

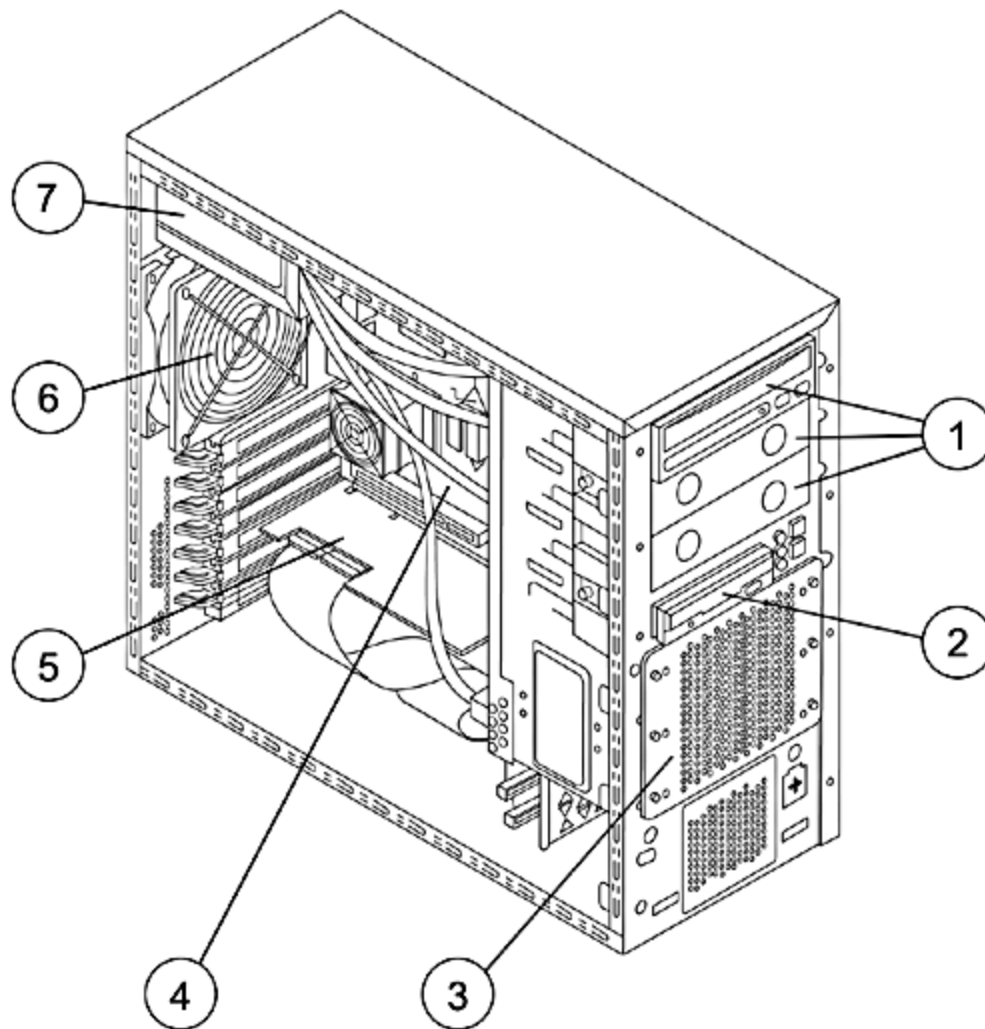
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## Overview

### HP ProLiant ML110



- |                                          |                             |
|------------------------------------------|-----------------------------|
| 1. 48x CD-ROM & Two Removable Media Bays | 5. Optional SCSI Controller |
| 2. 1.44 MB Diskette Drive                | 6. System Fan               |
| 3. Four 1" Non-Hot Plug Drive Bays       | 7. Power Supply             |
| 4. Main System Board                     |                             |

## What's New

- Supports 1 Intel Pentium 3.20 GHz processor supporting Hyperthreading technology with 1024-KB second level ECC cache standard 800MHz front-side-bus
- SATA Model: Intel® Pentium® 3.00 GHz processor, 4 port SATA RAID controller, and Standard 4 x 1" Wide SATA Hot Plug Drive Cage
- Supports 1 Intel Celeron® 2.60 GHz, processor with 128-KB second level ECC cache standard, 400MHz front-side-bus
- Supports 1 Intel Pentium 2.80 GHz processor supporting Hyperthreading technology with 1024-KB second level ECC cache standard 800MHz front-side-bus
- Supports 1 Intel Pentium 3.00 GHz processor supporting Hyperthreading technology with 1024-KB second level ECC cache standard 800MHz front-side-bus

## At A Glance

- Intel E7210 (875P) Chipset with 400Mhz FSB (Celeron Models) and 800Mhz FSB (Pentium 4)
- 256-MB or 512-MB (Pentium 4n models) of PC3200 DDR SDRAM running at 400MHz, with Advanced unbuffered ECC capabilities standard, expandable to 4 GB
- Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)
- Integrated Dual Channel Ultra ATA/133 Adapter (ATA Models) or a Single Channel Wide Ultra320 SCSI Adapter (SCSI Models)

- Support for up to four 1" Ultra320 NHP SCSI hard drives or three 1" ATA/100 NHP Drives or four 1" hot plug SATA HDD, (depending on Model & Accessories)
- Five total PCI slots (5 available on ATA models, 4 available on SCSI models, 4 available on SATA model): three 64-bit/66MHzPCI-X at 3.3 Volt and two 32-bit/33MHz PCI at 5 Volt
- Internal storage capacity of up to 288 GB (4 x 72GB non-hot plug 1" SCSI HDD) (SCSI Models)
- Internal storage capacity of up to 480 GB (3 x 160 GB 1" ATA/100 drives - 4th channel is attached to CD-ROM Drive) (ATA Models)
- Internal storage capacity of up to 1TB (4 x 250GB hot plug 1" SATA HDD) (SATA Model)
- Integrated ATI Rage XL with 8MB SDRAM video
- 350W Power Supply
- Two USB 2.0 ports
- ROM Based Setup Utility (RBSU) and PXE support
- Protected by HP Services, including a one-year, limited warranty, Next Business Day 1 year on-site limited Global warranty - Certain restrictions and exclusions apply.

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## Standard Features

|                                                                        |                                                                                                 |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Processor</b><br><i>One of the following<br/>depending on Model</i> | Intel Pentium 4 processor 3.20 GHz supporting HyperThreading technology, 800 MHz Front Side Bus |
|                                                                        | Intel Pentium 4 processor 3.00 GHz supporting HyperThreading technology, 800 MHz Front Side Bus |
|                                                                        | Intel Pentium 4 processor 2.80 GHz supporting HyperThreading technology, 800 MHz Front Side Bus |
|                                                                        | Intel Celeron processor 2.6 GHz, 400 MHz Front Side Bus                                         |

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|                     |                                                              |
|---------------------|--------------------------------------------------------------|
| <b>Cache Memory</b> | Integrated 1024-KB Level 2 ECC cache (Pentium 4 models only) |
|---------------------|--------------------------------------------------------------|

One of the following  
depending on Model

Integrated 128-KB Level 2 ECC cache (Celeron models only)

**Memory Protection** Advanced unbuffered ECC capabilities

**Memory**  
One of the following  
depending on Model

|          |                                    |
|----------|------------------------------------|
| Type     | PC3200 DDR SDRAM running at 400MHz |
| Standard | 256 MB                             |
| Maximum  | 4 GB                               |
| Standard | 512 MB<br>(Pentium 4 SBS models)   |
| Maximum  | 4 GB                               |

