

Dell™ PowerVault™ 725N NAS Systems User's Guide

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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 STP

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Technical Specifications

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Technical Specifications

Processor	
Processor type	Intel® Celeron® processor with a speed of at least 1.7 GHz or Intel Pentium® 4 processor with a speed of 2.0 GHz or 2.6 GHz

Expansion Bus	
Bus type	one PCI and one PCI-X
Expansion slots	one PCI 64-bit, 33 MHz and one PCI-X 64-bit, 133 MHz

Memory	
Architecture	PC-2100 SDRAM
Memory module sockets	three DIMM sockets
Memory module capacities	at least 128-MB registered DDR SDRAM DIMMs
Minimum RAM	256 MB

Drives	
Hard drives	four 1-inch, internal IDE hard drives, each with capacities of no less than 40 GB

Ports and Connectors	
Externally accessible:	
Serial	one 9-pin connector; UART 6550-compatible
USB	two 4-pin connectors
NIC	two RJ45 connector for integrated 10/100/1000 NICs
PS/2 style keyboard	6-pin mini-DIN connector
PS/2-compatible mouse	6-pin mini-DIN connector
Video	one 15-pin connector

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

Power	
Power supply:	
Wattage	250 watts
Voltage	100–240 VAC, 50–60 Hz
Output hold up time	20 ms minimum
Maximum inrush current	under typical line conditions and over the entire system ambient operating range, the inrush current may reach 30A per power supply for 10 ms or less
System battery	3.0-V lithium ion coin cell

Physical	
Rack:	
Height	4.2 cm (1.66 inches)
Width	42.7 cm (16.8 inches)
Depth	58.4 cm (23 inches)
Weight	12.27 kg (27 lb), maximum configuration

Environmental	
Temperature:	

Operating	10°C to 35°C (50°F to 95°F) at 10,000 feet above sea level 10°C to 40°C (50°F to 104°F) at sea level
Storage	-40°C to 65°C (-40°F to 149°F)
Relative humidity:	
Operating	20% to 80% (noncondensing)
Storage	5% to 95% (noncondensing)
Maximum vibration:	
Operating:	0.25 G at 3 to 200 Hz for 15 minutes
Storage:	0.50 G at 3 to 200 Hz for 15 minutes
Maximum shock:	
Operating	one shock pulse in the positive and negative x, y, and z axes (one pulse on each side of the system) of 31 G for up to 2 ms
Storage (non-operational)	six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms
Altitude:	
Operating	-16 to 3,048 m (-50 to 10,000 ft.)
Storage	-16 to 10,600 m (-50 to 35,000 ft.)

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System Overview

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Your Dell™ PowerVault™ 725N NAS system is a low-cost, high-performance NAS system that provides optimized file-serving capabilities on a rackmount or deskside system.

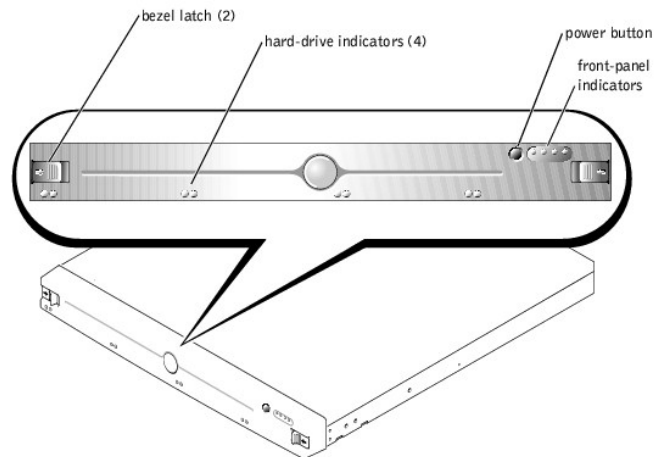
This section describes the major hardware and software features of your system and power protection devices and provides information about other documents you may need when setting up your system and how to obtain technical assistance.

Front-Panel Features

[Figure 1-1](#) shows the front-panel features of the system.

See the *Installation and Troubleshooting Guide* for more information about the front-panel indicators.

