Tech

TERMS

WHAT EVERY

Telecommunications AND Digital Media Professional

SHOULD KNOW

JEFF RUTENBECK

National Association of

N/AB™

BROADCASTERS

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Tech Terms

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Digital Media Professional Should Know

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INTRODUCTION

The purpose of this book is to provide telecommunications and digital media professionals with a collection of must-know terms and concepts that are likely to pop up in their daily conversations or appear in news articles or informational media that address our increasingly technological world. It is also intended for anyone who simply wants to know more of what makes today's technological world go around. The use of "essential" in the title is not accidental.

Although there are many high-quality books and web sites that provide an exhaustive collection of every technical term imaginable, this book aspires to whittle those tens of thousands down to a manageable and practical list of Internet, telephony, telecommunications, broadcasting, and computing terms that most professionals actually need to master—whether they are just getting started in a new field or are well established in their own area of expertise. And for those whose work responsibilities do not fit neatly into a "high-tech" category, many of the terms in this book are still important to know as large-scale digitization continues to shape almost every aspect of modern life.

The very first edition of *Tech Terms* was published by the National Association of Broadcasters in 1996, with a follow-up edition four years later. These earlier editions of *Tech Terms* focused primarily on terms related to the broadcasting and telecommunications industries, with the second edition incorporating some emerging computer and cyberspace terms. This current edition represents an almost complete reworking of the original material, with many less-useful terms eliminated. Almost all remaining terms were extensively revised, and an extensive list of new terms was added. All relevant entries are appropriately cross-referenced.

As I was preparing this latest edition for publication I was struck by how many terms and concepts from the previous edition (terms that seemed so central to the technological world of the late 1990s) had lost their relevance, many of them failing to materialize and many of them fading into obscurity. Although I cannot predict the near future any better than the next person, I have paid careful attention to the inclusion of terms and concepts likely to be just as relevant five years from now as they are today. It is true that the technological world continues to change at breakneck pace. However, it is also true that over the past 20 years there have emerged unquestionably foundational technologies, concepts, and practices that are likely to shape our lives for many years to come. Those are the focus of this book.

How to Use This Book

Readers should note that each term has been assigned a "level" of 1, 2, or 3. This level indicator represents the degree to which a term or concept can be considered fundamental or foundational to a particular technological area or whether it describes a highly specialized or complicated concept.

Terms marked Level 1 represent those concepts and technologies that form the individual building blocks of an entire area of technological practice. Terms marked Level 2 require some fundamental knowledge of the relevant area but are not particularly specialized in nature.

Terms marked Level 3 characterize highly specific or broadly integrated concepts that commonly require some "Level 1" and "Level 2" knowledge to adequately understand. For example, understanding the nature of a browser (Level 1) is fundamental to understanding the concept of "client/server" (Level 2), which is in turn essential in understanding the idea of "ColdFusion" (Level 3).

Although the levels assigned to these terms are not written in stone, those who are new to technology in general or those who are new to a particular technological area might do well to focus first on the Level 1 terms and then, as those foundational blocks fall into place, build a broader understanding of the more complex terminology by exploring higher-level terms. I have attempted to describe and explain each essential tech term in plain language, and for many terms I have provided sample usages or pronunciations to clarify how they might be used in daily conversation.

My hope is that this collection of terms and concepts proves to be truly useful for those willing to spend a little time exploring ideas with which they are unfamiliar. I have no doubt that our world will become an ever-more technological place, and I have no doubt that a more thorough understanding of technology is absolutely essential for nearly all aspects of modern living.

Acknowledgments

A

AAC (Advanced Audio Coding)
Level: 2

Definition: A means of compressing digital audio signals that relies on "perceptual coding schemes" (the removal of data related to audio signals that are not perceptible by the human ear), AAC is widely regarded as a more efficient and effective means of audio compression compared to the long-used MP3 format. AAC provides improved audio quality at relatively low bit rates, and supports multichannel audio in that it provides up to 48 full-frequency channels. Because of its improved quality and its use with the increasingly popular iTunes online music service run by Apple, AAC has emerged as a significant challenger to MP3 and other audio compression formats. (See also *Compression*, *MPEG*, and *MP3*.)

AAF (Advanced Authoring Format)
Level: 3

Definition: Used for video editing projects, AAF is a widely used industry standard for saving and exchanging information related to video editing works in progress (such as transitions, edit history, and so on). AAF is used to improve compatibility among various vendor products and provides significant support for workflow management and archiving.