**Network Controller** Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)

| Expansion Slots | Slot# | Bus Speed        | Hot Plug<br>Y/N | Voltage<br>Connector | Notes                     |
|-----------------|-------|------------------|-----------------|----------------------|---------------------------|
|                 | 2     | 32bit/33MHz PCI  | No              | 5 Volt               | Full Length / Full Height |
|                 | 3     | 64bit/100MHz PCI | No              | 3.3V                 | Full Length / Full Height |

**NOTE:** For more information regarding PCI-X, please see the following URL:

<http://www.hp.com/servers/pci-x>

**NOTE:** All slots can accept universal keyed PCI cards.

**Storage Controller**  
One of the following  
depending on Model

HP Single Channel Ultra320 SCSI Adapter (SCSI Models)  
Integrated Dual Channel Ultra ATA-133 IDE (ATA Models)  
4 port SATA RAID controller (SATA Model)

|                |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Storage</b> | Diskette Drives                        | 1.44 MB                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                | CD-ROM                                 | 48x IDE (ATAPI) CD-ROM Drive                                                                                                                                                                                                                                                                                                                                                                                               |
|                | Hard Drives                            | One of the following: <ul style="list-style-type: none"><li>• 36.4-GB Ultra320 SCSI 10,000 rpm 1" Drive (SCSI models)</li><li>• 40-GB ATA/100 7200 rpm 1" Drive (ATA Models)</li><li>• 80-GB ATA/100 7200 rpm 1" Drive (ATA Models)</li><li>• SATA model: This model is not preconfigured with a specific SATA Drive. Customer must make a SATA drive selection upon purchase. ILP price does not include drive.</li></ul> |
|                | Maximum Internal Storage (SCSI Models) | 288 GB Internal Drive Cage Maximum SCSI capacity (4 x 72GB)                                                                                                                                                                                                                                                                                                                                                                |
|                | Maximum Internal Storage (ATA Models)  | 480 GB (3 x 160 GB) (internal drive bays and removable media bays)<br>For larger internal storage requirements, please contact your local HP representative by calling 1-800-888-9909.                                                                                                                                                                                                                                     |
|                | Maximum Internal Storage (SATA Model)  | 1 TB Internal Drive Cage Maximum SATA capacity (4 x 250GB)                                                                                                                                                                                                                                                                                                                                                                 |
|                |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                   |                              |   |
|-------------------|------------------------------|---|
| <b>Interfaces</b> | Parallel                     | 1 |
|                   | Serial                       | 1 |
|                   | Pointing Device (Mouse, PS2) | 1 |
|                   | Graphics                     | 1 |
|                   | Keyboard (PS2)               | 1 |
|                   | USB                          | 2 |

**NOTE:** Please see the following URL for additional information regarding USB support:

Network RJ-45  
(Ethernet)

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|                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Graphics</b>                                          | Integrated ATI RAGE XL Video Controller with 8MB SDRAM Video Memory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Form Factor</b>                                       | Tower (5U)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Industry Standard Compliance</b>                      | ACPI V1.0b Compliant<br>PCI 2.2 Compliant<br>PXE Support<br>WOL Support<br>Microsoft® Logo certifications<br>Novell Logo certifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Manageability</b>                                     | Offline Version - "floppy-based" method to flash the rom<br>BIOS Serial Console                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Security</b>                                          | Power-on password<br>Setup password<br>Diskette boot control<br>Intruder Alert Message                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Server Power Cords</b>                                | One Lowline NEMA power cord and one Highline IEC Power cord ships standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Power Supply</b>                                      | 350 Watts, PFC (Power Factor Correcting)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>System Fans</b>                                       | 1 - Non-hot plug, Non-redundant system fan shipped standard<br>1 - Non-hot plug, Non-redundant CPU heatsink fan shipped standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>OS Support</b>                                        | Microsoft Windows® 2000 Server<br>Microsoft Windows Server 2003<br>Microsoft Windows Small Business Server 2003<br>Novell NetWare 6.5<br>Novell NetWare 6.0<br>Novell NetWare 5.1<br>Novell NetWare SBS 6.5<br>Red Hat Linux 9<br>Red Hat Enterprise Linux 2.1<br><b>NOTE:</b> For an up-to-date listing of the latest ML110 OS support matrix, please see:<br><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 server ML110, please see: <a href="http://h18023.www1.hp.com/support/files/server/us/family/model/5769.html?lang=en&amp;cc=us">http://h18023.www1.hp.com/support/files/server/us/family/model/5769.html?lang=en&amp;cc=us</a>                       |
| <b>Factory Express Portfolio for Servers and Storage</b> | 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.<br>Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA3000 & EVA5000, XP, rackable tape libraries and configurable network switches. |

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

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## Service and Support

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

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

**NOTE:** For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at:

<http://www.hp.com/hps/carepack>

**NOTE:** For more complete information on HP Services offerings, customers and resellers, please visit us at: <http://www.hp.com/hps>

**NOTE:** Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

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## Models

|                                                             |                           |                                                                                                                       |
|-------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>ML110 C2.6-128KB<br/>256MB, 40GB, ATA<br/>339042-001</b> | <b>Processor</b>          | (1) Intel Celeron 2.6GHz (standard)                                                                                   |
|                                                             | <b>Cache Memory</b>       | Integrated 128-KB Level 2 cache                                                                                       |
|                                                             | <b>Memory</b>             | 256 MB (Standard) to 4 GB (Maximum) PC3200 DDR SDRAM DIMM<br>Memory running at 200MHz, with Advanced ECC capabilities |
|                                                             | <b>Network Controller</b> | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)                                                |
|                                                             | <b>Storage Controller</b> | Ultra ATA 100                                                                                                         |
|                                                             | <b>Hard Drive</b>         | (1) 40 GB Ultra ATA/100                                                                                               |
|                                                             | <b>Internal Storage</b>   | 480 GB maximum                                                                                                        |
|                                                             | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive                                                                                          |

