

# Glossary

## A

**ACK**An acknowledgment signal.

### **Advanced Power Management (APM)**

(1) A software interface (defined by Microsoft and Intel) between hardware-specific power management software (such as that located in a system BIOS) and an operating system power management driver. (2) An abridgment of the *Advanced Power Management (APM) BIOS Interface Specification* title.

### **Advanced System Configuration and Power Interface (ACPI)**

A specification that defines the power management, Plug and Play, and system BIOS interfaces for the system board and operating system.

**API**Acronym for application programming interface. This is a set of routines that an applications program uses to request and carry out lower-level services performed by the operating system.

**APM**See *Advanced Power Management*.

**Arbitrator**A software module in Windows that handles the allocation of hardware resources among devices.

**ASIC**Acronym for application-specific integrated circuit.

**ATA**Acronym for AT Attachment. Used interchangeably with Integrated Drive Electronics (IDE).

**ATAPI**See *AT Attachment Packet Interface*.

**AT Attachment (ATA)**An integrated bus generally used between host processors and disk drives.

### **AT Attachment Packet Interface (ATAPI)**

A hardware and software specification that documents the interface between a host computer and CD-ROM drives using the ATA bus.

## B

**buffer**A reserved portion of memory in which data is temporarily held, pending an opportunity to complete its transfer to or from a storage device or another location in memory.

**buffering**The process of using buffers to hold data that is being transferred, particularly to or from I/O devices such as disk drives and serial ports.

**bus enumerator**A bus device driver that detects devices located on a specific bus and loads information about devices into the hardware tree.

## C

**Card select number**The handle created by the system BIOS or the operating system through the isolation process, and assigned to each Plug and Play card on the ISA bus as a unique identifier.

**Card Services**A system component that is a protected-mode VxD, linked with the PC Card bus driver. The Card Services component passes the event notification from socket services to the PC Card bus driver, provides information from the computer's cards to the PC Card bus driver, and sets up the configuration for cards in the adapter sockets.

**CDFS**Compact disc file system, which controls access to the contents of CD-ROM drives.

**class**For hardware, the manner in which devices and buses are grouped for purposes of installing and managing device drivers and allocating resources. The hardware tree is organized by device class, and Windows 95 uses class installers to install drivers for all hardware classes.

**codec**Compression/decompression technology for digital video and stereo audio.

**Compatibility mode**An asynchronous, host-to-peripheral parallel port channel defined in the IEEE 1284-1994 standard. This mode is compatible with existing peripherals that attach to the Centronics-style PC parallel port.

**Configuration Manager**The central component of a Plug and Play system that drives the process of locating devices, setting up their nodes in the hardware tree, and running the resource allocation process. Each of the three phases of configuration management—boot time (BIOS), real mode, and protected mode—has its own configuration manager.

**conflict**See *resource conflict*.

**CSN**See *card select number*.

## D

**DDC**Acronym for display data channel, the communications channel between a monitor and the display adapter to which it is connected. This channel provides a method for the monitor to convey its identity to the display adapter.

**device**Any circuit that performs a specific function, such as a parallel port or graphics adapter.

**device ID**A device identification string, in many cases beginning with a three-letter standard EISA identifier, that distinguishes each logical device and bus from all others on the system.

**device node**The basic data structure for a given device, built by Configuration Manager in Windows 95; sometimes called devnode. Device nodes are built into memory at system startup for each device and enumerator with information about the device, such as currently assigned resources. The complete representation of all device nodes is referred to as the hardware tree.

**DIB**Acronym for device-independent bitmap.

### digital signal processor (DSP)

An integrated circuit designed for high-speed data manipulations, used in audio, communications, image manipulation, and other data-acquisition and data-control applications.

### direct memory access (DMA)

A method of moving data from a device to memory (or vice versa) without the help of the microprocessor. The system board uses a DMA controller to handle a fixed number of “channels,” each of which can be used by only one device at a time.

**disk I/O controller**A special-purpose chip and circuitry that directs and controls reading from and writing to a computer’s disk drive.

**DLL**Acronym for dynamic-link library. A programming interface (API) routine that user-mode applications access through ordinary procedure calls. The code for the API routine is not included in the user’s executable image. Instead, the operating system automatically modifies the executable image to point to DLL procedures at run time.

**DMA**See *direct memory access*.

**dock**To insert a portable computer into a base unit. Cold docking means the computer must begin from a power-off state and restart after docking. Hot docking means the computer can be docked while running at full power.

**docking station**The base computer unit into which a user can insert a portable computer to expand it to a desktop equivalent. A typical dock provides drive bays, expansion slots, all the ports on the desktop computer, and AC power.

**dongle**A physical device attached to a PC I/O port to add hardware capabilities.

**DSP**See *digital signal processor*.

**dynamic detection**The process by which a Plug and Play system can detect that a new device has been added or removed from the PC. This process allows the operating system and applications to begin using the added devices immediately or stop using the removed devices without rebooting the system.

