GLOSSARY

10BaseT Ethernet LAN designed to run on UTP cabling. 10BaseT runs at 10 megabits per second. The maximum length for the cabling between the NIC and the hub (or switch, repeater, etc.) is 100 meters. It uses baseband signaling. No industry standard spelling exists, so sometimes written 10BASE-T or 10Base-T.

100BaseT Generic term for an Ethernet cabling system designed to run at 100 megabits per second on UTP cabling. It uses baseband signaling. No industry standard spelling exists, so sometimes written 100BASE-T or 100Base-T.

1000BaseT Gigabit Ethernet on UTP.

2.1 Speaker setup consisting of two stereo speakers combined with a subwoofer.

3.5-inch floppy drive All modern floppy disk drives are of this size; the format was introduced in 1986 and is one of the longest surviving pieces of computer hardware.

34-pin ribbon cable Type of cable used by floppy disk drives.

3-D graphics Video technology that attempts to create images with the same depth and texture as objects seen in the real world.

40-pin ribbon cable Type of cable used to attach EIDE devices (such as hard drives) or ATAPI devices (such as optical drives) to a system.

5.1 speaker system Four satellite speakers plus a center speaker and a subwoofer.

8.3 naming system File-naming convention that specified a maximum of eight characters for a filename, followed by a 3-character file extension. Has been replaced by LFN (long filename) support.

80-wire ribbon cable Type of cable used to attach fast EIDE devices (such as ATA/100 hard drives) or ATAPI devices (such as optical drives) to a system.

802.11a Wireless networking standard that operates in the 5-GHz band with a theoretical maximum throughput of 54 Mbps.

802.11b Wireless networking standard that operates in the 2.4-GHz band with a theoretical maximum throughput of 11 Mbps.

802.11g Wireless networking standard that operates in the 2.4-GHz band with a theoretical maximum throughput of 54 Mbps and is backward compatible with 802.11b.

802.11n Wireless networking standard that can operate in both the 2.4-GHz and 5-GHz bands and uses MIMO to achieve a theoretical maximum throughput of 100+ Mbps.

A/V sync Process of synchronizing audio and video.

AC (alternating current) Type of electricity in which the flow of electrons alternates direction, back and forth, in a circuit.

AC'97 Sound card standard for lower-end audio devices; created when most folks listened to stereo sound at best.

access control Security concept using physical security, authentication, users and groups, and security policies.

ACPI (advanced configuration and power interface) Power management specification that far surpasses its predecessor, APM, by providing support for hot-swappable devices and better control of power modes.

activation Process of confirming that an installed copy of a Microsoft product (most commonly Windows or a Microsoft Office application) is legitimate. Usually done at the end of software installation.

active matrix Type of liquid crystal display that replaced the passive matrix technology used in most portable computer displays. Also called *TFT* (*thin film transistor*).

active partition On a hard drive, primary partition that contains an operating system.

active PFC (power factor correction) Circuitry built into PC power supplies to reduce harmonics.

ad hoc mode Decentralized wireless network mode, otherwise known as peer-to-peer mode, where each wireless node is in direct contact with every other node.

Add or Remove Programs Applet allowing users to manually add or remove a program from the system.

address bus Wires leading from the CPU to the memory controller chip (usually the Northbridge) that enable the CPU to address RAM. Also used by the CPU for I/O addressing. An internal electronic channel from the microprocessor to random access memory, along which the addresses of memory storage locations are transmitted. Like a post office box, each memory location has a distinct number or address; the address bus provides the means by which the microprocessor can access every location in memory.

address space Total amount of memory addresses that an address bus can contain.

administrative shares Administrator tool to give local admins access to hard drives and system root folders.

Administrative Tools Group of Control Panel applets, including Computer Management, Event Viewer, and Reliability and Performance Monitor.

Administrator account User account, created when the OS is first installed, that is allowed complete, unfettered access to the system without restriction.

Administrators group List of members with complete administrator privileges.

ADSL (asymmetric digital subscriber line) Fully digital, dedicated connection to the telephone system that provides average download speeds of 7 Mbps and upload speeds of 512 Kbps.

Advanced Startup Options menu Menu that can be reached during the boot process that offers advanced OS startup options, such as boot in Safe mode or boot into Last Known Good Configuration.

adware Type of malicious program that downloads ads to a user's computer, generating undesirable network traffic.

Aero The Windows Vista desktop environment. Aero adds some interesting aesthetic effects such as window transparency and Flip 3D.

AGP (accelerated graphics port) 32/64-bit expansion slot designed by Intel specifically for video that runs at 66 MHz and yields a throughput of at least 254 Mbps. Later versions (2×, 4×, 8×) give substantially higher throughput.

algorithm Set of rules for solving a problem in a given number of steps.

ALU (arithmetic logic unit) CPU logic circuits that perform basic arithmetic (add, subtract, multiply, and divide).

AMD (Advanced Micro Devices) CPU and chipset manufacturer that competes with Intel. Produces the popular Phenom, Athlon, Sempron, Turion, and Duron microprocessors; also produces video card processors under its ATI brand.

AMI (American Megatrends, Inc) Major producer of BIOS software for motherboards, as well as many other computer-related components and software.

amperes (amps or A) Unit of measure for amperage, or electrical current.

amplitude Loudness of a sound card.

AMR (audio/modem riser) Proprietary slot used on some motherboards to provide a sound inference–free connection for modems, sound cards, and NICs.

analog Device that uses a physical quantity, such as length or voltage, to represent the value of a number. By contrast, digital storage relies on a coding system of numeric units.

anti-aliasing In computer imaging, blending effect that smoothes sharp contrasts between two regions—e.g., jagged lines or different colors. Reduces jagged edges of text or objects. In voice signal processing, process of removing or smoothing out spurious frequencies from waveforms produced by converting digital signals back to analog.

anti-static bag Bag made of anti-static plastic into which electronics are placed for temporary or long-term storage. Used to protect components from electrostatic discharge.

anti-static mat Special surface on which to lay electronics. These mats come with a grounding connection designed to equalize electrical potential between a workbench and one or more electronic devices. Used to prevent electrostatic discharge.

anti-static wrist strap Special device worn around the wrist with a grounding connection designed to equalize

electrical potential between a technician and an electronic device. Used to prevent electrostatic discharge.

antivirus program Software designed to combat viruses by either seeking out and destroying them or passively guarding against them.

API (application programming interface) Software definition that describes operating system calls for application software; conventions defining how a service is invoked.

APIPA (Automatic Private IP Addressing) Feature of Windows that automatically assigns an IP address to the system when the client cannot obtain an IP address automatically.

APM (advanced power management) BIOS routines that enable the CPU to turn on and off selected peripherals.

applet Generic term for a program in the Windows Control Panel.

archive To copy programs and data onto a relatively inexpensive storage medium (disk, tape, etc.) for long-term retention.

archive attribute Attribute of a file that shows whether the file has been backed up since the last change. Each time a file is opened, changed, or saved, the archive bit is turned on. Some types of backups turn off this archive bit to indicate that a good backup of the file exists on tape.

ARP (Address Resolution Protocol) Protocol in the TCP/IP suite used with the command-line utility of the same name to determine the MAC address that corresponds to a particular IP address.

ASCII (American Standard Code for Information Interchange) Industry-standard 8-bit characters used to define text characters, consisting of 96 upper- and lowercase letters, plus 32 nonprinting control characters, each of which is numbered. These numbers were designed to achieve uniformity among computer devices for printing and the exchange of simple text documents.

aspect ratio Ratio of width to height of an object. Standard television has a 4:3 aspect ratio.

ASR (Automated System Recovery) Windows XP tool designed to recover a badly corrupted Windows system; similar to ERD.

assertive communication Means of communication that is not pushy or bossy but is also not soft. Useful in dealing with upset customers as it both defuses their anger and gives them confidence that you know what you're doing.

AT (advanced technology) Model name of the second-generation, 80286-based IBM computer. Many aspects of the AT, such as the BIOS, CMOS, and expansion bus, have become de facto standards in the PC industry. The physical organization of the components on the motherboard is called the AT form factor.

ATA (AT attachment) Type of hard drive and controller designed to replace the earlier ST506 and ESDI drives without requiring replacement of the AT BIOS—hence, AT attachment. These drives are more popularly known as IDE drives. (*See* IDE.) The **ATA/33** standard has drive transfer speeds up to 33 MBps; the **ATA/66** up to 66 MBps; the **ATA/100** up to 100 MBps; and the **ATA/133** up to 133 MBps. (*See* Ultra DMA.)

ATA/ATAPI-6 Also known as ATA-6 or "Big Drive." Replaced the INT13 extensions and allowed for hard drives as large as 144 petabytes (144 million GBs).

ATAPI (ATA packet interface) Series of standards that enable mass storage devices other than hard drives to use the IDE/ATA controllers. Popular with optical drives. (*See* EIDE.)

ATAPI-compliant Devices that utilize the ATAPI standard. (*See* ATAPI.)

Athlon Name used for a popular series of CPUs manufactured by AMD.

ATTRIB.EXE Command used to view the specific properties of a file; can also be used to modify or remove file properties, such as read-only, system, or archive.

attributes Values in a file that determine the hidden, read-only, system, and archive status of the file.

ATX (AT eXtended) Popular motherboard form factor that generally replaced the AT form factor.

authentication Any method a computer uses to determine who can access it.

authorization Any method a computer uses to determine what a specific user can do.

autodetection Process through which new disks are automatically recognized by the BIOS.

Automatic Updates Feature allowing updates to Windows to be retrieved automatically over the Internet.

AutoPlay Windows 2000/XP/Vista/7 setting, along with autorun.inf, enabling Windows to automatically detect media files and begin using them. (*See* AUTORUN.INF.)

AUTORUN.INF File included on some media that automatically launches a program or installation routine when the media is inserted/attached to a system.

autosensing Better quality sound cards use autosensing to detect a device plugged into a port and to adapt the features of that port.

auto-switching power supply Type of power supply able to detect the voltage of a particular outlet and adjust accordingly.

Award Software Major producer of BIOS software for motherboards.

backlight One of three main components used in LCDs to illuminate an image.

backside bus Set of wires that connect the CPU to Level 2 cache. First appearing in the Pentium Pro, all modern CPUs have a backside bus. Some buses run at the full speed of the CPU, whereas others run at a fraction. Earlier Pentium IIs, for example, had backside buses running at half the speed of the processor. (*See also* frontside bus and external data bus.)

Backup or Restore Wizard Utility contained within Windows that allows users to create system backups and set system restore points.

ball mouse Input device that enables users to manipulate a cursor on the screen by using a ball and sensors that detect the movement and direction of the ball.

bandwidth Piece of the spectrum occupied by some form of signal, such as television, voice, fax data. Signals require a certain size and location of bandwidth to be transmitted. The higher the bandwidth, the faster the signal transmission, allowing for a more complex signal such as audio or video. Because bandwidth is a limited space, when one user is occupying it, others must wait their turn. Bandwidth is also the capacity of a network to transmit a given amount of data during a given period.

bank Total number of SIMMs or DIMMs that can be accessed simultaneously by the chipset. The "width" of the external data bus divided by the "width" of the SIMM or DIMM sticks. DIMM slots must be populated to activate dual- or triple-channel memory.

bar code reader Tool to read Universal Product Code (UPC) bar codes.

basic disks Hard drive partitioned in the "classic" way with a master boot record (MBR) and partition table. (*See also* dynamic disks.)

baud One analog cycle on a telephone line. In the early days of telephone data transmission, the baud rate was often analogous to bits per second. Due to advanced modulation of baud cycles as well as data compression, this is no longer true.

BD-RE (Blu-ray Disc-REwritable) Blu-ray Disc equivalent of the rewritable DVD, allows writing and rewriting several times on the same BD. (*See* Blu-ray Disc.)

BD-ROM Blu-ray Disc equivalent of a DVD-ROM or CD-ROM. (*See* Blu-ray Disc.)

beaming Term used to describe transferring data from one PDA to another by means of IrDA.

beep codes Series of audible tones produced by a motherboard during the POST. These tones identify whether the POST has completed successfully or whether some piece of system hardware is not working properly. Consult the manual for your particular motherboard for a specific list of beep codes.

binary numbers Number system with a base of 2, unlike the number systems most of us use that have bases of 10 (decimal numbers), 12 (measurement in feet and inches), and 60 (time). Binary numbers are preferred for computers for precision and economy. An electronic circuit that can detect the difference between two states (on–off, 0–1) is easier and more inexpensive to build than one that could detect the differences among ten states (0–9).

biometric device Hardware device used to support authentication; works by scanning and remembering unique aspects of a user's various body parts (e.g., retina, iris, face, or fingerprint) by using some form of sensing device such as a retinal scanner.

BIOS (basic input/output system) Classically, software routines burned onto the system ROM of a PC. More commonly seen as any software that directly controls a particular piece of hardware. A set of programs encoded in read-only memory (ROM) on computers.

These programs handle startup operations and low-level control of hardware such as disk drives, the keyboard, and monitor.

bit Single binary digit. Also, any device that can be in an on or off state.

BitLocker Drive Encryption Drive encryption software offered in Windows Vista/7 Ultimate and Enterprise editions. BitLocker requires a special chip to validate hardware status and to ensure that the computer hasn't been hacked.

bit depth Number of colors a video card is capable of producing. Common bit depths are 16-bit and 32-bit, representing 65,536 colors and 16.7 million colors, respectively.

Bluetooth Wireless technology designed to create small wireless networks preconfigured to do specific jobs, but not meant to replace full-function networks or Wi-Fi.

Blu-ray Disc (BD) Optical disc format that stores 25 or 50 GB of data, designed to be the replacement media for DVD. Competed with HD DVD.

boot To initiate an automatic routine that clears the memory, loads the operating system, and prepares the computer for use. Term is derived from "pull yourself up by your bootstraps." PCs must do that because RAM doesn't retain program instructions when power is turned off. A cold boot occurs when the PC is physically switched on. A warm boot loads a fresh OS without turning off the computer, lessening the strain on the electronic circuitry. To do a warm boot, press the CTRL-ALT-DELETE keys twice in rapid succession (the three-fingered salute).

boot sector First sector on a PC hard drive or floppy disk, track 0. The boot-up software in ROM tells the computer to load whatever program is found there. If a system disk is read, the program in the boot record directs the computer to the root directory to load the operating system.