|                                                                                      | Form Factor               | Tower (5U)                                                                                                         |
|--------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>ML110 P3.00 -1024KB<br/>256MB, 80GB, ATA</b><br>359661-001                        | <b>Processor</b>          | (1) Intel Pentium 4 3.00 GHz supporting HyperThreading technology(standard)                                        |
|                                                                                      | <b>Cache Memory</b>       | Integrated 1024-KB Level 2 cache                                                                                   |
|                                                                                      | <b>Memory</b>             | 256 MB (Standard) to 4 GB (Maximum) PC3200 DDR SDRAM DIMM Memory running at 400MHz, with Advanced ECC capabilities |
|                                                                                      | <b>Network Controller</b> | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)                                             |
|                                                                                      | <b>Storage Controller</b> | Ultra ATA 100                                                                                                      |
|                                                                                      | <b>Hard Drive</b>         | (1) 80 GB Ultra ATA/100                                                                                            |
|                                                                                      | <b>Internal Storage</b>   | 480 GB maximum                                                                                                     |
| <b>ML110 P3.00-1024KB<br/>256MB, 36GB, SCSI</b><br>359663-001                        | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive                                                                                       |
|                                                                                      | <b>Form Factor</b>        | Tower (5U)                                                                                                         |
|                                                                                      | <b>Processor</b>          | (1) Intel Pentium 4 3.00 GHz supporting HyperThreading technology(standard)                                        |
|                                                                                      | <b>Cache Memory</b>       | Integrated 1024-KB Level 2 cache                                                                                   |
|                                                                                      | <b>Memory</b>             | 256 MB (Standard) to 4 GB (Maximum) PC3200 DDR SDRAM DIMM Memory running at 400MHz, with Advanced ECC capabilities |
|                                                                                      | <b>Network Controller</b> | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)                                             |
|                                                                                      | <b>Storage Controller</b> | HP Single Channel Ultra320 SCSI Adapter)                                                                           |
| <b>ML110 P3.00-1024KB,<br/>512MB, 36GB SCSI,<br/>w/SBS Pre-Install</b><br>359664-001 | <b>Hard Drive</b>         | (1) 36.4 GB Ultra320 SCSI, 10,000 rpm, 1" Drive                                                                    |
|                                                                                      | <b>SCSI Cable</b>         | 2 drop internal SCSI cable                                                                                         |
|                                                                                      | <b>Internal Storage</b>   | 288 GB maximum                                                                                                     |
|                                                                                      | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive                                                                                       |
|                                                                                      | <b>Form Factor</b>        | Tower (5U)                                                                                                         |
|                                                                                      | <b>NOS</b>                | Microsoft Windows Small Business Server 2003 + 5 CALs standard (pre-installed)                                     |
|                                                                                      |                           |                                                                                                                    |
| <b>ML110 P3.00 -1024KB<br/>256MB, SATA</b><br>344268-001                             | <b>Processor</b>          | (1) Intel Pentium 4 3.00 GHz supporting HyperThreading technology (standard)                                       |
|                                                                                      | <b>Cache Memory</b>       | Integrated 1024-KB Level 2 cache                                                                                   |
|                                                                                      | <b>Memory</b>             | 256 MB (Standard) to 4 GB (Maximum) PC3200 DDR SDRAM DIMM Memory running at 400MHz, with Advanced ECC capabilities |
|                                                                                      | <b>Network Controller</b> | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)                                             |
|                                                                                      | <b>Storage Controller</b> | 4 port SATA RAID Controller                                                                                        |
|                                                                                      | <b>Hard Drive</b>         | None ship standard                                                                                                 |

|                                                                                       |                           |                                                                                                                    |
|---------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------|
|                                                                                       | <b>SATA Cable</b>         | 4 SATA cables                                                                                                      |
|                                                                                       | <b>Internal Storage</b>   | 1 TB Maximum                                                                                                       |
|                                                                                       | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive                                                                                       |
|                                                                                       | <b>Form Factor</b>        | Tower (5U)                                                                                                         |
| <b>ML110 P3.20 -1024KB<br/>256MB, 80GB, ATA<br/>366882-001</b>                        | <b>Processor</b>          | (1) Intel Pentium 4 3.20 GHz supporting HyperThreading technology (standard)                                       |
|                                                                                       | <b>Cache Memory</b>       | Integrated 1024-KB Level 2 cache                                                                                   |
|                                                                                       | <b>Memory</b>             | 256 MB (Standard) to 4 GB (Maximum) PC3200 DDR SDRAM DIMM Memory running at 400MHz, with Advanced ECC capabilities |
|                                                                                       | <b>Network Controller</b> | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)                                             |
|                                                                                       | <b>Storage Controller</b> | Ultra ATA 100                                                                                                      |
|                                                                                       | <b>Hard Drive</b>         | (1) 80 GB Ultra ATA/100                                                                                            |
|                                                                                       | <b>Internal Storage</b>   | 480 GB maximum                                                                                                     |
|                                                                                       | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive                                                                                       |
|                                                                                       | <b>Form Factor</b>        | Tower (5U)                                                                                                         |
| <b>ML110 P3.20-1024KB<br/>256MB, 36GB, SCSI<br/>366884-001</b>                        | <b>Processor</b>          | (1) Intel Pentium 4 3.20 GHz supporting HyperThreading technology (standard)                                       |
|                                                                                       | <b>Cache Memory</b>       | Integrated 1024-KB Level 2 cache                                                                                   |
|                                                                                       | <b>Memory</b>             | 256 MB (Standard) to 4 GB (Maximum) PC3200 DDR SDRAM DIMM Memory running at 400MHz, with Advanced ECC capabilities |
|                                                                                       | <b>Network Controller</b> | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)                                             |
|                                                                                       | <b>Storage Controller</b> | HP Single Channel Ultra320 SCSI Adapter                                                                            |
|                                                                                       | <b>Hard Drive</b>         | (1) 36.4 GB Ultra320 SCSI, 10,000 rpm, 1" Drive                                                                    |
|                                                                                       | <b>SCSI Cable</b>         | 2 drop internal SCSI cable                                                                                         |
|                                                                                       | <b>Internal Storage</b>   | 288 GB maximum                                                                                                     |
|                                                                                       | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive                                                                                       |
|                                                                                       | <b>Form Factor</b>        | Tower (5U)                                                                                                         |
| <b>ML110 P3.20-1024KB,<br/>512MB, 36GB SCSI,<br/>w/SBS Pre-Install<br/>366883-001</b> | <b>Processor</b>          | (1) Intel Pentium 4 3.20 GHz supporting HyperThreading technology (standard)                                       |
|                                                                                       | <b>Cache Memory</b>       | Integrated 1024-KB Level 2 cache                                                                                   |
|                                                                                       | <b>Memory</b>             | 512 MB (Standard) to 4 GB (Maximum) PC3200 DDR SDRAM DIMM Memory running at 400MHz, with Advanced ECC Capabilities |
|                                                                                       | <b>Network Controller</b> | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN)                                             |
|                                                                                       | <b>Storage Controller</b> | HP Single Channel Ultra320 SCSI Adapter                                                                            |
|                                                                                       | <b>Hard Drive</b>         | (1) 36.4 GB Ultra320 SCSI, 10,000 rpm, 1" Drive                                                                    |
|                                                                                       | <b>SCSI Cable</b>         | 2 drop internal SCSI cable                                                                                         |
|                                                                                       | <b>Internal Storage</b>   | 288 GB Maximum (with optional drives)                                                                              |
|                                                                                       | <b>Optical Drive</b>      | 48x IDE (ATAPI) CD-ROM Drive                                                                                       |
|                                                                                       | <b>Form Factor</b>        | Tower (5U)                                                                                                         |
|                                                                                       | <b>NOS</b>                | Microsoft Windows Small Business Server 2003 + 5 CALs standard (pre-installed)                                     |

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# Configuration Information-Factory Integrated Models

**NOTE:** HP does not allow factory integration of options into standard models listed above.  
Configure-to-order servers must start with a CTO Chassis.  
**NOTE:** This product offering does not support HP Factory Express Server Configuration Level 1.