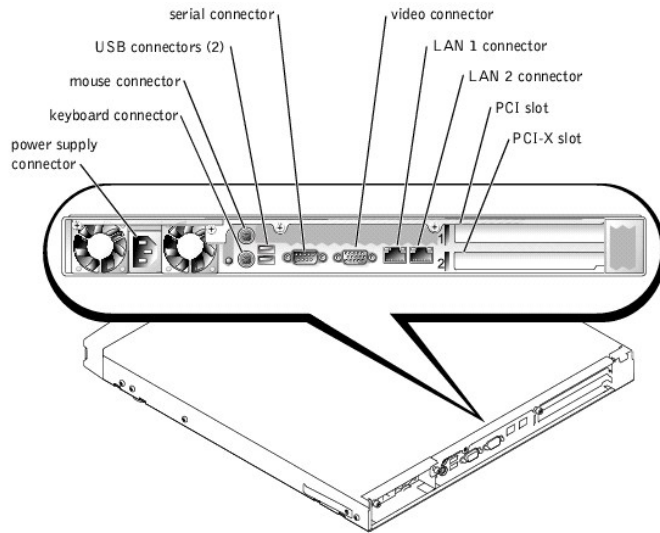
Figure 1-1. Front-Panel Features



Back-Panel Features

[Figure 1-2](#) shows the back-panel features of the system. For specific information about the back-panel connectors and indicators, see the *Installation and Troubleshooting Guide*.

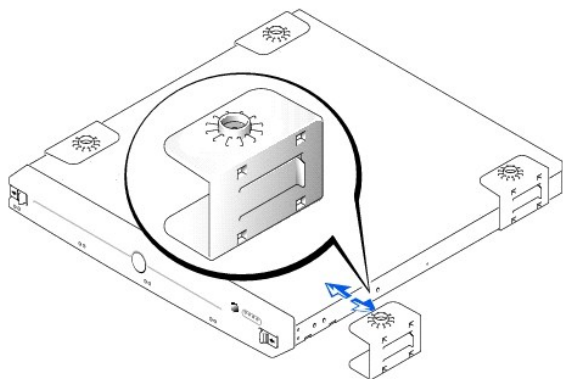
Figure 1-2. Back-Panel Features



Optional Support Brackets

The system comes with optional plastic brackets that you can clip to the sides (see [Figure 1-3](#)). Use this option if you do not plan to install the system in a rack. You can also use the brackets to stack systems on top of each other. If you are installing the system in a rack, see your *Rack Installation Guide*.

Figure 1-3. Optional Support Brackets



System Features

- 1 1-U rack-mountable chassis.
- 1 Intel® Celeron® processor with a speed of at least 1.7 GHz (Celeron) or Intel Pentium® 4 processor with a speed of 2.0 GHz or 2.6 GHz.
- 1 Three 64-bit DIMM slots, each supporting at least 128 MB DDR SDRAM.
- 1 Four hot-pluggable IDE hard drives connected to four IDE master channels in a RAID configuration.
- 1 One 250 W power supply.
- 1 Three system cooling fans and two power-supply cooling fans.
- 1 Serial connector used for console redirection.
- 1 Two integrated Broadcom 10/100/1000 BASE-T NICs with RJ45 Ethernet ports.
- 1 One 64-bit, 133 MHz PCI-X slot, and one 64-bit, 33 MHz PCI slot. Both slots support full-height, half-length cards.
- 1 Two integrated IDE controllers.
- 1 Support for an optional integrated IDE RAID controller for hardware-based RAID (if installed).
- 1 Embedded systems management circuitry that monitors operation of the system fans as well as critical system voltages and temperatures. The systems management circuitry works in conjunction with your systems management software.

Supported Operating System

Your system supports the Microsoft® Windows® Powered operating system.

Software Features



- 1 Microsoft Server Appliance Kit.
 - 1 Services for UNIX®, Novell® NetWare®, and Macintosh (integrated on the Microsoft Windows Powered operating system).
 - 1 Protocol support for TCP/IP, DHCP (client support), DNS (client support), NIS (client support), IPX, and AppleTalk.
 - 1 Disk management through Dell OpenManage™ Array Manager.
 - 1 Dell ActiveArchive™ snapshot software.
 - 1 Diagnostics for evaluating your system's components and devices. For information about using the system diagnostics, see your *Installation and Troubleshooting Guide*.
-

