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NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

Model DHM

Initial release: April 2003

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Technical Specifications

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Technical Specifications

Processor	
Processor type	One Intel® Celeron® with a minimum clock speed of at least 2.0 GHz, or one Intel Pentium® 4 with a minimum clock speed of at least 2.2 GHz
Front-side bus speed	From 400 MHz, depending on processor
Secondary cache	From 128 KB of L2, depending on processor

Expansion Bus	
Bus type	PCI 2.2
Expansion slots	Four 5.0-V connectors supporting 3.3-V universal or 5.0-V cards, half-length, 32-bit, 33-MHz

Memory	
Architecture	Dual-channel DDR 333 and DDR 400 SDRAM, ECC, 64-bit DIMMs **NOTE:** DDR 333 DIMMs operate at 320 MHz when used with a Pentium 4 processor with an 800-MHz front-side bus.
Memory module sockets	Four 184-pin
Memory module capacities	128 MB, 256 MB, 512 MB, 1 GB
Minimum RAM	128 MB
Maximum RAM	4 GB

Drives	
Hard drives	Two 1-inch, internal IDE, SATA (when available), or SCSI (with optional SCSI controller installed)
Diskette drive	One 3.5-inch, 1.44-MB
Optical drives	IDE CD, DVD, or CD-RW/DVD combination in one or both of the two 5.25-inch peripheral bays
Tape drive (optional)	IDE tape backup unit in the lower 5.25-inch peripheral bay

Connectors	
Externally accessible (back)	
NIC	RJ-45
Parallel	25-pin (bidirectional)
PS/2 (keyboard and mouse)	Two 6-pin mini-DIN
Serial	Two 9-pin, 16550-compatible
USB	Six 4-pin, USB 2.0-compliant
Video	15-pin VGA
Internally accessible	
Primary and secondary IDE channels	Two 40-pin
Primary and secondary SATA channels	Two 7-pin
Primary and secondary SCSI channels (optional)	Two 68-pin Ultra3 SCSI
Diskette-drive channel	One 34-pin

Video	
Video type	ATI Rage XL PCI video card; VGA connector
Video memory	8 MB

Power	
DC power supply **NOTICE:** Ensure that the voltage selection switch on the power supply is set to the appropriate voltage before turning on the power. See Figure 1-2 for the location of the switch.	
Wattage	250 W
Voltage	At 50/60 Hz, 90–135 V at 6 A max and 180–265 V at 3 A max
Heat dissipation	910 BTU/hr
Maximum inrush current	Under typical line conditions and over the entire system ambient operating range, the inrush current may reach 25 A per power supply for 10 ms or less.
Batteries	
System battery	CR 2032 3.0-V lithium ion coin cell

Physical	
Height	42.7 cm (16.8 inches)
Width	19.1 cm (7.5 inches)
Depth	45.0 cm (17.7 inches)
Weight (maximum configuration)	12.7 kg (28 lb)

Environmental	
Temperature	
Operating	10° to 35°C (50° to 95°F) **NOTE:** At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).
Storage	–40° to 65°C (–40° to 149°F)
Relative humidity	
Operating	20% to 80% (noncondensing)
Storage	5% to 95% (noncondensing)
Maximum vibration	
Operating	0.25 G at 3–200 Hz at 0.5 octave/min
Storage	0.5 G at 3–200 Hz at 1 octave/min
Maximum shock	
Operating	Bottom half-sine pulse with a change in velocity of 50.8 cm/s (20 inches/s)
Storage	Nonoperating (half-sine pulse) 105 G, 2 ms Nonoperating (faired-square wave) 27 G with a velocity change of 508 cm/s (200 inches/s)
Altitude	
Operating	–15 to 3048 m (–50 to 10,000 ft)
Storage	–15 to 10,600 m (–50 to 35,000 ft)

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System Overview

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This section describes the major hardware and software features of your system and provides information about the indicators on the system's front and back panels. It also provides information about other documents you may need when setting up your system and how to obtain technical assistance.

Front-Panel Features and Indicators

Figure 1-1 shows the front-panel features and indicators of the system. Table 1-1 describes these features and indicators.

Figure 1-1. Front-Panel Features and Indicators

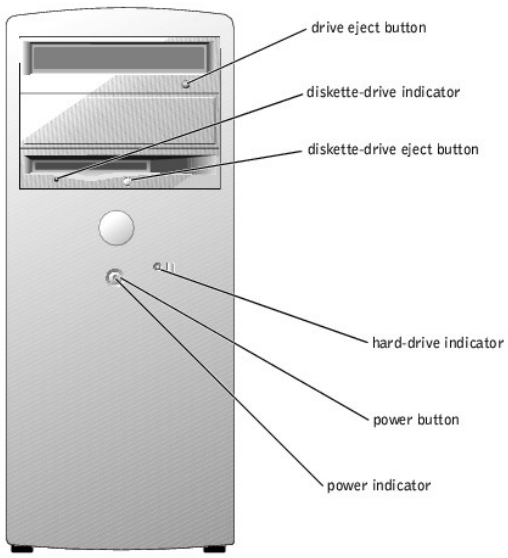


Table 1-1. Front-Panel Features and Indicators

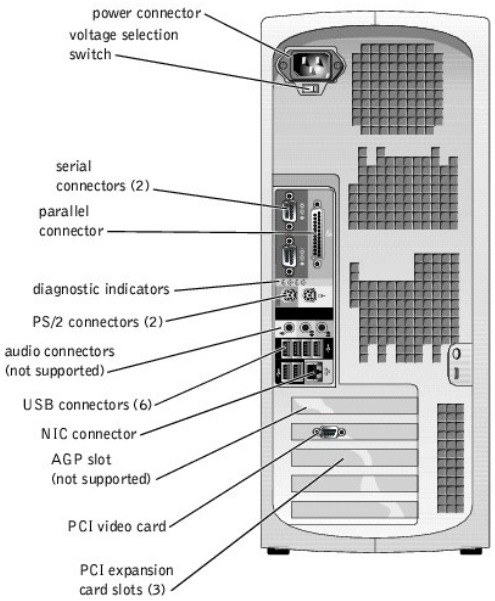
Indicator or Feature	Description
Diskette-drive indicator	Flashes when the diskette drive is reading or writing data to a diskette.
Hard-drive indicator	Flashes when the hard drives are reading or writing data to the hard drives. The light might also be on when a device such as the CD drive is operating.
Power indicator	The power indicator blinks or remains solid to indicate different states: • Off — The system is in the off state. • Steady green — The system is in a normal operating state. • Blinking green — The system is in a power-saving state. To exit from a power-saving state, briefly press the power button or click or move the mouse.