## Step 1: Base Configuration

|        |                                                                        |            |
|--------|------------------------------------------------------------------------|------------|
| Models | HP ProLiant ML110 Tower Chassis                                        | 360704-405 |
|        | <b>Factory Integrated Models ship with:</b>                            |            |
|        | Broadcom 5705 PCI Gigabit NIC (embedded) 10/100/1000 WOL (Wake on LAN) |            |
|        | Ultra ATA 100                                                          |            |

1.44MB Floppy Drive  
350 Watts, PFC (Power Factor Correcting)  
Tower 5U Form Factor  
**NOTE:** Keyboard and mouse included

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

|                   |                                                                              |            |
|-------------------|------------------------------------------------------------------------------|------------|
| <b>Processors</b> | Celeron Processor 2.6-GHz/400 MHz Front Side Bus, Factory Integration only   | 359090-L21 |
|                   | Pentium Processor 3.00-GHz/ 800 MHz Front Side Bus, Factory Integration only | 359699-L21 |
|                   | Pentium Processor 3.20-GHz/ 800 MHz Front Side Bus, Factory Integration only | 366886-L21 |

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|                    |                                                                      |            |
|--------------------|----------------------------------------------------------------------|------------|
| <b>Base Memory</b> | 256MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 256 MB)  | 354557-B21 |
|                    | 512MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 512 MB)  | 354560-B21 |
|                    | 1024MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 1024MB) | 354563-B21 |

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|                         |                                                                                                                                                                                                                                                                                         |            |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Base Hard Drives</b> | <b>Ultra320 SCSI - Non-Hot Plug</b>                                                                                                                                                                                                                                                     |            |
|                         | 36.4-GB U320 SCSI 10,000 rpm, Non-Hot Plug Drive, 1"                                                                                                                                                                                                                                    | 271832-B21 |
|                         | 72.8 GB, U320 10,000 rpm, Non-Hot Plug Hard Drive, 1"                                                                                                                                                                                                                                   | 332751-B21 |
|                         | <b>NOTE:</b> Must also select the U320 SCSI HBA Base (358700-B21) if choosing SCSI drive.                                                                                                                                                                                               |            |
|                         | 146.8-GB 10,000 rpm, U320 Non-Hot Plug Hard Drive (1")                                                                                                                                                                                                                                  | 356990-B21 |
|                         | 36.4GB 15,000 rpm, U320 Non-Hot Plug Hard Drive (1")                                                                                                                                                                                                                                    | 357012-B21 |
|                         | <b>ATA 100 - Non-Hot Plug (ATA Models only)</b>                                                                                                                                                                                                                                         |            |
|                         | 40-GB ATA 100 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                                 | 230534-B21 |
|                         | 80-GB ATA 100 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                                 | 278424-B21 |
|                         | 160-GB ATA 100 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                                | 366486-B21 |
|                         | <b>NOTE:</b> If 2.6GHz processor chosen, 40GB (230534-B21) is default first HDD. If customer prefers first HDD to be 80GB, choose 278424-B21; if 2.8GHz or higher processor chosen, 80GB (278424-B21) is default first HDD. If customer prefers first HDD to be 40GB, choose 230534-B21 |            |
|                         | <b>Serial-ATA (SATA) Hard Drive (SATA Models Only)</b>                                                                                                                                                                                                                                  |            |
|                         | 80-GB SATA 1.5Gb 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                              | 349237-B21 |
|                         | 160-GB SATA 1.5Gb 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                             | 349238-B21 |
|                         | 250-GB SATA 1.5Gb 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                             | 349239-B21 |
|                         | <b>NOTE:</b> Must also select the SATA Hardware Kit (370530-B21) if choosing SATA drive                                                                                                                                                                                                 |            |

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|                       |                                      |            |
|-----------------------|--------------------------------------|------------|
| <b>Optical Drives</b> | CD-RW/DVD-ROM Combo Drive Option Kit | 331346-B21 |
|                       | HP ProLiant 16X DVD-ROM Drive        | 217053-B21 |
|                       | HP ProLiant 48X CD w/SCREWS          | 337863-B21 |
|                       | HP DVD+R/RW 16X Half Height          | 383974-B21 |

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**Step 3: Choose Additional Factory Integratable Options**

|                   |                                                                                                      |            |
|-------------------|------------------------------------------------------------------------------------------------------|------------|
| <b>Controller</b> | HP ML110 U320 SCSI FIO HBA ALL<br><b>NOTE:</b> Must select if SCSI hard drives are chosen in step 2. | 358700-B21 |
|-------------------|------------------------------------------------------------------------------------------------------|------------|

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|                     |                                                                                             |            |
|---------------------|---------------------------------------------------------------------------------------------|------------|
| <b>Hardware Kit</b> | SATA HW ML110 NSF ALL<br><b>NOTE:</b> Must select if SATA hard drives are chosen in Step 2. | 370530-B21 |
|---------------------|---------------------------------------------------------------------------------------------|------------|

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|                   |                                                         |            |
|-------------------|---------------------------------------------------------|------------|
| Operating Systems | Microsoft Windows2003 SBS Standard Edition, Pre-install | 355383-B22 |
|                   | Microsoft Windows2003 SBS PRM, Pre-install              | 366914-B21 |

Step 4: Choose Additional Options for Factory Integration

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

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Options

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

|                                         |                                                                                                                                                                                                                                                                                                                   |            |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| ProLiant Essentials Value Pack Software | ProLiant Essentials Intelligent Networking Pack (1 License)                                                                                                                                                                                                                                                       | 372906-B21 |
|                                         | ProLiant Essentials Intelligent Networking Pack Flex License                                                                                                                                                                                                                                                      | 372950-B21 |
|                                         | ProLiant Essentials Intelligent Networking Pack Track License                                                                                                                                                                                                                                                     | 372951-B21 |
|                                         | <b>NOTE:</b> Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to <a href="http://www.hp.com/servers/proliantessentials">http://www.hp.com/servers/proliantessentials</a> or the various ProLiant Essentials Value Pack product QuickSpecs for more information. |            |
|                                         | <b>NOTE:</b> For more information regarding ProLiant Essentials Software, please see the following URL: <a href="http://www.hp.com/servers/proliantessentials">http://www.hp.com/servers/proliantessentials</a> .                                                                                                 |            |
| Memory                                  | 1024MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 1024 MB)                                                                                                                                                                                                                                             | 354563-B21 |
|                                         | 512MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 512 MB)                                                                                                                                                                                                                                               | 354560-B21 |
|                                         | 256MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 256 MB)                                                                                                                                                                                                                                               | 354557-B21 |
| <hr/>                                   |                                                                                                                                                                                                                                                                                                                   |            |
| Optical Drives                          | CD-RW/DVD-ROM Combo Drive Option Kit                                                                                                                                                                                                                                                                              | 331346-B21 |
|                                         | 16X DVD-ROM Option, Carbon                                                                                                                                                                                                                                                                                        | 217053-B21 |
|                                         | HP DVD+R/RW 16x Half Height                                                                                                                                                                                                                                                                                       | 383974-B21 |
| <hr/>                                   |                                                                                                                                                                                                                                                                                                                   |            |
| Hard Drives                             | <b>Ultra320 SCSI - Non-Hot Plug</b>                                                                                                                                                                                                                                                                               |            |
|                                         | <b>NOTE:</b> These drives require an additional SCSI controller in ATA models.                                                                                                                                                                                                                                    |            |
|                                         | 36.4GB 10,000 rpm, U320 Non-Hot Plug Hard Drive (1")                                                                                                                                                                                                                                                              | 271832-B21 |
|                                         | 72.8GB 10,000 rpm, U320 Non-Hot Plug Hard Drive (1")                                                                                                                                                                                                                                                              | 332751-B21 |
|                                         | 146.8-GB 10,000 rpm, U320 Non-Hot Plug Hard Drive (1")                                                                                                                                                                                                                                                            | 356990-B21 |
|                                         | 36.4GB 15,000 rpm, U320 Non-Hot Plug Hard Drive (1")                                                                                                                                                                                                                                                              | 357012-B21 |
|                                         | <b>ATA 100 - Non-Hot Plug (ATA Models only)</b>                                                                                                                                                                                                                                                                   |            |
|                                         | 40-GB ATA/100 7,200 rpm Non-Hot Plug Drive (1")                                                                                                                                                                                                                                                                   | 230534-B21 |
|                                         | 80-GB ATA/100 7,200 rpm Non-Hot Plug Drive (1")                                                                                                                                                                                                                                                                   | 278424-B21 |
|                                         | 160GB ATA/100 7,200 rpm Non-Hot Plug Drive (1")                                                                                                                                                                                                                                                                   | 366486-B21 |
|                                         | <b>Serial-ATA (SATA) Hard Drive (SATA Models Only)</b>                                                                                                                                                                                                                                                            |            |
|                                         | 80-GB SATA 1.5Gb 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                                                        | 349237-B21 |
|                                         | 160-GB SATA 1.5Gb 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                                                       | 349238-B21 |
|                                         | 250-GB SATA 1.5Gb 7,200 RPM Hard Drive (1")                                                                                                                                                                                                                                                                       | 349239-B21 |
| <hr/>                                   |                                                                                                                                                                                                                                                                                                                   |            |
| HP External 160GB HDD                   | HP External Backup Solution by Seagate                                                                                                                                                                                                                                                                            | 372914-001 |
| <hr/>                                   |                                                                                                                                                                                                                                                                                                                   |            |
| Storage Controllers - SCSI Drives       | <b>NOTE:</b> The following Storage Controllers are qualified for SCSI drives only. They do not support the ATA Drives.                                                                                                                                                                                            |            |
|                                         | Adaptec PCI SCSI RAID controller                                                                                                                                                                                                                                                                                  | 355671-B21 |
|                                         | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA                                                                                                                                                                                                                                                                   | 365289-B21 |
|                                         | 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2                                                                                                                                                                                                                                                                | 374654-B21 |
| <hr/>                                   |                                                                                                                                                                                                                                                                                                                   |            |
| Communications                          | HP NC7771 PCI-X 1000T Gigabit Server Adapter                                                                                                                                                                                                                                                                      | 290563-B21 |
|                                         | HP NC1020 PCI 1000T Gigabit Server Adapter                                                                                                                                                                                                                                                                        | 353377-B21 |
|                                         | Agere PCI V.92 56K Worldwide Controller less Win Modem                                                                                                                                                                                                                                                            | DC131B     |
|                                         | <b>NOTE:</b> RJ11 modem adapter is not included.                                                                                                                                                                                                                                                                  |            |
| <hr/>                                   |                                                                                                                                                                                                                                                                                                                   |            |
| Tape Backup Drives                      | HP DAT24 Internal SCSI DAT Drive                                                                                                                                                                                                                                                                                  | C1555D     |
|                                         | HP DAT40 Internal SCSI DAT Drive                                                                                                                                                                                                                                                                                  | C5686B     |

