Glossary

Advanced Television Systems Committee (ATSC): The FCC-appointed committee that set the specifications for digital television (DTV) and high definition television (HDTV) in the mid-1990s, replacing the NTSC, which had established the 525-line standard in 1953.

Aspect ratio: The ratio of a television picture width to height. The aspect ratio of NTSC video is set at a 4:3 standard, while DTV/HDTV is moving to 16:9.

Asymmetric digital subscriber line (ADSL): Attached to twisted-pair copper wiring, ADSL modems transmit data from 1.5–9 Mbps downstream (to the subscriber) and from 16–800 kbps upstream, the speed depending on distance from the central telephone office (CO).

Asynchronous transfer mode (ATM): An advanced data transmission technology that utilizes fixed-length packets (48 bytes: 8 bits per byte) to carry voice, video, and data signals on the same telecommunications line.

Backbone: The high-capacity trunk lines of communications networks connecting one or more first- and last-mile hubs.

Bandwidth: The transmission capacity of an electronic medium such as network wiring, fiber-optic cable, or wireless link; measured in digital communications as the number of bits per second delivered.

Bit: A contraction of the words binary and digit. In digital communication, a byte is a group of 8 bits; one kilobyte is equal to 1024 bits; a bit stream is a sequence of transmitted bits.

Bit-error rate: The fraction of a sequence of message bits that are in error.
The Broadband Millennium

Bit rate: The speed of a digital transmission measured in bits per second, as in kbps, Mbps, and Gbps.

Broadband: A widely used but loosely defined term referring to those digital channels capable of conveying information at 1.5 Mbps or higher, as in broadband wireless and broadband Internet.

Broadcasting: The process of transmitting radio, television, or data signals to multiple receivers via wire or wireless channels, as with terrestrial broadcasting, satellite broadcasting, cablecasting, and Webcasting.

Browser: Internet software that facilitates examination and retrieval of information stored on the World Wide Web.

Buffer: Space within a personal computer's random access memory where data such as streamed media are stored until enough information has been received that the content can be continuously displayed through a Web browser.

Cable modem: A modulator/demodulator unit that enables the coaxial and fiber-optic lines of cable TV to connect to either analog or digital circuits and equipment.

Caching: The temporary storage of digital information such as Web pages in an intermediate location, in order to speed Internet access and retrieval.

C-band: A portion of the electromagnetic spectrum used for satellite transmission in the range of 4–6 GHz.

Cellular communications: A mobile communications system using low-power wireless transmitters/receivers to interconnect users traveling within a geographic service area.

Chat: To carry on a live conversation on-line by sending and receiving messages in real time.

Glossary

Circuit/packet switching: Circuit switching is the designation of a particular channel in a communication network that remains open for the duration of the communication. In packet switching, variable-size packets of data are routed between and among networks of interconnected computers, resulting in some parts of a message arriving at their destination earlier than others.

Coaxial cable: A high-capacity copper cable consisting of a single center solid wire surrounded by a braided or foil conductor, which creates an electrically shielded transmission circuit.

Codec: A coder/decoder device that converts analog audio/video signals into digital format for transmission, and converts received digital signals back into analog format.

Code division multiple access (CDMA): A wideband, spread-spectrum technology used to increase information capacity as well as security by managing the available radio spectrum differently.

Competitive local-exchange carrier (CLEC): A telecommunications company—be it a phone, cable, or wireless company—that has sought to provide local telephone service in competition with the incumbent operators since the passage of the Telecommunications Act of 1996.

Compression: A digital process by which the amount of information transmitted on a communications channel such as a telephone line or stored in a communications medium such as a video disc can be reduced without significant loss of signal quality or information.

Datacasting: The transmission of information in digital format to specially equipped computers, cache sites, set-top boxes, or DTV receivers via terrestrial, satellite, or Internet broadcasting.

Dense wavelength division multiplexing (DWDM): A device for greatly multiplying the carrying capacity of fiber-optic lines by encoding several signals onto a single fiber strand, each at different wavelengths.
Desktop video: Video editing and production at the desktop using standard computing hardware and software.