Power Protection Devices

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

- 1 PDU — Uses circuit breakers to ensure that the AC current load does not exceed the PDU's rating.
 - 1 Surge protector — Prevents voltage spikes, such as those that may occur during an electrical storm, from entering the system through the electrical outlet. Surge protectors do not provide protection from brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.
 - 1 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.
 - 1 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 15 minutes to approximately an hour. A UPS that provides only 5 minutes of battery power allows you to shutdown the system. Use surge protectors and PDUs 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.
 - 1 The *Rack Installation Guide* included with your rack solution describes how to install your system into a rack.
 - 1 The *Setting Up Your System* document provides an overview of initially setting up your system.
 - 1 The *Installation and Troubleshooting Guide* describes how to troubleshoot the system and install or replace system components.
 - 1 The *System Administrator's Guide* provides system configuration, operation, and management information.
 - 1 Systems management software documentation describes the features, requirements, installation, and basic operation of the software.
 - 1 Documentation for any components you purchased separately provides information to configure and install these options.
 - 1 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.
 - 1 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* or *System Administrator's 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 Setup Utility


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You can use the System Setup utility as follows:

- 1 To change the system configuration information after you add, change, or remove any hardware in your system
- 1 To set or change user-selectable options—for example, the time or date on your system
- 1 To enable or disable integrated devices in your system


After you set up your system, run the System Setup utility to become familiar with your system configuration information and optional settings. It is recommended that you record the information for future reference.

 **NOTE:** Under normal operating conditions, your NAS system operates as a "headless" system and does not require a keyboard, monitor, and mouse. However, to perform the procedures in this section, you must connect these hardware components to the system.

Entering the System Setup Utility

To enter the System Setup utility, perform the following steps:

1. Connect a keyboard, monitor, and mouse to the system.
2. Turn on or restart your NAS system.

 **NOTE:** When you turn on the system, press the power button for less than two seconds. If you press the power button for longer than 3 seconds, the NAS system shuts down and automatically rebuilds its RAID arrays, extending the reboot process.

3. Press <F2> immediately after you see the following message:

Press <F2> to enter the Function Select menu

If you wait too long and your operating system begins to load into memory, allow the system to complete the load operation, and then shut down the NAS system and try again.

4. When the Function Select menu appears, press 1 to run the System Setup utility.

Responding to Error Messages

If an error message appears on your screen while the system is booting, make a note of the message. Next, before entering the System Setup utility, see "System Beep Codes" and "System Messages" in your Installation and Troubleshooting Guide for an explanation of the message and suggestions for correcting any errors.

Navigating the System Setup Utility

[Table 2-1](#) lists the basic keys used to view or change information in the screens and to exit the program.

Keys	Action
Down arrow	Moves to the next field.
Up arrow	Moves to the previous field.
Left arrow	Moves to the previous screen.
Right arrow	Moves to the next screen.
<Enter>	Moves to a submenu or selects an item.
<+> <->	Cycles through the settings in a field.
<Esc>	Exits the submenu or the System Setup utility. For most of the options, any changes you make are recorded but do not take effect until the next time you boot the system. For some options (as noted in the Help area), the changes take effect immediately.

System Setup Options

This section provides information about using the System Setup utility to change the default settings on your system.

See the online help for information on submenu items.

Main Screen

[Table 2-2](#) lists the options for the information fields that appear in the **System Setup** screen.

Option	Description
Version	Displays the BIOS version.
BIOS Build Date	Displays the BIOS build date.
Processor Type	Displays the type of processor installed in the system.
Processor Speed	Displays the processor speed.
Processor Cache	Displays the amount of processor cache.
System Memory	Displays the amount of system memory.
System Time	Resets the time on the system's internal clock.
System Date	Resets the date on the system's internal calendar.

Advanced Screen

[Table 2-3](#) lists the options for the information fields that appear in the **Advanced** screen. Use this screen to make changes to the basic operation of your system.

Option	Description
IDE Configuration	Displays the characteristics of the IDE2 and IDE3 hard drives, which are the last two drives of the system. The BIOS automatically detects the latest hard drives.
Event Log Configuration	Enables and clears the event logs. See the online help for information on submenu items.
OnBoard Devices Configuration	Enables and disables onboard devices.
System Health Monitoring Hardware	Displays the current system status of the system fans and processor temperature.

Power Screen

[Table 2-4](#) lists the options for the information fields that appear in the **Power** screen. Use this screen to set parameters for system power management operation.

