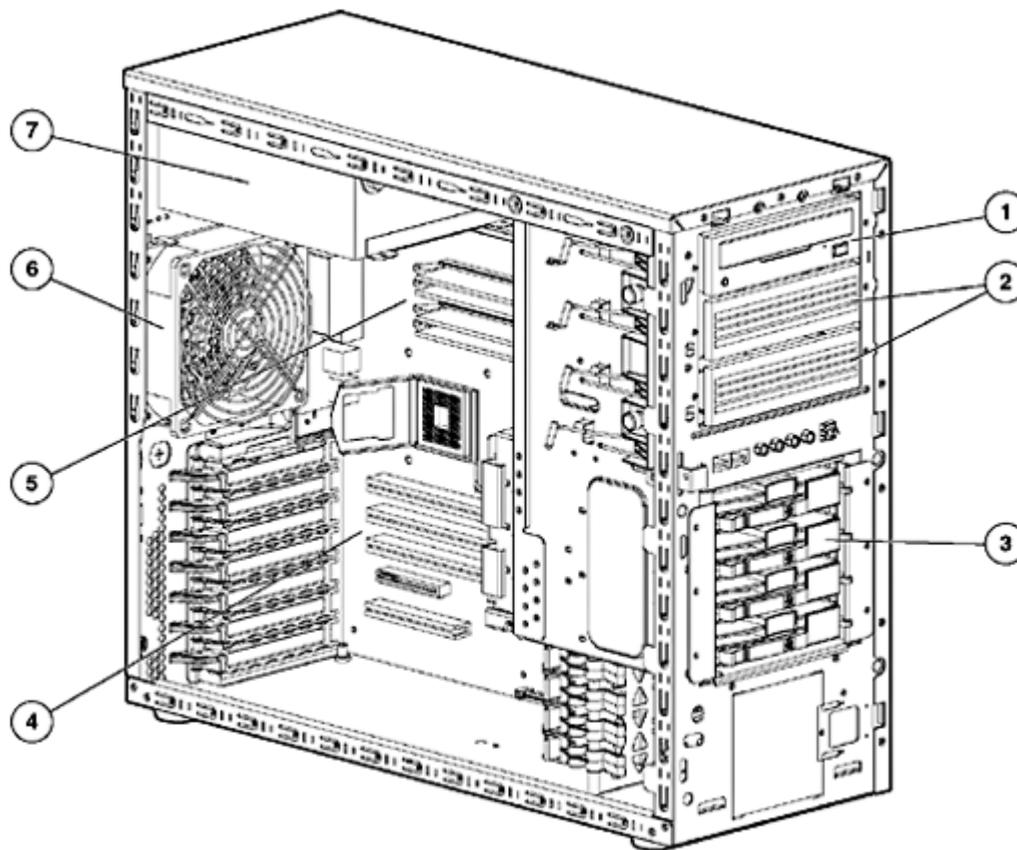


### Overview



1. 48x IDE (ATAPI) CD-ROM

2. Removable Media Bays

3. Four Hot-Plug (shown) or Four Non hot-plug (not shown) Drive Bays

4. Four Expansion Slots (Two PCI-X, One PCI, and One PCI Express)

5. Four DIMM Sockets, for up to 4GB DDR memory

6. System Fan

7. 350W Power Supply

### Overview

### At A Glance

- Supports a single 3.0 GHz, 3.20 GHz, or 3.40 GHz Intel® Pentium® 4 processor with 1MB or 2MB cache size or a single 2.8 GHz Intel Celeron processor with 256KB cache size.
- Intel® Pentium® 4 processors include support for Hyper-Threading
- Intel E7221 Chipset supporting 800MHz FSB (with Pentium 4 processor) or 533MHz FSB (with Celeron processor)
- PC3200 400MHz DDR SDRAM with advanced unbuffered ECC capabilities and optional interleaving (expandable up to 4 GB)
- Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
- Four Expansion Slots: Two PCI-X 64-bit/100MHz, One PCI 32-bit/33MHz slot, One PCI Express slot (X8 connector, x4 speed)
- SCSI models include
  - Single Channel Ultra320 SCSI Adapter in PCI-X slot
- SATA models include
  - Integrated four Channel SATA Controller
- Four USB 2.0 ports - Two on front, two on rear
- ROM Based Setup Utility (RBSU) and PXE support
- Protected by HP Services including a one-year, Next Business Day limited global warranty - Certain restrictions and exclusions apply.

## Standard Features

|                                                                |                                                                                  |
|----------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Processor</b><br>One of the following                       | Intel Pentium 4 - 3.4 GHz/800-2MB L2                                             |
|                                                                | <b>NOTE:</b> See "Configuration Information - Factory Integrated Models" section |
|                                                                | Intel Pentium 4 - 3.2 GHz/800-2MB L2                                             |
|                                                                | Intel Pentium 4 - 3.4 GHz/800-1MB L2                                             |
|                                                                | Intel Pentium 4 - 3.2 GHz/800-1MB L2                                             |
|                                                                | Intel Pentium 4 - 3.0 GHz/800-1MB L2                                             |
| <b>Cache Memory</b><br>One of the following depending on Model | Integrated 1MB level 2 ECC cache (Pentium 4 models)                              |
|                                                                | Integrated 2MB level 2 ECC cache (Pentium 4 models)                              |
|                                                                | Integrated 256KB level 2 ECC cache (Celeron models)                              |

**Memory Protection**      Advanced ECC

|               |          |                           |
|---------------|----------|---------------------------|
| <b>Memory</b> | Type     | PC3200 DDR SDRAM (400MHz) |
|               | Standard | 512 MB (1 x 512 MB)       |
|               | Maximum  | 4 GB                      |

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

| Expansion Slots | Slot Number | Bus Speed                        | Maximum Card Length | Hot Plug | PCI Voltage |
|-----------------|-------------|----------------------------------|---------------------|----------|-------------|
|                 | 1           | 64-bit/100MHz<br>PCI-X           | 12.3                | No       | 3.3V        |
|                 | 2           | 64-bit/100MHz<br>PCI-X           | 12.3                | No       | 3.3V        |
|                 | 3           | PCI Express x4<br>(x8 connector) | 12.3                | No       | N/A         |
|                 | 4           | 32-bit/33MHz PCI                 | 12.3                | No       | 3.3V        |

**Storage Controllers**      Single Channel Ultra320 SCSI Adapter ([SCSI Models](#)) OR  
 Integrated four port SATA controller with integrated SATA RAID 0, 1 ([SATA Models](#))  
**NOTE:** Integrated SATA RAID functionality supports 2 hard drives.  
**NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations

### Standard Features

|         |                |                                    |
|---------|----------------|------------------------------------|
| Storage | Diskette Drive | Optional<br>1.44 MB Diskette Drive |
|         | Optical Drive  | 48x IDE (ATAPI) CD-ROM Drive       |

|                          |                      |       |                    |
|--------------------------|----------------------|-------|--------------------|
| Maximum Internal Storage | Hot Plug SCSI        | 1.2TB | 4 x 300GB Ultra320 |
|                          | Non-Hot Plug SCSI    | 587GB | 4 x 146GB Ultra320 |
|                          | Hot Plug SAS (3.5")  | 587GB | 4 x 146GB SAS      |
|                          | Hot Plug SATA (3.5") | 2.0TB | 4 x 500GB SATA     |
|                          | Non-Hot Plug SATA    | 320GB | 4 x 80GB SATA      |

**NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations

|            |                          |                                         |
|------------|--------------------------|-----------------------------------------|
| Interfaces | Parallel                 | 1                                       |
|            | Serial                   | 1                                       |
|            | Pointing Device (Mouse)  | 1                                       |
|            | Graphics                 | 1                                       |
|            | Keyboard                 | 1                                       |
|            | USB                      | 4 (2 front, 2 rear)                     |
|            | Dedicated USB            | 1 (available for USB tape connectivity) |
|            | Network RJ-45 (Ethernet) | 1                                       |

**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 RAGE XL Video Controller with 8MB SDRAM Video Memory |
|----------|---------------------------------------------------------------------|

|             |                                                                          |
|-------------|--------------------------------------------------------------------------|
| Form Factor | Tower (5U) (Tower to Rack Enabling Option Kit (PN 238547-B22) available) |
|-------------|--------------------------------------------------------------------------|

|                                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ProLiant Essentials Foundation Pack Software | HP Systems Insight Manager | HP's new HP Systems Insight Manager (HP SIM) helps maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before those problems result in unplanned downtime or reduced productivity. HP SIM are both easy to set up work with the Insight Management Agents, integrated Lights-Out and Remote Insight Lights-Out Edition, and Version Control Agents to deliver robust fault, configuration, and asset management as well as remote administration. With HP SIM customers will also be able to take advantage of role-based security; the ability to manage ProLiant, Integrity, and HP 9000 systems; and plug-ins for storage, client, printer, and power management as well as server rapid deployment, performance management, and workload management. For more details on HP SIM visit <a href="http://www.hp.com/go/hpsim">http://www.hp.com/go/hpsim</a> . |
|----------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Standard Features

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Management Agents                                     | The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to HP Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management Web site at <a href="http://www.hp.com/servers/manage">http://www.hp.com/servers/manage</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| SmartStart                                            | SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at <a href="http://www.hp.com/servers/manage">http://www.hp.com/servers/manage</a> . SmartStart version supported (minimum): SmartStart 7.20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 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 <a href="http://www.hp.com/go/subscriberschoice">http://www.hp.com/go/subscriberschoice</a> and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ROMPaq, support software, and configuration utilities | The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options available in SmartStart or downloadable from Software and Drivers download pages, linked from the SmartStart website at <a href="http://www.hp.com/servers/smartstart">http://www.hp.com/servers/smartstart</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Survey Utility and diagnostics utilities              | The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Optional ProLiant Essentials Value Packs              | Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs: <ul style="list-style-type: none"><li>• Rapid Deployment Pack - an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands.</li><li>• Workload Management Pack - provides easier management of complex environments, improving overall server utilization and enabling Microsoft® Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.</li><li>• 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.</li><li>• 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</li><li>• Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats</li><li>• 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</li></ul> |

### Standard Features

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>.

