



Dictionary of Computer and Internet Terms

Seventh Edition



-
- More than 2500 key computer terms with definitions
 - Includes hundreds of words and expressions that apply specifically to the Internet
 - User-friendly descriptions of programming concepts, desktop and other applications, and much more
 - Filled with illustrations

Douglas Downing, Ph.D., Michael Covington, Ph.D., and
Melody Mauldin Covington

Dictionary of Computer and Internet Terms

Seventh Edition

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CONTENTS

About the Authors	ii
To the Reader	iv
Dictionary of Computer and Internet Terms	1-549
Numbers	1
Greek Letters	3
A	4
B	39
C	71
D	118
E	147
F	174
G	201
H	211
I	229
J	251
K	260
L	264
M	286
N	319
O	334
P	345
Q	392
R	395
S	425
T	471
U	503
V	512
W	524
X	540
Y	546
Z	548
Visual Dictionary of Characters and Symbols	550-554

IPR 2025-00857
Allani Ex. 2018 Page003

by placing the appropriate code directly into video memory.

Figure 128 shows the printable part of the special character set. Under DOS, these characters are typed by holding down the Alt key and typing the appropriate number on the numeric keypad at the right side of the keyboard. For example, to type a shaded block, hold down Alt, type 178, and then release Alt. (See also ASCII; ANSI)

An unusual characteristic of all IBM PCs, ATs, and PS/2s, but not of clones, is that if the machine is unable to load an operating system from disk, it calls up a BASIC interpreter that is stored on a ROM chip. This BASIC interpreter ("Cassette BASIC") was originally implemented so that low-budget computer hobbyists could use IBM PCs without disk drives, storing their programs on cassette tape. The same ROM code was included in later machines because it is used by the BASIC interpreter that runs under DOS. (See BASICA; GW-BASIC.)

IBM RS/6000 *see* WORKSTATION.

IC *see* INTEGRATED CIRCUIT.

ICANN (Internet Corporation of Assigned Names and Numbers) a non-profit corporation established in 1998 to oversee the assignment of Internet domain names and addresses. *See also* NETWORK SOLUTIONS, INC.



FIGURE 129. ICONS REPRESENTING PROGRAMS

icon a small picture on a computer screen that represents a particular object, operation, or group of files. Icons are used extensively in graphical user interfaces such as Microsoft Windows, the Macintosh, and the OS/2 Desktop.

On the Macintosh, the trash can icon stands for "delete." Use the mouse to move a file to the trash can, and it will be deleted. In Windows 95 and its successors, the Recycle Bin serves the same function. *See* GRAPHICAL USER INTERFACE; MOUSE; WINDOW; WINDOWS (MICROSOFT).

iconify to turn a window into an icon (same as MINIMIZE).

IDE (Integrated Device Electronics) a type of hard disk that has most of the controller circuitry built into it, to save space. IDE controllers are functionally similar to the older ST-506 standard. *See* ST-506; ESDI; SCSI.

identifiers symbolic names used in a program and defined by the programmer. Most identifiers stand for variables (*see* VARIABLE); however, some languages allow the use of identifiers to represent constants, so that the value of a particular constant, wherever it occurs in the program, can be changed by changing the statement that defines the identifier. *See* CONSTANT.

identity in Outlook Express or similar mail-reading programs, a setting that determines which of several individuals is using the computer. This enables several people to share a computer and keep their e-mail separate even though the operating system is not set up for multiple users.

identity theft (*jargon*) the crime of impersonation, i.e., pretending to be someone else, using forged documents of various kinds. Crucially, identity theft goes beyond the theft of a single credit card number or the forgery of a single document. It is an attempt to assume a person's entire identity, including name and credit rating, in order to create new accounts under the victim's name.

Identity theft often involves electronic communications media by taking advantage of the fact that on-line and mail-order merchants are often not very thorough in checking credit card users. However, despite wide publicity in the late 1990s, identity theft remains a relatively uncommon crime. *See also* COMPUTER ETHICS.

ideogram, ideograph a written symbol that represents an idea rather than the pronunciation of a word. Symbols such as &, \$, numerals, and computer icons are ideograms.

IDL (Interface Definition Language) *see* CORBA.

IE (Internet Explorer) a web browser developed by Microsoft.

IEC power connector the type of connector commonly used to attach a PC's power cord to the computer, using three prongs oriented in the same direction.

IEEE (Institute of Electrical and Electronics Engineers) the leading professional society for electrical and computer engineers in the United States. It publishes journals, holds conferences, and publishes many standards applicable to computer equipment. The IEEE is headquartered in Piscataway, New Jersey, and can be reached on the Web at <http://www.ieee.org>.

IEEE 1284 *see* IEEE Standard for Parallel Port, compatible with the designs used previously, but including provision for high-performance bidirectional communication with tape drives, disk drives, and other

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*Terms &
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Brad Hansen

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I

IAB See *Internet Architecture Board*.

IANA See *Internet Assigned Numbers Authority*.

IAP See *Internet Access Provider*.

I-beam (n.) The cursor shape in a graphical user interface (GUI) that identifies the location on the screen where characters will appear in a text-entry mode.

IBM-compatible (adj.) Describes a personal computer that runs MS-DOS and that is often referred to as a PC, as opposed to a Macintosh.

IBM PC (n.) International Business Machines Personal Computer; generic term for any microcomputer based on the Intel family of microprocessors: 8086, 8088, 80286, 80386, 80486, Pentium, or Pentium II. The speed of the central processing unit (CPU) is the most significant factor in performance, determined by clock rate and the number of bits the CPU can process internally.

IBM PC AT (n.) A version of the IBM PC released in August 1984 with an Intel 80286 processor, a 16-bit bus, a 1.2-megabyte (MB) floppy disk drive, and a larger case than the original PC had.

IBM PC XT (n.) An IBM-compatible personal

computer that was released in March 1983 with an Intel 8088 processor. The XT 286 version was released in September 1986 with an Intel 80286 processor and an eight-bit bus.

IBM PS/2 (n.) IBM Personal System/2; an IBM-compatible personal computer that replaced the IBM PC series in 1987. It used 8088, 80286, or 80386 processors and implemented IBM's Micro Channel Bus. It ran MS-DOS and OS/2 operating systems, and was compatible with most PC programs at the time.

IC See *integrated circuit*.

ICIA See *International Communications Industries Association*.

ICMP See *Internet Control Message Protocol*.

icon (n.) Any graphic symbol that represents an object, function, or task. Most often, it represents a file or application in a graphical user interface (GUI). When the cursor appears on top of an icon, a mouse click will generally initiate an action.

ICT See *Integrated Computer Telephony*.

ICW See *interactive courseware*.

ID (n.) Abbreviation for identification.

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IEEE 100

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I See: invalid; in-phase video.

