*Overview*
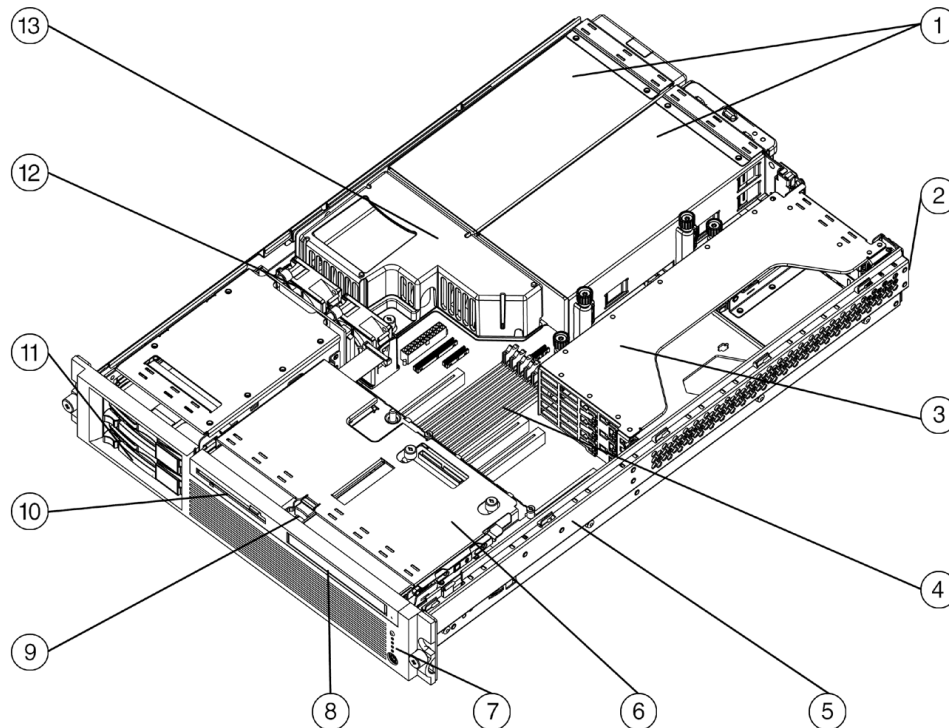


1. Dual 550W Hot Plug Redundant Power
2. 2U (3.5" Height) rack form factor
3. PCI-X Riser Cage, Three 64-bit PCI-X slots
4. Six memory DIMM slots
5. Tool-less "Snap in" Rail Solution
6. Hood
7. LEDs

8. Slimline Removable media Bay with 24x CD-ROM installed
9. Hood latch (accesses processors and fans)
10. 1.44 MB Diskette Drive
11. Wide Ultra3 SCSI drive cage for two hot plug hard drives or one DAT hot plug tape drive (plus 1 hard drive)
12. Hot Plug Fans
13. DC Power Converter Module

## What's New

- Intel® Xeon® Processors MP at 3.0GHz/4MB, 2.7GHz/2MB, or 2.2GHz/2MB (Expandable to 4 processors)

*Overview*

## At a Glance

- Intel Xeon Processors MP at 3.0GHz/4MB, 2.7GHz/2MB, 2.2GHz/2MB, 2.8 GHz/2MB, 2.5 GHz/1MB, 2.0 GHz/1MB (Expandable to 4 processors)
- The HP ProLiant DL560 delivers extraordinary performance and maximum power efficiency in an ultra dense, rack optimized form factor ServerWorks Grand Champion-LE chipset
- 2x1 interleaved memory, 200MHz DDR SDRAM Memory (PC2100 Registered SDRAM with Advanced ECC functionality)
- 1024 MB or 512 MB (depending on model) standard memory, expandable to 12 GB
- HP Advanced Memory Protection
- Two, full length 64-bit/100 MHz Non-Hot Pluggable PCI slots, one full length 64-bit/133 MHz Non-Hot Pluggable
- Integrated Lights-Out Standard Management (iLO) on system board
- Two NC7781 PCI-X Gigabit NICs (embedded)
- Integrated Smart Array 5i Plus Controller (Ultra3) with 64-MB total memory on 5i Plus Memory Module
- Battery-Backed Write Cache Enabler module on all 2P models (optional on 1P model)
- Internal Hot Plug Drive Storage of up to 600 GB (2 x 300 GB 1" Ultra320 hard drives)
- Redundant Cooling Zones for major subsystems (Memory, I/O, CPUs) assure 7x24 cooling
- Toolless and virtually cable-less internal design
- Rapid Deployment racking solution (rack rails and cable management)
- Protected by HP Services, including a three-year, Next Business Day on-site, limited, Global warranty and extended Pre-Failure Warranty that covers processors, memory and disk drives - Certain restrictions and exclusions apply.

# QuickSpecs

*Standard Features*

| | |
|---|---|
| **Processor**<br>*One of the following depending on Model* | (2P) Intel Xeon Processor MP 3.0 GHz/4MB (Expandable to 4 processors)<br>(2P) Intel Xeon Processor MP 2.7 GHz/2MB (Expandable to 4 processors)<br>(1P) Intel Xeon Processor MP 2.2 GHz/2MB (Expandable to 4 processors)<br>(1P) Intel Xeon Processor MP 2.0 GHz/1MB (Expandable to 4 processors) |
| **Cache Memory**<br>*One of the following depending on Model* | 4-MB Integrated Level 3 Cache<br>NOTE: 3.0 GHz Models only.<br>2-MB Integrated Level 3 Cache<br>NOTE: 2.7 GHz and 2.2 GHz Models only.<br>1-MB Integrated Level 3 Cache<br>NOTE: 2.0 GHz Models only. |
| **Upgradability** | Upgradable to quad processing |
| **Chipset** | ServerWorks Grand Champion-LE chipset<br>NOTE: For more information regarding ServerWorks, please see the following URL:<br>http://www.serverworks.com/products/overview.html. |

| | | |
|---|---|---|
| **Memory**<br>*One of the following depending on Model* | Type | 200-MHz (DDR) SDRAM PC2100 Registered SDRAM Memory with Advanced ECC functionality |
| | Standard | 1024 MB |
| | Maximum | 12 GB |
| | NOTE: Advanced ECC Memory Technology protects the data even in the event of an entire SDRAM component failure. Embedded in the chipset design, this feature allows the use of Industry-Standard Registered DIMMs. | |

| | |
|---|---|
| **Network Controller** | Two NC7781 PCI-X Gigabit NICs (embedded) |

| | | | |
|---|---|---|---|
| **Expansion Slots** | I/O (3 Total, 3 Available) | | PCI Voltage: |
| | 64-bit/100-MHz PCI<br>Non-Hot Plug | 2 and 3 | 3.3 Volt only |
| | 64-bit/133-MHz PCI-X<br>Non-Hot Plug | 1 | 3.3 Volt only |

| | |
|---|---|
| **Manageability** | Integrated Lights-Out (iLO) Standard Management (ASIC on the System Board) |

*Standard Features*

| Storage Controllers | Smart Array 5i Plus Controller, Ultra3 (supports RAID 0, 1, across internal hard disk drives) with 64 MB of memory |
|---|---|

- 64-MB total memory for code, transfer buffers, and read/write cache on the 5i Plus Memory Module
- Connector for Battery Backed Write Cache (BBWC) Enable

**NOTE:** The Smart Array 5i Plus Controller is integrated on the system board and is designed to support the simplex drive cage. An external SCSI port is not available on the HP ProLiant DL560. External SCSI solutions require the addition of a PCI or PCI-X option card.

| Storage Data Protection | The Battery-Backed Write Cache (BBWC) Enabler protects up to 64-MB write cache memory from hard boot, power, controller, or system board failures. |
|---|---|

- Standard on HP ProLiant DL560 2P Models, optional on 1P Models
- Battery charge/life: Up to 72 hours/ 3 years
- Transportable data protection
- Increases overall controller performance

**NOTE:** Safely transport your write cache data to another HP ProLiant DL560 in the data center be removing the BBWC Enabler and 5i Plus Memory Module simultaneously (connected by short cable).

| Storage | Diskette Drive | 1.44 MB Diskette Drive |
|---|---|---|
| | Optical Drive | 24x IDE CD-ROM Drive (slimline) – ejectable for security and serviceability |
| | Hard Drives | None |
| | Maximum Internal Storage | 600 GB (2 x 300 GB Ultra320 1" drives) (internal hot plug Ultra3 drive cage) |
| | Hard Disk Drive Backplane | Internal Wide Ultra3 backplane supports up to TWO 1" hard disk drives |

| Interfaces | Serial | 1 |
|---|---|---|
| | Pointing Device (Mouse) | 1 |
| | Graphics | 1 |
| | Keyboard | 1 |
| | Rear USB Ports | 2 |
| | iLO Remote Management | 1 |
| | Network RJ-45 | 2 |
| | USB 1.0 | 1 |

| Graphics | Integrated 1280 x 1024, 16M color on PCI local bus, 8-MB of SDRAM video memory |
|---|---|

| Form Factor | Rack (2U = 3.5 inches), ships with sliding rails and cable management system |
|---|---|
| | Space saving form factor (2U) provides space efficiencies while providing maximum deployment flexibility |

## Standard Features

| | | |
|---|---|---|
| **ProLiant Essentials Foundation Pack Software** | HP Systems Insight Manager | HP's new HP Systems Insight Manager (HP SIM) helps maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before those problems result in unplanned downtime or reduced productivity. HP SIM are both easy to set up work with the Insight Management Agents, integrated Light-Out and Remote Insight Light-Outs Edition, and Version Control Agents to deliver robust fault, configuration, and asset management as well as remote administration. With HP SIM customers will also be able to take advantage of role-based security; the ability to manage ProLiant, Integrity, and HP 9000 systems; and plug-ins for storage, client, printer, and power management as well as server rapid deployment, performance management, and workload management. For more details on HP SIM visit http://www.hp.com/go/hpsim. |
| | SmartStart | SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at http://www.hp.com/servers/smartstart. SmartStart version supported (minimum): SmartStart 6.20. |
| | Management Agents | The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management Web site at http://www.hp.com/servers/manage. |
| | Subscriber's Choice | Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides automatic delivery of software and driver change notifications for ProLiant products. Sign up at http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis. |
| | ROMPaq, support software, and configuration utilities | The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options available in SmartStart or downloadable from Software and Drivers download pages, linked from the SmartStart website at www.hp.com/servers/smartstart. |
| | Survey Utility and diagnostics utilities | The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart. |

*Standard Features*

|  | Optional ProLiant Essentials Value Packs | Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs: |

- Rapid Deployment Pack – an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands.
- Workload Management Pack – provides easier management of complex environments, improving overall server utilization and enabling Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.
- Performance Management Pack – a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources.
- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions.
- Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats
- Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.

