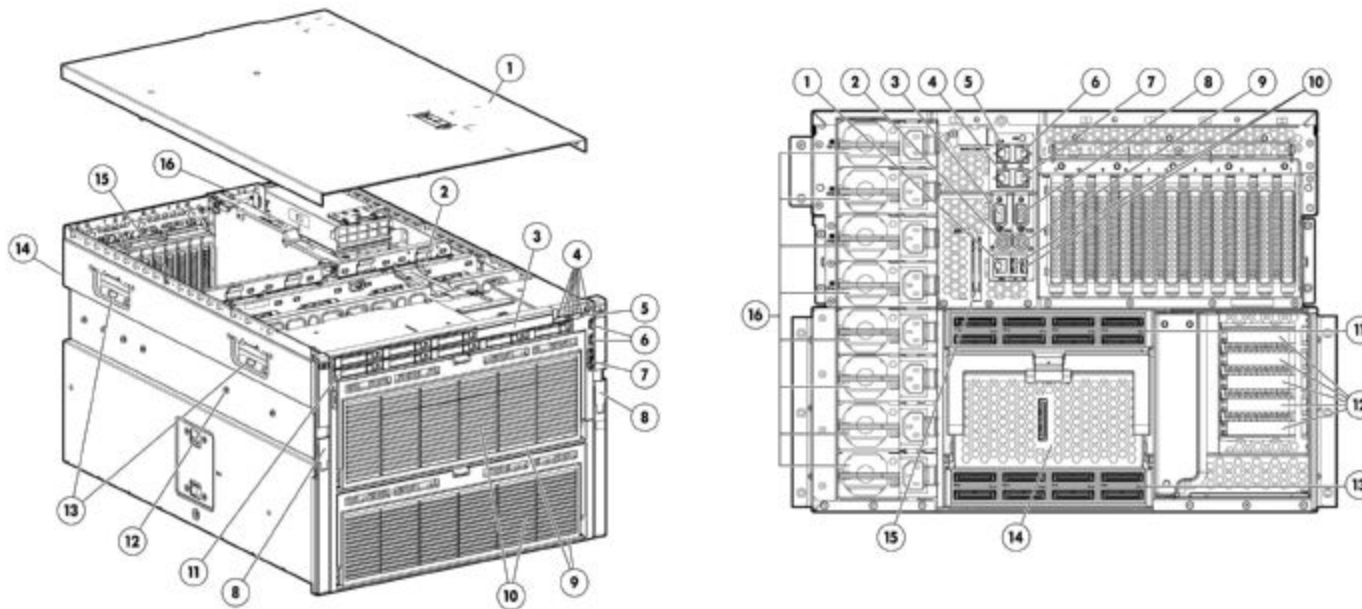


Overview



Front View:

1. Quick removal access panel
2. 8 hot plug redundant fans standard on all models, upper four fan positions shown, lower four not shown
3. DVD drive bay
4. Front panel LED display and Power button
5. Slide-out System Insight Display
6. Two front accessible USB 2.0 ports
7. One front video port
8. Quick release lever for fast server access
9. Upper and lower front accessible processor and memory drawer
10. Support for up to eight 8-core Intel Xeon processors (4 processors in upper and 4 processors in the lower drawer)
11. Support for up to 8 small form factor (SFF) SAS drives
12. Universal tool-less "Snap In" Sliding Rail Solution
13. Server lifting handles
14. 8U rack form factor
15. Up to 11 full height/full length slots supported
16. Hot Plug Redundant Power Supplies (4 or 8 depending on the model)

Rear View:

1. Integrated Lights-Out 3 port
2. Mouse port
3. Serial port
4. Gigabit NIC port
5. Gigabit NIC port
6. Gigabit NIC port
7. Gigabit NIC port
8. Video port
9. Keyboard port
10. Two USB ports
11. Upper XNC ports
12. Up to 5 low profile slots supported
13. Lower XNC ports
14. XNC module
15. Service tool
16. Power supplies (4 or 8 depending on the model)

At A Glance

HP ProLiant DL980 G7 with HP PREMA Architecture is an eight socket server built to handle the largest x86 enterprise environments with confidence. The DL980 G7 blends industry standard economies with advanced mission critical capabilities to deliver balanced scaling, self healing resiliency and breakthrough efficiencies needed in essential enterprise compute environments. Whether housing a single very large data intensive workload, or many consolidated or virtualized workloads to improve resource utilization, the DL980 G7 featuring PREMA Architecture with Smart CPU caching and a redundant system fabric, is designed to reduce bottlenecks, improve throughput and performance, as well as deliver enhanced reliability not previously available in an x86 environment.

● Processors:

- Intel® Xeon® 6500 or 7500 series processors with up to 8-cores per processor
- Supports up to eight Intel® Xeon® 6500 or 7500 series processors per system
- New Intel Microarchitecture with Intel Virtualization Technology FlexMigration
- Up to three Industry Standard Intel® 7500 Chipsets with six high-speed interconnects up to 6.4GT/s

● Memory:

- PC3-10600R Fully Buffered DIMMs (DDR3)
- Can be configured in Mirrored, Online Spare, or Advanced ECC modes

● Storage Controller:

- HP Smart Array P410i with optional Flash Backed Write Cache (FBWC)

● Internal Drive Support:

- Support for up to 8 hot plug SFF SAS drives
- HP Slim SATA DVD RW Optical Drive

● Network Controller:

- HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter

● Expansion Slots:

- Up to 16 slots supported: 11 full length/full height and 5 low profile slots

Overview

- Base I/O backplane configuration: 2 PCI-E 2.0 x8, 3 PCI-E x4
- Optional full height/full length I/O backplanes - (choose only one)
 - 2 PCI-E 2.0 x16, 1 PCI-E 2.0 x4, 2 PCI-X
 - 4 PCI-E 2.0 x8, 1 PCI-E 2.0 x4, 1 PCI-E 1.1 x4
- Optional low profile I/O backplane
 - 4 PCI-E 2.0 x8, 1 PCI-E 2.0 x4
- **Ports:**
 - Front: USB (2), Video
 - Rear: USB (2), Video, NIC
 - Internal: USB (2), SD slot (1)
- **Redundancy:**
 - Rear accessible Hot Plug Power Supplies with option for redundancy (Redundant power supplies are standard on some models)
 - Eight Hot Plug Redundant Fans standard
- **Infrastructure Management:**
 - Convenient slide-out Systems Insight Display for quick and easy front view server diagnostics, along with status LEDs, Automatic Server Recovery (ASR), ROM Based Setup Utility (RBSU)
 - HP Integrated Lights-Out 3 management processor for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
 - HP Insight Control a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
 - HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.
- **Form Factor:**
 - 8U rack models
- **Operating Systems:**
 - Supports Windows Server, RHEL, SLES, OEL, and VMware
- **Deployment/Serviceability:**
 - Front and rear video ports
 - Front accessible processor, and memory allow server to stay safely secured in the rack during servicing
 - Quick Deploy Rail System includes sliding universal rails, an ambidextrous cable management arm and quick release levers for fast and easy serviceability and in-rack tool-less access to major components
 - 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 resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

NOTE: Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Standard Features

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

| | |
|--|---|
| Processor | Eight-Core Processors |
| Four or eight of the following processors depending on model | Intel Xeon® X7560 Processor (2.26GHz, 24MB cache, 130W) |
| | Intel Xeon® X6550 Processor (2.00GHz, 18MB cache, 130W) |
| | Six-Core Processors |
| | Intel Xeon® E6540 Processor (2.00GHz, 18MB cache, 105W) |
| | Four-Core Processors |
| | Intel Xeon® E7520 Processor (1.86GHz, 18MB cache, 95W) |

| | |
|----------------|--|
| Chipset | Industry Standard Intel® 7500 Chipset Hewlett-Packard DL980 G7 Node Controller |
| | NOTE: For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/ |

| | |
|--------------------------|---|
| Memory Protection | Advanced ECC Mirrored Memory Online Spare Memory Rank |
|--------------------------|---|

| | | |
|---|----------|---|
| Memory | Type | PC3-10600R Fully Buffered DIMMs (DDR3) |
| One of the following depending on Model | Standard | 128GB (16 x 8GB) or 256GB (32 x 8GB) depending on Model |
| | Maximum | 2TB (128 x 16GB) |

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

| Expansion Slots | | | | | | | |
|-------------------------------------|------------------|------------------|-------|------------------|----------------|-------------|-------|
| Expansion Slots with No Option Card | Expansion Slot # | Technology | Width | Connector Width* | Bus Number(**) | Form Factor | Notes |
| | 1 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 2 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 3 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 4 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 5 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 6 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 7 | PCI Express Gen2 | x4 | x8 | 0x05 | FH/FL | |
| | 8 | PCI Express Gen2 | x4 | x8 | 0x08 | FH/FL | |
| | 9 | PCI Express Gen2 | x8 | x16 | 0x0B | FH/FL | |
| | 10 | PCI Express Gen2 | x4 | x8 | 0x0E | FH/FL | |
| | 11 | PCI Express Gen2 | x8 | x16 | 0x11 | FH/FL | |

* 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).
 FL= Full length; FH = Full height; LP = low-profile.