A&B Signaling
Level: 2

Definition: In telephone T-1 line transmissions, some of the capacity of the line has to be dedicated to internal signaling (call setup). A&B signaling is the process of taking one digital bit of information at a constant interval from each of the 24 subchannels on the T-1 line in order to let the system know that an active call is still in place. (See also *T-1*.)

ABR (Available Bit Rate)
Level: 3

Definition: A Quality of Service class defined by the ATM Forum for ATM networks that is used for connections that do not require timing relationships between source and destination. ABR adjusts the amount of bandwidth based on the amount of traffic on the network. Traffic sources adjust their transmission rate in response to information they receive describing the status of the network and its capability to successfully deliver data. (See also *CBR*, *UBR*, and *VBR*).

A/B Roll
Level: 2

Definition: The practice of using two video sources simultaneously. An A/B roll in editing means mixing video footage from two separate tape machines onto a master copy. For example, when recording a video dissolve one piece of video is faded or dissolved into another picture.

A/B Switch
Level: 1

Definition: A switching device enables a user to select a desired signal from two different sources. For example, in the past A/B switches were required to be available on television sets connected to cable systems allowing viewers to switch from an off-air television broadcast signal to cable (or vice versa).

Used in a sentence: "While I was editing my video I used the A/B switch to change my source signal from the VCR to the DVD player."

AC (Alternating Current)
Level: 2

Definition: Alternating current (AC) is one of two fundamental types of electrical power (the other is direct current, or DC). Utility companies deliver 60 Hz AC to almost all users in the United States, and many other countries carry 120 volts of AC electricity. Alternating current must be converted to direct current for use with electronic devices. (See also *DC*.)

Accelerated Graphics Port (AGP)
Level: 2

Definition: Refers to an improved interface system for managing the hardware (called "graphics cards" or "graphics accelerators") in a personal computer, which in turn controls the processing of graphical information. AGP enables graphics accelerators to gain faster access to PC system memory (random access memory, or RAM). This faster access to RAM allows a graphics accelerator much more access memory capacity than is available locally on a PC's graphics card. For example, to display an image containing 20 MB of graphical "textures", an 8-MB AGP graphics card could quickly and easily access the PC system memory for the additional 12 MB required to display the image. AGP graphics have quickly become a standard for use with computer games, design programs, and other graphics-intensive computer applications. (See also **Graphics Adapter** and **RAM**.)

Acceptable Use Policy (See *AUP*.)

Access Code
Level: 1

Definition: A short sequence of numbers, letters, and special characters that act as a password allowing a user to access a specific facility, service, feature, or function of a telecom network, computer system, or secure web site.

Used in a sentence: "To prevent unauthorized users from gaining access to this system, please do not give out your access code." (See also **Password**.)

Accessible Content
Level: 1

Definition: Usually refers to Internet-based content that has been designed to accommodate users with physical disabilities. Although there are no laws governing the accessibility of content for the general public, in 1998 the U.S. Congress amended Section 508 of the Rehabilitation Act of 1973 to include requirements for all federal agencies when they develop, procure, maintain, or use electronic and information technology. Federal agencies must give disabled employees and members of the public access to information that is comparable to the access available to others. Section 508 standards include guidelines for software applications and operating systems, web-based intranet and Internet information and systems, telecommunication products, video and multimedia products, and desktop and portable computing devices. For more information see *http://www.section508.gov.*

Used in a sentence: "Our group specifically designed accessible content so that people with disabilities could gain access to our online resources."

Access Node
Level: 2

Definition: Point in the local telephone network where numerous access lines are consolidated into a smaller number of feeder lines. Typically, access lines are multiplexed onto digital loop carrier (DLC) systems supporting T1-rate transmission. Other examples of access nodes are cellular antenna sites, PBXs, and optical network units.

Account
Level: 1

Definition: Refers to the granting of permissions and rights of use to someone on a multi-user computer system. An account usually includes a unique user name and a password that are both entered when a user wants to gain access to the computer system. Some computer systems designed or set up to be used by a single user assume that anyone using that particular machine is the original authorized user, and thus do not allow the creation of formal accounts. Now that PCs are commonly connected to an internal private network, users are often required to log in to their personal computers to gain access to other resources on the network, such as printers, fax machines, data archives, the Internet, and so on.

Used in a sentence: "I created a new account with our web hosting company so that we could set up a secure area to share documents with our clients." (See also **Authentication**, **Log-in**, and **Password**.)