Power button	Press this button to turn the system on or off. **NOTICE:** Ensure that the voltage selection switch on the power supply is set to the appropriate voltage before turning on the power. See Figure 1-2 for the location of the switch.

Back-Panel Features

Figure 1-2 shows the back-panel features of the system. Figure 1-3 and Table 1-2 provide information about NIC indicators. For information about diagnostic indicators, see your *Installation and Troubleshooting Guide*.

Figure 1-2. Back-Panel Features



NOTICE: To help avoid damaging your system, ensure that the voltage selection switch on the power supply (see Figure 1-2) is set for the voltage that most closely matches the AC power available in your location before turning on the power. Also, ensure that your monitor and attached devices are electrically rated to operate with the power available in your location.

Figure 1-3. NIC Indicators

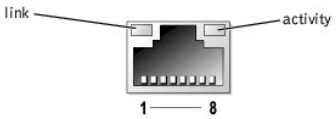


Table 1-2. NIC Indicators

Indicator	Normal Operation	Error Condition
Activity	Flashing amber indicates that network data is being sent or received.	When off at the same time that the link indicator is off, the NIC is not connected to the network.
Link	Steady green indicates that the NIC is connected to a valid link partner on the network.	When off at the same time that the activity indicator is off, the NIC is not connected to the network.

System Features

Your system offers the following features:

- One of the following processors:
  - Intel® Celeron® with a minimum clock speed of at least 2.0 GHz, front-side bus speed of at least 400 MHz, and a minimum of 128 KB of level 2 (L2) cache
  - Intel Pentium® 4 with a minimum clock speed of at least 2.2 GHz, front-side bus speed of at least 533 MHz, and a minimum of 512 KB of level 2 cache

NOTE: Use the System Setup program to view processor information. For more information, see "Using the System Setup Program."

- A minimum of 128 MB of DDR 333 and DDR 400 SDRAM ECC memory, upgradable to a maximum of 4 GB by installing 128-, 256-, 512-, or 1-GB unbuffered memory modules in the four memory module sockets on the system board
- Two 1-inch IDE, SATA (when available), or SCSI internal hard drives

NOTE: Hard-drive bus types cannot be mixed. Both drives must use the same bus type.

- Integrated IDE controllers for internal IDE hard drives, optical drives (CD, DVD, CD-RW/DVD combination), and optional tape backup drives; integrated SATA controllers (when available) for internal hard drives; optional SCSI controller card for optional SCSI drives
- One 3.5-inch peripheral drive bay for the diskette drive, and two 5.25-inch bays for the following supported drives: CD, DVD, combination CD-RW/DVD, or tape backup unit (IDE)

The system board includes the following built-in features:

- Four 32-bit, 33-MHz PCI expansion slots
- A VGA-compatible ATI RAGE XL video card, containing 8 MB of SDRAM video memory (nonupgradable), and a maximum resolution of 1280 x 1024 pixels and 16.7 million colors (noninterlaced)
- An integrated Gigabit Ethernet NIC, capable of supporting 10-Mbps, 100-Mbps, or 1000-Mbps data rates
- Chassis intrusion alert and padlock tabs for internal security

The following software is included with your system:

- The System Setup program for quickly viewing and changing the system configuration information for your system. For more information on this program, see "Using the System Setup Program."
- Enhanced security features, including a system password and a setup password, available through the System Setup program.
- Diagnostics for evaluating your system's components and devices. For information on using the system diagnostics, see "Running the System Diagnostics" in your *Installation and Troubleshooting Guide*.

For more information about specific features, see "Technical Specifications." For a list of documents that provide more information on your system's features, see "Other Documents You May Need."

Supported Operating Systems

- Microsoft® Windows® 2000 Server and Windows Server 2003
- Red Hat Linux 9

Power Protection Devices

Certain devices protect your system from the effects of problems such as power surges and power failures.

- Surge protector — Prevents voltage spikes, such as those that may occur during an electrical storm, from entering the system through the electrical outlet. They do not protect against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.
- Line conditioner — Maintains a system's AC power source voltage at a moderately constant level and provides protection from brownouts, but does not protect against a complete power loss.
- UPS — Uses battery power to keep the system running when AC power is unavailable. The battery is charged by AC power while it is available so that after AC power is lost, the battery can provide power to the system for a limited amount of time—from 5 minutes to approximately an hour. A UPS that

provides only 5 minutes of battery power allows you to save your open files and gracefully shutdown the system. Use surge protectors with all universal power supplies, and ensure that the UPS is UL-safety approved.

Other Documents You May Need

The *System Information Guide* provides important safety and regulatory information. Warranty information may be included within this document or as a separate document.

- The *User's Guide* provides information about system features and technical specifications.
- The *Installation and Troubleshooting Guide* describes how to troubleshoot the system and install or replace system components.
- Operating system documentation describes how to install (if necessary), configure, and use the operating system software.
- Documentation for any components you purchased separately provides information to configure and install these options.
- Updates are sometimes included with the system to describe changes to the system, software, and/or documentation.

NOTE: Always read the updates first because they often supersede information in other documents.

- Release notes or readme files may be included to provide last-minute updates to the system or documentation or advanced technical reference material intended for experienced users or technicians.

Obtaining Technical Assistance

If you do not understand a procedure in this guide or if the system does not perform as expected, see your *Installation and Troubleshooting Guide*.

Dell Enterprise Training and Certification is available; see **www.dell.com/training** for more information. This service may not be offered in all locations.

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Using the System Support CD

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The *System Support* CD contains utilities, diagnostics, and drivers to help you configure your system. You begin the operating system installation with this CD if your operating system was not preinstalled on your system. A bootable utility partition on the system's hard drive contains some of the same diagnostics functionality as the *System Support* CD.

Starting the System Support CD

To configure your system and install your operating system, insert the *System Support* CD, and turn on or reboot the system. The **Dell OpenManage Server Assistant** main screen appears.

The CD uses a standard Web browser interface. You can navigate the CD by using the mouse to click various icons and text links.