BOOT.INI Text file used during the boot process that provides a list of all OSs currently installed and available for NTLDR. Also tells where each OS is located on the system. Used in Windows XP and earlier Microsoft operating systems.

bootable disk Disk that contains a functional operating system; can also be a floppy disk, USB thumb drive, or optical disc.

bootstrap loader Segment of code in a system's BIOS that scans for an operating system, looks specifically for a valid boot sector, and, when one is found, hands control over to the boot sector; then the bootstrap loader removes itself from memory.

bps (bits per second) Measurement of how fast data is moved from one place to another. A 56K modem can move ~56,000 bits per second.

broadband Commonly understood as a reference to high-speed, always-on communication links that can move large files much more quickly than a regular phone line.

browser Program specifically designed to retrieve, interpret, and display Web pages.

BSoD (Blue Screen of Death) Infamous error screen that appears when Windows encounters an unrecoverable error.

BTX (Balanced Technology eXtended) Motherboard form factor designed as an improvement over ATX.

buffered/registered DRAM Usually seen in motherboards supporting more than four sticks of RAM, it is required to address interference issues caused by the additional sticks.

buffer underrun Inability of a source device to provide a CD-burner with a constant stream of data while burning a CD-R or CD-RW.

bug Programming error that causes a program or a computer system to perform erratically, produce incorrect results, or crash. The term was coined when a real bug was found in one of the circuits of one of the first ENIAC computers.

burn Process of writing data to a writable optical disc, such as a DVD-R.

burn-in failure Critical failure usually associated with manufacturing defects.

bus Series of wires connecting two or more separate electronic devices, enabling those devices to communicate.

bus mastering Circuitry allowing devices to avoid conflicts on the external data bus.

bus topology Network configuration wherein all computers connect to the network via a central bus cable.

byte Unit of eight bits; fundamental data unit of personal computers. Storing the equivalent of one character, the byte is also the basic unit of measurement for computer storage.

CAB files Short for cabinet files. These files are compressed and most commonly used during OS installation to store many smaller files, such as device drivers.

cache (disk) Special area of RAM that stores the data most frequently accessed from the hard drive. Cache memory can optimize the use of your systems.

cache (L1, L2, L3, etc.) Special section of fast memory, usually built into the CPU, used by the onboard logic to store information most frequently accessed by the CPU.

calibration Process of matching the print output of a printer to the visual output of a monitor.

card reader Device with which you can read data from one of several types of flash memory.

card services Uppermost level of PCMCIA services. Card services level recognizes the function of a particular PC Card and provides the specialized drivers necessary to make the card work. (*See also* socket services.)

CardBus 32-bit PC cards that can support up to eight devices on each card. Electrically incompatible with earlier PC cards (3.3 V versus 5 V).

CAT 5 Category 5 wire; a TIA/EIA standard for UTP wiring that can operate up to 100 megabits per second.

CAT 5e Category 5e wire; TIA/EIA standard for UTP wiring that can operate up to 1 gigabit per second.

CAT 6 Category 6 wire; TIA/EIA standard for UTP wiring that can operate up to 10 gigabits per second.

catastrophic failure Occurs when a component or whole system will not boot; usually related to a manufacturing defect of a component. Could also be caused by overheating and physical damage to computer components.

CCFL (cold cathode fluorescent lamp) Light technology used in LCDs and flatbed scanners. CCFLs use relatively little power for the amount of light they provide.

CD (CHDIR) DOS shorthand for "Change Directory." Allows you to change the focus of the command prompt from one directory to another.

CD (compact disc) Originally designed as the replacement for vinyl records, CDs have become the primary method of long-term storage of music and data.

CD quality CD-quality audio has a sample rate of 44.4 KHz and a bit rate of 128 bits.

CD-DA (CD-digital audio) Special format used for early CD-ROMs and all audio CDs; divides data into variable length tracks. A good format to use for audio tracks but terrible for data because of lack of error checking.

CD-R (compact disc recordable) CD technology that accepts a single "burn" but cannot be erased after that one burn.

CD-ROM (compact disc/read only memory) Read-only compact storage disk for audio or video data. Recordable devices, such as CD-Rs, are updated versions of the older CD-ROM players. CD-ROMs are read by using CD-ROM drives.

CD-RW (compact disc rewritable) CD technology that accepts multiple reads/writes like a hard drive.

Celeron Lower-cost brand of Intel CPUs.

Cellular WAN Technology that allows laptops and other mobile devices to access the Internet over a cell phone network.

cellular wireless networks Networks that enable cell phones, PDAs, and other mobile devices to connect to the Internet.

Centrino Marketing name for an Intel laptop solution including the mobile processor, support chips and wireless networking.

Centronics connector Connector used with older printers.

certification License that demonstrates competency in some specialized skill.

Certified Cisco Network Associate (CCNA) One of the certifications demonstrating a knowledge of Cisco networking products.

CHAP (Challenge Handshake Authentication Protocol) Common remote access protocol; serving system challenges the remote client, usually by means of asking for a password.

chassis intrusion detection Feature offered in some chassis that trips a switch when the chassis is opened.

chipset Electronic chips, specially designed to work together, that handle all of the low-level functions of a PC. In the original PC, the chipset consisted of close to 30 different chips; today, chipsets usually consist of one, two, or three separate chips embedded into a motherboard.

CHKDSK (Checkdisk) Hard drive error detection and, to a certain extent, correction utility in Windows. Originally a DOS command (CHKDSK.EXE); also the executable for the graphical Error-checking tool.

clean installation Operating system installed on a fresh drive, following a reformat of that drive. Often the only way to correct a problem with a system when many of the crucial operating system files have become corrupted.

client Computer program that uses the services of another computer program. Software that extracts information from a server; your auto-dial phone is a client, and the phone company is its server. Also, a machine that accesses shared resources on a server.

client/server Relationship in which client software obtains services from a server on behalf of a person.

client/server network Network that has dedicated server machines and client machines.

clock cycle Single charge to the clock wire of a CPU.

clock-multiplying CPU CPU that takes the incoming clock signal and multiples it inside the CPU to let the internal circuitry of the CPU run faster.

clock speed Speed at which a CPU executes instructions, measured in MHz or GHz. In modern CPUs, the internal speed is a multiple of the external speed. (*See also* clock-multiplying CPU.)

clock (CLK) wire Charge on the CLK wire to tell the CPU that another piece of information is waiting to be processed.

cluster Basic unit of storage on a floppy or hard disk. Multiple sectors are contained in a cluster. When Windows stores a file on a disk, it writes those files into dozens or even hundreds of contiguous clusters. If there aren't enough contiguous open clusters available, the operating system finds the next open cluster and writes there, continuing this process until the entire file is saved. The FAT or MFT tracks how the files are distributed among the clusters on the disk.

CMOS (complementary metal-oxide semiconductor) Originally, the type of non-volatile RAM that held information about the most basic parts of your PC, such as hard drives, floppies, and amount of DRAM. Today, actual CMOS chips have been replaced by Flash-type non-volatile RAM. The information is the same, however, and is still called CMOS—even though it is now almost always stored on Flash RAM.

CMOS setup program Program enabling you to access and update CMOS data.

CNR (Communications and Network Riser) Proprietary slot used on some motherboards to provide a sound inference–free connection for modems, sound cards, and NICs.

coaxial cable Cabling in which an internal conductor is surrounded by another, outer conductor, thus sharing the same axis.

code Set of symbols representing characters (e.g., ASCII code) or instructions in a computer program (a programmer writes source code, which must be translated into executable or machine code for the computer to use).

codec (compressor/decompressor) Software that compresses or decompresses media streams.

color depth Term to define a scanner's ability to produce color, hue, and shade.

COM port(s) Serial communications ports available on your computer. When used as a program extension, .COM indicates an executable program file limited to 64 KB.

command A request, typed from a terminal or embedded in a file, to perform an operation or to execute a particular program.

command prompt Text prompt for entering commands.

command-line interface User interface for an OS devoid of all graphical trappings.

Compact Flash (CF) One of the older but still popular flash media formats. Its interface uses a simplified PC Card bus, so it also supports I/O devices.

compatibility modes Feature of Windows 2000 and beyond to allow software written for previous versions of Windows to operate in newer operating systems.

compliance Concept that members of an organization must abide by the rules of that organization. For a technician, this often revolves around what software can or cannot be installed on an organization's computer.

component failure Occurs when a system device fails due to manufacturing or some other type of defect.

compression Process of squeezing data to eliminate redundancies, allowing files to use less space when stored or transmitted.

CompTIA A+ 220-701 (Essentials) One half of the CompTIA A+ exam, concentrating on understanding terminology and technology, how to do fundamental tasks, and basic Windows operating system support.

CompTIA A+ 220-702 (Practical Application) Other half of the CompTIA A+ exam, covering advanced troubleshooting and configuration.

CompTIA A+ certification Industry-wide, vendor-neutral computer certification program that demonstrates competency as a computer technician.

CompTIA Network+ certification Industry-wide, vendor-neutral certification for network technicians, covering network hardware, installation, and troubleshooting.

Computer (Vista) Default interface in Windows Vista and 7 for Windows Explorer; displays drives and network locations. (*See* My Computer.)

Computer Administrator One of three types of user accounts, the Administrator account has access to all resources on the computer.

Computer Management Applet in Windows' Administrative Tools that contains several useful snap-ins, such as Device Manager and Disk Management.

computing process Four parts of a computer's operation: input, processing, output, and storage.

Computing Technology Industry Association (CompTIA) Nonprofit IT trade association that administers the CompTIA A+ and CompTIA Network+ exams.

conditioning charger Battery charger that contains intelligent circuitry that prevents portable computer batteries from being overcharged and damaged.

connectors Small receptacles used to attach cables to a system. Common types of connectors include USB, PS/2, and DB-25.

consumables Materials used up by printers, including paper, ink, ribbons, and toner cartridges.

container file File containing two or more separate, compressed tracks, typically an audio and a moving picture track. Also known as a wrapper.

context menu Small menu brought up by right-clicking on objects in Windows.

Control Panel Collection of Windows applets, or small programs, that can be used to configure various pieces of hardware and software in a system.

controller card Card adapter that connects devices, such as a disk drive, to the main computer bus/motherboard.

convergence Measure of how sharply a single pixel appears on a CRT; a monitor with poor convergence produces images that are not sharply defined.

copy backup Type of backup similar to Normal or Full, in that all selected files on a system are backed up. This type of backup does not change the archive bit of the files being backed up.

COPY command Command in the command line interface for making a copy of a file and pasting it in another location.

core Name used for the family of Intel CPUs that succeeded the Pentium 4.

counter Used to track data about a particular object when using the Performance console.

CPU (central processing unit) "Brain" of the computer. Microprocessor that handles primary calculations for the computer. CPUs are known by names such as Pentium 4 and Athlon.

CRC (cyclic redundancy check) Very accurate mathematical method used to check for errors in long streams of transmitted data. Before data is sent, the main computer uses the data to calculate a CRC value from the data's contents. If the receiver calculates a CRC value different from the received data, the data was corrupted during transmission and is resent. Ethernet packets have a CRC code.

C-RIMM or CRIMM (continuity RIMM) Passive device added to populate unused banks in a system that uses Rambus RIMMs.

crossover cable Special UTP cable used to connect hubs or to connect network cards without a hub. Crossover cables reverse the sending and receiving wire pairs from one end to the other.

CRT (cathode ray tube) Tube of a monitor in which rays of electrons are beamed onto a phosphorescent screen to produce images. Also a shorthand way to describe a monitor that uses CRT rather than LCD technology.

CSMA/CA (carrier sense multiple access with collision avoidance) Networking scheme used by wireless devices to transmit data while avoiding data collisions, which wireless nodes have difficulty detecting.

CSMA/CD (carrier sense multiple access with collision detection) Networking scheme used by Ethernet devices to transmit data and resend data after detecting data collisions.

cylinder Single track on all the platters in a hard drive. Imagine a hard drive as a series of metal cans, nested one inside another; a single can would represent a cylinder.

daily backup Backup of all files that have been changed on that day without changing the archive bits of those files. Also called *daily copy backup*.

Daisy-chaining Method of connecting several devices along a bus and managing the signals for each device.

data classification System of organizing data according to its sensitivity. Common classifications include public, highly confidential, and top secret.

data structure Scheme that directs how an OS stores and retrieves data on and off a drive. Used interchangeably with the term file system. (*See also* file system.)

DB connectors D-shaped connectors used for a variety of connections in the PC and networking world. Can be male (with prongs) or female (with holes) and have a varying number of pins or sockets. Also called *D-sub*, *D-subminiature*, or *D-shell connectors*.

DB-15 A two- or three-row DB connector (female) used for 10Base5 networks, MIDI/joysticks, and analog video.

DB-25 connector DB connector (female), commonly referred to as a parallel port connector.

DC (direct current) Type of electricity in which the flow of electrons is in a complete circle in one direction.

DDR SDRAM (double data rate SDRAM) Type of DRAM that makes two processes for every clock cycle. (*See also* DRAM.)

DDR2 SDRAM Type of SDRAM that sends four bits of data in every clock cycle. (*See also* DDR SDRAM.)

DDR3 SDRAM Type of SDRAM that transfers data at twice the rate of DDR2 SDRAM.

debug To detect, trace, and eliminate errors in computer programs.

decibels Unit of measurement typically associated with sound. The higher the number of decibels, the louder the sound.

dedicated server Machine that is not used for any client functions, only server functions.

default gateway In a TCP/IP network, the nearest router to a particular host. This router's IP address is part of the necessary TCP/IP configuration for communicating with multiple networks using IP.

definition file List of virus signatures that an antivirus program can recognize.

defragmentation (DEFRAG) Procedure in which all the files on a hard disk are rewritten on disk so that all parts of each file reside in contiguous clusters. The result is an improvement in disk speed during retrieval operations.

Degauss Procedure used to break up the electromagnetic fields that can build up on the cathode ray tube of a monitor; involves running a current through a wire loop. Most monitors feature a manual degaussing tool.

DEL (Erase) command Command in the command line interface used to delete/erase files.

desktop User's primary interface to the Windows operating system.

desktop extender Portable computer that offers some of the features of a full-fledged desktop computer but with a much smaller footprint and lower weight.

desktop replacement Portable computer that offers the same performance as a full-fledged desktop computer; these systems are normally very heavy to carry and often cost much more than the desktop systems they replace.

device driver Program used by the operating system to control communications between the computer and peripherals.

Device Manager Utility that enables techs to examine and configure all the hardware and drivers in a Windows PC.

DHCP (Dynamic Host Configuration Protocol) Protocol that enables a DHCP server to set TCP/IP settings automatically for a DHCP client.

differential backup Similar to an incremental backup. Backs up the files that have been changed since the last backup. This type of backup does not change the state of the archive bit.

digital camera Camera that simulates film technology electronically.

digital certificate Form in which a public key is sent from a Web server to a Web browser so that the browser can decrypt the data sent by the server.

digital zoom Software tool to enhance the optical zoom capabilities of a digital camera.

digitally signed driver All drivers designed specifically for Windows are digitally signed, meaning they are tested to work stably with these operating systems.