**NOTE:** Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.
**NOTE:** For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials

**Industry Standard Compliance**

ACPI 2.0 Compliant

PCI 2.2 Compliant

PXE Support

WOL Support

Physical Address Extension (PAE) Support

Microsoft® Logo certifications

*Standard Features*

| Intelligent Manageability | Integrated Lights-Out (iLO) Standard Management |

- Virtual Text Remote Console
- Virtual Power Button Control
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) Security
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privileges

Integrated Lights-Out (iLO) Advanced Pack (supports Advanced features such as Graphical Remote Console and Virtual Floppy - available as a separate option)
Automatic Server Recovery-2 (ASR-2)
HP Systems Insight Manager
Redundant ROM
Remote Flash ROM
ROM-Based Setup Utility (RBSU)
Integrated Management Log (IML)
Hot Spare Boot
NOTE: Upon the event of a failed processor or VRM in a multi-processing environment, the system will automatically reboot and use the remaining good processor(s).
Dynamic sector repairing and drive parameter tracking (with Smart Array controllers)
Redundant/adaptive load balancing NIC Support

Availability

- Standard Advanced ECC functionality detects and corrects single bit and specific multi-bit memory errors (4bit and 8bit) while using industry standard registered DIMMS. Functionality is embedded in the chipset design.
- HP Advanced Memory Protection Technology – delivers unsurpassed memory protection and server availability:
- Online Spare Memory:
  - Offers a higher level of memory protection than Advanced ECC alone. If the number of single-bit correctable errors on a bank exceeds the pre-defined error threshold, that bank will fail over to the online spare bank without intervention or server interruption. The failed memory can then be replaced at the user's convenience during a scheduled maintenance window.

NOTE: All HP Advanced Memory Protection modes are user configurable through the ROM-Based Setup Utility (RBSU) and viewable through Insight Manager 7 and the Integrated Management Log (IML.).

- Smart Array 5i Plus Controller with standard Battery Backed Write Cache (BBWC) Enabler provides transportable data protection and increases overall controller performance. Up to 64MB Battery Backed Write Cache protection available on 2P HP ProLiant DL560 models (BBWC Enabler is optional on 1P model).
- Redundant Cooling Zones across major server subsystems (Memory, I/O, CPU) provide 7x24 cooling. Each zone is independent of each other and is able to support N+1 redundancy, as indicated below.

This zone configuration enables the server to withstand up to three fan failures, provided that they are not within the same zone. Each fan is hot plug redundant and individually removable.

- Up to two Hot Plug Ultra3 Drive Bays
- Simplex SCSI Backplane
- Dual Hot Plug Redundant Power Supplies (standard on 2P Models, one ships standard on 1P Models)

*Standard Features*

| Serviceability | |
|---|---|
| | • Innovative Diagnostic Lighting |
| | • LED display on front panel indicates power, internal health, external health, Unit ID light. |
| | • Tool-less, virtually cable-less interior design |

• Tool-less, virtually cable-less interior design
  ○ Tool-less access to interior of server
  ○ Lift up hood access to processors and primary fans
  ○ Ejectable, slimline media drives (and CD-ROM standard with support for optional DVD-ROM drives) is removable without the use of tools. Also has fixed floppy drive.
  ○ PCI Card Guides locks full length PCI cards in place during transit
  ○ Up to ten individually removable fans connect without cables to the system board
  ○ Processor/VRM Retention mechanism securely locks both processor and VRM into their respective sockets
  ○ Tool-less removal of system board
• Quick Deploy Rails
  ○ Tool-less design "snap in" rail

**Security**

Power-on password
Keyboard password
Diskette drive control
Diskette boot control
Network Server Mode
Security Provision
Serial interface control
Administrator's password
Disk configuration lock
Hot plug access security
Removable Diskette drive
Removable CD-ROM drive

**Power Supply**

550-Watt (low line or high line) Hot Plug Power Supply
**NOTE:** One 550-Watt Hot Plug Power Supply ships standard with 1P Models (optional Redundant Hot Plug Power Supply Option Kit).
**NOTE:** Two 550-Watt Hot Plug Power Supplies ship standard with 2P Models.

**System Fans**

| Standard | 5 Hot plug, redundant fans on 1P models (individually removable) |
|---|---|
| Maximum | 10 Hot plug, redundant fans on 2P models (individually removable) |

• Redundant Cooling Zones across major server subsystems (Memory, I/O, CPU) provide 7x24 cooling. Each zone is independent of each other and is able to support n+ 1 redundancy, as indicated below:
  ○ PCI-X expansion zone is 1+ 1 redundant (fans 1 and 2)
• System can run fully loaded with five fans. This zone configuration enables the server to withstand up to three fan failures, provided that they are not within the same zone. Each fan is hot plug redundant and individually removable.

**Required Cabling**

For required cabling information, refer to the HP Web site at
http://h18000.www1.hp.com/products/servers/proliantDL560/.

*Standard Features*

| | |
|---|---|
| OS Support | Microsoft Windows 2000 |
| | Windows Server 2003 |
| | Novell NetWare |
| | LINUX (Red Hat, SuSE) |
| | UnitedLinux |

**NOTE:** For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: http://www.hp.com/go/supportos
**NOTE:** For an up-to-date listing of the latest drivers available for the HP ProLiant DL560, please see: http://www.HP.com/support/files/server/us/index.html.
**NOTE:** For a more complete and up-to-date information on Linux support, please visit HP Linux website at http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html
**NOTE:** For more complete and up-to-date information on how to buy server operating systems from HP please visit the OS product site at: http://h18004.www1.hp.com/products/servers/software/OEM.html

**Rack Airflow Requirements**

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

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

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

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

**NOTE:** For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://www5.HP.com/products/servers/proliantdl560/index.html.

**Rack Mounting Requirements**

Tool-free support for racks with square mounting holes (including Compaq/HP 7000, 9000, 10000 and H9 series), with an adjustment range of 24"– 36".

*Standard Features*

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

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA3000 & EVA5000, XP, rackable tape libraries and configurable network switches.

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

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**Service and Support**

Three-year limited warranty, including hardware diagnostic support, pre-failure warranty (coverage of hard drives, memory and processors). The warranty is fully supported by HP Services and a worldwide network of resellers and service providers. In addition 90-day's getting started software telephone support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services.

NOTE: Limited warranty includes 3 year parts, 3 year labor, 3-year on-site support.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMWare-based IT solutions helping to deliver high level of application availability. Response times range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

HP Care Pack Services include HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the enclosure, as well as 22" and smaller external monitors and tower UPS options up to 3KVA. 22" and smaller external monitors will be covered at the same service level and coverage period as the server. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: http://www.hp.com/hps/carepack
NOTE:For more complete information on HP Services offerings, customers and resellers, please visit us at: http://www.hp.com/hps
NOTE: Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

*Models*

| | | |
|---|---|---|
| **DL560R01 X3.0GHz-4MB, 1024MB (2P)** 346921-xx1 | Processor(s) | (2) Intel Xeon Processors MP at 3.0 GHz standard (up to 4 supported) |
| | Cache Memory | 4-MB Integrated Level 3 Cache |
| | Memory | 1024 MB 200-MHz (DDR) SDRAM (PC2100-MHz Registered SDRAM Memory with Advanced ECC functionality) (Standard) to 12 GB (Maximum) |
| | Network Controller | Two NC7781 PCI-X Gigabit NICs (embedded) |
| | Storage Controller | Smart Array 5i Plus Controller (Ultra3) with Battery-Backed Write Cache Enabler (integrated on system board) |
| | Manageability | Integrated Lights-Out (iLO) Standard management (integrated on system board) |
| | Hard Drives | None ship standard |
| | Internal Storage | 293.6 GB maximum (with optional hard drives) |
| | Power Supply | Two 550W Hot Plug Redundant Power Supplies (low line or high line) |
| | Optical Drive | 24x IDE slimline CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack 2U |
| **DL560R01 X2.7-2MB, 1024MB (2P)** 346920-xx1 | Processor(s) | (2) Intel Xeon Processors MP at 2.7 GHz standard (up to 4 supported) |
| | Cache Memory | 2-MB Integrated Level 3 Cache |
| | Memory | 1024 MB 200-MHz (DDR) SDRAM (PC2100-MHz Registered SDRAM Memory with Advanced ECC functionality) (Standard) to 12 GB (Maximum) |
| | Network Controller | Two NC7781 PCI-X Gigabit NICs (embedded) |
| | Storage Controller | Smart Array 5i Plus Controller (Ultra3) with Battery-Backed Write Cache Enabler (integrated on system board) |
| | Manageability | Integrated Lights-Out (iLO) Standard management (integrated on system board) |
| | Hard Drives | None ship standard |
| | Internal Storage | 293.6 GB maximum (with optional hard drives) |
| | Power Supply | Two 550W Hot Plug Redundant Power Supplies (low line or high line) |
| | Optical Drive | 24x IDE slimline CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack 2U |

