Microware Glossary

A

AAL

See ATM adaptation layer.

AAL-5

See ATM adaptation layer type 5.

AAL connection

Established between two or more next higher layer entities.

ABS

application boot sequence

Abstract Window Toolkit

A device-independent layer of the Java API. It enables Java applications to create windows, buttons, menus, and a variety of other typical windowing widgets.

address independent

In operating system design this means allowing a file or module in memory to be placed at any location and be able to operate properly. In some inflexible systems, when you compile a program it must know the location in memory where it will reside as well as the memory location of other modules it will access.

The advantage to the user of Address Independent modules is that there is more flexibility in creation and maintaining the operating environment. Newer editions of a module can be placed in memory at a different location from the original and it will work correctly. This feature allows dynamic updating.

address prefix

A string of 0 or more bits up to a maximum of 152 bits that is the lead portion of one or more ATM addresses.

ADP

See Application Download Procedure.

ADPCM

Adaptive Differential Pulse Code Modulation. A technique used to encode and compress audio information.

ADSL

Asymmetric Digital Subscriber Line. A communication protocol.

Advanced Television (ATV)

Any television technology that offers "higher quality" images than those available through established standards. HDTV is an example of ATV.

Advanced Television Systems Committee (ATSC)

The Advanced Television Systems Committee (ATSC) was formed to establish voluntary technical standards for advanced television systems, including digital high definition television (HDTV). The ATSC is supported by its members who are subject to certain qualification requirements.

On December 24, 1996, the United States Federal Communications Commission (FCC) adopted the major elements of the ATSC Digital Television Standard (A/53) for the nation's next generation of broadcast television. Under the decision, the video and audio compression, the packetized data transport structure, and the modulation and transmission system specified in the ATSC standard are mandated by the Commission for use by terrestrial broadcasters, while the specific video formats to be used for digital broadcast television will be the subject of voluntary industry standards.

Canada, S. Korea, Taiwan and Argentina have adopted the ATSC DTV Standard for digital terrestrial broadcasts.

age

See process age.

alarm

Sends a signal or executes a subroutine at specified times. The signal can be sent at a specific time of day or after a specified interval has passed. The program may also request that the signal be sent periodically, each time the specified interval has passed.

alpha channel

A mechanism that controls the transparency or translucency of pixels on a display screen. If an alpha flag is present, it defines whether the alpha value is used or not. The alpha value defines the translucency using a range that extends from completely transparent to completely opaque.

am79c30

ISDN chip manufactured by Advanced Micro Devices and controlled by the sp79c30 driver.

American National Standards Institute (ANSI)

An organization that develops and publishes standards for voluntary use in the United States. See also BSI, CCITT, DIN, IEEE, ISO, and Standards Organizations.

American Standard Code for Information Interchange (ASCII)

In standard ASCII, each byte has seven bits to store information, allowing the eighth bit to be used for other purposes. ASCII characters thus have values ranging from 0 to 127. ASCII encodes thirty-two control characters for data transfer and ninety-six alphanumeric characters. It is the computing industry's standard for encoding alphanumeric characters, numbers, signs, and symbols. ANSI Standard code was revised in 1983, and there are several variations on the standard, allowing coding of 256 characters.

analog

A continuously varying signal (either in frequency or amplitude) without discrete values or steps. The human voice is analog, as is the traditional POTS network. While it is comparatively simple to transmit analog signals, they are very difficult to compress or filter for noise, which are the most important reasons digital technology is rapidly replacing analog. Contrast with Digital.

applet

Small software application performing a specific task. Has traditionally referred to programs like Cardfile and Calculator in Microsoft Windows but is now being used more commonly to describe small distributed applications created with Sun's Java programming language and operating over the Internet.

Application Developers Pak

The DAVID Applications Developers Pak provides easy-to-use language functions and sample code for creating digital television applications targeting DAVID devices.

The package contains APIs from MAUI, UpLink and Item. It also includes file manager libraries such as MPFM, SPF, and MFM.

This package does not allow creation of system state code so drivers can not be created and porting of DAVID to new hardware can not be accomplished.

Application Download Procedure

In DAVID environments, ADP is a network-specific series of handshakes between the set top box and the L2GW, which culminates in the downloading of an image (application and its associated modules) or script to the set top box.

Application Programming Interface (API)

Software that an application program uses to request and complete lower-level services performed by the computer or the networks operating system. It is a set of standard software interrupts, calls, functions, and data formats that applications use to initiate contact with hardware and network services.

assembly language

Low-level computer language. Translated by compilers or interpreters into machine language. Assembly language programs run faster than high-level language programs like those written in BASIC or FORTRAN.

asymmetrical compression

Compression techniques in which the compression and decompression processes are not the same. Compression requires more processing power than decompression. Typically used in CD-ROM creation, where ample time is available on the production side to compress data, decompression must occur in real-time. Before the advent of real-time MPEG-2 compression hardware, MPEG-2 video was also asymmetrical.