Standard Features

| Expansion Slots | | | | | | | |
|---|------------------|------------------|--------|------------------|-------------------|-------------|--------|
| Expansion Slots with Combination PCI-X, PCI-e and 300W GPU I/O Expander | Expansion Slot # | Technology | Width | Connector Width* | Bus Number(*)(**) | Form Factor | Notes |
| | 1 | PCI-X | 64-bit | N/A | 0x72 (Device 1) | FH/FL | 100MHz |
| | 2 | PCI-X | 64-bit | N/A | 0x72 (Device 2) | FH/FL | 100MHz |
| | 3 | PCI Express Gen2 | x16 | x16 | 0x76 | FH/FL | |
| | 4 | PCI Express Gen2 | x4 | x8 | 0x79 | FH/FL | |
| | 5 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 6 | PCI Express Gen2 | x16 | x16 | 0x84 | FH/FL | |
| | 7 | PCI Express Gen2 | x4 | x8 | 0x05 | FH/FL | |
| | 8 | PCI Express Gen2 | x4 | x8 | 0x08 | FH/FL | |
| | 9 | PCI Express Gen2 | x8 | x16 | 0x0B | FH/FL | |
| | 10 | PCI Express Gen2 | x4 | x8 | 0x0E | FH/FL | |
| | 11 | PCI Express Gen2 | x8 | x16 | 0x11 | FH/FL | |

* 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).
 FL= Full length; FH = Full height; LP = low-profile.

| Expansion Slots | | | | | | | |
|---|------------------|------------------|-------|------------------|-------------------|-------------|-------|
| Expansion Slots with Standard PCI-e option I/O Expander | Expansion Slot # | Technology | Width | Connector Width* | Bus Number(*)(**) | Form Factor | Notes |
| | 1 | PCI Express Gen1 | x4 | x8 | 0x71 | FH/FL | |
| | 2 | PCI Express Gen2 | x8 | x16 | 0x74 | FH/FL | |
| | 3 | PCI Express Gen2 | x8 | x16 | 0x77 | FH/FL | |
| | 4 | PCI Express Gen2 | x4 | x8 | 0x7A | FH/FL | |
| | 5 | PCI Express Gen2 | x8 | x16 | 0x84 | FH/FL | |
| | 6 | PCI Express Gen2 | x8 | x16 | 0x87 | FH/FL | |
| | 7 | PCI Express Gen2 | x4 | x8 | 0x05 | FH/FL | |
| | 8 | PCI Express Gen2 | x4 | x8 | 0x08 | FH/FL | |
| | 9 | PCI Express Gen2 | x8 | x16 | 0x0B | FH/FL | |
| | 10 | PCI Express Gen2 | x4 | x8 | 0x0E | FH/FL | |
| | 11 | PCI Express Gen2 | x8 | x16 | 0x11 | FH/FL | |

* 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).
 FL= Full length; FH = Full height; LP = low-profile.

Standard Features

| Expansion Slots | | | | | | | |
|--|------------------|------------------|-------|------------------|-------------------|-------------|-------|
| Expansion Slots with Low Profile I/O expander (PCI-e option) | Expansion Slot # | Technology | Width | Connector Width* | Bus Number(*)(**) | Form Factor | Notes |
| | 7 | PCI Express Gen2 | x4 | x8 | 0x05 | FH/FL | |
| | 8 | PCI Express Gen2 | x4 | x8 | 0x08 | FH/FL | |
| | 9 | PCI Express Gen2 | x8 | x16 | 0x0B | FH/FL | |
| | 10 | PCI Express Gen2 | x4 | x8 | 0x0E | FH/FL | |
| | 11 | PCI Express Gen2 | x8 | x16 | 0x11 | FH/FL | |
| | 12 | PCI Express Gen2 | x8 | x16 | 0x71 | LP | |
| | 13 | PCI Express Gen2 | x8 | x16 | 0x74 | LP | |
| | 14 | PCI Express Gen2 | x4 | x8 | 0x77 | LP | |
| | 15 | PCI Express Gen2 | x8 | x16 | 0x7A | LP | |
| | 16 | PCI Express Gen2 | x8 | x16 | 0x84 | LP | |

* 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).

FL= Full length; FH = Full height; LP = low-profile.

| Expansion Slots | | | | | | | |
|--|------------------|------------------|--------|------------------|-------------------|-------------|--------|
| Expansion Slots with Combination PCI-X, PCI-e and 300W GPU and Low Profile PCI-e I/O Expanders | Expansion Slot # | Technology | Width | Connector Width* | Bus Number(*)(**) | Form Factor | Notes |
| | 1 | PCI-X | 64-bit | N/A | 0x52 (Device 1) | FH/FL | 100MHz |
| | 2 | PCI-X | 64-bit | N/A | 0x52 (Device 2) | FH/FL | 100MHz |
| | 3 | PCI Express Gen2 | x16 | x16 | 0x56 | FH/FL | |
| | 4 | PCI Express Gen2 | x4 | x8 | 0x59 | FH/FL | |
| | 5 | N/A | N/A | N/A | N/A | N/A | N/A |
| | 6 | PCI Express Gen2 | x16 | x16 | 0x5C | FH/FL | |
| | 7 | PCI Express Gen2 | x4 | x8 | 0x05 | FH/FL | |
| | 8 | PCI Express Gen2 | x4 | x8 | 0x08 | FH/FL | |
| | 9 | PCI Express Gen2 | x8 | x16 | 0x0B | FH/FL | |
| | 10 | PCI Express Gen2 | x4 | x8 | 0x0E | FH/FL | |
| | 11 | PCI Express Gen2 | x8 | x16 | 0x11 | FH/FL | |
| | 12 | PCI Express Gen2 | x8 | x16 | 0xA1 | LP | |
| | 13 | PCI Express Gen2 | x8 | x16 | 0xA4 | LP | |

Standard Features

| | | | | | | | |
|--|----|------------------|----|-----|------|----|--|
| | 14 | PCI Express Gen2 | x4 | x8 | 0xA7 | LP | |
| | 15 | PCI Express Gen2 | x8 | x16 | 0xAA | LP | |
| | 16 | PCI Express Gen2 | x8 | x16 | 0xAD | LP | |

* 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).

FL= Full length; FH = Full height; LP = low-profile.

Expansion Slots

| Expansion Slots with Standard PCI-e and Low Profile PCI-e option I/O Expanders | Expansion Slot # | Technology | Width | Connector Width* | Bus Number(*)(**) | Form Factor |
|--|------------------|------------------|-------|------------------|-------------------|-------------|
| | 1 | PCI Express Gen1 | x4 | x8 | 0x51 | FH/FL |
| | 2 | PCI Express Gen2 | x8 | x16 | 0x54 | FH/FL |
| | 3 | PCI Express Gen2 | x8 | x16 | 0x57 | FH/FL |
| | 4 | PCI Express Gen2 | x4 | x8 | 0x5A | FH/FL |
| | 5 | PCI Express Gen2 | x8 | x16 | 0x5D | FH/FL |
| | 6 | PCI Express Gen2 | x8 | x16 | 0x60 | FH/FL |
| | 7 | PCI Express Gen2 | x4 | x8 | 0x05 | FH/FL |
| | 8 | PCI Express Gen2 | x4 | x8 | 0x08 | FH/FL |
| | 9 | PCI Express Gen2 | x8 | x16 | 0x0B | FH/FL |
| | 10 | PCI Express Gen2 | x4 | x8 | 0x0E | FH/FL |
| | 11 | PCI Express Gen2 | x8 | x16 | 0x11 | FH/FL |
| | 12 | PCI Express Gen2 | x8 | x16 | 0xA1 | LP |
| | 13 | PCI Express Gen2 | x8 | x16 | 0xA4 | LP |
| | 14 | PCI Express Gen2 | x4 | x8 | 0xA7 | LP |
| | 15 | PCI Express Gen2 | x8 | x16 | 0xAA | LP |
| | 16 | PCI Express Gen2 | x8 | x16 | 0xAD | LP |

* 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).