## Models

| DL560R01 X2.2-2MB, 1024MB (1P) 346919-xx1 | Processor(s) | (1) Intel Xeon Processor MP at 2.2 GHz standard (up to 4 supported) |
|---|---|---|
| | Cache Memory | 2-MB Integrated Level 3 Cache |
| | Memory | 1024 MB 200-MHz (DDR) SDRAM (PC2100-MHz Registered SDRAM Memory with Advanced ECC functionality) (Standard) to 12 GB (Maximum) |
| | Network Controller | Two NC7781 PCI-X Gigabit NICs (embedded) |
| | Storage Controller | Smart Array 5i Plus Controller (Ultra3) (integrated on system board) |
| | Manageability | Integrated Lights-Out (iLO) Standard management (integrated on system board) |
| | Hard Drives | None ship standard |
| | Internal Storage | 293.6 GB maximum (with optional hard drives) |
| | Power Supply | One 550W Hot Plug Redundant Power Supplies (low line or high line) |
| | Optical Drive | 24x IDE slimline CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack 2U |

| DL560R01 X2.0-1MB, 1024MB (1P) 246638-xx2 | Processor(s) | (1) Intel Xeon Processor MP at 2.0 GHz standard (up to 4 supported) |
|---|---|---|
| | Cache Memory | 1-MB Integrated Level 3 Cache |
| | Memory | 1024 MB 200-MHz (DDR) SDRAM (PC2100-MHz Registered SDRAM Memory with Advanced ECC functionality) (Standard) to 12 GB (Maximum) |
| | Network Controller | Two NC7781 PCI-X Gigabit NICs (embedded) |
| | Storage Controller | Smart Array 5i Plus Controller (Ultra3) (integrated on system board) |
| | Manageability | Integrated Lights-Out (iLO) Standard management (integrated on system board) |
| | Hard Drives | None ship standard |
| | Internal Storage | 293.6 GB maximum (with optional hard drives) |
| | Power Supply | One 550W Hot Plug Redundant Power Supplies (low line or high line) |
| | Optical Drive | 24x IDE slimline CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack 2U |

| Country Code Key | XX=00 | US |
|---|---|---|
| | XX=01 | Australia |
| | XX=03 | UK |
| | XX=20 | Brazil |
| | XX=29 | EURO |
| | XX=37 | APD |
| | XX=42 | Int'l, Europe, Germany, France |
| | XX=AA | PRC |

*Options*

| | | |
|---|---|---|
| **ProLiant Essentials Value Pack Software** | Rapid Deployment Pack, 1 User, V1.x<br>**NOTE**: This license allows 1 server to be managed and deployed via the Deployment Server. | 267196-B21 |
| | Rapid Deployment Pack, 1 User, V1.x (Japan)<br>**NOTE**: This license allows 1 server to be managed and deployed via the Deployment Server. | 267196-291 |
| | Rapid Deployment Pack, 10 Users, V1.x<br>**NOTE**: This license allows 10 servers to be managed and deployed via the Deployment Server. | 269817-B21 |
| | Rapid Deployment Pack, 10 Users, V1.x (Japan)<br>**NOTE**: This license allows 10 servers to be managed and deployed via the Deployment Server. | 269817-291 |
| | Flexible Quantity License Kit | 302127-B21 |
| | License-Only - for use with a Master License Agreement | 302128-B21 |
| | ProLiant Essentials Workload Management Pack (Featuring Compaq Resource Partitioning Manager version 2.0) | 303284-B21 |
| | Integrated Lights-Out (iLO) Advanced Pack | 263825-B21 |
| | ProLiant Essentials Performance Management Pack, Single License<br>**NOTE:** This license allows 1 server to be managed by Performance Management Pack. | 306696-B21 |
| | ProLiant Essentials Performance Management Pack, 10 Pack Server License | 374055-B21 |
| | Performance Management Pack, flexible license kit<br>**NOTE:** A single pack is shipped with a single license key for the total number of licenses ordered | 306697-B21 |
| | ProLiant Essentials Intelligent Networking Pack, 1 License | 372906-B21 |
| | ProLiant Essentials Intelligent Networking Pack Flex License | 372950-B21 |
| | ProLiant Essentials Intelligent Networking Pack Track License | 372951-B21 |
| | ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License | 371645-B21 |
| | ProLiant Essentials Vulnerability and Patch Management Pack, 10-Server License | 372029-B21 |
| | ProLiant Essentials Vulnerability and Patch Management Pack, Flexible-Quantity License | 371646-B21 |
| | ProLiant Essentials Vulnerability and Patch Management Pack, Tracking license for new servers | 371647-B21 |
| | ProLiant Essentials Vulnerability and Patch Management Pack, Tracking license for installed servers | 378372-B21 |
| | ProLiant Essentials Vulnerability and Patch Management Pack, 1-Server 10-Desktop Bundle License | 389941-B21 |
| | **NOTE:** Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information. | |
| | **NOTE:** For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials. | |
| **Software** | HP digital asset protection | 302316-001 |

# QuickSpecs

## Options

| Processor | | |
|---|---|---|
| | Intel Xeon MP X3.0/4MB Processor Option Kit | 346990-B21 |
| | Intel Xeon MP X2.70/2MB Processor Option Kit | 346989-B21 |
| | Intel Xeon MP X2.20/2MB Processor Option Kit | 346988-B21 |
| | Intel Xeon MP X2.80/2MB Processor Option Kit | 331004-B21 |
| | Intel Xeon MP X2.50/1MB Processor Option Kit | 331003-B21 |
| | Intel Xeon MP X2.0/1MB Processor Option Kit | 331002-B21 |

| Memory (DIMMs) | | |
|---|---|---|
| | 4096MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 2048 MB) | 300682-B21 |
| | 2048MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 1024MB) | 300680-B21 |
| | 1024MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 512MB) | 300679-B21 |
| | 512MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 256MB) | 300678-B21 |

| Optical Drives | | |
|---|---|---|
| | Slimline CD-RW/DVD-ROM Combo Drive Option Kit | 331903-B21 |
| | Slimline DVD-ROM Drive (8X/24X) Option Kit (Servers) | 264007-B21 |
| | HP DVD+R/RW 8X Slim | 383975-B21 |

**Hard Drives**

*Ultra320 SCSI - Universal Hot Plug*

| | | |
|---|---|---|
| | 300-GB 10,000 rpm U320 Universal Hard Drive (1") | 350964-B22 |
| | 146.8-GB 10,000 rpm U320 Universal Hard Drive (1") | 286716-B22 |
| | 72.8-GB 10,000 rpm U320 Universal Hard Drive (1") | 286714-B22 |
| | 146.8-GB 15,000 rpm U320 SCSI Hard Drive (1") | 347708-B22 |
| | 72.8-GB 15,000 rpm U320 Universal Hard Drive (1") | 286778-B22 |
| | 36.4-GB 15,000 rpm U320 Universal Hard Drive (1") | 286776-B22 |

NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds. U320 drives require an optional U320 Smart Array Controller or U320 SCSI HBA to support U320 transfer rates.

NOTE: Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:
U320 Hard Drive QS:
http://h18000.www1.hp.com/products/quickspecs/11531_div/11531_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/11531_na/11531_na.HTML (North America)

## Options

| Storage Controller | Smart Array 6402/128 Controller | 273915-B21 |
|---|---|---|
| | Smart Array 6404/256 Controller | 273914-B21 |
| | Smart Array 641 Controller | 291966-B21 |
| | Smart Array 642 Controller | 291967-B21 |
| | 256-MB Battery-Backed Cache Module | 254786-B21 |

NOTE: This 256-MB Battery-Backed Cache Module supports the Smart Array 5300 series controllers, HP StorageWorks Modular Smart Array 1000 and the HP StorageWorks Modular Array 500.

256MB DDR, Battery-Backed Cache Upgrade Kit for SA-6400                                     273913-B21
NOTE: This 256-MB Battery-Backed Cache Module upgrade kit supports the Smart Array 6400 series controller only.

Battery-Backed Write Cache Enabler Option Kit                                               255514-B21
NOTE: This Battery-Backed Write Cache Enable Option Kit (PN 255514-xx1) is optional for the HP ProLiant DL560 1P Model only.

Battery-Backed Write Cache Enabler Option Kit (Japan)                                       255514-291
NOTE: This Battery-Backed Write Cache Enable Option Kit (PN 255514-xx1) is optional for the HP ProLiant DL560 1P Model only.