Asymmetric Digital Subscriber Line (ADSL)

Technology using digital filtering to remove noise from twisted-pair copper lines, enabling broadband transmission. There are several varieties of ADSL using varying hardware, modulation software and compression techniques. ADSL-2 can deliver up to four VCR-quality video signals but has limited upstream response. ADSL can only work over distances of less than 12,000 feet, a requirement 60% of U.S. homes meet. Visit the ADSL Forum to learn more about ADSL.

Asynchronous Transfer Mode

A communication mode capable of transmitting at very high speeds, typically from 155 Mbps to 622 Mbps. Provides on-demand, high-speed digital connections between service-provider servers and the broadband network. This is provided through the BIG and LAN segments connected to ATM ports on a dedicated bandwidth.

(ATM): Technology selected by the CCITT in 1988 to implement a Broadband Integrated Services Digital Network (B-ISDN). Transmissions are encoded into fixed-length packets and through ATM switches. Each ATM link supplies a constant stream of ATM packet slots into which transmissions are placed or left idle or unused. ATM handles numerous services well by combining the best of both circuit-switching technology (for constant-bit rate services such as voice and graphics) and packet-switching (for variable-bit rate services such as data and full-motion video). To learn more about ATM, visit the ATM Forum, an industry organization with some 450 members focusing on the development, standardization, and deployment of ATM products.

Asynchronous Transfer Mode - Segmentation and Re-Assembly (ATM SAR)

ATM is a popular transmission protocol used by telephone companies and by customers using telephone company transmission networks. ATM breaks messages into small packages. The SAR hardware facilitates the packetizing of messages at the sender's end and re-assembly of the packets at the end destination.

asynchronous transmission

Transmission method in which each packet of information is individually synchronized, usually by means of "start" and "stop" elements in the header.

AT&T 5E6

A specification for an AT&T ISDN switch.

ATM

See Asynchronous Transfer Mode.

ATM adaptation layer

The standards layer allowing multiple applications to have data converted to and from the ATM cell. A protocol translating higher layer services into the size and format of an ATM cell.

ATM adaptation layer type 5

AAL functions supporting variable bit rate, delay-tolerant, and connection-oriented data traffic and requiring minimal sequencing or error detection support.

ATM address

Three formats, each having 20 bytes in length including country, area, and end-system identifiers.

ATM address resolution protocol

Enables a host to find the ATM address of a target host given only the target's Internet address.

ATMARP

See ATM address resolution protocol.

ATM layer link

A section of an ATM Layer connection between two adjacent active ATM layer entities.

ATM link

A virtual path link or virtual channel link.

ATM peer-to-peer connection

A virtual channel connection or a virtual path connection.

ATM traffic descriptor

A generic list of traffic parameters used to capture the intrinsic traffic characteristics of a requested ATM connection.

ATM user-user connection

An association established by the ATM layer to support communication between two or more ATM service users (between two or more next higher entities or between two or more ATM layer entities). The communications over an ATM layer connection may be either bidirectional or unidirectional. The same virtual channel identifier is issued for both directions of a connection at an interface.

attribute

A characteristic that defines whether a file is read-only, write-only, executable, a directory, or sharable. Every file stored in the operating system has certain file attributes. The OS-9 `attr` command displays and changes these attributes.

audio block

Actual data within an audio sector. This consists of 18 sound groups of ADPCM data.

audio elementary stream

The compressed audio data bitstream as defined by the MPEG-2 standard. Refer to ISO/IEC International Standard | Recommendation 13818-3.

authoring

In software development, the process of creating an interactive application. Popular multimedia authoring tools include Macromedia's Director and Authorware and Aimtech's IconAuthor. Multimedia authoring programs are quickly being upgraded to support World Wide Web and interactive television applications. Authoring tools are typically object-oriented and do not require sophisticated programming abilities to be used effectively.

AWT

Abstract Windowing Toolkit. Name for the Java platform-independent windowing, graphics, and user-interface toolkit.

B

backbone

Part of a telecommunications network carrying a large volume of traffic. Usually SONET-based fiber, these high-capacity links form major arteries within the national PSTN. The term is relative since a backbone in a small network could be much smaller than non-backbone lines in a large network.

back channel

Return link in a two-way data circuit, such as a coaxial cable or satellite circuit. The bandwidth of this upstream channel is usually less than that of the forward channel.

band

Range of frequencies between two defined limits. For example, the audio band, the range of frequencies that can be detected by the human ear, ranges between about 20 and 20,000 Hertz.

bandwidth

Transmission capacity. Specifically, the range of frequencies a media
(e.g. copper wire, coaxial cable, satellite, fiber-optic cable) can effectively transmit. Generally, the larger the bandwidth, the greater the capacity of voice, video, or data the media can carry. Bandwidth in systems is limited both by the transmission media and by the electronics sending and receiving data.

