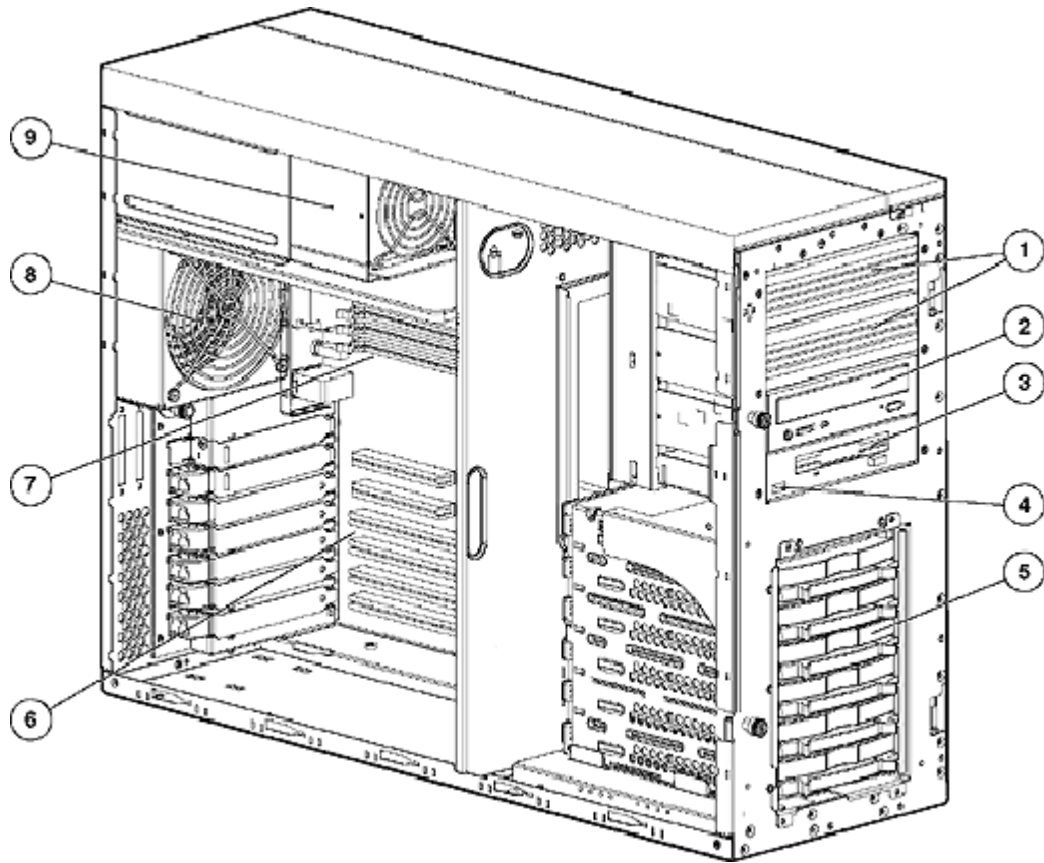


Overview



1. Two Available Removable Media Bays
2. 48X Max IDE CD-ROM Drive
3. 1.44 Diskette Drive
4. USB Port
5. Six Hot Plug Drive Bays

6. Six Expansion Slots (four PCI-X, two PCI-Express)
7. Six DIMM sockets for up to 12 GB of DDR2 memory
8. System Fan (an optional redundant system fan is available)
9. Power Supply

NOTE: An optional 2nd power supply is available for hot-plug 1+1 redundancy

What's New

The HP ProLiant ML350 G4p now supports several exciting new options:

- Serial Attached SCSI (SAS) hard drives and controllers
- USB DAT tape drives
- Intel Xeon 3.6 GHz processors with 2MB L2 cache

Overview

At A Glance

The HP ProLiant family now includes an HP ProLiant ML350 server that combines fourth generation features with top notch performance and remote management capabilities. To complement our popular G4 features, the HP ProLiant ML350 G4p packs the latest Intel Xeon processors with 2MB cache, DDR2 memory, Integrated Lights-Out management, and support for serial hard drives.

- 3.0 GHz, 3.2 GHz, 3.4 GHz or 3.6 GHz Intel® Xeon™ processors (dual processor capability) with 2MB level 2 cache. Processors include support for Hyper-Threading.
- Intel® E7520 chipset
- 800-MHz front side bus
- Integrated Dual Channel Ultra320 SCSI Adapter
- HP integrated 2 Port SATA controller
- Smart Array 641 Controller (standard in Array Models only)
- Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
- PC2-3200 400 MHz DDR2 SDRAM with Online Spare support (expandable to 12 GB)
- Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI Express, and one x8 PCI Express
- Two USB ports, including one front USB port (USB 2.0)
- Standard support for six hot plug SCSI or two SATA hard drives (SCSI models support Ultra320 drives. Serial models support SAS and SATA drives.)
NOTE: See the "Storage" section of this QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives.
- Internal storage capacity of up to 1.8 TB; 2.4 TB with optional 2-bay hot plug SCSI drive cage
- Support for optional duplex SCSI backplane, redundant system fan, and second serial port
- Integrated Lights-Out (iLO) Standard for remote management
- 725W Hot-Plug Power Supply; optional 725W Hot-Pluggable Redundant Power Supply (1 + 1) available.
- Tool-free chassis entry and component access
- Universal rail solution supporting both square and round hole rack environments
- Support for ROM based setup utility (RBSU) and redundant ROM
- Systems Insight Manager, SmartStart, and Automatic Server Recovery 2 (ASR-2)
- HP Power Regulator for ProLiant
- Protected by HP Services and a worldwide network of resellers and service providers. Three-year Next Business Day, on-site limited global warranty. Certain restrictions and exclusions apply. Pre-Failure Notification on processors, memory, and SCSI hard drives. SATA hard drives have a one-year warranty.

Standard Features

| | |
|---|--|
| Processor One of the following depending on Model | Intel Xeon Processor 3.4 GHz/800-2MB L2 Intel Xeon Processor 3.2 GHz/800-2MB L2 Intel Xeon Processor 3.0 GHz/800-2MB L2 NOTE: "Factory Integrated Models" are configured to order and require the selection of at least one processor. |
|---|--|

| | |
|---------------------|------------------------------|
| Cache Memory | Integrated 2MB Level 2 cache |
|---------------------|------------------------------|

| | |
|---------------------------------|--------------------------------|
| Processor Upgradeability | Upgradeable to dual processing |
|---------------------------------|--------------------------------|

| | |
|----------------|--|
| Chipset | Intel® E7520 Chipset with 800-MHz Front Side Bus |
|----------------|--|

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

| | | |
|--|--|------------------------------|
| Memory One of the following depending on model | Type | PC2-3200 DDR2 SDRAM (400MHz) |
| | Standard for Non-Array Models | 512 MB (1 x 512 MB) |
| | Standard for Array Models | 1 GB (2 x 512 MB) |
| | Maximum | 12 GB |
| | NOTE: The standard memory information above does not apply to factory integrated models. The memory configuration in factory integrated models is set according to your specifications. | |

| | |
|---------------------------|--|
| Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
|---------------------------|--|

| Expansion Slots | Slot Number | Bus Speed | Maximum Card Length | Bus Number* | Device Number** | Hot Plug | PCI Voltage |
|-----------------|--|------------------------------|---------------------|-------------|-----------------|----------|-------------|
| | 1 | PCI Express x4 (half length) | 6.6" | 16 | 1 | no | N/A |
| | 2 | PCI Express x8 | 12.28" | 12 | 1 | no | N/A |
| | 3 | 64-bit/100MHz PCI-X | 12.28" | 9 | 2 | no | 3.3 Volt |
| | In HP ProLiant ML350 G4p Array Models, the Smart Array 641 is installed in Slot 3. | | | | | | |
| | 4 | 64-bit/100MHz PCI-X | 12.28" | 9 | 1 | no | 3.3 Volt |
| | 5 | 64-bit/133MHz PCI-X | 12.28" | 6 | 1 | no | 3.3 Volt |
| | 6 | 64-bit/66MHz PCI-X | 12.28" | 2 | 2 | no | 3.3 Volt |

*NOTE: Bus number listed reflects the default bus assignment. Inserting cards with PCI bridges may alter the actual bus assignment number.

**NOTE: Slots are enumerated differently based on operating system. Microsoft's operating systems enumerate from lowest to highest Device ID by bus (starting with the lowest bus).

NOTE: All slots can accept universal keyed PCI cards

Standard Features

| | | | |
|---------------------------------|--|---|--|
| Storage Controller | Integrated Dual Channel Ultra320 SCSI Adapter HP integrated 2 Port SATA controller Smart Array 641 Controller (Standard in Array Models only) | | |
| Storage | Diskette Drives | 1.44 MB Diskette Drive | |
| | Optical Drive | 48x IDE CD-ROM Drive | |
| | Hard Drives | None included standard | |
| | External Storage | Two external SCSI port knockouts available; optional Internal-to-External SCSI Cable Option Kit required for external connections | |
| | | <ul style="list-style-type: none"> • HD68 Internal to External SCSI Cable Option Kit PN 159547-B22 • VHDCI Internal to External SCSI Cable Option Kit PN 333370-B21 | |
| Maximum Internal Storage | Hot Plug SCSI | 2.4 TB | 6 x 300 GB with standard drive cage + 2 x 300 GB with optional ML3xx Two Bay Hot Plug SCSI Drive Cage |
| | Hot Plug SATA | 1.5 TB | 2 x 250 GB with standard controller + 4 x 250 GB with optional SATA array controller |
| | Hot Plug SAS (3.5") | 880 GB | 6 x 146 GB with optional Smart Array P600 Controller |
| Interfaces | Parallel | 1 | |
| | Serial | 1 (optional 2nd serial port available) | |
| | Pointing Device (Mouse) | 1 | |
| | Graphics | 1 | |
| | Keyboard | 1 | |
| | Network RJ-45 | 2 (1 dedicated for iLO) | |
| | USB | 2 | <p>NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html.</p> |
| | External SCSI knockouts | 2 | |
| Graphics | Integrated ATI RAGE XL Video Controller with 8-MB SDRAM Video Memory VGA connector; up to 1600 x 1200 resolution supported | | |
| Form Factor | Tower or rack (5U) NOTE: Rack models (and rack conversion kit) support: <ul style="list-style-type: none"> • Square or round hole racks 24"- 35" deep, including HP Rack System /E and HP Systems • Telco racks with 3rd part option kit from Rack Solutions http://www.racksolutions.com/hp | | |

Standard Features

ProLiant Essentials Foundation Pack Software

HP Systems Insight Manager

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. For more information on HP SIM visit: <http://www.hp.com/go/hpsim>.