I^2t (1) (protection and coordination of industrial and commercial power systems) The measure of heat energy developed within a circuit during the fuses melting or clearing. Generally stated as melting I^2t or clearing I^2t .
(IA/PSP) 242-1986r

(2) The integral of the square of the current during a given time interval in $A^2\cdot s$:

$$I^2t = \int_{t_0}^{t_1} i^2 dt \text{ (A}^2\text{-s)}$$

Notes: 1. The melting I^2t is equal to the integral of the square of the current during the melting time of the fuse. 2. The clearing I^2t is equal to the integral of the square of the current during the clearing time of the fuse. The clearing time is equal to the sum of melting time and arcing time. 3. The I^2t ($A^2\cdot s$) multiplied by the resistance (ohms) through which the current flows is equal to the energy (Joules) that will be produced in the resistance.
(SWG/PE) C37.40b-1996

I^2t characteristic (of a fuse) The amount of ampere-squared seconds passed by the fuse during a specified period and under specified conditions. **Notes:** 1. The specified period may be the melting, arcing, or total clearing time. The sum of melting and arcing I^2t is the clearing I^2t . 2. The melting characteristic is related to a specified current wave shape, and the arcing I^2t to specified voltage and circuit-impedance conditions.
(SWG/PE) C37.100-1992

IA See: laser gyro axes; internal address field; input axis.

IACK daisy-chain driver A functional module that activates the interrupt-acknowledge daisy-chain whenever an interrupt handler acknowledges an interrupt request. This daisy-chain ensures that only one interrupter responds with its status/ID when more than one has generated an interrupt request.
(C/BA) 1014-1987

IAGC See: instantaneous automatic gain control.

IAM Abbreviation for initial address message.
(COM/TA) 973-1990w

I_{avg} output The average output load current at which to test the unit under test, $(I_{min} + I_{max})/2$.
(PEL) 1515-2000

IC See: information center; interexchange carrier; instruction counter; integrated circuit.

ICEA The Insulated Cable Engineers Association. Founded in 1925, the ICEA is a professional society of insulated cable engineers to promote the reliability of covered and insulated conductors for the transmission and distribution of electric energy, control, and instrumentation of equipment and communications.
(T&D/PE) 524a-1993r

ice detection light (illuminating engineering) An inspection light designed to illuminate the leading edge of the wing to check for ice formation.
(BEC/IE) [126]

ice proof (1) (high voltage air switches, insulators, and bus supports) So constructed or protected that ice will not interfere with successful operation.
(SWG/PE) C37.30-1971s
(2) So constructed or protected that ice of a specified composition and thickness will not interfere with successful operation.
(SWG/PE) C37.100-1992

ICES See: Integrated Civil Engineering System.

ice tests Design tests made to determine the rated ice-breaking ability of the switching equipment.
(SWG/PE) C37.100-1992

I chrominance signal (national television system committee color television) The sidebands resulting from suppressed-carrier modulation of the chrominance subcarrier by the I video signal. **Note:** The signal is transmitted in vestigial form, the upper sideband being limited to a frequency within the top of the picture transmission channel (approximately 0.6 MHz above the chrominance subcarrier), and the lower side-

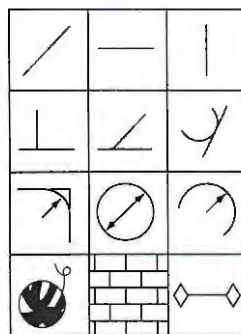
band extending to approximately 1.5 MHz below the carrier. The phase of the signal, for positive I video signal, is 123 deg with respect to the (B-Y) axis.
(BT/AV) 201-1986r

ICOM code An expression in one diagram that unambiguously identifies an arrow segment in another diagram. An ICOM code is used to associate a boundary arrow of a child diagram with an arrow attached to an ancestral box. **Synonym:** arrow reference.
(C/SE) 1320-1986r

ICOM label An arrow label attached without a squiggle to the arrowhead of an output boundary arrow or to the rowtail of an input, control, or mechanism boundary arrow. An ICOM label associates a boundary arrow of a child diagram with an arrow label of an arrow attached to an ancestral box.
(C/SE) 1320-1986r

Icon A high-order programming language designed primarily to process non-numerical data, as in the applications such as analyzing natural language, transforming or generating computer programs, and formatting documents.
(C) 610.13-1986r

icon A symbol that is a pictorial indication of a command object and is located on a graphics tablet or an on-screen menu.



icon

(C) 610.6-1986r

iconic model A physical model that looks like the system being modeled; for example, a non-functional replica of a computer tape drive used for display purposes. **See also:** scale model.
(C) 610.3-1986r

ICV See: integrity check value.

ICW See: interrupted continuous wave.

IDA See: independent disk array.

IDCODE (identity code) A defined instruction for the test logic defined by 1149.1-1990.
(TT/C) 1149.1-1990

Idp Current measurement taken at the ground rail during gas-escapement operation.
(C/TT) 1450-1986r

IDE See: integrated device electronics.

ideal capacitor (nonlinear capacitor) A capacitor whose transferred charge characteristic is single-valued. **See also:** nonlinear capacitor.
(ED) [4]

ideal code bin width Q The full-scale range divided by the total number of code states.
(IM/WM&A) 1057-1994r

ideal codec A codec that has theoretically optimum characteristics.
(COM/TA) 269-1982r

ideal conductor See: perfect conductor.
ideal dielectric See: perfect dielectric.

ideal filter (A) (frequency domain) A filter that passes, without attenuation, all frequencies inside specified frequency limits while rejecting all other frequencies. **(B)** (time domain). A filter with a time domain response identical to the excitation except for a constant delay.
(CAS) [13]

IEEE 100

The Authoritative Dictionary of IEEE Standards Terms

Seventh Edition

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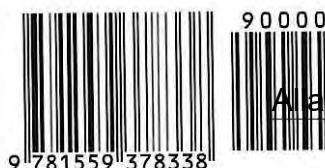
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**Standards Coordinating Committee 10, Terms and Definitions
Jane Radatz, Chair**

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I

I See: invalid; in-phase video.

I^2t (1) (protection and coordination of industrial and commercial power systems) The measure of heat energy developed within a circuit during the fuses melting or clearing. Generally stated as melting I^2t or clearing I^2t .

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(PE/SWG) C37.40b-1996

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(PE/T&D) 524a-1993

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(PE/SWG) C37.30-1971s

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(PE/SWG) C37.100-1992

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(PE/SWG) C37.100-1992

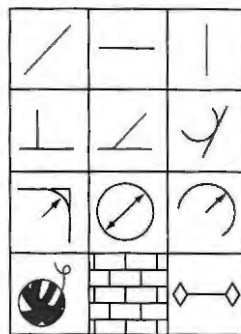
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(BT) 201-1979w

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(C) 610.13-1993

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(C) 610.6-1991

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(C) 610.3-1989

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(IM) 1057-1994

ideal codec A codec that has theoretically optimum characteristics.

(COM) 269-1992

ideal conductor See: perfect conductor.

ideal dielectric See: perfect dielectric.

ideal filter (A) (frequency domain). A filter that passes, without attenuation, all frequencies inside specified frequency limits while rejecting all other frequencies. **(B) (time domain).** A filter with a time domain response identical to the excitation except for a constant delay.