Option	Description
AC Power Failure	Sets the power state after a shutdown caused by an unexpected interruption in AC power. If the value is set to Last State , the system returns to the last power state.
Power Button Mode	Enables or disables the system from booting using the power button.

Boot Screen

[Table 2-5](#) lists the options for the information fields that appear in the **Boot** screen. Use this screen to modify the boot sequences of the internal hard drives.

Option	Description
Boot Device Priority	Determines where and in which order the system looks for a bootable operating system each time it is started.
Hard Disk Drives	Selects the boot sequence of the hard drives.

Security Screen

[Table 2-6](#) lists the options for the information fields that appear in the **Security** screen. Use this screen to enable the supervisor and user passwords.

Option	Description
Change System Password	Sets a system password.
Clear System Password	Clears a system password.

 **NOTE:** See the *Installation and Troubleshooting Guide* for information about changing and clearing passwords.

Exit Screen

[Table 2-7](#) lists the options for the information fields that appear in the **Exit** screen. Use this screen to save or discard any changes to the System Setup utility and default settings.

Option	Description
Exit Saving Changes	Saves any changes that you made in the System Setup utility and exits.
Exit Discarding Change	Exits the System Setup utility and does not save any changes you made.
Load Optimal Defaults	Configures the settings in the System Setup utility that will provide your system with the best performance.
Discard Changes	Discards any changes you made to the System Setup utility.

Updating the BIOS

See the *System Administrator's Guide* for information about updating the BIOS.

Disabling a Forgotten Password

See the *Installation and Troubleshooting Guide*.

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Glossary

Dell™ PowerVault™ 725N NAS Systems User's Guide

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

A

Abbreviation for ampere(s).

AC

Abbreviation for alternating current.

ACPI

Abbreviation for Advanced Configuration and Power Interface.

adapter card

An expansion card that plugs into an expansion-card connector on the computer's system board. An adapter card adds some specialized function to the system by providing an interface between the expansion bus and a peripheral device. Examples of adapter cards include network cards, sound cards, and SCSI adapters.

ambient temperature

The temperature of the area or room where the system is located. Also known as room temperature.

ANSI

Abbreviation for American National Standards Institute.

application

Software, such as a spreadsheet or word processor, designed to help you perform a specific task or series of tasks. Application programs run from the operating system.

asset tag code

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, you should back up your system's hard drive on a regular basis. Before making a change to the configuration of your system, you should 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

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

- 1 Communications between the microprocessor and peripheral devices, such as the keyboard and the video adapter
- 1 Miscellaneous functions, such as system messages

bit

The smallest unit of information interpreted by your system.

boot routine

When you start your system, it 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>; otherwise, you must perform a cold boot by pressing the reset button or by turning the system off and then back on.

bootable diskette

You can start your system from a bootable diskette. To make a bootable diskette, insert a diskette in the diskette drive, type `sys a:` at the command line prompt, and press <Enter>. Use this bootable diskette if your system will not boot from the hard drive.

bps

Abbreviation for bits per second.

BTU

Abbreviation for British thermal unit.

bus

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

byte

Eight contiguous bits of information, the basic data unit used by your system.

C

Abbreviation for Celsius.

cache

A fast storage area that keeps a copy of data or instructions for quicker data retrieval. For example, your system's BIOS may cache ROM code in faster RAM. Or, a disk-cache utility may reserve RAM in which to store frequently accessed information from your system's disk drives: 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

Abbreviation for compact disc. CD drives use optical technology to read data from CDs. CDs are read-only storage devices; you cannot write new data to a CD with standard CD drives.

COM_n

The device names for the first through fourth serial ports on your system are COM1, COM2, COM3, and COM4. The default interrupt for COM1 and COM3 is IRQ4, and the default interrupt for COM2 and COM4 is IRQ3. Therefore, you must be careful when configuring software that runs a serial device so that you don't create an interrupt conflict.

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.

controller

A chip that controls the transfer of data between the microprocessor and memory or between the micro-processor and a peripheral device such as a disk drive or the keyboard.

control panel

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

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 microprocessor of specific processing tasks. A math coprocessor, for example, handles numeric processing. A graphics coprocessor handles video rendering.

CPU

Abbreviation for central processing unit. See *microprocessor*.

DC

Abbreviation for direct current.