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#### Industry Standard Compliance

ACPI V1.0b Compliant  
PCI 2.2 Compliant  
PCI-X 1.0 Compliant  
PCI-Express 1.0a Compliant  
PXE Support  
WOL Support  
Microsoft Logo certifications  
Novell Logo certifications  
USB2.0

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#### Manageability

HP Systems Insight Manager  
Online ROM Flash Utility  
Automatic Server Recovery-2 (ASR-2)  
Drive Parameter Tracking (with Smart Array Controller)  
Dynamic Sector Repairing (with Smart Array Controller)  
Pre-Failure Warranty (covers processors, memory and SCSI hard drives)  
BIOS Serial Console

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#### Security

Power-on password  
Setup password  
Diskette boot control  
Power switch security  
Intruder Alert Message

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#### Server Power Cords

All models ship with one 6' standard low-line country specific power cord.

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#### 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>.

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#### Power Specifications

To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at URL: <http://h30099.www3.hp.com/configurator/powercalcs.asp>

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### Standard Features

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply     | 350 Watts, PFC (Power Factor Correcting)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| System Fans      | 1 - Non-hot plug, Non-redundant system fan<br><b>NOTE:</b> Does not include fans in CPU heatsink or power supply.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Required Cabling | For required cabling information, refer to the Web site at <a href="http://h18000.www1.hp.com/products/servers/ProLiantML310/">http://h18000.www1.hp.com/products/servers/ProLiantML310/</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OS Support       | Microsoft Windows Server 2003 (Standard & Web Edition)<br>Microsoft Small Business Server 2003<br>Microsoft Windows 2000 Server<br>Novell NetWare<br>Linux (Red Hat, SuSE, and UnitedLinux)<br>VMware Virtualization Software<br><br><b>NOTE:</b> For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: <a href="http://www.hp.com/go/supportos">http://www.hp.com/go/supportos</a><br><b>NOTE:</b> For an up-to-date listing of the latest drivers available for the HP ProLiant ML310, please see: <a href="http://h18023.www1.hp.com/support/files/server/us/index.html">http://h18023.www1.hp.com/support/files/server/us/index.html</a> .<br><b>NOTE:</b> For a more complete and up-to-date information on Linux support, please visit HP Linux Web site at: <a href="http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html">http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html</a><br><b>NOTE:</b> For more complete and up-to-date information on how to buy server operating systems from HP please visit the OS product site at: <a href="http://h18004.www1.hp.com/products/servers/software/OEM.html">http://h18004.www1.hp.com/products/servers/software/OEM.html</a><br><b>NOTE:</b> For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at: <a href="http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html">http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html</a> |

### Rack Airflow Requirements

#### Rack 10000 series Cabinets

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

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

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

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

**NOTE:** For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: <http://h18000.www1.hp.com/products/servers/ProLiantDL760/index.html>.

### Standard Features

#### Factory Express Portfolio for Servers and Storage

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

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

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:** For detailed specification information on ProLiant Smart Buys please click on the following link: <ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>

#### 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 1 year parts, 1 year labor, 1 year on-site support.

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

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

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

HP Care Pack services include 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

## Standard Features

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:** For detailed specification information on ProLiant Smart Buys please click on the following link:

<ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf>.

|                                              |                    |                                                                                  |
|----------------------------------------------|--------------------|----------------------------------------------------------------------------------|
| ML310T02 3.4/800-1M<br>HP-SCSI<br>376793-001 | Processor(s)       | (1) Intel Pentium 3.40 GHz (standard)                                            |
|                                              | Cache Memory       | 1MB Level 2 cache                                                                |
|                                              | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory |
|                                              | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                         |
|                                              | Storage Controller | Single Channel Ultra320 SCSI controller in PCI slot                              |
|                                              | Hard Drives        | None ship standard (up to 4 hot plug SCSI drives supported)                      |
|                                              | Internal Storage   | 1.20 TB maximum hot plug SCSI (with optional hard drives)                        |
|                                              | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                     |
|                                              | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                             |
|                                              | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                         |

|                                                  |                    |                                                                                                                                                                                                                                  |
|--------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ML310T02 3.4/800-1M<br>HP-SATA/SAS<br>376794-001 | Processor(s)       | (1) Intel Pentium 3.40 GHz (standard)                                                                                                                                                                                            |
|                                                  | Cache Memory       | 1MB Level 2 cache                                                                                                                                                                                                                |
|                                                  | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory                                                                                                                                                 |
|                                                  | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                                                                                                                                                                         |
|                                                  | Storage Controller | Four port Integrated SATA Controller                                                                                                                                                                                             |
|                                                  | Hard Drives        | None ship standard (up to 4 hot plug SATA or SAS drives supported)<br><b>NOTE:</b> See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations |
|                                                  | Internal Storage   | 2.0 TB maximum hot plug SATA (with optional hard drives)                                                                                                                                                                         |
|                                                  | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                                                                                                                                                                     |
|                                                  | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                                                                                                                                                                             |
|                                                  | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                                                                                                                                                                         |

|                                               |                    |                                                                                  |
|-----------------------------------------------|--------------------|----------------------------------------------------------------------------------|
| ML310T02 3.4/800-1M<br>NHP-SCSI<br>378247-002 | Processor(s)       | (1) Intel Pentium 3.40 GHz (standard)                                            |
|                                               | Cache Memory       | 1MB Level 2 cache                                                                |
|                                               | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory |
|                                               | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                         |
|                                               | Storage Controller | Single Channel Ultra320 SCSI controller in PCI slot                              |
|                                               | Hard Drives        | (1) 36.4 GB Ultra320 SCSI                                                        |
|                                               | Internal Storage   | 587.2 GB maximum NHP SCSI (with optional hard drives)                            |
|                                               | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                     |
|                                               | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                             |
|                                               | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                         |

### Models

|                                                  |                    |                                                                                                                                                                                                                                  |
|--------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ML310T02 3.4/800-1M<br>NHP SATA80<br>381833-002  | Processor(s)       | (1) Intel Pentium 3.40 GHz (standard)                                                                                                                                                                                            |
|                                                  | Cache Memory       | 1MB Level 2 cache                                                                                                                                                                                                                |
|                                                  | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory                                                                                                                                                 |
|                                                  | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                                                                                                                                                                         |
|                                                  | Storage Controller | Four port Integrated SATA Controller                                                                                                                                                                                             |
|                                                  | Hard Drives        | (1) 80GB Non hot plug SATA drive                                                                                                                                                                                                 |
|                                                  | Internal Storage   | 320 GB maximum NHP SATA (with optional drives)<br><b>NOTE:</b> See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations                             |
|                                                  | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                                                                                                                                                                     |
|                                                  | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                                                                                                                                                                             |
|                                                  | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                                                                                                                                                                         |
| ML310T02 3.2/800-2M<br>HP SCSI<br>381839-001     | Processor(s)       | (1) Intel Pentium 3.20 GHz (standard)                                                                                                                                                                                            |
|                                                  | Cache Memory       | 2MB Level 2 cache                                                                                                                                                                                                                |
|                                                  | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory                                                                                                                                                 |
|                                                  | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                                                                                                                                                                         |
|                                                  | Storage Controller | Single Channel Ultra320 SCSI controller in PCI slot                                                                                                                                                                              |
|                                                  | Hard Drives        | None ship standard (up to 4 hot plug SCSI drives supported)                                                                                                                                                                      |
|                                                  | Internal Storage   | 1.20 TB maximum hot plug SCSI (with optional hard drives)                                                                                                                                                                        |
|                                                  | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                                                                                                                                                                     |
|                                                  | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                                                                                                                                                                             |
|                                                  | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                                                                                                                                                                         |
| ML310T02 3.2/800-2M<br>HP SATA/SAS<br>381838-001 | Processor(s)       | (1) Intel Pentium 3.20 GHz (standard)                                                                                                                                                                                            |
|                                                  | Cache Memory       | 2MB Level 2 cache                                                                                                                                                                                                                |
|                                                  | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory                                                                                                                                                 |
|                                                  | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                                                                                                                                                                         |
|                                                  | Storage Controller | Four port Integrated SATA Controller                                                                                                                                                                                             |
|                                                  | Hard Drives        | None ship standard (up to 4 hot plug SATA or SAS drives supported)<br><b>NOTE:</b> See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations |
|                                                  | Internal Storage   | 2.0 TB maximum hot plug SATA (with optional hard drives)                                                                                                                                                                         |
|                                                  | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                                                                                                                                                                     |
|                                                  | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                                                                                                                                                                             |
|                                                  | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                                                                                                                                                                         |