Management Agents

The Management Agents provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, or portables, and send alerts to Systems Insight Manager or other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, visit: <http://www.hp.com/servers/manage>.

SmartStart

SmartStart simplifies server setup by providing a quick, easy way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at <http://www.hp.com/servers/manage>.
Minimum SmartStart version supported: 7.2
Latest SmartStart version supported: 7.3

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 alerts on updates as they become available.

ROMPaa, 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 the Software and Drivers download pages at <http://www.hp.com/go/support>.

Insight Diagnostics Online Edition

The most advanced configuration analysis, reporting and troubleshooting utilities used by HP at your fingertips. Available in SmartStart.

Optional ProLiant Essentials Value Packs

Optional software offerings that extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Integrated Lights-Out Advanced Pack - upgrades the Integrated Lights-Out processor to full virtual presence and control with graphical console and virtual media.
- Rapid Deployment Pack - an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands.
- 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, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus
- 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,

Standard Features

- 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.
- Server Migration Pack - The Server Migration Pack automates the manual processes required for migrating servers between physical or virtual platforms (P2V, V2P, and V2V).

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 V2.0 Compliant
PCI 2.2 Compliant
PXE Support
WOL Support
PCI-X 1.0 Compliant
Novell Certified
Microsoft® Logo certifications
USB 2.0

Availability

Optional Hot Plug, Redundant Power supply
Online Spare Memory
Optional Redundant System Fan

Remote Management

Integrated Lights-Out Standard

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

Integrated Lights Out Advanced Pack (optional)
Remote Insight Lights-Out Edition II (optional)

Standard Features

| | |
|--------------------------------------|---|
| System Management | HP Systems Insight Manager SmartStart Redundant ROM System Firmware Update ROMPaq ProLiant RBSU (ROM-Based Setup Utility) Automatic Server Recovery-2 (ASR-2) Dynamic Sector Repairing (with Smart Array Controller) Drive Parameter Tracking (with Smart Array Controller) Pre-Failure Warranty (covers processors, memory and SCSI hard drives) |
| Security | Power-on password Setup password Diskette boot control Parallel and serial interface control Disk configuration lock Power switch security |
| Server Power Cords | Tower models ship standard with a 12' country specific, lowline NEMA power cord. Rack models ship standard with a 10' IEC cable. Rack models for some countries also include a 12' NEMA cord. Most redundant power supply options ship with a 12' country specific power cord. The one exception is the IEC redundant power supply (P/N 384168-B21) which ships with a 10' IEC cable only. |
| UPS and PDU Power Cord Matrix | Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf . |
| Power Supply | Hot plug models: 725 Watt, Power Factor Correction (PFC), Hot Plug 100 to 240 VAC Rated Input Voltage (Auto-sensing), CE Mark Compliant Optional 2nd power supply for hot-pluggable 1 + 1 redundancy |
| System Fans | 1 fan ships standard, 2 fans total supported (does not include power supply or processor heatsink fans) |
| Required Cabling | For required cabling information, refer to the HP ProLiant ML350 G4p cabling matrix at http://www.hp.com/servers/proliantML350 . NOTE: Please see the "Storage" section of this QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives. |

Standard Features

OS Support

Microsoft Windows Server 2003
Microsoft Small Business Server 2003
Microsoft Windows 2000 Server and Advanced Server
Novell NetWare
Novell NetWare Small Business Suite
LINUX (Red Hat, SuSE)
VMware Virtualization Software

NOTE: For a complete and up-to-date listing of supported operating systems please visit our OS Support Matrix at: <http://www.hp.com/go/supportos>.

NOTE: For a complete and up-to-date information on Linux support, please visit the HP Linux Web site at <http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html>

NOTE: Optional hardware may be required to support some operating systems.

NOTE: For 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>

NOTE: For an up-to-date listing of the latest drivers available for the HP ProLiant ML350, please see: <http://www.compaq.com/support/files/server/us/index.html>.

NOTE: For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at:

<http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html>.

Installation of Server into Telco Racks

Support for all 2-post Telco racks requires the use of the HP ProLiant ML350 G4 rack kit and an additional option kit from Rack Solutions. <http://www.racksolutions.com/hp>.

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, 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>.

Custom Builder

Please see the Enterprise Configurator for configuration assistance at: <http://www.hp.com/products/configurator>.

HP ProLiant Smart Buys (NA only)

The HP Smart Buy program offers mainstream business solutions at competitive prices with excellent availability and superior HP quality. It offers a wide range of industry-leading HP products at compelling prices, allowing you to receive richer configurations with additional options.

NOTE: ProLiant Smart Buys are available in NA only. For detailed specification information on ProLiant Smart Buys please click on the following link: <ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>

Standard Features

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of resellers and service providers. 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. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

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

NOTE: SATA drives have a 1 year warranty.

The warranty is fully supported by HP Services and a worldwide network of resellers and service providers. In addition, 90-day 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.

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 coverage for the HP branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as 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, 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.

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

NOTE: ProLiant Smart Buys are available in NA only. For detailed specification information on ProLiant Smart Buys please click on the following link: <ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>.

Models - Tower

| | | |
|---|--------------------|---|
| ML350T04p SCSI x3.0-2MB/800, 512 MB 380165-xx1 | Processor(s) | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional hard drives & drive cage) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Tower (5U) |

| | | |
|---|--------------------|---|
| ML350T04p SCSI x3.0-2MB/800, 1 GB Array 380173-xx1 | Processor(s) | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 1 GB (2 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | RAID Controller | Smart Array 641 Controller |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| Form Factor | Tower (5U) | |

| | | |
|---|--|---|
| ML350T04p SATA/SAS x3.0-2MB/800, 512 MB 331889-xx1 | Processor(s) | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated two port SATA Integrated dual channel Ultra320 SCSI adapter |
| Hard Drive | None ship standard (Up to 6 supported with optional SATA or SAS controller NOTE: Please see the "Storage" section of these QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives. | |

Models

| | |
|------------------|---|
| Internal Storage | Hot Plug SATA - 1.5 TB maximum (with optional SATA controller & 6 hard drives) NOTE: The optional SATA RAID controller is required to support hot plug of SATA hard drives. Hot Plug SAS - 880 GB maximum (with optional SAS controller & 6 hard drives) |
| Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| Diskette Drive | 1.44 MB Diskette Drive |
| Form Factor | Tower (5U) |

| | | |
|--|--------------------|---|
| ML350T04p SCSI x3.2-2MB/800, 512 MB 380166-xx1 | Processor(s) | (1) Intel Xeon 3.2 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| Form Factor | Tower (5U) | |

| | | |
|---|------------------------|---|
| ML350T04p SCSI x3.2-2MB/800, 1 GB Array 380196-xx1 | Processor(s) | (1) Intel Xeon 3.2 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 1 GB (2 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | RAID Controller | Smart Array 641 Controller |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| Diskette Drive | 1.44 MB Diskette Drive | |
| Form Factor | Tower (5U) | |

Models

| | | |
|---|---------------------------|---|
| ML350T04p SATA/SAS x3.2-2MB/800, 512 MB 356816-xx1 | Processor(s) | (1) Intel Xeon 3.2 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated two port SATA Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported with optional SATA or SAS controller) NOTE: Please see the "Storage" section of these QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives. |
| | Internal Storage | Hot Plug SATA - 1.5 TB maximum (with optional SATA controller & 6 hard drives) NOTE: The optional SATA RAID controller is required to support hot plug of SATA hard drives. Hot Plug SAS - 880 GB maximum (with optional SAS controller & 6 hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Tower (5U) |

| | | |
|---|---------------------------|---|
| ML350T04p SCSI x3.4-2MB/800, 512 MB 380172-xx1 | Processor(s) | (1) Intel Xeon 3.4 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Tower (5U) |

| | | |
|---|---------------------------|---|
| ML350T04p SCSI x3.4-2MB/800, 1 GB Array 380197-xx1 | Processor(s) | (1) Intel Xeon 3.4 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 1 GB (2 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | RAID Controller | Smart Array 641 Controller |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Tower (5U) |

Models

| | | |
|--|--------------------|---|
| ML350T04p SATA/SAS x3.4-2MB/800, 512 MB 370508-xx1 | Processor(s) | (1) Intel Xeon 3.4 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated two port SATA Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported with optional SATA or SAS controller) NOTE: Please see the "Storage" section of these QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives. |
| | Internal Storage | Hot Plug SATA - 1.5 TB maximum (with optional SATA controller & 6 hard drives) NOTE: The optional SATA RAID controller is required to support hot plug of SATA hard drives. Hot Plug SAS - 880 GB maximum (with optional SAS controller & 6 hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Tower (5U) |

Models - Rack

| | | |
|---|--------------------|---|
| ML350R04p SCSI x3.0- 2MB/800, 512 MB 382174-xx1 | Processor(s) | (1) Intel Xeon 3.0 GHz processor standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack (5U) |

