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Computer Dictionary

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while moving to different locations. Mobile IP tracks a moving host by registering the presence of the host with a foreign agent; the home agent then forwards packets to the remote network. *See also* IP.

mobile telephone switching office *n.* Computer that controls wireless phone calls. The mobile telephone switching office controls the operation of wireless cell sites, tracks calls, and transfers signals between wireless networks and traditional wired telephone systems. *Acronym:* MTSO.

mode *n.* The operational state of a computer or a program. For example, edit mode is the state in which a program accepts changes to a file. *See also* address mode, compatibility mode, safe mode, video mode, virtual real mode.

modem *n.* In telecommunications, a device that generates analog modem signals digitally. The term *modem* is a combination of the terms *modem* and *codec*. *See also* codec (definition 1), modem (definition 2).

model *n.* A mathematical or graphical representation of a real-world situation or object—for example, a mathematical model of the distribution of matter in the universe, a spreadsheet (numeric) model of business operations, or a graphical model of a molecule. Models can generally be changed or manipulated so that their creators can see how the real version might be affected by modifications or varying conditions. *See also* modeling, simulation.

modeling *n.* **1.** The use of computers to describe the behavior of a system. Spreadsheet programs, for example, can be used to manipulate financial data representing the health and activity of a company, to develop business plans and projections, or to evaluate the impact of proposed changes on the company's operations and financial status. *See also* simulation, spreadsheet program. **2.** The use of computers to describe physical objects and the spatial relationships among them mathematically. CAD programs, for example, are used to create on-screen representations of such physical objects as tools, office buildings, complex molecules, and automobiles. These models use equations to create lines, curves, and other shapes and to place those shapes accurately in relation to each other and to the two-dimensional or three-dimensional space in which they are drawn. *See also* CAD, rendering, solid model, surface modeling, three-dimensional model, two-dimensional model, wire-frame model.

modem *n.* **1.** Short for **modulator/demodulator**. A communications device that converts between digital data from a computer or terminal and analog audio signals that can pass through a standard telephone line. Because the telephone system was designed to handle voice and other audio signals and a computer processes signals as discrete units of digital information, a modem is necessary at both ends of the telephone line to exchange data between computers. At the transmit end, the modem converts from digital to analog audio; at the receiving end, a second modem converts the analog audio back to its original digital form. In order to move a high volume of data, high-speed modems rely on sophisticated methods for "loading" information onto the audio carrier—for example, they may combine frequency shift keying, phase modulation, and amplitude modulation to enable a single change in the carrier's state to represent multiple bits of data. In addition to the basic modulation and demodulation functions, most modems also include firmware that allows them to originate and answer telephone calls. International standards for modems are specified by the International Telecommunications Union, or ITU. Despite their capabilities, modems do require communications software in order to function. *See also* amplitude modulation, frequency modulation, quadrature amplitude modulation. **Compare** digital modem. **2.** Any communications device that acts as an interface between a computer or terminal and a communications channel. Although such a device may not actually modulate or demodulate analog signals, it may be described as a modem because a modem is perceived by many users to be a black box that connects a computer to a communications line (such as a high-speed network or a cable TV system). *See also* digital modem.

modem bank *n.* A collection of modems connected to a server maintained by an ISP or the operator of a BBS or remote-access LAN. Most modem banks are configured to allow a remote user to dial a single phone number that routes calls to an available phone number on the bank. *See also* BBS (definition 1), ISP, LAN.

modem eliminator *n.* A device that enables two computers to communicate without modems. *See also* null modem.

modem port *n.* A serial port used for connecting an external modem to a personal computer. *See also* modem (definition 1), serial port.

modem ready *n.* *See* MR.

M

noise *n.* **1.** Any interference that affects the operation of a device. **2.** Unwanted electrical signals, produced either naturally or by the circuitry, that distort or degrade the quality or performance of a communications channel. *See also* distortion.

nonbreaking space *n.* A character that replaces the standard space character in order to keep two words together on one line rather than allowing a line to break between them.

noncompetes *n.* An agreement between employer and employee that states that the employee will not accept work with a competing company for a specified length of time after leaving the employer's company. Noncompete agreements are common in high-tech companies and are typically requested to help maintain company secrets and retain valuable employees.

nonconductor *n.* *See* insulator.

noncontiguous data structure *n.* In programming, a data structure whose elements are not stored contiguously in memory. Data structures such as graphs and trees, whose elements are connected by pointers, are noncontiguous data structures. *Compare* contiguous data structure.

nondedicated server *n.* A computer on a network that can function as both a client and a server; typically, a desktop machine on a peer-to-peer network. *Compare* dedicated server.

nondestructive readout *n.* A reading operation that does not destroy the data read, either because the storage technology is capable of retaining the data or because the reading operation is accompanied by a data refresh (update) function. *Acronym:* NDR, NDRO. *Compare* destructive read.

nonexecutable statement *n.* **1.** A program statement that cannot be executed because it lies outside the flow of execution through the program. For example, a statement immediately following a *return()* statement but before the end of the block in C is nonexecutable. **2.** A type definition, variable declaration, preprocessor command, comment, or other statement in a program that is not translated into executable machine code.

nonimpact printer *n.* Any printer that makes marks on the paper without striking it mechanically. The most common types are ink-jet, thermal, and laser printers. *See also* ink-jet printer, laser printer, thermal printer. *Compare* impact printer.

noninterlaced *adj.* Pertaining to a display method on raster-scan monitors in which the electron beam scans each line of the screen once during each refresh cycle. *Compare* interlaced.