Bandwidth also refers to the range of frequencies that can be passed over a given channel. The public phone system has a bandwidth of approximately 3 KHz.

barker channel

Cable channel dedicated to promoting pay-per-view events, usually through text broadcasts.

baseband

In analog terms, the original bandwidth of a signal from a device (e.g., 4 KHz for a telephone, 4.5 MHz for television). Form of modulation in which signals are pulsed directly on the transmission medium without frequency division multiplexing.

The original frequency span of a signal before it is modified for transmission or otherwise manipulated.

baseband signaling

Transmission of a digital or analog signal at its original frequency, without frequency modulation. This technology is commonly used in LANs, as it is simpler and cheaper than broadband (or frequency multiplexed) transmission, the other widely available LAN option.

base-case system

DAVID hardware system with the minimum allowable characteristics as defined by the DAVID System Specification.

base station

Central radio transmitter/receiver that maintains communications with mobile radiotelephones within a given range (typically a cell site).

BASIC

See Beginners All-purpose Symbolic Instruction Code (BASIC).

basic cable

Channels received by cable subscribers for no charge beyond basic subscription rate. Most basic cable channels are supported by advertising and small per-subscriber charges paid by cable system operators.

Basic Rate Interface (BRI)

Two 64Kb/s bearer channels and one 16Kb/s data channel in an ISDN connection that carries both call setup and user packet data across the network. It may also be referred to as a 2B+D connection.

baud

Unit of signaling speed. The baud rate is the frequency of the carrier wave that is used by a modem to transmit information over an analog phone line.

In popular usage, baud is used synonymously with bits per second (bps). However, technically, these terms have different meanings. When transmitting data, the baud rate is the number of cycles per second of the carrier wave. For example, a 2400 baud modem's carrier wave cycles 2400 times per second. Since each change in state can correspond to multiple bits of data, the actual bit rate of data transfer may exceed the baud rate.

bearer channel

Clear channel pipes for user voice and data transmitted at relatively high speeds.

Beginners All-purpose Symbolic Instruction Code (BASIC)

Very simple, structured programming language with easy-to-remember instruction names. Often implemented in the form of an interpreter.

Bell Communications Research (Bellcore)

Company formed at the divestiture of AT&T to provide certain centralized services to the seven RBOCs. Bellcore developed technologies and standards for the RBOCs. It also served as a coordinating point for national security, emergency planning, and other federal government telecommunications matters. Bellcore was sold to Science Applications International Corp. (SAIC) in late 1997 and is now called Telcordia Technologies.

Bell Operating Company (BOC)

Any of the twenty-two regulated telephone companies formed by the divestiture of the former AT&T Bell System. The Regional Bell Operating Companies (RBOCs) are holding companies comprised of some of the twenty-two BOCs on a regional basis.

These seven "Baby Bells" were created at midnight on December 31, 1983, by a consent decree (a negotiated legal settlement) between AT&T and the United States Federal Government. This agreement is known as the Modified Final Judgment or the MFJ. As part of the agreement, the BOCs were only permitted to carry local (intraLATA) traffic, and forced to hand off long distance (interLATA) traffic to competitive IXCs.

The original RBOCs were Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Telesis, SBC Communications, and U S West. RBOCs are also known as RHCs (Regional Holding Companies), RBHCs (Regional Bell Holding Companies), and more generally as LECs (Local Exchange Carriers).

binary

The number system with only two states, used to represent information in digital format. In digital systems, the smallest unit of information is the bit, which can have a value of only 0 or 1.

Binary Digit (Bit)

Smallest possible unit of information, used as the basis of digital processing and signalling. A bit can either be on (1) or off (0). Data bits are used in combination to form characters. Framing bits are inserted at a given interval in a bit stream to synchronize the transmission of frames.

Kilobit:	1,000 bits
Megabit:	1 million bits
Gigabit:	1 billion bits
Terabit:	1 trillion bits

Binhex

Binary Hexadecimal. Method for converting non-ASCII files into ASCII. Binhex converters are needed because Internet mail systems can only handle ASCII files.

B-ISDN

See broadband ISDN.

bit-block transfer

Operations that draw or copy blocks of pixels from one location to another. These are the underlying operations that support all types of drawing in MAUI.