(CAS) [13]

ideally conducting medium See: perfect conductor.

ideal noise diode See: noise diode, ideal.

ideal paralleling (rotating machinery) Paralleling by adjusting the voltage, and frequency and phase angle for alternating-current machines, such that the conditions of the incoming machine are identical with those of the system with which it is being paralleled. **See also:** asynchronous machine.

(PE) [9]

ideal site A test site on which the reflective surface is flat and has infinite conductivity and size.

(EMC) C63.4-1988s, C63.5-1988

ideal transducer See also: transducer, ideal.

ideal value (1) (automatic control) A selected variable that would result from a perfect system operating from the same command as the actual system under consideration. **See also:** control system, feedback.

(CS/IA) [60]

identified

(2) (synchronizing) a controlled (age) that regulates between it and regulator set

identified (1) for the specified application requirement. pose, environment, qualified test organization, location may vary, re-equipment;

(2) (data management)

identification of a signal is from a system by determining of change of responses to

identification of a signal transmits code

identifier (software) index of an

identity The identity and only if identity operation.

identity element radio signal or ground, basic parts responders. used instead

identity gate identity operation

identity operation and only if identity operation. altitude, and

I-display (A) (B) A display appears as a at it and in

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was based on the Intel 80286 processor and dramatically outperformed its predecessor, the XT, in speed. *See also* 80286.

IBM PC *n.* Short for **IBM Personal Computer**. A class of personal computers introduced in 1981 and conforming to IBM's PC specification. The first PC was based on the Intel 8088 processor. For a number of years, the IBM PC was the de facto standard in the computing industry for PCs, and clones, or PCs that conformed to the IBM specification, have been called *PC-compatible*. *See also* PC-compatible, Wintel.

IBM PC/XT *n.* A class of personal computer released by IBM in 1983. XT, short for eXtended Technology, enabled users to add a wider range of peripherals to their machines than was possible with the original IBM PC. Equipped with a 10-megabyte hard disk drive and one or two 5¼-inch floppy drives, the PC/XT was expandable to 256K of RAM on the motherboard and was loaded with MS-DOS version 2.1, which supported directories and subdirectories. The popularity of this machine contributed to the production of what came to be known in the industry as "clones," copies of its design by many manufacturers. *See also* IBM AT, IBM PC, XT.

IBM PC-compatible *adj.* *See* PC-compatible.

IC *n.* *See* integrated circuit.

ICANN *n.* Acronym for **Internet Corporation for Assigned Names and Numbers**. The private, nonprofit corporation to which the United States government in 1998 delegated authority for administering IP (Internet Protocol) addresses, domain names, root servers, and Internet-related technical matters, such as management of protocol parameters (port numbers, protocol numbers, and so on). The successor to IANA (IP address administration) and NSI (domain name registration), ICANN was created to internationalize and privatize Internet management and administration. *See also* IANA, NCI.

ICASE *vi-kās\ n.* Acronym for **Integrated Computer-Aided Software Engineering**. Software that performs a wide variety of software engineering functions, such as program design, coding, and testing parts or all of the completed program.

ICE *n.* 1. Acronym for **Information and Content Exchange**. A protocol based on XML (Extensible Markup Language) designed to automate the distribution of syndicated content over the World Wide Web. Based on the concept of content syndicators

(distributors) and subscribers (receivers), ICE defines the responsibilities of the parties involved, as well as the format and means of exchanging content so that data can easily be transferred and reused. The protocol has been submitted to the World Wide Web Consortium by Adobe Systems, Inc., CNET, Microsoft, Sun Microsystems, and Vignette Corporation. It is intended to help in both publishing and interbusiness exchanges of content. 2. Acronym for **in-circuit emulator**. A chip used as a stand-in for a microprocessor or a microcontroller. An in-circuit emulator is used to test and debug logic circuits. 3. Acronym for **Intrusion Countermeasure Electronics**. A fictional type of security software, popularized by science fiction novelist William Gibson, that responds to intruders by attempting to kill them. The origin of the term is attributed to a USENET subscriber, Tom Maddox. 4. *See* Intelligent Concept Extraction.

ICM *n.* *See* image color matching.

ICMP *n.* Acronym for **Internet Control Message Protocol**. A network-layer (ISO/OSI level 3) Internet protocol that provides error correction and other information relevant to IP packet processing. For example, it can let the IP software on one machine inform another machine about an unreachable destination. *See also* communications protocol, IP, ISO/OSI reference model, packet (definition 1).

icon *n.* A small image displayed on the screen to represent an object that can be manipulated by the user. By serving as visual mnemonics and allowing the user to control certain computer actions without having to remember commands or type them at the keyboard, icons contribute significantly to the user-friendliness of graphical user interfaces and to PCs in general. *See also* graphical user interface.

iconic interface *n.* A user interface that is based on icons rather than on typed commands. *See also* graphical user interface, icon.

icon parade *n.* The sequence of icons that appears during the boot-up of a Macintosh computer.

ICQ *vi cek' yoo\ n.* A software program developed by Mirabilis that notifies Internet users when friends, family, or other selected users are also online and allows them to communicate with one another in real time. Through ICQ, users can chat, send e-mail, exchange messages on message boards, and transfer URL and files, as well as launch third-party programs, such as games, in which multiple people can

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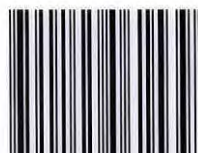


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Allani Ex. 2018 Page023

of a dispute over a domain name, the matter is referred to the CPR Institute for Dispute Resolution under the Uniform Dispute Resolution Policy (UDRP). See also Internet and TLD.

ICAP Internet Content Adaptation Protocol. Point-to-point protocol between cache servers and network-based applications.

ICAPI International Call Control API.

ICB Individual Case Basis. A service arrangement in which the regulations, rates and charges are developed based on the specific circumstances of the customer's situation. General tariffs which apply to the vast unwashed customer base do not apply in this case. The price is negotiated between the company (i.e. the phone company) and the customer.

ICCF Interexchange Carrier Compatibility Forum.

ICD International Code Designator. A 2-byte field of the 20-byte NSAP (Network Service Access Point) address, the ICD is used to identify an international organization. NSAP and ICD are used in a variety of networks, including ATM. The British Standards Institution is the registration authority for the International Code Designator. See also BSI.

ICE Information Content and Exchange. An emerging protocol in the form of a XML (eXtensible Markup Language) application, ICE is designed to facilitate the automation of content syndication on the World Wide Web. The ICE architecture is intended to define business rules that would support data (e.g., user profile) exchange among partner sites. Such data can then be processed, loaded into a repository and resold under the user interface of the licensee. For example, ICE would allow a review of a book, movie or theater production to be licensed to multiple Web site hosts. A kill date would automatically kill the content across all sites on a specified date.

ICEA Insulated Cable Engineers Association. See the following definitions.

ICEA-P-46-426 Power cable ampacities for copper and aluminum conductor cable.

ICEA-P-53-426 Ampacities 15 KV through 35 KV copper and aluminum conductor.

ICEA-S-19-81 Rubber-insulated wire and cable.

ICEA-S-61-402 Thermoplastic-insulated wire and cable.

ICEA-S-66-524 Cross-linked thermosetting polyethylene-insulated wire and cable.