128MB Battery-Backed Cache Enabler                                                          351580-B21
NOTE: This 128MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller.

| | 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter | 268351-B21 |
|---|---|---|
| | 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS | 284688-B21 |
| | Ultra320 Expansion Module for SA-6402 | 273911-B21 |

NOTE: Please see the following Controller or SCSI Adapter QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information:
http://h18000.www1.hp.com/products/quickspecs/11587_div/11587_div.HTML
(Smart Array 6400 Series)
http://h18000.www1.hp.com/products/quickspecs/12067_div/12067_div.HTML
(Smart Array 641)
http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.HTML
(Smart Array 642)
http://h18000.www1.hp.com/products/quickspecs/10429_div/10429_div.HTML
(SCSI Adapter)
http://h18000.www1.hp.com/products/quickspecs/11555_div/11555_div.HTML
(U320 Adapter)

| Communications | HP NC310F PCI-X 1000SX Gigabit Server Adapter | 368169-B21 |
|---|---|---|
| | HP NC1020 PCI 1000T Gigabit Server Adapter | 353377-B21 |
| | HP NC6170 PCI-X Dual Port 1000SX Gigabit Server Adapter | 313879-B21 |
| | HP NC7170 PCI-X Dual Port 1000T Gigabit Server Adapter | 313881-B21 |
| | HP NC7771 PCI-X 1000T Gigabit Server Adapter | 290563-B21 |

NOTE: Any NIC on the option list can be used for redundancy with the embedded NC7781 Network Controller

## Options

**Redundant Options**
| | |
|---|---|
| Hot Plug Redundant Power Supply Option Kit | 267555-001 |
| Hot Plug Redundant Power Supply Option Kit (EMEA) | 267555-B21 |
| Hot Plug Redundant Fan Option Kit | 288635-B21 |

**Management Options**
| | |
|---|---|
| Remote Insight Lights-Out Edition II (NA, LA) | 227251-001 |
| Remote Insight Lights-Out Edition II (EMEA) | 227251-021 |
| Remote Insight Lights-Out Edition II (ROW) | 227251-371 |

**Security**
| | |
|---|---|
| HP/Atalla AXL600L SSL Accelerator Card for ProLiant Servers | 524545-B21 |
| AXL300 Accelerator PCI Card for ProLiant Servers | 227933-B21 |

**Tape Drives**

NOTE: For the complete listing of Tape Drive offerings for this server, please visit: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html

For recommended tape drive offerings for this ProLiant server see the following:

**Hot Plug Tape Drives**
| | |
|---|---|
| HP StorageWorks DAT 72 Tape Drive, Internal Hot-Plug (Carbon) | Q1529A |

**USB Tape Drives**
| | |
|---|---|
| HP StorageWorks DAT 72 USB External Tape Drive (Carbon) | DW027A |

**External and Rack-Mount Ultrium Tape Drives**
| | |
|---|---|
| HP StorageWorks Ultrium 232 Tape Drive, Internal (Carbonite) | DW064A |

NOTE: No internal tape drives fit inside this HP ProLiant server (except hot plug tape). The internal drive shown here is for the 1U and 3U Rack-mount Kit.

| | |
|---|---|
| HP StorageWorks Ultrium 232 Tape Drive, External (Carbonite) | DW065A |
| HP StorageWorks Ultrium 448 Tape Drive, External (Carbonite) | DW017A |
| HP StorageWorks Ultrium 448 Rack-mount (Carbonite) - Single drive installed in a 1U rack-mount kit | DW028A |
| HP StorageWorks Ultrium 960 Tape Drive , External (Carbonite) | Q1539A |
| HP StorageWorks 3U Rack-Mount Kit with one Ultrium 960 drive | Q1595A |

NOTE: Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items: http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html (Worldwide)
http://h18006.www1.hp.com/products/quickspecs/11739_na/11739_na.html (North America)
For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: http://www.hp.com/go/connect.

**Rack-Mount Tape Drive Enclosures**
| | |
|---|---|
| HP StorageWorks 1U Rack-Mount Kit | A7445A |

NOTE: The 1U Rack-mount Kit can support up to 2 half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including DAT 24, DAT40, DAT72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, and Ultrium 448 tape drives.

*Options*

|  | HP StorageWorks 3U Rack-Mount Kit | 274338-B21 |
|---|---|---|

**NOTE:** The 3U Rack-Mount Kit can support up to 2 full-height or 4 half-height tape drives and compatible with multiple Single-Ended and LVD SCSI tape drives including DAT 24, DAT 40, DAT 72, DAT 72X6 Autoloader, DLT VS80, DLT VS160, SDLT 320, SDLT 600, Ultrium 215, Ultrium 232, Ultrium 230, Ultrium 448, Ultrium 460, and Ultrium 960 tape drives.

**NOTE:** Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits:
http://h18000.www1.hp.com/products/quickspecs/10854_div/10854_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML (North America)

| | | |
|---|---|---|
| **Tape Autoloaders** | DAT Autoloader | |
| | HP StorageWorks DAT 72x6 External Autoloader | Q1567A |

**NOTE:** Please see the DAT Tape Autoloader QuickSpecs for additional options such as host bus adapters, controllers and media:
http://h18000.www1.hp.com/products/quickspecs/11985_div/11985_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/11985_na/11985_na.HTML (North America)

**HP StorageWorks 1/8 Tape Autoloader**

| | |
|---|---|
| 1/8 Ultrium 960 Tape Autoloader, Tabletop | AF204A |
| 1/8 Ultrium 448 Tape Autoloader, Tabletop | AF203A |
| 1/8 SDLT 320 Tape Autoloader, Tabletop | AA926A |
| 1/8 Ultrium 230 Tape Autoloader, Tabletop | C9572CB |
| 1/8 DLT VS80 Tape Autoloader, Tabletop | C9264CB |
| 1/8 Tape Autoloader Rackmount Kit | C9268R |

**NOTE:** Required to install the 1/8 tape autoloader in a standard 19-inch rack
**NOTE:** Please reference the 1/8 Tape Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

**HP StorageWorks SSL1016 Tape Autoloader**

| | |
|---|---|
| SSL1016 Ultrium 460 Tape Autoloader | 330821-B21 |
| SSL1016 SDLT 320 Tape Autoloader | 330816-B21 |

**NOTE:** Please reference the SSL1016 Tape Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

| | | |
|---|---|---|
| **Tape Libraries** | *HP StorageWorks MSL6000 Tape Library* | |
| | **Ultrium 960 technology** | |
| | MSL6030, 1 drive, 30 slots, Ultrium 960 | AD606A |
| | MSL6030, 2 drive, 30 slots, Ultrium 960 | AD607A |
| | MSL6030, 1 drive, 30 slots, Ultrium 960, with embedded FC router | AD608A |

*Options*

| | |
|---|---|
| MSL6030, 2 drive, 30 slots, Ultrium 960, with embedded FC router | AD609A |
| MSL6060, 2 drive, 60 slots, Ultrium 960 | AD610A |
| MSL6060, 2 drive, 60 slots, Ultrium 960, with embedded FC router | AD611A |

**SDLT 600 technology**

| | |
|---|---|
| MSL6026, 1 drive, 26 slots, SDLT 600 | AD582A |
| MSL6026, 2 drive, 26 slots, SDLT 600 | AD583A |
| MSL6026, 1 drive, 26 slots, SDLT 600, with embedded FC router | AD584A |
| MSL6026, 2 drive, 26 slots, SDLT 600, with embedded FC router | AD585A |
| MSL6052, 2 drive, 52 slots, SDLT 600 | AD586A |
| MSL6052, 2 drive, 52 slots, SDLT 600, with embedded FC router | AD587A |

**Ultrium 460 technology**

| | |
|---|---|
| MSL6030, 1 drive, 30 slots, Ultrium 460 | AD598A |
| MSL6030, 2 drive, 30 slots, Ultrium 460 | AD599A |
| MSL6030, 1 drive, 30 slots, Ultrium 460, with embedded FC router | AD600A |
| MSL6030, 2 drive, 30 slots, Ultrium 460, with embedded FC router | AD601A |
| MSL6060, 2 drive, 60 slot Ultrium 460 | AD603A |
| MSL6060, 2 drive, 60 slot Ultrium 460, with embedded FC router | AD604A |

**NOTE:** Please reference the MSL6000 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

**HP StorageWorks MSL5026S2 Tape Library**

| | |
|---|---|
| MSL5026S2, 1 drive, 26 slots, SDLT 320, RM | 293472-B22 |
| MSL5026S2, 2 drive, 26 slots, SDLT 320, RM | 293472-B23 |
| MSL5026S2, 1 drive, 26 slots, SDLT 320, RM with embedded FC router | 293472-B24 |
| MSL5026S2, 2 drive, 26 slots, SDLT 320, RM with embedded FC router | 293472-B25 |

**NOTE:** Please reference the MSL5026S2 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

**HP StorageWorks MSL5052S2 Tape Library**

| | |
|---|---|
| MSL5052S2, 2 drive, 52 slots, SDLT 320, RM | 293474-B21 |
| MSL5052S2, 2 drive, 52 slots, SDLT 320, RM with embedded FC router | 293474-B24 |

**NOTE:** Please reference the MSL5052S2 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

**HP StorageWorks ESL E-Series Tape Libraries**

| | |
|---|---|
| ESL Extended 712e Tape Library, 0 drive, 712 LTO slots | AA934B |
| ESL Extended 630e Tape Library, 0 drive, 630 SDLT slots | AA935B |
| ESL Extended 322e Tape Library, 0 drive, 322 LTO slots | AA939B |
| ESL Extended 286e Tape Library, 0 drive, 286 SDLT slots | AA940B |
| ESL E-Series Ultrium 960 drive kit | AD595A |
| ESL E-Series Ultrium 460 drive kit | AA937A |
| ESL E-Series Ultrium 460-FC drive kit | AA941A |

*Options*

| | |
|---|---|
| ESL E-Series SDLT 320 drive kit | AA936A |
| ESL E-Series e2400-FC 2G Interface Controller | AA928A |

NOTE: Please reference the ESL E-Series Tape Libraries QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

*HP StorageWorks ESL9000 Series Tape Libraries*

| | |
|---|---|
| ESL9595 Extended Tape Library, 0 drive, 400 slots (card cage, Interface Mgr card, Command View license) | 343378-B21 |
| ESL9322 Extended Tape Library, 0 drive, 222 slots (card cage, Interface Mgr card, Command View license) | 343377-B21 |
| ESL9000 Ultrium 460 drive kit | 330834-B21 |
| ESL9000 Ultrium 230 drive kit | 301930-B21 |
| ESL9000 SDLT 320 drive kit | 293414-B21 |

**Magneto-Optical Jukeboxes**

*HP StorageWorks 9.1 GB Mid-range Optical Jukeboxes*

| | |
|---|---|
| 300mx, 2 drive, 32 slot jukebox | C1150M |
| 600mx, 4 drive, 64 slot jukebox | C1160M |
| 700mx, 2 drive, 76 slot jukebox | C1170M |