Bit Error Rate (BER)

Ratio of error bits to correctly transmitted bits. BER usually depends upon the physical media, and is usually highest over copper and coaxial cable, and lowest over fiber. The BER is usually expressed as a negative exponent of the power of 10. For example, 10 to the negative sixth power means that one in every 1,000,000 bits transferred will be wrong.

bitmap

Type of computer-graphic image where each pixel corresponds directly to data stored in memory. Each pixel can be represented by one bit or up to 32 bits, depending upon the number of colors available and the definition of the image.

bit rate

Data transmission speed measured in bits per second (Bps or b/s). In reality, this rate depends upon the number of retransmissions needed, which in turn depends on the level of noise on the line and the BER.

bit stream

Continuous stream of data transmitted over a communications line without separations between the characters.

blanking interval

Interval during TV picture formation when the electron gun returns from right to left after each line (horizontal blanking) or from top to bottom after each field (vertical blanking) when picture is suppressed. The Vertical Blanking Interval is used to broadcast closed captioning and data for display across the bottom of TV screens. A new interactive service called "Intercast" will make use of this interval to broadcast information for display on the television screen and for use by personal computers. This information may include URLs for Websites related to the TV programming that the Intercast is accompanying.

BLOB

Binary Large Object.

board

Stiff card containing electronic elements (such as processors, communication devices etc.),wiring connecting them to each other, and a bus to connect to other processors.

bootfile

Contains the kernel and other high-level modules (init module, file managers, drivers, descriptors, applications, et.) The image is loaded based on the device you select from the boot menu. The bootfile normally brings up a shell prompt, but can be configured to automatically start your application.See also coreboot.

branch

A development path that diverges from the primary path (trunk) of software development. All information on branch revisions (as well as information on trunk revisions) is maintained in a single log file. By using branching, you can maintain several parallel development paths for the same file.

branching

In interactive media, the facility to deviate from a central narrative or sequence and choose to follow one or more of multiple paths.

BRI

See Basic Rate Interface (BRI).

bridge

Device that connects network segments at the data link layer. On TCP/IP networks, both sides of the bridge have the same network ID. Bridges are often used to isolate heavy traffic areas of the network to avoid congestion.

bridge amplifier

Amplifier used on a cable TV trunk to feed branching cables.

broadband

A general term used to describe high bandwidth equipment or systems that utilize a large portion of the electromagnetic spectrum through fiber-optic and coaxial cabling. Broadband systems can typically deliver multiple video channels and other services. Coaxial cable TV networks are the classic example of broadband services, where numerous video channels, and theoretically telephony and data services can be supported simultaneously.

There are numerous definitions of broadband. Some define the term as any communication channel with a bandwidth wider than 3 KHz (voice grade); others put the boundary at 20 KHz. CCITT recommendation I.113 defines broadband as "a service or system requiring transmission channels capable of supporting [transmission] rates greater than the primary rate."

The Gemini C4 Lab defines true broadband as any service where transmission rates exceed 1.544 Mpbs (T1). Services with rates between T1 and 20 KHz are considered wideband, and everything smaller is termed narrowband. See also Wideband and Narrowband.

broadband ISDN

A high-speed network standard (above 1.544 Mbps) that integrated Narrowband ISDN with existing and new services with voice, data, and video in the same network.

broadcast

To send information to multiple receiving devices simultaneously, whether over a data communications network, a voice mail or e-mail system, a local TV or radio transmitter, or a satellite system. Generally used to describe television, or other one-to-many forms of distribution.

broadcaster

Programmer who transmits signals over the airwaves for reception via antenna. Programming may also be transmitted by cable, but cable is not the only means of transmission. Compare Cablecasting.

broadcast quality

Professional-quality video. Video with a resolution comparable to that of video recorded using the professional Betacam or U-matic formats.

browser

Software application used to display HTML documents. Browsers may be used to display or retrieve HTML documents across the Internet. Popular browsers include Netscape's Navigator, NCSA's Mosaic, Spry's Spyglass and Microsoft's Explorer.

BSAFE

General purpose cryptographic toolkit supporting RSA, DES, DES3, RC4, SHA-1, MD2, and MD5

buffer

Temporary storage location for information being sent or received, either through communications channels or between processors in a computer. Buffers play a critical role in maintaining a steady flow of information to an output device such as a video screen.

bursty

Term used to describe information that flows unevenly, with intense periods followed by relatively long, silent intervals. Electronic transactions, for example, are typically bursty. Video transmissions usually consist of a continuous stream of information.

bus

A number of generally parallel signal lines that transmit control, data, and address signals. An electrical connection that allows two or more wires or lines to be connected together. Often used to mean bus slot.

bus speed

Speed at which the computer's CPU (central processing unit) communicates with other elements of the computer.

byte

Eight bits of data. A byte represents a single character of data, eight bits long, which is considered the basic unit of computerized information. In personal computers, a byte can represent a single character such as a letter of the alphabet, a number from 0 to 9, or a punctuation mark.

C

C++

Object-oriented programming language built upon C. Created by Bjarne Stroustrup at AT&T's Bell Laboratories, it has been adopted as the primary object-oriented language by many software designers.

cable

While referring generally to a wide range of types of wire, the term most often refers to the system that delivers broadcast video service over coaxial cable. See CATV and coaxial cable.