Models

| | | |
|--|---------------------------|---|
| ML350R04p SCSI x3.0-2MB/800, 1 GB Array 382195-xx1 | Processor(s) | (1) Intel Xeon Processor 3.0 GHz standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 1 GB (2 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | RAID Controller | Smart Array 641 |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack (5U) |

| | | |
|--|---------------------------|---|
| ML350R04p SCSI x3.2-2MB/800, 512 MB 382177-xx1 | Processor(s) | (1) Intel Xeon Processor 3.2 GHz standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack (5U) |

| | | |
|--|---------------------------|---|
| ML350R04p SCSI x3.2-2MB/800, 1 GB Array 382196-xx1 | Processor(s) | (1) Intel Xeon Processor 3.2 GHz standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 1 GB (2 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | RAID Controller | Smart Array 641 Controller |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack (5U) |

Models

| | | |
|--|---------------------------|---|
| ML350R04p SCSI x3.4-2MB/800, 512 MB 382197-xx1 | Processor(s) | (1) Intel Xeon Processor 3.4 GHz standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 512 MB (1 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| | Form Factor | Rack (5U) |

| | | |
|--|---------------------------|---|
| ML350R04p SCSI x3.4-2MB/800, 1 GB Array 382178-xx1 | Processor(s) | (1) Intel Xeon Processor 3.4 GHz standard (up to 2 supported) |
| | Cache Memory | Integrated 2MB Level 2 cache |
| | Standard Memory | 1 GB (2 x 512 MB) |
| | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter |
| | Storage Controller | Integrated dual channel Ultra320 SCSI adapter |
| | RAID Controller | Smart Array 641 Controller |
| | Hard Drive | None ship standard (up to 6 supported) |
| | Internal Storage | 2.4 TB maximum hot plug SCSI (with optional drive cage & hard drives) |
| | Optical Drive | 48x IDE (ATAPI) CD-ROM Drive |
| | Diskette Drive | 1.44 MB Diskette Drive |
| Form Factor | Rack (5U) | |

Country Code Key

XX=00
 XX=01
 XX=03
 XX=04
 XX=05
 XX=20
 XX=29
 XX=37
 XX=42
 XX=AA

Tower Code Key

U.S. English
 Australia
 UK
 Germany
 France
 Brazil
 Japan
 APD
 Europe
 PRC

Rack Code Key

U.S. English
 N/A
 N/A
 N/A
 N/A
 N/A
 Japan
 APD
 Europe
 PRC

Configuration Information - Factory Integrated Models (North America only)

NOTE: For Configure to Order requirements within EMEA region, please consult local Sales Contact.

NOTE: All configure-to-order servers must start with a CTO Chassis. Use the following section to order a server customized to your requirements with options integrated at the factory. The options you select in steps 2 and 3 will be integrated with the base configuration you select in step 1. Additional options selected in Step 4 will also be integrated when applicable.

NOTE: Standard models of this product offering (see previous section of this document) do not support HP Factory Express Server Configuration Level 1.

Step 1: Base Configuration (choose one of the following configurable models)

| | | |
|---------------|---|------------|
| Models | HP ProLiant ML350G4p HP-SCSI Rack CTO Chassis (North America) | 382188-405 |
| | Includes: Embedded NC7761 PCI 10/100/1000T Gigabit network adapter Integrated dual channel Ultra320 SCSI adapter Six Hot Plug SCSI Drive Bays Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI Express, and one x8 PCI Express Two USB ports 725W Hot-Plug Power Supply 5U Rack Form Factor | |
| | HP ProLiant ML350G4p HP-SCSI Tower CTO Chassis (North America) | 382187-405 |
| | Includes: Embedded NC7761 PCI 10/100/1000T Gigabit network adapter Integrated dual channel Ultra320 SCSI adapter Six Hot Plug SCSI Drive Bays Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI Express, and one x8 PCI Express Two USB ports 725W Hot-Plug Power Supply 5U Tower form factor Keyboard 2-button Mouse | |
| | HP ProLiant ML350G4p Serial Tower CTO Chassis (North America) | 372798-405 |
| | Includes: Embedded NC7761 PCI 10/100/1000T Gigabit network adapter Integrated dual channel Ultra320 SCSI adapter Dual port SATA controller Six Hot Plug SATA Drive Bays Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, one 64-bit/66-MHz PCI-X, one x4 PCI-Express, and one x8 PCI-Express Two USB ports 725W Hot-Plug Power Supply 5U Tower form factor Keyboard 2-button Mouse | |

Configuration Information - Factory Integrated Models (North America only)

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

| | | |
|---------------|---|------------|
| Processors | Intel X3.0GHz/800-2MB ML350G4p FIO BASE | 382184-L21 |
| | Intel X3.2GHz/800-2MB ML350G4p FIO BASE | 382182-L21 |
| | Intel X3.4GHz/800-2MB ML350G4p FIO BASE | 382180-L21 |
| | Intel X3.6GHz/800-2MB ML350G4p FIO BASE | 370515-L21 |
| Base Memory | 512 MB Advanced ECC PC2-3200 DDR SDRAM DIMM Kit (1 x 512 MB) | 384163-B21 |
| | 1 GB Advanced ECC PC2-3200 DDR SDRAM DIMM Kit (2 x 512 MB) | 343055-B21 |
| | 2 GB Advanced ECC PC2-3200 DDR SDRAM DIMM Kit (2 x 1024 MB) | 343056-B21 |
| | 4 GB Single-Rank Adv. ECC PC2-3200 DDR SDRAM DIMM Kit (2 x 2048 MB) | 343057-B21 |
| Optical Drive | DVD-ROM Drive Option Kit | 217053-B21 |
| | CD-RW/DVD-ROM Combo Drive Option Kit | 331346-B21 |
| | HP DVD+R/RW 16X Half Height | 383974-B21 |
| | HP 48X CD-ROM ALL (no screws) | 384758-B21 |

Step 3: Choose Additional Factory Integratable Options

| | | |
|-----------------|--|------------|
| SAS Starter Kit | NOTE: The new HP ProLiant ML350 G4p SAS Starter Kit makes migration to SAS easy and affordable. The SAS Starter Kit includes the Smart Array P600 Controller, two 72 GB 15K rpm SAS hard drives, and two required SAS cables. | |
| | HP ProLiant ML350 G4p SAS Starter Kit | 393684-B21 |
| Controllers | Smart Array 641 Controller | 291966-B21 |
| | Smart Array 642 Controller | 291967-B21 |
| | Smart Array 6402/128 Controller | 273915-B21 |
| | Smart Array 6404/256 Controller | 273914-B21 |
| | HP Single Channel Ultra320 SCSI HBA | 374654-B21 |
| | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter | 268351-B21 |
| | HP Smart Array P600 Controller | 337972-B21 |
| Hard Drives | Ultra320 Hot Plug (For use with HP-SCSI CTO Chassis) | |
| | HP 300GB U320 10K Universal HDD | 350964-B22 |
| | HP 146GB U320 10K Universal HDD | 286716-B22 |
| | HP 72GB U320 10K Universal HDD | 286714-B22 |
| | HP 146GB U320 15K Universal HDD | 347708-B22 |
| | HP 72GB U320 15K Universal HDD | 286778-B22 |
| | HP 36GB U320 15K Universal HDD | 286776-B22 |
| | SATA Hot Plug (For use with Serial CTO Chassis) | |
| | HP 500GB 1.5G SATA 7.2K 3.5" HDD | 395473-B21 |
| | HP 250GB 1.5G SATA 7.2K 3.5" HDD | 349239-B21 |
| | HP 160GB 1.5G SATA 7.2K 3.5" HDD | 349238-B21 |
| | HP 80GB 1.5G SATA 7.2K 3.5" HDD | 349237-B21 |
| | SAS 3.5" Hot Plug (For use with Serial CTO Chassis) | |
| | HP 36GB 3G SAS 15K 3.5" HDD | 375868-B21 |

Configuration Information - Factory Integrated Models (North America only)

| | | |
|------------------|---|------------|
| | HP 72GB 3G SAS 15K 3.5" HDD | 375870-B21 |
| | HP 146GB 3G SAS 15K 3.5" HDD | 375872-B21 |
| Hard Drive Cable | HP Internal SAS/SATA Cable, 30 inch multi-lane | 389662-B21 |
| | NOTE: The SAS cable above supports four drives. Two cables are required when more than four drives are installed. These cables and HP Smart Array P600 RAID controller are required to support Serial Attached SCSI (SAS) hard drives. Refer to the ML350 G4p Cable Matrix for detailed information (http://www.hp.com/servers/proliantML350). | |

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Options" section below. Some options may not be available for factory integration. Please contact an HP sales representative for additional information.