FL= Full length; FH = Full height; LP = low-profile.

Storage Controller HP Smart Array P410i controller with optional FBWC

Storage Data Protection

The Flash Backed Write Cache (FBWC) increases cache data retention capabilities from two days of existing battery backed write cache (BBWC) to infinite data retention.

- Standard on 4P Models, optional on factory integrated models
- Transportable data protection
- Increases overall controller performance

Standard Features

| | | | |
|---|---|--|-----------|
| Storage | Optical Drive | Slimline DVD Drive standard | |
| | Hard Drives | None ship standard | |
| | Hard Disk Drive Backplane | Internal SAS backplane supports up to eight SFF hard disk drives | |
| Maximum Internal Storage Type | Hot Plug SFF SAS | 2.4TB | 8 x 300GB |
| Interfaces | Serial | 1 | |
| | Pointing Device (Mouse) | 1 | |
| | Video | 1 front; 1 rear | |
| | Keyboard | 1 | |
| | USB 2.0 Ports | 6 total: 2 front; 2 rear; 2 internal | |
| | | NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html | |
| | iLO 3 Remote Management | 1 | |
| Network RJ-45 | 4 | | |
| Graphics | Integrated ATI ES1000 with 32MB embedded video SDRAM Max Resolution 1280 x 1024 x 16M color | | |
| Form Factor | Rack (8U = 14 inches), ships with Quick Deploy Sliding Rail System, an ambidextrous cable management arm and quick release levers for fast and easy serviceability and in-rack tool-less access to major components. | | |
| HP Insight Management Control Software | HP Insight Foundation | <p>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.</p> <p>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.</p> <p>The foundation pack includes:</p> <ul style="list-style-type: none"> ● HP SmartStart ● HP Management ● HP ProLiant Firmware Maintenance <p>SmartStart version supported (minimum): SmartStart 8.5 http://www.hp.com/servers/smartstart</p> | |
| | HP Integrated Lights-Out (iLO) | <p>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. HP iLO can be purchased stand-alone and it also is included with the purchase of HP Insight Control. For more information, visit: www.hp.com/go/iLO</p> | |
| HP Insight Control | <p>HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.</p> <p>Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol</p> | | |

Standard Features

HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: <http://www.hp.com/services/insight>.

HP Insight Dynamics for ProLiant

HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. As a powerfully integrated by design toolkit to accelerate complex technology projects and simplify daily operations that ultimately enable IT Staff personnel to dynamically keep pace with the organizations changing business requirements. It enables them to plan capacity and power continuously, balance across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location.

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

Industry Standard Compliance

ACPI 2.0. Compliant
 PCIE 2.0 Compliant
 PXE Support
 WOL Support
 Physical Address Extension (PAE) Support
 Microsoft® Logo certifications
 USB 2.0 Support

Intelligent Manageability

HP Systems Insight Manager
 SmartStart
 Redundant ROM
 Remote Flash ROM
 Management Agents
 Integrated Management Log (IML)
 Automatic Server Recovery-2 (ASR-2)
 ROM-Based Setup Utility (RBSU)
 Dynamic Sector Repairing (with Smart Array Controllers)
 Drive Parameter Tracking (with Smart Array Controllers)
 Pre-Failure Warranty (covers processors, SAS hard drives and memory)
 Redundant/adaptive load balancing NIC Support
 Hot Spare Boot
NOTE: Upon the event of a failed processor in a multi-processing environment, the system will automatically reboot and use the remaining good processor(s).

Standard Features

Availability

HP Advanced Memory Protection Technology - delivers unsurpassed memory protection and server availability with the following supported modes of operation:

- **Advanced ECC**
Advanced ECC Memory is the default memory protection mode for the HP ProLiant DL980 G7. In Advanced ECC, the server is protected against correctable memory errors. The server will provide notification if the level of correctable errors exceeds a predefined threshold rate. The server does not fail because of correctable memory errors. Advanced ECC provides additional protection over Standard ECC in that it is possible to correct certain memory errors that would otherwise be uncorrectable and result in server failure. Whereas Standard ECC can correct single-bit memory errors, Advanced ECC can correct single-bit and multi-bit memory errors if all failed bits are on the same DRAM device on the DIMM.
- **Online Spare Memory Rank (customer option)**
Offers a higher level of memory protection than Advanced ECC alone. If the number of single-bit correctable errors on a rank exceeds the pre-defined error threshold, that rank will fail over to the online spare rank without intervention or server interruption. The failed memory can then be replaced at the user's convenience during a scheduled maintenance window.
Online Spare Memory is achieved by protecting active memory with online spare memory on the same memory board. No operating system support is required.
- **Mirrored Memory (customer option)**
Mirrored Memory provides a higher level of availability than Advanced ECC and Online Spare Memory. With Mirrored Memory, the server is protected against uncorrectable memory errors that would otherwise result in server failure. Mirrored Memory allows the server to keep two copies of all memory data. If an uncorrectable error is encountered, the proper data is retrieved from the copy of memory that did not fail.
- Smart Array P410i Controller with optional Flash Backed Write Cache (FBWC) Enabler provides transportable data protection and increases overall controller performance. Up to 1G Flash Backed Write Cache protection optional on HP ProLiant DL980 G7 (512MB FBWC ships standard with 4P Models).
- Hot Plug Redundant Fans - Eight Hot Plug Redundant Fans ship standard with all models.
- Front Accessible Chassis - Redesigned chassis allows access to memory, processors and hard drives from the front of the server while it remains safely engaged in the rack. This provides easier serviceability and lowers the chance of interfering with neighboring servers' cables and components.
- Hot Plug Universal Drives - Up to eight Hot Plug Universal SFF SAS drives are supported.
- Hot Plug Redundant Power Supplies - Four or eight Hot Plug Redundant Power Supplies ship standard with 4P Base Models

Serviceability

- Front and Rear accessibility provides unsurpassed serviceability by allowing the server to remain safely secured in the rack while maintaining Hot Plug Universal Hard Drives, Hot Plug Redundant Power Supplies, and Memory.
- Innovative Diagnostic Lighting
- Systems Insight Display - precisely depicts all major subsystems of the server (Processors, Memory, CPU, Fans, circuit board Interlock, over-temperature status) and gives instant visual indication of fault status.
- Tool-less interior design
 - Tool-less access to interior of server
 - Rear Access to Hot Plug Redundant Power Supplies
 - PCI Card Guides locks full length PCI cards in place
 - Upper four fans are individually removable. Lower four fans are removable in pairs only.
 - Processor Retention Cage securely locks Processors into their sockets
 - Tool-less removal of system board
- Quick Deploy Rails
 - Tool-less design "snap in" rail and ambidextrous cable management arm

Security

Power-on password
Keyboard password
External USB port enable/disable
Network Server Mode
Serial interface control
Administrator's password
Removable CD-ROM or DVD drive

Standard Features

Security Trusted Platform Module

The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to: www.hp.com/go/TPM

NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.
NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

Server Power Cords

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

Power Supply

E5640 4P Model: (4) 1200W AC Power Supplies (220VAC only)
X6550 4P Model: (8) 1200W AC Power Supplies (220VAC only)

Power Supply Requirement Override

NOTE: The HP ProLiant DL980 G7 requires Four Power Supplies to operate without power redundancy. Eight power supplies are required for power redundancy. The level of redundancy will be reported during the system power on. For planning purposes you can use the Power Advisor (www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor) which is more accurate to determine the power requirements. Also, there is an RBSU override switch capability that allows the user to override the base setting if the Power Advisor indicates the configuration is acceptable for low line operation.