### Models

|                                              |                    |                                                                                  |
|----------------------------------------------|--------------------|----------------------------------------------------------------------------------|
| ML310T02 3.2/800-1M<br>HP-SCSI<br>376871-001 | Processor(s)       | (1) Intel Pentium 3.20 GHz (standard)                                            |
|                                              | Cache Memory       | 1MB Level 2 cache                                                                |
|                                              | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory |
|                                              | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                         |
|                                              | Storage Controller | Single Channel Ultra320 SCSI controller in PCI slot                              |
|                                              | Hard Drives        | None ship standard (up to 4 hot plug SCSI drives supported)                      |
|                                              | Internal Storage   | 1.2 TB maximum hot plug SCSI (with optional hard drives)                         |
|                                              | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                     |
|                                              | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                             |
|                                              | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                         |

|                                                  |                    |                                                                                                                                                                                                                        |
|--------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ML310T02 3.2/800-1M<br>HP-SATA/SAS<br>376852-001 | Processor(s)       | (1) Intel Pentium 3.20 GHz (standard)                                                                                                                                                                                  |
|                                                  | Cache Memory       | 1MB Level 2 cache                                                                                                                                                                                                      |
|                                                  | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory                                                                                                                                       |
|                                                  | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                                                                                                                                                               |
|                                                  | Storage Controller | Four port Integrated SATA Controller                                                                                                                                                                                   |
|                                                  | Hard Drives        | None ship standard (up to 4 hot plug SATA or SAS drives)<br><b>NOTE:</b> See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations |
|                                                  | Internal Storage   | 2.0 TB maximum hot plug SATA (with optional hard drives)                                                                                                                                                               |
|                                                  | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                                                                                                                                                           |
|                                                  | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                                                                                                                                                                   |
|                                                  | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                                                                                                                                                               |

|                                               |                    |                                                                                  |
|-----------------------------------------------|--------------------|----------------------------------------------------------------------------------|
| ML310T02 3.2/800-1M<br>NHP SCSI<br>378279-002 | Processor(s)       | (1) Intel Pentium 3.20 GHz (standard)                                            |
|                                               | Cache Memory       | 1MB Level 2 cache                                                                |
|                                               | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory |
|                                               | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                         |
|                                               | Storage Controller | Single Channel Ultra320 SCSI controller in PCI slot                              |
|                                               | Hard Drives        | (1) 36.4 GB Ultra320 SCSI                                                        |
|                                               | Internal Storage   | 320 GB maximum (with optional hard drives)                                       |
|                                               | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                     |
|                                               | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                             |
|                                               | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                         |

### Models

|                                                 |                    |                                                                                                                                                                                                                    |
|-------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ML310T02 3.2/800-1M<br>NHP SATA80<br>381832-002 | Processor(s)       | (1) Intel Pentium 3.20 GHz (standard)                                                                                                                                                                              |
|                                                 | Cache Memory       | 1MB Level 2 cache                                                                                                                                                                                                  |
|                                                 | Memory             | 512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory                                                                                                                                   |
|                                                 | Network Controller | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                                                                                                                                                           |
|                                                 | Storage Controller | Four port Integrated SATA Controller                                                                                                                                                                               |
|                                                 | Hard Drives        | (1) 80GB Non hot plug SATA drive                                                                                                                                                                                   |
|                                                 | Internal Storage   | 320 GB maximum non hot plug SATA (with optional hard drives)<br><b>NOTE:</b> See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations |
|                                                 | Optical Drive      | 48x IDE (ATAPI) CD-ROM Drive                                                                                                                                                                                       |
|                                                 | Diskette Drive     | None ship standard (Optional 1.44 MB Diskette Drive)                                                                                                                                                               |
|                                                 | Form Factor        | Tower (5U) (Tower to Rack Enabling Option Kit available)                                                                                                                                                           |

### Configuration Information - Factory Integrated Models

**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

|               |                                                                                        |            |
|---------------|----------------------------------------------------------------------------------------|------------|
| <b>Models</b> | HP ProLiant ML310 Tower CTO Chassis NHP SCSI                                           | 381850-405 |
|               | HP ProLiant ML310 Tower CTO Chassis NHP SATA                                           | 381851-405 |
|               | HP ProLiant ML310 Tower CTO Chassis HP-SCSI                                            | 378559-405 |
|               | HP ProLiant ML310 Tower CTO Chassis HP-SATA/SAS                                        | 378560-405 |
|               | <b>Factory Integrated Models ship with:</b>                                            |            |
|               | Embedded NC7761 PCI 10/100/1000T Gigabit network adapter                               |            |
|               | Integrated four Channel SATA Controller (included with 381851-405 and 378560-405 ONLY) |            |
|               | 350 Watts, PFC (Power Factor Correcting)                                               |            |
|               | Keyboard                                                                               |            |
|               | Mouse                                                                                  |            |
|               | Tower 5U Form Factor                                                                   |            |

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

|                      |                                                              |            |
|----------------------|--------------------------------------------------------------|------------|
| <b>Processors</b>    | Celeron Processor 2.80-GHz/533 MHz Front Side Bus, FIO       | 383872-L22 |
|                      | Pentium Processor 3.00-GHz/800 MHz Front Side Bus, FIO       | 390813-L22 |
|                      | Pentium Processor 3.20-GHz/ 800 MHz Front Side Bus, 1MB FIO  | 383871-L22 |
|                      | Pentium Processor 3.20-GHz/ 800 MHz Front Side Bus, 2MB FIO  | 383870-L22 |
|                      | Pentium Processor 3.40-GHz/ 800 MHz Front Side Bus, 1MB FIO  | 383869-L22 |
|                      | Pentium Processor 3.40-GHz/ 800 MHz Front Side Bus, 2MB FIO  | 383868-L22 |
| <b>Base Memory</b>   | 256 MB Advanced ECC PC3200 DDR SDRAM DIMM Kit (1 x 256 MB)   | 354557-B21 |
|                      | 512 MB Advanced ECC PC3200 DDR SDRAM DIMM Kit (1 x 512 MB)   | 354560-B21 |
|                      | 1024 MB Advanced ECC PC3200 DDR SDRAM DIMM Kit (1 x 1024 MB) | 354563-B21 |
| <b>Optical Drive</b> | CD-RW/DVD-ROM Combo Drive Option Kit                         | 331346-B21 |
|                      | HP ProLiant 48X CD w/SCREWS                                  | 337863-B21 |
|                      | 16X DVD-ROM Drive Option Kit (Carbon)                        | 217053-B21 |

### Configuration Information - Factory Integrated Models

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Base Hard Drives</b> | <p><b>Non-Hot Plug U320 SCSI Drives</b><br/> <b>NOTE:</b> For use in Non-Hot Plug SCSI base configurations P/N 381850-405 or 381805-B21.</p> <p>HP 36GB U320 15K NHP HDD 357012-B21<br/>           HP 72GB U320 10K NHP HDD 332751-B21</p> <p><b>Hot Plug U320 SCSI Drives</b><br/> <b>NOTE:</b> For use in Hot Plug SCSI base configurations P/N 378559-405 or 378559-B21.</p> <p>HP 72GB U320 10K Universal HDD 286714-B22<br/>           HP 146GB U320 10K Universal HDD 286716-B22<br/>           HP 36GB U320 15K Universal HDD 286776-B22<br/>           HP 72GB U320 15K Universal HDD 286778-B22</p> <p><b>Non-Hot Plug SATA Drives</b><br/> <b>NOTE:</b> For use in Non-Hot Plug SATA base configurations P/N 381851-405 or 381851-B21.</p> <p>HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD 383410-B21<br/>           HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD, FIO 399164-B21<br/>           HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD, FIO 399165-B21<br/>           HP 500GB 1.5G SATA 7.2K 3.5" HDD 395473-B21</p> <p><b>Hot Plug SATA Drives</b><br/> <b>NOTE:</b> For use in Hot Plug SATA/SAS base configurations P/N 378560-405 or 378560-B21.</p> <p>HP 80GB 1.5G SATA 7.2K 3.5" HDD 349237-B21<br/>           HP 160GB 1.5G SATA 7.2K 3.5" HDD 349238-B21<br/>           HP 250GB 1.5G SATA 7.2K 3.5" HDD 349239-B21</p> <p><b>Hot Plug SAS 3.5" Drives</b><br/> <b>NOTE:</b> for use in Hot Plug SATA/SAS base configurations P/N 378560-405 or 378560-B21.</p> <p>HP 36GB 3G SAS 15K 3.5" HDD 375868-B21<br/>           HP 72GB 3G SAS 15K 3.5" HDD 375870-B21<br/>           HP 146GB 3G SAS 15K 3.5" HDD 375872-B21</p> |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 3: Choose Additional Factory Integratable Options

|                    |                                                                                                                                                                                                                                                           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Controllers</b> | <p>Smart Array 641 Controller 291966-B21<br/>           Smart Array 642 Controller 291967-B21<br/>           64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 268351-B21<br/>           64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 374654-B21</p> |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Step 4: Choose Additional Options for Factory Integration

