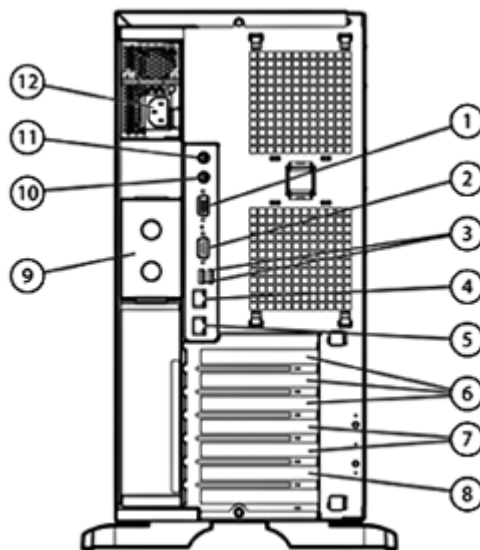
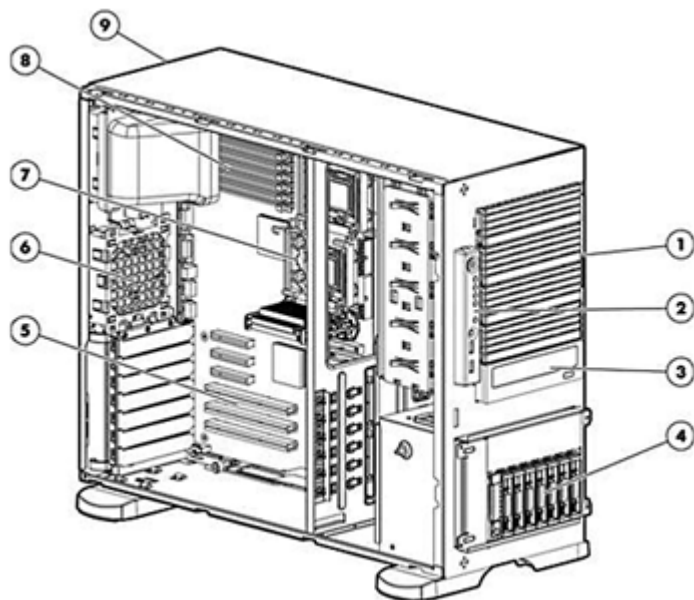


Overview



Front View:

1. Five removable media bays
2. Front display panel; includes power button, UID, two USB 2.0 ports, and system status LED's
3. CD-ROM Drive (Dual-Core models), DVD-ROM Drive (Quad-Core models)
4. Eight SFF (2.5") (shown) or six LFF (3.5") SAS or SATA Hot Plug drive bays
5. Six expansion slots (three PCI Express, three PCI-X)
6. Two system fans standard with support for optional redundant system fans
7. Support for two Intel® Dual-Core or Quad-Core Xeon® 5000 sequence processors
8. Eight PC2-5300 FB-DIMM (DDR2 667) memory sockets
9. Single Hot-Plug power supply standard, optional second redundant supply for availability

Rear View:

1. Monitor port
2. Serial port
3. USB ports
4. Integrated Lights-Out 2 (iLO2) port
5. Network port
6. PCI Express x4
7. PCI-X 64/100
8. PCI-X 64/133
9. Access to add 2nd redundant power supply
10. Mouse port
11. Keyboard port
12. Power

At A Glance

Building on a tradition of excellence, the HP ProLiant family introduces the fifth generation HP ProLiant ML350 server. The HP ProLiant ML350 G5 server provides Multi-Core performance, enterprise level management, and highly available redundant options in a modular server form factor. New for this generation is a smaller and quieter chassis, embedded Smart Array E200i Controller and 5 media bays.

● Processors:

- Quad-Core and Dual-Core Intel® Xeon® processors for blazing performance; systems support up to 2 processors
- 1333/1066/667 MHz front side bus (FSB)



Overview

- Intel® 5000Z chipset
- **Memory:**
 - Eight PC2-5300 Fully Buffered DIMMs (DDR2 667) sockets with online-spare support for cost-effective memory configuration and expansion and 2:1 interleaving
 - Up to 16 GB of memory supported on Dual-Core 5000 and 5100 series
 - Up to 32 GB of memory supported on Dual-Core 5200 series, Quad-Core 5300 and 5400 series
- **Storage Controllers:**
 - Entry Models: HP Smart Array E200i/64MB Controller (integrated SAS/SATA Hot-Plug Controller with RAID 0/1/1+0 support)
 - 128MB BBWC optional upgrade kit for RAID 5 support also available
 - Base Models: HP Smart Array E200i/128 BBWC Controller (RAID 0/1/1+0/5)
- **Internal Drive Support:**
 - Up to eight SFF (2.5") or six LFF (3.5") Hot Plug Serial Attached SCSI (SAS) or Serial-ATA (SATA) hard drives
 - Maximum of 6TB of internal storage capacity (using Hot-Plug SATA drives)
- **Network Controller:**
 - Embedded NC373i Multifunction Gigabit Network Adapter with TCP/IP Offload Engine, including support for Accelerated iSCSI through an optional Licensing Kit
- **Expansion Slots:**
 - Six total expansion slots
 - One 64-bit/133-MHz PCI-X; two 64-bit/100-MHz PCI-X; three x8 PCI Express (x4 speed)
 - Optional PCI-X Expander provides additional two 64-bit/100-MHz PCI-X slots by converting a single PCI Express slot
 - A single x8 PCI Express slot with x8 bus speed can be achieved by attaching the x4/x8 PCIE Bus Expander option kit. (Please see the chart and notes in the Expansion Slots under Standard Features below for more details)
- **USB Ports:**
 - Six USB 2.0 ports: (2) front; (2) rear; (2) internal
- **Redundancy:**
 - Optional Hot plug redundant power supplies
 - Support for optional redundant system fans
- **Infrastructure Management:**
 - Convenient slide-out Systems Insight Display for quick and easy front view server diagnostics, along with status LEDs, Automatic Server Recovery (ASR), ROM Based Setup Utility (RBSU)
 - HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
 - HP Insight Control a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
 - HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.
- **Operating Systems and Virtualization Software Support for ProLiant Servers:**
 - Supports Windows, RHEL, SLES, OEL, NetWare
- **Deployment/Serviceability:**
 - Optional parallel and second serial port available without using a PCI slot
 - Tool-free chassis entry and component access
 - Tool-free motherboard removal
 - Universal rail solution supporting both square and round hole rack environments
 - Customer Self Repair (CSR): HP products are designed with many CSR parts to minimize repair time and allow for greater flexibility in performing defective parts replacement
- **Warranty:**
 - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of



Overview

purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

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



Standard Features

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: <http://h71028.www7.hp.com/ERC/downloads/4AA0-6362ENW.pdf>.

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

Processor

One of the following depending on Model

Quad-Core Processors

Quad-Core Intel® Xeon® Processor X5460 (3.16 GHz, 120 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5440 (2.83 GHz, 80 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor L5420 (2.50 GHz, 50 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5405 (2.00 GHz, 80 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor X5355 (2.66 GHz, 120 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5345 (2.33 GHz, 80 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5335 (2.00 GHz, 80 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5420 (2.50 GHz, 80 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5410 (2.33 GHz, 80 Watts, 1333 FSB)
Quad-Core Intel® Xeon® Processor E5320 (1.86 GHz, 80 Watts, 1066 FSB)
Quad-Core Intel® Xeon® Processor E5310 (1.60 GHz, 80 Watts, 1066 FSB)

Dual-Core Processors

Dual-Core Intel® Xeon® Processor X5260 (3.33 GHz, 80 Watts, 1333 FSB)
Dual-Core Intel® Xeon® Processor E5205 (1.86 GHz, 65 Watts, 1066 FSB)
Dual-Core Intel® Xeon® Processor 5160 (3.0 GHz, 80 Watts, 1333 FSB)
Dual-Core Intel® Xeon® Processor 5150 (2.66 GHz, 65 Watts, 1333 FSB)
NOTE: Available via Configure-To-Order only. See Factory Integrated Models section for more information.
Dual-Core Intel® Xeon® Processor 5140 (2.33 GHz, 65 Watts, 1333 FSB)
Dual-Core Intel® Xeon® Processor 5130 (2.00 GHz, 65 Watts, 1333 FSB)
Dual-Core Intel® Xeon® Processor 5120 (1.86 GHz, 65 Watts, 1066 FSB)

Cache Memory

One of the following depending on Model

12MB (2 x 6MB) Level 2 cache (5400 series)
8MB (2 x 4MB) Level 2 cache (5300 series)
6MB (1 x 6MB) Level 2 cache (5200 series)
4MB (1 x 4MB) Level 2 cache (5100 series)
4MB (2 x 2MB) Level 2 cache (5000 series)

Upgradeability

Upgradeable to 2 processors (4 or 8 cores)

NOTE: Future upgradeable to Xeon® Series 5400/5300 Quad-Core processors (Please contact your regional sales support to determine quad core upgradeability. Some of the earlier shipping models may not support this upgrade). 5100 Dual-Core models are not upgradeable to the 5200 Dual-Core processors.