Options

| | | |
|---|--|------------|
| HP ProLiant ML350 G4p Unique Options NOTE: Several options are shared between the HP ProLiant ML350 G4 and G4p | Hot Plug Redundant Power Supply Option Kit (NA, LA) | 384168-001 |
| | Hot Plug Redundant Power Supply Option Kit (AUST) | 384168-011 |
| | Hot Plug Redundant Power Supply Option Kit (EURO) | 384168-021 |
| | Hot Plug Redundant Power Supply Option Kit (UK) | 384168-031 |
| | Hot Plug Redundant Power Supply Option Kit (Japan) | 384168-291 |
| | Hot Plug Redundant Power Supply Option Kit (IEC) | 384168-B21 |
| | NOTE: PN 384168-B21 contains the redundant power supply with an IEC power cable. Purchase this kit only when connecting to a PDU or UPS that supports IEC cables. All other kits contain country specific power cables. | |
| | ProLiant ML350 G4 Tower to Rack Conversion Kit | 358350-B21 |
| | ML350 G4 Redundant System Fan Kit | 365866-B21 |
| | ProLiant ML350 G4p Second Serial Port Option Kit | 390390-B21 |

| | | |
|--|--|------------|
| ProLiant Essentials Value Pack Software | ProLiant Essentials Integrated Lights-Out Advanced Pack ProLiant Essentials Integrated Lights-Out Advanced Pack, 1 server Featuring: sophisticated virtual administration features for ultimate control of servers in the data centers and remote sites. NOTE: For additional ProLiant Integrated Light-Out Advanced Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11052_div/11052_div.HTML | 263825-B21 |
| | ProLiant Essentials Intelligent Networking Pack ProLiant Essentials Intelligent Networking Pack - Windows Edition, Single Server License NOTE: For use with a single server. Contains one license with a unique license activation key and documentation. NOTE: For additional ProLiant Intelligent Networking Pack - Windows License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML | 372906-B21 |
| | ProLiant Essentials Intelligent Networking Pack - Linux Edition, Single Server License NOTE: For additional ProLiant Intelligent Networking Pack - Linux License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML | 397004-B21 |
| | ProLiant Essentials Performance Management Pack ProLiant Essentials Performance Management Pack, Single-Server License NOTE: For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation. NOTE: The most recent version of the software can always be downloaded at http://www.hp.com/products/pmp . NOTE: For additional ProLiant Performance Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11925_div/11925_div.HTML | 306696-B21 |
| | ProLiant Essentials Rapid Deployment Pack Windows Edition and Linux Edition Release Rapid Deployment Pack, Single-Server License NOTE: This license allows 1 server to be deployed and managed via RDP. | 267196-B21 |
| | Rapid Deployment Pack, Single-Server License (Japan) NOTE: This license allows 1 server to be deployed and managed via RDP. | 267196-291 |

Options

NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.HTML

http://h18000.www1.hp.com/products/quickspecs/11713_div/11713_div.HTML

ProLiant Essentials Workload Management Pack

ProLiant Essentials Workload Management Pack, Single Server License 303284-B21

NOTE: For additional ProLiant Workload Management Pack License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/11452_div/11452_div.HTML

ProLiant Essentials Virtualization Management Software

ProLiant Essentials Virtual Machine Management Pack, Single-Server License 372214-B21

NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.

ProLiant Essentials Server Migration Pack, Single-Migration License 375345-B21

NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation.

NOTE: This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.

NOTE: For additional ProLiant Essentials Virtualization Management Software License Kits please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.HTML

ProLiant Essentials Vulnerability and Patch Management Pack

ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License 371645-B21

NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.

NOTE: For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at:

http://h18000.www1.hp.com/products/quickspecs/12111_div/12111_div.HTML

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>.

| | | |
|---|--|------------|
| ProLiant Software Maintenance Subscription | ProLiant Software Maintenance Subscription | 355060-B21 |
| | ProLiant Software Maintenance Single Release | 356573-B21 |
| | ProLiant Foundation Pack Single Release | 356604-B21 |

NOTE: Please see the SmartStart QuickSpecs for additional information regarding the subscription purchase:

<http://h18000.www1.hp.com/products/quickspecs/Division/11073.html>
(Worldwide)

http://h18000.www1.hp.com/products/quickspecs/North_America/11073.html
(North America)

Options

| | | |
|---------------------------|--|------------|
| Processors | Intel Xeon 3.6 GHz-2MB Processor Option Kit | 370515-B21 |
| | Intel Xeon 3.4 GHz-2MB Processor Option Kit | 382180-B21 |
| | Intel Xeon 3.2 GHz-2MB Processor Option Kit | 382182-B21 |
| | Intel Xeon 3.0 GHz-2MB Processor Option Kit | 382184-B21 |
| | Intel Xeon 3.0 GHz-1MB Processor Option Kit | 358344-B21 |
| Memory (DIMMs) | NOTE: The HP ProLiant ML350 G4p requires interleaved memory configurations when more than one DIMM is installed. Non-array models of the ML350 G4p ship standard with a single DIMM. Note that when upgrading system memory, DIMMs must be configured in identical pairs. | |
| | 512 MB Advanced ECC PC2-3200 DDR2 SDRAM DIMM Kit (1 x 512 MB) | 384163-B21 |
| | 1 GB Advanced ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 512 MB) | 343055-B21 |
| | 2 GB Advanced ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 1024 MB) | 343056-B21 |
| | 4 GB Single-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB) | 343057-B21 |
| | 4 GB Dual-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB) | 375004-B21 |
| Internal Storage Upgrades | Duplex SCSI Backplane Option Kit | 339323-B21 |
| | ML3xx Two Bay Hot Plug SCSI Drive Cage | 244059-B21 |
| | NOTE: The drive cage option kit (PN 244059-B21) has one 1" drive bay and one 1.6" drive bay. It installs in two removable media bays. | |
| Optical Drives | CD-RW/DVD-ROM Combo Drive Option Kit | 331346-B21 |
| | NOTE: The DVD-ROM drive is supported in either the CD-ROM bay or a removable media bay. If placed in a removable media bay, it requires the 2-Device IDE cable (PN 305381-B21). | |
| | DVD-ROM Drive Option Kit | 217053-B21 |
| | HP DVD+R/RW 16X Half Height | 383974-B21 |
| Hard Drives | Ultra320 – Universal Hot Plug | |
| | HP 300GB U320 10K Universal HDD | 350964-B22 |
| | HP 146GB U320 10K Universal HDD | 286716-B22 |
| | HP 72GB U320 10K Universal HDD | 286714-B22 |
| | HP 146GB U320 15K Universal HDD | 347708-B22 |
| | HP 72GB U320 15K Universal HDD | 286778-B22 |
| | HP 36GB U320 15K Universal HDD | 286776-B22 |
| | NOTE: Please see the Ultra320 Universal Hot Plug Hard Drive QuickSpecs for additional technical information on the hard drives Support details, please see the following: 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) | |
| | Serial ATA (SATA) Hot Plug | |
| | HP 500GB 1.5G SATA 7.2K 3.5" HDD | 395473-B21 |

Options

| | |
|----------------------------------|------------|
| HP 250GB 1.5G SATA 7.2K 3.5" HDD | 349239-B21 |
| HP 160GB 1.5G SATA 7.2K 3.5" HDD | 349238-B21 |
| HP 80GB 1.5G SATA 7.2K 3.5" HDD | 349237-B21 |

NOTE: Please see the SATA Hard Drive QuickSpecs for additional technical information on the hard drives Support details, please see the following:

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

http://h18000.www1.hp.com/products/quickspecs/11940_na/11940_na.HTML
(North America)

SAS 3.5" Hot Plug (For use with Serial CTO Chassis)

| | |
|------------------------------|------------|
| HP 36GB 3G SAS 15K 3.5" HDD | 375868-B21 |
| HP 72GB 3G SAS 15K 3.5" HDD | 375870-B21 |
| HP 146GB 3G SAS 15K 3.5" HDD | 375872-B21 |

NOTE: Please see the SAS Hard Drive QuickSpecs for additional technical information on the hard drives and support details:

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

http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.HTML
(North America)

| | | |
|-------------------|--|------------|
| Hard Drive Cables | HP Internal SAS/SATA Cable, 30 inch multi-lane | 389662-B21 |
| | NOTE: The SAS cable above supports four hard drives. Two cables are required to support more than 4 hard drives. These cables and HP Smart Array P600 RAID controller are required to support Serial Attached SCSI (SAS) hard drives. Refer to the ML350 G4p Cable Matrix for detailed information (http://www.hp.com/servers/proliantML350). | |

| | | |
|--|--|------------|
| Storage Controllers | Ultra320 SCSI Storage Controllers | |
| | 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 |
| | 128MB Battery-Backed Cache Enabler | 351580-B21 |
| | NOTE: This 128MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller. | |
| | Ultra320 Expansion Module for SA-6402 | 273911-B21 |
| | 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS | 284688-B21 |
| | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 | 374654-B21 |
| 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter | 268351-B21 | |

Options

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)

Serial ATA (SATA) Controller

HP 6-port SATA RAID Controller

372953-B21

NOTE: Please see the following Controller or SCSI Adapter QuickSpecs for Technical Specifications

http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.HTML
(SATA RAID Controller)

SAS Controller

HP Smart Array P600 Controller

337972-B21

512MB DDR BBWC Upgrade

372538-B21

NOTE: For Smart Array P600 Controller only.

NOTE: Please see the following Controller 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/12247_div/12247_div.HTML
(Smart Array P600 Controller)

SAS HBA

HP 8 Internal Port SAS HBA with RAID

347786-B21

NOTE: Please see the following QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/12332_div/12332_div.HTML
(SAS HBA)

Options

| | | |
|-----------------------|---|------------|
| Communications | HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter | 367132-B21 |
| | HP NC310F PCI-X 1000SX Gigabit Server Adapter | 368169-B21 |
| | HP NC320T PCI Express 1000T Gigabit Server Adapter | 367047-B21 |
| | HP NC370F PCI-X Multifunction 1000SX Gigabit Server Adapter | 374193-B22 |
| | HP NC370T PCI-X Multifunction 1000T Gigabit Server Adapter | 374191-B22 |
| | HP NC1020 PCI 1000T Gigabit Server Adapter | 353377-B21 |
| | HP NC7170 PCI-X Dual Port 1000T Gigabit Server Adapter | 313881-B21 |
| | HP NC7771 PCI-X 1000T Gigabit Server Adapter | 290563-B21 |

NOTE: A minimum of 1 GB of memory is required for NC370x adapters, with a maximum of two NC370x adapters permitted in a server.