ACD (See *Automatic Call Distributor.*)

Acrobat
Level: 1

Definition: A platform developed by Adobe systems that uses a "portable document format" (PDF) for creating, delivering, and printing documents regardless of the computer system used to create or produce them. Acrobat preserves the "look" of the original document if that document is transferred over a network system. This attribute is unlike some other software programs in which document files may lose certain formatting during an electronic transfer. Due to its format preservation advantages, Acrobat is commonly used to distribute forms, manuals, spreadsheets, brochures, newsletters, magazines and many other types of highly formatted file content that are transmitted over the relatively narrowband Internet system. (See also **PDF** and **Plug-in**.)

AC-3 (Audio Codec 3)
Level: 2

Definition: Also known as "Dolby digital," AC-3 is Dolby's third-generation coding algorithm for audio that is recorded digitally. Optimized for the capacities of human hearing, AC-3 is used for the standard audio track on the digital versatile disc (DVD), is the standard audio format for high-definition television (HDTV), and is being used for digital cable and satellite transmissions. This approach provides five full-bandwidth channels (front left, front right, center, surround left, and surround right), providing what is called "surround sound" quality. Using a comparatively small portion of bandwidth, it also includes a low-frequency effect (LFE) channel that provides the rumbling sound needed for special effects and action sequences in movies. This multichannel approach is known as 5.1 channel. (See also **Dolby**.)

ActionScript
Level: 2

Definition: An object-oriented programming language designed specifically for Macromedia Flash applications. ActionScript makes it possible to create interactive web animations, Flash-based business applications, games, advertisements, and more. The ability to program in ActionScript is now one of the most sought-after skills in the content creation business.

Used in a sentence: "Our programmers used ActionScript to build an interactive form on the Web so that we can more easily capture customer information." (See also **Flash**.)

Active Directory
Level: 3

Definition: Active Directory is part of the Windows network architecture that provides a directory service designed for distributed networking environments. Active Directory allows organizations to share and manage information about network resources and users and acts as the central authority for network security, letting the operating system readily verify a user's identity and control his or her access to resources on that network. (See also **Windows**.)

Active Matrix Display
Level: 2

Definition: A type of liquid crystal display (LCD) where each display element (each pixel) includes an active component such as a transistor to maintain and refresh its appearance frequently. One of the most common types of active matrix display uses a technology called "thin film transistor" (TFT). In most cases, the terms *active matrix* and *TFT* are used interchangeably. (See also **LCD**, **Monitor**, and **Pixel**.)

Active Server Pages (ASP)
Level: 2

Definition: Refers to a set of solutions created by Microsoft specifically for use by Internet web site providers. Similar to the Common Gateway Interface or ColdFusion, ASP software allows for complex interactions between the web pages that are viewable by users on a specific web site and other software tools a company or organization may make available for retrieval of specific information. For example, ASP is commonly being used to allow a web user to search certain

company databases that are made available via the company's own web site. If a user is interested in the retail pricing information of a particular product or service offered by the company, ASP would enable the web user to fill out a pre-set form on the web site to request this information. After submitting the request form, ASP acts to retrieve the information from the database containing this current pricing information. The final step enacted by ASP is to load the desired information back onto a web page for viewing by the user. ASP is also used to enable web users to add their own information to an existing database for use by a web site provider. An example here may be when a user signs up to receive an electronic newsletter or receive weekly news updates from a brokerage house. A user provides a set of information by filling in a pre-set web form and submitting the information (e.g., name, e-mail address, and so on) for storage on a particular web site's database. (See also *ColdFusion*, *Common Gateway Interface*, *E-commerce*, *.NET*, and *Web Server*.)

Active Video Lines
Level: 2
Definition: The number of video picture scan lines actually being used for the purpose of picture generation in television broadcast transmissions. Active lines are the total number of scanning lines minus those lines devoted to the vertical blanking interval (VBI). In the standard analog NTSC television system, 525 scan lines are available for television picture transmission. However, traditional broadcast television stations only use about 484 of these lines for the visible picture. Most traditional television sets cannot reproduce this number of video lines. The remaining scanning lines making up the VBI are used for a variety of internal signaling, text, closed captioning, data transmission, or other station or network purposes. (See also *HDTV*, *NTSC*, *Scan Line*, and *VBI*.)

ActiveX
Level: 2
Definition: A set of software programs developed by Microsoft that are designed to provide interactive control of content files transmitted over electronic communication networks, especially the Internet. Similar in concept to Java (developed by Sun Microsystems), ActiveX delivers small "applet"-sized programs that can be embedded in a web page to produce multimedia effects, enhanced page layout, or add other interactive features users may choose to activate on demand. Because of recent fears about computer security, current versions of the Windows XP operating system make it possible to block ActiveX content. (See also *Applet* and *Java*.)