Standard Features

| | |
|---------|---|
| Chipset | Intel® 5000Z Chipset NOTE: For more information regarding Intel® chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/ . |
|---------|---|

| | |
|-------------------|------------------------------|
| Memory Protection | Online spare Advanced ECC |
|-------------------|------------------------------|

| | | |
|--|-------------------------|--|
| Memory One of the following depending on model | Type | PC2-5300 Fully Buffered DIMMs (DDR2-667) |
| | Standard (Entry Models) | 512 MB (1 x 512 MB) on Dual-Core Models |
| | | 1 GB (2 x 512 MB) on Quad-Core 5300 series |
| | | 1 GB (2 x 512 MB) on Quad-Core 5400 series |
| | Standard (Base Models) | 1 GB (2 x 512 MB) on Dual-Core Models |
| | | 1 GB (2 x 512 MB) on Quad-Core 5300 series |
| 2 GB (2 x 1 GB) on Quad-Core 5400 series | | |
| Maximum (Dual-Core 5000 & 5100 series) | 16 GB (8 x 2 GB) | |
| Maximum (Dual-Core 5200, Quad-Core 5300 & 5400 series) | 32 GB (8 x 4 GB) | |

| | |
|--------------------|---|
| Network Controller | Embedded NC373i Multifunction Gigabit Network Adapter with TCP/IP Offload Engine, including support for Accelerated iSCSI through an optional Licensing Kit |
|--------------------|---|

Expansion Slots

| Expansion Slot # | Technology | Bus Width | Connector Width* | Bus Number** | Form Factor | Notes |
|------------------|-----------------------|-----------|------------------|--------------|------------------------|--------------|
| 6 | PCI Express | x4 | x8 | 15 | Standard Height/Length | |
| 5 | PCI Express | x4 | x8 | 6 | Standard Height/Length | |
| 4 | PCI Express | x4 | x8 | 9 | Standard Height/Length | |
| 3 | 64-bit / 100MHz PCI-X | NA | NA | 12 | Standard Height/Length | PCI-X 100MHz |
| 2 | 64-bit / 100MHz PCI-X | NA | NA | 12 | Standard Height/Length | PCI-X 100MHz |
| 1 | 64-bit / 133MHz PCI-X | NA | NA | 20 | Standard Height/Length | PCI-X 133MHz |



Standard Features

NOTES:

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

| | | |
|---------------------------|--------------|--|
| Storage Controller | Entry Models | HP Smart Array E200i/64MB Controller |
| | Base Models | HP Smart Array E200i/128 BBWC Controller |

NOTE: Supports RAID 0/1/1+0 with 64MB of Cache, upgradeable to 128MB with BBWC for RAID 5 support.

| | | |
|----------------|--|---|
| Storage | Diskette Drives | None included standard |
| | Optical Drive One of the following depending on model | Quad-Core 5400 series: 16x SATA DVD-ROM drive Quad-Core 5300 series: 16x PATA DVD-ROM drive Dual-Core: 48x IDE CD-ROM drive |
| | Hard Drives | None included standard |

NOTE: Quad-Core 5400 series BTO Models are configured with SATA optical drive.

| | | | |
|--|-------------------|-------|-----------|
| Maximum Internal Storage One of the following depending on model | Hot Plug LFF SATA | 6TB | 6 x 1TB |
| | Hot Plug LFF SAS | 6TB | 6 x 1TB |
| | Hot Plug SFF SATA | 4.0TB | 8 x 500GB |
| | Hot Plug SFF SAS | 4.0TB | 8 x 500GB |

| | | |
|-------------------|-------------------------|--|
| Interfaces | Parallel | Optional parallel port available |
| | Serial | 1 (optional 2nd serial port available) |
| | Pointing Device (Mouse) | 1 |
| | Graphics | 1 |
| | Keyboard | 1 |
| | Network RJ-45 | 2 (1 dedicated for iLO 2) |
| | USB 2.0 Ports | 6 (2 front, 2 rear, 2 internal) |

NOTE: Please see the following URL for additional information regarding USB support:
<http://h18004.www1.hp.com/products/servers/platforms/usb-support.html>.

| | |
|-----------------|--|
| Graphics | Integrated ATI ES1000, 32MB video standard |
|-----------------|--|

- 16 bit color: maximum resolution of 1600 x 1200
- 32 bit color: maximum resolution of 1280 x 1024

NOTE: Maximum resolution available via iLO 2 remote console is 1280 x 1024.



Standard Features

Form Factor

Tower or Rack (5U)

NOTE: Rack models (and rack conversion kit) support:

- Square or round hole racks 24"- 36" deep, including HP Rack System /E and HP Systems
- Telco racks with 3rd part option kit from Rack Solutions
<http://www.racksolutions.com/hp>

HP Insight management software

HP Insight Foundation

Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.

HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: <http://www.hp.com/go/foundation>.

The foundation pack includes:

- HP SmartStart
- HP Management
- HP ProLiant Firmware Maintenance

SmartStart version supported (minimum): SmartStart 7.60.

<http://www.hp.com/servers/smartstart>

ProLiant Onboard Administrator

HP ProLiant Onboard Administrator (powered by the HP Integrated Lights-Out 2 management processor) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP ProLiant Onboard Administrator functions without additional software, and can be accessed from any location via a web browser. It works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and the Insight Dynamics for ProLiant helping customers unlock the value of the ProLiant platform and deliver the highest possible quality of IT service to the business. See:

www.hp.com/go/ProLiantOA

HP Insight Control

HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console.

Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol

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

HP Insight Dynamics for

HP Insight Dynamics for ProLiant, a product option, is an integrated



Standard Features

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

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

| | |
|-------------------------------------|---|
| Industry Standard Compliance | ACPI V2.0 Compliant PCI 2.2 Compliant PXE Support WOL Support PCI-X 1.0a Compliant Novell Certified Microsoft® Logo certifications USB 2.0 |
|-------------------------------------|---|

| | |
|---------------------|---|
| Availability | Optional Hot-Plug, Redundant Power supply Online-Spare Memory Optional Dual Redundant System Fans |
|---------------------|---|

| | |
|--------------------------|--|
| 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 SAS hard drives) |
|--------------------------|--|



Standard Features

| | |
|----------|---|
| Security | Power-on password Setup password Diskette boot control Parallel and serial interface control Disk configuration lock Power switch security |
|----------|---|

| | |
|--------------------|--|
| Server Power Cords | ProLiant ML servers in a rack-mount configuration no longer ship standard with NEMA power cords that allow connection to 110V wall outlets in a home or office. These servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant ML rack-mount server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately. The 12' cord (AF556A) or 6' cord (187335-001) can be purchased online at HP.COM. In a tower configuration, the servers ship standard with a 6' NEMA power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate sku. Please see the following power cord matrix: http://www.hp.com/go/powercordmatrix . |
|--------------------|--|

| | |
|-------------------------------|--|
| UPS and PDU Power Cord Matrix | Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the "HP Power Cord Matrix" link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link: www.hp.com/products/powercords . |
|-------------------------------|--|

| | |
|--------------|--|
| Power Supply | 800 Watt-CE Mark Compliant Hot Plug Power Supply (1000 Watt high line) Optional second Power Supply provides redundant capability NOTE: Please see the "Power Specifications" section later in this document for low line and high line requirements. |
|--------------|--|

| | |
|-------------|--|
| System Fans | 2 fans ship standard, dual redundant fans are optional, 4 fans total supported (does not include power supply or processor heat sink fans) |
|-------------|--|

| | |
|------------------|---|
| Required Cabling | For required cabling information, refer to the HP ProLiant ML350 G5 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. |
|------------------|---|

| | |
|--|---|
| Operating Systems and Virtualization Software Support for ProLiant Servers | Microsoft Windows Server Microsoft Windows Server Hyper V Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Enterprise Linux (OEL) NetWare NOTE: For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/ossupport and our driver download page www.hp.com/support/ML350G5 . |
|--|---|



Standard Features

Installation of Server into Telco Racks Support for all 2-post Telco racks requires the use of the HP ProLiant ML350 G5 rack kit and an additional option kit from Rack Solutions. <http://www.hp.com/go/rackandpower>

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

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

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

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

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

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

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

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

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

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

- **Support** - 3-Year Support Plus 24 only

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



Standard Features

NOTE: For a complete listing of service offerings and information visit:
<http://www.hp.com/services/proliantservices>
<http://www.hp.com/go/proliant/carepack>



Models

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

NOTE: Please note that SFF tower or rack models can only be configured with SFF 2.5" SAS or SATA hard drives and LFF tower or rack models can be only configured with LFF 3.5" SAS or SATA hard drives.

| | | |
|--|---|---|
| <p>HP ML350 G5 Entry Models</p> <p>Tower</p> <p>Quad-Core Models</p> <p>HP ML350T05 E5420 LFF 458239-001</p> <p>HP ML350T05 E5410 LFF 458244-001</p> <p>Rack</p> <p>Quad-Core Models HP ML350R05 E5420 LFF 458240-001</p> | <p>Processor(s) One of the following depending on Model</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drive</p> <p>Internal Storage</p> <p>Optical Drive One of the following depending on Mode</p> <p>PCI-Express Slots</p> <p>Power Supplies</p> <p>Fans</p> <p>Form Factor One of the following depending on Model</p> | <p>(1) Quad-Core Intel® Xeon® E5420 Processor (2.50 GHz, 80 Watts, 1333 FSB)</p> <p>(1) Quad-Core Intel® Xeon® E5410 Processor (2.33 GHz, 80 Watts, 1333 FSB)</p> <p>12MB (2 x 6MB) Level 2 cache - 5400 Series</p> <p>1 GB (2 x 512 MB)</p> <p>Embedded NC373i Multifunction Gigabit Server Adapter</p> <p>Smart Array E200i/64 Controller (RAID 0/1/1+0)</p> <p>None Ship Standard; (0/6 LFF)</p> <p>6TB LFF SATA 6TB LFF SAS</p> <p>Quad-Core: 16x DVD-ROM standard Dual-Core: 48x CD-ROM standard</p> <p>Six expansion slots (three PCI Express, three PCI-X)</p> <p>800-Watt CE-mark compliant Hot-Plug power supply Optional second power supply provides redundant operation</p> <p>2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)</p> <p>Tower Rack (5U), (8.75 in/22.25 cm)</p> |
|--|---|---|