ICEA-S-68-516 Ethylene propylene rubber insulated wire and cable.

ICF Internet Connection Firewall. A firewall is a security system—hardware and/or software—that acts as a protective boundary between a network (which may be your PC only or it may be your PC and your families PCs on a local area network—and the outside world. Windows XP includes something called Internet Connection Firewall software Microsoft says you can use to restrict what information is communicated between the Internet and you and/or your network. You may be connected to the Internet via a cable modem, a DSL modem, or a dial-up modem. You should not enable Internet Connection Firewall on virtual private networking (VPN) connections, which are typically used to securely log in to a corporate network. You should not enable ICF on client computers that are part of a large company or school network with a server-client structure. ICF will interfere with file and printer sharing in these scenarios. It's very easy to enable the Microsoft's software ICF. Poking around on Network/Properties/Advanced tab will lead you to a screen that talks about the ICF. Simply select Protect my computer or network, and then click OK. The Windows XP firewall is now enabled. My personal preference is for separate firewall hardware, not just a software solution. But I'm probably an old foggy.

ICFA International Computer Facsimile Association. The mission of this new organization is to create awareness of the benefits and uses of computer fax to increase worldwide market size.

ICI 1. Interexchange Carrier Interface. The interface between carrier networks that support SMDS.

ICIS See MAG Plan.

ICIT International Center for Information Technologies. A part of MCI.

Icky PIC Sticky Plastic Insulated Conductor. A gel-filled cable which is the only type recommended for direct burial, i.e., directly in the ground without any protective conduit system. As the gel is very sticky, working with "icky PIC" is a somewhat unpleasant experience.

ICM See Integrated Call Management and/or Intelligent Call Management.

ICMP Internet Control Message Protocol. ICMP is a layer 3 protocol that is tightly integrated with the TCP/IP protocol suite. It allows routers to send error and control messages about packet processing on IP networks. For example, if a packet cannot reach its destination, an ICMP message is sent to the packet's source. Functions of ICMP include:

- Reporting errors. An error message is sent when a packet cannot reach its destination.
- Reporting congestion. ICMP messages report congestion when a router's buffer is

full and is unable to properly forward packets. A source quench message is returned to the data source to slow down packet transmission. This is done sparingly to reduce the chance that ICMP messages will contribute to the congestion problem.

- Relaying troubleshooting information. Troubleshooting information is relayed through ICMP's echo feature. The ping utility is based on this ability to send a packet roundtrip between two hosts.
- Reporting time outs. ICMP reports timeouts when a packet's time-to-live (TTL) counter reaches zero and the packet is discarded.

Some common ICMP messages include:

- Echo - used by the ping utility to test the connection between two devices
- Echo reply - reply to a ping
- Destination unreachable - several reasons cause a destination to be unreachable (unavailable port, unknown network, etc.)
- Source quench - tells the data source to reduce its transmission rate
- Redirect - informs the source of a better route to the destination
- Time exceeded - sent when a packet's time-to-live reaches zero
- Parameter problem - sent when there is a problem with the IP header
- Timestamp - requests the last time a host touched a particular packet to determine delay
- Timestamp reply - reply to a time stamp request

ICOMP Intel Comparative Microprocessor Performance Index. A test for measuring how fast microprocessors are.

icon An icon is a picture or symbol representing an object, task, command or choice you can select from a piece of software (e.g. a trash can for a deletion command).

iconography The science of icons. A fancy name for talking about icons—those little visual representations of objects, tasks or commands you find in Windows and other GUI (Graphical User Interface) programs and operating systems.

ICP 1. Intelligent Call Processing. The ability of the latest ACDs to intelligently route calls based on information provided by the caller, a database on callers and system parameters within the ACD such as volumes within agent groups and number of agents available.

2. Instituto das Comunicacoes de Portugal (The Portuguese Institute of Communications).

3. Intelligent Call Processor. The name of an AT&T service. ICP allows users to directly link their customer premise equipment to its network for individual call processing based on customer-specific information.

4. Independent Communications Provider. An ICP is a switchless CLEC (Competitive Local Exchange Carrier). Multi-service, integrated access.

5. Integrated Communications Provider. A fancy name for a competitive local exchange carrier (CLEC) that has passed beyond being an "ordinary" CLEC, which tends to just rent incumbent LEC (ILEC) circuits, into one who builds his own circuits and has a more comprehensive sales and marketing strategy. I first saw this term in a marketing presentation by a Lucent executive. I'm not too sure he knew what the term meant, except that he felt better if he sold equipment to an ICP, not a CLEC. A company called Jetstream wrote about this:

Since the Telecommunications Act of 1996 opened the \$100 billion local market to competition, more than 500 companies have registered to offer local voice and data telecommunications services in the U.S. These newly enfranchised Integrated Communications Providers (ICPs) have collectively raised more than \$30 billion to fund construction of the local networks they'll need to operate as carriers, and the total continues to rise at an unprecedented rate.

To survive in this competitive arena, CLECs, DLECs, ILECs and IXCs are aggressively looking for new technologies that will let them serve their customers profitably with a differentiated range of communication services.

6. Integrated Communications Platform. A remotely managed telephone, messaging and data networking platform. The benefit of this system is it provides corporate users with a single point of contact for managing an office's entire communications infrastructure, including local and long distance voice, data, and Internet service.

7. Internet Cache Protocol. A protocol used by caches on proxy servers to query other caches on other proxy servers about Web objects in cached databases. ICP uses User Datagram Protocol (UDP), an application-layer extension of the TCP/IP protocol suite. See also Cache, Proxy, and UDP.

ICQ ICQ "I Seek You". A erstwhile popular program that lets you find your friends and associates online on the Internet in real time. You send them messages, chat with them

ness in coming years as the invention of the Gutenberg Press was in 1453.

At its heart, the Internet is many large computer networks joined together over high-speed backbone data links ranging from 56 Kbps (now rare) to T-1, T-3, OC-1, OC-3 and higher. The Internet now reaches worldwide. Depending on the whim of the local government (which typically controls the local phone company and thus access to the Internet for its citizenry) you can pretty well get onto the Internet and roam it unchecked. The governments of Singapore, the People's Republic of China, Burma, Saudi Arabia and a few others limit their peoples' access to the Internet. The topology of the Internet and its subnetworks changes daily, as do its providers and its content. The bottom line is that the makeup of the Internet—i.e. how it works—is not all that important. It is the applications and information available on it that are important—the most significant of which are e-mail (electronic mail) and the World Wide Web. Commercial networks from AT&T, SPRINT, Worldcom and many others now carry the bulk of the traffic. As NSFNET (i.e. the U.S. Government) no longer funds the Internet, it has been commercialized, with money changing hands in complex ways between users, companies with Web sites, Internet Access Providers, long distance providers, government, universities and others. Increasingly, businesses are joining their computers to the Internet. There are now over 125 million Internet sites you can visit, running on over 75 million computers. There are probably 500 million computers worldwide equipped to reach the Internet—from the laptop I'm writing this on, to the desktop at your office.