DDR

Abbreviation for double-data rate.

device driver

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

DHCP

Acronym for Dynamic Host Configuration Protocol.

diagnostics

A comprehensive set of tests for your system. See your *Installation and Troubleshooting Guide* for more information about using diagnostics.

DIMM

Acronym for dual in-line memory module. A small circuit board containing DRAM chips that connects to the system board.

DIN

Acronym for *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; for example, a `c:\>` prompt normally indicates that you are at the root directory of hard drive C. Additional directories that branch off the root directory are called *subdirectories*. Subdirectories may contain additional directories branching off them.

DMA

Abbreviation for direct memory access. A DMA channel allows certain types of data transfer between RAM and a device to bypass the microprocessor.

DMI

Abbreviation for Desktop Management Interface. DMI enables the management of your system's software and hardware. DMI collects information about the system's components, such as the operating system, memory, peripherals, expansion cards, and asset tag. Information about the system's components is displayed as a MIF file.

DNS

Abbreviation for Domain Name System.

DRAM

Abbreviation for dynamic random-access memory. A system's RAM is usually made up entirely of DRAM chips. Because DRAM chips cannot store an electrical charge indefinitely, your system continually refreshes each DRAM microprocessor in the system.

DVD

Abbreviation for digital versatile disk.

ECC

Abbreviation for error checking and correction.

EEPROM

Acronym for electrically erasable programmable read-only memory.

EISA

Acronym for Extended Industry-Standard Architecture, a 32-bit expansion-bus design. The expansion-card connectors in an EISA system are also compatible with 8- or 16-bit ISA expansion cards.

To avoid a configuration conflict when installing an EISA expansion card, you must use the EISA Configuration Utility. This utility allows you to specify which expansion slot contains the card and obtains information about the card's required system resources from a corresponding EISA configuration file.

EMC

Abbreviation for Electromagnetic Compatibility.

EMI

Abbreviation for electromagnetic interference.

ERA

Abbreviation for 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

Abbreviation for electrostatic discharge.

expanded memory

A technique for accessing RAM above 1 MB. To enable expanded memory on your system, you must use an EMM. You should configure your system to support expanded memory only if you run application programs that can use (or require) expanded memory.

expansion bus

Your system contains an expansion bus that allows the microprocessor to communicate with controllers for peripheral devices, such as a network card or an internal modem.

expansion-card connector

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

extended memory

RAM above 1 MB. Most software that can use it, such as the Microsoft® Windows® operating system, requires that extended memory be under the control of an XMM.

external cache memory

A RAM cache using SRAM chips. Because SRAM chips operate at several times the speed of DRAM chips, the microprocessor can retrieve data and instructions faster from external cache memory than from RAM.

F

Abbreviation for Fahrenheit.

FAT

Acronym for file allocation table. The file system structure used by MS-DOS to organize and keep track of file storage. The Windows NT® operating systems can optionally use a FAT file system structure.

FCC

Abbreviation for Federal Communications Commission.

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

Abbreviation for front side bus. The FSB is the data path and physical interface between the microprocessor and the main memory (RAM).

ft

Abbreviation for feet.

FTP

Abbreviation for file transfer protocol.

g

Abbreviation for gram(s).

G

Abbreviation for gravities.

GB

Abbreviation for gigabyte(s). A gigabyte equals 1,024 megabytes or 1,073,741,824 bytes.

graphics coprocessor

See coprocessor.

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.

h

Abbreviation for 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. The sequence of decimal numbers from 0 through 16, for example, is expressed in hexadecimal notation as 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10. 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 an internet or

intranet network using an internet browser. Some systems provide for attaching a keyboard, mouse, and monitor for specific management or service needs, others do not.

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

Abbreviation for hertz.

IDE

Abbreviation for integrated drive electronics

I/O

Abbreviation for input/output. A keyboard is an input device, and a printer is an output device. In general, I/O activity can be differentiated from computational activity. For example, when a program sends a document to the printer, it is engaging in output activity; when the program sorts a list of terms, it is engaging in computational activity.

ID

Abbreviation for identification.

interlacing

A technique for increasing video resolution by only up-dating alternate horizontal lines on the screen. Because interlacing can result in noticeable screen flicker, most users prefer noninterlaced video adapter resolutions.

internal microprocessor cache

An instruction and data cache built in to the microprocessor. The Intel® Pentium® microprocessor includes a 16-KB internal cache, which is set up as an 8-KB read-only instruction cache and an 8-KB read/write data cache.