DIMM (dual inline memory module) 32- or 64-bit type of DRAM packaging, similar to SIMMs, with the distinction that each side of each tab inserted into the system performs a separate function. DIMMs come in a variety of sizes, with 184- and 240-pin being the most common on desktop computers.

dipole antennae Standard straight-wire antennae that provide the most omnidirectional function.

DIR command Command used in the command-line interface to display the entire contents of the current working directory.

directory Another name for a folder.

directory service Centralized index that each PC accesses to locate resources in the domain.

DirectX Set of APIs enabling programs to control multimedia, such as sound, video, and graphics. Used in Windows Vista to draw the Aero desktop.

Disk Cleanup Utility built into Windows that can help users clean up their disks by removing temporary Internet files, deleting unused program files, and more.

disk cloning Taking a PC and making duplicates of the hard drive, including all data, software, and configuration files and transferring it to another PC. (*See* image installation.)

disk duplexing Type of disk mirroring using two separate controllers rather than one; faster than traditional mirroring.

Disk Management Snap-in available with the Microsoft Management Console that enables techs to configure the various disks installed in a system; available in the Computer Management Administrative Tool.

disk mirroring Process by which data is written simultaneously to two or more disk drives. Read and write speed is decreased but redundancy in case of catastrophe is increased.

disk quota Application allowing network administrators to limit hard drive space usage.

disk striping Process by which data is spread among multiple (at least two) drives. Increases speed for both reads and writes of data. Considered RAID level 0 because it does not provide fault tolerance.

disk striping with parity Method for providing fault tolerance by writing data across multiple drives and then including an additional drive, called a parity drive, that stores information to rebuild the data contained on the other drives. Requires at least three physical disks: two for the data and a third for the parity drive. This provides data redundancy at RAID levels 3–5 with different options.

disk thrashing Hard drive that is constantly being accessed due to lack of available system memory. When system memory runs low, a Windows system will utilize hard disk space as "virtual" memory, thus causing an unusual amount of hard drive access.

display adapter Handles all the communication between the CPU and the monitor. Also known as a video card.

Display applet Tool in Windows 2000 and Windows XP used to adjust display settings, including resolution, refresh rate, driver information, and color depth.

DMA (direct memory access) modes Technique that some PC hardware devices use to transfer data to and from the memory without using the CPU.

DMA controller Resides between the RAM and the devices and handles DMA requests.

DNS (domain name system) TCP/IP name resolution system that translates a host name into an IP address.

DNS domain Specific branch of the DNS name space. First-level DNS domains include .COM, .GOV, and .EDU.

docking station Device that provides a portable computer extra features such as a DVD drive or PC Card, in addition to legacy and modern ports. Similar to a port replicator.

document Steps a technician uses to a solve a problem: To record the relevant information. For a technician, this would be recording each troubleshooting job: what the problem was, how it was fixed, and other helpful information.

Documents folder Windows Vista/7 folder for storing user-created files. Replaces the My Documents folder previously used in Windows 2000/XP. (*See* My Documents.)

Dolby Digital Technology for sound reductions and channeling methods used for digital audio.

domain Groupings of users, computers, or networks. In Microsoft networking, a domain is a group of computers and users that share a common account database, called a SAM, and a common security policy. On the Internet, a domain is a group of computers that share a common element in their hierarchical name. Other types of domains exist—e.g., collision domain, etc.

domain-based network Network that eliminates the need for logging in to multiple servers by using domain controllers to hold the security database for all systems.

DOS (Disk Operating System) First popular operating system available for PCs. A text-based, single-tasking operating system that was not completely replaced until the introduction of Windows 95.

dot pitch Value relating to CRTs, showing the diagonal distance between phosphors measured in millimeters.

dot-matrix printer Printer that creates each character from an array of dots. Pins striking a ribbon against the paper, one pin for each dot position, form the dots. May be a serial printer (printing one character at a time) or a line printer.

double-sided RAM RAM stick with RAM chips soldered to both sides of the stick. May only be used with motherboards designed to accept double-sided RAM. Very common.

DPI (dots per inch) Measure of printer resolution that counts the dots the device can produce per linear (horizontal) inch.

DPMS (Display Power-Management Signaling) Specification that can reduce CRT power consumption by 75 percent by reducing/eliminating video signals during idle periods.

DRAM (dynamic random access memory or dynamic RAM) Memory used to store data in most personal computers. DRAM stores each bit in a "cell" composed of a transistor and a capacitor. Because the capacitor in a DRAM cell can only hold a charge for a few milliseconds, DRAM must be continually refreshed, or rewritten, to retain its data.

DriveLock CMOS program enabling you to control the ATA security mode feature set. Also known as *drive lock*.

driver signing Digital signature for drivers used by Windows to protect against potentially bad drivers.

DS3D (DirectSound3D) Introduced with DirectX 3.0, DS3D is a command set used to create positional audio, or sounds that appear to come from in front, in back, or to the side of a user. (*See also* DirectX.)

DSL (digital subscriber line) High-speed Internet connection technology that uses a regular telephone line for connectivity. DSL comes in several varieties, including asynchronous (ADSL) and synchronous (SDSL), and many speeds. Typical home-user DSL connections are ADSL with a download speed of 7 Mbps and an upload speed of 512 Kbps.

D-subminiature See DB connectors.

DTS (Digital Theatre Systems) Technology for sound reductions and channeling methods, similar to Dolby Digital.

dual boot Refers to a computer with two operating systems installed, enabling users to choose which operating system to load on boot. Can also refer to kicking a device a second time just in case the first time didn't work.

DualView Microsoft feature enbling Windows to use two or more monitors simultaneously.

dual-channel architecture Using two sticks of RAM (either RDRAM or DDR) to increase throughput.

dual-channel memory Form of DDR, DDR2, and DDR3 memory access used by many motherboards that requires two identical sticks of DDR, DDR2, or DDR3 RAM.

dual-core Dual-core CPUs have two execution units on the same physical chip but share caches and RAM.

dual-scan passive matrix Manufacturing technique for increasing display updates by refreshing two lines at a time.

dumpster diving To go through someone's trash in search of information.

DUN (Dial-Up Networking) Software used by Windows to govern the connection between the modem and the ISP.

duplexing Similar to mirroring in that data is written to and read from two physical drives, for fault tolerance. Separate controllers are used for each drive, both for additional fault tolerance and additional speed. Considered RAID level 1. Also called *disk duplexing* or *drive duplexing*.

Duron Lower-cost version of AMD's Athlon series of CPUs.

DVD (digital versatile disc) Optical disc format that provides for 4–17 GB of video or data storage.

DVD-ROM DVD equivalent of the standard CD-ROM.

DVD-RW Rewritable DVD media.

DVD-Video DVD format used exclusively to store digital video; capable of storing over 2 hours of high-quality video on a single DVD.

DVI (Digital Visual Interface) Special video connector designed for digital-to-digital connections; most commonly seen on PC video cards and LCD monitors. Some versions also support analog signals with a special adapter.

Dxdiag (DirectX Diagnostics) Diagnostic tool for getting information about and testing a computer's DirectX version.

dye-sublimation printers Printer that uses a roll of heat-sensitive plastic film embedded with dyes, which are vaporized and then solidified onto specially coated paper to create a high-quality image.

dynamic disks Special feature of Windows that enables users to span a single volume across two or more drives. Dynamic disks do not have partitions; they have volumes. Dynamic disks can be striped, mirrored, and striped or mirrored with parity.

EAX (Environment Audio eXtensions) 3-D sound technology developed by Creative Labs but now supported by most sound cards.

ECC (error correction code) Special software, embedded on hard drives, that constantly scans the drives for bad sectors.

ECC RAM/DRAM (error correction code DRAM) RAM that uses special chips to detect and fix memory errors. Commonly used in high-end servers where data integrity is crucial.

effective permissions User's combined permissions granted by multiple groups.

EFI (Extensible Firmware Interface) Firmware created by Intel and HP that replaced traditional 16 bit BIOS and added several new enhancements.

EFS (encrypting file system) Encryption tool found in NTFS 5.

EIA/TIA See TIA/EIA.

EIDE (enhanced IDE) Marketing concept of hard drive–maker Western Digital, encompassing four improvements for IDE drives, including drives larger than 528 MB, four devices, increase in drive throughput, and non–hard drive devices. (*See* ATAPI, PIO mode.)

electrostatic discharge (ESD) Movement of electrons from one body to another. A real menace to PCs, as it can cause permanent damage to semiconductors.

eliciting answers Communication strategy designed to help techs understand a user's problems better. Works by listening to a user's description of a problem and then asking cogent questions.

e-mail (electronic mail) Messages, usually text, sent from one person to another via computer. Can also be sent automatically to a group of addresses (mailing list).

electromagnetic interference (EMI) Electrical interference from one device to another, resulting in poor performance of the device being interfered with. Examples: Static on your TV while running a blow dryer, or placing two monitors too close together and getting a "shaky" screen.

emergency repair disk (ERD) Saves critical boot files and partition information and is the main tool for fixing boot problems in Windows 2000.

encryption Making data unreadable by those who do not possess a key or password.

erase lamp Component inside laser printers that uses light to make the coating of the photosensitive drum conductive.

error-checking Windows XP/Vista/7 name for the Checkdisk and ScanDisk tools.

eSATA Serial ATA-based connector for external hard drives and optical drives.

escalate Process used when person assigned to repair a problem is not able to get the job done, such as sending the problem to someone else.

Ethernet Name coined by Xerox for the first standard of network cabling and protocols. Based on a bus topology.

Ethic of Reciprocity Golden Rule: Do unto others as you would have them do unto you.

EULA (end-user license agreement) Agreement that accompanies a piece of software, to which user must agree before using the software. Outlines the terms of use for the software and also lists any actions on the part of the user that violate the agreement.

event auditing Feature of Event Viewer's Security section that creates an entry in the Security Log when certain events happen, such as a user logging on.

Event Viewer Utility made available as an MMC snap-in that enables users to monitor various system events, including network bandwidth usage and CPU utilization.

EXPAND Command-line utility program included with Windows used to access files within CAB files.

expansion bus Set of wires going to the CPU, governed by the expansion bus crystal, directly connected to expansion slots of varying types (PCI, AGP, PCIe, etc.). Depending on the type of slots, the expansion bus runs at a percentage of the main system speed (8.33–133 MHz).

expansion bus crystal Controls the speed of the expansion bus.

expansion slots Connectors on a motherboard that enable users to add optional components to a system. (*See also* AGP and PCI.

Serial PC Card designed to replace CardBus PC Cards. ExpressCards connect to either a Hi-Speed USB (480 Mbps) or PCI Express (2.5 Gbps) bus.

extended partition Type of non-bootable hard disk partition. May only have one extended partition per disk. Purpose is to divide a large disk into smaller partitions, each with a separate drive letter.

extension Three or four letters that follow a filename and identify the type of file. Common file extensions are .ZIP, .EXE, and .DOC.

external data bus (EDB) Primary data highway of all computers. Everything in your computer is tied either directly or indirectly to the external data bus. (*See also* frontside bus and backside bus.)

fast user switching Account option that is useful when multiple users share a system; allows users to switch without logging off.

FAT (file allocation table) Hidden table that records how files on a hard disk are stored in distinct clusters; the only way DOS knows where to access files. Address of first cluster of a file is stored in the directory file. FAT entry for the first cluster is the address of the second cluster used to store that file. In the entry for the second cluster for that file is the address for the third cluster, and so on until the final cluster, which gets a special end-of-file code. There are two FATs, mirror images of each other, in case one is destroyed or damaged.

FAT32 File allocation table that uses 32 bits for addressing clusters. Commonly used with Windows 98 and Windows Me systems. Some Windows 2000 Professional and Windows XP systems also use FAT32, although most modern Windows systems use the more robust NTFS.

FDISK Disk-partitioning utility included with Windows.

fiber optics High-speed channel for transmitting data, made of high-purity glass sealed within an opaque tube. Much faster than conventional copper wire such as coaxial cable.

file Collection of any form of data that is stored beyond the time of execution of a single job. A file may contain program instructions or data, which may be numerical, textual, or graphical information.

file allocation unit Another term for cluster. (*See also* cluster.)

file association Windows term for the proper program to open a particular file; for example, file association for opening .MP3 programs might be Winamp.

file format How information is encoded in a file. Two primary types are binary (pictures) and ASCII (text), but within those are many formats, such as BMP and GIF for pictures. Commonly represented by a suffix at the end of the filename; for example, .txt for a text file or .exe for an executable.

file server Computer designated to store software, courseware, administrative tools, and other data on a local- or wide-area network. It "serves" this information to other computers via the network when users enter their personal access codes.

file system Scheme that directs how an OS stores and retrieves data on and off a drive; FAT32 and NTFS are both file systems. Used interchangeably with the term "data structure." (*See also* data structure.)

filename Name assigned to a file when the file is first written on a disk. Every file on a disk within the same folder must have a unique name. Filenames can contain any character (including spaces), except the following: \ / : * ? " < > |

firewall Device that restricts traffic between a local network and the Internet.

FireWire (IEEE 1394) Interconnection standard to send wide-band signals over a serialized, physically thin connector system. Serial bus developed by Apple and Texas Instruments; enables connection of 60 devices at speeds up to 800 megabits per second.

firmware Embedded programs or code stored on a ROM chip. Generally OS-independent, thus allowing devices to operate in a wide variety of circumstances without direct OS support. The system BIOS is firmware.

Flash ROM ROM technology that can be electrically reprogrammed while still in the PC. Overwhelmingly the most common storage medium of BIOS in PCs today, as it can be upgraded without a need to open the computer on most systems.

flatbed scanner Most popular form of consumer scanner; runs a bright light along the length of the tray to capture an image.

FlexATX Motherboard form factor. Motherboards built in accordance with the FlexATX form factor are very small, much smaller than microATX motherboards.

Flip 3D In the Aero desktop environment, a three-dimensional replacement for ALT-TAB. Accessed by pressing the WINDOWS KEY-TAB key combination.

floppy disk Removable storage media that can hold between 720 KB and 1.44 MB of data.

floppy drive System hardware that uses removable 3.5-inch disks as storage media.

flux reversal Point at which a read/write head detects a change in magnetic polarity.

FM synthesis Producing sound by electronic emulation of various instruments to more-or-less produce music and other sound effects.

folders list Toggle button in Windows Explorer for Windows 2000 and XP that displays the file structure on the left side of the window. In Windows Vista and 7, the folders list is active by default.

form factor Standard for the physical organization of motherboard components and motherboard size. Most common form factors are ATX and BTX.