NOTE: Please reference the Magneto-Optical Jukebox data sheets at http://www.hp.com/go/optical for additional information needed to create a complete solution

*HP StorageWorks 9.1 GB High-end Optical Jukeboxes*

| | |
|---|---|
| 1200mx, 4 drive, up to 128 slots | C1104M |
| 1200mx, 6 drive, up to 128 slots | C1105M |
| 2200mx, 4 drive, up to 238 slots | C1111M |
| 2200mx, 6 drive, up to 238 slots | C1107M |
| 2200mx, 10 drive, up to 238 slots | C1110M |

NOTE: Please reference the Magneto-Optical Jukebox data sheets at http://www.hp.com/go/optical for additional information needed to create a complete solution

**Ultra Density Optical Jukeboxes**

| | |
|---|---|
| 1000ux, 2 drive, 32 slot jukebox | AA965A |
| 1900ux, 4 drive, 64 slot jukebox | AA966A |
| 1900ux, 4 mixed drive, 64 slot jukebox | AA968A |
| 2300ux, 2 drive, 76 slot jukebox | AA967A |
| 3800ux, 4 drive, 128 slot jukebox | AA969A |
| 3800ux, 6 drive, 128 slot jukebox | AA970A |
| 7100ux, 4 drive, 238 slot jukebox | AA973A |
| 7100ux, 6 drive, 238 slot jukebox | AA971A |
| 7100ux, 10 drive, 238 slot jukebox | AA972A |

*Options*

7100ux, 6 mixed drive, 238 slot jukebox
AA974A

NOTE: Please reference the Ultra Density Optical Jukebox QuickSpecs at
http://www.hp.com/go/optical for additional information needed to create a
complete solution

| | | |
|---|---|---|
| **Cluster Options** | ProLiant Cluster Starter Kit | 364023-B21 |

NOTE: For additional information regarding the ProLiant Cluster Starter Kit please see
the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11935_na/11935_na.html
(North America)
http://h18000.www1.hp.com/products/quickspecs/11935_div/11935_div.html
(Worldwide)

ProLiant Cluster Kit with OpenView Storage Mirroring
364025-B21

NOTE: For additional information regarding the ProLiant Cluster Kit with OpenView
Storage Mirroring please see the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11934_na/11934_na.html
(North America)
http://h18000.www1.hp.com/products/quickspecs/11934_div/11934_div.html
(Worldwide)

ProLiant Cluster HA/F200 for the Entry Level SAN
364026-B21

ProLiant Cluster HA/F200 for the Entry Level SAN (Japan)
364026-291

NOTE: For additional information regarding the ProLiant Cluster for Entry Level SAN
please see the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11932_na/11932_na.html
(North America)
http://h18000.www1.hp.com/products/quickspecs/11932_div/11932_div.html
(Worldwide)

ProLiant Cluster HA/F500 for the Enterprise SAN
364024-B21

NOTE: For additional information regarding the ProLiant Cluster HA/F500 for
Enterprise SAN please see the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11933_na/11933_na.html
(North America)
http://h18000.www1.hp.com/products/quickspecs/11933_div/11933_div.html
(Worldwide)

HP Serviceguard for Linux ProLiant Cluster A.11.15 for SUSE SLES 8 / UnitedLinux 1.0
and Red Hat EL 3 (2 node license cluster kit)
305199-B24

HP Serviceguard for Linux ProLiant Cluster A.11.16 for SUSE SLES 9 and Red Hat EL 3
(2 node license cluster kit)
305199-B25

HP Serviceguard for Linux License A.11.15 for SUSE SLES 8 / UnitedLinux 1.0 and
Red Hat EL 3 (single license version)
307754-B24

HP Serviceguard for Linux A.11.16 for SUSE SLES9 and Red Hat EL 3 (single license
version)
307754-B25

NOTE: For additional information regarding the HP Serviceguard for Linux License,
please see the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11518_na/11518_na.html
(North America)
http://h18000.www1.hp.com/products/quickspecs/11518_div/11518_div.html
(Worldwide)

| | | |
|---|---|---|
| External Storage – Rack | HP StorageWorks Modular Smart Array 20<br>**NOTE:** Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. | 335921-B21 |
| | HP StorageWorks Modular Smart Array 20 Starter Kit<br>**NOTE:** Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. Includes Smart Array 6402/128 Controller.<br>**NOTE:** The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 1" Hot Plug Hard Drives. | 366172-B21 |
| | HP StorageWorks Modular Smart Array 30 SB<br>**NOTE:** Rack-mountable 14 drive enclosure with single bus, redundant power supplies. | 302969-B21 |
| | HP StorageWorks Modular Smart Array 30 DB<br>**NOTE:** Rack-mountable 14 drive enclosure with dual bus, redundant power supplies.<br>**NOTE:** The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 1" Hot Plug Hard Drives. | 302970-B21 |
| | Redundant Power Supply 499W | 338296-B21 |
| | Ultra320 Dual Bus I/O Module for MSA30 | 287483-B21 |
| | Ultra320 Single Bus I/O Module for MSA30 | 287484-B21 |
| HP StorageWorks Modular Smart Array 500 | HP StorageWorks Modular Smart Array 500 Generation 2<br>**NOTE:** Please see the Modular Smart Array 500 Generation 2 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at:<br>http://h18000.www1.hp.com/products/quickspecs/11956_na/11956_na.HTML (North America)<br>http://h18000.www1.hp.com/products/quickspecs/11956_div/11956_div.HTML (Worldwide) | 335880-B21 |
| HP StorageWorks Modular Smart Array 1500 cs | Modular Smart Array 1500 Controller Shelf<br>**NOTE:** Please see the StorageWorks Modular SAN Array 1500 cs QuickSpecs for additional options and configuration information at:<br>http://www.hp.com/go/MSA1500cs | AA986A |
| HP StorageWorks Modular Smart Array 1000 | HP StorageWorks Modular Smart Array 1000<br>**NOTE:** Please see the Modular Smart Array 1000 QuickSpecs for additional options and configuration information at<br>http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML (North America)<br>http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML (Worldwide) | 201723-B22 |

*Options*

| | | |
|---|---|---|
| **StorageWorks Options** | StorageWorks SAN Switch 2/16 | 322118-B21 |
| | StorageWorks SAN Switch 2/16-EL Upgrade Kit | 325889-B21 |
| | StorageWorks Director 2/64 | 286809-B21 |

**NOTE:** Please see the StorageWorks Director 2/64 QuickSpecs for additional information:
http://h18000.www1.hp.com/products/quickspecs/11003_na/11003_na.HTML (North America)
http://h18000.www1.hp.com/products/quickspecs/11003_div/11003_div.HTML (Worldwide)

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**UPS Power Cord Matrix**

*Please see the UPS Power Cord Matrix for cable descriptions, requirements, and specifications for UPS units.*

ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf.

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**Uninterruptible Power Systems – Rack**

| | |
|---|---|
| HP UPS R1500 XR (1440VA, 1340 Watt), Low Voltage (NA) | 204404-001 |
| HP UPS R1500 XR (1500VA, 1340 Watt), High Voltage (Int'l) | 204404-B31 |
| HP UPS R1500 XR (1500VA, 1340 Watt), Low Voltage (Japan) | 204404-291 |
| HP UPS R3000 XR (2880VA, 2700 Watt), Low Voltage (NA) | 192186-001 |
| HP UPS R3000 XR (3000VA, 2700 Watt), High Voltage (NA) | 192186-002 |
| HP UPS R3000 XR (2400VA, 2250 Watt), Low Voltage (Japan) | 192186-291 |
| HP UPS R3000 XR (3000VA, 2700 Watt), High Voltage (Japan) | 192186-292 |
| HP UPS R3000 XR (3000VA, 2700 Watt), High Voltage (Int'l - detachable cord) | 192186-B31 |
| HP UPS R3000 XR (3000VA, 2700 Watt), High Voltage (16A IEC309 Plug) | 192186-B32 |
| HP UPS R3000 XR (3000VA, 2700 Watt), High Voltage (16A CEE 7/7 SCHUKO Plug) | 192186-B33 |
| HP UPS R3000 XR (3000VA, 2700 Watt), High Voltage (16A BS-546 Plug) | 192186-AR1 |
| HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage (NA/Jpn) | 326529-D71 |
| HP UPS R5500 XR, (6000VA, 5400 Watt), High Voltage (Int'l) | 326529-B31 |
| UPS R12000 XR N+x (200-240V) (WW-hardwired) | 207552-B22 |