IP

Abbreviation for Internet Protocol.

IPX

Abbreviation for Internetwork Packet EXchange.

IRQ

Abbreviation for 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 microprocessor. Each peripheral connection must be assigned an IRQ number. For example, the first serial port in your system (COM1) is assigned to IRQ4 by default. Two devices can share the same IRQ assignment, but you cannot operate both devices simultaneously.

ITE

Abbreviation for information technology equipment.

jumper

Jumpers are 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 printed circuit board.

K

Abbreviation for kilo-, indicating 1,000.

KB

Abbreviation for kilobyte(s), 1,024 bytes.

KB/sec

Abbreviation for kilobyte(s) per second.

Kbit(s)

Abbreviation for kilobit(s), 1,024 bits.

Kbit(s)/sec

Abbreviation for kilobit(s) per second.

key combination

A command requiring you to press multiple keys at the same time. For example, you can reboot your system by pressing the <Ctrl><Alt> key combination.

kg

Abbreviation for kilogram(s), 1,000 grams.

kHz

Abbreviation for kilohertz, 1,000 hertz.

LAN

Acronym for 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

Abbreviation for pound(s).

LED

Abbreviation for light-emitting diode. An electronic device that lights up when a current is passed through it.

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. Some local-bus designs allow peripherals to run at the same speed and with the same width data path as the system's microprocessor.

m

Abbreviation for meter(s).

mA

Abbreviation for milliampere(s).

MAC

Abbreviation for Media Access Control.

mAh

Abbreviation for milliampere-hour(s).

math coprocessor

See coprocessor.

Mb

Abbreviation for megabit.

MB

Abbreviation for megabyte(s). The term *megabyte* means 1,048,576 bytes; however, when referring to hard drive storage, the term is often rounded to mean 1,000,000 bytes.

MB/sec

Abbreviation for megabytes per second.

Mbps

Abbreviation for megabits per second.

MBR

Abbreviation for master boot record.

memory

A system can contain several different forms of memory, such as RAM, ROM, and video memory. Frequently, the word *memory* is used as a synonym for RAM; for example, an unqualified statement such as "a system with 16 MB of memory" refers to a system with 16 MB of RAM.

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.

MHz

Abbreviation for megahertz.

microprocessor

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

mm

Abbreviation for millimeter(s).

mouse

A pointing device that controls the movement of the cursor on a screen. Mouse-aware software allows you to activate commands by clicking a mouse button while pointing at objects displayed on the screen.

MPEG

Acronym for Motion Picture Experts Group. MPEG is a digital video file format.

ms

Abbreviation for millisecond(s).

MS-DOS

Abbreviation for Microsoft Disk Operating System.

NAS

Abbreviation for Network Attached Storage. Network-attached storage (NAS) is one of the concepts used for implementing shared storage on a network. The network communication uses Common Internet File System (CIFS) for Microsoft Windows environments, Network File System (NFS) for UNIX® environments, FTP, http, and other networking protocols.

NAS system

A NAS system is typically a system or component that is a dedicated, high-performance, high-speed communicating system. NAS systems have their own operating systems, integrated hardware, and software that are optimized to stand alone and serve specific storage needs. Essentially NAS systems are types of plug-and-play systems with the single purpose of serving your storage needs.

Dell's NAS systems are designed to easily add storage to a workgroup, small office, or small business network. These *headless* systems can be managed from any browser and offer data security capabilities similar to general-purpose servers. By design, NAS systems off-load file management work from the general-purpose server. Also, low-end NAS systems can be used by a peer-to-peer network to support "always-on" access to information. When a NAS system is positioned behind an Internet router, it can provide a small office with a cost effective file server that is *future proofed* by the fact that adding a general-purpose server does not obsolete the NAS system.

NDIS

Abbreviation for Network Driver Interface Specification.

NIC

Acronym for network interface controller.

NMI

Abbreviation for nonmaskable interrupt. A device sends an NMI to signal the microprocessor about hardware errors, such as a parity error.

noninterlaced

A technique for decreasing screen flicker by sequentially refreshing each horizontal line on the screen.

ns

Abbreviation for nanosecond(s), one billionth of a second.

NTFS

Abbreviation for the NT File System option in the Windows NT® operating system.