nonmaskable interrupt *n.* A hardware interrupt that bypasses and takes priority over interrupt requests generated by software and by the keyboard and other such devices. A nonmaskable interrupt cannot be overruled (masked) by another service request and is issued to the microprocessor only in disastrous circumstances, such as severe memory errors or impending power failures. *Acronym:* NMI. *Compare* maskable interrupt.

nonprocedural language *n.* A programming language that does not follow the procedural paradigm of executing statements, subroutine calls, and control structures sequentially but instead describes a set of facts and relationships and then is queried for specific results. *Compare* procedural language.

nonreturn to zero *n.* **1.** In data transmission, a method of encoding data in which the signal representing binary digits alternates between positive and negative voltage when there is a change in digits from 1 to 0 or vice versa. In other words, the signal does not return to a zero, or neutral, level after transmission of each bit. Timing is used to distinguish one bit from the next. **2.** In the recording of data on a magnetic surface, a method in which one magnetic state represents a 1 and, usually, the opposite state represents a 0. *Acronym:* NRZ.

nontrivial *adj.* Being either difficult or particularly meaningful. For example, a complicated programmed procedure to handle a difficult problem would represent a nontrivial solution.

Non-Uniform Memory Access *n.* *See* NUMA.

nonuniform memory architecture *n.* A system architecture designed for Sequent's Non-Uniform Access Memory, a type of distributed shared memory using a number of shared memory segments instead of a single centralized physical memory. *Acronym:* NUMA.

nonvolatile memory *n.* A storage system that does not lose data when power is removed from it. Intended to refer to core memory, ROM, EPROM, flash memory, bubble memory, or battery-backed CMOS RAM, the term is occasionally used in reference to disk subsystems as well. *See also* bubble memory, CMOS RAM, core, EPROM, flash memory, ROM.

NO-OP *n.* *See* no-operation instruction.

N

volatile memory *n.* **1.** Memory, such as RAM, that loses its data when the power is shut off. *Compare* nonvolatile memory. **2.** Memory used by a program that can change independently of the program, such as memory shared by another program or by an interrupt service routine.

volt *n.* The unit used to measure potential difference or electromotive force. One volt is defined as the potential across which 1 coulomb of charge will do 1 joule of work, or the potential generated by 1 ampere of current flowing through 1 ohm of resistance. *See also* electromotive force.

voltage *n.* *See* electromotive force.

voltage regulator *n.* A circuit or circuit component that maintains a constant output voltage despite variations in input voltage.

volts alternating current *n.* The measure of the peak-to-peak voltage swing of an electrical signal. *Acronym:* VAC.

volume *n.* **1.** A disk or tape that stores computer data. Sometimes, large hard disks are divided into several volumes, each of which is treated as a separate disk. **2.** The loudness of an audio signal.

volume label *n.* A name for a disk or tape. MS-DOS systems, which seldom use disk names except in directory listings, use the term *volume label*. Apple Macintosh systems, which often refer to disks by name, use the term *volume name*.

volume name *n.* *See* volume label.

volume reference number *n.* *See* volume serial number.

volume serial number *n.* The optional identifying volume number of a disk or tape. MS-DOS systems use the term *volume serial number*. Apple Macintosh systems use the term *volume reference number*. A volume serial number is not the same as a volume label or volume name. *Compare* volume label.

VON *n.* Acronym for **voice on the net**. A broad category of hardware and software technology for real-time voice and video transmission over the Internet. The term was coined by Jeff Pulver, who formed a group called the VON Coalition, which opposes regulation of VON technology and promotes VON to the public.

von Neumann architecture *n.* The most common structure for computer systems, attributed to the mathematician John von Neumann. It uses the concept of a program that can be permanently stored in a computer and manipulated or made self-modifying through machine-based instructions. Sequential processing is characteristic of von Neu-

mann architecture. Parallel architectures have evolved to improve on the encumbrances of sequential instructions. *See also* parallel computer.

von Neumann bottleneck *n.* Competition between data and instructions for CPU time. Mathematician John von Neumann was the first to show that a computer based on architecture linking a single processor with memory will actually spend more time retrieving data from memory than processing it. The bottleneck arises when the processor has to trade off between executing a large number of instructions per second and reading in a large amount of data in the same time. *See also* CPU.

VPD *n.* Acronym for **virtual printer device driver**. *See* virtual device driver.

VPN *n.* *See* virtual private network.

VR *n.* *See* virtual reality.

VRAM *n.* *See* video RAM.

VRC *n.* Acronym for **vertical redundancy check**. A method for checking the accuracy of transmitted data. VRC generates an extra bit (parity bit) for each character transmitted. The parity bit indicates whether the character contains an odd or an even number of 1 bits. If its value does not match the type of the character, that character is assumed to be incorrectly transmitted. *See also* parity. *Compare* LRC.

VRML *n.* Acronym for **Virtual Reality Modeling Language**. A scene description language for creating 3-D interactive Web graphics similar to those found in some video games, allowing the user to "move around" within a graphic image and interact with objects. VRML, a subset of Silicon Graphics' Inventor File Format (ASCII), was created by Mark Pesce and Tony Parisi in 1994. VRML files can be created in a text editor, although CAD packages, modeling and animation packages, and VRML authoring software are the tools preferred by most VRML authors. VRML files reside on an HTTP server; links to these files can be embedded in HTML documents, or users can access the VRML files directly. To view VRML Web pages, users need a VRML-enabled browser or a VRML plug-in for Internet Explorer or Netscape Navigator. *See also* 3-D graphic, HTML document, HTTP server (definition 1).

v-root *n.* *See* virtual root.

V series *n.* The series of ITU-T (formerly CCITT) recommendations relating to modems and modem communications over the public phone system, including signaling, coding, and circuit characteristics. *See* the table.