NOTE: NC61XX, NC71XX, NC77XX, or NC1020 network adapter (NIC) can be used for redundancy with the embedded NC7761 NIC. When either the embedded NC7761 or the NC1020 is teamed with other HP Ethernet adapters, Jumbo Frames and LSO features are automatically disabled.

| | | |
|---------------------------|---|------------|
| 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 |

Tape Drives

NOTE: The following tape drives are recommended for use with the HP ProLiant ML350 G4p. Additional HP tape drives are supported.

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

USB Tape Drives NOTE: When using the USB internal tape connector, the front USB port will be deactivated

| | |
|--|--------|
| HP StorageWorks DAT 72 USB External Tape Drive (Carbonite) | DW027A |
|--|--------|

Internal, Rack-Mount, and Array Module Ultrium Tape Drives

| | |
|---|--------|
| HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite) | DW064A |
|---|--------|

| | |
|---|--------|
| HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite) | DW016A |
|---|--------|

| | |
|---|--------|
| HP StorageWorks Ultrium 215 Array Module (Carbon) | C7492B |
|---|--------|

NOTE: Single drive installed in a 1U Rack-mount kit.

Internal, Rack-Mount, and Array Module DAT Drives

| | |
|--|--------|
| HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon) | Q1522B |
|--|--------|

| | |
|--|--------|
| HP StorageWorks 1U Rack-mount kit with one DAT 72 (Carbon) | A7443A |
|--|--------|

NOTE: Single drive installed in a 1U Rack-mount kit.

Rack-Mount Tape Drive Enclosures

| | |
|-----------------------------------|--------|
| HP StorageWorks 1U Rack-Mount Kit | A7445B |
|-----------------------------------|--------|

NOTE: The 1U Rack-mount Kit can support up to (2) half-height tape drives and compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232 and Ultrium 448 tape drives.

| | |
|---------------------------------------|--------|
| HP StorageWorks 1U USB Rack-Mount Kit | A8007A |
|---------------------------------------|--------|

| | |
|-------------------------|------------|
| 1U USB Cable Option Kit | 396114-B21 |
|-------------------------|------------|

NOTE: Converts a 1U SCSI rack-mount kit to a USB interface to support the USB tape drives.

Options

Tape Autoloaders

DAT Autoloader

HP StorageWorks DAT 72x6 Autoloader (Internal) Q1566A

HP StorageWorks DAT 72x6 Autoloader (External) Q1567A

NOTE: Please see the DAT 72x6 Tape Autoloader QuickSpecs for additional options such as host bus adapters, controllers and media:

http://h18006.www1.hp.com/products/quickspecs/11905_div/11905_div.html
(Worldwide)

http://h18006.www1.hp.com/products/quickspecs/11905_na/11905_na.html
(North America)

HP StorageWorks 1/8 Tape Autoloader

HP StorageWorks 1/8 Ultrium 960 Tape Autoloader AF204A

HP StorageWorks 1/8 Ultrium 448 Tape Autoloader AF203A

HP StorageWorks 1/8 Ultrium 232 Tape Autoloader AF202A

1/8 Tape Autoloader Rackmount Kit C9268R

NOTE: Required to install the unit in a standard 19-inch rack; includes rails and rackmount instructions

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>

Tape Libraries

HP StorageWorks MSL2024 Tape Library

HP StorageWorks MSL2024 1 Ultrium 960 Drive Library AG115A

HP StorageWorks MSL2024 1 Ultrium 448 Drive Library AG116A

HP StorageWorks MSL2024 2 Ultrium 448 Drive Library AG117A

HP StorageWorks MSL6000 Tape Library

Ultrium 960 technology

HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library AD606A

HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library AD608A

HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library AD607A

HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library AD609A

Ultrium 460 technology

HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library AD598A

HP StorageWorks MSL6030 1 Ultrium 460 Dr FC Library AD600A

HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library AD599A

HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library AD601A

NOTE: Please reference the MSL2024 and 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>

Options

| | | |
|--|--|------------|
| Magneto-Optical Jukeboxes | HP StorageWorks 9.1 GB Optical Jukeboxes | |
| | 600mx, 4 drive, 64 slot jukebox | C1160M |
| | 1200mx, 4 drive, up to 128 slots | C1104M |
| | 2200mx, 6 drive, up to 238 slots | C1107M |
| | <p>NOTE: Please see the HP StorageWorks Magneto-Optical Products data sheet for a complete listing of available jukeboxes at: http://www.hp.com/products1/storage/products/archivalprod/brochures/MO_family_pb.pdf</p> <p>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.</p> | |
| Ultra Density Optical Jukeboxes | 1900ux, 4 drive, 64 slot jukebox | AA966A |
| | 3800ux, 4 drive, 128 slot jukebox | AA969A |
| | 7100ux, 6 drive, 238 slot jukebox | AA971A |
| | | |
| | <p>NOTE: Please see the HP StorageWorks Ultra Density Optical Jukeboxes QuickSpecs for a complete listing of available jukeboxes at: http://h18006.www1.hp.com/products/quickspecs/11944_div/11944_div.html</p> <p>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</p> | |
| HP StorageWorks Modular Smart Array 20 | HP StorageWorks Modular Smart Array 20 | 335921-B21 |
| | NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. | |
| | HP StorageWorks Modular Smart Array 20 Starter Kit | 366172-B21 |
| | <p>NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. Includes Smart Array 6402/128 Controller.</p> <p>NOTE: The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 3.5" Hot Plug Hard Drives.</p> | |
| HP StorageWorks Modular Smart Array 30 | HP StorageWorks Modular Smart Array 30 SB | 302969-B21 |
| | NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies | |
| | HP StorageWorks Modular Smart Array 30 DB | 302970-B21 |
| | <p>NOTE: Rack-mountable 14 drive enclosure with dual bus, redundant power supplies</p> <p>NOTE: The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 Hot Plug Hard Drives.</p> | |

Options

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.11.16 for SUSE SLES 9 and Red Hat EL & 4 (2 node license cluster kit) 305199-B26

HP Serviceguard for Linux A.11.16 for SUSE SLES9 and Red Hat EL 3 & 4 (single license version) 307754-B26

HP Serviceguard for Linux and Red Hat Global File System - 1 year subscription T2798AA#001

HP Serviceguard for Linux and Red Hat Global File System - 3 years subscription T2798AA#003

NOTE: For additional information regarding HP Serviceguard for Linux, 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)

Uninterruptible Power Systems – Tower UPS

HP UPS T1000 XR (1000 VA, 700 Watts), Low Voltage (NA) 204155-001

HP UPS T1000 XR (1000 VA, 700 Watts), High Voltage (Int'l) 204155-B31

HP UPS T1000 XR (1000VA, 700Watts) 100 VAC (JPN) 312803-291

HP UPS T1500 XR (1440 VA, 1050 Watts) (NA) 204155-002

HP UPS T1500 XR (1500 VA, 1050 Watts) (Int'l) 204155-B32

HP UPS T1500 XR (1500 VA, 1050 Watts) (Japan) 204155-291

HP UPS T2200 XR (1920 VA, 1600 Watts) Low Voltage (NA) 204451-001

HP UPS T2200 XR (2200 VA, 1600 Watts) High Voltage (NA) 204451-002

HP UPS T2200 XR (2200 VA, 1600 Watts) (Int'l) 204451-B31

HP UPS T2200 XR (2200 VA, 1600 Watts) (Japan) 204451-291

Uninterruptible Power Systems – HP Rack UPS

HP UPS R1500 XR (100 to 127) (NA) 204404-001

HP UPS R1500 XR (208 to 480) (Int'l) 204404-B31

HP UPS R1500 XR (100 to 127) (Japan) 204404-291

HP UPS R3000 XR (120V) (NA) 192186-001

HP UPS R3000 XR (208V) (NA) 192186-002

HP UPS R3000 XR (100V) (Japan) 192186-291

HP UPS R3000 XR (208V) (Japan) HP UPS R3000 XR (200V) (Japan) 192186-292

HP UPS R3000 XR (230V) (Int'l - detachable cord) 192186-B31

HP UPS R3000 XR (230V) (16A IEC309 Plug) 192186-B32

HP UPS R3000 XR (230V) (16A CEE 7/7 SCHUKO Plug) 192186-B33

HP UPS R3000 XR (230V) (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

Options

| | | |
|--|--|------------|
| HP Monitored Power Distribution Unit (PDU) | HP Monitored Power Distribution Unit: Full Rack Version | |
| | HP 17.3 kVA S2324 Monitored PDU- dual input, 3-phase, 24A (NA/JPN) | 370959-D71 |
| | HP 8.3 kVA S1324 Monitored PDU- single input, 3-phase, 24A (NA/JPN) | 370960-D71 |
| | HP 16.6 kVA S2140 Monitored PDU- dual input, 1-phase, 40A (NA/JPN) | 370961-D71 |
| | HP 8.6 S1140 Monitored PDU- single input, 1-phase, 40A (NA/JPN) | 370962-D71 |
| | HP 22.1 kVA S2316 Monitored PDU- dual input, 3-phase, 16A (INTL) | 370963-B31 |
| | HP 11 kVA S 1316 Monitored PDU- single input, 3-phase, 16A (INTL) | 370964-B31 |
| | HP 14.7 kVA S2132 Monitored PDU- dual input, 1-phase, 32A (INTL) | 370965-B31 |
| HP 7.4 kVA S1132 Monitored PDU- single input, 1-phase, 32A (INTL) | 370966-B31 | |
| Modular PDUs 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) | 252663-D71 |
| | NOTE: This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR. | |
| | 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) | 252663-B21 |
| | NOTE: This mPDU (252663-B21), 40A model has a hardwired input. | |
| | 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. 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. | |
| HP Modular Power Distribution Unit (mPDU), High Volt Model, 40A, Attached Cord, (NA/JPN) | 252663-D73 | |
| HP Modular Power Distribution Unit (mPDU), High Volt Model, 40A, Attached Cord, (Int'l) | 252663-B32 | |
| 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) | | |
| USB Options | HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver) | DC172B |
| | USB 1.44-MB External Diskette Drive (Carbonite) | DC141B |
| | 256MB HP Drive Key II (USB 2.0) | PH657A |