Cable Act of 1984

United States federal statute that deregulated most aspects of the U.S. CATV industry. The Act was supplemented and partially repealed by the Cable Reregulation Act of 1992.

cablecasting

Televised programming originating on cable channels as distinguished from re-transmission of a broadcast signal by a cable system.

cable loss

Attenuation of signal strength while it travels over cable. Cable loss is effected by the cable's shape, size, length, and composition. For coaxial cable, higher frequencies have greater loss than lower frequencies following a logarithmic function.

cable modem

Modem is a contraction of Modulator/Demodulator. A cable modem is used to transmit digital data over an analogue channel (a CATV coaxial cable). Because purely digital transmissions require a higher bandwidth than ordinary coaxial lines can handle, modems are required to modulate carrier signals with data signals and extract data signals from modulated carrier signals, respectively.

Cable Reregulation Act of 1992

United States federal statute passed by Congress in October 1992, requiring the FCC to reregulate the cable television industry. The FCC then forced the cable industry to reduce its rates by 10% in 1993 and by another 7% in 1994.

Cable TV (CATV or Community Antenna Television)

A broadband transmission system generally using a 450 or 750MHz coaxial cable to broadcast many frequency-divided TV channels simultaneously. The typical cable TV system consists of several components:

Distribution Segment: Cable extending from a trunk to a feeder cable. Homes that are within 500 feet of a distribution segment may have a direct drop.

Drop: Cable leading from a tap on the feeder to the home.

Feeder: Smaller cable that runs from a distribution segment into a neighborhood.

Trunk: Portion of a coaxial cable system, including trunk repeater amplifiers, which starts at the headend or hub of a system and continues through the system acting as the main distribution artery for cable TV signals. The trunk cable connects into the distribution and feeder segments.

cache

Very fast intermediate memory between a fast CPU and a slower RAM memory subsystem. Caches operate according to "the locality principle" which states that a Von Neumann CPU (one that processes information serially) tends to access the same memory locations repeatedly. Cache memory speeds up the operation of a computer by retaining this information so that the CPU does not have to repeatedly access its slower RAM memory to use it.

capacity

Ability of a telecommunications facility to carry traffic. Measurement depends upon the type of facility. Data lines are measured in bits per second. Switch capacity is measured by the maximum number of calls it can switch in an hour or the maximum number of calls it can maintain simultaneously. The capacity of coaxial cable and wireless communications systems is typically measured in bandwidth.

carrier band

Range of frequencies that can be modulated to carry information on a specific transmission system.

carrier wave

Radio wave generated at a transmitting station, upon which signal information is modulated.

CAT

Conditional Access Table.

Cathode Ray Tube (CRT)

An electronic vacuum tube, such as a television picture tube, that can be used to display images. It is the technology underlying most standard computer and television displays.

CATV

See Cable TV (CATV or Community Antenna Television).

C-band

Range of the electromagnetic spectrum (at 4-8 GHz) typically used for Fixed Satellite Service (FSS) transmissions. The 3.7-4.2 Ghz band is commonly used for FSS down-links, and the 6 Ghz band for the up-link.

C boot technology

Enables you to create drivers in either C or assembly language. The C Boot system provides front end code for various booting methods (such as disk and tape) which make calls to the hardware-level boot drivers.

With C Boot technology, you can create menus and display them on the system terminal. This enables you to use a terminal to select the boot device instead of setting switches.

CBR

See constant bit rate.

CCH

Control channel communications path.

CCIR

See Comite Consultatif Internationale des Radiocommunications (CCIR).

CCITT

See Comite Consultatif Internationale de Telegraphie et Telephonie (CCITT).

CD-DA

Compact Disc-Digital Audio. The accepted world standard for digital audio disc.

CDM

See cryptographic device module.

cell

Basic geographic unit of a wireless telephone system, and thus the basis for the generic industry term "cellular." A city or county is divided into small cells, each of which is equipped with a low-powered radio transmitter/receiver. The cells can vary in size depending on terrain, capacity demands, and other factors. By controlling transmission power, signals can be limited to the boundaries of the cell. When a mobile phone moves from one cell to another, a computer at the Mobile Telephone Switching Office monitors the movement and at the proper time, transfers the call to the new cell at another frequency. The hand-off is performed quickly, and is not usually noticeable.

Also, a unit of transmission in ATM. A fixed-size frame consisting of a 5-octet header and a 48-octet payload.

cell header

ATM Layer protocol control information.

cell splitting

Means of increasing the capacity of a cellular system by subdividing a cell into two or more smaller cells, each of which is then equipped with its own antenna/receiver.