ACU (Automatic Calling Unit)
Level: 2
Definition: A device that can be programmed to automatically place telephone calls via computer interface, eliminating the need for human action to place the calls.

A/D (Analog-to-Digital) Conversion
Level: 1
Definition: The process of converting or transferring a signal from analog to digital. Analog and digital are two different ways of sending voice, data, or video signals. To convert a signal from its natural analog state (continuous and linear) to digital, the signal must first go through a filter. The filter makes sure that no frequencies are out of the digital sampling range. In the conversion process, analog signals are measured many times in a process called sampling. Each sample of the analog signal is then converted to a discrete digital number based on its approximate amplitude at the instant it is measured.

Used in a sentence: "We had to put all of our old source video through an A/D conversion before we could distribute it over the Internet." (See Figure A–1 and also *Sampling*.)

Adapter Card
Level: 1
Definition: A printed circuit board that can be installed in a personal or desktop computer to provide connectivity to an input/output (I/O) device such as an enhanced graphics card or a network card. Adapter cards are connected to the

The picture is divided into many small blocks | One block is divided into 8 x 8 pixels | Decimal values of pixels | Decimal values of pixels after DCT and quantization
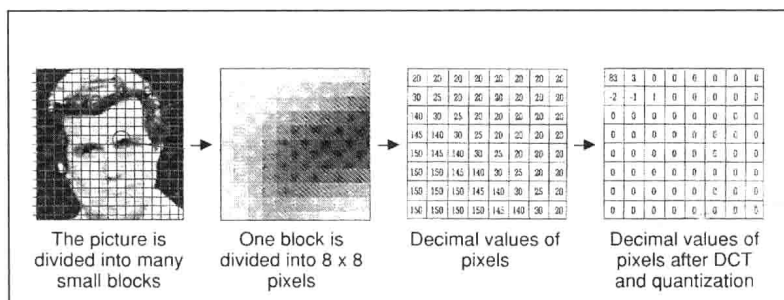
Source: CED Magazine, April 1996

FIGURE A–1. Analog-to-digital conversion.

basic PC "bus," which in turn is connected to the CPU.

Used in a sentence: "I had to install a new adapter card in my computer so that I could run two monitors at the same time." (See also *Bus*, *CPU*, and *I/O*.)

Adaptive Discrete Cosine Transform (See *ADCT*.)

Adaptive Routing
Level: 2
Definition: A digital data routing technique using computer software to automatically select the most efficient route for the transmission of traffic. This technique allows for faster data transfers, as it reduces bottlenecks and heavy congestion points in a network. (See also *Router*.)

ADC (Analog-To-Digital Converter)
Level: 2
Definition: An electronic device that converts analog signals to digital data bit streams, enabling the signal data to be further manipulated, encoded, and transmitted over digital circuits. (See also *A/D*.)

ADCT (Adaptive Discrete Cosine Transform) (See *DCT*.)

Address
Level: 1
Definition: The location of a person or node in a computer network from which information is being sent or transferred to. A typical computer network, whether small or large, has multiple nodes connected to it, such as user workstations, system routers, switches, and hub points. Access to an individual node is dependent on the system being able to recognize a specific destination on the network. This applies to in-house local area networks (LANs) or wide area networks (WANs), such as the Internet. Routing information, such as electronic mail, becomes more complex over the Internet because it is actually a network of networks. To send information, a common addressing scheme is needed (or some ability to convert addresses from one network to another) so that each node has a unique address and the system can recognize where to send information packets.

Used in a sentence: "We needed to determine the network address of the printer so that everyone in the workgroup could use it." (See also *IP*, *Network*, and *TCP/IP*.)

Addressability
Level: 2
Definition: Refers to the technical capability of a communication system for controlling the delivery of programs or other services to select subsets of subscribers on the system. In the cable industry, addressable control allows a cable operator to remotely activate, disconnect, or unscramble a specific channel or service received by a subscriber from the cable head end. Upon notification from a subscriber via an upstream activation channel, the cable system acknowledges the subscriber's address and resets the signaling scheme in the subscriber's set-top box—temporarily enabling the subscriber's box to

unscramble the desired pay TV, PPV, or VOD program signal and thus allowing the subscriber to view the program. (See also *Address*, *Encryption*, *PPV*, and *VOD*.)