Click the **Exit** icon to exit Server Assistant. If you exit Server Assistant while in the Server Setup program, the system reboots to the standard operating system boot partition.

If the CD does not boot, verify that the CD drive is specified first in the **Boot Sequence** option in the System Setup program (see "Using the System Setup Program").

Using the Server Setup Program

If the operating system is not preinstalled or if you install an operating system at a later date, use the Server Setup program on the *System Support* CD to configure your system and install your operating system.

NOTE: Use the *System Support* CD only if your operating system is not preinstalled on your system. Locate the operating system's *Installation Instructions* document and follow the instructions to complete the installation process.

The Server Setup program guides you through tasks such as the following:

- Setting the system date and time
- Selecting and installing your operating system; specifying operating system-specific information
- Configuring hard drives
- Viewing the installation summary

NOTE: You must have your operating system media available to install your operating system.

To start the Server Setup program, click **Server Setup** on the **Dell OpenManage Server Assistant** main screen. Follow the instructions on the screen.

Updating Drivers and Utilities

You can update drivers and utilities on any system that has Microsoft® Internet Explorer 4.0 or later or Netscape Navigator 6.0 or later installed. When you

insert the CD into the CD drive on a system that uses a Microsoft Windows®-based operating system, the system automatically starts the browser and displays the **Dell OpenManage Server Assistant** main screen.

To update drivers and utilities, perform the following steps:

1. From the **Dell OpenManage Server Assistant** main screen, select the option for updating drivers and utilities.
2. Select the system model number from the drop-down box.
3. Select the type of drivers or utilities that you want to update.
4. Click **Continue**.
5. Select each driver or utility that you want to update.

   You are prompted to either run the program or provide a location to save the files.
6. Run the program or specify the location to save the files.

Using the Utility Partition

The utility partition is a bootable partition on the hard drive that contains system configuration and diagnostic utilities. When you start the utility partition, it boots and provides an executable environment for the partition's utilities.

To start the utility partition, turn on or reboot the system. During POST, press <F10> after the following message appears:

```
<F10> = Utility Partition
```

NOTE: The utility partition provides only limited MS-DOS® functionality and cannot be used as a general-purpose MS-DOS partition.

The utility partition provides a text-based interface from which you can run the partition's utilities. To select a menu option, use either the arrow keys to highlight the option and press <Enter> or type the number of the menu option. To exit the utility partition, press <Esc> from the **Utility Partition** main menu.

Table 2-1 provides a sample list and explanation of the options that appear on the utility partition menu. These options are available even when the *System Support* CD is not in the CD drive.

Table 2-1. Utility Partition Main Menu Options

Option	Description
Run system diagnostics	Runs the system hardware diagnostics
NOTE: The options displayed may vary depending on your system configuration and may not include those listed here.	

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Using the System Setup Program

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Run the System Setup program to familiarize yourself with your system configuration and optional settings. Print the System Setup screens by pressing <Print Screen> or record the information for future reference.

You can use the System Setup program to:

- Change the system configuration stored in NVRAM after you add, change, or remove hardware
- Set or change user-selectable options—for example, the time or date
- Enable or disable integrated devices
- Correct discrepancies between the installed hardware and configuration settings

---

Entering the System Setup Program

1. Turn on or restart your system.
2. Press <F2> immediately after you see the following message:

   ```
   <F2> = System Setup
   ```

   If your operating system begins to load before you press <F2>, allow the system to finish booting, and then restart your system and try again.

   NOTE: To ensure an orderly system shutdown, see the documentation that accompanied your operating system.

Responding to Error Messages

You can enter the System Setup program by responding to certain error messages. If an error message appears while the system is booting, make a note of the message. Before entering the System Setup program, see "System Beep Codes" and "System Messages" in your *Installation and Troubleshooting Guide* for an explanation of the message and suggestions for correcting errors.

NOTE: After installing a memory upgrade, it is normal for your system to send a message the first time you start your system.

Using the System Setup Program

Table 3-1 lists the keys that you use to view or change information on the System Setup program screens and to exit the program.

Table 3-1. System Setup Program Navigation Keys

Keys	Action
Up arrow or <Shift><Tab>	Moves to the previous field.
Down arrow or <Tab>	Moves to the next field.
Spacebar, <+>, <–>, left and right arrows	Cycles through the settings in a field. In many fields, you can also type the appropriate value.
<Esc>	Exits the System Setup program and restarts the system if any changes were made.

<F1>	Displays the System Setup program's help file.

NOTE: For most of the options, any changes that you make are recorded but do not take effect until you restart the system.

System Setup Options

Main Screen

When you enter the System Setup program, the main System Setup program screen appears (see Figure 3-1).

Figure 3-1. Main System Setup Program Screen

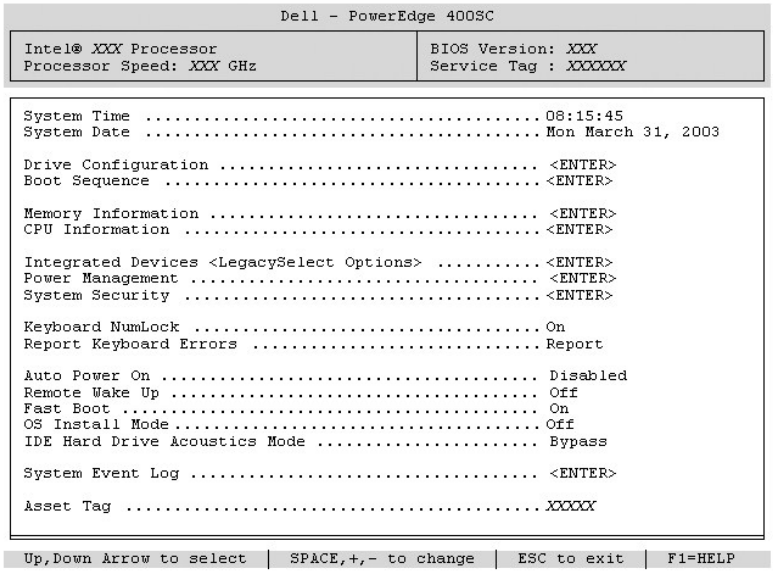

Table 3-2 lists the options and descriptions for the information fields that appear on the main System Setup program screen.

NOTE: The System Setup program defaults are listed under their respective options, where applicable.