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.

System Fans

8 Hot plug, redundant fans ship standard

Required Cabling

For required cabling information, refer to the HP Web site at: www.hp.com/servers/dl980g7

Operating Systems and Microsoft Windows Server

Virtualization Software Microsoft Windows Server Hyper V

Support for ProLiant Servers

Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
Oracle Enterprise Linux (OEL)
VMware

NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: <http://www.hp.com/go/ossupport> and our driver download page www.hp.com/support/DL980G7.

Standard Features

Rack Airflow Requirements

Rack 10000 G2 series Cabinets

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

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

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

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

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: <http://www.hp.com/servers/dl980>.

Rack Kit

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

NOTE: Cable management arm must be removed to access Hot Plug Power Supplies when the cable management arm is mounted on the right.

Telco Rack Support

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

Factory Express Portfolio for Servers and Storage

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

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

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

HP Enterprise Configurator

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

<http://www.hp.com/products/configurator>

Standard Features

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

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

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

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

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

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

- Support: 3-Year Support Plus 24 only

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

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

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

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

Models

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

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

| | | |
|--|------------------------------|---|
| HP DL980G7 E6540 6 core 2.0GHz 4p Svr AM445A | Processor(s) | (4) Intel Xeon® E6540 Processor (2.00GHz, 18MB cache, 105W) |
| | Memory | 128GB (16 x 8GB) PC3-10600R Fully Buffered DIMMs (DDR3) |
| | Network Controller | HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter |
| | Storage Controller | HP Smart Array P410i Controller with 512MB FBWC |
| | Hard Drives | None ship standard |
| | Internal Storage | 2.4TB max (with optional 300GB SAS hard drives) |
| | Power Supplies | Four power supplies standard Optional upgrade to eight power supplies for redundancy |
| | Optical Drive | Slimline DVD |
| | Integrated Lights-Out | HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board) |
| | Form Factor | Rack 8U |

| | | |
|--|------------------------------|--|
| HP DL980G7 X6550 8 core 2.0GHz 4p Svr AM444A | Processor(s) | (4) Intel Xeon® X6550 Processor (2.00GHz, 18MB cache, 130W) |
| | Memory | 256GB (32 x 8GB) PC3-10600R Fully Buffered DIMMs (DDR3) |
| | Network Controller | HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter |
| | Storage Controller | HP Smart Array P410i Controller with 512MB FBWC |
| | Hard Drives | None ship standard |
| | Internal Storage | 2.4TB max (with optional 300GB SAS hard drives) |
| | Power Supplies | Eight power supplies standard (fifth - eighth power supply are for redundancy) |
| | Optical Drive | Slimline DVD |
| | Integrated Lights-Out | HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board) |
| | Form Factor | Rack 8U |

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 only available as a Factory Installable Option.

Step 1: Base Configuration

| | | |
|------------------|--|--------|
| HP Models | HP ProLiant DL980 CTO system | AM426A |
| | Factory Integrated Model ships with: | |
| | HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter | |
| | Eight HP Memory Boards | |
| | Five PCI-express slots | |
| | HP Smart Array P410i Controller | |
| | Four hot-plug power supplies | |
| | Eight redundant hot plug fans | |
| | SFF SAS drive cage | |
| | HP Integrated Lights-Out 3 (iLO 3) management processor (integrated on system board) | |
| | Rack form factor, 8U | |

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

| | | |
|----------------------|---|------------|
| HP Processors | NOTE: Each processor kit contains four processors. | |
| | NOTE: If eight processors are desired select one xxxxxx-L21 and one xxxxxx-B21. Additionally one HP DL980 CPU Assembly (P/N: AM442A) will be required. | |
| | Eight-Core Processors | |
| | Intel Xeon Processor Model X7560 (2.26GHz, 24MB cache, 130W) 4P FIO Kit | 597871-L21 |
| | Intel Xeon Processor Model X6550 (2.0GHz, 18MB cache, 130W) 4P FIO Kit | 597870-L21 |
| | Six-Core Processors | |
| | Intel Xeon Processor Model E6540 (2.0GHz, 18MB cache, 105W) 4P FIO Kit | 597869-L21 |
| | Four-Core Processors | |
| | Intel Xeon Processor Model E7520 (1.86GHz, 18MB cache, 95W) 4P FIO Kit | 597868-L21 |
| HP Memory | Registered DIMMs (RDIMMs) | |
| | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| | HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| | HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| | HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| | HP Memory Board | 588141-B21 |

Step 3: Choose Additional Factory Integratable Options (only one of the following from each list unless otherwise noted)

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

Step 4: Choose Additional Options for Factory Integration

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

Core Options

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

| | | |
|--------------------------|--|------------|
| HP Unique Options | PCI Express I/O Exp. Kit NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4 and one PCI-E 1.1 x4. | 588137-B21 |
| | PCI-X / PCI Express I/O Exp. Kit NOTE: Adds two PCI-E 2.0 x16, one PCI-E 2.0 x4 and two PCI-X. | 588139-B21 |
| | Low Profile PCI Express I/O Expansion Kit NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4. | AM434A |
| | HP DL980 CPU Assembly NOTE: Required for 8p configurations only. | AM442A |

HP Processors **NOTE:** Each processor kit contains four processors. 8P configurations require one HP DL980 CPU Assembly (P/N: AM442A)

Eight-Core Processors

| | |
|--|------------|
| Intel Xeon Processor Model X7560 (2.26GHz, 24MB cache, 130W) 4P Kit | 597871-B21 |
| Intel Xeon Processor Model X6550 (2.0GHz, 18MB cache, 130W) 4P Kit | 597870-B21 |

Six-Core Processors

| | |
|--|------------|
| Intel Xeon Processor Model E6540 (2.0GHz, 18MB cache, 105W) 4P Kit | 597869-B21 |
|--|------------|

Four-Core Processors

| | |
|--|------------|
| Intel Xeon Processor Model E7520 (1.86GHz, 18MB cache, 95W) 4P Kit | 597868-B21 |
|--|------------|

HP Memory

Registered DIMMs (RDIMMs)

| | |
|---|------------|
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| HP Memory Board | 588141-B21 |

NOTE: Eight memory boards come standard in all pre-configured and CTO models. A maximum of 16 memory boards are supported in the server (requires installation of the HP DL980 CPU Assembly P/N: AM442A).

HP Optical Drives

| | |
|------------------------------------|------------|
| HP Slim SATA DVD-ROM Optical Drive | 481041-B21 |
| HP Slim SATA DVD RW Optical Drive | 481043-B21 |

HP Hard Drives

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

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

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

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

Core Options

HP Networking

Gigabit Ethernet Adapters

| | |
|--|------------|
| HP NC112T PCI Express 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 |
| NOTE: There is a maximum of five NC364T PCI Express Quad Port Gigabit Server Adapter NICs allowed in this server. | |
| HP NC375T PCI Express Quad Port Gigabit Server Adapter | 538696-B21 |
| HP NC365T Ethernet Quad Port Server Adapter | 593722-B21 |
| HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter | 458492-B21 |

10 Gigabit Ethernet Adapters

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

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

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

| | |
|--|------------|
| HP NC522SFP Dual Port 10GbE Server Adapter | 468332-B21 |
| HP NC524SFP Dual Port 10GbE Server Adapter | 489892-B21 |
| HP NC550SFP Dual Port 10GbE Server Adapter | 581201-B21 |

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

Smart-mini DIMM Module

| | |
|---|------------|
| HP 512MB DDR2 244P Mini DIMM Module Kit | 519808-B21 |
| NOTE: By plugging the Smart-mini DIMM Module to the HP NC375i Integrated Quad Port Multifunction Gigabit Server Adapter, TCP/IP Offload Engine (TOE) for Windows is enabled/supported. | |

HP InfiniBand

| | |
|--|------------|
| HP IB 4X DDR CX-2 PCI-e G2 Dual Port HCA | 592521-B21 |
| HP IB 4X QDR CX-2 PCI-e G2 Dual Port HCA | 592520-B21 |

HP I/O Expansion Options

| | |
|---|------------|
| PCI Express I/O Exp. Kit | 588139-B21 |
| NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4 and one PCI-E 1.1 x4. | |
| PCI-X / PCI Express I/O Exp. Kit | 588137-B21 |
| NOTE: Adds two PCI-E 2.0 x16, one PCI-E 2.0 x4 and two PCI-X. | |
| Low Profile PCI Express I/O Expansion Kit | AM434A |
| NOTE: Adds four PCI-E 2.0 x8, one PCI-E 2.0 x4. | |

HP Power Supplies

| | |
|--|------------|
| HP 1200W CS Platinum Power Supply 94% Efficiency | 578322-B21 |
|--|------------|

Additional Options

HP Insight Software

HP Insight Control

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

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

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

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

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at:

<http://www.hp.com/go/insightupdates>.