FORMAT command Command in the command line interface used to format a storage device.

formatting Magnetically mapping a disk to provide a structure for storing data; can be done to any type of disk, including a floppy disk, hard disk, or other type of removable disk.

FPU (floating point unit) Formal term for math coprocessor (also called a *numeric processor*) circuitry inside a CPU. A math coprocessor calculates by using a floating point math (which allows for decimals). Before the Intel 80486, FPUs were separate chips from the CPU.

fragmentation Occurs when files and directories get jumbled on a fixed disk and are no longer contiguous. Can significantly slow down hard drive access times and can be repaired by using the DEFRAG utility included with each version of Windows. (*See also* defragmentation (DEFRAG).)

freeware Software that is distributed for free, with no license fee.

frequency Measure of a sound's tone, either high or low.

frontside bus Wires that connect the CPU to the main system RAM. Generally running at speeds of 66–133 MHz. Distinct from the expansion bus and the backside bus, though it shares wires with the former.

front-view projector Shoots the image out the front and counts on you to put a screen in front at the proper distance.

FRU (field replaceable unit) Any part of a PC that is considered to be replaceable "in the field," i.e., a customer location. There is no official list of FRUs—it is usually a matter of policy by the repair center.

FTP (File Transfer Protocol) Rules that enable two computers to talk to one another during a file transfer. Protocol used when you transfer a file from one computer to another across the Internet.

fuel cells Power source that uses chemical reactions to produce electricity. Lightweight, compact, and stable devices expected to replace batteries as the primary power source for portable PCs.

full-duplex Any device that can send and receive data simultaneously.

Full-Speed USB USB standard that runs at 12 Mbps.

fuser assembly Mechanism in laser printers that uses two rollers to fuse toner to paper during the print process.

gain Ratio of increase of radio frequency output provided by an antenna, measured in decibels (dB).

GDI (graphical device interface) Component of Windows that utilizes the CPU rather than the printer to process a print job as a bitmapped image of each page.

general protection fault (GPF) Error code usually seen when separate active programs conflict on resources or data.

geometry Numbers representing three values: heads, cylinders, and sectors per track; define where a hard drives stores data.

giga Prefix for the quantity 1,073,741,824 or for 1 billion. One gigabyte would be 1,073,741,824 bytes, except with hard drive labeling, where it means 1 billion bytes. One gigahertz is 1 billion hertz.

GPU (graphics processing unit) Specialized processor that helps CPU by taking over all of the 3-D rendering duties.

grayscale depth Number that defines how many shades of gray the scanner can save per dot.

grayware Program that intrudes into a user's computer experience without damaging any systems or data.

group Collection of user accounts that share the same access capabilities.

Group Policy Means of easily controlling the settings of multiple network clients with policies such as setting minimum password length or preventing Registry edits.

Guest/Guest groups Very limited built-in account type for Windows.

GUI (graphical user interface) Interface that enables user to interact with computer graphically, by using a mouse or other pointing device to manipulate icons that represent programs or documents, instead of using only text as in early interfaces. Pronounced "gooey."

HAL (hardware abstraction layer) Part of the Windows OS that separates system-specific device drivers from the rest of the NT system.

handshaking Procedure performed by modems, terminals, and computers to verify that communication has been correctly established.

hang When a computer freezes and does not respond to keyboard commands, it is said to "hang" or to have "hung."

hang time Number of seconds a too-often-hung computer is airborne after you have thrown it out a second-story window.

hardware Physical computer equipment such as electrical, electronic, magnetic, and mechanical devices. Anything in the computer world that you can hold in your hand. A floppy drive is hardware; Microsoft Word is not.

hardware protocol Defines many aspects of a network, from the packet type to the cabling and connectors used.

HBA (host bus adapter) Connects SATA devices to the expansion bus. Also known as the SATA controller.

HD (Hi-Definition) Multimedia transmission standard that defines high-resolution images and 5.1, 6.1, and 7.1 sound.

HDA (High-Definition Audio) Intel-designed standard to support features such as true surround sound with many discrete speakers.

HDD (hard disk drive) Data-recording system using solid disks of magnetic material turning at high speeds to store and retrieve programs and data in a computer.

HDMI (high-definition multimedia interface) Single multimedia connection that includes both high-definition video and audio. One of the best connections for outputting to television. Also contains copy protection features.

heads Short for read/write heads used by hard drives to store data.

heat dope See thermal compound.

hex (hexadecimal) Base-16 numbering system using 10 digits (0 through 9) and six letters (A through F). In the computer world, shorthand way to write binary numbers by substituting one hex digit for a four-digit binary number (e.g., hex 9 = binary 1001).

hibernation Power management setting in which all data from RAM is written to the hard drive before going to sleep. Upon waking up, all information is retrieved from the hard drive and returned to RAM.

hidden attribute File attribute that, when used, does not allow DIR command to show a file.

hierarchical directory tree Method by which Windows organizes files into a series of folders, called *directories*, under the root directory. (*See also* root directory.)

high gloss Laptop screen finish that offers sharper contrast, richer colors, and wider viewing angles than a matte finish, but is also much more reflective.

high-level formatting Format that sets up a file system on a drive.

high-voltage anode Component in a CRT monitor that has very high voltages of electricity flowing through it.

Hi-Speed USB USB standard that runs at 480 Mbps.

honesty Telling the truth—a very important thing for a tech to do.

host On a TCP/IP network, single device that has an IP address—any device (usually a computer) that can be the source or destination of a data packet. In the mainframe world, computer that is made available for use by multiple people simultaneously.

hot-swappable Any hardware that may be attached to or removed from a PC without interrupting the PC's normal processing.

HotSync (synchronization) Program used by PalmOS-based PDAs to synchronize files between a PDA and a desktop computer.

HRR (horizontal refresh rate) Amount of time it takes for a CRT to draw one horizontal line of pixels on a display.

HTML (Hypertext Markup Language) ASCII-based, script-like language for creating hypertext documents such as those on the World Wide Web.

HTTP (Hypertext Transfer Protocol) Extremely fast protocol used for network file transfers in the WWW environment.

HTTPS (HTTP over Secure Sockets Layer) Secure form of HTTP used commonly for Internet business transactions or any time when a secure connection is required. (*See also* HTTP.)

hub Electronic device that sits at the center of a star topology network, providing a common point for the connection of network devices. Hubs repeat all information out to all ports and have been replaced by switches, although the term is still commonly used.

hyperthreading CPU feature that enables a single pipeline to run more than one thread at once.

I/O (input/output) General term for reading and writing data to a computer. "Input" includes data from a keyboard, pointing device (such as a mouse), or loaded from a disk. "Output" includes writing information to a disk, viewing it on a CRT, or printing it to a printer.

I/O addressing Using the address bus to talk to system devices.

I/O advanced programmable interrupt controller (IOAPIC) Typically located in the Southbridge, the IOAPIC acts as the traffic cop for interrupt requests to the CPU.

I/O base address First value in an I/O address range.

ICH (I/O controller hub) Official name for Southbridge chip found in Intel's chipsets.

icon Small image or graphic, most commonly found on a system's desktop, that launches a program when selected.

ICS (Internet Connection Sharing) Allowing a single network connection to be shared among several machines. ICS was first introduced with Windows 98.

IDE (intelligent drive electronics) PC specification for small- to medium-sized hard drives in which the controlling electronics for the drive are part of the drive itself, speeding up transfer rates and leaving only a simple adapter (or "paddle"). IDE only supported two drives per system of no more than 504 megabytes each, and has been completely supplanted by Enhanced IDE. EIDE supports four drives of over 8 gigabytes each and more than doubles the transfer rate. The more common name for PATA drives. Also known as *integrated drive electronics*. (*See* PATA.)

Identify the problem. To question the user and find out what has been changed recently or is no longer working properly. (One of the steps a technician uses to a solve a problem.)

IEC-320 Connects the cable supplying AC power from a wall outlet into the power supply.

IEEE (Institute of Electronic and Electrical Engineers) Leading standards-setting group in the United States.

IEEE 1284 IEEE standard governing parallel communication.

IEEE 1394 IEEE standard governing FireWire communication. (*See also* FireWire.)

IEEE 1394a FireWire standard that runs at 400 Mbps.

IEEE 1394b FireWire standard that runs at 800 Mbps

IEEE 802.11 Wireless Ethernet standard more commonly known as Wi-Fi.

image file Bit-by-bit image of data to be burned on CD or DVD—from one file to an entire disc—stored as a single file on a hard drive. Particularly handy when copying from CD to CD or DVD to DVD.

image installation Operating system installation that uses a complete image of a hard drive as an installation media. Helpful when installing an operating system on a large number of identical PCs.

impact printer Uses pins and inked ribbons to print text or images on a piece of paper.

impedance Amount of resistance to an electrical signal on a wire. Relative measure of the amount of data a cable can handle.

incident report Record of the details of an accident, including what happened and where it happened.

incremental backup Backs up all files that have their archive bits turned on, meaning that they have been changed since the last backup. Turns the archive bits off after the files have been backed up.

Information Technology (IT) Field of computers, their operation, and their maintenance.

infrastructure mode Wireless networking mode that uses one or more WAPs to connect the wireless network nodes to a wired network segment.

inheritance Feature that passes on the same permissions in any sub-folders/files resident in the original folder.

ink cartridge Small container of ink for inkjet printers.

inkjet printer Uses liquid ink, sprayed through a series of tiny jets, to print text or images on a piece of paper.

installation disc Typically a CD-ROM or DVD that holds all the necessary device drivers.

instruction set All of the machine-language commands that a particular CPU is designed to understand.

integrity Always doing the right thing.

interface Means by which a user interacts with a piece of software.

Interrupt 13 (INT13) extensions Improved type of BIOS that accepts EIDE drives up to 137 GB.

interrupt/interruption Suspension of a process, such as the execution of a computer program, caused by an event external to the computer and performed in such a way that the process can be resumed. Events of this kind include sensors monitoring laboratory equipment or a user pressing an interrupt key.

inverter Device used to convert DC current into AC. Commonly used with CCFLs in laptops and flatbed scanners.

IP (Internet Protocol) Internet standard protocol that provides a common layer over dissimilar networks; used to move packets among host computers and through gateways if necessary. Part of the TCP/IP protocol suite.

IP address Numeric address of a computer connected to the Internet. An IPv4 address is made up of 4 octets of 8-bit binary numbers translated into their shorthand numeric values. An IPv6 address is 128-bits long. The IP address can be broken down into a network ID and a host ID. Also called *Internet address*.

IPCONFIG Command-line utility for Windows servers and workstations that displays the current TCP/IP configuration of the machine. Similar to WINIPCFG and IFCONFIG.

IPSec (Internet Protocol Security) Microsoft's encryption method of choice for networks consisting of multiple networks linked by a private connection, providing transparent encryption between the server and the client.

IrDA (Infrared Data Association) Protocol that enables communication through infrared devices, with speeds of up to 4 Mbps.

IRQ (interrupt request) Signal from a hardware device, such as a modem or a mouse, indicating that it needs the CPU's attention. In PCs, IRQs are sent along specific IRQ channels associated with a particular device. IRQ conflicts were a common problem in the past when adding expansion boards, but the plug-and-play specification has removed this headache in most cases.

ISA (industry standard architecture) Industry Standard Architecture design was found in the original IBM PC for the slots that allowed additional hardware to be connected to the computer's motherboard. An 8-bit, 8.33-MHz expansion bus was designed by IBM for its AT computer and released to the public domain. An improved 16-bit bus was also released to the public domain. Replaced by PCI in the mid-1990s.

ISDN (integrated services digital network) CCITT (Comité Consultatif Internationale de Télégraphie et Téléphonie) standard that defines a digital method for communications to replace the current analog telephone system. ISDN is superior to POTS telephone lines because it supports up to 128 Kbps transfer rate for sending information from computer to computer. It also allows data and voice to share a common phone line. DSL reduced demand for ISDN substantially. (*See also* POTS.)

ISO 9660 CD format to support PC file systems on CD media. Supplanted by the Joliet format.

ISO file Complete copy (or image) of a storage media device, typically used for optical discs.

ISP (Internet service provider) Company that provides access to the Internet, usually for money.

jack (physical connection) Part of a connector into which a plug is inserted. Also referred to as ports.

Joliet Extension of the ISO 9660 format. Most popular CD format to support PC file systems on CD media.

joystick Peripheral often used while playing computer games; originally intended as a multipurpose input device.

joule Unit of energy describing (in this book) how much energy a surge suppressor can handle before it fails.

jumper Pair of small pins that can be shorted with a shunt to configure many aspects of PCs. Usually used in configurations that are rarely changed, such as master/slave settings on IDE drives.

Kerberos Authentication encryption developed by MIT to enable multiple brands of servers to authenticate multiple brands of clients.

kernel Core portion of program that resides in memory and performs the most essential operating system tasks.

keyboard Input device. Three common types of keyboards: those that use a mini-DIN (PS/2) connection, those that use a USB connection, and those that use wireless technology.

Knowledge Base Large collection of documents and FAQs that is maintained by Microsoft. Found on Microsoft's Web site, the Knowledge Base is an excellent place to search for assistance on most operating system problems.

KVM (keyboard, video, mouse switch) Hardware device that enables multiple computers to be viewed and controlled by a single mouse, keyboard, and screen.

LAN (local area network) Group of PCs connected via cabling, radio, or infrared that use this connectivity to share resources such as printers and mass storage.

laptop Traditional clamshell portable computing device with built-in LCD monitor, keyboard, and trackpad.

laser Single-wavelength, in-phase light source that is sometimes strapped to the head of sharks by bad guys. Note to henchmen: Lasers should never be used with sea bass, no matter how ill-tempered they might be.

laser printer Electro-photographic printer in which a laser is used as the light source.

Last Known Good Configuration Option on the Advanced Startup Options menu that allows your system to revert to a previous configuration to troubleshoot and repair any major system problems.

latency Amount of delay before a device may respond to a request; most commonly used in reference to RAM.

LBA (logical block addressing) Translation (algorithm) of IDE drives promoted by Western Digital as a standardized method for breaking the 504-MB limit in IDE drives. Subsequently universally adopted by the PC industry and now standard on all EIDE drives.

LCD (liquid crystal display) Type of display commonly used on portable PCs. Also have mostly replaced CRTs as the display of choice for most desktop computer users, due in large part to rapidly falling prices and increasing quality. LCDs use liquid crystals and electricity to produce images on the screen.

LED (light-emitting diode) Solid-state device that vibrates at luminous frequencies when current is applied.