| | | |
|--|--|--|
| <p>HP ML350 G5 Base Models</p> <p>Tower</p> <p>Quad-Core Models</p> <p>HP ML350T05 E5430 SFF 458238-001</p> <p>HP ML350T05 E5420 SFF 458242-001</p> <p>HP ML350T05 E5410 SFF 458246-001</p> <p>Rack</p> <p>Quad-Core Models HP ML350R05 E5430 SFF -----</p> | <p>Processor(s) One of the following depending on Model</p> <p>Cache Memory</p> <p>Memory</p> <p>Network Controller</p> <p>Storage Controller</p> <p>Hard Drive</p> <p>Internal Storage</p> <p>Optical Drive One of the following depending on Model</p> <p>PCI-Express Slots</p> | <p>(1) Quad-Core Intel® Xeon® E5430 Processor (2.66 GHz, 80 Watts, 1333 FSB)</p> <p>(1) Quad-Core Intel® Xeon® E5420 Processor (2.50 GHz, 80 Watts, 1333 FSB)</p> <p>(1) Quad-Core Intel® Xeon® E5410 Processor (2.33 GHz, 80 Watts, 1333 FSB)</p> <p>12MB (2 x 6MB) Level 2 cache</p> <p>2 GB (2 x 1GB) standard</p> <p>Embedded NC373i Multifunction Gigabit Server Adapter</p> <p>Smart Array E200i/128 BBWC Controller (RAID 0/1/1+0/5)</p> <p>None Ship Standard; (0/8 SFF)</p> <p>4TB SFF SATA 4TB SFF SAS</p> <p>Quad-Core: 16x DVD-ROM standard Dual-Core: 48x CD-ROM standard</p> <p>Six expansion slots (three PCI Express, three PCI-X)</p> |
|--|--|--|



Models

458237-001

HP ML350R05 E5420

SFF

458243-001

Power Supplies

800-Watt CE-mark compliant Hot-Plug power supply
Optional second power supply provides redundant operation

Fans

2 fans ship standard, 4 fans total supported (does not include power supply or processor heatsink fans)

Form Factor

One of the following
depending on Model

Tower

Rack (5U), (8.75 in/22.25 cm)



Configuration Information - Factory Integrated Models

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

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

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

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

| | | |
|---------------|--|------------|
| Models | ML350 G5 Tower Models | |
| | LFF - 3.5" Drives | |
| | HP ProLiant ML350G5 LFF SAS/SATA Tower CTO Chassis | 412645-B21 |
| | Includes: | |
| | Embedded NC373i Multifunction Gigabit Server Adapter | |
| | Integrated Smart Array E200i Controller | |
| | Six Hot-Plug (LFF) SAS/SATA Drive Bays | |
| | Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors) | |
| | Six USB ports | |
| | 800W Hot-Plug Power Supply | |
| | Tower Form Factor | |
| | Keyboard | |
| | 2-button Mouse | |
| | SFF - 2.5" Drives | |
| | HP ProLiant ML350G5 SFF SAS/SATA Tower CTO Chassis | 395570-B21 |
| | Includes: | |
| | Embedded NC373i Multifunction Gigabit Server Adapter | |
| | Integrated Smart Array E200i Controller | |
| | Eight Hot-Plug (SFF) SAS/SATA Drive Bays | |
| | Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors) | |
| | Six USB ports | |
| | 800W Hot-Plug Power Supply | |
| | Tower Form Factor | |
| | Keyboard | |
| | 2-button Mouse | |
| | ML350 G5 Rack Models | |
| | LFF - 3.5" Drives | |
| | HP ProLiant ML350G5 LFF SAS/SATA Rack CTO Chassis | 412644-B21 |
| | Includes: | |
| | Embedded NC373i Multifunction Gigabit Server Adapter | |
| | Integrated Smart Array E200i Controller | |



Configuration Information - Factory Integrated Models

Six Hot-Plug (LFF) SAS/SATA Drive Bays
 Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors)
 Six USB ports
 800W Hot-Plug Power Supply
 Rack (5U) Form Factor

SFF - 2.5" Drives

HP ProLiant ML350G5 SFF SAS/SATA Rack CTO Chassis 395569-B21

Includes:

Embedded NC373i Multifunction Gigabit Server Adapter
 Integrated Smart Array E200i Controller
 Eight Hot-Plug (SFF) SAS/SATA Drive Bays
 Six expansion slots: one 64-bit/133-MHz PCI-X, two 64-bit/100-MHz PCI-X, and three x4 PCI Express (with x8 connectors)
 Six USB ports
 800W Hot-Plug Power Supply
 Rack (5U) Form Factor

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

Processors

Quad-Core Processors

| | |
|---|------------|
| Quad-Core Intel® Xeon® Processor X5460 (3.16 GHz, 120 Watts, 1333 FSB) ML350G5 FIO Kit | 493457-L21 |
| Quad-Core Intel® Xeon® Processor E5440 (2.83 GHz, 80 Watts, 1333 FSB) ML350G5 FIO Kit | 458257-L21 |
| Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) ML350G5 FIO Kit | 458259-L21 |
| Quad-Core Intel® Xeon® Processor L5420 (2.50 GHz, 50 Watts, 1333 FSB) ML350G5 FIO Kit | 493459-L21 |
| Quad-Core Intel® Xeon® Processor E5420 (2.50 GHz, 80 Watts, 1333 FSB) ML350G5 FIO Kit | 458265-L21 |
| Quad-Core Intel® Xeon® Processor E5410 (2.33 GHz, 80 Watts, 1333 FSB) ML350G5 FIO Kit | 458267-L21 |
| Quad-Core Intel® Xeon® Processor E5405 (2.00 GHz, 80 Watts, 1333 FSB) ML350G5 FIO Kit | 458269-L21 |

Base Memory

| | |
|--|------------|
| 1 GB FBD PC2-5300 2 x 512 MB Single Rank Kit | 397409-B21 |
| 2 GB FBD PC2-5300 2 x 1 GB Dual Rank Kit | 397411-B21 |
| 2 GB FBD PC2-5300 2 x 1 GB Low Power Single Rank Kit | 461826-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Dual Rank Kit | 397413-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Low Power Dual Rank Kit | 461828-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Dual Rank Kit | 397415-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Low Power Dual Rank Kit | 466440-B21 |



Configuration Information - Factory Integrated Models

NOTE: Memory Option Kits include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, please visit: <http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>.

| | | |
|---------------------------------------|---|------------|
| Smart Array E200i Controller Cache | HP SA E200 64MB Cache FIO Kit | 405102-B21 |
| | NOTE: Select this option for RAID 0/1/1+0 | |
| | 128-MB Battery-Backed Write Cache (BBWC) | 351580-B21 |
| | NOTE: Select this option for RAID 0/1/1+0/5. | |
| Optical Drive | 16X DVD-ROM Drive Option Kit (Carbon) | 217053-B21 |
| | HP Half-Height SATA DVD-ROM Optical Drive | 447326-B21 |
| | HP Half-Height SATA DVD RW Optical Drive | 447328-B21 |

Step 3: Choose Additional Factory Integratable Options

| | | |
|-----------------------|--|------------|
| Controllers | HP Smart Array P400/256 MB Controller | 405132-B21 |
| | NOTE: SAS Controller supporting RAID 0/1/1+0/5. | |
| | HP Smart Array P600/256 BBWC Controller | 337972-B21 |
| | NOTE: SAS Controller supporting RAID 0/1/1+0/5/6. | |
| | Smart Array 642 Controller | 291967-B21 |
| | NOTE: U320 Controller. | |
| | Smart Array 6402/128 Controller | 273915-B21 |
| | NOTE: U320 Controller. | |
| | Smart Array 6404/256 Controller | 273914-B21 |
| | NOTE: U320 Controller. | |
| | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 | 374654-B21 |
| | HP Smart Array 6404/512 FIO CNTRLR | 452240-B21 |
| Insight Control suite | HP Insight Control suite, No Media 1-Server License Factory-Integratable Option (FIO) including 1 year of 24x7 Technical Support and Updates | 582765-B21 |

Step 4: Choose Additional Options for Factory Integration

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



Core Options

NOTE: Some options may not be factory configurable. Please contact your local sales representative for additional information.

| | | |
|--|--|------------|
| HP ProLiant ML350 G5 Unique Options | HP Redundant Fan ML350 G5 Kit | 409579-B21 |
| | HP PCI-X Expander Kit (2 x 64-bit 100MHz PCI-X slots) | 435670-B21 |
| | NOTE: The HP PCI-X Expander kit converts a single PCI Express slot (slot 6) into two full height, full length 64-bit 100MHz PCI-X slots. | |
| | NOTE: The HP PCI-X Expander kit can support a maximum of one (1) HP Smart array, HBA, or SCSI PCI-X adapter. Prioritize internal slots for use with PCI-X storage controllers. Please refer to the ML350G5 user guide for additional details. | |
| | HP Tower to Rack Conversion Kit - ML350 G5 Kit | 412640-B21 |
| | NOTE: See "Redundant Options" section below for Hot Plug Redundant Power supplies. | |

Processors

Quad-Core Processors

| | |
|--|------------|
| Quad-Core Intel® Xeon® Processor X5460 (3.16 GHz, 120 Watts, 1333 FSB) | 493457-B21 |
| Quad-Core Intel® Xeon® Processor E5440 (2.83 GHz, 80 Watts, 1333 FSB) | 458257-B21 |
| Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) | 458259-B21 |
| Quad-Core Intel® Xeon® Processor L5420 (2.50 GHz, 50 Watts, 1333 FSB) | 493459-B21 |
| Quad-Core Intel® Xeon® Processor E5420 (2.50 GHz, 80 Watts, 1333 FSB) | 458265-B21 |
| Quad-Core Intel® Xeon® Processor E5410 (2.33 GHz, 80 Watts, 1333 FSB) | 458267-B21 |
| Quad-Core Intel® Xeon® Processor E5405 (2.00 GHz, 80 Watts, 1333 FSB) | 458269-B21 |
| Quad-Core Intel® Xeon® Processor X5355 (2.66 GHz, 120 Watts, 1333 FSB) | 436015-B21 |
| Quad-Core Intel® Xeon® Processor E5345 (2.33 GHz, 80 Watts, 1333 FSB) | 436013-B21 |
| Quad-Core Intel® Xeon® Processor E5335 (2.00 GHz, 80 Watts, 1333 FSB) | 437444-B21 |
| Quad-Core Intel® Xeon® Processor E5320 (1.86 GHz, 80 Watts, 1066 FSB) | 435512-B21 |
| Quad-Core Intel® Xeon® Processor E5310 (1.6 GHz, 80 Watts, 1066 FSB) | 435513-B21 |