**NOTE:** For additional options, please refer to the "Options" section below.

### Options

#### ProLiant Essentials Value Pack Software

##### ProLiant Essentials Intelligent Networking Pack

ProLiant Essentials Intelligent Networking Pack, Single Server License 372906-B21

**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 License Kits please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12062\\_na/12062\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12062_na/12062_na.HTML)

##### ProLiant Essentials Performance Management Pack

ProLiant Essentials Performance Management Pack, Single-Server License 306696-B21

**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 Intelligent Networking Pack - Windows License Kits please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12062\\_na/12062\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12062_na/12062_na.HTML)

ProLiant Essentials Intelligent Networking Pack - Linux Edition, Single Server License 397004-B21

**NOTE:** For additional ProLiant Intelligent Networking Pack - Linux License Kits please see the QuickSpecs at:

[http://h18000.www1.hp.com/products/quickspecs/12327\\_na/12327\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12327_na/12327_na.HTML)

##### ProLiant Essentials Rapid Deployment Pack Windows Edition and Linux Edition Release

Rapid Deployment Pack, Single-Server License 267196-B21

**NOTE:** This license allows 1 server to be deployed and managed via RDP.

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

[http://h18000.www1.hp.com/products/quickspecs/11053\\_na/11053\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11053_na/11053_na.HTML)

[http://h18000.www1.hp.com/products/quickspecs/11713\\_na/11713\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11713_na/11713_na.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\\_na/12328\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12328_na/12328_na.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\\_na/12111\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12111_na/12111_na.HTML)

### Options

**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>.

|                                                                              |                                                                                                                                                                                                                                                                                                                                    |            |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Memory<br>(SDRAM DIMMs)                                                      | 1024 MB Advanced ECC PC3200 DDR SDRAM DIMM (1 x 1024 MB)                                                                                                                                                                                                                                                                           | 354563-B21 |
|                                                                              | 512 MB Advanced ECC PC3200 DDR SDRAM DIMM (1 x 512 MB)                                                                                                                                                                                                                                                                             | 354560-B21 |
|                                                                              | 256 MB Advanced ECC PC3200 DDR SDRAM DIMM (1 x 256 MB)                                                                                                                                                                                                                                                                             | 354557-B21 |
| Optical Drives                                                               | 16X DVD-ROM Drive Option Kit (Carbon)                                                                                                                                                                                                                                                                                              | 217053-B21 |
|                                                                              | CD-RW/DVD-ROM Combo Drive Option Kit                                                                                                                                                                                                                                                                                               | 331346-B21 |
|                                                                              | <b>NOTE:</b> The DVD-ROM drive is supported in the CD-ROM bay and in the removable media bay. If placed in the removable media bay, it requires the 2-Device IDE cable (PN 305381-B21).                                                                                                                                            |            |
|                                                                              | HP DVD+R/RW 16X Half Height                                                                                                                                                                                                                                                                                                        | 383974-B21 |
| Diskette Drives                                                              | 1.44MB Floppy Drive Option Kit                                                                                                                                                                                                                                                                                                     | 379257-B21 |
| Serial Port Kit                                                              | HP ProLiant 2nd Serial port option kit                                                                                                                                                                                                                                                                                             | 390390-B21 |
| Hard Drives                                                                  | <b>Ultra320 - Universal Hot Plug</b> (SCSI Hot Plug Models Only)                                                                                                                                                                                                                                                                   |            |
|                                                                              | 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 |
|                                                                              | <b>Ultra320 - Non-Hot Plug</b> (SCSI Non Hot Plug Models Only)                                                                                                                                                                                                                                                                     |            |
|                                                                              | HP 146GB U320 10K NHP HDD                                                                                                                                                                                                                                                                                                          | 356990-B21 |
|                                                                              | HP 72GB U320 10K NHP HDD                                                                                                                                                                                                                                                                                                           | 332751-B21 |
|                                                                              | HP 36GB U320 15K NHP HDD                                                                                                                                                                                                                                                                                                           | 357012-B21 |
|                                                                              | <b>NOTE:</b> Please see the Wide Ultra320 Universal Hot Plug QuickSpecs for additional technical information on the hard drives Support details, please see the following: <a href="http://h18000.www1.hp.com/products/quickspecs/11531_na/11531_na.HTML">http://h18000.www1.hp.com/products/quickspecs/11531_na/11531_na.HTML</a> |            |
|                                                                              | <b>Serial-Attached SCSI (SAS) Hot Plug Hard Drive</b> (SATA/SAS Hot Plug Models Only)                                                                                                                                                                                                                                              |            |
|                                                                              | HP 146GB 3G SAS 15K 3.5" HDD                                                                                                                                                                                                                                                                                                       | 375872-B21 |
|                                                                              | HP 72GB 3G SAS 15K 3.5" HDD                                                                                                                                                                                                                                                                                                        | 375870-B21 |
| HP 36GB 3G SAS 15K 3.5" HDD                                                  | 375868-B21                                                                                                                                                                                                                                                                                                                         |            |
| <b>Serial-ATA (SATA) Hot Plug Hard Drive</b> (SATA/SAS Hot Plug Models Only) |                                                                                                                                                                                                                                                                                                                                    |            |
| 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                                                                                                                                                                                                                                                                                                                         |            |

### Options

**Serial-ATA (SATA) Non Hot Plug Hard Drive** (SATA Non Hot Plug Models Only)  
 HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD 383410-B21

**NOTE:** Please see the [Hard Drive QuickSpecs](#) for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:

[http://h18000.www1.hp.com/products/quickspecs/11940\\_na/11940\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11940_na/11940_na.HTML)

**Hard Drive Cables** HP 4-port SATA/SAS cable (target fan cable) 389653-B21

**NOTE:** This cable is required when the HP 6-port SATA RAID controller is installed on hot plug SATA/SAS models of the ML310 G2. See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations.

HP 2-port SATA Cable 379093-B21

**NOTE:** This cable is required when the HP 6-port SATA RAID controller is installed on non-hot plug SATA/SAS models of the ML310 G2. See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations.

### Storage Controllers

#### SCSI Controllers

**NOTE:** The following Storage Controllers are qualified for SCSI drives only. They do not support SATA or SAS Drives.

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/133MHz Dual Channel Ultra320 SCSI Adapter 268351-B21

64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 374654-B21

**NOTE:** Please see the following Controller or SCSI Adapter QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information:

[http://h18000.www1.hp.com/products/quickspecs/12067\\_na/12067\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12067_na/12067_na.HTML)  
 (Smart Array 641)

[http://h18000.www1.hp.com/products/quickspecs/12069\\_na/12069\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12069_na/12069_na.HTML)  
 (Smart Array 642)

[http://h18000.www1.hp.com/products/quickspecs/10429\\_na/10429\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/10429_na/10429_na.HTML)  
 (Dual Channel SCSI Adapter)

[http://h18000.www1.hp.com/products/quickspecs/11943\\_na/11943\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11943_na/11943_na.HTML)  
 (Single Channel SCSI HBA)

#### SAS Controllers

Smart Array P600 Controller 337972-B21

**NOTE:** Serial SCSI/ATA.

512MB DDR BBWC Upgrade 372538-B21

### Options

**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\\_na/12247\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/12247_na/12247_na.HTML)  
(Smart Array P600 Controller)

#### SAS HBA

HP 8 Internal Port SAS HBA with RAID 347786-B21

**NOTE:** Please see the HBA QuickSpecs for additional information:

[http://h18000.www1.hp.com/products/quickspecs/12332\\_div/12332\\_div.HTML](http://h18000.www1.hp.com/products/quickspecs/12332_div/12332_div.HTML)

#### SATA Controller

HP 6-port SATA RAID Controller 372953-B21

**NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations

### 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 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:** 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 NICs, Jumbo Frames and LSO features are automatically disabled.

### Management Options

Remote Insight Lights-Out Edition II 227251-001

### Tape Drives

**NOTE:** For the complete listing of Tape Drive offerings for this server, please visit:

<http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html>

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

#### USB Tape Drives

HP StorageWorks DAT 40 USB Internal Tape Drive (Carbonite) DW022A

HP StorageWorks DAT 40 USB External Tape Drive (Carbonite) DW023A

HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite) DW026A

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

#### Internal, External, and Rack-Mount Ultrium Tape Drives

HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite) DW064A

HP StorageWorks Ultrium 232 External Tape Drive (Carbonite) DW065B

HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite) DW016A

**NOTE:** Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items:

[http://h18006.www1.hp.com/products/quickspecs/11739\\_na/11739\\_na.html](http://h18006.www1.hp.com/products/quickspecs/11739_na/11739_na.html)

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>.