Options

| | | |
|--|--|------------|
| Other | ProLiant ML3xx Internal to External SCSI Cable Option Kit (HD68) | 159547-B22 |
| | ProLiant ML3xx Internal to External SCSI Cable Option Kit (VHDCI) | 333370-B21 |
| <p>NOTE: The ProLiant ML3xx Internal to External SCSI Cable Option Kits (PN 159547-B22 and 333370-B21) are supported by the HP ProLiant ML330, ML350, and ML370 products.</p> | | |
| Rack Conversion Kit | ProLiant ML350 G4 Tower to Rack Conversion Kit | 358350-B21 |
| | Rack Adapter Kit | 332815-B21 |
| | ProLiant DL380 G4, ML370 G4, ML350 G4 Shipping Bracket for Round Hole Racks | 371482-B21 |
| <p>NOTE: This kit is required if the server will be configured and shipped within a round hole rack.</p> | | |
| HP Rack 5000 Series (Graphite Metallic) | HP 5642 Rack-Unassembled | 358254-B21 |
| Rack Options for Rack 5000 Series | Stabilizer Kit for 5642 Rack (Graphite Carbon) | 374493-B21 |
| | Baying Kit for 5642 Rack (Graphite Carbon) | 374499-B21 |
| <p>NOTE: The stabilizing kit is used to prevent rack from tipping over.</p> <p>NOTE: The baying kit is used to join two or more HP 5642 racks.</p> | | |
| HP Rack 10000 G2 Series (Carbon/Graphite Metallic) | 10642 G2 (42U) Rack Cabinet - Pallet | AF001A |
| | 10642 G2 (42U) Rack Cabinet - Shock Pallet | AF002A |
| | 10642 G2 (42U) Rack Cabinet - Crated | AF003A |
| | 10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet | AF004A |
| | 10642 G2 (42U) Rack Cabinet, without door - Shock Pallet | AF005A |
| | 10642 G2 (42U) Rack Cabinet - with Extension, without door - Shock Pallet | AF006A |
| | 10636 G2 (36U) Rack Cabinet - Pallet | AF011A |
| | 10636 G2 (36U) Rack Cabinet - Shock Pallet | AF012A |
| | 10636 G2 (36U) Rack Cabinet - Crated | AF013A |
| | 10636 G2 (36U) Rack Cabinet , with Extension - Shock Pallet | AF014A |
| | 10636 G2 (36U) Rack Cabinet, without door - Shock Pallet | AF015A |
| | 10636 G2 (36U) Rack Cabinet, with Extension, without door - Shock Pallet | AF016A |
| | <p>NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.</p> <p>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)</p> <p>NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.</p> | |

Options

| | | |
|--|---|--------|
| Rack Options for Rack 10000 G2 Series | HP 10642 G2 Front Door ALL | AF009A |
| | HP 10636 G2 Front Door ALL | AF019A |
| | 10642 G2 (42U) Side Panels (set of two) (Graphite Metallic) | AF054A |
| | 10636 G2 (36U) Side Panels (set of two) (Graphite Metallic) | AF056A |
| | 10636 G2 Rear Extension Kit | AF060A |
| | 600mm G2 Stabilizer Option Kit (Graphite) | AF062A |
| | 600mm G2, Heavy Duty Stabilizer Option Kit (Graphite) | AF064A |
| | 800mm G2 Stabilizer Option Kit (Graphite) | AF066A |
| | 800mm G2, Heavy Duty Stabilizer Option Kit (Graphite) | AF068A |
| | NOTE: Supports 10000 G2 Series only. | |
| | HP 10000 G2 Rack Grounding Kit | AF074A |
| | 600W 10K G2 Rack Tie Down | AF076A |
| | NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower . | |

| | | |
|---|--|------------|
| HP Rack 10000 Series (Graphite Metallic) | 10642 (42U) Infrastructure Rack (Low Voltage) | 379006-001 |
| | 10642 (42U) Infrastructure Rack (High Voltage) | 379005-001 |
| | HP S10614 (14U) Rack Cabinet - Shock Pallet | 292302-B22 |
| | HP 10842 (42U) Rack Cabinet - Pallet | 257415-B21 |
| | HP 10842 (42U) Rack Cabinet - Shock Pallet | 257415-B22 |
| | HP 10647 (47U) Rack Cabinet - Pallet | 245160-B21 |
| | HP 10647 (47U) Rack Cabinet - Crated | 245160-B23 |
| | HP 10642 (42U) Rack Cabinet - Pallet | 245161-B21 |
| | HP 10642 (42U) Rack Cabinet - Shock Pallet | 245161-B22 |
| | HP 10642 (42U) Rack Cabinet - Crated | 245161-B23 |
| | HP 10636 (36U) Rack Cabinet - Pallet | 245162-B21 |
| | HP 10636 (36U) Rack Cabinet - Shock Pallet | 245162-B22 |
| | HP 10636 (36U) Rack Cabinet - Crated | 245162-B23 |
| | HP 10622 (22U) Rack Cabinet - Pallet | 245163-B21 |
| | HP 10622 (22U) Rack Cabinet - Shock Pallet | 245163-B22 |
| | HP 10622 (22U) Rack Cabinet - 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: It is mandatory to use a shock pallet in order to ship racks with equipment installed. Not all Compaq equipment is qualified to be shipped in the Rack 10000 series.

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)

Options

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

| | | | |
|---|--|------------|----------------|
| Rack Options for HP Rack 10000 Series | 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 | |
| | TFT7210R Rack Mounted 17" Monitor | 348373-B21 | |
| | NOTE: For a complete list of Monitors please view the following URL: http://www.hp.com/go/kvm | | |
| | TFT5600 Rack Keyboard Monitor | 221546-xx1 | |
| | NOTE: For a complete list of Monitors please view the following URL: http://h18004.www1.hp.com/products/monitors/ . | | |
| | 1U Rack Keyboard & Drawer (Carbon) | 257054-xx1 | |
| Country Code Key (for TFT5600 Rack Keyboard Monitor (PN 221546-xx1 and 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://www.hp.com/go/rackandpower>

| | | |
|---|---|------------|
| HP KVM Switch Options | IP Console Switch Box (KVM/IP), 3 x 1 x 16 | 262586-B21 |
| | IP Console Switch Box (KVM/IP), 1 x 1 x 16 | 262585-B21 |
| | Server Console Switch (KVM), 0 x 1 x 8 port | 336044-B21 |
| | Server Console Switch (KVM), 0 x 2 x 16 port | 336045-B21 |
| | PS/2 Interface Adapter, 1 pack | 262588-B21 |
| | PS/2 Interface Adapter, 8 pack | 262587-B21 |
| | USB Interface Adapter, 1 pack | 336047-B21 |
| | Serial Interface adapter - 1 Pack with power supply | 373035-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 1x 4 USB/PS2 KVM Switch, TT (NA/JPN) | 371301-D71 |
| | HP 1x 4 USB/PS2 KVM Switch, TT (AU/NZ) | 371301-011 |
| | HP 1x 4 USB/PS2 KVM Switch, TT (UK) | 371301-031 |
| | HP 1x 4 USB/PS2 KVM Switch, TT (EU) | 371301-A21 |
| | HP 1x 4 USB/PS2 KVM Switch, RM (ALL) | 371302-B21 |
| | HP PS2 KVM Cable with audio, 6', 2-pack | 371730-B21 |
| HP USB KVM Cable with audio, 6', 2-pack | 371729-B21 | |

Options

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <http://www.hp.com/go/kvm>.

| | | |
|---|--|--------|
| HP Serial Console Server Options | HP 16 Port Serial Console Server (worldwide) | AF101A |
| | HP 48 Port Serial Console Server (worldwide) | AF102A |
| | Serial Adapter, RJ45-DB9 DCE Female, 1 Pack | AF103A |
| | Serial Adapter, RJ45-DB9 DCE Female, 8 Pack | AF110A |

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

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <http://www.hp.com/go/kvm>.

| | | |
|---|--|--------|
| 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 (Electronic) | U4512E |
| | 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic) | U4513E |
| | 6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years (Electronic) | U4514E |
| | O/S and Hardware Installation | |
| | Hardware Installation (Electronic) | U4522E |
| | 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) | U4523E |
| | Support Plus | |
| | Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays. (Electronic) | U4524E |
| | 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 | U4525E |
| | Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic | U6308E |
| | Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic | U8330E |
| NOTE: For more information, customer/resellers can contact http://www.hp.com/services/carepack | | |

Memory

HP ProLiant ML350 G4p Memory Configuration

The HP ProLiant ML350 G4p requires memory interleaving when more than one DIMM is installed. For interleaving, DIMMs must be configured in identical pairs. The system will not boot properly if multiple DIMMs of varying density or type are installed in the system.

Standard Memory

All HP ProLiant ML350 G4p models ship with Advanced ECC PC2-3200 DDR2 SDRAM (running at 400 MHz).

Non-array models include a single 512 MB DIMM.

Array models include two 512 GB DIMMs.

Factory Integrated Models include the memory capacity of your choice.