Dual-Core Processors

| | |
|---|------------|
| Dual-Core Intel® Xeon® Processor X5260 (3.33 GHz, 80 Watts, 1333 FSB) | 493461-B21 |
| Dual-Core Intel® Xeon® Processor E5205 (1.86 GHz, 65 Watts, 1066 FSB) | 458725-B21 |

Memory (DIMMs)

| | |
|--|------------|
| 1 GB FBD PC2-5300 2 x 512 MB Single Rank Kit | 397409-B21 |
| 2 GB FBD PC2-5300 2 x 1 GB Dual Rank Kit | 397411-B21 |
| 2 GB FBD PC2-5300 2 x 1 GB Low Power Single Rank Kit | 461826-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Dual Rank Kit | 397413-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Low Power Dual Rank Kit | 461828-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Dual Rank Kit | 397415-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Low Power Dual Rank Kit | 466440-B21 |

NOTE: Memory Option Kits include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, please visit:
<http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>



Core Options

| | | |
|--------------------------|----------------------------------|------------|
| Smart Buy Memory (DIMMs) | 1 GB FBD PC2-5300 2 x 512 MB Kit | 397409-S21 |
| | 2 GB FBD PC2-5300 2 x 1 GB Kit | 397411-S21 |
| | 4 GB FBD PC2-5300 2 x 2 GB Kit | 397413-S21 |

| | | |
|----------------|---|------------|
| Optical Drives | Floppy Drive ML350/370 G5 Kit | 409582-B21 |
| | 16X DVD-ROM Drive Option Kit (Carbon) | 217053-B21 |
| | HP Half-Height SATA DVD-ROM Optical Drive | 447326-B21 |
| | HP Half-Height SATA DVD RW Optical Drive | 447328-B21 |

NOTE: Please note that some of the earlier BTO models may not support adding SATA Optical Drives. To ensure compatibility of the SATA Optical Drives, please add additional optical drives only on models with Quad-Core 5400 Series processors.

Hard Drives

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

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

SAS Hot Plug SFF Enterprise (ENT) Drives

NOTE: Please note that SFF 2.5" (small form factor) drives can only be installed on tower or rack models with SFF chassis (models).

| | |
|------------------------------------|------------|
| HP 300GB 6G SAS 10K SFF DP ENT HDD | 507127-B21 |
| HP 300GB 3G SAS 10K SFF DP ENT HDD | 492620-B21 |
| HP 146GB 6G SAS 15K SFF DP ENT HDD | 512547-B21 |
| HP 146GB 3G SAS 15K SFF DP ENT HDD | 504062-B21 |
| HP 146GB 6G SAS 10K SFF DP ENT HDD | 507125-B21 |
| HP 146GB 3G SAS 10K SFF DP ENT HDD | 418367-B21 |
| HP 72GB 6G SAS 15K SFF DP ENT HDD | 512545-B21 |
| HP 72GB 3G SAS 15K SFF DP ENT HDD | 418371-B21 |
| HP 72GB 3G SAS 10K SFF DP ENT HDD | 384842-B21 |

SAS Hot Plug 3.5" Enterprise (ENT) Drives

NOTE: Please note that LFF 3.5" (large form factor) drives can only be installed on tower or rack models with LFF chassis (models).

| | |
|-------------------------------------|------------|
| HP 600GB 6G SAS 15K 3.5" DP ENT HDD | 516828-B21 |
| HP 450GB 6G SAS 15K 3.5" DP ENT HDD | 516816-B21 |
| HP 450GB 3G SAS 15K 3.5" DP ENT HDD | 454232-B21 |
| HP 300GB 6G SAS 15K 3.5" DP ENT HDD | 516814-B21 |
| HP 300GB 3G SAS 15K 3.5" DP ENT HDD | 416127-B21 |
| HP 146GB 3G SAS 15K 3.5" DP ENT HDD | 384854-B21 |

SAS Hot Plug SFF Midline (MDL) Drives

| | |
|-------------------------------------|------------|
| HP 500GB 6G SAS 7.2K SFF DP MDL HDD | 507610-B21 |
|-------------------------------------|------------|

SAS Hot Plug 3.5" Midline (MDL) Drives

| | |
|------------------------------------|------------|
| HP 1TB 3G SAS 7.2K 3.5" DP MDL HDD | 461137-B21 |
|------------------------------------|------------|



Core Options

| | |
|--------------------------------------|------------|
| HP 1TB 6G SAS 7.2K 3.5" DP MDL HDD | 507614-B21 |
| HP 750GB 3G SAS 7.2K 3.5" DP MDL HDD | 461135-B21 |

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

http://h18000.www1.hp.com/products/quickspecs/12244_na/12244_na.html

SATA Hot Plug SFF Midline (MDL) Drives

| | |
|-------------------------------------|------------|
| HP 500GB 3G SATA 7.2K 2.5in MDL HDD | 507750-B21 |
| HP 160GB 3G SATA 7.2K 2.5in MDL HDD | 530888-B21 |

SATA Hot Plug 3.5" Midline (MDL) Drives

| | |
|------------------------------------|------------|
| HP 1TB 3G SATA 7.2K 3.5" MDL HDD | 454146-B21 |
| HP 750GB 3G SATA 7.2K 3.5" MDL HDD | 458930-B21 |
| HP 500GB 3G SATA 7.2K 3.5" MDL HDD | 458928-B21 |
| HP 250GB 3G SATA 7.2K 3.5" MDL HDD | 458926-B21 |

SATA Hot Plug SFF Entry (ETY) Drives

| | |
|-------------------------------------|------------|
| HP 250GB 3G SATA 5.4K SFF ETY HDD | 460355-B21 |
| HP 120GB 1.5G SATA 5.4K SFF ETY HDD | 458924-B21 |

SATA Hot Plug 3.5" Entry (ETY) Drives

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

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

http://h18000.www1.hp.com/products/quickspecs/13021_na/13021_na.html

3.5" SATA Hot Plug Drives

| | |
|----------------------------------|------------|
| HP 750GB 1.5G SATA 7.2K 3.5" HDD | 432341-B21 |
| HP 500GB 1.5G SATA 7.2K 3.5" HDD | 395473-B21 |
| HP 250GB 1.5G SATA 7.2K 3.5" HDD | 349239-B21 |
| HP 160GB 1.5G SATA 7.2K 3.5" HDD | 349238-B21 |

NOTE: The previous generation of 1.5G SATA drives are still supported. These drives can be purchased as an option, however they are no longer configurable.

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

http://h18004.www1.hp.com/products/quickspecs/11940_na/11940_na.html

SATA Hot Plug Midline (MDL) Solid State Drives

| | |
|---------------------------------------|------------|
| HP 60GB 3G SATA 2.5in MDL 1y Wty SSD | 572071-B21 |
| HP 120GB 3G SATA 2.5in MDL 1y Wty SSD | 572073-B21 |

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

| | |
|---------------------------------------|------------|
| HP 60GB 3G SATA 3.5in MDL 1y Wty SSD | 570761-B21 |
| HP 120GB 3G SATA 3.5in MDL 1y Wty SSD | 570763-B21 |

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

http://h18000.www1.hp.com/products/quickspecs/13415_na/13415_na.html



Core Options

Communications

Gigabit Ethernet Adapters

HP NC112T PCIe Gigabit Server Adapter 503746-B21

HP NC360T PCI Express Dual Port Gigabit Server Adapter 412648-B21

HP NC364T PCI Express Quad Port Gigabit Server Adapter 435508-B21

NOTE: Does not support Windows 2000.

NOTE: There is a maximum of five NC364T PCI Express Quad Port Gigabit Server Adapter NICs allowed in this server.

HP NC373F PCI Express Multifunction Gigabit Server Adapter 394793-B21

HP NC373T PCI Express Multifunction Gigabit Server Adapter 394791-B21

HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter 394795-B21

NOTE: Supported on a full length-full height slot only.

10 Gigabit Ethernet Adapters

HP NC522SFP Dual Port 10GbE Server Adapter 468332-B21

NOTE: A minimum of two gigabyte (2 GB) of server memory is required per each NC522SFP adapter.

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

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

Power Supplies

Redundant Power Supply 350/370/380 G5 Kit (IEC Cord) 399771-B21

Redundant Power Supply 350/370/380 G5 Kit (NEMA Cord) 399771-001

Power Options

Redundant Fan ML350 G5 Kit 409579-B21



Additional Options

HP Insight Software

HP Insight Control server deployment

HP Insight Control server deployment, Electronic License including 1 year of 24x7 Technical Support and Updates

T9082AAE

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

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

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

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: <http://www.hp.com/go/insightupdates>.

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

HP Insight Control for Linux

HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic

T9084BAE

HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates

464423-B22

HP Insight Control for Linux, Media pack (DVD) - No licenses included

464422-B22

NOTE: Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately.

NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: <http://www.hp.com/go/insightupdates>.