Level 1 (L1) cache First RAM cache accessed by the CPU, which stores only the absolute most-accessed programming and data used by currently running threads. Always the smallest and fastest cache on the CPU.

Level 2 (L2) cache Second RAM cache accessed by the CPU. Much larger and often slower than the L1 cache, and accessed only if the requested program/data is not in the L1 cache.

Level 3 (L3) cache Third RAM cache accessed by the CPU. Much larger and slower than the L1 and L2 caches, and accessed only if the requested program/data is not in the L2 cache. Seen only on high-end CPUs.

Li-Ion (lithium-ion) Battery commonly used in portable PCs. Li-Ion batteries don't suffer from the memory effects of NiCd batteries and provide much more power for a greater length of time.

limited account/user User account in Windows XP that has limited access to a system. Accounts of this type cannot alter system files, cannot install new programs, and cannot edit settings by using the Control Panel.

Linux Open-source UNIX-clone operating system.

Local Security Settings Windows tool used to set local security policies on an individual system.

local user account List of users allowed access to a system.

Local Users and Groups Tool enabling creation and changing of group memberships and accounts for users.

log files Files created in Windows to track the progress of certain processes.

logical drives Sections of a hard drive that are formatted and assigned a drive letter, each of which is presented to the user as if it were a separate drive.

login screen First screen of the Windows interface, used to log in to the computer system.

loopback plug Device used during loopback tests to check the female connector on a NIC.

Low-Speed USB USB standard that runs at 1.5 Mbps.

LPT port Commonly referred to as a printer port; usually associated with a local parallel port.

LPX First slimline form factor; replaced by NLX form factor.

lumens Unit of measure for amount of brightness on a projector or other light source.

Mac (Also **Macintosh**.) Apple Computers' flagship operating system, currently up to OS Xv10.6 "Snow Leopard" and running on Intel-based hardware.

MAC (Media Access Control) address Unique 48-bit address assigned to each network card. IEEE assigns blocks of possible addresses to various NIC manufacturers to help ensure that the address is always unique. The Data Link layer of the OSI model uses MAC addresses for locating machines.

MAC address filtering Method of limiting wireless network access based on the physical, hard-wired address of the units' wireless NIC.

machine language Binary instruction code that is understood by the CPU.

maintenance kits Commonly replaced printer components provided by many manufacturers.

mass storage Hard drives, CD-ROMs, removable media drives, etc.

matte Laptop screen finish that offers a good balance between richness of colors and reflections, but washes out in bright light.

MBR (master boot record) Tiny bit of code that takes control of the boot process from the system BIOS.

MCC (memory controller chip) Chip that handles memory requests from the CPU. Although once a special chip, it has been integrated into the chipset on all PCs today.

MCH (memory controller hub) Intel-coined name for what is now commonly called the Northbridge.

MD (MKDIR) command Command in the command line interface used to create directories.

mega- Prefix that usually stands for the binary quantity 1,048,576 (2^{20}). One megabyte is 1,048,576 bytes. One megahertz, however, is a million hertz. Sometimes shortened to *Meg*, as in "a 286 has an address space of 16 Megs."

megapixel Term used typically in reference to digital cameras and their ability to capture data.

memory Device or medium for temporary storage of programs and data during program execution. Synonymous with storage, although it most frequently refers to the internal storage of a computer that can be directly addressed by operating instructions. A computer's temporary storage capacity is measured in kilobytes (KB), megabytes (MB), or gigabytes (GB) of RAM (random-access memory). Long-term data storage on disks is also measured in kilobytes, megabytes, gigabytes, and terabytes.

memory addressing Taking memory address from system RAM and using it to address nonsystem RAM or ROM so the CPU can access it.

Memory Stick Sony's flash memory card format; rarely seen outside of Sony devices.

mesh topology Network topology where each computer has a dedicated line to every other computer, most often used in wireless networks.

MFT (master file table) Enhanced file allocation table used by NTFS. (*See also* FAT.)

microATX Variation of the ATX form factor, which uses the ATX power supply. MicroATX motherboards are generally smaller than their ATX counterparts but retain all the same functionality.

microBTX Variation of the BTX form factor. MicroBTX motherboards are generally smaller than their BTX counterparts but retain all the same functionality.

microprocessor "Brain" of a computer. Primary computer chip that determines relative speed and capabilities of the computer. Also called *CPU*.

Microsoft Windows Logo Program Testing program for hardware manufacturers, designed to ensure compatibility with the Windows OS.

MIDI (musical instrument digital interface) Interface between a computer and a device for simulating musical instruments. Rather than sending large sound samples, a computer can simply send "instructions" to the instrument describing pitch, tone, and duration of a sound. MIDI files are therefore very efficient. Because a MIDI file is made up of a set of instructions rather than a copy of the sound, modifying each component of the file is easy. Additionally, it is possible to program many channels, or "voices" of music to be played simultaneously, creating symphonic sound.

migration Moving users from one operating system or hard drive to another.

MIMO (multiple in/multiple out) Feature of 802.11n devices that enables the simultaneous connection of up to four antennae, allowing for increased throughput.

mini-audio connector Very popular, 1/8-inch diameter connector used to transmit two audio signals; perfect for stereo sound.

mini connector One type of power connector from a PC power supply unit. Supplies 5 and 12 volts to peripherals. Also known as a floppy connector,

mini PCI Specialized form of PCI designed for use in laptops.

mini power connector Connector used to provide power to floppy disk drives.

nini-DIN Small connection most commonly used for keyboards and mice. Many modern systems implement USB in place of mini-DIN connections. Also called *PS/2*.

mirrored volume Volume that is mirrored on another volume. (*See also* mirroring.)

mirroring Reading and writing data at the same time to two drives for fault tolerance purposes. Considered RAID level 1. Also called *drive mirroring*.

MMC (Microsoft Management Console) Means of managing a system, introduced by Microsoft with Windows 2000. The MMC allows an Administrator to customize management tools by picking and choosing from a list of snap-ins. Available snap-ins include Device Manager, Users and Groups, and Computer Management.

MMX (multimedia extensions) Specific CPU instructions that enable a CPU to handle many multimedia functions, such as digital signal processing. Introduced with the Pentium CPU, these instructions are used on all ×86 CPUs.

mode Any single combination of resolution and color depth set for a system.

modem (modulator/demodulator) Device that converts a digital bit stream into an analog signal (modulation) and converts incoming analog signals back into digital signals (demodulation). Analog communications channel is typically a telephone line, and analog signals are typically sounds.

module Small circuit board that DRAM chips are attached to. Also known as a "stick."

Molex connector Computer power connector used by CD-ROM drives, hard drives, and case fans. Keyed to prevent it from being inserted into a power port improperly.

monaural Describes recording tracks from one source (microphone) as opposed to stereo, which uses two sources.

monitor Screen that displays data from a PC. Can use either a cathode ray tube (CRT) or a liquid crystal display (LCD) to display images.

motherboard Flat piece of circuit board that resides inside your computer case and has a number of connectors on it. You can use these connectors to attach a variety of devices to your system, including hard drives, CD-ROM drives, floppy disk drives, and sound cards.

motherboard book Valuable resource when installing a new motherboard. Normally lists all the specifications about a motherboard, including the type of memory and type of CPU that should be used with the motherboard.

mount point Drive that functions like a folder mounted into another drive.

mouse Input device that enables users to manipulate a cursor on the screen to select items.

MOVE command Command in the command line interface used to move a file from one location to another.

MP3 Short for MPEG, Layer 3. MP3 is a type of compression used specifically for turning high-quality digital audio files into much smaller, yet similar sounding, files.

MPA (Microsoft Product Activation) Introduced by Microsoft with the release of Windows XP, Microsoft Product Activation prevents unauthorized use of Microsoft's software by requiring users to activate the software.

MPEG-2 (Moving Pictures Experts Group) Standard of video and audio compression offering resolutions up to 1280 × 720 at 60 frames per second.

MPEG-4 (Moving Pictures Experts Group) Standard of video and audio compression offering improved compression over MPEG-2.

MS-CHAP Microsoft's variation of the CHAP protocol, which uses a slightly more advanced encryption protocol. Windows Vista uses MS-CHAP v2 (version 2), and does not support MS-CHAP v1 (version 1).

MSCONFIG (System Configuration Utility) Executable file that runs the Windows System Configuration Utility, which enables users to configure a system's boot files and critical system files. Often used for the name of the utility, as in "just run MSCONFIG."

MSDS (material safety data sheet) Standardized form that provides detailed information about potential environmental hazards and proper disposal methods associated with various PC components.

MSINFO32 Provides information about hardware resources, components, and the software environment. Also known as System Information.

multiboot OS installation in which multiple operating systems are installed on a single machine. Can also refer to kicking a device several times in frustration.

multimedia extensions Originally an Intel CPU enhancement designed for graphics-intensive applications (such as games). It was never embraced but eventually led to improvements in how CPUs handle graphics.

multimeter Device used to measure voltage, amperage, and resistance.

multisession drive Recordable CD drive capable of burning multiple sessions onto a single recordable disc. A multisession drive also can close a CD-R so that no further tracks can be written to it.

multitasking Process of running multiple programs or tasks on the same computer at the same time.

Music-CD-R CD using a special format for home recorders. Music CD-R makers pay a small royalty to avoid illegal music duplication.

My Computer Applet that allows users to access a complete list of all fixed and removable drives contained within a system.

My Documents Introduced with Windows 98 and used in Windows 2000 and Windows XP, the My Documents folder provides a convenient place for users to store their documents, log files, and any other type of files.

My Network Places Folder in Windows XP that enables users to view other computers on their network or workgroup.

native resolution Resolution on an LCD monitor that matches the physical pixels on the screen. CRTs do not have fixed pixels and therefore do not have a native resolution.

NET Command in Windows that allows users to view a network without knowing the names of the other computers on that network.

NetBIOS (Network Basic Input/Output System) Protocol that operates at the Session layer of the OSI seven-layer model. This protocol creates and manages connections based on the names of the computers involved.

network Collection of two or more computers interconnected by telephone lines, coaxial cables, satellite links, radio, and/or some other communication technique. Group of computers that are connected and that communicate with one another for a common purpose. Also, the name of Vista's version of the My Network Places folder.

network ID Number that identifies the network on which a device or machine exists. This number exists in both IP and IPX protocol suites.

network printer Printer that connects directly to a network.

NIC (network interface card) Expansion card that enables a PC to physically link to a network.

NiCd (nickel-cadmium) Battery that was used in the first portable PCs. Heavy and inefficient, these batteries also suffered from a memory effect that could drastically shorten the overall life of the battery. (*See also* NiMH, Li-Ion.)

NiMH (nickel metal hydride) Battery used in portable PCs. NiMH batteries had fewer issues with the memory effect than NiCd batteries. NiMH batteries have been replaced by lithium-ion batteries. (*See also* NiCd, Li-Ion.)

nit Value used to measure the brightness of an LCD displays. A typical LCD display has a brightness of between 100 and 400 nits.

NLQ (near-letter quality) Designation for dot-matrix printers that use 24-pin printheads.

NLX Second form factor for slimline systems. Replaced the earlier LPX form factor. (NLX apparently stands for nothing; it's just a cool grouping of letters.)

NMI (non-maskable interrupt) Interrupt code sent to the processor that cannot be ignored. Typically manifested as a BSOD.

NNTP (Network News Transfer Protocol) Protocol run by news servers that enable newsgroups.

non-system disk or disk error Error that occurs during the boot process. Common causes for this error are leaving a non-bootable floppy disk, CD, or other media in the drive while the computer is booting.

nonvolatile Memory that retains data even if power is removed.

normal backup Full backup of every selected file on a system. Turns off the archive bit after the backup.

Northbridge Chip that connects a CPU to memory, the PCI bus, Level 2 cache, and AGP activities. Communicates with the CPU through the frontside bus. Newer CPUs feature an integrated Northbridge.

NOS (network operating system) Standalone operating system or part of an operating system that provides basic file and supervisory services over a network. Although each computer attached to the network has its own OS, the NOS describes which actions are allowed by each user and coordinates distribution of networked files to the user who requests them.

notification area Contains icons representing background processes, the system clock and volume control. Located by default at the right edge of the Windows taskbar. Most users call this area the system tray.

NSLOOKUP Command line program in Windows used to determine exactly what information the DNS server is providing about a specific host name.

NTDETECT.COM One of the critical Windows NT/2000/XP startup files.

NTFS (NT file system) Robust and secure file system introduced by Microsoft with Windows NT. NTFS provides an amazing array of configuration options for user access and security. Users can be granted access to data on a file-by-file basis. NTFS enables object-level security, long filename support, compression, and encryption.

NTFS permissions Restrictions that determine the amount of access given to a particular user on a system using NTFS.

NTLDR Windows NT/2000/XP boot file. Launched by the MBR or MFT, NTLDR looks at the BOOT.INI configuration file for any installed operating systems.

NVIDIA One of the foremost manufacturers of graphics cards and chipsets.

object System component that is given a set of characteristics and can be managed by the operating system as a single entity.

object access auditing Feature of Event Viewer's Security section that creates an entry in the Security Log when certain objects are accessed, such as a file or folder.

ohm(s) Electronic measurement of a cable's impedance.

OpenGL One of two popular APIs used today for video cards. Originally written for UNIX systems but now ported to Windows and Apple systems. (*See also* DirectX.)

optical disc/media Types of data discs (such as DVDs, CDs, Blu-ray Discs, etc.) that are read by a laser.

optical drive Drive used to read/write to optical discs, such as CDs or DVDs.

optical mouse Pointing device that uses light rather than electronic sensors to determine movement and direction the mouse is being moved.

optical resolution Resolution a scanner can achieve mechanically. Most scanners use software to enhance this ability.

optical zoom Mechanical ability of most cameras to "zoom" in as opposed to the digital ability.

option ROM Alternative way of telling the system how to talk to a piece of hardware. Option ROM stores BIOS for the card onboard a chip on the card itself.

OS (operating system) Series of programs and code that create an interface so users can interact with a system's hardware, for example, DOS, Windows, and Linux.

OS X Current operating system on Apple Macintosh computers. Based on a UNIX core, early versions of OS X ran on Motorola-based hardware; current versions run on Intel-based hardware. Pronounced "ten" rather than "ex."