|                              |                                                                                                                       |            |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------|
| <b>Rack Enabling Kit</b>     | ProLiant Rack Enabling Kit                                                                                            | 238547-B22 |
| <b>HP KVM Switch Options</b> | HP 1x4 USB/PS2 KVM TableTop Switch                                                                                    | 371301-D71 |
|                              | HP 1x4 USB/PS2 KVM Rack-mount Switch                                                                                  | 371302-B21 |
|                              | HP 6 foot, 2-Pack, PS2 with audio KVM Cable                                                                           | 371730-B21 |
|                              | HP 6 foot, 2-Pack, USB with audio KVM Cable                                                                           | 371729-B21 |
| <b>Other</b>                 | Internal SCSI Cable Option Kit, 4 drops - To be used when adding additional hard disk drives or a tape back-up drive. | 166389-B21 |
|                              | Internal SCSI Cable Option Kit, 2 drops - To be used when adding additional hard drives or a tape back-up drive.      | 273463-B21 |

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## Service and Support, HP Care Pack, and Warranty Information

|                                                              |                                                            |        |
|--------------------------------------------------------------|------------------------------------------------------------|--------|
| <b>Service and Support Offerings</b> (HP Care Pack Services) | <b>Hardware Services 4-Hour On-site Service</b>            |        |
|                                                              | 13-Hour x 5-Day Coverage, 3 Years                          | U4434A |
|                                                              | 13-Hour x 5-Day Coverage, 3 Years, Electronic              | U4434E |
|                                                              | 24-Hour x 7-Day Coverage, 3 Years                          | U4435A |
|                                                              | 24-Hour x 7-Day Coverage, 3 Years, Electronic              | U4435E |
|                                                              | <b>Hardware Services Next Business Day On-Site Service</b> |        |
|                                                              | 9-Hour x 5-Day Coverage, 3 Years,                          | U4433A |
|                                                              | 9-Hour x 5-Day Coverage, 3 Years, Electronic               | U4433E |
|                                                              | Hardware Installation                                      | U4444A |

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

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| <a href="#">Power Specifications</a>                                        | <a href="#">Technical Specifications</a> |                        |                                                                     |                         |



**Tested Product List**

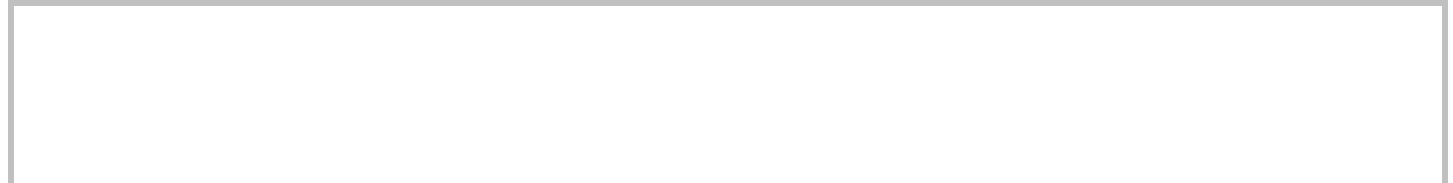
**NOTE:** The Tested Product List (TPL) is a list of HP and standard 3rd party devices (hardware or software) that have been tested by either HP or independent test houses for basic compatibility with the HP ProLiant ML110. HP products are supported by HP, non-HP products are not supported by HP. For non-HP products, you must obtain support from their own manufacturer. Non-HP third party products have been tested only for compatibility with the specified HP server. This level of

testing confirms proper device recognition by the HP server and basic compatibility with the identified HP server. HP disclaims all responsibility and liability for the manufacturing, distribution, marketing, licensing, installation, use, performance, maintenance, safety, regulatory certification, and support of these 3rd party products.

|                     |                        |                                                                         |
|---------------------|------------------------|-------------------------------------------------------------------------|
| IDE RAID Controller | Manufacturer           | Promise Technology, Inc.                                                |
|                     | Product                | FastTrak TX4000 IDE RAID Controller                                     |
|                     | Channels               | Four (4) Independent Data Channels                                      |
|                     | RAID Configurations    | RAID levels 0 + 1 striping/mirroring; RAID 1 mirroring; RAID 0 striping |
|                     | Capacity               | 240GB (3 x 80GB ATA) in ML110                                           |
|                     | Data Transfer Method   | 32-bit, 66MHz PCI Bus Master                                            |
|                     | Manufacturer's Website | <a href="http://www.promise.com/">http://www.promise.com/</a>           |

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## Memory

### HP ProLiant ML110 Celeron and Pentium 4 Models

#### **Standard Memory**

256-MB of PC3200 DDR SDRAM running at 400MHz (Celeron models running at 200 MHz), with Advanced ECC capabilities Memory installed (1 x 256-MB SDRAM DIMM).

#### **Standard Memory Plus Optional Memory**

Up to 3328-MB memory is available with the optional installation of PC3200 ECC DDR SDRAM DIMM Memory kits.

#### **Standard Memory Replaced with Optional Memory**

Up to 4096-MB of memory is available with the removal of the standard 256-MB of memory and the optional installation of PC3200 ECC DDR SDRAM DIMM Memory kits.