**NOTE:** The UPS R12000 XR has a hardwired input and output connection.

## Options

| | | |
|---|---|---|
| HP Power Distribution Unit with Power Monitoring | HP Power Distribution Unit with Power Monitoring Model S2324 - dual input, 3 phase, 24A (NA/JPN) | 370959-D71 |
| | HP Power Distribution Unit with Power Monitoring Model S1324 - single input, 3 phase, 24A (NA/JPN) | 370960-D71 |
| | HP Power Distribution Unit with Power Monitoring Model S2140 - dual input, 1 phase, 40A (NA/JPN) | 370961-D71 |
| | HP Power Distribution Unit with Power Monitoring Model S1140 - single input, 1 phase, 40A (NA/JPN) | 370962-D71 |
| | HP Power Distribution Unit with Power Monitoring Model S2316 - dual input, 3 phase, 16A (INTL) | 370963-B31 |
| | HP Power Distribution Unit with Power Monitoring Model S1316 - single input, 3 phase, 16A (INTL) | 370964-B31 |
| | HP Power Distribution Unit with Power Monitoring Model S2132 - dual input, 1 phase, 32A (INTL) | 370965-B31 |
| | HP Power Distribution Unit with Power Monitoring Model S1132 - single input, 1 phase, 32A (INTL) | 370966-B31 |

| | | |
|---|---|---|
| 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), Low Volt Model, 24A (100-127 VAC) (NA, Japan) NOTE: This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR. | 252663-D71 |
| | HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC) (NA, Japan) | 252663-D72 |
| | 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, 40A (200-240 VAC) (WW) NOTE: This mPDU (252663-B21), 40A model has a hardwired input. | 252663-B21 |
| | HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW) NOTE: This PDU has a detachable input power cord and allows for adaptability to country specific power requirements. This model may also be used with the high volt UPSs R3000 XR and R6000 For North America, need to order cable PN 340653-001 NOTE: Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords: http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.HTML (North America) http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.HTML (Worldwide) | 252663-B24 |

| | | |
|---|---|---|
| USB Options | USB 2-Button Optical Scroll Mouse (Carbonite/Silver) | DC172B |
| | USB 1.44-MB External Diskette Drive (Carbonite) | DC141B |

| | | |
|---|---|---|
| Custom Builder | Please see the Enterprise Configurator for configuration assistance at: http://www.hp.com/products/configurator. | |

*Options*

| | | |
|---|---|---|
| **Rack Kit** | Tool-free support for racks with square mounting holes (including Compaq/HP 7000, 9000, 10000 and H9 series), with an adjustment range of 24" – 36". | |

| | | |
|---|---|---|
| **Telco Rack Support** | DL380 G3 Telco Rack Kit:<br>**NOTE:** Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions: http://www.racksolutions.com/hp. | |

| | | |
|---|---|---|
| **Third Party Rack Kit** | Rack Adapter Kit<br>**NOTE:** This kit allows HP rack servers to fit in racks that are 24" wide. | 332815-B21 |

**HP Rack 10000 Series**
(Graphite Metallic)

| | |
|---|---|
| 10642 (42U) Infrastructure Rack (Low Voltage) | 379006-001 |
| 10642 (42U) Infrastructure Rack (High Voltage) | 379005-001 |
| HP Rack S10614 (14U) Rack Cabinet – Shock Pallet | 292302-B22 |
| HP Rack 10842 (42U, 800mm wide) – Pallet | 257415-B21 |
| HP Rack 10842 (42U, 800mm wide) – Shock Pallet | 257415-B22 |
| HP Rack 10647 (47U) – Pallet | 245160-B21 |
| HP Rack 10647 (47U) – Crated | 245160-B23 |
| HP Rack 10642 (42U) – Pallet | 245161-B21 |
| HP Rack 10642 (42U) – Shock Pallet | 245161-B22 |
| HP Rack 10642 (42U) – Crated | 245161-B23 |
| HP Rack 10636 (36U) – Pallet | 245162-B21 |
| HP Rack 10636 (36U) – Shock Pallet | 245162-B22 |
| HP Rack 10636 (36U) – Crated | 245162-B23 |
| HP Rack 10622 (22U) – Pallet | 245163-B21 |
| HP Rack 10622 (22U) – Shock Pallet | 245163-B22 |
| HP Rack 10622 (22U) – Crated | 245163-B23 |

**NOTE**: -B21 (pallet) used to ship empty racks shipped on a truck
-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)
-B23 (crated) used for air shipments of empty racks

**NOTE**: Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:
http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML (North America)

**NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html.

*Options*

Rack Options for HP
Rack 10000 Series

NOTE: For additional information regarding Rack Options, please see the following
URL: http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html.

| | |
|---|---|
| HP Rack Light Kit (Neon) | 361589-B21 |
| HP Rack Plinth Kit (Carbon) | 251960-B21 |
| 42U Side Panel – Graphite Metallic | 246099-B21 |
| 36U Side Panel – Graphite Metallic | 246102-B21 |
| 47U Side Panel – Graphite Metallic | 255486-B21 |
| TFT5600 Rack Keyboard Monitor | 221546-xx1 |

*Country Code Key* (for TFT5600 Rack Keyboard Monitor (PN 221546-xx1))

| | | | |
|---|---|---|---|
| XX = 001 | US | XX = 091 | Norway |
| XX = 031 | UK | XX = 101 | Sweden/Finland |
| XX = 041 | Germany | XX = 111 | Switzerland |
| XX = 051 | France | XX = 131 | Portugal |
| XX = 061 | Italy | XX = 181 | Belgium |
| XX = 071 | Spain | XX = 291 | Japan |
| XX = 081 | Denmark | XX = B31 | International |

| | |
|---|---|
| 1U Rack Keyboard & Drawer (Carbon) | 257054-xx1 |

*Country Code Key* (for 1U Rack Keyboard & Drawer (PN 257054-xx1))

| | | | |
|---|---|---|---|
| XX = 001 | US | XX = 091 | Norway |
| XX = 031 | UK | XX = 101 | Sweden/Finland |
| XX = 041 | Germany | XX = 111 | Switzerland |
| XX = 051 | France | XX = 131 | Portugal |
| XX = 061 | Italy | XX = 181 | Belgium |
| XX = 071 | Spain | XX = 291 | Japan |
| XX = 081 | Denmark | XX = B31 | International |

NOTE: For additional information regarding Rack Options, please see the following
URL: http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html.

*Options*

| HP KVM Switch Options | Server Console Switch (KVM), 0 x 1 x 8 port | 336044-B21 |
|---|---|---|
| | Server Console Switch (KVM), 0 x 2 x 16 port | 336045-B21 |
| | IP Console Switch Box (KVM/IP), 1 x 1 x 16 | 262585-B21 |
| | IP Console Switch Box (KVM/IP), 3 x 1 x 16 | 262586-B21 |
| | HP 1x4 USB/PS2 KVM Switch, RM (ALL) | 371302-B21 |
| | HP 1x4 USB/PS2 KVM Switch, TT, (EURO) | 371301-A21 |
| | HP 1x4 USB/PS2 KVM Switch, TT (UK) | 371301-031 |
| | HP 1x4 USB/PS2 KVM Switch, TT, (AUST/NZ) | 371301-011 |
| | HP 1x4 USB/PS2 KVM Switch, TT, (NA/JPN) | 371301-D71 |
| | PS/2 Interface Adapter, 8 pack | 262587-B21 |
| | PS/2 Interface Adapter, 1 pack | 262588-B21 |
| | CAT5 KVM Expansion Module | 262589-B21 |
| | Serial Interface adapter - 1 Pack with power supply | 373035-B21 |
| | CAT5e Cable 3', 4 pack | 263474-B21 |
| | CAT5e Cable 6', 8 pack | 263474-B22 |
| | CAT5e Cable 12', 8 pack | 263474-B23 |
| | CAT5e Cable 20', 4 pack | 263474-B24 |
| | CAT5e Cable 40', 1 pack | 263474-B25 |

NOTE: For additional information regarding HP KVM Switches and options, please see the following URL:
http://h18004.www1.hp.com/products/servers/proliantstorage/rack-options/list.html#console

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| Rack Options for Third party Cabinet Racks | Round hole rack cabinet rail kit | 293052-B21 |
|---|---|---|

NOTE: Support for racks with round mounting holes (include HP Rack System /E and HP Systems) with and adjustment range of 24 inches to 36 inches (60.96 cm to 91.44 cm).

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| Service and Support Offerings (HP Care Pack Services) | *Hardware Services On-site Service* | |
|---|---|---|
| | 4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years | U4697A |
| | 4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic | U4697E |
| | 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years | U4698A |
| | 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic | U4698E |
| | 6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years | U4699A |
| | 6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic | U4699E |

*Options*

### Installation & Start-up Services

| | |
|---|---|
| Hardware Installation | U4707A |
| Hardware Installation, Electronic | U4707E |
| 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. | U4708A |
| 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 | U4708E |

### Support Plus

| | |
|---|---|
| Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays. | U4709A |
| Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic | U4709E |
| Onsite HW support, 8am-9pm, M-F, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays | U4711A |
| Onsite HW support, 8am-9pm, M-F, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic | U4711E |

### 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. | U4710A |
| 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 | U4710E |
| Onsite HW support 24x7, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays. | U4712A |
| Onsite HW support 24x7, 4hr response and Linux O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic | U4712E |

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

*Memory*

HP ProLiant DL560
Standard Memory

1024 MB PC2100 Registered DDR SDRAM DIMM Memory comes installed (2 x 512-MB SDRAM)

Standard Memory Plus Optional Memory

Up to 9216 MB memory is available with the optional installation of PC2100 Registered DDR SDRAM DIMM Memory Option Kit

Standard Memory Replaced with Optional Memory

Up to 12,288 MB of memory is available with the removal of the standard 1024-MB of memory, the optional installation of PC2100 Registered DDR SDRAM DIMM Memory Option Kit

NOTE: This chart does not represent all possible memory configurations.

| Memory | | Standard Memory Board (Slots) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| Standard | 1024 MB | 512 MB | 512 MB | Empty | Empty | Empty | Empty |
| Optional | 9,216 MB | 512 MB | 512 MB | 2048 MB | 2048 MB | 2048 MB | 2048 MB |
| Maximum | 12,288 MB | 2048 MB | 2048 MB | 2048 MB | 2048 MB | 2048 MB | 2048 MB |

The following memory options are available from HP:
- 512MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 256MB)          300678-B21
- 1024MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 512MB)          300679-B21
- 2048MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 1024MB)          300680-B21
- 4096MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 2048 MB)          300682-B21

*Storage*
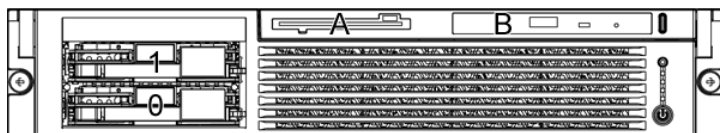


| | |
|---|---|
| A | 1.44-MB Diskette Drive |
| B | Ejectable: 24x IDE CD-ROM (Slimline) |
| 0-1 | Wide Ultra3/Ultra320 Drive Cage |

## Drive Support

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| **Slim Line Drives** | | | |
| 1.44-MB slim-line Diskette Drive | Up to 1 | C | Integrated |
| Ejectable IDE slim-line CD-ROM Drive | Up to 1 | B | Integrated IDE |
| Slimline DVD-ROM Drive (8X/24X) Option Kit (ejectable) | Up to 1 | B | Integrated IDE |

Hard Drives

*Ultra320 Hot Pluggable Drives*

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| **1-inch** | | | |
| 300-GB 10,000 rpm | Up to 2 | 0-1 | Integrated Dual Channel Wide Ultra3 SCSI Adapter |
| 146.8-GB 10,000 rpm | | | Smart Array 6402/128Controller |
| 72.8-GB 10,000 rpm | | | Smart Array 641 Controller |
| 146.8-GB 15,000 rpm | | | Smart Array 642 Controller |
| 72.8-GB 15,000 rpm | | | 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter |
| 36.4-GB 15,000 rpm | | | |

NOTE: All U320 Universal Hard Drives are backward compatible to U2 or U3 speeds. U320 drives require an optional U320 Smart Array Controller or U320 SCSI HBA to support U320 transfer rates.