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

HP Insight Control for Linux

| | |
|--|----------|
| HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic | TC213AAE |
| HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates | TC209A |
| HP Insight Control for Linux, Media pack (DVD) - No licenses included | TC208A |

NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: <http://www.hp.com/go/ic-linux> (click on Download button).

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

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

NOTE: For additional License Kits, including electronic licensing options, please see the QuickSpecs at:

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

HP Integrated Lights-Out Advanced (iLO Advanced)

| | |
|---|----------|
| HP Integrated Lights-Out (iLO) Advanced for ProLiant Electronic License, including (1) year of 24x7 Technical Support and Updates | TA850AAE |
|---|----------|

NOTE: This part number (P/N TA850AAE) can be purchased as a single license or as multiple licenses (no minimum) with a single activation key.

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

| | |
|---|------------|
| HP Integrated Lights-Out (iLO) Advanced for ProLiant (1) Server License/(1) Key, No Media, including (1) year of 24x7 Technical Support and Updates | 512485-B21 |
|---|------------|

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

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

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

HP Insight Control server deployment

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

NOTE: Licenses ship without media. The Insight Control Media Kit can be ordered separately, or can be downloaded at:

<http://www.hp.com/go/insightupdates>.

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

Additional Options

Customers in China and Japan should order the physical equivalent.

NOTE: Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s).

Includes one year of 24 x 7 HP Software Technical Support Service.

NOTE: For additional license kits please see the Insight Control QuickSpecs at:
http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html

| | | |
|--------------------------|---------------------------------------|------------|
| HP Security - TPM | HP Trusted Platform Module Option Kit | 488069-B21 |
|--------------------------|---------------------------------------|------------|

HP Storage Controllers SAS Controllers

Smart Array P212 Controller

| | |
|---------------------------------------|------------|
| HP Smart Array P212/256 MB Controller | 462834-B21 |
|---------------------------------------|------------|

Smart Array P411 Controller

| | |
|---------------------------------------|------------|
| HP Smart Array P411/256 MB Controller | 462830-B21 |
|---------------------------------------|------------|

| | |
|---|------------|
| HP Smart Array P411/1G Flash Backed Write Cache | 572531-B21 |
|---|------------|

| | |
|--|------------|
| HP Smart Array P411/512MB Flash Backed Write Cache | 578229-B21 |
|--|------------|

Smart Array P812 Controller

| | |
|--|------------|
| HP Smart Array P812/1G Flash Backed Cache Controller | 487204-B21 |
|--|------------|

Optional Upgrades

NOTE: Maximum of two battery or FBWC kits (for Smart Array Controllers) can be installed in upper full height/full length (FH/FL) I/O slot area. Maximum of one battery or FBWC kit (for Smart Array Controller) can be installed in lower low profile (LP) I/O slot area.

| | |
|---------------------|------------|
| Battery Kit upgrade | 462969-B21 |
|---------------------|------------|

NOTE: Supported on HP Smart Array P212 Controller and HP Smart Array P411 Controller only.

| | |
|-----------------------------|------------|
| 1G Flash Backed Write Cache | 534562-B21 |
|-----------------------------|------------|

| | |
|--------------------------------|------------|
| 512MB Flash Backed Write Cache | 534916-B21 |
|--------------------------------|------------|

| | |
|---|------------|
| HP Smart Array Advanced Pack No Media 1-Server license including 1yr 24x7 Technical Support | 516471-B21 |
|---|------------|

NOTE: This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.

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

http://h18000.www1.hp.com/products/quickspecs/13203_div/13203_div.html
(Smart Array P212 Controller)

http://h18000.www1.hp.com/products/quickspecs/13202_div/13202_div.html
(Smart Array P411 Controller)

http://h18000.www1.hp.com/products/quickspecs/13558_div/13558_div.html
(Smart Array P812 Controller)

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

SAS HBA

| | |
|----------------------------|------------|
| HP SC08Ge Host Bus Adapter | 488765-B21 |
|----------------------------|------------|

| | |
|---------------------------------------|------------|
| HP SC08e 6Gb 2-ports Ext PCIe SAS HBA | 614988-B21 |
|---------------------------------------|------------|

NOTE: This is a 2 x4 External Port HBA

NOTE: This is only approved for the HP StorageWorks P2000 G3 SAS Modular Smart Array.

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

http://h18004.www1.hp.com/products/quickspecs/13082_div/13082_div.html
(SC08Ge HBA)

http://h18004.www1.hp.com/products/quickspecs/13651_div/13651_div.html
(SC08e 6Gb HBA)

Additional Options

| | | |
|-----------------------|----------------------------------|--------|
| HP Power Cords | HP 1.83m 10A C13 CH Power Cord | AF565A |
| | HP 1.83m 10A C13 DK Power Cord | AF566A |
| | HP 1.83m 10A C13 EU Power Cord | AF568A |
| | HP 1.83m 10A C13 UK Power Cord | AF570A |
| | HP 1.83m C13 IT/CL Power Cord | AF571A |
| | HP 2.5m C13 So Africa Power Cord | AF567A |

HP Tape Backup

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

HP StorageWorks DAT 320 USB Tape Drive in 1U USB Rack Kit AP835A

HP StorageWorks DAT 320 SAS Internal Tape Drive AJ830A

NOTE: For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive EH847A

NOTE: For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks LTO-4 Ultrium 1760 Internal Tape Drive EH919A

NOTE: For installation into 1U SAS rack kit (AE459B) or 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks LTO-4 Ultrium 1840 Internal Tape Drive EH860A

NOTE: For installation into 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks LTO-5 Ultrium 3280 Internal Tape Drive EH899A

NOTE: For installation into 3U SAS rack kit (AG576B). No peripheral bay available for installation into the server. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks 1/8 G2 LTO-5 Ultrium 3000 SAS Tape Autoloader BL536A

NOTE: Requires HP 1U Tape Autoloader Rack Kit (AH166A) for rack installation. Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks MSL2024 Tape Library with one LTO-5 Ultrium 3000 SAS Drive BL537A

NOTE: Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks MSL4048 Tape Library with one LTO-4 Ultrium 3000 SAS Drive BL538A

NOTE: Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

HP StorageWorks MSL8096 Tape Library with one LTO-5 Ultrium 3000 SAS Drive BL539A

NOTE: Connection using HP P212 Smart Array Controller SAS (462828-B21) recommended.

Additional Options

HP Disk Backup

NOTE: For the complete range of StorageWorks D2D Backup Systems see: <http://www.hp.com/go/d2d>. For the complete range of StorageWorks RDX drives and media see: <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP StorageWorks disk backup products see: <http://www.hp.com/go/connect>.

HP StorageWorks D2D Backup Systems with Backup Data Deduplication

HP StorageWorks D2D2504i Backup System EJ002B

NOTE: 3.0TB of useable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.

HP StorageWorks D2D4009i Backup System EH939A

NOTE: 7.5TB of useable network disk backup capacity. Network connected appliance with connectivity using the iSCSI protocol. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended.

HP StorageWorks D2D4112fc Backup System EH993B

NOTE: 9.0TB (expandable to 18.0TB) of useable network disk backup capacity. Fibre Channel SAN connected appliance. Direct server attach is not supported, requires connection via SAN fabric.

HP StorageWorks RDX Removable Disk Backup Systems USB

HP StorageWorks RDX500 Internal Removable Disk Backup System AJ934A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 500GB of disk capacity per data cartridge.