## E

**ECP**Acronym for extended capabilities port. An asynchronous, 8-bit-wide parallel channel defined by IEEE 1284-1994 that provides PC-to-peripheral and peripheral-to-PC data transfers.

**EISA**Acronym for Extended Industry Standard Architecture bus.

**Energy Star**Abridgment of EPA Energy Star computers. A program initiated by the U.S. Environmental Protection Agency and computer manufacturers documenting standards of power management designed to reduce the electricity load of computer systems in the commercial sector. Computers that meet the requirements of the Energy Star program qualify for the Energy Star logo.

**enumeration**The process by which logical devices and buses, and their available resources, are identified in a Plug and Play system.

**enumerator**A Plug and Play system component that takes responsibility for detecting logical child devices and reports the existence of those devices to the configuration manager during startup.

**expansion bus**A group of address, data, and control lines that provide a buffered interface to devices located either on the system board or on cards that are plugged into expansion connectors. Expansion buses on the system board can include the USB, PC Card, PCI, and other buses.

**expansion card**A card that connects to an expansion bus and that contains one or more devices.

**expansion ROM**See *option ROM*.

## F

**FDC**Acronym for floppy disk drive controller.

**FIFO**Acronym for first in, first out. A method for processing a queue in which items are removed in the same order they were added.

## H

### Hardware Compatibility Tests

A suite of tests prepared by Windows Hardware Quality Laboratory (WHQL) that verify hardware and device driver operation under a specific operating environment. These tests exercise the combination of a device, a software driver, and an operating system under controlled conditions to verify that all components operate properly.

**hardware tree**A record in RAM of the current system configuration, based on the configuration information for all devices in the hardware branch of the Registry. The hardware tree is created each time the computer is started or whenever a dynamic change occurs to the system configuration.

## HCT

See *Hardware Compatibility Tests*.

**HDC** Acronym for hard disk controller. See *Disk I/O Controller*.

**hot docking** A system design to support removing or installing a mobile system in a docking station, while the computer is running at full power.

**I**  
**IDE** Acronym for Integrated Device Electronics. A type of disk-drive interface where the controller electronics reside on the drive itself, eliminating the need for a separate adapter card.

**IHV** Acronym for independent hardware vendor.

**I/O** Acronym for input/output. Two of the three activities that characterize a computer: input, processing, and output. This refers to the complementary tasks of gathering data for the microprocessor to work with and making the results available to the user through a device such as the monitor, disk drive, or printer.

**INF file** A file created for a particular adapter that provides the Windows Setup program with the information required to set up that device, such as a list of valid logical configurations for the device, the names of driver files associated with the device, the values to be added or changed in the registry, and so on.

**integrated devices** Any devices, such as parallel ports, graphics adapters, and so on, that are designed on the system board rather than on an expansion card.

**IPL** Acronym for initial program load. A device used by the system during the boot process to load an operating system into memory.

**IrDA** Acronym for Infrared Data Association.

**IRP** Acronym for I/O request packet. Data structures that drivers use to communicate with each other.

**IRQ** Acronym for interrupt request. A method by which a device can request to be serviced by the device's software driver. The system board uses a programmable interrupt controller (PIC) to monitor the priority of the requests from all devices. When a request occurs, the microprocessor suspends the current operation and gives control to the device driver associated with the interrupt number issued. The lower the number for example, IRQ 3, the higher the priority of the interrupt.

**ISA** Acronym for Industry Standard Architecture bus. An expansion bus that provides a buffered interface from devices on expansion cards to the PC internal bus.

**isolation** The process by which cards on an ISA bus are distinguished from each other after system startup.

## K

**kernel** The portion of Windows that manages the processor.

## L

**legacy** A colloquial description usually referring to older devices or systems that are not Plug and Play compatible.

**local bus** Generally refers to a system bus directly connected to the microprocessor on a system board. Used colloquially to refer to system board buses located closer to the microprocessor than are ordinary expansion buses (that is, with less buffering), which are therefore capable of greater throughput. The PCI bus is often referred to as a local bus.

**M**

**minidriver**A device driver that contains hardware-specific code related to a specific hardware device. The Win32 Driver Model allows hardware manufacturers to implement minidrivers.

**miniport driver**A 32-bit installable driver. Windows NT was the first operating system to use miniport drivers.

**motherboard**See *system board*.

**MPEG**Acronym for Motion Picture Experts Group, used when referring to one of several standard video-compression schemes.

**N**

**NDIS**Acronym for Network Driver Interface Specification. NDIS provides transport independence for network vendors. All transport drivers call the NDIS interface to access network.

**nibble mode**An asynchronous, peripheral-to-host channel defined in the IEEE 1284-1994 standard. This mode provides a channel for the peripheral to send data to the host, which is commonly used to identify the peripheral.

**NMI**Acronym for Nonmaskable Interrupt. An interrupt that cannot be overruled by another service request; called nonmaskable because it bypasses and takes priority over interrupt requests generated by software, the keyboard, and other devices.

**NTFS**Windows NT File System. An advanced file system designed for use specifically with the Windows NT operating system. NTFS supports file system recovery and extremely large storage media, in addition to other advantages.