NVRAM

Abbreviation for 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.

partition

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

After partitioning the hard drive, you must format each logical drive with the format command.

PCI

Abbreviation for Peripheral Component Interconnect. PCI is a standard for local-bus implementation developed by Intel Corporation.

PDU

Abbreviation for power distribution unit. A PDU is a power source with multiple power outlets that provides electrical power to servers and storage systems in a rack.

peripheral device

An internal or external device—such as a printer, a disk drive, or a keyboard—connected to a system.

PGA

Abbreviation for pin grid array, a type of microprocessor socket that allows you to remove the microprocessor 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

Acronym for power-on self-test. Before the operating system loads when you turn on your system, the POST tests various system components such as RAM, the disk drives, and the keyboard.

program diskette set

The set of diskettes from which you can perform a complete installation of an operating system or application program. When you reconfigure a program, you often need its program diskette set.

protected mode

An operating mode supported by 80286 or higher microprocessors, protected mode allows operating systems to implement:

- 1 A memory address space of 16 MB (80286 micro--processor) to 4 GB (Intel386™ or higher micro-processor)
- 1 Multitasking
- 1 Virtual memory, a method for increasing addressable memory by using the hard drive

The Windows NT and UNIX® 32-bit operating systems run in protected mode. MS-DOS cannot run in protected mode; however, some programs that you can start from MS-DOS, such as the Windows operating system, are able to put the system into protected mode.

PS/2

Abbreviation for Personal System/2.

PXE

Acronym for Preboot Execution Environment.

RAID

Acronym for redundant array of independent disks.

RAM

Acronym for random-access memory. The system's primary temporary storage area for program instructions and data. Each location in RAM is identified by a number called a *memory address*. Any information stored in RAM is lost when you turn off your system.

RAS

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

read-only file

A read-only file is one that you are prohibited from editing or deleting. A file can have read-only status if:

- 1 Its read-only attribute is enabled.
- 1 It resides on a physically write-protected diskette or on a diskette in a write-protected drive.
- 1 It is located on a network in a directory to which the system administrator has assigned read-only rights to you.

readme file

A text file included with a software package or hardware product that contains information supplementing or updating the documentation for the software or hardware. Typically, readme files provide installation information, describe new product enhancements or corrections that have not yet been documented, and list known problems or other things you need to be aware of as you use the software or hardware.

real mode

An operating mode supported by 80286 or higher microprocessors, real mode imitates the architecture of an 8086 microprocessor.

ROM

Acronym for read-only memory. Your system contains some programs essential to its operation in ROM code. Unlike RAM, 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

Acronym for RAID on Motherboard.

rpm

Abbreviation for revolutions per minute.

RTC

Abbreviation for real-time clock. Battery-powered clock circuitry inside the system that keeps the date and time after you turn off the system.

SA

Abbreviation for server appliance.

SCSI

Acronym for small computer system interface. An I/O bus interface with faster data transmission rates than standard ports. You can connect up to seven devices (15 for some newer SCSI types) to one SCSI interface.

SDMS

Abbreviation for SCSI device management system.

SDRAM

Acronym for synchronous dynamic random-access memory.

sec

Abbreviation for 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 number

A bar code label on the system that identifies it when you call Dell for customer or technical support.

SIMM

Acronym for single in-line memory module. A small circuit board containing DRAM chips that connects to the system board.

SMART

Acronym for Self-Monitoring Analysis and Reporting Technology. A technology that allows hard drives to report errors and failures to the system BIOS, which then displays 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

Abbreviation for symmetric multiprocessing. SMP is a system that has two or more microprocessors connected via a high-bandwidth link and managed by an operating system, where each microprocessor has equal access to I/O devices. This is in contrast to parallel processing, where a front-end microprocessor handles all I/O to disks, terminals, local area networks, and so on.

SNMP

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

SRAM

Abbreviation for static random-access memory. Because SRAM chips do not require continual refreshing, they are substantially faster than DRAM chips.

SVGA

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

To display a program at a specific resolution, you must install the appropriate video drivers and your monitor must support the resolution. Similarly, the number of colors that a program can display depends on the capabilities of the monitor, the video driver, and the amount of video memory installed in the system.

system board

As the main circuit board, the system board usually contains most of your system's integral components, such as the following:

- 1 Microprocessor
- 1 RAM
- 1 Controllers for standard peripheral devices, such as the keyboard
- 1 Various ROM chips

Frequently used synonyms for system board are *motherboard* and *logic board*.