### Options

#### Internal, External, and Rack-Mount DAT Drives

|                                                            |        |
|------------------------------------------------------------|--------|
| HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)   | Q1522B |
| HP StorageWorks DAT 72 SCSI External Tape Drive (Carbon)   | Q1523B |
| HP StorageWorks 1U Rack-mount kit with one DAT 72 (Carbon) | A7443A |

**NOTE:** Please see the DAT Tape Drive QuickSpecs for controllers, media, and other options:

[http://h18000.www1.hp.com/products/quickspecs/11883\\_na/11883\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/11883_na/11883_na.HTML)

[http://h18006.www1.hp.com/products/quickspecs/12128\\_na/12128\\_na.html](http://h18006.www1.hp.com/products/quickspecs/12128_na/12128_na.html)

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

#### 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.

**NOTE:** Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits:

[http://h18000.www1.hp.com/products/quickspecs/10854\\_na/10854\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML)

### 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\\_na/11905\\_na.html](http://h18006.www1.hp.com/products/quickspecs/11905_na/11905_na.html)

#### 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>

### Options

#### Tape Libraries

|                                                                                                                                                                                                                                                                                                                                                        |  |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------|
| <b>HP StorageWorks MSL2024 Tape Library</b>                                                                                                                                                                                                                                                                                                            |  |        |
| 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 |
| <b>HP StorageWorks MSL6000 Tape Library</b>                                                                                                                                                                                                                                                                                                            |  |        |
| <b>Ultrium 960 technology</b>                                                                                                                                                                                                                                                                                                                          |  |        |
| 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 |
| <b>Ultrium 460 technology</b>                                                                                                                                                                                                                                                                                                                          |  |        |
| 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 |
| <p><b>NOTE:</b> Please reference the MSL2024 and MSL6000 Tape Library QuickSpecs at <a href="http://www.hp.com/go/automation">http://www.hp.com/go/automation</a> for additional information needed to create a complete solution; reference current compatibility information at <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a>.</p> |  |        |

#### Magneto-Optical Jukeboxes

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------|
| <b>HP StorageWorks 9.1 GB Optical Jukeboxes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |        |
| 600mx, 4 drive, 64 slot jukebox                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | C1160M |
| 1200mx, 4 drive, up to 128 slots                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | C1104M |
| 2200mx, 6 drive, up to 238 slots                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | C1107M |
| <p><b>NOTE:</b> Please see the HP StorageWorks Magneto-Optical Products data sheet for a complete listing of available jukeboxes at: <a href="http://www.hp.com/products1/storage/products/archivalprod/brochures/MO_family_pb.pdf">http://www.hp.com/products1/storage/products/archivalprod/brochures/MO_family_pb.pdf</a></p> <p><b>NOTE:</b> Please reference the Magneto-Optical Jukebox data sheets at <a href="http://www.hp.com/go/optical">http://www.hp.com/go/optical</a> 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><b>NOTE:</b> Please see the HP StorageWorks Ultra Density Optical Jukeboxes QuickSpecs for a complete listing of available jukeboxes at: <a href="http://h18006.www1.hp.com/products/quickspecs/11944_na/11944_na.html">http://h18006.www1.hp.com/products/quickspecs/11944_na/11944_na.html</a></p> <p><b>NOTE:</b> Please reference the Ultra Density Optical Jukebox QuickSpecs at <a href="http://www.hp.com/go/optical">http://www.hp.com/go/optical</a> for additional information needed to create a complete solution</p> |  |        |

### Options

|                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                               |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| HP StorageWorks Modular Smart Array 30                                                                                                              | HP StorageWorks Modular Smart Array 30 SB                                                                                                                                                                                                                                                                                                                     | 302969-B21 |
|                                                                                                                                                     | <b>NOTE:</b> Rack-mountable 14 drive enclosure with single bus, redundant power supplies                                                                                                                                                                                                                                                                      |            |
|                                                                                                                                                     | HP StorageWorks Modular Smart Array 30 DB                                                                                                                                                                                                                                                                                                                     | 302970-B21 |
|                                                                                                                                                     | <b>NOTE:</b> Rack-mountable 14 drive enclosure with dual bus, redundant power supplies                                                                                                                                                                                                                                                                        |            |
|                                                                                                                                                     | <b>NOTE:</b> The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 Hot Plug Hard Drives.                                                                                                                                                                                                                                             |            |
| Uninterruptible Power Systems – Tower Supply                                                                                                        | HP T500 UPS 120 V                                                                                                                                                                                                                                                                                                                                             | 361475-001 |
|                                                                                                                                                     | HP UPS Model T700 (700VA, 500 Watt), Low Voltage                                                                                                                                                                                                                                                                                                              | 204015-001 |
|                                                                                                                                                     | HP T750 UPS                                                                                                                                                                                                                                                                                                                                                   | 378439-D71 |
|                                                                                                                                                     | HP UPS Model T1000 XR (1000VA, 700 Watt), Low Voltage                                                                                                                                                                                                                                                                                                         | 204155-001 |
|                                                                                                                                                     | HP UPS Model T1500 XR (1440VA, 1050 Watt), Low Voltage                                                                                                                                                                                                                                                                                                        | 204155-002 |
| Uninterruptible Power Systems – Rack                                                                                                                | HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage                                                                                                                                                                                                                                                                                                            | 326529-D71 |
|                                                                                                                                                     | HP UPS R1500 XR (100 to 127)                                                                                                                                                                                                                                                                                                                                  | 204404-001 |
|                                                                                                                                                     | HP UPS R3000 XR (120V)                                                                                                                                                                                                                                                                                                                                        | 192186-001 |
|                                                                                                                                                     | HP UPS R3000 XR (208V)                                                                                                                                                                                                                                                                                                                                        | 192186-002 |
|                                                                                                                                                     | HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage                                                                                                                                                                                                                                                                                                            | 326529-D71 |
|                                                                                                                                                     | UPS R12000 XR N+ x (200-240V) (hardwired)                                                                                                                                                                                                                                                                                                                     | 207552-B22 |
|                                                                                                                                                     | <b>NOTE:</b> The UPS R12000 XR has a hardwired input and output connection.                                                                                                                                                                                                                                                                                   |            |
| Modular PDUs 1U/0U<br>(Up to 32 outlets)<br><b>NOTE:</b> 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)                                                                                                                                                                                                                                                                                 | 252663-D71 |
|                                                                                                                                                     | <b>NOTE:</b> 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)                                                                                                                                                                                                                                                                                | 252663-D72 |
|                                                                                                                                                     | HP Modular Power Distribution Units (mPDU), High Volt Model, 40A (200-240 VAC)                                                                                                                                                                                                                                                                                | 252663-B21 |
|                                                                                                                                                     | <b>NOTE:</b> This mPDU (252663-B21), 40A model has a hardwired input.                                                                                                                                                                                                                                                                                         |            |
|                                                                                                                                                     | HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC)                                                                                                                                                                                                                                                                                | 252663-B24 |
|                                                                                                                                                     | <b>NOTE:</b> 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. Need to order cable PN 340653-001.                                                                                                                        |            |
|                                                                                                                                                     | <b>NOTE:</b> 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:<br><a href="http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.HTML">http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.HTML</a> |            |
| Rack Enabling Kit                                                                                                                                   | ProLiant ML310/ML330 G2 Rack Enabling Kit                                                                                                                                                                                                                                                                                                                     | 238547-B22 |
|                                                                                                                                                     | <b>NOTE:</b> Support for racks with round or square mounting holes (including all Compaq and HP Rack System /E and HP Systems), with an adjustment range of 24" – 36".                                                                                                                                                                                        |            |

### Options

|       |                                                    |            |
|-------|----------------------------------------------------|------------|
| Other | Internal to External SCSI Cable Option Kit (HD68)  | 159547-B22 |
|       | Internal to External SCSI Cable Option Kit (VHDCI) | 333370-B21 |
|       | Telco Rack Option Kit                              | 251243-B21 |

**NOTE:** Support for all 2-post Telco racks requires the use of the standard four post rack kit and an additional option kit from HP.

|             |                                                 |        |
|-------------|-------------------------------------------------|--------|
| USB Options | USB Optical Scroll Mouse (Carbonite)            | DD441B |
|             | USB 1.44-MB External Diskette Drive (Carbonite) | DC141B |

|                                            |                          |            |
|--------------------------------------------|--------------------------|------------|
| HP Rack 5000 Series<br>(Graphite Metallic) | HP 5642 Rack-Unassembled | 358254-B21 |
|--------------------------------------------|--------------------------|------------|

|                                      |                                                                             |            |
|--------------------------------------|-----------------------------------------------------------------------------|------------|
| Rack Options for Rack<br>5000 Series | Stabilizer Kit for 5642 Rack (Graphite Carbon)                              | 374493-B21 |
|                                      | <b>NOTE:</b> The stabilizing kit is used to prevent rack from tipping over. |            |
|                                      | Baying Kit for 5642 Rack (Graphite Carbon)                                  | 374499-B21 |
|                                      | <b>NOTE:</b> The baying kit is used to join two or more HP 5642 racks.      |            |

|                                                             |                                                                           |        |
|-------------------------------------------------------------|---------------------------------------------------------------------------|--------|
| HP Rack 10000 G2<br>Series<br>(Carbon/Graphite<br>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 |

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

**NOTE:** Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:

[http://h18000.www1.hp.com/products/quickspecs/12402\\_na/12402\\_na.HTML](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>.