OSI seven-layer model Architecture model based on the OSI protocol suite that defines and standardizes the flow of data between computers. The seven layers are:
Layer 1 The Physical layer Defines hardware connections and turns binary into physical pulses (electrical or light). Repeaters and hubs operate at the Physical layer.
Layer 2 The Data Link layer Identifies devices on the Physical layer. MAC addresses are part of the Data Link layer. Bridges operate at the Data Link layer.
Layer 3 The Network layer Moves packets between computers on different networks. Routers operate at the Network layer. IP and IPX operate at the Network layer.
Layer 4 The Transport layer Breaks data down into manageable chunks. TCP, UDP, SPX, and NetBEUI operate at the Transport layer.
Layer 5 The Session layer Manages connections between machines. NetBIOS and Sockets operate at the Session layer.
Layer 6 The Presentation layer Can also manage data encryption; hides the differences between various types of computer systems.
Layer 7 The Application layer Provides tools for programs to use to access the network (and the lower layers). HTTP, FTP, SMTP, and POP3 are all examples of protocols that operate at the Application layer.

overclocking To run a CPU or video processor faster than its rated speed.

P1 power connector Provides power to ATX motherboards.

P4 12V connector Provides additional 12-volt power to motherboards that support Pentium 4 and later processors.

P8 and P9 connectors Provides power to AT-style motherboards.

packet Basic component of communication over a network. Group of bits of fixed maximum size and well-defined format that is switched and transmitted as a single entity through a network. Contains source and destination address, data, and control information.

page fault Minor memory-addressing error.

page file Portion of the hard drive set aside by Windows to act like RAM. Also known as virtual memory or swap file.

PAN (personal area network) Small wireless network created with Bluetooth technology and intended to link PCs and other peripheral devices.

parallel port Connection for the synchronous, high-speed flow of data along parallel lines to a device, usually a printer.

parallel processing When a multicore CPU processes more than one thread.

parental controls Tool to allow monitoring and limiting of user activities; designed for parents to control the content their children can access.

parity Method of error detection where a small group of bits being transferred is compared to a single parity bit set to make the total bits odd or even. Receiving device reads the parity bit and determines if the data is valid, based on the oddness or evenness of the parity bit.

parity RAM Earliest form of error-detecting RAM; stored an extra bit (called the *parity bit*) to verify the data.

partition Section of the storage area of a hard disk. Created during initial preparation of the hard disk, before the disk is formatted.

partition table Table located in the boot sector of a hard drive that lists every partition on the disk that contains a valid operating system.

partitioning Electronically subdividing a physical hard drive into groups called *partitions* (or *volumes*).

passive matrix Technology for producing colors in LCD monitors by varying voltages across wire matrices to produce red, green, or blue dots.

password Key used to verify a user's identity on a secure computer or network.

Password Authentication Protocol (PAP) Oldest and most basic form of authentication. Also the least safe, because it sends all passwords in clear text.

password reset disk Special type of floppy disk with which users can recover a lost password without losing access to any encrypted, or password-protected, data.

PATA (parallel ATA) Implementation that integrates the controller on the disk drive itself. (*See also* ATA, IDE, SATA.)

patch Small piece of software released by a software manufacturer to correct a flaw or problem with a particular piece of software.

path Route the operating system must follow to find an executable program stored in a subdirectory.

PC bus Original 8-bit expansion bus developed by IBM for PCs; ran at a top speed of 4.77 MHz. Also known as the XT bus.

PC Card Credit card–sized adapter cards that add functionality in many notebook computers, PDAs, and other computer devices. Come in 16-bit and CardBus parallel format and ExpressCard serial format. (*See also* PCMCIA.)

PC tech Someone with computer skills who works on computers.

PCI (peripheral component interconnect) Design architecture for the expansion bus on the computer motherboard, which enables system components to be added to the computer. Local bus standard, meaning that devices added to a computer through this port will use the processor at the motherboard's full speed (up to 33 MHz) rather than at the slower 8 MHz speed of the regular bus. Moves data 32 or 64 bits at a time rather than the 8 or 16 bits the older ISA buses supported.

PCIe (PCI Express) Serialized successor to PCI and AGP, which uses the concept of individual data paths called *lanes*. May use any number of lanes, although

single lanes (×1) and 16 lanes (×16) are the most common on motherboards.

PCI-X (PCI Extended) Enhanced version of PCI, 64 bits wide. Typically seen in servers and high-end systems.

PCL Printer control language created by Hewlett-Packard and used on a broad cross-section of printers.

PCM (Pulse Code Modulation) Sound format developed in the 1960s to carry telephone calls over the first digital lines.

PCMCIA (Personal Computer Memory Card International Association) Consortium of computer manufacturers who devised the PC Card standard for credit card–sized adapter cards that add functionality in many notebook computers, PDAs, and other computer devices. (*See also* PC Card.)

PDA (personal digital assistant) Handheld computer that blurs the line between calculators and computers. Early PDAs were calculators that enabled users to program in such information as addresses and appointments. Modern PDAs, such as the Palm and PocketPC, are fully programmable computers. Most PDAs use a pen/stylus for input rather than a keyboard. A few of the larger PDAs have a tiny keyboard in addition to the stylus.

Pearson VUE One of the two companies that administers the CompTIA A+ exams, along with Prometric.

peer-to-peer networks Network in which each machine can act as both a client and a server.

Pentium Name given to the fifth and later generations of Intel microprocessors; has a 32-bit address bus, 64-bit external data bus, and dual pipelining. Also used for subsequent generations of Intel processors—the Pentium Pro, Pentium II, Pentium III, and Pentium 4. Pentium name was retired after the introduction of the Intel Core CPUs.

pen-based computing Input method used by many PDAs that combines handwriting recognition with modified mouse functions, usually in the form of a pen-like stylus.

performance console Windows tool used to log resource usage over time.

Performance Logs and Alerts Snap-in enabling the creation of a written record of most everything that happens on the system.

Performance Options Tool allowing users to configure CPU, RAM, and virtual memory settings.

peripheral Any device that connects to the system unit.

permission propagation Term to describe what happens to permissions on an object when you move or copy it.

persistence Phosphors used in CRT screens continuing to glow after being struck by electrons, long enough for the human eye to register the glowing effect. Glowing too long makes the images smeary, and too little makes them flicker.

Personalization applet Windows Vista/7 applet with which users can change display settings such as resolution, refresh rate, color depth and also desktop features.

PGA (pin grid array) Arrangement of a large number of pins extending from the bottom of the CPU package. There are many variations on PGA.

Phillips-head screwdriver Most important part of a PC tech's toolkit.

Phoenix Technologies Major producer of BIOS software for motherboards.

phosphor Electro-fluorescent material that coats the inside face of a cathode ray tube (CRT). After being hit with an electron, it glows for a fraction of a second.

photosensitive drum Aluminum cylinder coated with particles of photosensitive compounds. Used in a laser printer and usually contained within the toner cartridge.

picoBTX Variation of the BTX form factor. picoBTX motherboards are generally smaller than their BTX or microBTX counterparts but retain the same functionality.

pin 1 Designator used to ensure proper alignment of floppy disk drive and hard drive connectors.

ping (packet Internet groper) Slang term for a small network message (ICMP ECHO) sent by a computer to check for the presence and aliveness of another. Used to verify the presence of another system. Also the command used at a prompt to ping a computer.

PIO mode Series of speed standards created by the Small Form Factor Committee for the use of PIO by hard drives. Modes range from PIO mode 0 to PIO mode 4.

pipeline Processing methodology where multiple calculations take place simultaneously by being broken into a series of steps. Often used in CPUs and video processors.

pixel (picture element) In computer graphics, smallest element of a display space that can be independently assigned color or intensity.

plug Hardware connection with some sort of projection that connects to a port.

plug and play (PnP) Combination of smart PCs, smart devices, and smart operating systems that automatically configure all necessary system resources and ports when you install a new peripheral device.

polygons Multi-sided shapes used in 3-D rendering of objects. In computers, video cards draw large numbers of triangles and connect them to form polygons.

polymorph virus Virus that attempts to change its signature to prevent detection by antivirus programs, usually by continually scrambling a bit of useless code.

polyphony Number of instruments a sound card can play at once.

POP3 (Post Office Protocol) Refers to the way e-mail software such as Eudora gets mail from a mail server. When you obtain a SLIP, PPP, or shell account, you almost always get a POP account with it. It is this POP account that you tell your e-mail software to use to get your mail. Also called *point of presence*.

pop-up Irritating browser window that appears automatically when you visit a Web site.

port (networking) In networking, the number used to identify the requested service (such as SMTP or FTP) when connecting to a TCP/IP host. Examples: 80 (HTTP), 20 (FTP), 69 (TFTP), 25 (SMTP), and 110 (POP3).

port (physical connection) Part of a connector into which a plug is inserted. Physical ports are also referred to as jacks.

port replicator Device that plugs into a USB port or other specialized port and offers common PC ports, such as serial, parallel, USB, network, and PS/2. By plugging your notebook computer into the port replicator, you can instantly connect the computer to non-portable components such as a printer, scanner, monitor, or full-sized keyboard. Port replicators are typically used at home or in the office with the non-portable equipment already connected.

positional audio Range of commands for a sound card to place a sound anywhere in 3-D space.

POST (power-on self test) Basic diagnostic routine completed by a system at the beginning of the boot process to make sure a display adapter and the system's memory are installed; it then searches for an operating system. If it finds one, it hands over control of the machine to the OS.

PostScript Language defined by Adobe Systems, Inc. for describing how to create an image on a page. The description is independent of the resolution of the device that will actually create the image. It includes a technology for defining the shape of a font and creating a raster image at many different resolutions and sizes.

potential Amount of static electricity stored by an object.

power conditioning Ensuring and adjusting incoming AC wall power to as close to standard as possible. Most UPS devices provide power conditioning.

power good wire Used to wake up the CPU after the power supply has tested for proper voltage.

power supply fan Small fan located in a system power supply that draws warm air from inside the power supply and exhausts it to the outside.

power supply unit Provides the electrical power for a PC. Converts standard AC power into various voltages of DC electricity in a PC.

Power User(s) Group Second most powerful account and group type in Windows after Administrator/Administrators.

ppm (pages per minute) Speed of a printer.

PPP (Point-to-Point Protocol) Enables a computer to connect to the Internet through a dial-in connection and enjoy most of the benefits of a direct connection.

primary corona Wire located near the photosensitive drum in a laser printer, that is charged with extremely high voltage to form an electric field, enabling voltage to pass to the photosensitive drum, thus charging the photosensitive particles on the surface of the drum.

primary partition Partition on a Windows hard drive designated to store the operating system.

print resolution Quality of a print image.

print spooler Area of memory that queues up print jobs that the printer will handle sequentially.

printer Output device that can print text or illustrations on paper. Microsoft uses the term to refer to the software that controls the physical print device.

printhead Case that holds the printwires in a dot-matrix printer.

printed circuit boards Copper etched onto a nonconductive material and then coated with some sort of epoxy for strength.

printwires Grid of tiny pins in a dot-matrix printer that strike an inked printer ribbon to produce images on paper.

PRML (Partial Response Maximum Likelihood) Advanced method of RLL that uses powerful, intelligent circuitry to analyze each flux reversal on a hard drive and to make a best guess as to what type of flux reversal it just read. This allows a dramatic increase in the amount of data a hard drive can store.

product key Code used during installation to verify legitimacy of the software.

program/programming Series of binary electronic commands sent to a CPU to get work done.

Programs and Features Windows Vista/7 replacement for the Add or Remove Programs applet.

projector Device for projecting video images from PCs or other video sources, usually for audience presentations. Available in front and rear view displays.

Prometric One of the two companies that administers the CompTIA A+ exams, along with Pearson VUE.

prompt A character or message provided by an operating system or program to indicate that it is ready to accept input.

proprietary Technology unique to a particular vendor.

protocol Agreement that governs the procedures used to exchange information between cooperating entities. Usually includes how much information is to be sent, how often it is sent, how to recover from transmission errors, and who is to receive the information.

proxy server Device that fetches Internet resources for a client without exposing that client directly to the Internet. Usually accept requests for HTTP, FTP, POP3, and SMTP resources. Often caches, or stores, a copy of the requested resource for later use. Common security feature in the corporate world.

public folder Folder that all users can access and share with all other users on the system or network.

queue Area where objects wait their turn to be processed. Example: the printer queue, where print jobs wait until it is their turn to be printed.

Quick Launch toolbar Enables you to launch commonly used programs with a single click.

QVGA Video display mode of 320 × 240.

RAID (redundant array of inexpensive devices) Six-level (0–5) way of creating a fault-tolerant storage system:
Level 0 Uses byte-level striping and provides no fault tolerance.
Level 1 Uses mirroring or duplexing.
Level 2 Uses bit-level striping.
Level 3 Stores error-correcting information (such as parity) on a separate disk, and uses data striping on the remaining drives.
Level 4 Level 3 with block-level striping.
Level 5 Uses block-level and parity data striping.

RAID-5 volume Striped set with parity. (*See also* RAID).

rails Separate DC paths within an ATX power supply.

RAM (random access memory) Memory that can be accessed at random; that is, which you can write to or read from without touching the preceding address. This term is often used to mean a computer's main memory.

RAMDAC (random access memory digital-to-analog converter) Circuitry used on video cards that support analog monitors to convert the digital video data to analog.

raster image Pattern of dots representing what the final product should look like.

raster line Horizontal pattern of lines that form an image on the monitor screen.

RD (RMDIR) Command in the command line interface used to remove directories.

RDRAM (Rambus DRAM) Patented RAM technology that uses accelerated clocks to provide very high-speed memory.

read-only attribute File attribute that does not allow a file to be altered or modified. Helpful when protecting system files that should not be edited.

rear-view projector Projector that shoots an image onto a screen from the rear. Rearview projectors are always self-enclosed and very popular for TVs, but are virtually unheard of in the PC world.

Recovery Console Command-line interface boot mode for Windows that is used to repair a Windows 2000 or Windows XP system suffering from massive OS corruption or other problems.

Recycle Bin When files are deleted from a modern Windows system, they are moved to the Recycle Bin. To permanently remove files from a system, they must be emptied from the Recycle Bin.

REGEDIT.EXE Program used to edit the Windows Registry.

register Storage area inside the CPU used by the onboard logic to perform calculations. CPUs have many registers to perform different functions.

registration Usually optional process that identifies the legal owner/user of the product to the supplier.

Registry Complex binary file used to store configuration data about a particular system. To edit the Registry, users can use the applets found in the Control Panel or REGEDIT.EXE or REGEDT32.EXE.

Reliability and Performance Monitor Windows Vista's extended Performance applet.

remediation Repairing damage caused by a virus.

remnant Potentially recoverable data on a hard drive that remains despite formatting or deleting.

Remote Assistance Feature of Windows that enables users to give anyone control of his or her desktop over the Internet.

Remote Desktop Connection Windows tool used to enable a local system to graphically access the desktop of a remote system.