**NOTE:** Charts do not represent all possible memory configurations.

| Memory   |         | Slot    |         |         |         |
|----------|---------|---------|---------|---------|---------|
|          |         | 4       | 3       | 2       | 1       |
| Standard | 256 MB  | Empty   | Empty   | Empty   | 256 MB  |
| Optional | 3328 MB | 1024 MB | 1024 MB | 1024 MB | 256 MB  |
| Maximum  | 4096 MB | 1024 MB | 1024 MB | 1024 MB | 1024 MB |

**Following are memory options available from HP:**

- 256MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 256 MB) 354557 -B21
- 512MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 512 MB) 354560 -B21
- 1024MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 1024 MB) 354563 -B21

## HP server ML110 Pentium 4 SBS Models

### **Standard Memory**

512-MB of PC3200 DDR SDRAM running at 400MHz, with Advanced ECC capabilities Memory installed (1 x 512-MB SDRAM DIMM).

### **Standard Memory Plus Optional Memory**

Up to 3584-MB memory is available with the optional installation of PC3200 ECC DDR SDRAM DIMM Memory kits.

### **Standard Memory Replaced with Optional Memory**

Up to 4096-MB of memory is available with the removal of the standard 512-MB of memory and the optional installation of PC3200 ECC DDR SDRAM DIMM Memory kits.

**NOTE:** Charts do not represent all possible memory configurations.

| Memory   |         | Slot    |         |         |         |
|----------|---------|---------|---------|---------|---------|
|          |         | 4       | 3       | 2       | 1       |
| Standard | 512 MB  | Empty   | Empty   | Empty   | 512 MB  |
| Optional | 3584 MB | 1024 MB | 1024 MB | 1024 MB | 512 MB  |
| Maximum  | 4096 MB | 1024 MB | 1024 MB | 1024 MB | 1024 MB |

**Following are memory options available from HP:**

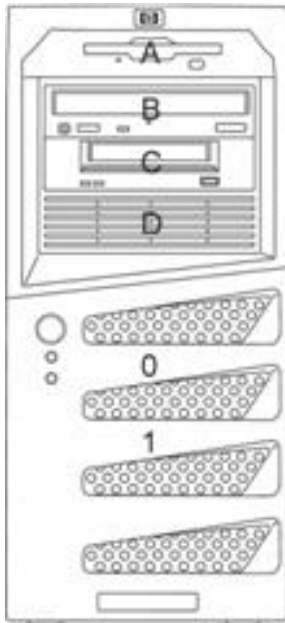
- 256MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 256 MB) 354557 -B21
- 512MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 512 MB) 354560 -B21
- 1024MB of Advanced ECC PC3200 DDR SDRAM DIMM Memory Kit (1 x 1024 MB) 354563 -B21

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**Storage**



|            |                                                                                |
|------------|--------------------------------------------------------------------------------|
| A          | 48x IDE (ATAPI) CD-ROM                                                         |
| D          | 1.44 Diskette Drive                                                            |
| B, C       | Removable Media Bays (1.6" each)                                               |
| 0, 1, 2, 3 | Four 1" Non-Hot Plug Drive Bays, or Four Hot Plug Drive Bays (SATA model only) |

## Drive Support

|                                                 | Quantity Supported | Position Supported | Controller                                                 |
|-------------------------------------------------|--------------------|--------------------|------------------------------------------------------------|
| <b>Removable Media</b>                          |                    |                    |                                                            |
| 1.44-MB Diskette Drive                          | Up to 1            | E                  | Integrated                                                 |
| IDE (ATAPI) CD-ROM Drive                        | Up to 2            | B or C             | Integrated IDE (ATAPI)                                     |
| DVD-ROM Drive Option Kit                        | Up to 2            | B or C             | Integrated IDE (ATAPI)                                     |
| <b>Hard Drives (SCSI Models only)</b>           |                    |                    |                                                            |
| <i>Ultra 320 SCSI - Non-Hot Plug</i>            |                    |                    |                                                            |
|                                                 | Quantity Supported | Position Supported | Controller                                                 |
| <b>1-inch</b><br>36.4-GB<br>72.8-GB             | Up to 4            | 0, 1, 2 or 3       | HP Single Channel Ultra3 SCSI Adapter (SCSI Models)        |
| <b>Hard Drives (ATA Models only)</b>            |                    |                    |                                                            |
| <i>ATA/100 IDE - Non-Hot Plug</i>               |                    |                    |                                                            |
|                                                 | Quantity Supported | Position Supported | Controller                                                 |
| <b>1-inch</b><br>160.0-GB<br>80.0-GB<br>40.0-GB | Up to 3            | 0, 1, 2 or 3       | Integrated Dual Channel Ultra ATA-100 Adapter (ATA Models) |
| <b>Hard Drives (SATA Models only)</b>           |                    |                    |                                                            |
| <i>SATA 1.5Gb - Hot Plug</i>                    |                    |                    |                                                            |
|                                                 | Quantity Supported | Position Supported | Controller                                                 |
| <b>1-inch</b><br>80.0-GB                        | Up to 4            | 0, 1, 2 or 3       | 4 Port SATA RAID Controller (SATA Model)                   |

160.0-GB  
250.0-GB

**Maximum Storage Capacity - SCSI Models**

|          |                                             |
|----------|---------------------------------------------|
| Internal | 288 GB (4 x 72 GB non-hot-plug hard drives) |
| Total    | 288 GB                                      |

**Maximum Storage Capacity - ATA Models**

|          |                                                                                                |
|----------|------------------------------------------------------------------------------------------------|
| Internal | 480 GB (3 x 160 GB non-hot-plug hard drives - 4th channel is attached to CD-ROM Drive)         |
| Total    | 480 GB; For larger internal storage requirements, please contact your local HP representative. |

**Maximum Storage Capacity - SATA Models**

|          |                                       |
|----------|---------------------------------------|
| Internal | 1TB (4 x 250 GB hot-plug hard drives) |
| Total    | 1 TB                                  |

**Tape Drives**

**NOTE:** A SCSI controller needs to be purchased to operate internal SCSI devices in the ATA Models.

**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)

|          | <b>Quantity<br/>Supported</b> | <b>Position<br/>Supported</b> | <b>Controller</b>                   |
|----------|-------------------------------|-------------------------------|-------------------------------------|
| HP DAT24 | Up to 1                       | C                             | HP Single Channel Ultra320 SCSI HBA |
| HP DAT40 | Up to 1                       | C                             | HP Single Channel Ultra320 SCSI HBA |
| HP DAT72 | Up to 1                       | C                             | HP Single Channel Ultra320 SCSI HBA |

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## Power Specifications

Part Number

346127-001

Spare Kit

348626-001

Operational Input Voltage Range (V rms)

90 to 135 and 180 to 5 V auto ranging

Frequency Range (Nominal) (Hz)

47 to 63 Hz

| Nominal Input Voltage (Vrms)    | 100 | 115  | 208 | 220 | 230  | 240 |
|---------------------------------|-----|------|-----|-----|------|-----|
| Max Rated Output Wattage Rating | N/A | 350  | N/A | N/A | 350  | N/A |
| Nominal Input Current (A rms)   | N/A | 54.0 | N/A | N/A | 2.50 | N/A |

|                                        |     |        |     |     |          |     |
|----------------------------------------|-----|--------|-----|-----|----------|-----|
| Max Rated Input Wattage Rating (Watts) | N/A | 575310 | N/A | N/A | 575310   | N/A |
| Max. Rated VA (Volt-Amp)               | N/A | 920    | N/A | N/A | 920      | N/A |
| Efficiency (%)                         | N/A | ~63%   | N/A | N/A | ~63%     | N/A |
| Power Factor                           | N/A | N/A    | N/A | N/A | N/A      | N/A |
| Leakage Current (mA)                   | N/A | 3.5mA  | N/A | N/A | 0.73.5mA | N/A |
| Maximum Inrush Current (A peak)        | N/A | 80120  | N/A | N/A | 120      | N/A |
| Maximum Inrush Current duration (mS)   | N/A | N/A    | N/A | N/A | N/A      | N/A |