Adjacent Channel Interference
Level: 2
Definition: Disruptions in a signal channel caused by power leaking from an adjacent channel. Common causes of adjacent channel interference are poor frequency planning, insufficient filtering, use of incorrect power, or anomalies in propagation. (See also *Interference* and *Propagation*.)

ADS (See *Alternative Data Stream*.)

ADSL (Asymmetrical Digital Subscriber Line)
Level: 2
Definition: A form of digital subscriber line in which the bandwidth available for downstream connection is significantly larger than for upstream. Although designed to minimize the effect of cross-talk between the upstream and downstream channels, ADSL is well suited for web browsing, client-server applications, and providing a voice channel. The data rate of ADSL depends on the length and quality of the line connecting an end user to the telephone company's central office. The upstream data flow is usually between 90 and 640 kilobits per second, whereas the downstream data flow is between 144 k and 8 megabits per second. (See also *Cable Broadband* and *DSL*.)

Advanced Audio Coding (See *AAC*.)

Advanced Authoring Format (See *AAF*.)

Advanced Encryption Standard
Level: 2
Definition: An encryption algorithm used to scramble digital data, AES (also known as Rijndael) was adopted by the U.S. government in 2000 after a three year selection process, which was started in September of 1997 by the National Institute of Standards and Technology (NIST). Also known as a "cipher," Rijndael was developed by two Belgian cryptographers, Joan Daemen and Vincent Rijmen. AES displaced DES (Digital Encryption Standard) as the official encryption platform for the U.S. government.
Used in a sentence: "Our new security technologies take advantage of the power of the new AES standard, making them more secure than ever before." (See also *DES*, *Encryption*, and *Privacy*.)

Advanced Intelligent Network (See *AIN*.)

Advanced Research Projects Agency Network (See *ARPANet*.)

Advanced Television Systems Committee (ATSC) Standard (See *ATSC Standard*.)

AES (See *Advanced Encryption Standard*.)

Afterburner
Level: 2
Definition: A device that converts high-definition video to standard-definition video. (See also *Downconverter* and *HDTV*.)

Agent
Level: 2
Definition: Refers to a computer program designed to perform information gathering or other computing task in an automated way. It is becoming popular to use agents to perform complex Internet searches, do online shopping, or help plan a trip—all with minimal interaction required by the user.
Used in a sentence: "Our software developers want to develop a software agent that assists customers with their online purchase decisions." (See also *AI*, *Bot*, *Expert system*, and *Intelligent Agent*.)

AGP (See *Accelerated Graphics Port*.)

AHRA (Audio Home Recording Act) of 1992
Level: 1
Definition: An amendment to the U.S. Federal Copyright Act of 1976 that requires manufacturers

or importers of digital audio recorders (including DAT, DCC, and MiniDisc recorders) and blank media to make royalty payments. This legislation exempts consumers from lawsuits for copyright violations when they record music for private, noncommercial use. It mandates the inclusion of serial copying management technology in all consumer digital audio recorders to make serial duplication difficult. The AHRA stipulates that manufacturers (not consumers) of covered devices must: (1) register with the Copyright Office, (2) pay a statutory royalty on each device and piece of media sold, and (3) implement serial copyright management technology that prevents the duplication of copies. If these guidelines are followed, the manufacturers of such devices receive statutory immunity from infringement litigation based on the use of those devices by consumers.

AI (Artificial Intelligence)
Level: 2
Definition: Refers to a growing number of high-level software programming systems that strive to enable computers to emulate human-like decision-making functions. Many researchers consider the abilities of learning, reasoning, and decision making essential aspects of artificial intelligence. Today, AI applications are most commonly employed in computer systems to process and integrate vast amounts of information well enough to come to decisions without defined responses being specifically written into software code, such as with expert systems, natural language understanding, speech recognition applications, vision systems, and robotics. (See also ***Agent***, ***Bot***, ***Expert System***, ***Video Games***, and ***Intelligent Agent***.)

AIFF (Audio Interchange File Format)
Level: 2
Definition: A format developed by Apple for storing high-quality audio and musical instrument information in digital form. The format is also used by Silicon Graphics workstations for working on audio and musical files. AIFF does not support data compression, so AIFF files tend to be comparatively large. However, there is a compressed version of this format—AIIF-Compressed (AIFF-C or AIFC)—that supports compression ratios as high as 6:1. (See also ***Compression*** and ***Digital Audio***.)

AIN (Advanced Intelligent Network)
Level: 3
Definition: A telephone network architecture that separates service logic from switching equipment, making it possible to add new services without having to redesign switches to support those new services. AIN technology encourages competition among service providers because it makes it easier for a provider to add services (also giving consumers more service choices). AIN is recognized as an industry standard in North America. (See also ***Switch***.)