### Options

|                                       |                                                             |        |
|---------------------------------------|-------------------------------------------------------------|--------|
| Rack Options for Rack 10000 G2 Series | HP 10642 G2 Front Door                                      | AF009A |
|                                       | HP 10636 G2 Front Door                                      | 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 |
|                                       | <b>NOTE:</b> 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) | HP Rack S10614 (14U) Rack Cabinet - Shock Pallet | 292302-B22 |
|                                          | HP Rack 10842 (42U) Rack Cabinet - Pallet        | 257415-B21 |
|                                          | HP Rack 10842 (42U) Rack Cabinet - Shock Pallet  | 257415-B22 |
|                                          | HP Rack 10647 (47U) – Pallet                     | 245160-B21 |
|                                          | HP Rack 10647 (47U) – Crated                     | 245160-B23 |
|                                          | HP Rack 10642 (42U) – Pallet                     | 245161-B21 |
|                                          | HP Rack 10642 (42U) – Shock Pallet               | 245161-B22 |
|                                          | HP Rack 10642 (42U) – Crated                     | 245161-B23 |
|                                          | HP Rack 10636 (36U) – Pallet                     | 245162-B21 |
|                                          | HP Rack 10636 (36U) – Shock Pallet               | 245162-B22 |
|                                          | HP Rack 10636 (36U) – Crated                     | 245162-B23 |
|                                          | HP Rack 10622 (22U) – Pallet                     | 245163-B21 |
|                                          | HP Rack 10622 (22U) – Shock Pallet               | 245163-B22 |
|                                          | HP Rack 10622 (22U) – Crated                     | 245163-B23 |

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

**NOTE:** Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:

[http://h18000.www1.hp.com/products/quickspecs/10995\\_na/10995\\_na.HTML](http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML)

**NOTE:** For additional information regarding Rack Cabinets, please see the following URL:

<http://h18000.www1.hp.com/products/servers/proliantstorage/racks/index.html>.

### Options

|                                                                                                                                                                                                                                                                                      |                                                                                                                                                  |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Rack Options for Rack<br>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 |
|                                                                                                                                                                                                                                                                                      | <b>NOTE:</b> For a complete list of Monitors please view the following URL:<br><a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |            |
|                                                                                                                                                                                                                                                                                      | TFT5600 Rack Keyboard Monitor                                                                                                                    | 221546-001 |
|                                                                                                                                                                                                                                                                                      | <b>NOTE:</b> For a complete list of Monitors please view the following URL:<br><a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |            |
|                                                                                                                                                                                                                                                                                      | 1U Rack Keyboard & Drawer (Carbon)                                                                                                               | 257054-001 |
| <b>NOTE:</b> For additional information regarding Rack Cabinets, please see the following URL: <a href="http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html">http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html</a> . |                                                                                                                                                  |            |

|                       |                                                                                                                                                                                                                                                |            |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 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 |
|                       | <b>NOTE:</b> Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> .                                    |            |
|                       | HP 1x 4 USB/PS2 KVM Switch, TT                                                                                                                                                                                                                 | 371301-D71 |
|                       | HP PS2 KVM Cable with audio, 6', 2-pack                                                                                                                                                                                                        | 371730-B21 |
|                       | HP USB KVM Cable with audio, 6', 2-pack                                                                                                                                                                                                        | 371729-B21 |
|                       | <b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |            |

|                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                               |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| HP Serial Console Server<br>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 |
|                                                                                                                                                                                                                                                | <b>NOTE:</b> 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: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |        |
| <b>NOTE:</b> For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: <a href="http://www.hp.com/go/kvm">http://www.hp.com/go/kvm</a> . |                                                                                                                                                                                                                                               |        |

### Options

|                                                              |                                                                                                                                                                                                          |        |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Service and Support Offerings</b> (HP Care Pack Services) | <b>Hardware Services On-site Service</b>                                                                                                                                                                 |        |
|                                                              | Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic                                                                                                                          | U4445E |
|                                                              | 4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic                                                                                                                                    | U4446E |
|                                                              | 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic                                                                                                                                    | U4447E |
|                                                              | 6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic                                                                                                                    | U4448E |
|                                                              | <b>Installation &amp; Start-up Services</b>                                                                                                                                                              |        |
|                                                              | Hardware Installation, Electronic                                                                                                                                                                        | U4456E |
|                                                              | 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 | U4457E |
|                                                              | <b>Support Plus</b>                                                                                                                                                                                      |        |
|                                                              | 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                         | U4458E |
|                                                              | <b>Support Plus 24</b>                                                                                                                                                                                   |        |
|                                                              | 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                                          | U4459E |
|                                                              | 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                                             | U6306E |
|                                                              | 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                                       | U8328E |

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

### Memory

#### HP ProLiant ML310 G2 All Models

##### Standard Memory - Pentium 4 Models

512 MB PC3200 Unbuffered ECC DDR SDRAM installed (1 x 512 MB SDRAM DIMM)

##### Standard Memory Replaced with Optional Memory

Up to 4096 MB memory is available with the optional installation of PC3200 Unbuffered ECC DDR SDRAM DIMM Memory kits.

These systems support PC3200 DDR memory and come standard with a single PC3200 DIMM installed.

The system board provides four DIMM sockets:

- Socket 1 (blue connector), channel A
- Socket 2 (black connector), channel A
- Socket 3 (blue connector), channel B
- Socket 4 (black connector), channel B

DIMMs do not need to be installed in pairs although installation of pairs (an equal DIMM for each channel) provides the best performance. The BIOS will detect the DIMM population and set the system accordingly as follows:

- Single-channel mode - DIMMs installed for one channel only
- Dual-channel asymmetric mode - DIMMs installed for both channels but of unequal channel capacities.
- Dual-channel interleaved mode (recommended) - DIMMs installed for both channels and offering equal channel capacities, proving the highest performance.

These systems require DIMMs with the following parameters:

- Unbuffered
- 256 MB, 512 MB, and 1 GB memory technology
- PC3200
- ECC DIMMs only

The first DIMM should be installed in Socket 1. A DIMM should not be installed in Socket 2 without a DIMM in Socket 1. Likewise a DIMM should not be installed in Socket 4 without a DIMM in Socket 3. A DIMM need not be installed in Socket 2 in order to install a DIMM in Socket 3.

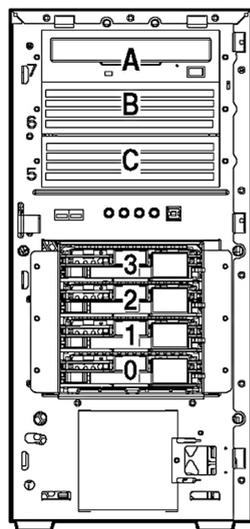
The table below shows some of the suggested memory configurations for these systems.

**NOTE:** Table below does not list all possible configurations. Balanced-capacity, dual-channel loading yields best performance.

## Memory

| Channel A |          | Channel B |          | Total  | Mode                     |
|-----------|----------|-----------|----------|--------|--------------------------|
| Socket 1  | Socket 2 | Socket 3  | Socket 4 |        |                          |
| 256 MB    | none     | none      | none     | 256 MB | Single-channel           |
| 256 MB    | none     | 256 MB    | none     | 512 MB | Dual-channel interleaved |
| 512 MB    | none     | none      | none     | 512 MB | Single-channel           |
| 512 MB    | none     | 512 MB    | none     | 1 GB   | Dual-channel interleaved |
| 1 GB      | none     | none      | none     | 1 GB   | Single-channel           |
| 1 GB      | none     | 1 GB      | none     | 2 GB   | Dual-channel interleaved |
| 1 GB      | 1-GB     | 1 GB      | none     | 3 GB   | Dual-channel asymmetric  |
| 1 GB      | 1-GB     | 1 GB      | 1 GB     | 4 GB   | Dual-channel interleaved |

## Storage



|            |                                                           |
|------------|-----------------------------------------------------------|
| A,         | 48x IDE (ATAPI) CD-ROM                                    |
| B, C       | Removable Media Bays (1.6" each)                          |
| 0, 1, 2, 3 | Four Non-Hot Plug Drive Bays, or Four Hot Plug Drive Bays |