Common Memory Upgrades from Base Memory

NOTE: Charts do not represent all possible memory configurations.

| Total Capacity Required | Pair 1 | | Pair 2 | | Pair 3 | |
|-------------------------|--------------------------------|-----------------|-----------------|--------|-----------------|-------|
| | Base Memory (Non-Array Models) | DIMM Upgrade #1 | DIMM Upgrade #2 | | DIMM Upgrade #3 | |
| 512 MB | 512 MB | Empty | Empty | Empty | Empty | Empty |
| 1 GB | 512 MB | 512 MB | Empty | Empty | Empty | Empty |
| 2 GB | 512 MB | 512 MB | 512 MB | 512 MB | Empty | Empty |
| 4 GB | 512 MB | 512 MB | 512 MB | 512 MB | 1 GB | 1 GB |

| Total Capacity Required | Pair 1 | | Pair 2 | | Pair 3 | |
|-------------------------|----------------------------|-----------------|-----------------|--------|-----------------|-------|
| | Base Memory (Array Models) | DIMM Upgrade #1 | DIMM Upgrade #2 | | DIMM Upgrade #3 | |
| 1 GB | 512 MB | 512 MB | Empty | Empty | Empty | Empty |
| 2 GB | 512 MB | 512 MB | 512 MB | 512 MB | Empty | Empty |
| 4 GB | 512 MB | 512 MB | 512 MB | 512 MB | 1 GB | 1 GB |

Installing maximum memory

| Maximum Capacity | Pair 1 | | Pair 2 | | Pair 3 | |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 12 GB | 2 GB Single Rank | 2 GB Single Rank | 2 GB Single Rank | 2 GB Single Rank | 2 GB Single Rank | 2 GB Single Rank |

Following are memory options available from HP:

- 512 MB of Advanced ECC PC2-3200 DDR2 SDRAM DIMM Memory Kit (1 x 512 MB) 384163-B21
- 1 GB of Advanced ECC PC2-3200 DDR2 SDRAM DIMM Memory Kit (2 x 512 MB) 343055-B21
- 2 GB of Advanced ECC PC2-3200 DDR2 SDRAM DIMM Memory Kit (2 x 1024 MB) 343056-B21
- 4 GB Single-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB) 343057-B21
- 4 GB Dual-Rank Adv. ECC PC2-3200 DDR2 SDRAM DIMM Kit (2 x 2048 MB) 375004-B21

Memory

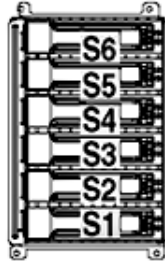
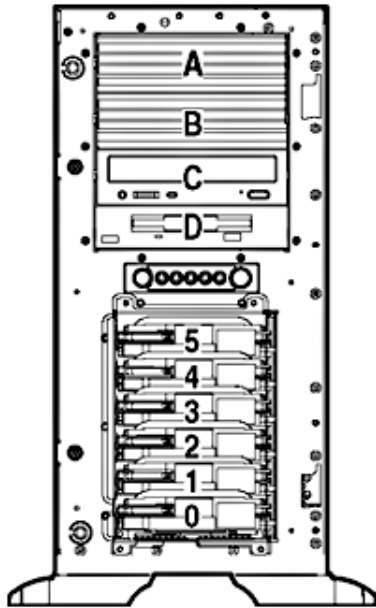
NOTE: Online Spare Memory is not supported when using 2-rank DIMMs. A total of 8 ranks are supported on the HP ProLiant ML350 G4p, A maximum of 4, 2-rank DIMMs can be populated. If you plan to mix DIMM types, 2-rank DIMMs must be installed in the first bank, 1 rank DIMMs can then be installed in subsequent banks.

The following is the memory population rules for the HP ProLiant ML350 G4p.

Key: S denotes single rank kit, D denotes Dual rank kit, and X denotes no install.

| Bank A | Bank B | Bank C | NOTES: |
|--------|--------|--------|----------------------------|
| S | X | X | |
| S | S | X | |
| S | S | S | |
| D | X | X | Online spare not supported |
| D | S | X | Online spare not supported |
| D | S | S | Online spare not supported |
| D | D | X | Online spare not supported |

Storage



- 0 - 5 6 x 1" Hot Plug SCSI Hard Drive Bays
- or
- S1-S6 6 x 1" Hot plug SATA Hard Drive Bays
- D 1.44 MB Diskette Drive
- C 48x CD-ROM
- A,B Available half height bay

Drive Support

| | Quantity Supported | Position Supported | Controller |
|--|--------------------|--------------------|-----------------|
| Removable Media | | | |
| 1.44-MB Diskette Drive | Up to 1 | D | Integrated |
| IDE (ATAPI) CD-ROM Drive | Up to 2 | A, B, C | Integrated IDE |
| HP DVD+R/RW 16X Half Height | Up to 2 | A, B, C | Integrated IDE |
| DVD-ROM Drive Option Kit | Up to 2 | A, B, C | Integrated IDE |
| ML3xx Two Bay Hot Plug SCSI Drive Cage | Up to 1 | A + B* | Integrated SCSI |

*NOTE: The Two Bay Hot Plug SCSI Drive Cage requires the use of both available removable media bays (A+B). In most cases, it is not possible to install both a non hot plug tape drive and the two bay hot plug SCSI drive cage option.

Storage

Hard Drives

Ultra320 SCSI - Hot Plug Drives

| | Quantity Supported | Position Supported | Controller |
|------------------|--------------------|--------------------|---|
| 300GB U320 10K | Up to 8 | 0-5, A+B | Integrated Dual Channel Ultra320 SCSI Adapter Smart Array 641 Controller Smart Array 6402/128 Controller Smart Array 6404/256 Controller Smart Array 642 Controller 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter |
| 146.8GB U320 10K | | | |
| 72.8GB U320 10K | | | |
| 146.8GB U320 15K | | | |
| 72.8GB U320 15K | | | |
| 36.4GB U320 15K | | | |

NOTE: Use of hot plug SCSI hard drives in positions A and B requires an optional two-bay drive cage (PN 244059-B21). With Serial models, a SCSI HBA is also required.

SATA - Hot Plug

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|--|
| 80GB 1.5G SATA 7.2K | Up to 6 | S1-S6 | HP integrated 2 Port SATA controller HP 6-Port SATA RAID Controller |
| 160GB 1.5G SATA 7.2K | | | |
| 250GB 1.5G SATA 7.2K | | | |
| 500GB 1.5G SATA 7.2K | | | |

NOTE: Full hot plug capability and drive LED status support requires installation of a SATA RAID controller. The With the HP 6-Port SATA RAID Controller, hard drive configurations can be setup, monitored and managed using HP Storage Manager. HP Systems Insight Manager should not be used to view the status of SATA hard drives and SATA RAID configurations. After installing the 6-Port SATA RAID Controller, ensure that the latest firmware, drivers, and management software are downloaded from <http://www.hp.com/go/support>.

SAS- Hot Plug

| | Quantity Supported | Position Supported | Controller |
|------------------|--------------------|--------------------|--------------------------------|
| 36GB 3G SAS 15K | 6 | S1-S6 | HP Smart Array P600 Controller |
| 72GB 3G SAS 15K | | | |
| 146GB 3G SAS 15K | | | |

Storage

External Storage

| | Quantity Supported | Position Supported | Host Controller or Adapter |
|-------------------------------------|---|--------------------|---|
| Modular Smart Array 20 Family | Up to 2 | External | Smart Array 6402/128 Controller Smart Array 6404/256 Controller |
| Modular Smart Array 30 Family | Up to 2 | External | Integrated Dual Channel Ultra320 SCSI Adapter NOTE: Connection of an external device to the embedded SCSI controller requires an internal-to-external cable (PN 159547-B22 or 333370-B21) Smart Array 6402/128 Controller Smart Array 6404/256 Controller Smart Array 642 Controller 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| Modular Smart Array 50 Enclosure | Up to 2 | External | HP Smart Array P600 Controller |
| Modular Smart Array 500 G2 | 1 | External | Please see the Modular Smart Array 500 G2 QuickSpecs for the latest list of supported HBAs: http://www.hp.com/go/msa500 . |
| Modular Smart Array 1500 cs or 1000 | Please see the Modular Smart Array 1500 cs or Modular Smart Array 1000 QuickSpecs links below to determine configuration requirements | | Please see the Modular Smart Array 1500 cs or Modular Smart Array 1000 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 cs: | | | http://www.hp.com/go/MSA1500cs |

Tape Drives, Tape Autoloaders, & Tape Libraries

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)

| | Quantity Supported | Position Supported | Controller |
|---|--------------------|--------------------|---|
| HP StorageWorks Tape Drives, Hot plug DAT 40 Hot Plug DAT 72 Hot Plug | 1 | 0-5 | Integrated Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |

Storage

| | | | |
|--|-------------------------------|----------|---|
| HP StorageWorks Tape Drives, Internal Ultrium 232 Ultrium 448 DAT 40 DAT 72 DLT VS80 DLT VS160 SDLT 320 | Up to 2 | A, B | Integrated Dual Channel Ultra320 SCSI Adapter Smart Array 641 Controller 64-Bit/133MHz Dual Channel Ultra320 SCSI 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 |
| HP StorageWorks Tape Drives, External Ultrium 232 Ultrium 448 Ultrium 460 DAT 40 DAT 72 DLT VS80 DLT VS160 SDLT 320 | Up to 2 | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| HP StorageWorks Tape Drives, External Ultrium 960 SDLT 600 | 1 per SCSI Channel | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| HP StorageWorks Tape Drives, USB External DAT 24 USB DAT 40 USB DAT 72 USB | 1 per USB port | External | USB port |
| HP StorageWorks Rack-mount Tape Drive Enclosures 1U Rack-Mount Kit 3U Rack-Mount Kit 5U Rack-Mount Kit | 1 per SCSI channel | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| HP StorageWorks Tape Autoloaders, External DAT 72x6 Tape Autoloader 1/8 Tape Autoloader | 1 autoloader per SCSI channel | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |

Storage

HP StorageWorks Tape Libraries

MSL2024 (Ultrium 960-based)

MSL2024 (Ultrium 448-based)

MSL6000 (Ultrium 960-based)

MSL6000 (SDLT 600-based)

MSL6000 (Ultrium 460-based)

MSL5026S2 (SDLT 320-based)

MSL5052S2 (SDLT 320-based)

Please reference the relevant MSL or Tape Library QuickSpecs to determine configuration requirements

External

Please consult the EBS connectivity matrix at <http://www.hp.com/go/ebs> for detailed connectivity information.