Table 3-2. System Setup Program Options

Option	Description
System Time	Resets the time on the system's internal clock.
System Date	Resets the date on the system's internal calendar.
Drive Configuration	Displays a screen that allows you to configure all system drives including: enabling and disabling the diskette drive, configuring the drive type and drive geometry information for primary and secondary drives, and enabling and disabling DMA transfers for the internal IDE and SATA (when available) hard-drive interface.
Boot Sequence	Determines the order in which the system searches for boot devices during system startup. Available options can include the diskette drive, CD drive, hard drives, and network.
Memory Information	Displays the amount of installed system memory and memory speed. This option does not have user-selectable settings.
CPU Information	Displays information related to the processor (speed, cache size, and so on), and allows you to lower the speed at which the processor runs after system boot to accommodate speed-sensitive applications, and to enable Hyper-Threading (if supported by your processor).
Integrated Devices	See "Integrated Devices Screen."
Power Management	Displays a screen that allows you to configure the system's power-management features, including the suspend mode (**S1** or **S3**), AC power recovery, and low-power mode.
System Security	Displays a screen that allows you to configure the security features of your system, including passwords, POST hotkeys, chassis intrusion, and Boot Integrity Services (BIS) requests. See "System and Setup Password Features" for more information about setting up passwords.
Keyboard NumLock	Determines whether your system starts up with the **NumLock** mode activated on 101- or 102-key keyboards (does not apply to 84-

	key keyboards).
Report Keyboard Errors	Enables or disables reporting of keyboard errors during the POST. Enable this option for host systems that have keyboards attached. Select **Do Not Report** to suppress all error messages relating to the keyboard or keyboard controller during POST. This setting does not affect the operation of the keyboard itself if a keyboard is attached to the system.
Auto Power On (**Disabled** default)	Displays a screen that allows you to configure the system's Auto Power On features, including setting the time and days of the week to turn on the system automatically. The selections are every day or every Monday through Friday. Time is kept in a 24-hour format (hours:minutes). Change the start-up time by pressing the right- or left-arrow keys to increase or to decrease the numbers or type numbers in both the date and time fields. This feature does not work if you turn off the system using a power strip or surge protector.
Remote Wake Up	When set to **On**, the system turns on when a NIC or a modem with Remote Wake Up capabilities receives a wake-up signal. When set to **On w/Boot to NIC**, the system attempts a network boot prior to using the boot sequence. Normally, the system can be turned on remotely from a state of **Suspend**, **Hibernate**, or **Off**. When **Low Power Mode** is enabled (from the **Power Management** window), the system can only be turned on remotely from the **Suspend** state.
Fast Boot (**On** default)	Specifies how quickly the system boots if an operating system has requested a simple boot. When set to **On**, the system boots in 10 seconds or less, skipping certain configurations and tests. When set to **Off**, these tests and configurations are not skipped.
OS Install Mode (**Off** default)	Determines the maximum amount of memory available to the operating system. On sets the maximum memory to 256 MB. Off makes all of the system memory available to the operating system. Some operating systems cannot be installed with more than 2 GB of system memory. Enable this option (On) during operating system installation and disable (Off) after installation.
IDE Hard Drive Acoustics Mode	Sets the hard drive's acoustic mode. When set to **Bypass**, the system does not test or change the mode. When set to **Quiet**, the drive operates at its most quiet setting. When set to **Suggested**, the drive operates at the acoustic level suggested by the manufacturer (between **Quiet** and **Performance** modes). When set to **Performance**, the drive operates normally. **NOTE:** Any setting other than **Performance** may cause a loss in drive performance.
System Event Log	Displays a screen that allows you to view the system event log and its status and to clear the log.
Asset Tag	Displays the customer-programmable asset tag for the system if an asset tag has been assigned. To enter an asset tag of up to 10 characters into NVRAM, see "Asset Tag Utility."

Integrated Devices Screen

Table 3-3 lists the options and descriptions for the information fields that appear on the **Integrated Devices** screen.

Table 3-3. Integrated Devices Screen Options

Option	Description
Network Interface Controller	Enables or disables the system's integrated NIC. Options are **On**, **On w/PXE**, and **Off**. PXE support allows the system to boot from the network. Changes take effect after the system reboots.
Mouse Port (On default)	Sets the built-in PS/2-compatible mouse to **On** or **Off**.
USB Emulation (**On** default)	Allows USB devices to work with operating systems that do not have direct USB support. Options are **On**, **Off**, and **No Boot**. When set to **No Boot**, USB emulation continues, but boot devices are disabled. **NOTE:** For emulation to work properly, the USB controller must be set to **On**.
USB Controller (**On** default)	Enables or disables the system's USB ports. Options are **On** and **Off**. Disabling the USB ports makes system resources available for other devices.
Serial Port 1 and Serial Port 2 (**Auto** default)	Serial port 1 options are **COM1**, **COM3**, **Auto**, and **Off**. Serial port 2 options are **COM2**, **COM4**, **Auto**, and **Off**. When serial port 1 or 2 is set to **Auto**, the integrated port automatically maps to the next available port. Serial port 1 attempts to use COM1 first and then COM3. Serial port 2 attempts to use COM2 first and then COM4. If both addresses are in use for a specific port, the port is disabled. If you set the serial port to **Auto** and add an expansion card with a port configured to the same designation, the system automatically remaps the integrated port to the next available port designation that shares the same IRQ setting.
Parallel Port	Displays a screen that allows you to configure the system's parallel port.
Diskette Interface (**Auto** default)	Enables or disables the system's diskette drive controller. When **Auto** is selected, the system turns off the controller when necessary to accommodate a controller card installed in an expansion slot. You can also configure the drive as read-only. When using the read-only setting, the drive cannot be used to write to a disk.
PC Speaker (**On** default)	Sets the integrated speaker to **On** or **Off**. A change to this option takes effect immediately (rebooting the system is not required).
Primary Video Controller (**Auto** default)	Specifies which video controller the system will use during boot.

System Security Screen

Table 3-4 lists the options and descriptions for the information fields that appear on the **System Security** screen.