AJAX (Asynchronous JavaScript and XML)
Level: 3
Definition: An increasingly popular web application development technique that uses advances in client and server software technologies to create more flexible, better-performing applications. AJAX applications look and function as if they are operating directly on the user's machine rather than through a complex interaction between the user's machine and a remote server. AJAX uses a combination of HTML (or XHTML) and CSS for presenting information; the Document Object Model (DOM), manipulated through JavaScript, to dynamically display and interact with the information presented; and the XMLHttpRequest object to exchange data asynchronously with the web server. AJAX achieves its responsiveness by processing locally any response to a user action that does not require action by the server (e.g., simple data validation, some forms of navigation, and so on). If the application needs something from the server in order to respond to a user action (such as submitting data for processing, loading additional interface code, or retrieving new data), the AJAX application makes those requests asynchronously (typically using XML), without interrupting the user's interaction with the application. AJAX is increasingly used for content aggregation, chat, e-mail and instant messaging applications,

games, map tools, office productivity (including word processing and calendaring), and much more. The use of AJAX applications requires users to have JavaScript-capable browsers (with JavaScript turned "on"). (See also *Asynchronous*, *CSS*, *DOM*, *Javascript*, and *XML*.)

Algorithm
Level: 1

Definition: In general terms, an algorithm is a procedure or formula for solving a problem. Examples include the set of calculations used to encrypt digital communications or the process used to compress digital files. Algorithms play an important part in almost all computer software applications.

Used in a sentence: "The new compression algorithm did a much better job of maintaining the integrity of the original signal, while reducing the size of the file at the same time." (See also *Compression* and *Encryption*.)

Alias
Level: 1

Definition: A false name, moniker, or invented set of alphanumeric characters created by a computer user as a personal identifier code, or ID. Aliases are usually short and easy to remember, as well as quickly keyed in as text, to gain access to a computer or online system. An alias acts as a substitute for a person's real name, or in some cases it acts as a substitute for a string of characters that is relatively long and/or difficult to remember. Aliases are commonly used in online chat sessions to establish a fictitious identity, or as a shorthand code name for posting comments on Internet message boards.

Used in a sentence: "I had to set up an alias on the bulletin board system because I didn't want anyone at work to know the postings came from me." (See also *Chat*, *Computer-mediated Communication*, *Forum*, *Newsgroup*, and *Usenet*.)

Aliasing
Level: 2

Definition: A technical condition in which undesirable effects are produced during the digital conversion process due to the sampling rate or the resolution being too low to faithfully reproduce image detail. This occurs when original data or information changes more quickly or shifts more radically than can be captured accurately by the digital sampling process. This results in the incomplete or false reconstruction of the text, picture, or graphical material. For example, in the case of video, jagged edges show up at boundaries during major changes in a video frame, such as shifting from picture data to text. Normally, these jagged edges are technically smoothed out in a second process, called antialiasing, to enhance viewing. (See Figure A–2 and see also *Antialiasing*.)

Not Anti-Aliased   **Anti-Aliased**
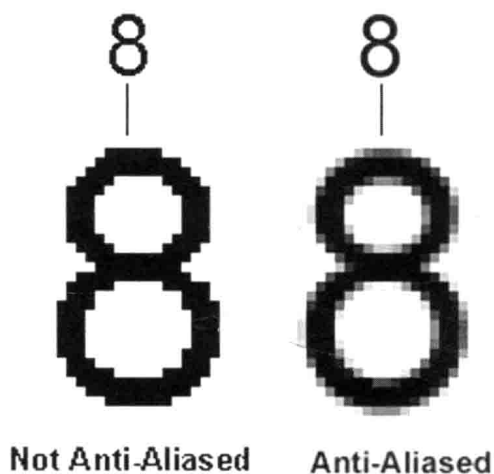
FIGURE A–2. Aliasing.

ALICE (Artificial Linguistic Computer Entity)
Level: 2

Definition: A natural language, open source, easy-to-program chatbot that uses AIML (Artifical Intelligence Mark-up Language) to allow Internet users to interact with basic artificial intelligence software. Developed by Dr. Richard S. Wallace starting in 1995, the now world-famous ALICE program won the Loebner Prize for "most human computer" in 2000, 2001, and again in 2004. (See also *AI* and *Bot*.)