*Storage*

External Storage

| | Quantity Supported | Position Supported | Host Controller or Adapter |
|---|---|---|---|
| Modular Smart Array 30 Family | Up to 13 | External | Smart Array 6402/128 Controller<br>Smart Array 6404/256 Controller<br>Smart Array 642 Controller<br>64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| Modular Smart Array 500 G2 System | 1 | External | Please see the Modular Smart Array 500 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/msa500 |
| Modular Smart Array 1000 | Please see the Modular Smart Array 1000 QuickSpecs below to determine configuration requirements | External | Please see the Modular Smart Array 1000 QuickSpecs (URL below) for the latest list of supported HBAs |
| Modular Smart Array 1500 cs | Please see the Modular Smart Array 1500 cs QuickSpecs below to determine configuration requirements | External | Please see the Modular Smart Array 1500 cs QuickSpecs (URL below) for the latest list of supported HBAs |

Modular Smart Array 1000:
http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML (North America)

Modular Smart Array 1500: http://www.hp.com/go/MSA1500cs

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**Maximum Storage Capacity** – (External Enclosure Attached)

| | |
|---|---|
| Internal | 600 GB (2 x 300 GB Ultra320 SCSI 1" Drives) |
| External | 50.40 TB (12 x (14 x 300 GB Ultra320 SCSI 1" Drives)) |
| Total | 51.00 TB |

---

Tape Drives, Tape Autoloaders, & Tape Libraries

## Storage

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following:
http://h18000.www1.hp.com/products/quickspecs/North_America/10233.html (North America)
http://h18000.www1.hp.com/products/quickspecs/Division/10233.html (Worldwide)

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following:
http://h18000.www1.hp.com/products/quickspecs/North_America/10809.html (North America)
http://h18000.www1.hp.com/products/quickspecs/Division/10809.html (Worldwide)

NOTE: For complete listing of tape drive offerings see
http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html

For details on connecting tape drives to this server, see the following:

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| HP StorageWorks DAT Tape Drives, Internal Hot Plug<br>DAT 40 Tape Drive<br>DAT 72 Tape Drive | 1 | 0, 1 | Smart Array 5i Plus Controller (integrated on system board)<br>64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| HP StorageWorks Tape Drives, USB External<br>DAT 40 USB<br>DAT 72 USB | 1 per USB port | External | USB port |
| HP StorageWorks Tape Drives, External<br>Ultrium 215<br>Ultrium 230<br>Ultrium 232<br>Ultrium 448<br>Ultrium 460<br>DAT 40<br>DAT 72<br>DLT VS80<br>DLT VS160<br>SDLT 320 | Up to 2 | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| HP StorageWorks Tape Drives, External<br>Ultrium 960<br>SDLT 600 | 1 drive per SCSI channel | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| HP StorageWorks Autoloaders, External<br>DAT 72x6 Tape Autoloader<br>1/8 Tape Autoloader<br>SSL1016 Tape Autoloader | 1 autoloader per SCSI channel | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |

*Storage*

| | | | |
|---|---|---|---|
| **HP StorageWorks Rack-mount Tape Drive Enclosures**<br>1U Rack-Mount Kit<br>3U Rack-Mount Kit<br>5U Rack-Mount Kit | 1 per SCSI channel | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| **HP StorageWorks Tape Libraries, External**<br>MSL6000 (Ultrium 960-based)<br>MSL6000 (SDLT 600-based)<br>MSL6000 (Ultrium 460-based)<br>MSL5026S2 (SDLT 320-based)<br>MSL5052S2 (SDLT 320-based) | Please reference the MSL Tape Library QuickSpecs to determine configuration requirements | External | 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| **HP StorageWorks ESL E-Series Tape Libraries**<br>ESL 712e<br>ESL 630e<br>ESL 322e<br>ESL 286e | Please reference the ESL E-series Tape Libraries QuickSpecs to determine configuration requirements | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |

*Power Specifications*

| Part Number | 280126-001 |
|---|---|
| Spare Kit | 280126-B21 |
| Operational Input Voltage Range (V rms) | 90 to 264 |
| Frequency Range (Nominal) (Hz) | 47 to 63 (50/60) |

| Nominal Input Voltage (Vrms) | 100 | 115 | 208 | 220 | 230 | 240 |
|---|---|---|---|---|---|---|
| Max Rated Output Wattage Rating | 550 | 550 | 550 | 550 | 550 | 550 |
| Nominal Input Current (A rms) | 7.1 | 6.1 | 3.3 | 3.1 | 3.0 | 2.8 |
| Max Rated Input Wattage Rating (Watts) | 696 | 688 | 679 | 671 | 667 | 663 |
| Max. Rated VA (Volt-Amp) | 710 | 702 | 693 | 684 | 680 | 676 |
| Efficiency (%) | 79 | 80 | 81 | 82 | 82.5 | 83 |
| Power Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Leakage Current (mA) | .87 | 1.00 | 1.81 | 1.91 | 2.00 | 2.09 |
| Maximum Inrush Current (A peak) | 100 | 100 | 100 | 100 | 100 | 100 |
| Maximum Inrush Current duration | 20 | 20 | 20 | 20 | 20 | 20 |

## System Specifications

### HP ProLiant DL560 Fully Configured

Up to 4 Processors, 6 Memory Slots, 2 Hard Drives, 3 PCI Slots, and 2 Hot Plug Power Supplies

| Nominal Input Voltage (Vrms) | 100 | 115 | 208 | 220 | 230 | 240 |
|---|---|---|---|---|---|---|
| Fully Loaded System Input Wattage (W) | 534 | 527 | 520 | 514 | 507 | 501 |
| Fully Loaded System Input Current (A rms) | 5.4 | 4.7 | 2.6 | 2.4 | 2.3 | 2.1 |
| Fully Loaded System Thermal (BTU- Hr) | 1820 | 1707 | 1774 | 1752 | 1730 | 1709 |
| Fully Loaded System VA (Volt-Amp) | 545 | 538 | 531 | 524 | 518 | 511 |
| System Leakage with all power supplies loaded (mA) | .87 | 1.00 | 1.81 | 1.91 | 2.00 | 2.09 |
| System Inrush Current with all power supplies loaded (A) | 200 | 200 | 200 | 200 | 200 | 200 |
| Power cord requirements | Nema 5-15P to IEC320-C13 | | | Option no./Spare no: 163719-002 | | |
| | IEC320-C13 to IEC320-C14 | | | Option no./Spare no: 142259-001/ 142258-B21 | | |

NOTES:

ActiveAnswers Power Calculation
Power calculator is LIVE on ActiveAnswers Web site. This is an external link.

Follow this link: http://h30099.www3.hp.com/configurator/powercalcs.asp.

To drill down to calculators:
- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: DL560
- Click on: "Power Calculator" link (You may need to scroll down to see it.)

*Technical Specifications*

| System Unit Rack | Chassis Footprint (HxWxD) | 3.38 x 17.50 x 25.75 in (8.59 x 44.45 x 65.41 cm) | |
|---|---|---|---|
| | Weight | Maximum (2 Power Supplies, 2 Hard Drives) | 60 lb (27 kg) |
| | | Minimum (No hard drives installed, one power supply) | 35 lb (16 kg) |
| | Input Requirements | Rated Input Voltage | 100 to 120 VAC/200 to 240 VAC |
| | | Rated Input Frequency | 50 to 60 Hz |
| | | Input Power | 690W @ 115 VAC/675W @ 230 VAC |
| | | Rated Input Current | 7A (100 VAC), 6A (115 VAC), 3A (230 VAC) |
| | Max BTU Rating | 2375 BTU (550 Watts) | |
| | Power Supply Output Power (per power supply) | Rated Steady-State Power | 550W/550W (lowline/highline) |
| | | Maximum Peak Power | 550W/550W (lowline/highline) |
| | Temperature Range | Operating | 50° to 95° F (10° to 35° C) |
| | | Non-operating | -20° to 140° F (-29° to 60° C) |
| | | Shipping | -22° to 122° F (-30° to 50° C) |
| | Relative Humidity (non-condensing) | Operating | 10% to 70% |
| | | Non-operating | 5% to 95% |
| | Maximum Wet Bulb Temperature | 101.7° F (38.7° C) | |

Acoustic Noise

**NOTE:** Listed are the declared A-weighted sound power levels LWAd and the declared average bystander position sound pressure levels LpAm when operating in a 23° C ambient environment. Noise emissions were measured in accordance with ECMA 74 and declared in accordance with ECMA 109.

| Idle (Fixed Disk Drives Spinning) | |
|---|---|
| L WAd (BELS) | 6.0 |
| L pAm (dBA) | 46 |

**NOTE:** These values apply to 2U rack configuration. Configuration tested included 2 processors, two 10, 000 rpm hard drive, 1 power supplies, 1 power supply fan and 4 CPU fans.