HP StorageWorks RDX750 Internal Removable Disk Backup System AW577A

NOTE: For installation into 1U USB Rack-Mount Kit (A8007A). No peripheral bay available for drive installation into the server. 750GB of disk capacity per data cartridge.

HP StorageWorks Options

StorageWorks Fibre Channel HBA

NOTE: The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see: <http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>

Emulex Fibre Channel HBAs

HP StorageWorks 81E PCI-e FC HBA Single Port AJ762A

HP StorageWorks 82E PCI-e FC HBA Dual Port AJ763A

HP StorageWorks FC2142 4Gb PCI-e HBA A8002A

HP StorageWorks FC2242 Dual Channel 4Gb PCI-e HBA A8003A

QLogic Fibre Channel HBAs

HP StorageWorks 81Q PCI-e FC HBA Single Port AK344A

HP StorageWorks 82Q PCI-e FC HBA Dual Port AJ764A

HP StorageWorks FC1142 4Gb PCI-e HBA AE311A

HP StorageWorks FC1242 Dual Channel 4Gb PCI-e HBA AE312A

StorageWorks SCSI HBA

HP U320e SCSI Host Bus Adapter AH627A

NOTE: Recommended HBA for MSL SCSI Tape Library connect.

StorageWorks Converged Network Adapter

HP CN1000E 2P Converged Network Adapter AW520A

NOTE: There is a maximum of two CN1000E 2P Converged Network Adapters allowed in this server.

Additional Options

HP Disk Storage Systems

MSA SAN Storage Arrays

HP StorageWorks 50 Modular Smart Array 364430-B21

NOTE: Please see the QuickSpecs for additional options and configuration information at:

http://h18000.www1.hp.com/products/quickspecs/12245_div/12245_div.html (Worldwide)

Disk Enclosures

HP StorageWorks D2600 Disk Enclosure AJ940A

HP StorageWorks D2700 Disk Enclosure AJ941A

NOTE: Please see the QuickSpecs for additional options and configuration information at:

http://h18000.www1.hp.com/products/quickspecs/13404_div/13404_div.html (Worldwide)

HP Uninterruptible Power Systems

HP Rack-Mountable R5500 UPS

HP R5500 VA UPS, INTL AF416A

HP R5500 VA UPS, NA/JPN AF426A

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/11871_div/11871_div.html (Worldwide)

HP R/T3000 Uninterruptible Power System (UPS)

HP R/T3000 UPS, High voltage, NA/JPN AF453A

HP R/T3000 UPS, High voltage, detachable inlet cord INTL AF454A

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/13417_div/13417_div.html (Worldwide)

NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups.

NOTE: For additional information on sizing your server, please reference: <http://www.upssizer.com>.

HP Power Distribution Unit

HP Monitored Power Distribution Unit: Half Rack Version

HP 4.9 kVA S124 Monitored PDU- single input, 1Ø, 24A (NA/JPN) AF914A

HP 7.3 kVA S132 Monitored PDU- single input, 1Ø, 32A (INTL) AF915A

HP Monitored Power Distribution Unit: Full Rack Version

HP 8.6 kVA S1324 Monitored PDU- single input, 3Ø, 24A (NA/JPN) AF504A

HP 8.3 S1140 Monitored PDU- single input, 1Ø, 40A (NA/JPN) AF506A

HP 11 kVA S1316 Monitored PDU- single input, 3Ø, 16A (INTL) AF508A

HP 7.3 kVA S1132 Monitored PDU- single input, 1Ø, 32A (INTL) AF510A

NOTE: Please see the following QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/12118_div/12118_div.html (Worldwide)

Modular Power Distribution Units 1U/0U (Up to 32 outlets)

NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).

HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC) (NA, Japan) 252663-D72

8.3kVA Model - mPDU, 40A, High (power cord attached) (NA/JPN) 252663-D73

HP Modular Power Distribution Units (mPDU), High Volt Model, 32A (200-240 VAC) (Int'l) 252663-B31

HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW) 252663-B24

NOTE: This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.

NOTE: Please see the following QuickSpecs for additional options including shorter jumper cables and country specific power cords:

http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.html (Worldwide)

NOTE: For additional information on HP Power Distribution Units including accessories please go to: www.hp.com/go/pdu.

Additional Options

| | | |
|-----------------------|--|--------|
| HP Rack Series | HP Rack 10000 G2 Series (Carbon/Graphite Metallic) | |
| | 10642 G2 (42U) Rack Cabinet - Pallet | AF001A |
| | 10642 G2 (42U) Rack Cabinet - Shock Pallet | AF002A |
| | 10647 G2 (47U) Rack Cabinet - Pallet | AF031A |
| | 10647 G2 (47U) Rack Cabinet 1200mm Deep - Shock Pallet | AF044A |
| | NOTE: Due to handling and shipping requirements, AF044A is only orderable through HP Factory Express. It is not for direct sales. Customer site surveys are required before an order is approved. CTO orders may require additional lead time. | |
| | NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed. | |
| | NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: 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 | |
| | 2x1Ex16 IP Console SwitchG2 with Virtual Media | AF621A |
| | 4x1Ex32 IP Console SwitchG2 with Virtual Media | AF622A |
| | 2x16 Server Console Switch G2 with Virtual Media | AF618A |
| | 2x32 Server Console Switch G2 with Virtual Media | AF619A |
| | PS/2 Virtual Media Interface Adapter, 1 pack | AF604A |
| | NOTE: Requires PS/2 and one USB port on server. | |
| | Server console switch 0x2x8 | AF616A |
| | Server console switch 0x2x16 | AF617A |
| | PS/2 Interface Adapter, 1 pack | 262588-B21 |
| | PS/2 Interface Adapter, 8 pack | 262587-B21 |
| | 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 . | |
| | HP 1x4 Console Switch | AF611A |
| | PS2 Server Console Cable, 6 ft, 2 pack | AF612A |

| | | |
|------------------------------|---|------------|
| HP USB and SD Options | HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver) | DC172B |
| | HP USB 04 Standard Keyboard | DT528A#ABA |
| | HP 4GB SD Flash Media Kit | 580387-B21 |
| | NOTE: Blank SD media device is supported for use with VMware. SD media must be installed in the internal slot of the ProLiant server. Learn more at: http://www.hp.com/go/proliantvirtualization . | |
| | HP 2GB USB Flash Media Drive Key | 608447-B21 |
| | NOTE: HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like SmartStart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions. | |

Additional Options

HP Care Pack Services Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UV301E

4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UV298E

6-Hour Call to Repair, On-site Service 7-Day x 24-Hour Coverage, 3 Years (U.S. Part Number)

6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UV292E

Installation & Start-up Services

Hardware Installation, Electronic UV304E

Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays, Electronic U4618E

Installation and Startup for Essentials Rapid Deployment Pack, Electronic U5683E

Support Plus 24

Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic UX131E

Onsite HW support 24x7, 4hr response and RedHat AS O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic UX132E

Onsite HW support 24x7, 4hr response and SuSE O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic UX133E

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".

HP ProLiant DL980 G7 Models

Memory Subsystem Architecture

Intel Xeon 7500 and 6500 series memory architecture is designed to take advantage of multiple stages of memory interleaving to reduce latency and increase bandwidth.

Each Intel Xeon 7500 and 6500 series processor contains two Memory Controllers as shown in the Processor/Memory interconnect figure below. Each Memory controller has two Scalable Memory Interface (SMI) buses operating in lockstep where each SMI bus connects to a memory buffer. The purpose of the buffer is to convert SMI to DDR3. Each buffer has two DDR3 channels and can support up to four DIMMs for a total of eight DIMMs per cartridge.