Aloha
Level: 3

Definition: The first multiple access network, launched in 1971 in Hawaii, "pure" Aloha is a packet protocol for satellite and terrestrial radio transmissions via which users can transmit at any time. However, they risk collisions with other users' messages. "Slotted Aloha" reduces the chance of collisions by dividing the channel into time slots and requiring that the user send only at the beginning of a time slot. Aloha was the inspiration for Ethernet. (See also *Ethernet* and *Packet*.)

Alpha Channel
Level: 2

Definition: In many image editing and rendering software programs, each pixel in an image is described by "channels" of data that define the mixture of the red, green, and blue (RGB) colors making up that particular pixel. Newer-generation software adds an "alpha" channel that defines the amount of transparency in the pixel. Transparency is achieved through "masking" the other channels so that the colors show through in varying intensity. If a mask is fully transparent, the color of the other channels will display with full intensity. If the mask is set to 50% transparency, only half the color intensity will show through. If the mask is completely opaque, the color information from the other channels will not appear at all.

Used in a sentence: "I adjusted the alpha channel transparency to make the image background and the company logo look smoothly blended."

Alphanumeric
Level: 1

Definition: Refers to written text using a set of characters that may contain combinations of alphabetic letters and numbers (0 to 9). For example, in a database application the place for entering user addresses would be designated as an alphanumeric field containing both house and/or apartment number (numeric) and street name (alphabetic).

Used in a sentence: "Our system administrators want us to use a combination of letters and numbers in our passwords because alphanumeric combinations make it much more difficult for hackers to break into our computer systems." (See also *ASCII* and *Unicode*.)

Alternate Routing
Level: 2

Definition: A feature used with telephone long-distance or Intra-LATA (local access and transport area) calling allowing the phone system to transmit calls over various network circuit lines in response to congestion and delays encountered on the primary circuit route. (See also *Intra-LATA*.)

Alternating Current (See *AC*.)

Alternative Data Stream (ADS)
Level: 3

Definition: Originally designed to make it possible for Microsoft's NTFS capable of acting as a file server for Macintosh clients, alternate data streams can provide hackers with a method of hiding hacker tools on a system they have breached. This allows the hacker to store and execute the files without being detected by the system's administrator. Although there are legitimate uses of ADS, such as storing information about files, most anti-virus programs that scan for ADS have trouble distinguishing innocuous ones from insidious ones.

Used in a sentence: "Some software will help you track alternative data stream activity so that you can keep an eye on your computer's security." (See also *Hacker* and *Spyware*.)

Alt Key
Level: 1

Definition: Refers to the alternate key on a personal computer keyboard that functions like a second *Ctrl* key and makes commands available while the user holds down the *Alt* key and presses another key. For example, in all Windows applications holding down the *Alt* key and pressing the *F* key drops down the File menu. On a Macintosh computer, the equivalent key is known as the *Option* key.

Used in a sentence: "The instructions say to hold down the Alt key and then press F to bring up the File menu." (See also *Control (Ctrl) key*.)

AM (Amplitude Modulation)
Level: 2

Definition: AM is a form of modulation in which the amplitude of a carrier wave is altered in direct proportion to that of a modulating signal. Other forms of modulation include "frequency modulation" (FM) and "phase modulation" (in which the phase is varied). AM is commonly used at radio frequencies and was the first method used to broadcast commercial radio. The term *AM* is sometimes used generically to refer to the AM broadcast (mediumwave) band. (See also *FM*.)

AM Expanded Band
Level: 2

Definition: In a decision by the Federal Communications Commission, the FCC expanded the official allocation for AM radio licenses by opening up 10 new frequencies in the upper part of the AM band (1610 kHz to 1700 kHz). The ruling was to reduce troublesome interference to existing AM radio stations. In a March, 1996 decision, 86 AM stations were designated to migrate to the so-called expanded portion of the AM band. Each of the new AM expanded band licensees are authorized to operate with 10 kW of daytime and 1 kW of nighttime power.

AMAX
Level: 2

Definition: A certification mark placed on AM radios that meet specific high-quality standards established by the National Radio Systems Committee (NRSC). These standards were formulated to increase the reception quality of AM radio. In order to carry the AMAX certification mark, an AM radio must have an audio bandwidth of 50 to 7500 Hz, manual or automatic bandwidth control, and expanded AM band capability (1605 to 1705 kHz). Additionally, if the radio is AM stereo, the certification mark becomes AMAX stereo.

Ambient Noise
Level: 1

Definition: In a general sense, ambient noise is background noise associated with a given environment. Examples of ambient noise sources include the wind, humming fluorescent lights, power transformers, electrical appliances, and other equipment noises. Each of these natural or man-made sources produces some movement that displaces air causing variations in acoustic pressure and thus contributing a small amount of sound that makes up so-called background noise. When noise sources are too distant or weak to be isolated, they are considered ambient noise.