Cellular Telecommunications Industry Association (CTIA)

Trade association for the cellular telephone and wireless communications industries based in Washington, DC. CTIA can also refer to the Computer Technology Industry Association, a trade association for the computer industry based in Lombard, Illinois.

CellularVision

An LMDS "wireless cable" provider in the New York metropolitan area. CellularVision holds a patent for its LMDS technology and is the first company to commercially deploy an LMDS system.

Central Office (CO)

Telephone company facility where subscribers' lines are terminated and joined to other switching equipment, enabling local and long-distance calls. In the U.S., a CO can serve as few as 5,000 subscribers and as many as 100,000. There are five different classes of central offices:

Class 5 = an end office (i.e. local exchange)
Class 4 = a toll center
Class 3 = a primary switching center
Class 2 = a sectional switching center
Class 1 = a regional switching center.
Also called end office.

Central Processing Unit (CPU)

Part of the computer that performs the logic, computational and decision-making functions. The CPU is the heart of a computer and includes the arithmetic logic unit, the control unit, and other essential components. It interprets and executes instructions as it receives them. It is often called the central processor or simply the processor. In the PC industry, there are two dominant standards: the Intel 80x86 family and the Motorola 68000 series. Numerous chip makers clone these processors, but only a few (notably DEC with its Alpha chip) have developed their own architectures. The Intel family of 80x86 CISC processors today holds roughly 85% of the world market. The Motorola 68000 family holds 15% of the world market, and is mainly used in Apple computers.

The rapid increases in CPU power and speed have accellerated the information revolution more than any other development. Intel 8080 microprocessor was introduced in 1974 and often called the "first" microprocessor. An 8-bit (1byte) microprocessor containing 5,000 transistors, it was used in computers like the MSAI 8080 and the Commodore 64.

Intel's 8088 processor came into the market in 1979. It had 29,000 transistors and a 16-bit data bus. It drove the original IBM PC and the IBM XT with a clock speed of 4.77 MHz.

32-bit computers, processing four bytes (32 bits) of information simultaneously, arrived with the Intel 80386DX and the Motorola 68030. These microprocessors use a true 32-bit external data bus and support 32-bit peripherals.

CERN

See Centre European pour Recherche Nucleaire.

certificate object

Object storing a public-key certificate.

channel

Path or frequency along which a communications signal is transmitted. By multiplexing several channels into one, one channel can carry on several simultaneous exchanges.

character

Any coded representation of an alphabet letter, numerical digit, or special symbol.

Characters Per Second (CPS)

Measure of the rate of data transmission of stop and start bits that gives a more realistic measure of transfer rates than bits per second (bps). With a 9600 bps modem, transfer rates of 850 characters per second are typical. With v.32bis or HST/DS modems, rates of 1700 characters per second are possible.

chatting

A network-based style of communication that allows people to approximate "chat" by typing messages to each other in real time. Chatting is a text-based simulation of conversing on a party line and has become one of the most popular on-line activities. See Internet Relay Chat.

checksum

Mechanism for error detection used in communication transfer protocols such as ZMODEM, XMODEM and KERMIT. Checksums are inferior to cyclic redundancy check (CRC) as a means of error detection.

chip

Integrated circuit that serves as the physical structure on which other integrated circuits are fabricated as components. Chips are typically finger-nail size silicon plates that contain up to several million circuits and electronic elements. A group of integrated circuits designed for a specific function (e.g. compression) are known as a chip set. A chip set integrates the function of a number of discrete elements on a smaller number of chips.

chromakey

System that enables two or more video images to be combined into a single, composite image using the principle of color keying. Chromakeying effectively renders one or more colors transparent, so that other images may be displayed in their space. Chromakeying is most commonly encountered in television weather forecasts, where the weather person stands in front of a map and discusses the movement of storm fronts across the map. The weather broadcaster is actually standing in front of a blank screen and chromakeying is used to insert the animated graphic of the weather map into the blank area.

churn

Term used to describe the turnover of customer subscriptions. Churn is particularly noticeable in the cellular telephone, beeper and on-line businesses where users continually drop their monthly subscriptions. Sometimes the churn rate is as high as 2% or 3% per month. In the cable TV industry, the rate is based on a formula that accounts for subscriber connects, disconnects, upgrades, and downgrades. A high churn rate is costly to companies since it means they are continuously spending money to attract new customers.

CISC

See Complex Instruction Set Computer

class

The fundamental structure in Java. It corresponds to a struct in C.

client/server

Term used to describe the latest configurations of distributed computing where processing is shared by local and remote computers. With a client/server system, the work load is split between PCs and one or more larger computers on a network. The computer on which the information resides is called the server. The computer that a user uses to request information or applications is known as the client. Each client program is designed to work with one or more specific kinds of servers and specific servers require specific kinds of clients. A World Wide Web browser is an example of a Web client. At a general level, a telephone is a client and the telephone company is the server.

clock

In data communications, a device that generates precisely spaced timing pulses (or the pulses themselves) used for synchronizing transmissions and recording elapsed times.

clusters

A group of hardware items connected to a common controller.

coaxial cable

Cable that consists of an outer conductor concentric with an inner conductor. The two conductors are separated from each other by insulating material. Coaxial cable, often simply called "coax," is typically used by cable television systems. It has greater bandwidth than twisted-pair copper wire, which telephone companies typically use in the portion of the telephone system that is nearest to subscribers (i.e. the local loop).