- The number of DIMMs or ranks does not affect memory frequency, but can affect memory bandwidth and performance. All DIMMs will run at the highest possible frequency for a given processor.
- DDR3 memory speed is a function of the processors QPI bus speed such that
 - Processors with a QPI speed of 6.4GT will run memory at 1066MHz
 - Processors with a QPI speed of 4.8GT will run memory at 800 MHz

DIMM Installation guidelines

Each memory cartridge can support up to 8 DIMMs, for a system total of 128 DIMMs. When installing DIMM modules in the Memory Cartridge observe the following minimum guidelines:

- UDIMMs are not supported
- Minimum allowable configuration is one Quad (two DIMMs on each of the two cartridges connected to processor one).
- DIMMs must be installed as Quads (four DIMMs with identical characteristics). For configuration simplicity HP recommends using identical part numbered DIMMs throughout when possible.
- DIMM Quads MUST be populated in sequence by letter designation. Install DIMMs 1A and 8A on each cartridge first, followed by DIMMs 3B and 6B on each cartridge, then DIMMs 2C and 7C, and finally DIMMs 4D and 5D last.
- Maximum performance is achieved by balancing DIMM Quads by letter groupings across all memory cartridges. All 1A and 8A DIMMs should be installed (preferably with the same size DIMMs in all memory cartridges across the entire system) first, followed by the B DIMMs, C DIMMs and D DIMMs.

AMP modes Online Sparing and Memory Mirroring have further requirements beyond these listed here. Please refer to the user guide for additional memory configuration requirements.

Memory Cartridge population guidelines

This server contains 8 memory cartridge slots within each processor memory drawer. Observe the following guidelines:

- A memory cartridge must be installed in each slot.
- To maximize performance distribute the total memory capacity evenly between all memory cartridges.
- When operating the system in 40-bit address mode and installing 64x 16GB DIMMs (1TB total memory), the 64 DIMMs must be spread evenly across all 16 memory cartridges, or some of the memory will not be recognized.
- Memory configurations larger than 1TB require the use of 44-bit addressing mode.

Hemisphere mode

The Xeon EX architecture incorporates hemisphere mode, a high performance interleaving technology. Hemisphere mode allows interleaving between the two processor memory controllers internal to each processor.

The DL980 G7 always uses Hemisphere mode. This requires that for each processor, the two memory cartridges attached to the processor have matching memory configurations. If the two memory configurations are not equal, the DL980 G7 will ignore (waste) the extra memory in the larger configuration.

Memory Performance Optimization

The DL980 G7 supports 128 DIMMs across eight multi-core processors. While there are many DIMM population configurations that can support any desired total memory size, optimal performance can only be achieved when DIMMs are populated to take advantage of the Xeon EX architecture. The largest contributor to performance is to populate each DDR3 channel in each memory cartridge. To achieve this, the minimum DIMM count per cartridge is four. Maximum bandwidth is reached by fully populating all memory cartridges with the maximum number of eight DIMMs per cartridge.

- The more ranks per DIMM the higher the performance, so Quad rank DIMMs perform better than dual rank DIMMs.
- Performance is best when the installed DIMMs are all of equal size.

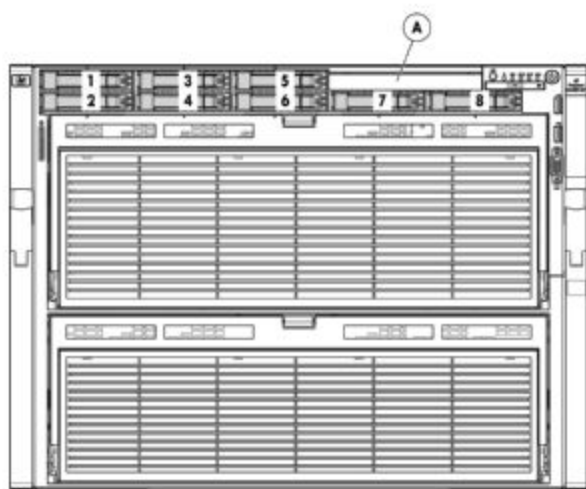
NOTE: Memory configurations listed do not apply to "Factory Integrated Models". Only registered (RDIMM) speeds of 1066 or 1333 running at 1066 are supported. UDIMMs are not supported.

Memory

The following memory options are available from HP:

| HP Memory | Registered DIMMs (RDIMMs) | |
|-----------|---|------------|
| | HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| | HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| | HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| | HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| | HP Memory Board | 588141-B21 |

Storage



A DVD drive bay

1-8 SFF SAS internal drive cage

Drive Support

| | Quantity Supported | Position Supported | Controller |
|-----------------------------------|--------------------|--------------------|-----------------|
| Removable Media | | | |
| HP Slimline DVD Optical drive | 1 | A | Integrated SATA |
| HP Slim SATA DVD RW Optical Drive | 1 | A | Integrated SATA |

Hard Drives

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

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

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

| | Quantity Supported | Position Supported | Controller |
|---------------------|--------------------|--------------------|---|
| 300GB 6G SAS 10K DP | Up to 8 | 1-8 | HP Smart Array P410i (standard on server) |
| 146GB 6G SAS 15K DP | | | HP Smart Array P812/1GB FBWC Controller |
| 72GB 6G SAS 15K DP | | | |

External Storage

| | Quantity Supported | Position Supported | Host Controller or Adapter |
|----------------------|--------------------|--------------------|--|
| D2600 Disk Enclosure | Up to 4 | External | HP Smart Array P212/ 256 MB Controller |
| | | External | HP Smart Array P411/256 MB Controller |
| | Up to 8 | External | HP Smart Array P411/512 MB BBWC Controller |
| | | External | HP Smart Array P411/1G FBWC Controller |
| | | External | HP Smart Array P812 Controller |
| D2700 Disk Enclosure | Up to 2 | External | HP Smart Array P212/256 MB Controller |
| | | External | HP Smart Array P411/256 MB Controller |
| | Up to 4 | External | HP Smart Array P411/512 MB BBWC Controller |
| | | External | HP Smart Array P411/1G FBWC Controller |
| | | External | HP Smart Array P812 Controller |

Maximum Storage Capacity - (External SAS Enclosure Attached)

| | |
|----------|--|
| Internal | 2.4.0TB (8 x 300GB SFF SAS Drives) |
| External | 960TB (80 MSA60 enclosures x 12 drive bays each x 1TB SATA Drives) |

Storage

Tape and Disk-Based Backup

NOTE: For the complete range of StorageWorks tape drives, autoloaders, libraries and media, including the internal fitting models, see: <http://www.hp.com/go/tape>. For the complete range of StorageWorks D2D Backup Systems see: <http://www.hp.com/go/d2d>. For the complete range of StorageWorks RDX drives and media see: <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP StorageWorks disk and tape backup products see: <http://www.hp.com/go/connect>.

| | Position Supported | Controller | Controller Part Number |
|--|--------------------|---|------------------------|
| HP StorageWorks USB Tape Drives DAT 40 DAT 72 DAT 160 DAT 320 1U USB Rack-Mount Kit | External | USB 2.0 Port | N/A |
| HP StorageWorks SAS Tape Drives DAT 160 DAT 320 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 LTO-5 Ultrium 3000 LTO-5 Ultrium 3280 1U Rack-Mount Kit 3U Rack-Mount Kit | External | HP Smart Array P212/256 MB Controller Please check the full compatibility information at: http://www.hp.com/go/connect | 462828-B21 |
| HP StorageWorks SCSI Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000 | External | HP U320e SCSI Dual Channel Controller Please check the full compatibility information at: http://www.hp.com/go/connect | AH627A |
| HP StorageWorks SAS Tape Autoloaders and Libraries 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096 | External | HP Smart Array P212/256 MB Controller Please check the full compatibility information at: http://www.hp.com/go/connect | 462828-B21 |
| HP StorageWorks USB RDX Removable Disk Backup System RDX160 RDX320 RDX500 RDX750 | External | USB 2.0 port | N/A |
| HP StorageWorks D2D Backup Systems, iSCSI D2D2500i D2D4000i | External | Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended. | |
| HP StorageWorks D2D Backup Systems, Fibre Channel D2D4000fc | External | Direct server attach is not supported, requires connection via SAN fabric. See: http://www.hp.com/go/connect | |