Table 3-4. System Security Screen Options

Option	Description
Password Status	Setting the **Setup Password** option to **Enabled** prevents the system password from being changed or disabled at system start-up. To *lock* the system password, assign a setup password in the **Setup Password** option and then change the **Password Status** option to **Locked**. In this state, you cannot change the system password using the **System Password** option and it cannot be disabled at system start-up by pressing <Ctrl><Enter>. To *unlock* the system password, enter the setup password in the **Setup Password** field and then change the **Password Status** option to **Unlocked**. In this state, you can disable the system password at system start-up by pressing <Ctrl><Enter> and then change the password using the **System Password** option.
System Password	Displays the current status of your system's password security feature and allows you to assign and verify a new system password. **NOTE:** See "System Password" for instructions on assigning a system password and using or changing an existing system password.
Setup Password	Restricts access to the System Setup program in the same way that you restrict access to your system using the system password feature. **NOTE:** See "Setup Password" for instructions on assigning a setup password and using or changing an existing setup password.
Post Hotkeys	Allows you to configure which hotkeys (<**F2**> or <**F12**>) are displayed on the screen during POST.
Chassis Intrusion	Enables or disables the chassis-intrusion detection feature. When set to **Enabled-Silent,** chassis intrusions are detected but no warning message is reported during start-up. When set to **Enabled**, this field displays **DETECTED** when the chassis cover has been removed. Pressing any edit key acknowledges the intrusion and arms the system to look for further security breaches.
PXE BIS Default Policy	Allows you to specify how the system responds to Boot Integrity Services (BIS) authentication requests when no certificate has been installed. When set to **Deny**, BIS requests are rejected. When set to **Accept**, requests are accepted. When set to **Reset**, BIS is reinitialized and set to **Deny** on the next boot.

Exit Screen

After you press <Esc> to exit the System Setup program, the **Exit** screen displays the following options:

- Save Changes and Exit
- Discard Changes and Exit
- Return to Setup

System and Setup Password Features

NOTICE: Although passwords provide security for the data on your system, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs.

System Password

NOTICE: If you leave your system running and unattended without having a system password assigned, or if you leave the system unlocked so that someone can disable the password by changing a jumper setting, anyone can access the data stored on the hard drives.

Option Settings

You cannot change or enter a new system password if either of the following two options are displayed:

- **Enabled** — A system password is assigned.
- **Disabled** — The system password is disabled by a jumper setting on the system board.

You can only assign a system password when the following option is displayed:

- **Not Enabled** — A system password has not been assigned and the password jumper on the system board is in the enabled position (the default).

Assigning a System Password

To escape from the field without assigning a system password, press <Tab> or the <Shift><Tab> key combination to move to another field, or press <Esc> at any time before you complete step 5.

1. Enter System Setup (see "Entering the System Setup Program") and verify that **Password Status** is set to **Unlocked**.
2. Highlight **System Password** and then press the left- or right-arrow key.

   The option heading changes to **Enter Password**, followed by an empty 32-character field in square brackets.
3. Type your new system password.

   You can use up to 32 characters. To erase a character when entering your password, press <Backspace> or the left-arrow key. The password is not case sensitive.

   Certain key combinations are not valid. If you enter one of these combinations, the system emits a beep.

   As you press each character key (or the spacebar for a blank space), a placeholder appears in the field.
4. Press <Enter>.

   If the new system password is less than 32 characters, the whole field fills with placeholders. Then the option heading changes to **Verify Password**, followed by another empty 32-character field in square brackets.
5. To confirm your password, type it a second time and press <Enter>.

   The password setting changes to **Enabled**.
6. Exit System Setup.

   Password protection takes effect when you restart the computer.

Typing Your System Password

When you start or restart the system, one of the following prompts appears on the screen.

If **Password Status** is set to **Unlocked**:

```
Type in the password and
- press <ENTER> to leave password security enabled.
- press <CTRL><ENTER> to disable password security.
Enter password:
```

If **Password Status** is set to **Locked**:

```
Type the password and press <Enter>.
```

If you have assigned a setup password, the system accepts your setup password as an alternate system password.

If you type a wrong or incomplete system password, the following message appears on the screen:

```
** Incorrect password. **
```

If you again type an incorrect or incomplete system password, the same message appears on the screen. The third and subsequent times you type an incorrect or incomplete system password, the system displays the following message:

```
** Incorrect password. **
Number of unsuccessful password attempts: 3
System halted! Must power down.
```

Even after the system is turned off and on, the previous message is displayed each time you type an incorrect or incomplete system password.

Deleting or Changing an Existing System Password

1. Enter System Setup (see "Entering the System Setup Program") and verify that **Password Status** is set to **Unlocked**.
2. Restart the system.
3. When prompted, type the system password.
4. Press <Ctrl><Enter> to disable the existing system password.
5. Confirm that **Not Enabled** is displayed for the **System Password** option.

   If **Not Enabled** is displayed, the system password is deleted. If **Not Enabled** is not displayed, press <Alt><b> to restart the computer, and then repeat step 3 through step 5.

   To assign a new password, follow the procedure in "Assigning a System Password."
6. Exit System Setup.

Setup Password

Option Settings

- **Enabled** — Does not allow assignment of setup passwords; you must enter a setup password to make changes to system setup.
- **Not Enabled** — Allows assignment of setup passwords; password feature is enabled but no password is assigned.

Assigning a Setup Password

The setup password can be the same as the system password.

1. Enter System Setup (see "Entering the System Setup Program") and verify that **Setup Password** is set to **Not Enabled.**
2. Highlight **Setup Password** and press the left- or right-arrow key.

   The system prompts you to type and verify the password. If a character is not permitted, the system emits a beep.
3. Type and then verify the password.

   After you verify the password, the **Setup Password** setting changes to **Enabled**. The next time you enter System Setup, the computer prompts you for the setup password.
4. Exit System Setup.

   A change to **Setup Password** becomes effective immediately (no need to restart the computer).

Operating Your System With a Setup Password Enabled

When you enter System Setup, the **Setup Password** option is highlighted, prompting you to type the password.

If you do not type the correct password, the system lets you view, but not modify, system setup options.

Deleting or Changing an Existing Setup Password

To change an existing setup password, you must know the setup password.

1. Enter System Setup (see "Entering the System Setup Program").
2. Type the setup password at the prompt.
3. Highlight **Setup Password** and press the left- or right-arrow key to delete the existing setup password.

   The setting changes to **Not Enabled**.

   To assign a new setup password, perform the steps in "Assigning a System Password."
4. Exit System Setup.

Disabling a Forgotten Password

See your *Installation and Troubleshooting Guide*.