The Internet's networking technology is very smart. Every time someone hooks a new computer to the Internet, the Internet adopts that hookup as its own and begins to route Internet traffic over that hookup and through that new computer. Thus as more computers are hooked to the Internet, its network (and its value) grows exponentially. The Internet is basically a packet switched network based on a family of protocols called TCP/IP, which stands for Transmission Control Protocol/Internet Protocol (TCP/IP), a family of networking protocols providing communication across interconnected networks, between computers with diverse hardware architectures and between various computer operating systems. Most PCs, including Windows-based machines and Macintoshes, will happily communicate using TCP/IP.

How TCP Works: TCP is a reliable, connection-oriented protocol. Connection-oriented implies that TCP first establishes a connection between the two computer systems that intend to exchange data (e.g. your PC and the host computer you're trying to reach, which may be thousands of miles away). Since most networks are built on shared media (for example, several systems sharing the same cabling), it is necessary to break chunks of data into manageable pieces so that no two communicating computers monopolize the network. These pieces are called packets. When an application sends a message to TCP for transmission, TCP breaks the message into packets, sized appropriately for the network, and sends them over the network. Because a single message is often broken into many packets, TCP marks these packets with sequence numbers before sending them. The sequence numbers allow the receiving system to properly reassemble the packets into the original original order, i.e. the original message. TCP checks for errors. And finally, TCP uses port IDs to specify which application running on the system is sending or receiving the data. The port ID, checksum, and sequence number are inserted into the TCP packet in a special section called the header. The header is at the beginning of the packet containing this and other "control" information for TCP.

How IP Works: IP is the messenger protocol of TCP/IP. The IP protocol, much simpler than TCP, basically addresses and sends packets. IP relies on three pieces of information, which you provide, to receive and deliver packets successfully: IP address, subnet mask, and default gateway. The IP address identifies your system on the TCP/IP network. IP addresses are 32-bit addresses that are globally unique on a network. There's much more on TCP/IP in my definition on TCP/IP and on Internet Addresses in that definition.

Here's how the Internet is used: As a computer network joining two (or more) computers together in a session, it is basically transparent to what it carries. It doesn't care if it carries electronic mail, research material, shopping requests, video, images, voice phone calls, requests for information, faxes ... or anything that can be digitized, placed in a packet of information and sent. A packet-switched network like the Internet injects short delays into its communications as it disassembles and assembles the packets of information it sends. And while these short delays are not a problem for non-real time communications, like email, they present a problem for "real-time" information such as voice and video. The Internet can inject a delay of as much as half a second between speaking and being heard at the other end. This makes conversation difficult. Internet telephony, as it's called when it runs on the Internet, is getting better, however, as the Internet improves and voice cod-

ing and compression techniques improve. I've enjoyed some relatively decent conversations to distant places.

Probably the most famous quote about the Internet is one from John Doerr, one of Silicon Valley's most famous venture capitalists. He said, "The Internet is the greatest legal creation of wealth in the history of the planet." Later, after the dot com bust he came to regret his words. By hyping wealth rather than invention, he has confessed, he distracted the industry from pursuing revolutionary technologies.

Now for a little history on the Internet. In the early 1990s the Internet was run by and for the United States government. There was no public use of the Internet. There were no commercial applications. In fact it wasn't even clear to the Federal Government what the Internet actually was. So an organization called the Federal Networking Council (FNC), which actually managed networking for the Federal Government, on October 24, 1995, unanimously passed a resolution defining the term Internet. This definition was developed in consultation with the leadership of the Internet and Intellectual Property Rights (IPR) Communities. **RESOLUTION:**

"The Federal Networking Council (FNC) agrees that the following language reflects our definition of the term 'Internet'. 'Internet' refers to the global information system that —(i) is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions/follow-ons;

(ii) is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and

(iii) provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein."

MCI Mail was the first commercial application attached to the Internet. Once it got one, all the other email services wanted an...and the rest is history. See various Internet definitions following. See also Berners-Lee, Domain, Domain Naming System, Grid Computing, gTLD, ICANN, Internet2, Internet Appliance, Internet Protocol, Internet Telephony, Intranet, IP Telephony, Surf, TCP/IP, Web Browser and Web Services.

Internet access The method by which users connect to the Internet, usually through the service of an Internet Service Provider (ISP).

Internet access provider See ISP.

Internet address When you travel the Internet or its World Wide Web area, you need an address to get to where you want to go—just like you need an address on a letter you mail or a phone number you wish to reach. All Internet addresses are expressed in dotted decimal notation of four fields of eight bits. In binary code, each bit has two possible values, 0 or 1. Therefore, each 8-bit field yields two to the eighth power, or 256 possible combinations. Since one of the possible combinations is 000, which means nothing, it is not used, thereby leaving 255 possible numbers in each field. IP addresses are written as XXX.XXX.XXX.XXX, where X is any number between 0 and 9, and where each 3-digit field has a value between 001 (i.e., 1) and 256. Internet addresses currently are based on the IPv4 (Internet Protocol version 4 protocol), which uses a 32-bit code in the 20-octet IP header to identify host addresses. A 32-bit address field yields 2 to the 32nd power possible addresses—that's 4,294,967,296 addresses, that seems like a lot of addresses, but it's not enough in the context of the commercialized Internet. Note that IPv6 has been standardized by the IETF (Internet Engineering Task Force), but has yet to be widely implemented, as equipment upgrades generally are required. Among the advantages of IPv6 is an address field expanded to 128 bits. A 128-bit address field yields 2 to the 128 power addresses—that's 340,282,366,920,939,463,463,374,607,431,768,211,456 distinct addresses. That's enough for approximately 32 addresses for every square inch of dry land on the Earth's surface, which should be enough for a while. No one wants to remember all those numbers when they go checking out their favorite site. So they came up with a neat idea of naming sites and having a bunch of computers do the translation, very similar to what happens with 800 toll-free numbers in North America. As a result Web URLs (Uniform Resource Locators) and e-mail addresses (such as www.harrynewton.com and harry@harrynewton.com) are textual addresses that are translated into correlating IP addresses through DNSs (Domain Name Servers, i.e. dedicated translation computers), which maintain tables of both domain names and IP addresses. For example, if you wish to reach www.Javanet.com, you can type www.Javanet.com in your browser or you can simply type 209.94.128.8. But www.Javanet.com is easier to remember. Internet addresses are organized into hierarchical "classes," as follows:

Class A Addresses: Begin with a "0" bit. Of a possible 128 Class A networks, only 51 networks exist. Examples include General Electric Company, IBM Corporation, AT&T,

Hewlett-Packard Company, Ford Motor Company, and the Defense Information Systems Agency. They all are huge organizations, and require the highest possible categorization.

Class B Addresses: Begin with a "10" bit sequence. Of a possible 65,536 Class B networks, only about 12,000 exist.

Class C Addresses: Begin with a "110" binary bit sequence. Most applicants are assigned Class C addresses in blocks of 255 IP addresses. As of January 1998, about 800,000 Class C addresses were assigned.

Class D Addresses: Begin with a "1110" bit sequence. They are intended for multicast purposes.

