTE: RAID 6, 6+0 can be enabled with one of the following combinations: <ul style="list-style-type: none"> 1G FBWC and Smart Array Advanced Pack License key option upgrades RAID 5, 5+0 (Distributed Data Guarding) NOTE: A minimum or 256 MB cache is required to enable RAID 5, 5+0 support RAID 1+0 (Striping & Mirroring) RAID 0 (Striping), RAID 1 (Mirroring)

Smart Array P410 Controller	Dimensions	Embedded
	Disk Drive and Enclosure Interface - Transfer rate	6Gb/s SAS (Serial Attached SCSI)
	SAS Connectors	2 internal 4X connectors
	Cache Memory Speed	DDR2-800MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth.
	Server Interface	8 5G PCIe 2.0 provides 4GB/s maximum bandwidth
	SAS Speed	8 6Gb/s SAS links provide 4.8GB/s maximum bandwidth
	Cache Memory	1G FBWC module
	Logical Drives Supported	Up to 64 logical drives with cache
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space
	RAID Support	RAID 6, 6+0 (Advanced Data Guarding) NOTE: RAID 6, 6+0 can be enabled with one of the following combinations: <ul style="list-style-type: none"> 1G FBWC and Smart Array Advanced Pack License key option upgrades RAID 5, 5+0 (Distributed Data Guarding) NOTE: A minimum or 256 MB cache is required to enable RAID 5, 5+0 support RAID 1+0 (Striping & Mirroring) RAID 0 (Striping), RAID 1 (Mirroring)

Technical Specifications

Smart Array P812 Controller	Dimensions	Embedded
	PCI Label	PCIe2 x8 (i.e., x8 mechanical, up to x8 electrical)
	PCI Link Rate	8.5 GT/s PCI Express (4 GB/s maximum bandwidth in each direction)
	SAS Connectivity	Mini SAS 4i connectors 4 Mini SAS 4x connectors
	SAS Link Rate	SAS protocol: 6 Gb/s, 3 Gb/s, or 1.5 Gb/s
	SAS Performance	Controller supports a maximum of 4.8 GB/s maximum bandwidth in each direction (allocated across all the connectors)
	RAID Cache	1 GiB capacity (not all of which is available for user data) 64-bit data width with 8-bit error correcting code (ECC) 64-bit data width with 8-bit error correcting code (ECC) Flash-backed on power loss Tether to capacitor pack Removable
	RAID Cache Bus Speed	DDR2-800 (6.4 GiB/s maximum bandwidth)
	Software upgradeable Firmware	Yes
	Maximum Drive Count	108 drives (e.g., 108 TB with 108 x 1 TB SATA 3.5" MDL HDD) support
	System Memory Addressing	64-bit, supporting servers memory space greater than 4 GiB
	RAID Support	RAID 6 (Advanced Data Guarding) RAID 60 RAID 5 (Distributed Data Guarding) RAID 50 RAID 1+0 (Striping & Mirroring) RAID 1 (Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Flashable ROM with redundant firmware images

NC375i Integrated Quad Port Multifunction Gigabit Server Adapter	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX	
		IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
		IEEE 802.3ad 1000Base-TX	
		IEEE 802.1p 100Base-TX	
		IEEE 802.1q 100Base-TX	
	Data Transfer Method	PCI Express, four lanes (x4)	
	Controller	Qlogic/NetXen NX3031	
	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	

Technical Specifications

Connector	RJ-45	
Cable Support	10Base-T	Categories 3, 4 or 5 UTP up to 328 ft (100 m)
	100Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)
	1000Base-TX	Category 5 or higher UTP; up to 328 ft (100 m)

HP Integrated Lights-Out 2 (iLO 2) integrated on system board	Architecture	32-bit PCI-based health and remote management ASIC
	Processor	32-bit RISC processor core running at 66MHz
	Upgradeability	Option firmware upgradeable via Flash ROM
	Operating System Support	Microsoft Windows Server 2008 Enterprise Edition (32bit and 64bit)
	Client Browser Support	Microsoft Internet Explorer 7 Microsoft Internet Explorer 6 Firefox 3.5 (on supported Windows and Linux systems) Firefox 3.0 (on supported Windows and Linux systems)
	Command Line Support	Telnet, Secure Shell and serial port access Secure Socket Layer Secure Shell version 2 (Password and certificate)
	Security	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface RC4 encryption of video
	Directory Support Services	Active Directory v1.0 (Windows 2003)
	Driver Support	Health Driver (HP ProLiant iLO 2 Management Controller Driver) iLO Management Channel Interface Driver
	Management protocols supported	SNMP 2, IPMI 2.0 (KCS interface), DMTF Server Management Command Line Protocol Specification (SM CLP), DMTF Web Services Management Specification (WS Management)

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

Technical Specifications

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