Asset Tag Utility

You can use the Asset Tag utility to assign a unique tracking number to your system. This number is displayed on the System Setup program main screen.

NOTE: The Asset Tag utility works only with operating systems that support MS-DOS®-based applications.

Creating the Asset Tag Utility Diskette

1. Insert the *System Support* CD into the CD drive of a system running a Microsoft® Windows® operating system.
2. Insert a blank diskette into the system's diskette drive.
3. Select the system for which you want to create an asset tag and click Continue.
4. On the **Utilities and Drivers** Page, select **Dell: Bootable Diskette with Asset Tag Utility**.
5. Save the utility to the hard drive and then execute the utility to create a bootable diskette.
6. Insert the diskette into the system for which you want to assign the asset tag and reboot the system.

Assigning or Deleting an Asset Tag Number

1. Insert the Asset Tag utility diskette that you created into the diskette drive, and reboot the system.
2. You can either assign or delete an asset tag number.
   - To assign an asset tag number, type asset and a space followed by the new string.

     An asset tag number can have up to 10 characters. Any combination of characters is valid. For example, at the a:\> prompt, type the following command and press <Enter>:

     ```
     asset 12345abcde
     ```

   - To delete an asset tag number without assigning a new one, type asset /d and press <Enter>.
3. When prompted to verify the change to the asset tag number, type y and press <Enter>.

To view the Asset Tag utility help screen, type `asset /?` and press <Enter>.

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Glossary

Dell™ PowerEdge™ 400SC Systems User's Guide

The following list defines or identifies technical terms, abbreviations, and acronyms used in your system documents:

A

Ampere(s)

AC

Alternating current

ACPI

Advanced Configuration and Power Interface

AGP

Advanced graphics port

ambient temperature

The temperature of the area or room where the system is located

ANSI

American National Standards Institute

application

Software designed to help you perform a specific task or series of tasks. Applications run from the operating system.

ARI

Analog Rack Interface

ASCII

American Standard Code for Information Interchange

asset tag

An individual code assigned to a system, usually by a system administrator, for security or tracking purposes

backup

A copy of a program or data file. As a precaution, back up your system's hard drive on a regular basis. Before making a change to the configuration of your system, back up important start-up files from your operating system.

backup battery

The backup battery maintains system configuration, date, and time information in a special section of memory when the system is turned off.

beep code

A diagnostic message in the form of a pattern of beeps from your system's speaker. For example, one beep, followed by a second beep, and then a burst of three beeps is beep code 1-1-3.

BIOS

Basic input/output system. Your system's BIOS contains programs stored on a flash memory chip. The BIOS controls the following:

- Communications between the processor and peripheral devices
- Miscellaneous functions, such as system messages

bit

The smallest unit of information interpreted by your system

blade

A module that contains a processor, memory, and a hard drive. The modules are mounted into a chassis that includes power supplies and fans.

boot routine

When you start your system, the boot routine clears all memory, initializes devices, and loads the operating system. Unless the operating system fails to respond, you can reboot (also called *warm boot*) your system by pressing <Ctrl><Alt><Del>. Otherwise, you must perform a cold boot by pressing the reset button or by turning the system off and then back on.

bootable diskette

A bootable diskette is used to start your system if the system will not boot from the hard drive.

BTU

British thermal unit

bus

An information pathway between the components of a system. Your system contains an expansion bus that allows the processor to communicate with controllers for the peripheral devices connected to the system. Your system also contains an address bus and a data bus for communications between the processor and RAM.

C

Celsius

cache

A fast storage area that keeps a copy of data or instructions for quick data retrieval. When a program makes a request to a disk drive for data that is in the cache, the disk-cache utility can retrieve the data from RAM faster than from the disk drive.

CD

Compact disc. CD drives use optical technology to read data from CDs.

component

As they relate to DMI, manageable components are operating systems, computer systems, expansion cards, and peripherals that are compatible with DMI. Each component is made up of groups and attributes that are defined as relevant to that component.

COM*n*

The device names for the serial ports on your system

control panel

The part of the system that contains indicators and controls, such as the power switch and power indicator

controller

A chip that controls the transfer of data between the processor and memory or between the processor and a peripheral

conventional memory

The first 640 KB of RAM. Conventional memory is found in all systems. Unless they are specially designed, MS-DOS® programs are limited to running in conventional memory.

coprocessor

A chip that relieves the system's processor of specific processing tasks. A math coprocessor, for example, handles numeric processing.

CPU

Central processing unit. See *processor*.

DC

Direct current

DDR

Double-data rate

device driver

A program that allows the operating system or some other program to interface correctly with a peripheral. Some device drivers—such as network drivers—must be loaded from the **config.sys** file or as memory-resident programs (usually, from the **autoexec.bat** file). Others must load when you start the program for which they were designed.

DHCP

Dynamic Host Configuration Protocol

diagnostics

A comprehensive set of tests for your system

DIMM

Dual in-line memory module. See also *memory module*.

DIN

Deutsche Industrie Norm

directory

Directories help keep related files organized on a disk in a hierarchical, "inverted tree" structure. Each disk has a "root" directory. Additional directories that branch off the root directory are called *subdirectories*. Subdirectories may contain additional directories branching off them.

DMA

Direct memory access. A DMA channel allows certain types of data transfer between RAM and a device to bypass the processor.

DMI

Desktop Management Interface. DMI enables the management of your system's software and hardware by collecting information about the system's components, such as the operating system, memory, peripherals, expansion cards, and asset tag.

DNS

Domain Name System

DRAM

Dynamic random-access memory. A system's RAM is usually made up entirely of DRAM chips.

DVD

Digital versatile disc

ECC

Error checking and correction

EEPROM

Electronically erasable programmable read-only memory

EMC

Electromagnetic Compatibility

EMI

Electromagnetic interference

ERA

Embedded remote access. ERA allows you to perform remote, or "out-of-band," server management on your network server using a remote access controller.

ESD

Electrostatic discharge

expansion bus

Your system contains an expansion bus that allows the processor to communicate with controllers for peripherals, such as NICs.

expansion card

An add-in card that plugs into an expansion slot on the computer's system board. An expansion card adds some specialized function to the system by providing an interface between the expansion bus and a peripheral. Examples of expansion cards include NICs and SCSI adapters.

expansion-card connector

A connector on the system board or riser board for plugging in an expansion card

F

Fahrenheit

FAT

File allocation table. The file system structure used by MS-DOS to organize and keep track of file storage. The Microsoft® Windows® operating systems can

optionally use a FAT file system structure.

flash memory

A type of EEPROM chip that can be reprogrammed from a utility on diskette while still installed in a system; most EEPROM chips can only be rewritten with special programming equipment.

format

To prepare a hard drive or diskette for storing files. An unconditional format deletes all data stored on the disk.