Class E Addresses: Begin with a "1111" bit sequence. They are reserved for future use.

Now, the term "Internet Address" can be a bit misleading. As we have seen, it actually refers to an "IP Address," unless it's a URL, of course. Even if it's a URL, it's translated into an IP address. IP addresses often are used in the LAN (Local Area Network), as well as in the Internet and other public packet data networks. In such a case, one IP address often is used internal to the LAN domain, and another in the Internet domain, in order to mask the internal IP subnet address from the outside world. Masking the internal IP address essentially "masks," or hides, the true IP address of your workstation from the outside world. You may do this for one simple reason—you don't want the outside world to be able to get to your PC. The internal IP address might be either IPv4 or IPv6, while the Internet "outside world" address currently is always IPv4. In either event, the IP addresses are translated, one to the other, through a process of NAT (Network Address Translation), which is accomplished in an access router. On the outbound side, your true IP address is translated into an Internet IP address associated with the router. Responses to your transmissions are addressed to the router, which then translates them back into your true IP address for successful delivery. This translation and masking process secures and protects your identity. See NAT for a full explanation of this process. See also Subnet Mask.

Internet appliance A sub-\$500 machine specially designed for Internet browsing and first proposed in the late Fall of 1995 by Larry Ellison, head of database software company Oracle. Part of its appeal to people outside Microsoft and Intel is that the Internet Appliance would not have to be based on standard PC technology. It need have an Intel chip and need not run Windows. This device is also called an Internet Terminal, a Network Computer or an IPC, an Interpersonal computer. The original description of the Internet Appliance was that it would come with 4mb of RAM, 4mb of flash memory, processor, monitor, keyboard and mouse—all for under \$500.

Internet Architecture Board The Internet Architecture Board (IAB) is a technical advisory group of the Internet Society. Its responsibilities include:

IESG Selection: The IAB appoints a new IETF chair and all other IESG candidates, from a list provided by the IETF nominating committee.

Architectural Oversight: The IAB provides oversight of the architecture for the protocols and procedures used by the Internet.

Standards Process Oversight and Appeal: The IAB provides oversight of the process used to create Internet Standards. The IAB serves as an appeal board for complaints of improper execution of the standards process.

RFC Series and IANA: The IAB is responsible for editorial management and publication of the Request for Comments (RFC) document series, and for administration of the various Internet assigned numbers.

External Liaison: The IAB acts as representative of the interests of the Internet Society in liaison relationships with other organizations concerned with standards and other technical and organizational issues relevant to the world-wide Internet.

Advice to ISOC: The IAB acts as a source of advice and guidance to the Board of Trustees and Officers of the Internet Society concerning technical, architectural, procedural, and (where appropriate) policy matters pertaining to the Internet and its enabling technologies.

Internet Assigned Numbers Authority IANA. This group is responsible for the assignment of unique Internet parameters (e.g., TCP port numbers, and ARP hardware types), and managing domain names. It also was responsible for administration and assignment of IP (Internet Protocol) numbers within the geographic areas of North America, South America, the Caribbean and sub-Saharan Africa; on December 22, 1997, that responsibility was shifted to ARIN (American Registry for Internet Numbers). www.arin.net. The IANA has well-established working relationships with the US Government, the Internet Society (ISOC), and the InterNIC. ISOC provides coordination of IANA activities with the Internet Engineering Task Force (IETF) through the participation of IANA in the Internet Architecture Board (IAB). IANA responsibility was assigned by DARPA

(Defense Advanced Research Project Agency) to the Information Sciences Institute (ISI) of the University of Southern California. ISI has discretionary authority to delegate portions of its functions to an Internet Registry (IR), previously performed by SRI International and currently performed by Network Solutions Inc. (NSI), a subsidiary of SAIC. Beginning March 1998, that function is shared with the Council of Registrars (CORE). CORE contracted (November 1997) with Emergent Corporation to build and operate the new Internet Name Shared Registry System (SRS), which is a neutral, shared database repository that coordinates registrations from CORE and propagates those names to the global Internet Domain Name System (DNS). www.isi.edu/div7/iana/ See also ARIN, CORE, DNS, Internet, InterNIC, and SRS.

Internet backbone This super-fast network spanning the world from one major metropolitan area to another is provided by a handful of notional Internet Service Providers (ISPs). These companies and organizations use connections running at on T-3 lines and above linked up at specified interconnection points called national access points. Local ISPs connect to this backbone through routers so that data can be carried though the backbone to its final destination. The largest backbone operators include AT&T and WorldCom's UUNET. Interconnection between these backbone operators is done through peering arrangements. Tele2 (based in Sweden) is one of few Pan-European fixed line operators that resell voice and Internet services to residential users, without owning a backbone network (but leases it instead).

Internet cable access A general term used to describe accessing the Internet using the cable TV coaxial cable for inbound Internet access (i.e. downstream) and the phone line for up sending commands and requests (i.e. upstream information). The cable TV is very fast—as much as six million bits per second. The phone is relatively slow—no more than fifty thousand bits per second. But it works because most information from the Internet flows at you, not away from you. The cable and telecom industry is working on standards to make disparate cable systems and TV set-top boxes work with each other. The industry has developed Data Over Cable Service Interface Specification (DOCSIS), which sets standards for both two-way and cable-plus-phone specifications. See DOCSIS.

Internet cache protocol See ICP.

Internet call waiting Imagine you have one phone line at your house. You're presently using that one line to surf the Internet. Someone calls you. You have installed call forwarding. Their incoming call gets forwarded to another phone line, which is answered by a service provider who is providing the Internet call waiting service. Their machine answers: "The number you called is presently surfing the Internet. Would you like to tell them you're calling? Do you have a message? Record now." The machine picks up the incoming phone line from callerID, records the message and then sends an email to you, saying this phone number is trying to reach you. And here's their message." It then plays the message.

Internet Content Adaptation Protocol See ICAP.

Internet content provider ICP. A company that will design and deliver content for your Web site.

Internet Control Message Protocol ICMP. An integral part of IP (Internet Protocol), ICMP is a mechanism by which IP software on a host or gateway can communicate with its peers on other machines to report errors and pass other information (e.g., time stamps) relevant to IP packet processing. As specified in RFC-792, ICMP also provides a number of diagnostic functions. One of the most frequently used ICMP messages is the Echo Request, commonly known as the Ping utility, which allows a device to test the communication path to another device. The ICMP header comprises 12 octets. See also Ping.

Internet Engineering Planning Group See IEPG.

Internet Engineering Steering Group IESG. The executive committee of the IETF (Internet Engineering Task Force).

Internet Engineering Task Force IETF. One of two technical working bodies of the Internet Activities Board. The IETF is the primary working body developing new TCP/IP (Transmission Control Protocol/Internet Protocol) standards for the Internet. It has more than one thousand active participants. www.ietf.org.