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

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

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

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

HP Integrated Lights-Out Advanced

HP Integrated Lights-Out Advanced, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates

512485-B21

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

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

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

HP Insight Rapid Deployment software

HP Insight Rapid Deployment software No Media 1-Server License including 1 year of 24x7 Technical Support and Updates

452151-B21



Additional Options

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

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

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

Storage Controllers

SAS Controllers

Smart Array E200 Controller

HP Smart Array E200/128 BBWC Controller 411508-B21

Smart Array E500 Controller

HP Smart Array E500/256MB Controller 435129-B21

Smart Array P400 Controller

HP Smart Array P400/512MB BBWC Controller 411064-B21

NOTE: Supports RAID 0/1/1+0/5/6.

HP Smart Array P400/256MB Controller 405132-B21

NOTE: Supports RAID 0/1/1+0/5.

Smart Array P600 Controller

HP Smart Array P600/256 BBWC Controller 337972-B21

NOTE: Supports internal or external drive attach.

Smart Array P800 Controller

HP Smart Array P800/512 BBWC Controller 381513-B21

NOTE: Supports internal or external drive attach.

Optional Upgrades

128-MB Battery-Backed Write Cache (BBWC) 351580-B21

NOTE: Supports the Smart Array E200 Controller and Smart Array 642 Controller.

HP SA-P400 and SA-E500 24 In Battery Cable Kit 417836-B21

NOTE: This option kit contains a 24" battery cable and adhesive material for installing a battery into the server if a Smart Array P400 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions.

512MB Battery-backed cache (BBWC) upgrade 405148-B21

NOTE: for Smart Array P400 Controller.

Battery-backed write cache (BBWC) upgrade 383280-B21

NOTE: for Smart Array P400 Controller.

512MB Battery-backed write cache (BBWC) upgrade 372538-B21

NOTE: For Smart Array P600 Controller.

NOTE: Please see the following QuickSpecs additional information:

http://h18000.www1.hp.com/products/quickspecs/12460_na/12460_na.html
(Smart Array E200 Controller)

http://h18000.www1.hp.com/products/quickspecs/12700_na/12700_na.html
(Smart Array E500 Controller)

http://h18000.www1.hp.com/products/quickspecs/12400_na/12400_na.html
(Smart Array P400 Controller)

http://h18000.www1.hp.com/products/quickspecs/12247_na/12247_na.html



Additional Options

(Smart Array P600 Controller)

http://h18000.www1.hp.com/products/quickspecs/12616_na/12616_na.html

(Smart Array P800 Controller)

SAS HBA

HP SC08Ge Host Bus Adapter

488765-B21

HP SC44Ge Host Bus Adapter

416096-B21

NOTE: When using the SC44Ge with SATA Hard Drives, 1.5G SATA Hard Drives are required. Transfer rate: 1.5 Gb/s, 3 Gb/s SAS.

HP 8 Internal Port SAS HBA with RAID

347786-B21

NOTE: Transfer rate: 1.5 Gb/s, 3 Gb/s SAS.

NOTE: Please see the HBA QuickSpecs for additional information:

http://h18004.www1.hp.com/products/quickspecs/13082_na/13082_na.html

(SC08Ge HBA)

http://h18004.www1.hp.com/products/quickspecs/12617_na/12617_na.html

(SC44Ge HBA)

http://h18004.www1.hp.com/products/quickspecs/12332_na/12332_na.html

(8 Internal Port SAS HBA)

SCSI Controllers for External Drive/Storage Support

Smart Array 6402/128 Controller

273915-B21

NOTE: Ultra320 SCSI.

Smart Array 6404/256 Controller

273914-B21

NOTE: Ultra320 SCSI.

Smart Array 642 Controller

291967-B21

NOTE: Ultra320 SCSI.

128MB Battery-Backed Write Cache (BBWC)

351580-B21

NOTE: Supports the Smart Array E200 Controller and Smart Array 642 Controller.

64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2

374654-B21

SCSI HBA

HP SC11Xe Host Bus Adapter

412911-B21

NOTE: Recommended HBA for SCSI tape drive connect.

NOTE: Please see the following QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/11943_na/11943_na.html

(Single Channel Ultra320 SCSI HBA)

http://h18000.www1.hp.com/products/quickspecs/11587_na/11587_na.html

(Smart Array 6400 Series)

http://h18000.www1.hp.com/products/quickspecs/12069_na/12069_na.html

(Smart Array 642)

http://h18000.www1.hp.com/products/quickspecs/12566_na/12566_na.html

(SC11Xe HBA)

PCI Option

HP x4-x8 PCI-E Bus Expander Option Kit

403724-B21

NOTE: The HP x4/x8 PCI Express Bus Expander kit converts 2 x4 PCI Express slots into a single x8 PCI Express slot for high performance x8 PCI Express cards.

Port Options

Parallel/Serial Port ML370/350 G5 Kit

401222-B21



Additional Options

Tape Storage

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

Tape Drives

DAT USB Tape Drives

| | |
|--|--------|
| HP StorageWorks DAT 160 USB Internal Drive | Q1580A |
| HP DAT 320 USB Internal Tape Drive | AJ825A |
| DAT 320 USB External Tape Drive | AJ823A |

SAS Tape Drives

NOTE: For the ML350 G5, HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape.

| | |
|--|--------|
| HP StorageWorks LTO-2 Ultrium 448 SAS Internal Tape Drive | DW085A |
| HP StorageWorks LTO-3 Ultrium 920 SAS Internal Tape Drive | EH847A |
| HP StorageWorks LTO-4 Ultrium 1760 SAS Internal Tape Drive | EH919A |
| HP DAT 320 SAS Internal Tape Drive | AJ830A |
| DAT 320 WW SAS External Tape Drive | AJ828A |

NOTE: Please refer to the "Tape and Disk-Based Backup" table in the Storage section of this document for a list of SAS controllers with tape support.

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

HP StorageWorks 1/8 G2 Tape Autoloader

| | |
|---|--------|
| HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader | AK377A |
| HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader | AH558A |
| HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit | AH166A |

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

NOTE: Please reference the Tape Autoloader QuickSpecs at:
<http://www.hp.com/go/automation> for additional information needed to create a complete solution.

HP StorageWorks MSL2024 Tape Library

| | |
|--|--------|
| HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library | AK378A |
| HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library | AH559A |

HP StorageWorks MSL4048 Tape Library

| | |
|--|--------|
| HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library | AK380A |
| HP StorageWorks MSL4048 1 LTO-3 Ultrium 920 SAS Drive Library | AH560A |

NOTE: Please reference the MSL 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>.



Additional Options

Disk-Based Backup

RDX Removable Disk Backup

HP StorageWorks RDX500 Internal Removable Disk Backup System

AJ934A

NOTE: 500 GB of Disk Storage.

NOTE: Please see the HP RDX Removable Disk Backup System QuickSpecs for additional information:

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

D2D Backup

HP StorageWorks D2D2502i Backup System

EJ001A

NOTE: 2 TB raw capacity/1.5 TB useable capacity.

HP StorageWorks D2D2504i Backup System

EJ002A

NOTE: 4 TB raw capacity/3 TB useable capacity.

NOTE: Please see the HP D2D Backup Systems QuickSpecs for additional information: <http://www.hp.com/go/d2d>.

StorageWorks Options

StorageWorks Fibre Channel HBAs

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

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

Brocade Fibre Channel HBAs

HP StorageWorks 81B PCI-e FC HBA Single Port

AP769A

HP StorageWorks 82B PCI-e FC HBA Dual Port

AP770A

HP StorageWorks 41B 4Gb PCI-e FC HBA

AP767A

HP StorageWorks 42B 4Gb Dual-Port PCI-e FC HBA

AP768A

Emulex Fibre Channel HBAs

HP StorageWorks 81E PCI-e FC HBA Single Port

AJ762A

HP StorageWorks 82E PCI-e FC HBA Dual Port

AJ763A

HP StorageWorks FC2142 4Gb PCI-e HBA

A8002A

HP StorageWorks FC2242 Dual Channel 4Gb PCI-e HBA

A8003A

QLogic Fibre Channel HBAs

HP StorageWorks 81Q PCI-e FC HBA Single Port

AK344A

HP StorageWorks 82Q PCI-e FC HBA Dual Port

AJ764A

HP StorageWorks FC1142 4Gb PCI-e HBA

AE311A

HP StorageWorks FC1242 Dual Channel 4Gb PCI-e HBA

AE312A

StorageWorks SCSI HBA

HP U320e SCSI Host Bus Adapter

AH627A

NOTE: Recommended HBA for MSL SCSI Tape Library connect.



Additional Options

| | | |
|--|--|------------|
| HP StorageWorks Modular Smart Array | MSA SAN Storage Arrays | |
| | HP StorageWorks Modular Smart Array 20 | 335921-B21 |
| | NOTE: Rack-mountable 12 (SATA) drive enclosure with U320 Host connectivity, redundant power supplies. | |
| | NOTE: The Modular Smart Array Enclosure 20 Family supports the SATA 1.5Gb/s 3.5" Hot Plug Hard Drives. | |
| | HP StorageWorks 50 Modular Smart Array | 364430-B21 |
| | NOTE: Please see the Modular Smart Array 50 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12245_na/12245_na.html | |
| | HP StorageWorks 60 Modular Smart Array | 418408-B21 |
| | NOTE: Please see the Modular Smart Array 60 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12627_na/12627_na.html | |
| | HP StorageWorks 70 Modular Smart Array | 418800-B21 |
| | NOTE: Please see the Modular Smart Array 70 QuickSpecs for additional information including configuration steps and additional options needed for a complete solution at: http://h18000.www1.hp.com/products/quickspecs/12652_na/12652_na.html | |
| HP 2012sa Single Controller Modular Smart Array | AJ752A | |
| HP 2012sa Dual Controller Modular Smart Array | AJ753A | |
| NOTE: Please see the Modular Smart Array 2000sa QuickSpecs for additional options and configuration information at: http://h18000.www1.hp.com/products/quickspecs/13045_na/13045_na.html | | |
| Uninterruptible Power Systems | HP Tower UPS | |
| | HP T1500 G3 UPS Models | |
| | HP T1500 G3 UPS | AF450A |
| | NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/13160_na/13160_na.html | |
| | NOTE: For additional information on HP Uninterruptible Power Systems please go to: www.hp.com/servers/rackups . | |
| | HP Rack-mountable UPS | |
| | HP R1500 G2 UPS | |
| | HP, R1.5kVA UPS, 1U | AF419A |
| | NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12507_na/12507_na.html | |
| | HP R3000 UPS | |
| | HP R3000 VA UPS, 2U, Low voltage L5-30 | AF422A |
| | HP R3000 VA UPS, 2U, High voltage L6-20 | AF423A |
| | NOTE: Please see the QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/10671_na/10671_na.html | |
| HP R/T3000 Uninterruptible Power System (UPS) | | |
| HP R/T3000 UPS, Low voltage | AF452A | |
| HP R/T3000 UPS, High voltage | AF453A | |



Additional Options

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/13417_na/13417_na.html

HP Rack-Mountable R5500 UPS

HP R5500 VA UPS

AF426A

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/11871_na/11871_na.html

NOTE: For additional information on HP Uninterruptable Power Systems please go to:

www.hp.com/servers/rackups.