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

System diskette is a synonym for *bootable diskette*.

system memory

System memory is a synonym for *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 such features as password protection and energy management. Some options in the System Setup program require that you reboot the system (or the system may reboot automatically) in order to make a hardware configuration change. 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.

Running the Control Panel or Windows Setup program may change options in the **system.ini** file. On other occasions, you may need to change or add options to the **system.ini** file manually with a text editor, such as Notepad.

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.

text mode

A video mode that can be defined as *x* columns by *y* rows of characters.

UL

Abbreviation for Underwriters Laboratories.

UMB

Abbreviation for upper memory blocks.

UNIX

Abbreviation for UNiversal Internet eXchange. UNIX, precursor to Linux, is an operating system written in the C programming language. Known for its portability and flexibility, UNIX has become a leading operating system for computer workstations.

upper memory area

The 384 KB of RAM located between 640 KB and 1 MB. If the system has an Intel386 or higher microprocessor, a utility called a *memory manager* can create UMBS in the upper memory area, in which you can load device drivers and memory-resident programs.

UPS

Abbreviation for uninterruptible power supply. A battery-powered unit that automatically supplies power to your system in the event of an electrical failure.

USB

Abbreviation for Universal Serial Bus. A USB connector provides a single connection point for multiple USB-compliant devices, such as mice, keyboards, printers, and system speakers. USB devices can also 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

Abbreviation for unshielded twisted pair.

V

Abbreviation for volt(s).

VAC

Abbreviation for volt(s) alternating current.

VCCI

Abbreviation for Voluntary Control Council for Interference.

VDC

Abbreviation for volt(s) direct current.

VESA

Acronym for Video Electronics Standards Association.

VGA

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

To display a program at a specific resolution, you must install the appropriate video drivers and your monitor must support the resolution. Similarly, the number of colors that a program can display depends on the capabilities of the monitor, the video driver, and the amount of video memory installed for the video adapter.

VGA feature connector

On some systems with a built-in VGA video adapter, a VGA feature connector allows you to add an enhancement adapter, such as a video accelerator, to your system. A VGA feature connector can also be called a *VGA pass-through connector*.

video adapter

The logical circuitry that provides—in combination with the monitor—your system's video capabilities. A video adapter may support more or fewer features than a specific monitor offers. Typically, a video adapter comes with video drivers for displaying popular application programs and operating systems in a variety of video modes.

On some systems, a video adapter is integrated into the system board. Also available are many video adapter cards that plug into an expansion-card connector.

Video adapters often include memory separate from RAM on the system board. The amount of video memory, along with the adapter's video drivers, may affect the number of colors that can be simultaneously displayed. Video adapters can also include their own coprocessor for faster graphics rendering.

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. A software package may include some "generic" video drivers. Any additional 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 mode

Video adapters normally support multiple text and graphics display modes. Character-based software displays in text modes that can be defined as *x* columns by *y* rows of characters. Graphics-based software displays in graphics modes that can be defined as *x* horizontal by *y* vertical pixels by *z* colors.

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.

VRAM

Abbreviation for video random-access memory. Some video adapters use VRAM chips (or a combination of VRAM and DRAM) to improve video performance. VRAM is dual-ported, allowing the video adapter to update the screen and receive new image data at the same time.

W

Abbreviation for watt(s).

WH

Abbreviation for 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. Among other things, the **win.ini** file records what printer(s) and fonts are installed for Windows. The win.ini file also usually includes sections that contain optional settings for Windows application programs that are installed on the hard drive.

Running the Control Panel or Windows Setup program may change options in the **win.ini** file. On other occasions, you may need to change or add options to the **win.ini** file manually with a text editor such as Notepad.

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 NT

High-performance server and workstation operating system software developed by Microsoft that is intended for technical, engineering, and financial applications.

Windows Powered

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

write-protected

Read-only files are said to be *write-protected*. You can write-protect a 3.5-inch diskette by sliding its write-protect tab to the open position or by setting the write-protect feature in the System Setup program.




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Notes, Notices, and Cautions

-  **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.
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Glossary

For a complete list of abbreviations and acronyms, see the "Glossary."

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