## System Specifications

|                                                          |                                                                                                                                                                       |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                          | <b>Power **</b>                                                                                                                                                       |
| <b>HP ProLiant ML110 Fully Configured</b>                | (see **)                                                                                                                                                              |
| Fully Loaded System Input Wattage (W)                    | 318W                                                                                                                                                                  |
| Fully Loaded System Input Current (A rms)                | 4.4A @ 115V, 2.2A @ 230V                                                                                                                                              |
| Fully Loaded System Thermal (BTU-Hr)                     | 1907BTU                                                                                                                                                               |
| Fully Loaded System VA (Volt-Amp)                        | 506                                                                                                                                                                   |
| System Leakage with all power supplies loaded (mA)       | 0.75mA                                                                                                                                                                |
| System Inrush Current with all power supplies loaded (A) | 80A                                                                                                                                                                   |
| Power cord requirements                                  | Nema 5-15P to IEC320-C13                                                                                                                                              |
|                                                          | IEC320-C13 to IEC320-C14                                                                                                                                              |
|                                                          | **Power shown is for a fully configured system consisting of (1) CPU, (4) double-sided DIMMs, (3) HDDs, (1) CD-ROM, (1) DVD-ROM, (4) PCI cards, and (1) power supply. |
| <b>Power Cord Part Number</b>                            | 121565-001                                                                                                                                                            |

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# Technical Specifications

|                                       |                                          |                                                                                                     |                              |
|---------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------|
| System Unit                           | Dimensions (HxWxD)<br>(with feet)        | 16.9 x 7.9 x 21.7 in (43.0 x 20.0 x 55.0 cm)                                                        |                              |
|                                       | Weight(approximate)                      | 37 lb (16.8 kg)                                                                                     |                              |
|                                       | Input Requirements<br>(per power supply) | Range Input Voltage                                                                                 | 90 to 135 VAC/180 to 265 VAC |
|                                       |                                          | Normal Line Voltage                                                                                 | 115 or 230 VAC               |
|                                       | Line Frequency                           | 50 to 60 Hz                                                                                         |                              |
|                                       | Rated Input Current                      | load 8A at 115VAC, 4A at 230VAC                                                                     |                              |
|                                       | BTU Rating                               | 1907 BTU                                                                                            |                              |
| SCSI Connectors<br>(SCSI Models only) |                                          | One internal LVD/SE connector for U160 devices, plus two internal SE connectors for legacy devices. |                              |

|                                                        |                                            |                                |
|--------------------------------------------------------|--------------------------------------------|--------------------------------|
| <b>Power Supply Output Power</b><br>(per power supply) | Rated Steady-State Power                   | 320W                           |
|                                                        | Maximum Peak Power                         | 350W                           |
| <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)                               | 4.7                            |
|                                                        | L pAm (dBA)                                | 31                             |
|                                                        | Operating<br>(Random Seeks to Fixed Disks) |                                |
|                                                        | L WAd (BELS)                               | 4.8                            |
|                                                        | L pAm (dBA)                                | 32                             |

|                                               |                                  |                                                         |                             |            |
|-----------------------------------------------|----------------------------------|---------------------------------------------------------|-----------------------------|------------|
| <b>Non-Hot Plug Ultra320 SCSI Hard Drives</b> | <b>36.4 GB 10K</b><br>271832-B21 | <b>Capacity</b>                                         | 36,419.2 MB                 |            |
|                                               |                                  | <b>Height</b>                                           | 1.0 in (2.5 cm)             |            |
|                                               |                                  | <b>Width</b>                                            | 4.0 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                | 0.7 ms     |
|                                               |                                  |                                                         | Average                     | 5.4 ms     |
|                                               |                                  |                                                         | Full-stroke                 | 11 ms      |
|                                               |                                  |                                                         | Rotational Speed            | 10,000 rpm |
|                                               |                                  | <b>Physical Configuration</b>                           | Bytes/Sector                | 512        |
|                                               |                                  |                                                         | Logical Blocks              | 71,132,000 |
|                                               |                                  | <b>Operating Temperature</b>                            | 50° to 95° F (10° to 35° C) |            |

|                                         |                                 |                                                      |                             |             |
|-----------------------------------------|---------------------------------|------------------------------------------------------|-----------------------------|-------------|
| <b>Non-Hot Plug ATA/100 Hard Drives</b> | <b>80 GB 7.2K</b><br>278424-B21 | <b>Capacity</b>                                      | 80,054 MB                   |             |
|                                         |                                 | <b>Height</b>                                        | 1.0 in (2.54 cm)            |             |
|                                         |                                 | <b>Width</b>                                         | 4.0 in (10.16 cm)           |             |
|                                         |                                 | <b>Interface</b>                                     | ATA 100                     |             |
|                                         |                                 | <b>Transfer rate synchronous (maximum)</b>           | 100 MB/s                    |             |
|                                         |                                 | <b>Seek time</b> (typical reads, including settling) | Single track                | 0.8 ms      |
|                                         |                                 |                                                      | Average                     | 8.5 ms      |
|                                         |                                 |                                                      | Full-stroke                 | 17.8 ms     |
|                                         |                                 |                                                      | Rotational speed            | 7,200 rpm   |
|                                         |                                 | <b>Physical Configuration</b>                        | Bytes/Sector                | 512         |
|                                         |                                 |                                                      | Logical Blocks              | 156,355,584 |
|                                         |                                 | <b>Operating Temperature</b>                         | 41° to 131° F (5° to 55° C) |             |
|                                         | <b>40 GB 7.2K</b><br>230534-B21 | <b>Capacity</b>                                      | 40,027 MB                   |             |
|                                         |                                 | <b>Height</b>                                        | 1.0 in (2.54 cm)            |             |
|                                         |                                 | <b>Width</b>                                         | 4.0 in (10.16 cm)           |             |
|                                         |                                 | <b>Interface</b>                                     | ATA 100                     |             |

|                                                         |                                |            |
|---------------------------------------------------------|--------------------------------|------------|
| <b>Transfer rate</b><br>synchronous (maximum)           | 100 MB/s                       |            |
| <b>Seek time</b><br>(typical reads, including settling) | Single track                   | 0.8 ms     |
|                                                         | Average                        | 8.5 ms     |
|                                                         | Full-stroke                    | 17.8 ms    |
|                                                         | Rotational speed               | 7,200 rpm  |
| <b>Physical Configuration</b>                           | Bytes/Sector                   | 512        |
|                                                         | Logical Blocks                 | 78,177,792 |
| <b>Operating Temperature</b>                            | 41° to 131° F<br>(5° to 55° C) |            |