Used in a sentence: "I couldn't transcribe the tape because there was too much ambient noise for the recorded dialogue to be audible." (See also *Interference*.)

American Standard Code for Information Interchange (See *ASCII*.)

Ampere
Level:2

Definition: The measurement of electrical current in a circuit, usually abbreviated as amps.

Amplifier
Level: 1

Definition: An electronic device for enhancing or amplifying the power of a signal. For example, as signals are transmitted through a wire-line network (such as telephone twisted-pair copper lines or coaxial cables, or even fiber optic lines), a certain amount of loss in signal power occurs. An amplifier is used to boost the signal power to make up for the loss and thus regenerate the signal. There is a limit as to how many amplifiers can be used in a cascade, as amplifiers are not capable of restoring seriously degenerated signals.

Used in a sentence: "The system engineers needed to use an amplifier to boost the signal."

Amplitude Modulation (See *AM*.)

Amplitude Shift Keying (ASK)
Level: 3

Definition: A simple form of signal modulation in which a carrier frequency is switched on or off to represent the presence or absence of a signal. ASK is useful only in simplified transmissions going in a single direction (simplex mode), or at least in one single direction at a time (half-duplex).

Other forms of shift key technologies are much more prevalent (phase-shift keying) because signals are often divided into many channels and multiplexed using multiple frequencies. (See also *FDMA* and *PSK*.)

Analog
Level: 1

Definition: In terms of electronics, analog is a traditional electronic process in which information such as audio and video signals is represented as a continuous electronic wave. Using time-variant electrical characteristics in combination with specified electromagnetic spectrum frequencies can represent the physical world of sight and sound. Analog signals have typically been used for transmitting voice and video communications (e.g., telephone voice calls, television video, and radio/TV audio signals).

Used in a sentence: "The analog video source had to be converted to digital before we could compress it and send it over the network."

Analog-to-Digital (See *A/D*.)

Analog-to-Digital Converter (See *ADC*.)

Anamorphic DVD (Anamorphic Digital Video Device)
Level: 2

Definition: Anamorphic DVD is a relatively efficient way of bringing more lines of resolution for those watching a DVD on widescreen televisions or computer monitors. The wider film picture fits better in the wider display and less space goes unused (in the black bars on the top and bottom). When a widescreen movie is shown on a traditional television (with 4:3 aspect ratio), 346 scan lines (horizontal lines drawn on the screen) are used for the picture, and the remaining 184 are filled in with black on the top and bottom of the screen. But when an anamorphic widescreen image is shown on a widescreen television (16:9 aspect ratio), 461 scan lines are used for the film and only 19 are thrown away in the black bars, making for a sharper, more detailed picture that fits almost perfectly in the available screen. Because most people still have standard 4:3 televisions, it would not be financially viable for DVD

manufacturers to have to ship different versions for different TV sets. For display on an ordinary 4:3 television, the anamorphic image must be reduced from the top and bottom by reducing every four lines in the picture to three and adding extra black space to the top and bottom. If the image is shown on a 4:3 TV without being reduced, it appears horizontally squished, making everything look taller and skinnier. This can occur when people have their DVD players inadvertently set to 16:9 mode instead of 4:3 mode. (See also *DVD* and *HDTV*.)

ANI (Automatic Number Identification)
Level: 2

Definition: In video applications, ANI refers to a type of pay-per-view (PPV) or near video-on-demand ordering system through which a cable customer calls into an interface computer located at the phone company to order specific PPV programming. Callers are automatically identified by telephone number, thus allowing the local cable system to authorize subscriber access to the programming event and initiate billing. The same or similar type of ANI operations may be used by the telephone companies themselves now that they are also getting into the video delivery business. (See also *PPV* and *VOD*.)

Animated GIF (Graphics Image Format) File
Level: 1

Definition: A type of graphical image file typically seen on web pages that appear to be animated. The GIF file format allows for multiple frames of an image to be created and then cycled through, thus creating the animation effect. Animated GIFs are popular on the Web because the files are usually small and can be downloaded quickly.

Used in a sentence: "The advertising agency wanted to use an animated GIF on the client's web site to make it look like smoke was coming out of the house's chimney." (See also ***Bitmap Graphics*** and *GIF*.)

Anonymous FTP (Anonymous File Transfer Protocol)
Level: 2

Definition: A generic password system to enable Internet users to access and download certain