Power Specifications

| | |
|---|-------------------|
| Part Number | 382175-001 |
| Spare Kit | 390394-001 |
| Operational Input Voltage Range (V rms) | 90 - 264 |
| Frequency Range (Nominal) (Hz) | 47 - 63 (50 / 60) |

| Nominal Input Voltage (Vrms) | 100 | 115 | 208 | 220 | 230 | 240 |
|--|------|------|------|------|------|------|
| Max Rated Output Wattage Rating | 725 | 725 | 725 | 725 | 725 | 725 |
| Nominal Input Current (A rms) | 9.2 | 7.9 | 4.2 | 4.0 | 3.8 | 3.6 |
| Max Rated Input Wattage Rating (Watts) | 906 | 895 | 873 | 863 | 863 | 863 |
| Max. Rated VA (Volt-Amp) | 915 | 904 | 910 | 899 | 909 | 909 |
| Efficiency (%) | 80 | 81 | 83 | 84 | 84 | 84 |
| Power Factor | 0.99 | 0.99 | 0.96 | 0.96 | 0.95 | 0.95 |
| Leakage Current (mA) | 0.31 | 0.36 | 0.65 | 0.69 | 0.72 | 0.75 |
| Maximum Inrush Current (A peak) | 15 | 17 | 30 | 32 | 34 | 35 |
| Maximum Inrush Current duration (milliseconds) | 3 | | | | | |

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: ML350 G4p
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

Technical Specifications

| | | | |
|----------------------------|--|---|--|
| System Unit - Tower | Dimensions (HxWxD) (with feet/bezel) | 18.43 x 8.66 x 25.2 in (46.8 x 22 x 64 cm) | |
| | Weight (approximate) | 60 lb (27.24 kg) (without hard drives) | |
| | Input Requirements (per power supply) | Rated Line Voltage | 100 to 120 VAC |
| | | Rated Input Frequency | 50 Hz to 60 Hz |
| | | Input Power | 906W @ 100VAC |
| | | Rated Input Current | 9.2A(100VAC),4.3A(200VAC) |
| | Rated Line Frequency | 50 to 60 Hz | |
| | BTU Rating | 3,125 BTU/hr | |
| | SCSI Connectors | Two internal HD68 connectors (Support for either two internal, two external, or a mix of internal/external is available. This is achieved using an internal to external SCSI cable option kit (PN 159547-B22) and either of the two SCSI knockouts.) | |
| | Power Supply Output Power (per power supply) | Rated Steady-State Power | 725W |
| | Temperature Range | Operating | 50° to 95° F (10° to 35° C) (No direct sustaining sunlight) |
| | | Storage (up to one year) | -40° to 158° F (-40° to 70° C) |
| | Maximum Wet Bulb Temperature | 82.4° F (28° C) | |
| | Relative Humidity (non-condensing) | Operating | 10% to 90% |
| | | Non-operating | 5% to 90% |
| Acoustic Noise | Idle (Fixed Disk Drives Spinning) | | |
| | L WAd (BELS) | 6.0 | |
| | L pAm (dBA) | 43 | |
| | Operating (Random Seeks to Fixed Disks) | | |
| | L WAd (BELS) | 6.0 | |
| | L pAm (dBA) | 43 | |

Technical Specifications

| | | | | |
|--|--|--|--|--|
| System Unit - Rack | Dimensions (HxWxD) | 8.61 x 19 x 24 in (21.87 x 48.26 x 60.96 cm) | | |
| | Weight (approximate) | 60 lb (27.24 kg) (without hard drives) | | |
| | Input Requirements (per power supply) | Rated Line Voltage | 100 to 120 VAC | |
| | | Rated Input Frequency | 50 Hz to 60 Hz | |
| | | Input Power | 906W @ 100VAC | |
| | | Rated Input Current | 9.2A(100VAC), 4.3A(200VAC) | |
| | Rated Line Frequency | 50 to 60 Hz | | |
| | BTU Rating | 3,125 BTU/hr | | |
| | SCSI Connectors | Two internal HD68 connectors | | |
| | | NOTE: Support for either two internal, two external, or a mix of internal/external is available. This is achieved using an internal to external SCSI cable option kit, PN 159547-B22 or 333370-B21, and either of the two SCSI knockouts. | | |
| | Power Supply Output Power (per power supply) | Rated Steady-State Power | 725W | |
| | Temperature Range | Operating | 50° to 95° F (10° to 35° C) (No direct sustaining sunlight) | |
| | | Storage (up to one year) | -40° to 158° F (-40° to 70° C) | |
| Maximum Wet Bulb Temperature | | 82.4° F (28° C) | | |
| Relative Humidity (non-condensing) | Operating | 10% to 90% | | |
| | Non-operating | 5% to 90% | | |
| Acoustic Noise | Idle (Fixed Disk Drives Spinning) | L WAd (BELS) | 6.0 | |
| | | L pAm (dBA) | 43 | |
| | Operating (Random Seeks to Fixed Disks) | L WAd (BELS) | 6.0 | |
| | | L pAm (dBA) | 43 | |

Technical Specifications

| | | | | |
|--|-----------------------|--|----------|--|
| Embedded NC7761 PCI 10/100/1000T Gigabit network adapter | Network Interface | 10Base-T/100Base-TX/1000Base-TX | | |
| | Compatibility | IEEE 802.3 10Base-T | | |
| | | IEEE 802.3ab 1000Base-T | | |
| | | IEEE 802.3u 100Base-TX | | |
| | Data Transfer Method | 32-bit bus-master PCI | | |
| | 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) | 2000Mb/s | |
| Connector | RJ-45 | | | |
| Cable Support | 10Base-T | Categories 3, 4 or 5 UTP; up to 328 ft (100 m) | | |
| | 10/100/1000Base-TX | Category 5 UTP; up to 328 ft (100 m) | | |

| | | | |
|-------------------------------------|---|--|--|
| Integrated Serial ATA Controller | Simultaneous drive transfer channels | Support for up to 2 hard drives | |
| | Transfer rate synchronous (maximum theoretical) | 150 MB/s per channel; 300MB/s | |
| | Protocol | Serial ATA | |
| | Drive support | HP Universal Serial ATA | |
| | Feature | Supports Pre-Failure Warranty of SATA Hard Drives Support for Systems Insight Manager | |
| | OS Support | Microsoft Windows 2000 Server | |
| Microsoft Windows Server 2003 | | | |
| Novell NetWare | | | |
| Linux (Red Hat, SuSE, UnitedLinux) | | | |

NOTE: This controller does not support LED functions. This controller does not support Hot Plug functions.

| | | | |
|--|--|---|--|
| Integrated Dual Channel Ultra320 SCSI Adapter | Drives Supported | Up to 28 SCSI devices (14 per channel) | |
| | Data Transfer Method | 64-bit PCI bus-master | |
| | SCSI Channel Transfer Rate | 320 MB/s per channel | |
| | Maximum Transfer Rate per PCI Bus (peak) | 400 MB/s per channel | |
| | SCSI Protocols | Wide Ultra2 SCSI | |
| | | Wide-Ultra SCSI-3 | |
| | | Ultra320 SCSI | |
| | Electrical Protocol | Low Voltage Differential (LVD) | |
| | SCSI Termination | Active Termination | |
| | External SCSI Connectors | Optional VHDCI and HD68 internal-to-external connectors | |
| Internal SCSI Connectors | Two 68-Pin Wide-Ultra SCSI-3 connectors | | |

Technical Specifications

| | | |
|--|--|---|
| Smart Array 641 Controller | Protocol | Ultra320 SCSI |
| NOTE: The Smart Array 641 Controller ships standard with the Array Models only. | SCSI Electrical Interface | Low Voltage Differential (LVD) |
| | Drives Supported | Up to 6 Ultra320, Ultra3 and Ultra2 SCSI hard drives |
| | SCSI Port Connectors SA-641 | One internal SCSI port |
| | Data Transfer Method | 64-Bit PCI bus-master |
| | PCI Bus Speed | 64-bit, 133-MHz PCI-X (1 GB/s maximum bandwidth) |
| | PCI | 3.3 volt PCI slot compatibility only |
| | Simultaneous Drive Transfer Channels | One |
| | Channel Transfer Rate | 320-MB/s total; 320-MB/s per channel |
| | Software upgradeable Firmware | Yes |
| | Cache Memory | 64-MB DRAM used for code, transfer buffers, and non-battery backed read cache |
| | Logical Drives Supported | 32 |
| | Maximum Capacity | 1.80 TB (6 X 300 GB) |
| | Memory Addressing | 64-bit, supporting servers memory greater than 4 GB |
| | RAID Support | RAID 5 (Distributed Data Guarding) RAID 1+0 (Striping & Mirroring) RAID 1 (Mirroring) RAID 0 (Striping) |
| | Upgradeable Firmware | 2-MB Flashable ROM |
| | Disk Drive and Enclosure Protocol Support | Ultra320, Ultra2 and Ultra3 |
| | Warranty | Maximum: The remaining warranty of the HP server product in which it is installed (to a maximum three-year limited warranty) Minimum: One-year, on-site limited warranty Pre-Failure Warranty: Drives attached to the Smart Array Controller and monitored under Insight Manager are supported by a Pre-Failure (replacement) Warranty. For complete details, consult the HP Support Center or refer to your HP Server Documentation. |

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