REN (RENAME) command Command in the command-line interface used to rename directories.

resistance Difficulty in making electricity flow through a material, measured in Ohms.

resistor Any material or device that impedes the flow of electrons. Electronic resistors measure their resistance (impedance) in Ohms. See Ohm(s).

resolution Measurement for CRTs and printers expressed in horizontal and vertical dots or pixels. Higher resolutions provide sharper details and thus display better-looking images.

resources Data and services of a PC.

respect What all techs should feel for their customers.

response rate Time it takes for all of the sub-pixels on the panel to go from pure black to pure white and back again.

restore point System snapshot created by the System Restore utility that is used to restore a malfunctioning system. (*See also* System Restore.)

RET (resolution enhancement technology) Technology that uses small dots to smooth out jagged edges that are typical of printers without RET, producing a higher-quality print job.

RFI (radio frequency interference) Another form of electrical interference caused by radio-wave emitting devices, such as cell phones, wireless network cards, and microwave ovens.

RG-58 Coaxial cabling used for 10Base2 networks.

RIMM Individual stick of Rambus RAM. The letters don't actually stand for anything; they just rhyme with SIMM and DIMM.

RIP (raster image processor) Component in a printer that translates the raster image into commands for the printer.

riser card Special adapter card, usually inserted into a special slot on a motherboard, that changes the orientation of expansion cards relative to the motherboard. Riser cards are used extensively in slimline computers to keep total depth and height of the system to a minimum. Sometimes called a daughterboard.

RJ (registered jack) connector UTP cable connector, used for both telephone and network connections. RJ-11 is a connector for four-wire UTP; usually found in telephone connections. RJ-45 is a connector for eight-wire UTP; usually found in network connections.

RJ-11 See RJ (registered jack) connector.

RJ-45 See RJ (registered jack) connector.

ROM (read-only memory) Generic term for nonvolatile memory that can be read from but not written to. This means that code and data stored in ROM cannot be corrupted by accidental erasure. Additionally, ROM retains its data when power is removed, which makes it the perfect medium for storing BIOS data or information such as scientific constants.

root directory Directory that contains all other directories.

root keys Five main categories in the Windows Registry:

HKEY_CLASSES_ROOT
HKEY_CURRENT_USER
HKEY_USERS
HKEY_LOCAL_MACHINE
HKEY_CURRENT_CONFIG

router Device connecting separate networks; Forwards a packet from one network to another based on the network address for the protocol being used. For example, an IP router looks only at the IP network number. Routers operate at Layer 3 (Network) of the OSI seven-layer model.

RS-232C Standard port recommended by the Electronics Industry Association for serial devices.

Run dialog box Command box in which users can enter the name of a particular program to run; an alternative to locating the icon in Windows.

S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) Monitoring system built into hard drives.

S/PDIF (Sony/Philips Digital Interface Format) Digital audio connector found on many high-end sound cards. Users can connect their computers directly to a 5.1 speaker system or receiver. S/PDIF comes in both a coaxial and an optical version.

Safe mode Important diagnostic boot mode for Windows that only runs very basic drivers and turns off virtual memory.

sampling Capturing sound waves in electronic format.

SATA (serial ATA) Serialized version of the ATA standard that offers many advantages over PATA (parallel ATA) technology, including thinner cabling, keyed connectors, and lower power requirements.

SATA bridge Adapter that allows PATA devices to be connected to a SATA controller.

SATA power connector 15-pin, L-shaped connector used by SATA devices that support the hot swappable feature.

satellites Two or more standard stereo speakers to be combined with a sub-woofer for a speaker system (i.e. 2.1, 5.1, etc.)

scan code Unique code corresponding to each key on the keyboard sent from the keyboard controller to the CPU.

SCSI (small computer system interface) Powerful and flexible peripheral interface popularized on the Macintosh and used to connect hard drives, CD-ROM drives, tape drives, scanners, and other devices to PCs of all kinds. Normal SCSI enables up to seven devices to be connected through a single bus connection, whereas Wide SCSI can handle 15 devices attached to a single controller.

SCSI chain Series of SCSI devices working together through a host adapter.

SCSI ID Unique identifier used by SCSI devices. No two SCSI devices may have the same SCSI ID.

SD (Secure Digital) Very popular format for flash media cards; also supports I/O devices.

SDRAM (synchronous DRAM) DRAM that is synchronous, or tied to the system clock and thus runs much faster than traditional FPM and EDO RAM. This type of RAM is used in all modern systems.

SEC (single-edge cartridge) Radical CPU package where the CPU was contained in a cartridge that snapped into a special slot on the motherboard called Slot 1.

sector Segment of one of the concentric tracks encoded on the disk during a low-level format. A sectors holds 512 bytes of data.

sector translation Translation of logical geometry into physical geometry by the onboard circuitry of a hard drive.

sectors per track (sectors/track) Combined with the number of cylinders and heads, defines the disk geometry.

serial port Common connector on a PC. Connects input devices (such as a mouse) or communications devices (such as a modem).

server Computer that shares its resources, such as printers and files, with other computers on a network. Example: Network File System Server that shares its disk space with a workstation that does not have a disk drive of its own.

service pack Collection of software patches released at one time by a software manufacturer.

SetupAPI.log Log file that tracks the installation of all hardware on a system.

Setuplog.txt Log file that tracks the complete installation process, logging the success or failure of file copying, Registry updates, and reboots.

SFC (system file checker) Scans, detects, and restores Windows system files, folders, and paths.

shadow mask CRT screen that allows only the proper electron gun to light the proper phosphors.

shared documents Windows pre-made folder accessible by all users on the computer.

shared memory Means of reducing the amount of memory needed on a video card by borrowing from the regular system RAM, which reduces costs but also decreases performance.

share-level security Security system in which each resource has a password assigned to it; access to the resource is based on knowing the password.

shareware Program protected by copyright; holder allows (encourages!) you to make and distribute copies under the condition that those who adopt the software after preview pay a fee to the holder of the copyright. Derivative works are not allowed, although you may make an archival copy.

shunt Tiny connector of metal enclosed in plastic that creates an electrical connection between two posts of a jumper.

SID (security identifier) Unique identifier for every PC that most techs change when cloning.

sidebanding Second data bus for AGP video cards; enables the video card to send more commands to the Northbridge while receiving other commands at the same time.

signal-to-noise ratio Measure that describes the relative quality of an input port.

signature Code pattern of a known virus; used by antivirus software to detect viruses.

SIMM (single in-line memory module) DRAM packaging distinguished by having a number of small tabs that install into a special connector. Each side of each tab is the same signal. SIMMs come in two common sizes: 30-pin and 72-pin.

simple file sharing Allows users to share locally or across the network but gives no control over what others do with shared files.

simple volume Volume created when setting up dynamic disks. Acts like a primary partition on a dynamic disk.

single-sided RAM Has chips on only one side as opposed to double-sided RAM.

slimline Motherboard form factor used to create PCs that were very thin. NLX and LPX were two examples of this form factor.

slot covers Metal plates that cover up unused expansion slots on the back of a PC. Useful in maintaining proper airflow through a computer case.

Smart battery Portable PC battery that tells the computer when it needs to be charged, conditioned, or replaced.

smart card Hardware authentication involving a credit-card-sized card with circuitry that can be used to identify the bearer of that card.

SmartMedia Format for flash media cards; no longer used with new devices.

SMM (System Management Mode) Special CPU mode that enables the CPU to reduce power consumption by selectively shutting down peripherals.

SMTP (Simple Mail Transport Protocol) Main protocol used to send electronic mail on the Internet.

snap-ins Small utilities that can be used with the Microsoft Management Console.

social engineering Using or manipulating people inside the networking environment to gain access to that network from the outside.

socket services Device drivers that support the PC Card socket, enabling the system to detect when a PC Card has been inserted or removed, and providing the necessary I/O to the device.

SODIMM (small outline DIMM) Memory used in portable PCs because of its small size.

soft power Characteristic of ATX motherboards, which can use software to turn the PC on and off. The physical manifestation of soft power is the power switch. Instead of the thick power cord used in AT systems, an ATX power switch is little more than a pair of small wires leading to the motherboard.

software Single group of programs designed to do a particular job; always stored on mass storage devices.

solid ink printers Printer that uses solid sticks of nontoxic "ink" that produce more vibrant color than other print methods.

sound card Expansion card that can produce audible tones when connected to a set of speakers.

Southbridge Part of a motherboard chipset; handles all the inputs and outputs to the many devices in the PC.

spam Unsolicited e-mails from both legitimate businesses and scammers that accounts for a huge percentage of traffic on the Internet.

spanned volume Volume that uses space on multiple dynamic disks.

SPD (serial presence detect) Information stored on a RAM chip that describes the speed, capacity, and other aspects of the RAM chip.

speaker Device that outputs sound by using magnetically driven diaphragm.

sprite Bitmapped graphic such as a BMP file used by early 3-D games to create the 3-D world.

spyware Grayware that runs in the background of a user's PC, sending information about browsing habits back to the company that installed it onto the system.

SRAM (static RAM) RAM that uses a flip-flop circuit rather than the typical transistor/capacitor of DRAM to hold a bit of information. SRAM does not need to be refreshed and is faster than regular DRAM. Used primarily for cache.

SSH (Secure Shell) Terminal emulation program similar to Telnet, except that the entire connection is encrypted.

SSD (solid state drive) Data storage device that uses solid state memory to store data.

SSID (service set identifier) Parameter used to define a wireless network; otherwise known as the network name.

SSL (Secure Sockets Layer) Security protocol used by a browser to create secure Web sites.

standard account/user User account in Windows Vista that has limited access to a system. Accounts of this type cannot alter system files, cannot install new programs, and cannot edit some settings by using the Control Panel without supplying an administrator password. Replaces the Limited accounts in Windows XP.

standouts Small connectors that screw into a computer case. A motherboard is then placed on top of the standouts, and small screws are used to secure it to the standouts.

star topology Network topology where the computers on the network connect to a central wiring point, usually called a *hub*.

Start button Button on the Windows taskbar that enables access to the Start menu.

Start menu Menu that can be accessed by clicking the Start button on the Windows taskbar. Enables you to see all programs loaded on the system and to start them.

static charge eliminator Device used to remove a static charge.

static IP address Manually set IP address that will not change.

stealth virus Virus that uses various methods to hide from antivirus software.

stepper motor One of two methods used to move actuator arms in a hard drive. (*See also* voice coil motor.)

stereo Describes recording tracks from two sources (microphones) as opposed to monaural, which uses one source.

stick Generic name for a single physical SIMM, RIMM, or DIMM.

STP (shielded twisted pair) Cabling for networks, composed of pairs of wires twisted around each other at specific intervals. Twists serve to reduce interference (also called *crosstalk*)—the more twists, the less interference. Cable has metallic shielding to protect the wires from external interference.

streaming media Broadcast of data that is played on your computer and immediately discarded.

stream loading Process a program uses to constantly download updated information.

stripe set Two or more drives in a group that are used for a striped volume.

strong password Password containing at least eight characters, including letters, numbers, and punctuation symbols.

stylus Pen-like input device used for pen-based computing.

subnet mask Value used in TCP/IP settings to divide the IP address of a host into its component parts: network ID and host ID.

sub-pixel Tiny liquid crystal molecules arranged in rows and columns between polarizing filters used in LCDs.

subwoofer Powerful speaker capable of producing extremely low-frequency sounds.

super I/O chip Chip specially designed to control low-speed, legacy devices such as the keyboard, mouse, and serial and parallel ports.

surge suppressor Inexpensive device that protects your computer from voltage spikes.

SVGA (super video graphics array) Video display mode of 800 × 600.

swap file See page file.

switch Device that filters and forwards traffic based on some criteria. A bridge and a router are both examples of switches.

SXGA Video display mode of 1280 × 1024.

SXGA+ Video display mode of 1400 × 1050.

syntax The proper way to write a command-line command so that it functions and does what it's supposed to do.

Sysprep Windows tool that makes cloning of systems easier by making it possible to undo portions of the installation.

System BIOS Primary set of BIOS stored on an EPROM or Flash chip on the motherboard. Defines the BIOS for all the assumed hardware on the motherboard, such as keyboard controller, floppy drive, basic video, and RAM

system bus speed Speed at which the CPU and the rest of the PC operates; set by the system crystal.

system crystal Crystal that provides the speed signals for the CPU and the rest of the system.

system disk Any device with a functional operating system.

system fan Any fan controlled by the motherboard but not directly attached to the CPU.

System Management Mode (SMM) Provided CPUs the ability to turn off high-power devices (monitors, hard drives, etc.). Originally for laptops; later versions are incorporated in all AMD and Intel CPUs.

System Monitor Utility that can evaluate and monitor system resources, such as CPU usage and memory usage.

system resources In classic terms, the I/O addresses, IRQs, DMA channels, and memory addresses. Also refers to other computer essentials such as hard drive space, system RAM, and processor speed.

System Restore Utility in Windows that enables you to return your PC to a recent working configuration when something goes wrong. System Restore returns your computer's system settings to the way they were the last time you remember your system working correctly—all without affecting your personal files or e-mail.

System ROM ROM chip that stores the system BIOS.

System Tools Menu containing tools such as System Information and Disk Defragmenter, accessed by selecting Start | Programs or All Programs | Accessories | System Tools.

system tray Contains icons representing background processes and the system clock. Located by default at the right edge of the Windows taskbar. Accurately called the *notification area*.

system unit Main component of the PC, in which the CPU, RAM, CD-ROM, and hard drive reside. All other devices—the keyboard, mouse, and monitor—connect to the system unit.

Tablet PC Small portable computer distinguished by the use of a touch screen with stylus and handwriting recognition as the primary modes of input. Also the

name of the Windows XP-based operating system designed to run on such systems.

tailgating Form of infiltration and social engineering that involves following someone else through a door as if you belong.

take ownership Special permission allowing users to seize control of a file or folder and potentially preventing others from accessing the file/folder.

Task Manager Shows all running programs, including hidden ones, accessed by pressing CTRL-SHIFT-ESC. Able to shut down an unresponsive application that refuses to close normally.

taskbar Contains the Start button, the system tray, the Quick Launch bar, and buttons for running applications. Located by default at the bottom of the desktop.

TCP/IP (Transmission Control Protocol/Internet Protocol) Communication protocols developed by the U.S. Department of Defense to enable dissimilar computers to share information over a network.

Tech Toolkit Tools a PC tech should never be without, including a Phillips-head screwdriver, a pair of tweezers, a flat-head screwdriver, a hemostat, a Torx wrench, a parts retriever, and a nut driver or two.

telephone scams Social engineering attack in which the attacker makes a phone call to someone in an organization to gain information.