Digital audio radio service (DARS): A satellite-based direct broadcast service in which digitally coded audio and data are transmitted to Earth-based receivers.

Digital subscriber line (DSL): A digital transmission technology for converting low-bandwidth copper telephone lines into broadband transmission lines.

Digital television (DTV): Television created, edited, stored, and transmitted in digital formats, including HDTV, SDTV, datacasting, and multicasting.

Digital video recorder (DVR): A digital "VCR" that permits customized recording, live TV pause, instant replay, variable speed rewind/fast-forward, and 30-plus hours of hard-drive storage.

Direct broadcast satellite (DBS): A space-based broadcast service using high-power (100-plus watts) satellites operating in the Ku-band (12–14 GHz) targeting small (18–24 inch) home receivers.

DOCSIS modem: A cable modem that meets the industry's OpenCable standard for data transmission of services (data over cable service interoperability specification) over hybrid fiber/coaxial (HFC) networks.

Download: The retrieval of data from a distant database, as with the downloading of Web pages and digitized music and video for storage on a resident hard-drive, using an on-line connection.

Electromagnetic frequency: The number of cycles per second of an alternating current or wave form expressed in Hz, in honor of the electronics pioneer H. R. Hertz, where 1 kHz = 1,000 Hz, 1 MHz = 1,000 kHz, 1GHz = 1,000 MHz, and 1 THz = 1,000 GHz.

Electromagnetic spectrum: A system for identifying and allocating for use the physical wavelengths that convey the signals of telecommunication, including voice, video, and data.

Electronic Program Guide (EPG): An on-screen listing of programming and other content available to video and Internet users.

Ethernet: A widely used data distribution system for local-area networks (LANs) operating at 10 Mbps (Ethernet), 100 Mbps (fast Ethernet), or 1,000 Mbps (Gigabit Ethernet), in which the total bandwidth is shared.

Extranet: A private wide-area network (WAN) using Internet technology to link businesses with suppliers, customers, and other businesses.

Federal Communications Commission (FCC): An agency of the U.S. government reporting to the Department of Commerce that regulates various matters relating to communications.

Fiber-optic communication: Transmission lines consisting of highly transparent glass fibers that have the capability to carry enormous amounts of information in the form of light pulses.

Fiber-to-the-curb (FTTC): The deployment of fiber-optic cable from the central office to a nearer-the-home location within the neighborhood.

Fiber-to-the-home (FTTH): The deployment of fiber-optic cable from the central office to an individual home.

First and last mile: An expression used to denote the beginning and ending points of communication, normally referring to the telecommunications architecture of the local loop but also including homes, schools, and local businesses.

Fixed wireless access (FWA): The reception and transmission of wireless communications in fixed locations, as with homes, schools, and offices.
Footprint: The area of the Earth's surface illuminated by the
downlinked signal of a space-based communications satellite.

Geosynchronous Earth orbit (GEO): The location in space at an
altitude of 22,237 miles above the equator where an orbiting
satellite is stationary relative to the Earth.

Gigahertz (GHz): A unit of measurement for high-speed radio
frequencies: one billion cycles per second.

Head end: The central office of a cable television system, usually
housing antennas, earth stations, preamplifiers, frequency
converters, demodulators, modulators, video servers, and related
equipment.

High-definition television: A set of standards for advanced
television that establishes the number of scan lines on the TV
receiver at 720 or higher, as with 720 or 1080-interlace or 720 or
1080-progressive; also to increase the aspect (width to height) ratio
from 4:3 to 16:9.

Hybrid fiber/coax (HFC): A communications and cable
architecture that uses optical fiber from a central office to a
connection point (node) in the vicinity of users, with standard
coaxial or twisted-pair wiring continuing into individual homes and
businesses.

Incumbent local-exchange carrier (ILEC): One of seven
regional Bell operating telephone companies (RBOCs) spun off
when the U.S. Department of Justice required that AT&T be
divested in 1984.