Power Distribution Units

Monitored PDUs

HP Monitored Power Distribution Unit: Full Rack Version

HP 17.3 kVA S2324 Monitored PDU- dual input, 3Ø, 24A

AF503A

HP 8.6 kVA S1324 Monitored PDU- single input, 3Ø, 24A

AF504A

HP 16.6 kVA S2140 Monitored PDU- dual input, 1Ø, 40A

AF505A

HP 8.3 S1140 Monitored PDU- single input, 1Ø, 40A

AF506A

HP 4.9 kVA S124 Monitored PDU- single input, 1Ø, 24A

AF914A

Modular PDUs 1U/0U (Up to 32 outlets)

NOTE: 1U/0U mounting brackets shipped with the unit (optimized for 10000 G2 and 9000 series racks).

3.6kVA Model - mPDU, 16A, High

252663-B24

2.8 kVA Model - mPDU, 24A, Low

252663-D71

4.9kVA Model - mPDU, 24A, High

252663-D72

8.3kVA Model - mPDU, 40A, High

252663-B21

8.3kVA Model - mPDU, 40A, High (power cord attached)

252663-D73

8.3kVA Model - mPDU 40A, High (core only)

252663-D75

4.9kVA Model - mPDU 24A, High (core only)

252663-D74

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



Additional Options

HP Rack Series

HP Rack 5000 Series (Graphite Metallic)

HP 5642 Rack-Unassembled 358254-B21

NOTE: Please see the QuickSpecs for additional information:

http://h18000.www1.hp.com/products/quickspecs/12074_na/12074_na.html

HP Rack 10000 G2 Series (Carbon/Graphite Metallic)

HP S10614 (14U) Rack Cabinet - Shock Pallet 292302-B22

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

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

10622 G2 (22U) Rack Cabinet - Pallet AF021A

10622 G2 (22U) Rack Cabinet - Shock Pallet AF022A

10642 G2 (42U) Rack Cabinet 1200mm Deep - Shock Pallet AF034A

10642 G2 (42U) Rack Cabinet 1200mm Deep - Pallet AF038A

10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet AF041A

10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet AF042A

10647 G2 (47U) Rack Cabinet - Pallet AF031A

10647 G2 (47U) Rack Cabinet 1200mm Deep - Shock Pallet AF044A

NOTE: Due to handling and shipping requirements, AF044A is only orderable through HP Factory Express. It is not for direct sales. Customer site surveys are required before an order is approved. CTO orders may require additional lead time.

10647 G2 (47U) Rack Cabinet 1200mm Deep - Pallet AF045A

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

NOTE: xxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels).

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_na/12402_na.html

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



Additional Options

HP Rack Options

Keyboards and Monitors

| | |
|---------------------------------------|--------|
| TFT7600 Rackmount Keyboard Monitor | AG052A |
| HP TAA TFT7600 Rkmntkybd 17in Monitor | AG067A |
| 1U Rackmount Keyboard with USB | AG072A |

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

HP KVM Switch Options

| | |
|--|------------|
| 2x1x16 IP Console Switch with Virtual Media | AF601A |
| 4x1x16 IP Console Switch with Virtual Media | AF602A |
| 2x16 Server Console Switch with Virtual Media | AF600A |
| 0x2x16 KVM Server Console G2 Switch with Virtual Media and CAC | AF618A |
| 0x2x32 KVM Server Console G2 Switch with Virtual Media and CAC | AF619A |
| PS/2 Virtual Media Interface Adapter, 1 pack | AF604A |
| NOTE: Requires PS/2 and one USB port on server. | |
| 1x1Ex8 KVM IP Console Switch G2 with Virtual Media and CAC | AF620A |
| 2x1Ex16 KVM IP Console Switch G2 with Virtual Media and CAC | AF621A |
| 4x1Ex32 KVM IP Console Switch G2 with Virtual Media and CAC | AF622A |
| Server console switch 0x2x8 | AF616A |
| Server console switch 0x2x16 | AF617A |
| HP TAA Server console switch 0x2x16 | AF626A |
| PS/2 Interface Adapter, 1 pack | 262588-B21 |
| PS/2 Interface Adapter, 8 pack | 262587-B21 |

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

| | |
|--|--------|
| HP 1x4 Console Switch | AF611A |
| PS2 Server Console Cable, 6 ft, 2 pack | AF612A |

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 | AF101A |
| HP 48 Port Serial Console Server | 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>.

Rack Kits

| | |
|--|------------|
| HP ML350 G5 Tower to Rack Conversion Kit | 412640-B21 |
|--|------------|



Additional Options

| | | |
|--------------------|---|-------------|
| USB and SD Options | HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver) | DC172B |
| | USB 1.44-MB External Diskette Drive (Carbonite) | DC141B |
| | HP USB 04 Standard Keyboard | DT528A# ABA |
| | HP 1GB USB 2.0 Floppy Drive Key | 442085-B21 |

Service and Support Offerings (HP Care Pack Services)

Hardware Services On-site Service

NOTE: To attach 3 year, 4-Hour On-site Service to Smart Buy servers, Smart Buy Care Packs must be used. For other service levels, order standard Care Pack part numbers.

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

NOTE: Use one of the following Smart Buy Care Packs to attach 3 year, 4-Hour On-site Service to Smart Buy servers. For other service levels, order standard Care Pack part numbers.

ML350 Smart Buy 4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic UE901E

ML350 Smart Buy 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic UE902E

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

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

HP ProLiant ML350 G5 Memory Configuration

The HP ProLiant ML350 G5 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 G5 models ship with PC2-5300 Fully Buffered DIMMs (DDR2-667).

Entry models include a single 512 MB DIMM (Dual-Core) or two 512 MB DIMMs (Quad-Core).

Base models include two 512 MB DIMMs (1 GB total memory) or two 1 GB DIMMs (2 GB total memory)

Factory Integrated Models include the memory capacity of your choice.

Common Memory Configuration

Valid DIMM pair combinations use slots 1/5, slots 2/6, slots 3/7, and slots 4/8. Maximum supported memory is 16 GB for Dual-Core 5000 and 5100 series models and 32 GB on Quad-Core 5300 and 5400 series models.

NOTE: Chart does not represent all possible memory configurations.

| Memory | | Slot | | | | | | | |
|----------|-------|--------|-------|-------|-------|--------|-------|-------|-------|
| | | 1A | 2B | 3C | 4D | 5A | 6B | 7C | 8D |
| Standard | 1 GB | 512 MB | Empty | Empty | Empty | 512 MB | Empty | Empty | Empty |
| Optional | 13 GB | 512 MB | 2 GB | 2 GB | 2 GB | 512 MB | 2 GB | 2 GB | 2 GB |
| Maximum | 32 GB | 4 GB | 4 GB | 4 GB | 4 GB | 4 GB | 4 GB | 4 GB | 4 GB |

Following are memory options available from HP:

| | |
|--|------------|
| 1 GB FBD PC2-5300 2 x 512 MB Single Rank Kit | 397409-B21 |
| 2 GB FBD PC2-5300 2 x 1 GB Dual Rank Kit | 397411-B21 |
| 2 GB FBD PC2-5300 2 x 1 GB Low Power Single Rank Kit | 461826-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Dual Rank Kit | 397413-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Low Power Dual Rank Kit | 461828-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Dual Rank Kit | 397415-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Low Power Dual Rank Kit | 466440-B21 |

NOTE: Memory Option Kits include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, please visit: <http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>.



Memory

Online spare memory configuration

FBDIMMs can either be single-rank or dual-rank. Certain FBDIMM configuration requirements are based on these classifications. A dual-rank FBDIMM is similar to having two separate FBDIMMs, or ranks, on the same module. Although only a single FBDIMM module, a dual-rank FBDIMM acts as two separate FBDIMMs.

In online spare mode, a single rank of memory acts as the spare memory. For single-rank FBDIMMs, the entire FBDIMM acts as the spare memory. For a dual-rank FBDIMM, only half of the FBDIMM acts as the spare memory while the other half is available for operating system and application usage.