|                                             |                                    |                  |                                                                                                                                               |
|---------------------------------------------|------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>48X Max IDE (ATAPI)<br/>CD-ROM Drive</b> | <b>Disk</b>                        | Applicable Disk  | CD-ROM, CD-XA, CD-DA<br>(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 |
|                                             |                                    | Capacity         | 540 MB (Mode 1, 12 cm)<br>650 MB (Mode 2, 12 cm)                                                                                              |
|                                             | <b>Block Size</b>                  | Mode 1           | 2,048 bytes, 1024 bytes                                                                                                                       |
|                                             |                                    | Mode 2           | 2,340 bytes, 2,336 bytes, 1024 bytes                                                                                                          |
|                                             |                                    | CD-DA            | 2,352 bytes                                                                                                                                   |
|                                             |                                    | CD-XA            | 2,328 bytes                                                                                                                                   |
|                                             |                                    | Interface        | IDE (ATAPI)                                                                                                                                   |
|                                             | <b>Access Times<br/>(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<br/>(typical)</b> | < 7seconds       |                                                                                                                                               |
|                                             | <b>Stop Time</b>                   | < 4seconds       |                                                                                                                                               |
|                                             | <b>Laser Parameters</b>            | Type             | Semiconductor Laser GaAlAs                                                                                                                    |
|                                             |                                    | Wave Length      | 780 ± 25 nm                                                                                                                                   |
|                                             | <b>Operating<br/>Conditions</b>    | Temperature      | 41° to 113° F (5° to 45° C)                                                                                                                   |
|                                             |                                    | Humidity         | 10% to 80%                                                                                                                                    |
|                                             | <b>Dimensions</b>                  | (HxWxD, maximum) | 1.7 x 5.85 x 8.11 in (42.9 x 150 x 208 cm)                                                                                                    |
|                                             |                                    | Weight           | 2.09 lb (0.95 kg)                                                                                                                             |

|                                                                                   |                                                     |                                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------|
| <b>Integrated Dual<br/>Channel Ultra ATA-100<br/>Adapter</b><br>(ATA Models only) | <b>Drives Supported</b>                             | Up to 5 IDE devices (3 devices channel 1/2 devices channel 2) |
|                                                                                   | <b>Channels</b>                                     | 2 (primary and secondary)                                     |
|                                                                                   | <b>Storage Capacity</b>                             | 640 GB                                                        |
|                                                                                   | <b>Data Transfer Method</b>                         | 32-bit/33-MHz PCI bus-master                                  |
|                                                                                   | <b>Maximum ATA Channel<br/>Transfer Rate</b>        | 100 MB/s per channel                                          |
|                                                                                   | <b>Maximum Transfer Rate<br/>per PCI Bus (peak)</b> | 133 MB/s per channel                                          |
|                                                                                   | <b>ATA Protocols</b>                                | UDMA Mode [0-5]                                               |
|                                                                                   |                                                     | PIO Mode [0-4]                                                |
|                                                                                   | <b>ATA 100 Cable</b>                                | 80-Conductor Cable                                            |
|                                                                                   | <b>Internal ATA<br/>Connectors</b>                  | Two 40-Pin Connectors (primary and secondary)                 |

|                                                                                  |                                                 |                                                                                                                      |
|----------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>HP Single Channel Ultra3 SCSI Adapter</b><br>(SCSI Models only)               | <b>Drives Supported</b>                         | Up to 4 SCSI devices Wide                                                                                            |
|                                                                                  | <b>Data Transfer Method</b>                     | 64-bit/33-MHz PCI bus-master                                                                                         |
|                                                                                  | <b>SCSI Channel Transfer Rate</b>               | 320 MB/s per channel                                                                                                 |
|                                                                                  | <b>Maximum Transfer Rate per PCI Bus (peak)</b> | 267 MB/s per channel                                                                                                 |
|                                                                                  | <b>SCSI Protocols</b>                           | Wide Ultra4 SCSI, Wide Ultra2 SCSI, Wide Ultra SCSI-3, Fast-Wide SCSI-2, and Fast SCSI-2                             |
|                                                                                  | <b>Electrical Protocol</b>                      | Low Voltage Differential (LVD)                                                                                       |
|                                                                                  | <b>SCSI Termination</b>                         | Active Termination                                                                                                   |
| <b>External SCSI Connectors</b>                                                  |                                                 | None                                                                                                                 |
| <b>4 port SATA RAID controller</b> (SATA Model Only)                             | <b>SATA Protocol</b>                            | SATA 1.5Gb/s                                                                                                         |
|                                                                                  | <b>SATA Ports</b>                               | 4 internal                                                                                                           |
|                                                                                  | <b>Port transfer rate</b>                       | 1.5 Gb/s total                                                                                                       |
|                                                                                  | <b>Drives Supported</b>                         | Up to 4 SATA HDD                                                                                                     |
|                                                                                  | <b>Data Transfer Method</b>                     | 32-bit/66-MHz PCI bus-master                                                                                         |
|                                                                                  | <b>Storage Capacity</b>                         | up to 1TB (4x 250GB hot plug 1" SATA HDD)                                                                            |
|                                                                                  | <b>PCI</b>                                      | 3.3 volt CPI slot compatibility only                                                                                 |
|                                                                                  | <b>Cache Memory</b>                             | 64MB of SDRAM Memory for RAID and read cache                                                                         |
|                                                                                  | <b>RAID Levels Supported</b>                    | RAID 5 (Distributed Data Guarding)<br>RAID 1+0 (Striping & Mirroring)<br>RAID 1 (Mirroring)<br>RAID 0 (Striping)     |
|                                                                                  | <b>Maximum Capacity</b>                         | up to 1TB (4x 250GB hot plug 1" SATA HDD)                                                                            |
|                                                                                  | <b>Logical RAID Volumes Supported</b>           | 4                                                                                                                    |
|                                                                                  | <b>Operating Systems</b>                        | Microsoft Windows® 2000 Server ; Microsoft Windows® Server 2003 ;<br>Linux: Red Hat 9.0                              |
| <b>HP Single Channel Ultra3 SCSI Adapter</b><br>(SCSI Models only)               | <b>Drives Supported</b>                         | Up to 4 SCSI devices Wide                                                                                            |
|                                                                                  | <b>Data Transfer Method</b>                     | 64-bit/33-MHz PCI bus-master                                                                                         |
|                                                                                  | <b>SCSI Channel Transfer Rate</b>               | 320 MB/s per channel                                                                                                 |
|                                                                                  | <b>Maximum Transfer Rate per PCI Bus (peak)</b> | 267 MB/s per channel                                                                                                 |
|                                                                                  | <b>SCSI Protocols</b>                           | Wide Ultra4 SCSI, Wide Ultra2 SCSI, Wide Ultra SCSI-3, Fast-Wide SCSI-2, and Fast SCSI-2                             |
|                                                                                  | <b>Electrical Protocol</b>                      | Low Voltage Differential (LVD)                                                                                       |
|                                                                                  | <b>SCSI Termination</b>                         | Active Termination                                                                                                   |
| <b>External SCSI Connectors</b>                                                  |                                                 | None                                                                                                                 |
| <b>Broadcom 5705 PCI Gigabit NIC</b> (embedded)<br>10/100/1000 WOL (Wake on LAN) | <b>Network Interface</b>                        | Ethernet Standards: IEEE 802.3, 802.3u, 802.3ad, and 802.3ab, 802.1x, 802.1Q and 802.1p                              |
|                                                                                  | <b>Data Transfer Method</b>                     | 32-bit PCI                                                                                                           |
|                                                                                  | <b>Network Transfer Rate</b>                    | 10/100/1000 Mbps, Half- and full-duplex      Auto-negotiated speeds of 10/100/1000 Mbps in both half and full duplex |
|                                                                                  | <b>Connector</b>                                | RJ-45 connector                                                                                                      |
|                                                                                  | <b>Cable Support</b>                            | Category 5 or higher UTP wiring                                                                                      |

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