COBOL

Common Business Oriented Language. Programming language that is specifically designed for banking and business applications.

code

Specific way of using symbols and rules to represent information.

Codec

Acronym for CODer-DECoder. Device in a telephone network that converts voice from analog to digital form so it can be understood by PBXs and digital transmission systems. Also converts digital signals back to analog.

Code Division Multiple Access (CDMA)

Spread-spectrum approach to digital transmission. With CDMA, each conversation is digitized and then tagged with a code. The mobile phone is then instructed to decipher only a particular code to select the correct conversation from the signal.

color complement

Image created by replacing each color in the original image with its complement.

colored memory

A memory allocation scheme enabling a system to recognize different memory types and reserve areas for special purposes. This allows applications to ask for a specific type of memory (for example, graphics memory).

Color Look Up Table (CLUT)

Array or table of data containing numerical values for all of the colors represented in an image. CLUTs can be used to manipulate and compress color images.

Comite Consultatif Internationale des Radiocommunications (CCIR)

Standards-setting body that is part of the ITU and based in Geneva. Also called ITU-RS.

Comite Consultatif Internationale de Telegraphie et Telephonie (CCITT)

International Telegraph and Telephone Consultative Committee, an organization that sets international telecommunications standards such as the v.32 and v.42 modem standards and Group III and Group IV fax standards. It is a suborganization of the United Nations that sets up international mandatory standards for telecommunications services. Also called ITU-T.

common carrier

Company that is "affected with a public interest" and thus holds itself open to the general public and serves all comers equally. Common carrier is often used to describe companies that provide telecommunications services to the general public. A common carrier cannot refuse to serve you, your information, or your freight as long as you conform to the rules and regulations as filed with state or federal authorities. Companies that are common carriers are typically required to submit to significant regulatory scrutiny.

common part convergence sublayer

The portion of the convergence sublayer of an AAL remaining the same regardless of the traffic type.

Communications Act of 1934

United States federal statute that establishes telecommunications goals and guidelines and creates the authority for the Federal Communications Commission (FCC) to regulate interstate and international communications. For more information on this and other FCC statutes visit the FCC.

Complex Instruction Set Computer (CISC)

Microprocessors that use a very extensive instruction set of 100 to 400 machine instructions. Characteristic of CISC is the micro-encoding of the machine instructions. The Intel 80x86 family and the Motorola 68000 family are the two most common examples of CISC chips.

Complimentary Metal Oxide Semiconductor (CMOS)

Technology used for semiconductor elements with very low power consumption. CMOS RAM is memory that contains a PC's configuration information such as the type of hard disk and motherboard. CMOS RAM must have continuous power to preserve its memory when the computer is turned off. This power is typically supplied by a lithium battery.

composite privileges

Combination of two or more privileges. These can be either pre-defined composite privileges or user-defined composite privileges.

compression algorithm

Process used to compress or reduce digital data for transmission or storage. Common compression algorithms include LZW, the Lempel-Ziv-Welsh algorithm used for lossless data compression, and MPEG-2, the digital video compression standard. The more effective the compression algorithm, the higher the compression ratio (the factor by which data can be compressed). It typically takes longer to compress data than it does to decompress data. Examples of digital compression include MPEG, JPEG, fractals and wavelets.

Computer Business Equipment Manufacturers Association (CBEMA)

Lobbying group for computer equipment manufacturers.

conditional access

Digital Television service providers who offer optional services such as premium channels (HBO) or pay-per-view need a method of limiting access to any or all of their services. Different implementations of conditional access facilitate this. Popular methods involve key-encryption and scrambled data. In some deployments, the customer inserts a SmartCard into the device and the conditional access software will work with information on the card to authorize the service and to optionally descramble the data if needed. The information on the SmartCard can be update to reflect changes in service.

conditional access table

Associates one or more (private) entitlement management message streams each with a unique PID value. See ISO/IEC International Standard | Recommendation 13818-1.

CONFIG macro

Used when creating the `init` module to determine six or more system-dependent variables, including `MainFram`, `SysStart`, `SysParam`, `SysDev`, `ConsolNm`, and `ClockNm`.