Internet fax Internet fax is, as it sounds, sending faxes over the Internet. There are a whole bunch of manual ways to send faxes over the Internet—most of which are akin to sending a fax over the PSTN, as we do it today. Dial up, etc. There are movements, however, to automate this process and get Internet faxing more along the lines of Internet email. Internet Fax is coming in two parts. The first is a store and forward model that is essentially based on the MIME attachment of TIFF files to standard E-Mail messages delivered by SMTP. The standards for this model are being in the IETF - ITU agreements of

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by Harry Newton

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This is the name InteCom uses for their PBX family. InteCom is now owned by Matra, a French company.

IC 1. Intercom.

2. Integrated Circuit.

3. Intermediate Cross-connect. An interconnect point within backbone wiring, for example, the interconnection between the main cross-connect and telecommunications closet or between the building entrance facility and the main cross-connect.

IC DRAM Integrated Circuit Dynamic Random Access Memory.

ICA International Communications Association. ICA is the biggest trade association of the largest corporate telecommunications users — the people whose companies spend the most. ICA was founded in 1949 as the National Committee of Communications Supervisors. On behalf of its members, the ICA works to influence the FCC, Congress, and other regulatory and law-making bodies on issues of national telecom and international distribution issues. www.icanet.com

iCal See iCalendar.

iCalendar iCal. Internet Calendaring and Scheduling Core Object Specification is a specification from the Internet Engineering Task Force designed to allow people to share and coordinate their appointment calendar over the Internet. At the heart of iCalendar is the Time Zone Calendar Component, a protocol that accounts for different time zones. As a result, users of a typical day planner can schedule appointments with users in other time zones and with other calendaring programs. The iCalendar spec is the foundation for four new specifications. iTIP is the iCalendar Transport Independent Interoperability Protocol, which details how calendaring systems use iCalendar objects to interoperate and defines a message protocol for finding free time or searching to-do lists. iMIP is the iCalendar Message Based Interoperability Protocol which addresses defines interoperability among calendaring systems piggybacked on Internet email using MIME (Multipurpose Internet Mail Extension). iRIP is the iCalendar Real Time Interoperability Protocol that addresses the how diverse scheduling systems query each other in real time. Client Access Protocol (CAP) allows any calendaring client to access information from heterogeneous back-end systems. iCalendar is replacing an older specification called vCalendar. See vCalendar. www.ietf.org

ICANN The Internet Corporation for Assigned Names and Numbers, a new non-profit, international organization based in California. ICANN is slated to have broad authority to reform the present system of issuing Internet addresses, including adding new top-level domains, like shop, as in www.mycompany.shop.

ICAPI International Call Control API.

ICB Individual Case Basis Nonstandard situations where special arrangements are required to satisfy unusual requirements. General tariffs do not apply.

ICD International Code Designator. A 2-byte field of the 20-byte NSAP (Network Service Access Point) address, the ICD is used to identify an international organization. NSAP and ICD are used in a variety of networks, including ATM. The British Standards Institution is the registration authority for the International Code Designator. See also BSI.

ICE Information Content and Exchange. An emerging protocol in the form of a XML (eXtensible Markup Language) application, ICE is designed to facilitate the automation of content syndication on the World Wide Web. The ICE architecture is intended to define business rules that would support data

(e.g., user profile) exchange among partner sites. Such data can then be processed, loaded into a repository and resold under the user interface of the licensee. For example, ICE would allow a review of a book, movie or theater production to be licensed to multiple Web site hosts. A kill date would automatically kill the content across all sites on a specified date.

ICEA Insulated Cable Engineers Association.

ICFA International Computer Facsimile Association. The mission of this new organization is to create awareness of the benefits and uses of computer fax to increase worldwide market size.

ICI 1. Interexchange Carrier Interface. The interface between carrier networks that support SMDS.

ICIT International Center for Information Technologies. A part of MCI.

ICM See INTEGRATED CALL MANAGEMENT.

ICMP Internet Control Message Protocol. As specified in RFC-792, ICMP provides a number of diagnostic functions and can send error packets to hosts. ICMP uses the basic support of IP and is an integral part of IP.

ICOMP Intel Comparative Microprocessor Performance Index. A test for measuring how fast microprocessors are.

Icon An icon is a picture or symbol representing an object, task, command or choice you can select from a piece of software (e.g. a trash can for a deletion command).

Iconography The science of icons. A fancy name for talking about icons — those little visual representations of objects, tasks or commands you find in Windows and other GUI (Graphical User Interface) programs and operating systems.

ICP 1. Intelligent Call Processing. The ability of the latest ACDs to intelligently route calls based on information provided by the caller, a database on callers and system parameters within the ACD such as volumes within agent groups and number of agents available.

2. Instituto das Comunicacoes de Portugal (The Portuguese Institute of Communications).

3. Intelligent Call Processor. The name of an AT&T service. ICP allows users to directly link their customer premise equipment to its network for individual call processing based on customer-specific information.

4. Independent Communications Provider. An ICP is a switchless CLEC.

ICR 1. Initial Cell Rate. An ABR service parameter, in cells/sec, that is the rate at which a source should send initially and after an idle period.

2. Internet Call Routing node. A Bellcore proposed device that would communicate with both the voice and data networks through the Signaling System 7. After a local telephone company's central office detects an incoming data call, the ICR would instruct the voice switch to reroute the connection to a data network through remote access gear, which would then send the data to the Internet.

ICS 1. See INTERACTIVE CALL SETUP.

2. Integrated Communications System. A Northern Telecom definition: A telecommunications based platform with advanced processing power and capacity that enables integration and orchestration of typical business equipment (telephones, fax, etc.) through open architecture interfaces, as in the Norstar-PLUS Modular ICS.

ICSA International Computer Security Association. Formerly the National Computer Security Association, founded in 1980, and renamed in 1994, ICSA strives to improve security and confidence in global computing through aware-

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Harry Newton has 29 years in telecommunications. He founded LAN (now Network) Magazine, the first networking magazine. He founded the three leading monthly telecom magazines — Call Center, Computer Telephony and Teleconnect. He founded the enormously successful trade show, Computer Telephony Conference and Exposition (CT Expo). He is (of late) a successful venture capitalist in telecom. He holds an MBA from the Harvard Business School and an Economics undergraduate degree from the University of Sydney, Australia. He is the telecom industry's most popular speaker and has spoken before every leading industry event.

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IANA Short for *I*(nternet) *A*(ssigned) *N*(umbers) *A*(uthority), an organization working under the auspices of the Internet Architecture Board (IAB) that is responsible for assigning new Internet-wide IP addresses.

⇒ See also INTERNET ARCHITECTURE BOARD; IP ADDRESS.

I-beam pointer A pointer shaped like a capital I used in graphics-based text processing applications. Many desktop publishing systems and word processors use an I-beam pointer to mark blocks of text and move the insertion point. Note that the I-beam pointer is not the same as the selection pointer, which is usually shaped like an arrow.

⇒ See also INSERTION POINT; POINTER.

IBM Short for *I*(nternational) *B*(usiness) *M*(achines), the largest computer company in the world. IBM started in 1911 as a producer of punch card tabulating machines. In 1953, it introduced its first computer, the 701. During the 1960s and 1970s, IBM came to dominate the new field of mainframe and minicomputers. In 1981, IBM launched its first personal computer, called the *IBM PC*, which quickly became the standard. However, IBM underestimated the market for PCs and lost market share to vendors of PC compatibles, such as Compaq.