Telnet Terminal emulation program for TCP/IP networks that allows one machine to control another as if the user were sitting in front of it.

tera- Prefix that usually stands for the binary number 1,099,511,627,776 (2^{40}). When used for mass storage, it's often shorthand for a trillion bytes.

terminal Dumb device connected to a mainframe or computer network that acts as a point for entry or retrieval of information.

terminal emulation Software that enables a PC to communicate with another computer or network as if the PC were a specific type of hardware terminal.

termination Using terminating resistors to prevent packet reflection on a network cable.

terminator Resistor that is plugged into the end of a bus cable to absorb the excess electrical signal, preventing it from bouncing back when it reaches the end of the wire. Terminators are used with coaxial cable and on the ends of SCSI chains. RG-58 coaxial cable requires resistors with a 50-Ohm impedance.

Test the theory Attempt to resolve the issue by either confirming the theory and learning what needs to be done to fix the problem, or by not confirming the theory and forming a new one or escalating. (One of the steps a technician uses to a solve a problem.)

texture Small picture that is tiled over and over again on walls, floors, and other surfaces to create the 3-D world.

TFT (thin film transistor) Type of LCD screen. (*See also* active matrix.)

theory of probable cause One possible reason why something is not working; a guess.

thermal compound Paste-like material with very high heat-transfer properties. Applied between the CPU and the cooling device, it ensures the best possible dispersal of heat from the CPU. Also called *heat dope*.

thermal printer Printers that use heated printheads to create high-quality images on special or plain paper.

thermal unit Combination heat sink and fan designed for BTX motherboards; blows hot air out the back of the case instead of just into the case.

thread Smallest logical division of a single program.

throttling Power reduction/thermal control capability allowing CPUs to slow down during low activity or high heat build-up situations. Intel's version is known as SpeedStep, AMD's as PowerNow!

throw Size of the image a projector displays at a certain distance from the screen.

TIA/EIA Telecommunications Industry Alliance/Electronic Industries Alliance. Trade organization that provides standards for network cabling and other electronics;.

tiers Levels of Internet providers, ranging from the Tier 1 backbones to Tier 3 regional networks.

timbre Qualities that differentiate the same note played on different instruments.

toner A fine powder made up of plastic particles bonded to iron particles, used by laser printers to create text and images.

toner cartridge Object used to store the toner in a laser printer. (*See also* laser printer, toner.)

touchpad Flat, touch-sensitive pad that serves as a pointing device for most laptops.

touch screen Monitor with a type of sensing device across its face that detects the location and duration of contact, usually by a finger or stylus.

TRACERT Command-line utility used to follow the path a packet takes between two hosts. Also called TRACEROUTE.

traces Small electrical connections embedded in a circuit board.

track Area on a hard drive platter where data is stored. A group of tracks with the same diameter is called a *cylinder*.

trackball Pointing device distinguished by a ball that is rolled with the fingers.

TrackPoint IBM's pencil eraser-sized joystick used in place of a mouse on laptops.

transfer corona Thin wire, usually protected by other thin wires, that applies a positive charge to the paper during the laser printing process, drawing the negatively charged toner particles off of the drum and onto the paper.

transparency (Windows Vista Aero) Effect in the Aero desktop environment that makes the edges of windows transparent.

triad Group of three phosphors—red, green, blue—in a CRT.

Trojan Program that does something other than what the user who runs the program thinks it will do.

troubleshooting theory Steps a technician uses to a solve a problem: identify the problem, establish a theory of probable cause, test the theory, establish a plan of action, verify functionality, and document findings.

TV tuner Typically an add-on device that allows users to watch television on a computer.

TWAIN (technology without an interesting name) Programming interface that enables a graphics application, such as a desktop publishing program, to activate a scanner, frame grabber, or other image-capturing device.

UAC (User Account Control) Windows Vista feature that enables Standard accounts to do common tasks and provides a permissions dialog when Standard and Administrator accounts do certain things that could potentially harm the computer (such as attempt to install a program).

UART (universal asynchronous receiver/transmitter) Device that turns serial data into parallel data. The cornerstone of serial ports and modems.

UDF (universal data format) Replaced the ISO-9660 formats, allowing any operating system and optical drive to read UDF formatted disks.

UEFI (Unified Extensible Firmware Interface) Consortium of companies that established the UEFI standard that replaced the original EFI standard.

Ultra DMA Hard drive technology that enables drives to use direct memory addressing. Ultra DMA mode 3 drives—called *ATA/33*—have data transfer speeds up to 33 MBps. Mode 4 and 5 drives—called *ATA/66* and *ATA/100*, respectively—transfer data at up to 66 MBps for mode 4 and 100 MBps for mode 5. Both modes 4 and 5 require an 80-wire cable and a compatible controller to achieve these data transfer rates.

unauthorized access Anytime a person accesses resources in an unauthorized way. This access may or may not be malicious.

Unicode 16-bit code that covers every character of the most common languages, plus several thousand symbols.

unsigned driver Driver that has not gone through the Windows Hardware Quality Labs or Microsoft Windows Logo Program to ensure compatibility.

UPC (Universal Product Code) Bar code used to track inventory.

Upgrade Advisor The first process that runs on the XP installation CD. It examines your hardware and installed software (in the case of an upgrade) and provides a list of devices and software that are known to have issues with XP. It can also be run separately from the Windows XP installation, from the Windows XP CD. The Upgrade Advisor is also available for Windows Vista and Windows 7.

upgrade installation Installation of Windows on top of an earlier installed version, thus inheriting all previous hardware and software settings.

UPS (uninterruptible power supply) Device that supplies continuous clean power to a computer system the whole time the computer is on. Protects against power outages and sags.

URL (uniform resource locator) An address that defines the location of a resource on the Internet. URLs are used most often in conjunction with HTML and the World Wide Web.

USB (universal serial bus) General-purpose serial interconnect for keyboards, printers, joysticks, and many other devices. Enables hot-swapping and daisy-chaining devices.

USB host controller Integrated circuit that is usually built into the chipset and controls every USB device that connects to it.

USB hub Device that extends a single USB connection to two or more USB ports, almost always directly from one of the USB ports connected to the root hub.

USB root hub Part of the host controller that makes the physical connection to the USB ports.

USB thumb drive Flash memory device that uses the standard USB connection.

User account Container that identifies a user to an application, operating system, or network, including name, password, user name, groups to which the user belongs, and other information based on the user and the OS or NOS being used. Usually defines the rights and roles a user plays on a system.

User Accounts applet Windows XP (and later versions) applet that replaced the Users and Passwords applet of Windows 2000.

user interface Visual representation of the computer on the monitor that makes sense to the people using the computer, through which the user can interact with the computer.

user profiles Settings that correspond to a specific user account and may follow users regardless of the computers where they log on. These settings enable the user to have customized environment and security settings.

User's Files Windows Vista's redux of the My Documents folder structure. It is divided into several folders such as Documents, Pictures, Music, and Video.

Users and Passwords applet Windows 2000 application that allowed management of user accounts and passwords.

Users group List of local users not allowed, among other things, to edit the Registry or access critical system files. They can create groups, but can only manage the groups they create.

USMT (User State Migration Tool) Advanced application for file and settings transfer of multiple users.

UTP (unshielded twisted pair) Popular type of cabling for telephone and networks, composed of pairs of wires twisted around each other at specific intervals. The twists serve to reduce interference (also called *crosstalk*). The more twists, the less interference. Unlike its cousin, STP, UTP cable has no metallic shielding to protect the wires from external interference. 10BaseT uses UTP, as do many other networking technologies. UTP is available in a variety of grades, called categories, as follows:
Category 1 UTP Regular analog phone lines—not used for data communications.
Category 2 UTP Supports speeds up to 4 megabits per second.
Category 3 UTP Supports speeds up to 16 megabits per second.
Category 4 UTP Supports speeds up to 20 megabits per second.
Category 5 UTP Supports speeds up to 100 megabits per second.
Category 5e UTP Supports speeds up to 1000 megabits per second.
Category 6 UTP Supports speeds up to 10 gigabits per second.

V standards Standards established by CCITT for modem manufacturers to follow (voluntarily) to ensure compatible speeds, compression, and error correction.

Verify. Making sure that a problem has been resolved and will not return. (One of the steps a technician uses to a solve a problem.)

vertices Used in the second generation of 3-D rendering, vertices have a defined X, Y, and Z position in a 3-D world.

VESA (Video Electronics Standards Association) Consortium of computer manufacturers that standardized improvements to common IBM PC components. VESA is responsible for the Super VGA video standard and the VLB bus architecture.

VGA (Video Graphics Array) Standard for the video graphics adapter that was built into IBM's PS/2 computer. It supports 16 colors in a 640 × 480 pixel video display and quickly replaced the older CGA (Color Graphics Adapter) and EGA (Extended Graphics Adapter) standards.

video capture Computer jargon for the recording of video information, such as TV shows or movies.

video card Expansion card that works with the CPU to produce the images displayed on your computer's display.

video display See monitor.

virus Program that can make a copy of itself without your necessarily being aware of it. Some viruses can destroy or damage files. The best protection is to back up files regularly.

virus definition or data file Files that enable the virus protection software to recognize the viruses on your system and clean them. These files should be updated often. They are also called *signature files*, depending on the virus protection software in use.

virus shield Passive monitoring of a computer's activity, checking for viruses only when certain events occur.

VIS (viewable image size) Measurement of the viewable image that is displayed by a CRT rather than a measurement of the CRT itself.

voice coil motor One of two methods used to move actuator arms in a hard drive. (*See also* stepper motor.)

VoIP (Voice over Internet Protocol) Collection of protocols that make voice calls over a data network possible.

volatile Memory that must have constant electricity to retain data. Alternatively, any programmer six hours before deadline after a non-stop, 48-hour coding session, running on nothing but caffeine and sugar.

volts (V) Measurement of the pressure of the electrons passing through a wire, or voltage.

volume Physical unit of a storage medium, such as tape reel or disk pack, that is capable of having data recorded on it and subsequently read. Also refers to a contiguous collection of cylinders or blocks on a disk that are treated as a separate unit.

volume boot sector First sector of the first cylinder of each partition; stores information important to its partition, such as the location of the operating system boot files.

voucher Means of getting a discount on the CompTIA A+ exams.

VPN (virtual private network) Encrypted connection over the Internet between a computer or remote network and a private network.

VRM (voltage regulator module) Small card supplied with some CPUs to ensure that the CPU gets correct voltage. This type of card, which must be used with a motherboard specially designed to accept it, is not commonly seen today.

VRR (vertical refresh rate) The amount of time it takes for a CRT to draw a complete screen. This value is measured in hertz, or cycles per second. Most modern CRTs have a VRR of 60 Hz or better.

wait state Occurs when the CPU has to wait for RAM to provide code. Also known as pipeline stalls,

WAP (Wireless Access Point) Device that centrally connects wireless network nodes.

wattage (watts or W) Measurement of the amps and volts needed for a particular device to function.

wave table synthesis Technique that supplanted FM synthesis, wherein recordings of actual instruments or other sounds are embedded in the sound card as WAV files. When a particular note from a particular instrument or voice is requested, the sound processor grabs the appropriate prerecorded WAV file from its memory and adjusts it to match the specific sound and timing requested.

Web browser Program designed to retrieve, interpret, and display Web pages.

webcam PC camera most commonly used for Internet video.

Welcome screen Login screen for Windows XP. Enables users to select their particular user account by clicking on their user picture.

WEP (Wired Equivalent Privacy) Wireless security protocol that uses a standard 40-bit encryption to scramble data packets. Does not provide complete end-to-end encryption and is vulnerable to attack.

Wi-Fi Common name for the IEEE 802.11 wireless Ethernet standard.

wildcard Character used during a search to represent search criteria. For instance, searching for ***.doc** will return a list of all files with a .doc extension, regardless of the filename. The * is the wildcard in that search.

Windows 2000 Windows version that succeeded Windows NT; it came in both Professional and Server versions.

Windows 9x Term used collectively for Windows 95, Windows 98, and Windows Me.

Windows Explorer Windows utility that enables you to manipulate files and folders stored on the drives in your computer.

Windows Logo'd Products List List of products that have passed the Microsoft Windows Logo Program and are compatible with Windows operating system. Formerly called the *Hardware Compatibility List* (or *HCL*).

Windows NT Precursor to Windows 2000, XP, and Vista, which introduced many important features (such as HAL and NTFS) used in all later versions of Windows.

Windows sidebar User interface feature in Windows Vista that enables users to place various gadgets, such as clocks, calendars, and other utilities, on the right side of their desktop.

Windows update Microsoft application used to keep Windows operating systems up to date with the latest patches or enhancements. (*See* Automatic Updates.)

Windows Vista Version of Windows; comes in many different editions for home and office use, but does not have a Server edition.

Windows XP Version of Windows that replaced both the entire Windows 9x line and Windows 2000; does not have a Server version.

worm Very special form of virus. Unlike other viruses, a worm does not infect other files on the computer. Instead, it replicates by making copies of itself on other systems on a network by taking advantage of security weaknesses in networking protocols.

WPA (Wi-Fi Protected Access) Wireless security protocol that uses encryption key integrity-checking and EAP and is designed to improve on WEP's weaknesses.

WPA 2 (Wi-Fi Protected Access 2) Wireless security protocol, also known as IEEE 802.11i. Uses the Advanced Encryption standard and replaces WPA.

WQUXGA Video display mode of 2560 × 1600.

wrapper See container file.

WSXGA Video display mode of 1440 × 900.

WSXGA+ Video display mode of 1680 × 1050.

WUXGA Video display mode of 1920 × 1200.

WVGA Video display mode of 800 × 480.

WWW (World Wide Web) System of Internet servers that support documents formatted in HTML and related protocols. Can be accessed by using Gopher, FTP, HTTP, Telnet, and other tools.

www.comptia.org CompTIA's Web site.

WXGA Video display mode of 1280 × 800.

x64 Describes 64-bit operating systems and software.

x86 Describes 32-bit operating systems and software.

XCOPY command Command in the command-line interface used to copy multiple directories at once, which the COPY command could not do.

xD (Extreme Digital) picture card Very small flash media card format.

Xeon Line of Intel CPUs designed for servers.

XGA (extended graphics array) Video display mode of 1024 × 768.

XPS (XML Paper Specification) print path Improved printing subsystem included in Windows Vista. Has enhanced color management and better print layout fidelity.

XT bus See PC bus.

ZIF (zero insertion force) socket Socket for CPUs that enables insertion of a chip without the need to apply pressure. Intel promoted this socket with its overdrive upgrades. The chip drops effortlessly into the socket's holes, and a small lever locks it in.