FSB

Front-side bus. The FSB is the data path and physical interface between the processor and the main memory (RAM).

ft

Feet

FTP

File transfer protocol

g

Gram(s)

G

Gravities

Gb

Gigabit(s); 1024 megabits or 1,073,741,824 bits

GB

Gigabyte(s); 1024 megabytes or 1,073,741,824 bytes. However, when referring to hard-drive capacity, the term is usually rounded to 1,000,000,000 bytes.

graphics mode

A video mode that can be defined as *x* horizontal by *y* vertical pixels by *z* colors

group

As it relates to DMI, a group is a data structure that defines common information, or attributes, about a manageable component.

guarding

A type of data redundancy in which a set of physical drives stores data and an additional drive stores parity data. See also *mirroring*, *striping*, and *RAID*.

h

Hexadecimal. A base-16 numbering system, often used in programming to identify addresses in the system's RAM and I/O memory addresses for devices. In text, hexadecimal numbers are often followed by *h*.

headless system

A system or device that functions without having a keyboard, mouse, or monitor attached. Normally, headless systems are managed over a network using an Internet browser.

host adapter

A host adapter implements communication between the system's bus and the controller for a peripheral device. (Hard-drive controller subsystems include integrated host adapter circuitry.) To add a SCSI expansion bus to your system, you must install or connect the appropriate host adapter.

Hz

Hertz

I/O

Input/output. A keyboard is an input device, and a monitor is an output device. In general, I/O activity can be differentiated from computational activity.

ID

Identification

IDE

Integrated drive electronics

integrated mirroring

Provides simultaneous physical mirroring of two drives. Integrated mirroring functionality is provided by the system's hardware. See also *mirroring*.

internal processor cache

An instruction and data cache built into the processor

IP

Internet Protocol

IPX

Internetwork Packet eXchange

IRQ

Interrupt request. A signal that data is about to be sent to or received by a peripheral device travels by an IRQ line to the processor. Each peripheral connection must be assigned an IRQ number. Two devices can share the same IRQ assignment, but you cannot operate both devices simultaneously.

jumper

Small blocks on a circuit board with two or more pins emerging from them. Plastic plugs containing a wire fit down over the pins. The wire connects the pins and creates a circuit. Jumpers provide a simple and reversible method of changing the circuitry in a board.

K

Kilo-, indicating 1000

Kb

Kilobit(s); 1024 bits

KB

Kilobyte(s);1024 bytes

Kbps

Kilobit(s) per second

KBps

Kilobyte(s) per second

key combination

A command requiring you to press multiple keys at the same time (for example, <Ctrl><Alt><Del>)

kg

Kilogram(s); 1000 grams

KMM

Keyboard/monitor/mouse

KVM

Keyboard/video/mouse. KVM refers to a switch that allows selection of the system from which the video is displayed and for which the keyboard and mouse are used.

LAN

Local area network. A LAN system is usually confined to the same building or a few nearby buildings, with all equipment linked by wiring dedicated specifically to the LAN.

lb

Pound(s)

LCD

Liquid crystal display

LED

Light-emitting diode; an electronic device that lights up when a current is passed through it

Linux

A version of UNIX® that runs on a variety of hardware systems. Linux is open source software, which is freely available; however, the full distribution of Linux along with technical support and training are available for a fee from vendors such as Red Hat Software.

local bus

On a system with local-bus expansion capability, certain peripheral devices (such as the video adapter circuitry) can be designed to run much faster than they would with a traditional expansion bus. See also *bus*.

m

Meter(s)

mA

Milliampere(s)

MAC

Media Access Control

Mb

Megabit(s); 1,048,576 bits

MB

Megabyte(s); 1,048,576 bytes. However, when referring to hard-drive capacity, the term is often rounded to mean 1,000,000 bytes.

Mbps

Megabits per second

MBps

Megabytes per second

MBR

Master boot record

memory address

A specific location, usually expressed as a hexadecimal number, in the system's RAM

memory module

A small circuit board containing DRAM chips that connects to the system board

memory

An area in your system, other than the hard drive, that stores basic system data. A system can contain several different forms of memory, such as integrated memory (ROM and RAM) and add-in memory modules (DIMMs).

MHz

Megahertz

mirroring

A type of data redundancy in which a set of physical drives stores data and one or more sets of additional drives stores duplicate copies of the data. Mirroring functionality is provided by software. See also *guarding*, *integrated mirroring*, *striping*, and *RAID*.

mm

Millimeter(s)

ms

Millisecond(s)

MS-DOS

Microsoft Disk Operating System

NAS

Network Attached Storage. NAS is one of the concepts used for implementing shared storage on a network. NAS systems have their own operating systems, integrated hardware, and software that are optimized to serve specific storage needs.

NIC

Network interface controller

NMI

Nonmaskable interrupt. A device sends an NMI to signal the processor about hardware errors.

NTFS

The NT File System option in the Windows 2000 operating system

NVRAM

Nonvolatile random-access memory. Memory that does not lose its contents when you turn off your system. NVRAM is used for maintaining the date, time, and system configuration information.

parity

Redundant information that is associated with a block of data

partition

You can divide a hard drive into multiple physical sections called *partitions* with the fdisk command. Each partition can contain multiple logical drives. You must format each logical drive with the format command.

PCI

Peripheral Component Interconnect; a standard for local-bus implementation

PDU

Power distribution unit; a power source with multiple power outlets that provides electrical power to servers and storage systems in a rack

peripheral

An internal or external device—such as a diskette drive or keyboard—connected to a system

PGA

Pin grid array; a type of processor socket that allows you to remove the processor chip

pixel

A single point on a video display. Pixels are arranged in rows and columns to create an image. A video resolution, such as 640 x 480, is expressed as the number of pixels across by the number of pixels up and down.