## Drive Support

|                          | Quantity Supported | Position Supported | Controller             |
|--------------------------|--------------------|--------------------|------------------------|
| <b>Removable Media</b>   |                    |                    |                        |
| 1.44-MB Diskette Drive   | Up to 1            | A, B, or C         | Integrated             |
| IDE (ATAPI) CD-ROM Drive | Up to 2            | A, B, or C         | Integrated IDE (ATAPI) |
| DVD-ROM Drive Option Kit | Up to 2            | A, B, or C         | Integrated IDE (ATAPI) |

### Hard Drives

#### Ultra320 SCSI - Non-Hot Plug (Non-Hot Plug SCSI models only)

|                  | Quantity Supported | Position Supported | Controller                                         |
|------------------|--------------------|--------------------|----------------------------------------------------|
| 36.4GB U320 15K  | Up to 4            | 0, 1, 2, or 3      | Single Channel Ultra320 SCSI Adapter (SCSI Models) |
| 72.8GB U320 15K  |                    |                    | Smart Array 6402/128 Controller                    |
| 146.8GB U320 15K |                    |                    | Smart Array 6404/256 Controller                    |
|                  |                    |                    | Smart Array 641 Controller                         |
|                  |                    |                    | Smart Array 642 Controller                         |
|                  |                    |                    | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter   |

#### Ultra320 SCSI -Hot Plug (Hot Plug SCSI models only)

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

### Storage

|                  |         |               |                                                    |
|------------------|---------|---------------|----------------------------------------------------|
| 300GB U320 10K   | Up to 4 | 0, 1, 2, or 3 | Single Channel Ultra320 SCSI Adapter (SCSI Models) |
| 146.8GB U320 10K |         |               | Smart Array 6404/256 Controller                    |
| 72.8GB U320 10K  |         |               | Smart Array 6404/256 Controller                    |
| 146.8GB U320 15K |         |               | Smart Array 641 Controller                         |
| 72.8GB U320 15K  |         |               | Smart Array 642 Controller                         |
| 36.4GB U320 15K  |         |               | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter   |

### Hot Plug SAS - (Hot Plug SATA/SAS Models Only)

|                  | Quantity Supported | Position Supported | Controller                  |
|------------------|--------------------|--------------------|-----------------------------|
| 36GB 3G SAS 15K  | Up to 4            | 0, 1, 2, 3         | Smart Array P600 Controller |
| 72GB 3G SAS 15K  |                    |                    |                             |
| 146GB 3G SAS 15K |                    |                    |                             |

**NOTE:** Use of SAS hard drives in SATA/SAS models requires installation of the Smart Array P600.

### Hot Plug Serial ATA - (Hot Plug SATA/SAS Models Only)

|                      | Quantity Supported | Position Supported | Controller                                         |
|----------------------|--------------------|--------------------|----------------------------------------------------|
| 80GB 1.5G SATA 7.2K  | Up to 4*           | 0, 1               | Integrated four port SATA Controller with RAID 0/1 |
| 160GB 1.5G SATA 7.2K | Up to 2*           | 0, 1, 2, 3         | Integrated four port SATA Controller with RAID 0/1 |
| 250GB 1.5G SATA 7.2K | Up to 4            | 0, 1, 2, 3         | HP 6-port SATA RAID controller                     |

**\*NOTE:** A maximum of two hard drives are supported when integrated RAID is enabled. Use of hot plug SATA hard drives in positions 2 and/or 3 requires either a non-RAID configuration or installation of the HP 6-port SATA RAID controller (P/N 372953-B21) and the HP 4-port SATA/SAS target fan cable (P/N 389653-B21).

**NOTE:** Hot plug capability and drive LED status support requires installation of the HP 6-port SATA RAID controller.

### Non-Hot Plug SATA - (Non-Hot Plug SATA models only)

|                      | Quantity Supported | Position Supported | Controller                                         |
|----------------------|--------------------|--------------------|----------------------------------------------------|
| 80GB 1.5G SATA 7.2K  | Up to 2*           | 0, 1               | Integrated four port SATA Controller               |
| 160GB 1.5G SATA 7.2K | Up to 4*           | 0, 1, 2, 3         | Integrated four port SATA Controller with RAID 0/1 |
| 250GB 1.5G SATA 7.2K | Up to 4*           | 0, 1, 2, 3         | HP 6-port SATA RAID controller                     |

**\*NOTE:** A maximum of two hard drives are supported when integrated RAID is enabled. Use of non-hot plug SATA hard drives in positions 2 and/or 3 requires either a non-RAID configuration or installation of the HP 6-port SATA RAID controller (P/N 372953-B21) and two of the HP 2-port SATA/SAS cables (P/N 379093-B21).

**NOTE:** Drive LED status support requires installation of the HP 6-port SATA RAID controller.

### External Storage

|                               | Quantity Supported | Position Supported | Host Controller or Adapter |
|-------------------------------|--------------------|--------------------|----------------------------|
| Modular Smart Array 30 Family |                    | External           | Smart Array 642 Controller |

## Storage

### Maximum Storage Capacity - SATA Models (SCSI Attached (Enclosure))

|          |                                                                          |
|----------|--------------------------------------------------------------------------|
| Internal | 1.0TB (4 x 250GB)                                                        |
| External | 29.40TB (14 x 300GB) x 7 (Requires additional SCSI controllers in slots) |
| Total    | 30.40TB                                                                  |

### Maximum Storage Capacity - SCSI Models (SCSI Attached (Enclosure))

|          |                                        |
|----------|----------------------------------------|
| Internal | 1.2TB (4 x 300GB hot-plug hard drives) |
| External | 29.40TB (14 x 300GB) x 7               |
| Total    | 30.60TB                                |

## 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](http://h18000.www1.hp.com/products/quickspecs/North_America/10233.html)

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

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

|                                                                                                                                                                               | Quantity Supported | Position Supported | Controller                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HP StorageWorks Tape Drives, USB Internal</b><br>DAT 40 USB<br>DAT 72 USB                                                                                                  | 1                  | B,C                | Embedded USB port                                                                                                                                                              |
| <b>HP StorageWorks Tape Drives, USB External</b><br>DAT 24 USB<br>DAT 40 USB<br>DAT 72 USB                                                                                    | 1 per USB port     | External           | USB port                                                                                                                                                                       |
| <b>HP StorageWorks Tape Drives, Internal</b><br>Ultrium 232<br>Ultrium 448<br>Ultrium 460<br>Ultrium 960<br>DAT 40<br>DAT 72<br>DLT VS80<br>DLT VS160<br>SDLT 320<br>SDLT 600 | 1                  | B,C                | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter,<br>Alternate OS |

### Storage

|                                                                                                                                                                                                                                                                     |                                                                                                          |          |                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HP StorageWorks Tape Drives, Internal</b><br>Ultrium 232<br>Ultrium 448<br>Ultrium 460<br>Ultrium 960<br>DAT 40<br>DAT 72<br>DLT VS80<br>DLT VS160<br>SDLT 320<br>SDLT 600                                                                                       | 1                                                                                                        | B,C      | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| <b>HP StorageWorks Tape Drives, External</b><br>Ultrium 960<br>SDLT 600                                                                                                                                                                                             | 1 per SCSI Channel                                                                                       | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| <b>HP StorageWorks Autoloaders, Internal</b><br>DAT 72x6 Tape Autoloader                                                                                                                                                                                            | 1                                                                                                        | B,C      | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| <b>HP StorageWorks Autoloaders, External</b><br>DAT 72x6 Tape Autoloader<br>1/8 Tape Autoloader                                                                                                                                                                     | 1 autoloader per SCSI channel                                                                            | External | 64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter<br>64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2<br>64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS |
| <b>HP StorageWorks Tape Libraries, External</b><br>MSL2024 (Ultrium 960-based)<br>MSL2024 (Ultrium 448-based)<br>MSL6000 (Ultrium 960-based)<br>MSL6000 (SDLT 600-based)<br>MSL6000 (Ultrium 460-based)<br>MSL5026S2 (SDLT 320-based)<br>MSL5052S2 (SDLT 320-based) | <a href="#">Please reference the MSL Tape Library QuickSpecs to determine configuration requirements</a> | External | Please consult the EBS connectivity matrix at <a href="http://www.hp.com/go/ebs">http://www.hp.com/go/ebs</a> for detailed connectivity information.                        |