Instructional television fixed service (ITFS): A broadcast
application in the microwave part of the frequency spectrum near
2,500 MHz (2.5 GHz) reserved by the FCC for educational and
other nonprofit uses.

Integrated services digital network (ISDN): A digital
communications network that allows the simultaneous
transmission of voice, data, video, imaging, fax, and other services
with speeds up to 128 kbps or faster when channels are combined.

Interactive television (ITV): Interactive content and
enhancements added to television programming, blending
traditional TV viewing with computer use. Also a form of content
on demand via cable and satellite set-top boxes and the Internet.

Interlace/progressive scan: The way images are scanned onto
display screens. Television screens have traditionally used an
interlace format in which the scan gun first paints the even-
numbered rows of picture elements, left to right, top to bottom;
then the gun jumps back to the top and paints odd-numbered
rows. Computer screens scan progressively line-by-line.

Internet: The world's largest data communications network
consisting of thousands of smaller networks interfaced in such a
way that computers of any type can interact with any other.

Internet protocol (IP): The technical transmission standards that
specify the formation of data packets, addressing schemes and
routing behaviors that make possible interconnection within
computer networks.

Internet service provider (ISP): One of some 6,000 companies
that provide Internet users with access to the vast infrastructure of
the Internet via telephone, cable, and wireless modems.

Intranet: A private communications network by which
corporations and nonprofit organizations utilize IP
communications technologies and techniques for in-house data,
voice, and video distribution, including teleconferencing.

IP telephony: Also called VoIP, a communications service that
includes voice, facsimile, and messaging, using Internet protocol
routing of voice over a packet-switched rather than circuit-switched
telephone network.
institute of Electrical and Electronics Engineers (IEEE): A professional association that helps set telecommunications system standards.

International Organization for Standardization (ISO): A worldwide federation of national standards bodies from some 130 countries, one from each country.

International Telecommunications Union (ITU): A United Nations agency located in Geneva, Switzerland, that has served to mediate international regulatory issues in telecommunications since 1865.

Java: A programming language developed by Sun Microsystems in widespread use on the World Wide Web designed to run on multiple computing platforms.

Kilobits per second (kbps): When measuring bandwidth, one thousand bits transmitted in one second.

Ku-/Ka-bands: Portions of the electromagnetic spectrum in the range of 10–17 GHz and 18–31 GHz used both in terrestrial and in satellite communication.

Local-area network (LAN): A communications network, consisting of servers, workstations, a communications link, and a network operating system, designed to interconnect users within a confined geographical area.

Low Earth-orbiting satellite (LEO): Space-based satellites positioned in orbits 400–8,000 miles above Earth. Medium Earth-orbiting satellites (MEO) are those traveling at approximately 10,000 miles above Earth.

Megabits per second (Mbps): When measuring bandwidth, one million bits transmitted in one second.

Microwave: Line-of-sight, point-to-point transmission of signals at frequencies above 1,000 MHz (1 GHz), used both in terrestrial and satellite communications.

Modem: An electronic device used in telephone, cable, and wireless communications capable of converting (modulating/demodulating) digital data signals into analog signals suitable for transmission over analog telecommunications circuits, also for converting analog signals to digital.


Multiple-systems operator (MSO): A cable company that owns two or more systems.

Multipoint distribution service (MDS/MMDS/LMDS): Commonly called wireless cable, these are broadband communications services that operate in frequency ranges above 1,000 MHz and are capable of point-to-multipoint transmission of two-way signals over relatively small distances.

Multiprotocol label switching (MPLS): An improvement in IP packet exchange enabling network operators to divert and route traffic around congestion and bottlenecks.

Narrowband: Any communication link that is limited to a low data rate, such as a 4 kHz or 64 kbps voice channel, generally considered insufficient for carrying high-speed Internet or video.

National Television Systems Committee (NTSC): A committee of the FCC that established the U.S. technical standard for broadcast television using 525 scan lines to be transmitted at 30 images per second.