Power Specifications

| HP 1200W CS Platinum Power Supply Kit | | | | | |
|--|------------|------------|------------|------------|------------|
| Part Number | 578322-B21 | | | | |
| Input Voltage Range (V rms) | 200 to 240 | | | | |
| Frequency Range (Nominal) (Hz) | 50/60 | | | | |
| Nominal Input Voltage (Vrms) | 200 | 208 | 220 | 230 | 240 |
| Maximum Rated Output Wattage Rating | 1200 | 1200 | 1200 | 1200 | 1200 |
| Nominal Input Current (A rms) | 6.7 | 6.5 | 6.1 | 5.8 | 5.6 |
| Maximum Rated Input Wattage Rating (Watts) | 1290 | 1290 | 1290 | 1290 | 1290 |
| Maximum Rated VA (Volt-Amp) | 1345 | 1345 | 1345 | 1345 | 1345 |
| Efficiency (%) | 93 | 93 | 93 | 93 | 93 |
| Power Factor | 0.97 | | | | |
| Leakage Current (mA) | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current (A peak) | 30 | | | | |
| Maximum Inrush Current duration (mS) | 10 | | | | |
| Maximum British Thermal Unit Rating (BTU-Hr) | 4403 | 4403 | 4403 | 4403 | 4403 |

Technical Specifications

| | | |
|--|--|---|
| System Unit Rack | Dimensions (H x W x D) 13.92 x 19.0 x 34.5 in (35.36 x 48.26 x 87.63 cm) (with bezel and XNC cables installed) | |
| Weight (approximate) | Maximum | 205 lb (93 kg) (all hard drives, power supplies, and processors installed) |
| | Minimum | 165 lb (75 kg) (one hard drive, power supply, and processor installed) |
| Input Requirements (per power supply) | Rated Line Voltage | 200 - 240 VAC |
| | Rated Input Current | 6.6A @ 200-240VAC |
| | Rated Input Frequency | 50 - 60 Hz +/- 3hz |
| | Rated Input Power | 1375W @ 200-240VAC |
| BTU Rating | Maximum | 14,330 BTU/hr (worst case configuration and utilization) |
| Power Specifications | Maximum | 4200 W (worst case configuration and utilization) |
| <p>NOTE: To review typical system power ratings use the HP Power Advisor which is available online located at url: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor</p> <ul style="list-style-type: none"> - Click on the system of interest. Example: DL980 G7 - Follow the instructions of the next screens. | | |
| Power Supply Output (per power supply) | Rated Steady-State Power | 1200W @ 200 - 240VAC |
| | Maximum Peak Power | 1440W @ 200 - 240VAC |
| 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 | |
| | L WAd | 7.5 Bels |
| | L pAm | 59.7 dB |
| | Operating | |
| | L WAd | 7.5 Bels |
| L pAm | 59.7 dB | |
| Emissions | FCC Rating | Class A |

Technical Specifications

| | | |
|--------------------------------|----------------------------|---|
| Classification (EMC) | Normative Standards | CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1 |
|--------------------------------|----------------------------|---|

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

| | | | |
|--|---|--|---|
| HP Slim SATA DVD RW Shipping Dimensions | 3.97 x 7.81 x 10.75 in (10.08 x 19.84 x 27.31 cm) | | |
| Optical Drive | Shipping Weight | 5 lb (2.27 kg) | |
| Disk | Applicable Disk | DVD-ROM DVD-R (Read Only) DVD-R DL DVD-RW DVD+R DVD+R DL DVD+RW DVD RAM CD-ROM XA CD-ROM Mode-1 data disc CD-ROM Mode-2 data disc CD Audio disc CD-Extra CD-RW CD-R Photo CD CD-I CD-DA | |
| | Capacity | DVD-ROM DVD+/-R DVD +/-RW DVD-RAM CD-ROM | DVD-SL 4.7 GB/side DVD-DL 8.5 GB/side Double Sided 9.40 GB/side Mode-1 650 MB (550 MB) Mode-2 742 MB (640 MB) |
| | Block Size | DVD CD | 2,048 bytes 2,352 (Mode-0) 2352, 2340, 2336, 2048 bytes (Mode-1) 2352, 2340, 2336, 2048 bytes (Mode-2) |
| | Diameter | 120 mm (4.7 in), 80 mm (3.1 in) (with adapter at vertical mounting mode) | |
| Loading Mechanism | Tray type Manual Load | | |
| Interface | SATA 1.5 | | |
| Access Times (typical) | Random | DVD-ROM < 120 ms, CD-ROM < 110 ms | |
| | Full-Stroke | DVD-ROM < 250 ms, CD-ROM < 210 ms | |
| Data Transfer Rate (sustained) | DVD-ROM | Single Layer 10.8 MB/sec. Max. | |
| | CD-ROM | 3.6 MB/sec. Max. | |
| Cache Buffer | 2 MB | | |
| Spin-up Time (typical) | less than 15 seconds | | |
| MTBF | 60,000 Power On Hours (POH) | | |

Technical Specifications

| | | |
|----------------------------|--|---|
| Ambient Temperature | Operating | -41° to 122° F (5° to 50° C) |
| | Storage/Transportation | -401° to 140° F (-30° to 60° C) |
| Dimensions | (HxWxD, maximum) | 0.5 x 5.2 x 5.45 in (12.7 x 132 x 138 mm) |
| Option Kit Contents | DVD-RW drive with installation guide, warranty card, registration card | |

| | | |
|--|---------------------------------------|--|
| Integrated Lights-Out 3 Standard (integrated on system board) | Architecture | PCI Express based health and remote management ASIC |
| | Processor | PCI Express RISC processor core running at 250MHz |
| | Upgradability | Option firmware upgradable via flash ROM |
| | Video Support | 1600 x 1200 DVR max resolution |
| | Interfaces | One Ethernet Sideband connection (10/100/1000 Mb/s) One Ethernet network connection (10/100 Mb/s) |
| | Memory | 128-MB DDR with ECC |
| | Operating System Support | Microsoft Windows Server 2008 R2 Enterprise Edition (64 bit) Microsoft Windows Server 2008 Enterprise Edition (64 bit) Red Hat Enterprise Linux 5.5 (64 bit) SUSE LINUX Enterprise Server 11 (64 bit) SUSE LINUX Enterprise Server 10 (64 bit) VMware ESX 4.1 |
| | Client System Support | Microsoft Windows 7 Microsoft Windows XP Professional Edition Microsoft Windows Vista Business and Ultimate Editions Red Hat Enterprise Desktop 5.00 SUSE Linux Enterprise Desktop 11 SUSE Linux Enterprise Desktop 10 |
| | Client Browser Support | Microsoft Internet Explorer 8 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 | Secure Shell and serial port access Secure Socket Layer Secure Shell version 2 |
| | Security | Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface AES encryption of video RC4 encryption of video |
| | Directory Support Services | Active Directory v1.0 (Windows 2003) |
| | Driver Support | HP ProLiant iLO 3 Management Controller Driver |
| | Management protocols supported | SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML |

Technical Specifications

| | | |
|-------------------------------------|---|--|
| Smart Array P410i Controller | Disk Drive and Enclosure Interface | 6Gb/s SAS (Serial Attached SCSI) |
| | SAS Connectors | 2 internal (mini SAS) x8 wide port connectors |
| | Cache Memory Speed | DDR2-800MHz with 40 or 72-bit wide bus provides up to 4.2GB/s maximum bandwidth |
| | Server Interface | x8 5G PCIe 2.0 provides 4GB/s maximum bandwidth. |
| | SAS Speed | x8 6G SAS provides 4.8GB/s maximum bandwidth. |
| | Cache Memory | 72-bit 512MB or 1GB Flash backed write cache transportable with flash upgrade. |
| | Logical Drives Supported | Up to 64 logical drives |
| | Maximum Logical Drive Capacity | Greater than 2TB |
| | Host Memory Addressing | 64-bit, supporting greater than 4GB server memory space |
| | RAID Support | RAID 6, 6+0 (Advanced Data Guarding) NOTE: RAID 6, 6+0 can be enabled with either: <ul style="list-style-type: none"> ● Minimum of 512MB FBWC and Smart Array Advanced Pack License Key option upgrades |
| | | RAID 5, 5+0 (Distributed Data Guarding) NOTE: A minimum of 512MB FBWC is required to enable RAID 5, 5+0 support of the Smart Array P410i |
| | | RAID 1+0 (Striping & Mirroring) RAID 0 (Striping) |

| | | | |
|--|--|---|---------|
| HP 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 (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 | |
| 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) | |

Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

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

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

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