### Technical Specifications

|                       |                                                 |                                                                                                                                                                                                         |                                |  |
|-----------------------|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--|
| <b>System Unit</b>    | <b>Dimensions (HxWxD)</b>                       | 17.0 x 7-7/8 x 22 in (43.0 x 20.0 x 55.0 cm)                                                                                                                                                            |                                |  |
|                       | <b>Weight (approximate)</b>                     | 37 lb (16.8 kg)                                                                                                                                                                                         |                                |  |
|                       | <b>Input Requirements</b><br>(per power supply) | Range Line Voltage                                                                                                                                                                                      | 100-127V and 200-240V          |  |
|                       |                                                 | Normal Line Voltage                                                                                                                                                                                     | 115 to 230 VAC                 |  |
|                       | <b>Line Frequency</b>                           | 50 to 60 Hz                                                                                                                                                                                             |                                |  |
|                       | <b>Rated Input Current</b>                      | < 6A RMS at 90VAC with maximum load                                                                                                                                                                     |                                |  |
|                       | <b>BTU Rating</b>                               | 1,560 BTU                                                                                                                                                                                               |                                |  |
|                       | <b>SCSI Connectors</b><br>(SCSI Models only)    | One internal HD68 connectors                                                                                                                                                                            |                                |  |
|                       |                                                 | <b>NOTE:</b> Support for either one internal or one external SCSI channel is available. This is achieved using an internal to external SCSI cable option kit (PN 159547-B22) and SCSI knockout bracket. |                                |  |
|                       | <b>Power Supply Output Power</b>                | Rated Steady-State Power                                                                                                                                                                                | 350W                           |  |
|                       |                                                 | Maximum Peak Power                                                                                                                                                                                      | 370W                           |  |
|                       | <b>Temperature Range</b>                        | Operating                                                                                                                                                                                               | 50° to 93° F (10° to 35° C)    |  |
|                       |                                                 | Shipping                                                                                                                                                                                                | -40° to 150° F (-40° to 66° C) |  |
|                       | <b>Relative Humidity</b><br>(non-condensing)    | Operating                                                                                                                                                                                               | 20% to 80%                     |  |
| Non-operating         |                                                 | 5% to 90%                                                                                                                                                                                               |                                |  |
| <b>Acoustic Noise</b> | Idle<br>(Fixed Disk Drives Spinning)            | L WAd (BELS)                                                                                                                                                                                            | 5.7                            |  |
|                       |                                                 | L pAm (dBA)                                                                                                                                                                                             | 40                             |  |
|                       | Operating<br>(Random Seeks to Fixed Disks)      | L WAd (BELS)                                                                                                                                                                                            | 5.7                            |  |
|                       |                                                 | L pAm (dBA)                                                                                                                                                                                             | 40                             |  |

|                                                    |                              |                                                         |                 |            |  |
|----------------------------------------------------|------------------------------|---------------------------------------------------------|-----------------|------------|--|
| <b>Non-Hot Plug Wide Ultra320 SCSI Hard Drives</b> | <b>36.4 GB 15K</b>           | <b>Capacity</b>                                         | 36419.2 MB      |            |  |
|                                                    | <b>357012-B21</b>            | <b>Height</b>                                           | 1 in (2.54 cm)  |            |  |
|                                                    |                              | <b>Width</b>                                            | 4 in (10.16 cm) |            |  |
|                                                    |                              | <b>Interface</b>                                        | Ultra320 SCSI   |            |  |
|                                                    |                              | <b>Transfer Rate Synchronous (Maximum)</b>              | 320 MB/s        |            |  |
|                                                    |                              | <b>Seek Time</b><br>(typical reads, including settling) | Single Track    | 0.4 ms     |  |
|                                                    |                              |                                                         | Average         | 3.8 ms     |  |
|                                                    |                              |                                                         | Full-Stroke     | 8 ms       |  |
|                                                    |                              | <b>Physical Configuration</b>                           | Rotational      | 15,000 rpm |  |
|                                                    |                              |                                                         | Bytes/Sector    | 512        |  |
|                                                    |                              |                                                         | Logical Blocks  | 71,132,000 |  |
|                                                    | <b>Operating Temperature</b> | 50° to 95° F (10° to 35° C)                             |                 |            |  |

### Technical Specifications

Non-Hot Plug SATA/100 Hard Drives 80 GB 7.2K 383410-B21

|                                                      |                             |             |
|------------------------------------------------------|-----------------------------|-------------|
| <b>Capacity</b>                                      | 80,000 MB                   |             |
| <b>Height</b>                                        | 1.028 in/2.611cm            |             |
| <b>Width</b>                                         | 4.0 in/10.16 cm             |             |
| <b>Interface</b>                                     | Serial ATA                  |             |
| <b>Transfer Rate</b> Synchronous (Maximum)           | 1.5 Gb/s                    |             |
| <b>Seek Time</b> (typical reads, including settling) | Single Track                | 0.9 ms      |
|                                                      | Average                     | 9.0 ms      |
|                                                      | Full-Stroke                 | 17.0 ms     |
|                                                      | Rotational                  | 7,200 rpm   |
| <b>Physical Configuration</b>                        | Bytes/Sector                | 512         |
|                                                      | Logical Blocks              | 156,301,488 |
| <b>Operating Temperature</b>                         | 41° to 131° F (5° to 55° C) |             |

|                                         |                                |                             |                                                                                                                                            |
|-----------------------------------------|--------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>48X Max IDE (ATAPI) CD-ROM Drive</b> | <b>Disk</b>                    | Applicable Disk             | CD-ROM, CD-XA, CD-DA (Mode 1, Mode 2, Form 1 and 2)<br>Photo CD (Single and Multi-session)<br>Mixed Mode (Audio and Data combined)<br>CD-R |
|                                         |                                | <b>Capacity</b>             | 540 MB (Mode 1, 12 cm)<br>650 MB (Mode 2, 12 cm)                                                                                           |
|                                         | <b>Block Size</b>              | Mode 1                      | 2,048 bytes                                                                                                                                |
|                                         |                                | Mode 2                      | 2,340 bytes, 2,336 bytes                                                                                                                   |
|                                         |                                | CD-DA                       | 2,352 bytes                                                                                                                                |
|                                         |                                | CD-XA                       | 2,328 bytes                                                                                                                                |
|                                         |                                | <b>Interface</b>            | IDE (ATAPI)                                                                                                                                |
|                                         | <b>Access Times (typical)</b>  | Random                      | < 100 ms                                                                                                                                   |
|                                         |                                | Full-Stroke                 | < 150 ms                                                                                                                                   |
|                                         | <b>Data Transfer Rate</b>      | Sustained                   | 3000 to 7200 KB/s (20X to 48X)                                                                                                             |
|                                         |                                | Burst                       | 150 KBps to 7,200 KBps                                                                                                                     |
|                                         |                                | Bus Rate                    | 16.7 MBps                                                                                                                                  |
|                                         | <b>Cache Buffer</b>            | 128 KB                      |                                                                                                                                            |
|                                         | <b>Start-up Time (typical)</b> | < 7seconds                  |                                                                                                                                            |
|                                         | <b>Stop Time</b>               | < 4seconds                  |                                                                                                                                            |
|                                         | <b>Laser Parameters</b>        | Type                        | Semiconductor Laser GaAlAs                                                                                                                 |
|                                         |                                | Wave Length                 | 780 ± 25 nm                                                                                                                                |
|                                         |                                | <b>Operating Conditions</b> | Temperature                                                                                                                                |
|                                         | <b>Dimensions</b>              | Humidity                    | 10% to 80%                                                                                                                                 |
|                                         |                                | (HxWxD, maximum)            | 1.7 x 5.85 x 8.11 in (4.29 x 14.86 x 20.60 cm)                                                                                             |
|                                         |                                | Weight                      | 2.09 lb (0.95 kg)                                                                                                                          |

### 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 4 Channel SATA Controller (SATA NHP Models only) | Drives Supported                   | Up to 4 SATA hard drives (1 drive/channel) |  |
|                                                             | Channels                           | 4                                          |  |
|                                                             | Storage Capacity                   | 1 TB                                       |  |
|                                                             | Maximum SATA Channel Transfer Rate | 150 MB/s per channel                       |  |
|                                                             | SATA Protocols                     | SATA-1a                                    |  |
|                                                             | Internal SATA Connectors           | One 4-lane connector (all four channels)   |  |

|                                                         |                                          |                                                                                          |  |
|---------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------|--|
| Single Channel Ultra320 SCSI Adapter (SCSI Models only) | Drives Supported                         | Up to 15 SCSI devices Wide                                                               |  |
|                                                         | Data Transfer Method                     | 64-bit/100-MHz PCI bus-master                                                            |  |
|                                                         | SCSI Channel Transfer Rate               | 320 MB/s per channel                                                                     |  |
|                                                         | Maximum Transfer Rate per PCI Bus (peak) | 1033 MB/s per channel                                                                    |  |
|                                                         | SCSI Protocols                           | Ultra320, Wide Ultra3, Wide Ultra2, Wide Ultra SCSI-3, Fast-Wide SCSI-2, and Fast SCSI-2 |  |
|                                                         |                                          | Fast SCSI-2                                                                              |  |
|                                                         | Electrical Protocol                      | Low Voltage Differential (LVD)                                                           |  |
|                                                         | SCSI Termination                         | Active Termination                                                                       |  |
|                                                         | External SCSI Connectors                 | None.                                                                                    |  |
|                                                         | Internal SCSI Connectors                 | One 68-Pin Wide Ultra SCSI-3 connectors                                                  |  |

**NOTE:** To implement an external SCSI connection, install an optional controller or internal to external SCSI option kit (part number 159547-B22 for HD68 or 333370-B21 for VHDCI).

## *Technical Specifications*

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