Over the past six or seven years, IBM has had to make some difficult adjustments as the market for mainframe computers has declined. While not the juggernaut it once was, IBM is still the most powerful company in the computer industry.

⇒ See also AS/400; COMPAQ; DEC; IBM PC; MAINFRAME; PC; SGI; SUN MICROSYSTEMS.

IBM compatible See under IBM PC.

IBM PC Refers to a family of personal computers produced by IBM. The term can also refer to computers that conform to set of loosely controlled standards. These are also called *IBM clones*, *IBM compatibles*, or simply compatibles. These terms are actually misnomers because many of the PCs produced by IBM do not conform to industry standards. For example, IBM attempted to change the expansion bus to MCA in its PS/2 line of PCs, but the industry did not follow suit.

⇒ See also COMPATIBLE; IBM; PC.

ICC See under SMART CARD.

ICMP Short for *I*(nternet) *C*(ontrol) *M*(essage) *P*(rotocol), an extension to the Internet Protocol (IP) defined by RFC 792. ICMP supports packets containing error, control, and informational messages. The PING command, for example, uses ICMP to test an Internet connection.

⇒ See also IP; PING.

icon A small picture that represents an object or program. Icons are very

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useful in applications that use windows, because with the click of a mouse button you can shrink an entire window into a small icon. (This is sometimes called *minimizing*.) To redisplay the window, you merely move the pointer to the icon and click (or double click) a mouse button. (This is sometimes called *restoring* or *maximizing*.)

Icons are a principal feature of graphical user interfaces.

⇒ See also GRAPHICAL USER INTERFACE.

IDE 1. See under IDE INTERFACE. **2.** See under INTEGRATED DEVELOPMENT ENVIRONMENT.

⇒ See also APPLICATION; IDE INTERFACE; INTEGRATED; PROGRAMMING LANGUAGE; VISUAL C++.

IDE interface Abbreviation of either *I(ntelligent) D(rive) E(lectronics)* or *I(ntegrated) D(rive) E(lectronics)*, depending on whom you ask. An IDE interface is an interface for mass storage devices, in which the controller is integrated into the disk or CD-ROM drive.

Although it really refers to a general technology, most people use the term to refer the ATA specification, which uses this technology. Refer to ATA for more information.

⇒ See also ATA; EIDE; HARD DISK DRIVE; INTERFACE; SCSI; ST-506 INTERFACE.

identifier Same as NAME. The term *identifier* is usually used for variable names.

⇒ See also NAME; VARIABLE.

IE Short for *Internet Explorer*.

IEEE Abbreviation of *I(nstitute) of E(lectrical) and E(lectronics) E(ngineers)*, pronounced *I-triple-E*. Founded in 1884, the IEEE is an organization composed of engineers, scientists, and students. The IEEE is best known for developing standards for the computer and electronics industry. In particular, the IEEE 802 standards for local-area networks are widely followed.

⇒ See also ETHERNET; FLOATING-POINT NUMBER; GIGABIT ETHERNET; IEEE 802 STANDARDS; NETWORK; TOKEN-RING NETWORK.

IEEE 1394 A new, very fast external bus standard that supports data transfer rates of up to 400 Mbps (400 million bits per second). Products supporting the 1394 standard go under different names, depending on the company. Apple, which originally developed the technology, uses the trademarked name *FireWire*. Other companies use other names, such as *I-link* and *Lynx*, to describe their 1394 products.

A single 1394 port can be used to connect up 63 external devices. In addition to its high speed, 1394 also supports *isochronous data*—delivering data at a guaranteed rate. This makes it ideal for devices that need to transfer high levels of data in real time, such as video de-

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icon In a graphical user interface (GUI), an onscreen symbol that represents a program, data file, or some other computer entity or function. Several icons might appear together on an icon bar, an onscreen row of buttons usually placed just above the document window that enables the user to choose frequently accessed menu options without having to use the menus. On each button is an icon that shows the button's function. For example, the Print button might display a tiny picture of a printer.

icon bar In an application, a row of buttons that can be pressed to initiate commands. Synonymous with toolbar.

ICQ (Pronounced *I seek you.*) A popular instant messaging service that informs a user when his or her Internet friends are online. Users can then exchange messages via text chatting. A competing service is America Online's Instant Messenger.

IDE Acronym for Integrated Drive Electronics. A hard drive interface standard for 80286, 80386, 80486, and Pentium computers that offers high performance at low cost. The IDE standard transfers most of the controller electronics to the hard disk assembly. For this reason, the IDE interface can be contained on the computer's motherboard; no controller card or expansion slot is necessary. Superseded by Enhanced Integrated Drive Electronics (EIDE).

IDEA See *International Data Encryption Algorithm*.

identifier In database management, a descriptor used to specify the uniqueness of the information contained in the data record. For example, in a database of travel films, the descriptor "Norway" might appear in a data record for the only travel films that depict scenery from that country.

identity theft A form of fraud in which a thief obtains someone's Social Security number and other personal information, and then uses this information to obtain credit cards fraudulently.

ISDL Acronym for ISDN Digital Subscriber Line. A Digital Subscriber Line (DSL) standard designed to provide Internet data transfer rates of up to 144 Kbps over a digital ISDN telephone line. See *DSL*, *ISDN*.

IE See *Microsoft Internet Explorer*.

IEEE Acronym for Institute of Electrical and Electronics Engineers (pronounced eye-triple-e). A non-profit, professional organization that is based in the United States but is international in scope, with branches in most countries. Among its members are electrical and electronics engineers, computer scientists, college and university faculty who teach electrical or electronics engineering, and telecommunication industry engineers. Like other leading professional associations, the IEEE publishes peer-reviewed journals, organizes conferences, and develops standards. The IEEE is extremely influential in establishing international standards for emerging computer, electronics, aerospace, and telecommunications technologies.

IEEE 754 A widely observed standard for implementing floating point notation on computer systems. See *floating point notation*.

IEEE 802 A series of telecommunications standards governing local area networks (LANs). Established by the Institute of Electrical and Electronic Engineers (IEEE), the standards include 10Base-2 and 10Base-T cabling, network bridges, and topologies. See *bridge*, *bus network*, *Ethernet*, *fiber optics*, *star network*.

IEEE 802.11 1. A specification for wireless LANs operating at a maximum data rate of 2 Mbps in the 2.4 GHz range. 2. The family of IEEE Wireless LAN standards based on the original 802.11 specification. See *IEEE 802.11a*, *IEEE 802.11b*, *IEEE 802.11g wireless LAN*.

IEEE 802.11a An IEEE standard for wireless LANs. 802.11a has a range of about 20 to 30 feet at the maximum data transfer rate (54 Mbps), although many faces of

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Bryan Pfaffenberger, Ph.D., author of *HTML 4 Bible* and more than 75 books on personal computing, teaches technical writing and the sociology of technology at the University of Virginia's Division of Technology, Culture, and Communication.



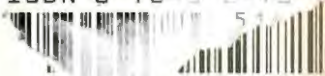
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