Online spare FBDIMM configuration requirements (in addition to general configuration requirements):

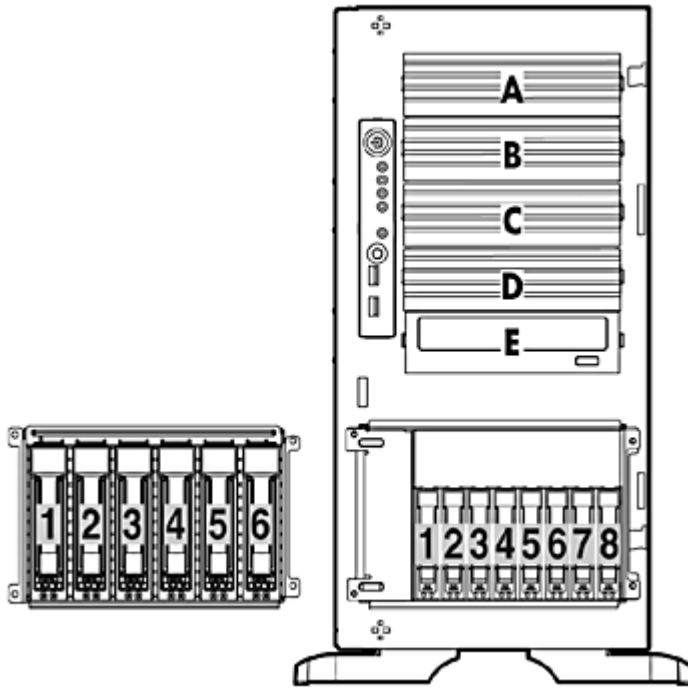
- When only bank A is being used, it must be fully populated with dual-rank FBDIMMs.
- For optimum memory usage, HP recommends all FBDIMMs be the same size with the same HP part number. If different sized FBDIMMs are used, a portion of the installed memory may not be utilized.

In online spare mode, FBDIMMs must be populated as specified in the following table:

- Configuration 1 (Bank A only) is only supported if using bank A, populated with dual-rank FBDIMMs.
- After installing FBDIMMs, use RBSU to configure the system for online spare memory support.

| Bank A 1A and 5A | Bank B 2B and 6B | Bank C 3C and 7C | Bank D 4D and 8D |
|---------------------|---------------------|---------------------|---------------------|
| X | — | — | — |
| X | X | — | — |
| X | X | X | X |

Storage



1 - 6 6 x 3.5" (LFF) Hot-Plug SAS/SATA hard drive bays

Or

1 - 8 8 x 2.5" (SFF) Hot-Plug SAS/SATA hard drive bays

A,B,C,D Available half height media bays

E Optical Drive

Drive Support

| | Quantity Supported | Position Supported | Controller |
|---|--------------------|--------------------|----------------------------|
| Removable Media | | | |
| 1.44-MB Diskette Drive | Up to 1 | A, B, C, D, E | Integrated SATA Controller |
| IDE (ATAPI) CD-ROM Drive | Up to 1 | A, B, C, D, E | Integrated SATA Controller |
| HP DVD±R/RW 16X Half Height | Up to 1 | A, B, C, D, E | Integrated SATA Controller |
| DVD-ROM Drive Option Kit | Up to 1 | A, B, C, D, E | Integrated SATA Controller |
| HP Half-Height SATA DVD-ROM Optical Drive | Up to 1 | A, B, C, D, E | Integrated SATA Controller |
| HP Half-Height SATA DVD RW Optical Drive | Up to 1 | A, B, C, D, E | Integrated SATA Controller |

Hard Drives

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

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

SAS Hot Plug SFF Enterprise (ENT) Drives

| Quantity Supported | Position Supported | Controller |
|--------------------|--------------------|------------|
|--------------------|--------------------|------------|



Storage

| | | | |
|---------------------|-------------|-----|---|
| 300GB 6G SAS 10K DP | Up to 8 SFF | 1-8 | HP Smart Array E200i/64MB Controller |
| 300GB 3G SAS 10K DP | | | HP Smart Array E200i/128 BBWC Controller |
| 146GB 6G SAS 15K DP | | | HP Smart Array E500/256MB Controller |
| 146GB 3G SAS 15K DP | | | HP Smart Array P400/256MB Controller |
| 146GB 6G SAS 10K DP | | | HP Smart Array P400/512MB BBWC Controller |
| 146GB 3G SAS 10K DP | | | HP Smart Array P600/256 BBWC Controller |
| 72GB 6G SAS 15K DP | | | HP Smart Array P800/512 BBWC Controller |
| 72GB 3G SAS 10K DP | | | |
| 72GB 3G SAS 15K DP | | | |

SAS Hot Plug SFF Midline (MDL) Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|---|
| 500GB 6G SAS 7.2K DP | Up to 8 SFF | 1-8 | HP Smart Array E200i/64MB Controller HP Smart Array E200i/128 BBWC Controller HP Smart Array E500/256MB Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P600/256 BBWC Controller HP Smart Array P800/512 BBWC Controller |

SAS Hot Plug 3.5" Enterprise (ENT) Drives

| | Quantity Supported | Position Supported | Controller |
|---------------------|--------------------|--------------------|---|
| 600GB 6G SAS 15K DP | Up to 6 LFF | 1-6 | HP Smart Array E200i/64MB Controller HP Smart Array E200i/128 BBWC Controller HP Smart Array E500/256MB Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P600/256 BBWC Controller HP Smart Array P800/512 BBWC Controller |
| 450GB 6G SAS 15K DP | | | |
| 450GB 3G SAS 15K DP | | | |
| 400GB 3G SAS 10K DP | | | |
| 300GB 6G SAS 15K DP | | | |
| 300GB 3G SAS 15K DP | | | |
| 146GB 3G SAS 15K DP | | | |

SAS Hot Plug 3.5" Midline (MDL) Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|---|
| 1TB 3G SAS 7.2K DP | Up to 6 LFF | 1-6 | HP Smart Array E200i/64MB Controller HP Smart Array E200i/128 BBWC Controller HP Smart Array E500/256MB Controller HP Smart Array P400/256MB Controller HP Smart Array P400/512MB BBWC Controller HP Smart Array P600/256 BBWC Controller HP Smart Array P800/512 BBWC Controller |
| 750GB 3G SAS 7.2K DP | | | |

SATA Hot Plug SFF Midline (MDL) Drives

| | Quantity Supported | Position Supported | Controller |
|--------------------|--------------------|--------------------|--------------------------------------|
| 500GB 3G SATA 7.2K | Up to 8 SFF | 1-8 | HP Smart Array E200i/64MB Controller |



Storage

160GB 3G SATA 7.2K

HP Smart Array E200i/128 BBWC Controller
 HP Smart Array E500/256MB Controller
 HP Smart Array P400/256MB Controller
 HP Smart Array P400/512MB BBWC Controller
 HP Smart Array P600/256 BBWC Controller
 HP Smart Array P800/512 BBWC Controller

SATA Hot Plug SFF Entry (ETY) Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|---|
| 250GB 3G SATA 5.4K | Up to 8 | 1-8 | HP Smart Array E200i/64MB Controller |
| 120GB 1.5G SATA 5.4K | | | HP Smart Array E200i/128 BBWC Controller |
| | | | HP Smart Array E500/256MB Controller |
| | | | HP Smart Array P400/256MB Controller |
| | | | HP Smart Array P400/512MB BBWC Controller |
| | | | HP Smart Array P600/256 BBWC Controller |
| | | | HP Smart Array P800/512 BBWC Controller |

NOTE: HP Systems Insight Manager should not be used to view the status of SATA hard drives and SATA RAID configurations.

SATA Hot Plug 3.5" Entry (ETY) Drives

| | Quantity Supported | Position Supported | Controller |
|--------------------|--------------------|--------------------|---|
| 160GB 3G SATA 7.2K | Up to 6 | 1-6 | HP Smart Array E200i/64MB Controller |
| | | | HP Smart Array E200i/128 BBWC Controller |
| | | | HP Smart Array E500/256MB Controller |
| | | | HP Smart Array P400/256MB Controller |
| | | | HP Smart Array P400/512MB BBWC Controller |
| | | | HP Smart Array P600/256 BBWC Controller |
| | | | HP Smart Array P800/512 BBWC Controller |

SATA Hot Plug 3.5" Midline (MDL) Drives

| | Quantity Supported | Position Supported | Controller |
|--------------------|---|--------------------|---|
| 1TB 3G SATA 7.2K | Up to 6 | 1-6 | HP Smart Array E200i/64MB Controller |
| 750GB 3G SATA 7.2K | | | HP Smart Array E200i/128 BBWC Controller |
| 500GB 3G SATA 7.2K | | | HP Smart Array E500/256MB Controller |
| 250GB 3G SATA 7.2K | | | HP Smart Array P400/256MB Controller |
| | | | HP Smart Array P400/512MB BBWC Controller |
| | HP Smart Array P600/256 BBWC Controller | | |
| | HP Smart Array P800/512 BBWC Controller | | |

3.5" SATA Hot Plug Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|--|
| 750GB 1.5G SATA 7.2K | Up to 6 | 1-6 | HP Smart Array E200i/64MB Controller |
| 500GB 1.5G SATA 7.2K | | | HP Smart Array E200i/128 BBWC Controller |



Storage

250GB 1.5G SATA 7.2K
160GB 1.5G SATA 7.2K

HP Smart Array E500/256MB Controller
HP Smart Array P400/256MB Controller
HP Smart Array P400/512MB BBWC Controller
HP Smart Array P600/256 BBWC Controller
HP Smart Array P800/512 BBWC Controller

SATA Hot Plug Midline (MDL) Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|---------------------|--------------------|--------------------|---|
| 60GB 3.0G SATA SSD | Up to 8 | 1-8 | HP Smart Array E200i/64MB Controller |
| 120GB 3.0G SATA SSD | | | HP Smart Array E200i/128 BBWC Controller |
| | | | HP Smart Array E500/256MB Controller |
| | | | HP Smart Array P400/256MB Controller |
| | | | HP Smart Array P400/512MB BBWC Controller |
| | | | HP Smart Array P600/256 BBWC Controller |
| | | | HP Smart Array P800/512 BBWC Controller |

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

| | Quantity Supported | Position Supported | Controller |
|---------------------|--------------------|--------------------|---|
| 60GB 3.0G SATA SSD | Up to 6 | 1-6 | HP Smart Array E200i/64MB Controller |
| 120GB 3.0G SATA SSD | | | HP Smart Array E200i/128 BBWC Controller |
| | | | HP Smart Array E500/256MB Controller |
| | | | HP Smart Array P400/256MB Controller |
| | | | HP Smart Array P400/512MB BBWC Controller |
| | | | HP Smart Array P600/256 BBWC Controller |
| | | | HP Smart Array P800/512 BBWC Controller |