*Technical  Specifications*

| 24X Max (or higher) IDE CD-ROM Drive Slimline | Disk | Applicable Disk | CD-DA, CD-ROM (Mode 1 and 2) |
|---|---|---|---|
| | | | CD-XA, CD-I (Mode 2, Form 1 and 2) |
| | | | Photo CD (Single and Multi-session) |
| | | | Mixed Mode (Audio and Data combined) |
| | | Capacity | 540 MB (Mode 1, 12 cm) |
| | | | 650 MB (Mode 2, 12 cm) |
| | | Diameter | 4.7 x 3.15 in/12 x 8 cm |
| | | Rotational Speed | 4200 rpm maximum |
| | | Center Hole | 0.6 in/15 mm diameter |
| | | Thickness | 1.2 mm |
| | | Track Pitch | 1.6 $\mu$m |
| | Block Size | Mode 1 | 2,048 |
| | | Mode 2 | 2,340, 2,336, 1,024 bytes |
| | | CD-DA | 2,352 bytes |
| | | CD-XA | 2,328 bytes |
| | Interface | IDE (ATAPI) | |
| | Access Times (typical) | Random | 100 ms |
| | | Full-Stroke | 2000 ms |
| | Data Transfer Rate | Sustained | 150 KB/s (sustained 1X) |
| | | Burst | 2100 to 3600 KB/s |
| | Cache Buffer | 128 KB | |
| | Start-up Time (typical) | < 7seconds | |
| | Stop Time | < 4seconds | |
| | Laser Parameters | Type | Semiconductor Laser GaA1As |
| | | Wave Length | 780 ± 25 nm |
| | | Divergence Angle | 53.5° ± 1.5° |
| | | Output Power | 0.14 mW |
| | Operating Conditions | Temperature | 41° to 113° F (5° to 45° C) |
| | | Humidity | 10% to 80% |
| | Dimensions | (HxWxD, maximum) | 1.69 x 5.75 x 8.19 in (4.29 x 15 x 20.8 cm) |
| | | Weight | 2.66 lb (1.2 kg) |

| Slimline CD-RW/DVD-ROM 24X Combo Drive (Multibay) | Shipping Dimensions | 13.88 x 11.38 x 9.25 in (35.26 x 28.91 x 23.50 cm) | |
|---|---|---|---|
| | Shipping Weight | 5 lb (2.27 kg) | |
| | Disk | Applicable Disk | DVD-ROM |
| | | | DVD-R (Read Only) |
| | | | 2.6 GB/side DVD-RAM (Read Only) |
| | | | 5.2 GB/side DVD-RAM (Read Only) |
| | | | CD-ROM Mode-1 data disc |
| | | | CD-ROM Mode-2 data disc |
| | | | CD Audio disc |
| | | | CD-Extra |
| | | | CD-RW |

*Technical Specifications*

|  |  | | | |
|---|---|---|---|---|
|  |  | CD-R | | |
|  |  | CD Text | | |
|  |  | PhotoCD | | |
|  |  | CD-I (mode 2) | | |
|  |  | CD-I Ready | | |
|  |  | CD-Bridge | | |
| | Capacity | DVD-ROM | DVD-SL | 4.7 GB/side |
| | | | DVD-DL | 8.5 GB/side |
| | | | Double Sided | 9.40 GB/side |
| | | DVD-R | | 3.95 GB/side |
| | | DVD-RAM | | 2.6 GB/side and 5.2 GB/ |
| | | CD-ROM | Mode-1 | 650 MB (550 MB) |
| | | | Mode-2 | 742 MB (640 MB) |
| | Block Size | DVD | | 2,048 bytes |
| | | CD | | 2,352 (Mode-0) |
| | | | | 2352, 2340, 2336, 2048 bytes (Mode-1) |
| | | | | 2352, 2340, 2336, 2048 bytes (Mode-2) |
| | Diameter | 120 mm, 80 mm (with adapter at vertical mounting mode) | | |
| Loading Mechanism | Tray type | | | |
| Interface | EIDE (ATAPI) | | | |
| Access Times (typical) | Random | DVD-ROM < 120 ms, CD-ROM < 110 ms | | |
| | Full-Stroke | DVD-ROM < 240 ms, CD-ROM < 160 ms | | |
| Audio Output Level (typical) | Line-out | CD 0.7 Vrms at 47 Kohms Load | | |
| Data Transfer Rate (sustained) | DVD-ROM | Single Layer | | 10.8 MB/sec. Max. |
| | DVD-RAM | 2.77 MB/sec. Max | | |
| | CD-ROM | 7.2 MB/sec. Max. | | |
| Cache Buffer | 2 MB | | | |
| Spin-up Time (typical) | less than 10 seconds | | | |
| MTBF | 120,000 Power On Hours (POH) | | | |
| Ambient Temperature | Operating | -22° to 140° F (-30° to 60° C) | | |
| Relative Humidity | Operating | 10% to 80% | | |
| | Storage/Transportation | 5% to 95% | | |
| Dimensions | (HxWxD, maximum) | 0.5 x 5.04 x 5.1 in (12.7x128x129.4 mm) | | |
| Option Kit Contents | DVD-ROM drive with installation guide, warranty card, registration card | | | |

## Technical Specifications

| | | |
|---|---|---|
| Integrated Lights-Out Standard (integrated on system board) | Architecture | 32-bit PCI-based health and remote management ASIC (Application Specific Integrated Circuit) |
| | Processor | 32-bit RISC processor core running at 66 MHz |
| | Upgradability | Option firmware upgradable via flash ROM. |
| | Video Support | Utilizes the host server's embedded video chip. Supports VGA/SVGA, 640 x 480 (256 to 16.7M colors), 800 x 600 (256 to 16.7M colors), 1024 x 768 (256 to 65K colors), 1280 x 1024 (256 colors) |
| | Interfaces | One Ethernet network connection (10/100 Mb/s) |
| | Memory | 2-MB Flash ROM |
| | | 8-MB SDRAM |
| | Operating System Support | United Linux 1.0 |
| | | Windows 2000 Server |
| | | Windows 2000 Advanced Server |
| | | Red Hat 7.x |
| | | SLES8 |
| | | Novell NetWare 5.x, 6.x |
| | Client Browser Support | Microsoft Internet Explorer 5.5 or later. |
| | iLO Standard Features | Virtual Text Remote Console |
| | | Virtual Power Button Control |
| | | Dedicated LAN Connectivity |
| | | Automatic IP Configuration via DHCP/DNS/WINS |
| | | Industry Standard 128-bit Secure Sockets Layer (SSL) Security |
| | | IML and iLO Event Logging |
| | | Support for up to 12 user accounts with customizable access privileges |
| | iLO Advanced Features (optional) | Virtual Graphical Remote Console |
| | | Virtual Floppy Drive |

| | | |
|---|---|---|
| Integrated Smart Array 5i Plus Controller | Data Compatible with all Smart Array Controllers | Yes |
| | Instant Upgrades to other Smart Array Controllers | Yes |
| | Consistent Software Manageability Tools | Yes |
| | PCI-X Bus | 64-bit, 100 MHz (integrated on system board) |
| | PCI-X Peak Data Transfer Rate | 800 MB/s |
| | SCSI Protocols Supported | Ultra3, Ultra2 |
| | SCSI Peak Data Transfer Rate | 160 MB/s per channel |
| | Channels | 2 (only one connected) |
| | SCSI Ports (external/internal) | 0/1 |
| | Drives Supported (maximum) | 2 |

NOTE: Maximum is the total number of internal drives on each specific ProLiant server.

*Technical Specifications*

|  | | |
|---|---|---|
| Cache | 64 MB Read and/or Write Cache | |
| Battery-Backed Write Cache | Yes, with installation of Battery-Backed Write Cache Enabler, up to 64MB | |
| RAID Support | 0, 1 | |
| Logical Drives (maximum) | Maximum = total number of drives | |
| Online Configuration | Yes | |
| Online Capacity Expansion | Yes | |
| Logical Drive Capacity Extension | Yes | |
| Online Stripe Size Migration | Yes | |
| Online RAID Level Migration | Yes | |
| Online Spare Support | Yes | |
| Automatic Data Recovery | Yes | |
| Drive Roaming | Yes | |
| Redundant Controllers | No | |

| Two NC7781 PCI-X Gigabit NICs (embedded) Server Adapter | Network Interface | 10/100/1000-T | |
|---|---|---|---|
| | Compatibility | IEEE 802.3 10Base-T | |
| | | IEEE 802.3ab 1000Base-T | |
| | | IEEE 802.3u 100Base-TX | |
| | Data Transfer Method | 64-bit/133MHz PCI-X | |
| | Network Transfer Rate | 10Base-T (Half-Duplex) | 10 Mb/s |
| | | 10Base-T (Full-Duplex) | 20 Mb/s |
| | | 100Base-TX (Half-Duplex) | 100 Mb/s |
| | | 100Base-TX (Full-Duplex) | 200 Mb/s |
| | | 1000Base-T (Full and Half-Duplex) | 2000 Mb/s |
| | Connector | RJ-45 | |
| | | 10Base-T | Category 3,4 or 5 UTP up to 328 ft (100 m) |
| | Cable Support | 10/100/1000Base-T | Category 5 UTP (2 pair); up to 328 ft (100 m) |