Node: A point where devices and equipment connect to a network.

Packet: A bundle of binary data organized for transmission over a network.
Packet data call: A telephony session during which packets of voice information are individually routed between the calling parties instead of on a dedicated circuit being established between parties.

Pay-per-view/video on demand (PPV/VoD): A method of marketing television, movies, concerts, and other special events to subscribers for an additional fee; in the case of VoD, individual viewers may specify the exact date and time for viewing (or downloading) a video program of their choice.

PCTV: Personal computers that function as DTV-compatible television receivers and alternatively, as devices by which TV viewers may surf the Internet.

Personal communication service (PCS): A wireless communications digital service approved by the FCC for voice and data operations in the radio frequency band from 1.7–2.3 GHz.

Personal video recorder (PVR): A digital VCR that permits customized recording, live TV pause, instant replay, variable speed rewind/fast-forward, and 30-plus hours of hard-drive storage.

Progressive scanning: A system of video scanning whereby lines of a picture are transmitted consecutively, as on computer screens, unlike the interlace scanning of NTSC television. Progressive DTV formats are identified as 480p and 720p, whereas interlace DTV formats are identified as 480i, 720i, and 1080i.

Protocol: A standardized format and set of rules for the transmission of digital information, as with the Internet protocol.

Public switched telephone network (PSTN): The much-admired circuit-switched network providing near-universal telephone service built by AT&T, GTE, and other providers during the time when these companies were government-regulated common carriers.

Regional Bell operating company (RBOC): One of seven regional telephone companies formed upon the divestiture of AT&T in 1984: Bell Atlantic, Nynex, Pacific Telesis, Bell South, SBC Communications, US West, and Ameritech.

Router: A device used to select one of several paths over which network traffic will be transmitted. For e-mail distribution, the router examines each address to select the most efficient pathway to their destination.

Server: A type of computer used in local- and wide-area networks containing the software for managing traffic within the network and providing storage space for network and user information.

Set-top box: A computer-like device connected to telephone, cable, wireless cable, satellite, broadcast, or utility inputs in broadband homes for the purpose of providing greater user interactivity and control over radio/TV programming, the Internet, games playing, electronic shopping and other applications.

Streaming media: The delivery of audio, video, data, and voice signals in IP-format as a continuous, real-time feed, or streamed on user command from a computer server.

T1 – T3/OC-1 – OC-3: Classes of telecommunications service offered by telephone companies to speed up the digital transmission of information in which OC denotes fiber-optic speeds.

Television receive-only (TVRO): A satellite dish used to receive television signals from a satellite.

Transmission control protocol/Internet protocol (TCP/IP): The widely accepted set of protocols that perform the transfers of data between two or more computers via the Internet.

Universal resource locator (URL): A unique address and location that identifies the Web sites or home pages where graphical, text, audio, and video information are stored on the World Wide Web.
Universal service: A public policy initiative to ensure that telecommunications services are available to all households.

Upload: To stream a computer file from a resident hard drive to one or more computers in other locations using an on-line connection such as the Internet.

Vertical blanking interval (VBI): An underutilized portion of the NTSC 525-line television signal where additional data such as closed captioning may be carried.

Very-small-aperture terminal (VSAT): A small satellite dish receiver/transmitter widely used by corporations in two-way data communications.

Virtual private network (VPN): The creation of the equivalent of a private communications network on a shared public network such as the Internet, maintaining privacy through the use of special security procedures.

Voice over IP (VoIP): A method of transmitting voice communications over a data network such as the Internet.

Wide-area network (WAN): A generic term for any public or private data network that covers a geographic area of 50 miles or greater.

Wireless local loop (WLL): A first- and last-mile interconnection using digital radio technology rather than twisted copper pair or coaxial cable to provide the final link from the telephone network to the subscriber.

World Wide Web (WWW): A network of thousands of servers using hypertext links to find and access millions of Web sites created on computers connected to the Internet.
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