**O**

**OEM**Acronym for original equipment manufacturer, used in this guide primarily to refer to PC systems manufacturers.

**option ROM**Optional read-only memory found on expansion cards. This ROM usually contains additional firmware required to properly boot the peripheral connected to the expansion card, for example, a hard drive. Also referred to as an expansion ROM.

**P**

**packed-pixel frame buffer**A portion of the display memory that holds the contents of a single screen image with screen bits stored in a single plane, with each pixel on the screen having a set of two or more corresponding bits that define the pixel color.

**PCI**Acronym for Peripheral Component Interconnect. A high-performance 32-bit or 64-bit bus designed to be used with devices that have high bandwidth requirements, such as the graphics subsystem.

**PCMCIA**Acronym for Personal Computer Memory Card International Association. Usually used to refer to a controller for PC Card expansion cards as documented in the PCMCIA standards.

**PIC**Acronym for programmable interrupt controller.

**Planar**See *system board*.

**Plug and Play**A design philosophy and a set of specifications that describe hardware and software changes to the PC and its peripherals for automatically identifying and arbitrating resource requirements among all devices and buses on the system.

**PnP**See *Plug and Play*.

**port**A connection or socket used to connect a device such as a printer, monitor, or modem to the computer. Information is sent from the computer to the device through a cable.

**port replicator** Low-cost docking station substitute, intended to provide convenient, one-step connection to multiple desktop devices.

**POST** Acronym for power-on self test. A procedure of the system BIOS that identifies, tests, and configures the PC in preparation for loading the operating system.

## R

**RAMDAC** Acronym for random access memory digital-to-analog converter. A chip built into some VGA and SVGA display adapters that translates the digital representation of a pixel into the analog information needed by the monitor to display it. The presence of a RAMDAC chip generally enhances overall display performance.

**Red Book audio** The data format standard for conventional audio CDs used in home stereo systems.

**registry** The tree-structured hierarchical database in which system hardware and software settings are to be stored. The registry supersedes use of separate INI files.

**resource arbitrator** A set of functions used by Configuration Manager to arbitrate and allocate resources on the PC.

**resource conflict** The result of more than one device sharing the same non-sharable resource. Conflicts can cause the device to be partially functional or nonfunctional, or might cause the PC to malfunction completely.

**resource data type function** A function that describes the resource requirements of an ISA expansion card, along with the programmability available on the card and its interdependencies.

**resources** A general term that refers to interrupt

request (IRQ) signals, direct memory access (DMA) channels, I/O port addresses, and memory addresses.

**RLE** Acronym for run-length encoding, a data compression scheme technique in which successive bytes of identical data are converted to a 2-byte pair, consisting of the repeated data byte and the repeat count.

## S

**SCAM** Acronym for SCSI configured automatically.

**SCSI** Acronym for small computer system interface. An I/O bus designed as a method of connecting several classes of peripherals to a host system without requiring modifications to generic hardware and software.

**SPI** Acronym for SCSI-3 parallel interfaces.

**spin down** A power management capability in which a hard drive shuts down its spindle motor.

**static resources** Device resources, such as IRQ signals, DMA channels, I/O port addresses, and memory addresses, that cannot be configured or relocated.

**system board** The primary circuit board in a PC that contains most of the basic components of the system. Also referred to as motherboard or planar.

## T

**TAPI** Acronym for telephony application program interface. A set of calls that allows applications to control modems and telephones by routing application function calls to the appropriate “service provider” DLL for a modem.

**tuple**A data structure defined by the PCMCIA to describe a single, specific characteristic of a PC Card. Tuples are chained together to form the card information structure (CIS), which describes to system software the PC Card's resource requirements and other characteristics. Tuples consist of a tuple code, an offset to the next tuple, and a number of bytes specific to the tuple.

## U

**UART**Acronym for universal asynchronous receiver-transmitter. A module composed of a single integrated circuit that contains both the receiving and transmitting circuits required for asynchronous serial communication.

**Unimodem**Name used to refer to the Windows universal modem driver. It is a driver-level component that uses modem description files (INFs) to control its interaction with the communications driver.

**Universal Serial Bus**A bidirectional, isochronous, dynamically attachable serial interface for adding peripheral devices such as game controllers, serial and parallel ports, and input devices on a single bus.

**USB**Acronym for Universal Serial Bus.

## V

**VESA**Acronym for Video Electronics Standards Association.

**VxD**A device driver that runs at the privileged ring 0 protected mode of the microprocessor. These drivers can extend the services of the Windows kernel, supervise hardware operations, or perform both functions. Such driver files are usually named according to the scheme VxD, where x refers to the device or service supported.

## W

**warm docking**A system design to support removing or installing a mobile system in a docking station while in a reduced power state such as suspend.

**Win32 API**A 32-bit application programming interface for both Windows 95 and Windows NT that includes sophisticated operating system capabilities, security, and API routines for Win32-based applications.

**workstation**In general, a powerful computer having considerable calculating and graphics capability.