External Storage

| | Quantity Supported | Position Supported | Host Controller or Adapter |
|--|-------------------------------|--------------------|--|
| 20 Modular Smart Array | Up to 2 | External | Smart Array 6402/128 Controller Smart Array 6404/256 Controller |
| 50 Modular Smart Array | Up to 2 Up to 4 Up to 4 | External | HP Smart Array P600/256 BBWC Controller HP Smart Array P800 |
| 60 Modular Smart Array | Up to 4 Up to 8 Up to 8 | External | HP Smart Array P600/256 BBWC Controller HP Smart Array P800 Controller HP Smart Array E500/256 BBWC Controller |
| 70 Modular Smart Array | Up to 2 Up to 4 Up to 4 | External | HP Smart Array P600/256 BBWC Controller HP Smart Array P800 Controller HP Smart Array E500/256 BBWC Controller |
| HP 2000sa Modular Smart Array Controller | Up to 4 | External | HP SC08Ge Host Bus Adapter |



Storage

Tape and Disk-Based Backup

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

| | Position Supported | Controller | Part Number |
|--|--------------------|----------------------------|-------------|
| Internal USB Tape Drives DAT 40 USB DAT 72 USB DAT 160 USB | A,B,C,D | USB 2.0 Port | N/A |
| USB Tape Drives, External DAT 40 USB DAT 72 USB DAT 160 USB 1U Rack-Mount Kit | External | USB 2.0 Port | N/A |
| SCSI Tape Drives, Internal LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 DAT 40 DAT 72 DAT 160 | A,B,C,D | HP SC11Xe Host Bus Adapter | 412911-B21 |
| SCSI Tape Drives, Internal LTO-3 Ultrium 960 LTO-4 Ultrium 1840 | A+B or C+D | HP SC11Xe Host Bus Adapter | 412911-B21 |
| SCSI Tape Drives, External LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 960 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 1U Rack-Mount Kit 3U Rack-Mount Kit | External | HP SC11Xe Host Bus Adapter | 412911-B21 |
| SAS Tape Drives, Internal DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS | A,B,C,D | HP SC44Ge Host Bus Adapter | 416096-B21 |



Storage

| | | | |
|---|------------|---|--------------------------|
| SAS Tape Drives, Internal LTO-4 Ultrium 1840 SAS | A+B or C+D | HP SC44Ge Host Bus Adapter | 416096-B21 |
| SAS Tape Drives, External DAT 160 SAS LTO-2 Ultrium 448 SAS LTO-3 Ultrium 920 SAS LTO-4 Ultrium 1760 SAS LTO-4 Ultrium 1840 SAS 1U Rack-Mount Kit 3U Rack-Mount Kit | External | HP SC44Ge Host Bus Adapter | 416096-B21 |
| SCSI Tape Automation, External DAT 72x10 Autoloader 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096 MSL6000 | External | HP SC11Xe Host Bus Adapter HP U320e SCSI Host Bus Adapter NOTE: Recommended for MSL tape libraries. | 412911-B21 AH627A |
| SAS Tape Automation, External 1/8 G2 Autoloader MSL2024 MSL4048 | External | HP SC44Ge Host Bus Adapter | 416096-B21 |
| HP StorageWorks Fibre Tape Automation, External MSL2024 MSL4048 MSL8096 MSL6000 | External | Please consult the EBS connectivity matrix at: http://www.hp.com/go/ebs for detailed connectivity information | N/A |
| HP StorageWorks RDX Removable Disk Backup System, Internal RDX160 RDX320 RDX500 | A,B,C,D | USB 2.0 Port | N/A |
| HP StorageWorks D2D Backup Systems D2D120 D2D130 D2D2500i D2D4000i | External | Embedded Network Controller | N/A |



Power Specifications

| | |
|--|-------------------|
| Part Number | 380622-001 |
| Spare Kit | 403781-001 |
| Operational Input Voltage Range (Vrms) | 90 - 264 |
| Frequency Range (Nominal) (Hz) | 47 - 63 (50 / 60) |

| Nominal Input Voltage (Vrms) | 100 | 120 | 208 | 220 | 230 | 240 |
|--|------|------|------|------|------|------|
| Max Rated Output Wattage Rating | 800 | 950 | 1000 | 1000 | 1000 | 1000 |
| Nominal Input Current (A rms) | 10.0 | 8.8 | 5.85 | 5.5 | 5.2 | 4.97 |
| Max Rated Input Wattage Rating (Watts) | 980 | 1035 | 1193 | 1186 | 1172 | 1169 |
| Max. Rated VA (Volt-Amp) | 1000 | 1056 | 1217 | 1210 | 1196 | 1193 |
| Efficiency (%) | 81.5 | 82 | 84 | 84 | 85 | 85.5 |
| Power Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Leakage Current (mA) | 0.44 | 0.52 | 0.91 | 0.96 | 1.00 | 1.04 |
| Maximum Inrush Current (A peak) | 30 | 30 | 30 | 30 | 30 | 30 |
| Maximum Inrush Current duration (milliseconds) | 3 | 3 | 3 | 3 | 3 | 3 |

NOTE: To review typical system power ratings use the HP Power Advisor which is available online located at url: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor

To drill down to calculators:

- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: ML350 G5
- Click on: "Power Calculator" link. (You may need to scroll down to see it)



Technical Specifications

| | | | | |
|--|---|---|--|--|
| System Unit | Tower Dimensions (H x W x D) (with feet/bezel) | 18.39 x 8.59 x 23.46 in (46.7 x 21.8 x 59.6 cm) | | |
| | Rack Dimensions (H x W x D) (with feet/bezel) | 8.54 x 17.5 x 21.9 in. (21.7 x 44.5 x 55.7cm) | | |
| | Tower Weight (approximate) | Maximum | 67 lb (30.4 kg) | |
| | | (all hard drives, power supplies, and processors installed) | | |
| | Rack Weight (approximate) | Minimum | 50 lb (22.7 kg) | |
| | | (one hard drive, power supply, and processor installed) | | |
| | Max Input Requirements (per power supply) | Rated Line Voltage | 100 VAC, 120 VAC 200 - 240 VAC | |
| | | Rated Input Current | 10A (at 100 VAC) 9A (at 120 VAC) 6.1A (at 200 VAC) | |
| | BTU Rating | BTU/HR | 3350 BTU/hr (at 100 VAC) | |
| | | | 3530 BTU/hr (at 120 VAC) | |
| 3990 BTU/hr (at 240 VAC) | | | | |
| Power Specifications | <p>NOTE: To review typical system power ratings use the HP Power Advisor which is available online located at url: www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor</p> <ul style="list-style-type: none"> - Click on the system of interest. Example: ML350 G5 - Follow the instructions of the next screens. | | | |
| Power Supply Output (per power supply) | Rated Steady-State Power | 800 W (at 100 VAC) 850 W (at 120 VAC) 1000 W (at 200-240 VAC) | | |
| | Maximum Peak Power | 800 W (at 100 VAC) 850 W (at 120 VAC) 1000 W (at 200-240 VAC) | | |
| System Inlet Temperature | Operating | 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m | | |



Technical Specifications

| | | |
|--|----------------------------|--|
| | | (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. |
| | Non-operating | System performance may be reduced if operating with a fan fault or above 30°C (86°F). |
| Relative Humidity (non-condensing) | Non-operating | -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr). |
| | Operating | 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing. |
| Altitude | Non-operating | 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing. |
| | Operating | 3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min). |
| Acoustic Noise | Non-operating | 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min). |
| | | Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). |
| | Idle | |
| | L WAd | 5.2 B |
| | L pAm | 35 dBA |
| | Operating | |
| | L WAd | 5.3 B |
| | L pAm | 35 dBA |
| Emissions Classification (EMC) | FCC Rating | Class B |
| | Normative Standards | CISPR 22; EN55022; EN55024; FCC CFR 47, Pt 15; ICES-003; CNS13438; GB9254; K22;K24; EN 61000-3-2; EN 61000-3-3; EN 60950-1; IEC 60950-1 |

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



Technical Specifications

| | | | |
|-------------------------------------|---|--|---|
| Smart Array E200i Controller | Disk Drive and Enclosure Interface | 3G SAS (Serial Attached SCSI) 1.5G SATA (Serial Advanced Technology Attachment) | |
| | SAS Connectors | 2 internal (SFF8484) x4 wide port connectors | |
| | Cache Memory Speed | DDR-1/266 MHz provides up to 4.2 GB/s maximum bandwidth. | |
| | Server Interface | x4 2.5G PCIe provides 2GB/s maximum bandwidth. | |
| | SAS Speed | x8 3G SAS provides 2.4GB/s maximum bandwidth. | |
| | Cache Memory | 40-bit 64MB ECC read cache or 40-bit 128MB ECC battery backed, transportable read/write cache | |
| | Logical Volumes Supported | Up to 32 logical volumes | |
| | Maximum Volume Capacity | 4.5TB (6 x 750GB SATA) | |
| | Host Memory Addressing | 64-bit, supporting greater than 4GB server memory space | |
| | RAID Support | RAID 5 (Distributed Data Guarding) RAID 1, 1+0 (Striping & Mirroring) RAID 0 (Striping) | |
| | Upgradeable Firmware | Upgradeable Firmware | |
| | <hr/> | | |
| | Embedded NC373i Multifunction Gigabit Server Adapter | Network Interface Compatibility | 10Base-T/100Base-TX/1000Base-TX IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX |
| Data Transfer Method | | PCI Express, four lanes (x4) | |
| 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) |
| <hr/> | | | |



Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

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

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

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