POST

Power-on self-test. Before the operating system loads when you turn on your system, the POST tests various system components such as RAM and hard drives.

processor

The primary computational chip inside the system that controls the interpretation and execution of arithmetic and logic functions. Software written for one processor must usually be revised to run on another processor. *CPU* is a synonym for processor.

protected mode

An operating mode that allows operating systems to implement:

- A memory address space of 16 MB to 4 GB
- Multitasking
- Virtual memory, a method for increasing addressable memory by using the hard drive

The Windows 2000 and UNIX 32-bit operating systems run in protected mode. MS-DOS cannot run in protected mode.

PS/2

Personal System/2

PXE

Preboot eXecution Environment

RAC

Remote access controller

RAID

Redundant array of independent disks. RAID is a method of providing data redundancy. Some common implementations of RAID include RAID 0, RAID 1, RAID 5, RAID 10, and RAID 50. See also *guarding*, *mirroring*, and *striping*.

RAM

Random-access memory. RAM is the system's primary temporary storage area for program instructions and data. Any information stored in RAM is lost when you turn off your system.

RAS

Remote Access Service. This service allows users running the Windows operating system to remotely access a network from their system using a modem.

readme file

A text file, usually shipped with software or hardware, that contains information supplementing or updating the product's documentation

read-only file

A read-only file is one that you are prohibited from editing or deleting.

ROM

Read-only memory. Your system contains some programs essential to its operation in ROM code. A ROM chip retains its contents even after you turn off your system. Examples of code in ROM include the program that initiates your system's boot routine and the POST.

ROMB

RAID on Motherboard

rpm

Revolutions per minute

SATA

Serial Advanced Technology Attachment; a type of storage interface

SCSI

Small computer system interface; an I/O bus interface with faster data transmission rates than standard ports

SDRAM

Synchronous dynamic random-access memory

sec

Second(s)

serial port

An I/O port used most often to connect a modem to your system. You can usually identify a serial port on your system by its 9-pin connector.

service tag

A bar code label on the system used to identify it when you call Dell for technical support

SMART

Self-Monitoring Analysis and Reporting Technology, which allows hard drives to report errors and failures to the system BIOS and then display an error message on the screen. To take advantage of this technology, you must have a SMART-compliant hard drive and the proper support in the system BIOS.

SMP

Symmetric multiprocessing. SMP is a system that has two or more processors connected via a high-bandwidth link and managed by an operating system, where each processor has equal access to I/O devices.

SNMP

Simple Network Management Protocol. SNMP is an industry-standard interface that allows a network manager to remotely monitor and manage workstations.

striping

Disk striping writes data across three or more disks in an array, but only uses a portion of the space on each disk. The amount of space used by a "stripe" is the same on each disk used. A virtual disk may use several stripes on the same set of disks in an array. See also *guarding*, *mirroring*, and *RAID.*

SVGA

Super video graphics array. VGA and SVGA are video standards for video adapters with greater resolution and color display capabilities than previous standards.

system board

As the main circuit board, the system board usually contains most of your system's integral components, such as the processor, RAM, controllers for peripherals, and various ROM chips.

system configuration information

Data stored in memory that tells a system what hardware is installed and how the system should be configured for operation

system diskette

See *bootable diskette*.

system memory

See *RAM*.

System Setup program

A BIOS-based program that allows you to configure your system's hardware and customize the system's operation by setting features such as password protection. Because the System Setup program is stored in NVRAM, any settings remain in effect until you change them again.

system.ini file

A start-up file for the Windows operating system. When you start Windows, it consults the **system.ini** file to determine a variety of options for the Windows operating environment. Among other things, the **system.ini** file records which video, mouse, and keyboard drivers are installed for Windows.

termination

Some devices (such as the last device at each end of a SCSI cable) must be terminated to prevent reflections and spurious signals in the cable. When such devices are connected in a series, you may need to enable or disable the termination on these devices by changing jumper or switch settings on the devices or by changing settings in the configuration software for the devices.

UL

Underwriters Laboratories

UNIX

UNiversal Internet eXchange. UNIX, precursor to Linux, is an operating system written in the C programming language.

uplink port

A port on a network hub or switch used to connect to other hubs or switches without requiring a crossover cable

UPS

Uninterruptible power supply; a battery-powered unit that automatically supplies power to your system in the event of an electrical failure

USB

Universal Serial Bus. A USB connector provides a single connection point for multiple USB-compliant devices, such as mice and keyboards. USB devices can be connected and disconnected while the system is running.

utility

A program used to manage system resources—memory, disk drives, or printers, for example

UTP

Unshielded twisted pair

V

Volt(s)

VAC

Volt(s) alternating current

VDC

Volt(s) direct current

VGA

Video graphics array. VGA and SVGA are video standards for video adapters with greater resolution and color display capabilities than previous standards.

video adapter

The logical circuitry that provides—in combination with the monitor—your system's video capabilities. A video adapter may be integrated into the system board or may be an expansion card that plugs into an expansion slot.

video driver

A program that allows graphics-mode application programs and operating systems to display at a chosen resolution with the desired number of colors. Video drivers may need to match the video adapter installed in the system.

video memory

Most VGA and SVGA video adapters include memory chips in addition to your system's RAM. The amount of video memory installed primarily influences the

number of colors that a program can display (with the appropriate video drivers and monitor capabilities).

video resolution

Video resolution—800 x 600, for example—is expressed as the number of pixels across by the number of pixels up and down. To display a program at a specific graphics resolution, you must install the appropriate video drivers and your monitor must support the resolution.

W

Watt(s)

WH

Watt-hour(s)

win.ini file

A start-up file for the Windows operating system. When you start Windows, it consults the **win.ini** file to determine a variety of options for the Windows operating environment. The **win.ini** file also usually includes sections that contain optional settings for Windows application programs that are installed on the hard drive.

Windows 2000

An integrated and complete Microsoft Windows operating system that does not require MS-DOS and that provides advanced operating system performance, improved ease of use, enhanced workgroup functionality, and simplified file management and browsing

Windows Powered

A Windows operating system designed for use on NAS systems. For NAS systems, the Windows Powered operating system is dedicated to file service for network clients.

Windows Server 2003

A set of Microsoft software technologies that enable software integration through the use of XML Web services. XML Web services are small reusable applications written in XML that allow data to be communicated between otherwise unconnected sources.

XML

eXtensible Markup Language. XML is a way to create common information formats and to share both the format and the data on the World Wide Web, intranets, and elsewhere.

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