Configuration Description Block (CDB)

OS-9 module/text file that describes the functional hardware configuration of a system. The CDB contains one entry for each device on the system. This block of data defines the name and characteristics of each device on your system. Applications use this data to achieve a level of hardware independence.

connection

An ATM connection consists of concatenation of ATM Layer links in order to provide an end-to-end information transfer capability to access points.

connection oriented data

Data requiring sequential delivery of its component protocol data unit to ensure correct functioning of its supported application, (voice or video).

connectionless

Refers to ability of existing LANs to send data without previously establishing connections.

connectionless service

A service allowing the transfer of information among service subscribers without the need for end-to-end establishment procedures.

constant bit rate

An ATM service category supporting a constant or guaranteed rate to transport services such as video or voice as well as circuit emulation requiring rigorous timing control and performance parameters.

content provider

Owner or licensee of content or programming. Paramount and Viacom are classic examples of content providers. Microsoft is both a software developer and a major content provider. Boundaries between content providers and software developers are blurring as their end products become more entwined. For example, the Microsoft Encarta CD-ROM encyclopedia is a software application that contains a substantial amount of content.

context object

Private data structures that hold a group of parameters for performing a certain class of operation. For example, the text context holds information such as the font and the destination drawmap to use when drawing text.

Context objects hide the implementation specific details and also provide a way to perform pre-processing on the current settings. This pre-processing speeds up the operations that use the context.

control channel

A bidirectional, low-bandwidth, encoded serial link that carries commands, requests, events, or small data packets between the server and set top boxes.

convergence sublayer

The general procedures and functions converting between ATM and non-ATM formats. This describes the functions of the upper half of the AAL layer. This is also used to describe the conversion functions between non-ATM protocols such as frame relay and ATM protocols above the AAL layer.

coprocessor

Microchip specifically designed for a certain CPU to enhance or support the functions of that CPU. Early members of Intel's 80x86 family of microprocessors required a math coprocessor to enhance the mathematical capabilities of the CPU. The coprocessor is sometimes referred to as a "processor extension."

coreboot

Boots the sstem up to the OS-9 boot menu on the target. Coreboot is the ROMore image merged with several low-level system modules. See also bootfile.

CPCS

See common part convergence sublayer.

C programming language

Very flexible programming language that is close to the machine while still incorporating several elements of a high-level language. One characteristic of C is that there are almost no reserved names and commands. Instead, all sophisticated commands that are known from other languages are implemented in the form of function libraries. C operates under UNIX, MS-DOS and a number of other operating systems. It is used for creating many commercial software applications and can be used for programming telecom switches.

CRM

See cryptographic registry module.

cryptographic device module

Module acting as a cryptoki token to perform cryptographic functions

cryptographic registry module

Module containing a list of all cryptographic device modules on a system.

cryptography

Enciphering and deciphering data in code to ensure confidentiality.

cryptoki

A cryptographic token interface defined by PKCS-11 Cryptographic Token Interface Standard

CSD

Configuration Status Descriptor.

C shared library (CSL)

Reduces the size of applications at a slight cost in speed.

CUG

Closed User Group.

Customer Premises Equipment (CPE)

Computers and household telephone equipment, such as phones, fax machines, modems, and eventually set-top boxes for video signal processing that interconnect with the network at the customer's premises or (if collocated on telco premises) that are owned by someone other than the telco itself. Equipment employed on the premises of a person (other than a carrier) to originate, route, or terminate telecommunications.

customization module

A customization module complements or changes the existing OS-9 standard system calls. OS-9 searches for these modules at start-up; they are usually found in the bootfile. If found, customization modules are executed in system state.

Cyclic Redundancy Check (CRC)

Family of redundant codes that can efficiently detect data errors. CRC is used widely in data recording and data communications. CRC is sometimes referred to as cyclic redundancy code.

D

d_maxage

Defines a maximum age for processes. `d_maxage` is a system global variable initially set in the `init` module. See init module and system global variable.

d_minpty

Defines a minimum priority below which processes are neither aged nor considered for execution. Processes with priorities less than `d_minpty` remain in the wait queue and hold any system resources that they held before `d_minpty` was set. `d_minpty` is a system global variable initially set in the `init` module. See init module and system global variable.

d_tcksec

A system global variable containing the number of ticks per second. When this value is changed, the hardware must be reinitialized. See system global variable.

d_tslice

A system global variable containing the number of ticks per time slice. See system global variable.

daemon

A process that runs in the background and performs a specified operation at predefined times or in response to certain events. Typical daemon processes include print spoolers, e-mail handlers, and other programs that perform administrative tasks for the operating system.

data communications

Transmission of encoded information by an electrical network system.

data module

A type of module used for shared variable storage by two or more processes. A data module must have a valid cyclic redundancy check and module header. A data module can be modified by several processes. See also memory module.

DAVIC

Digital Audio/Visual Interactive Committee. A standards body/group for standards.

DAVID

Digital Audio Video Interactive Decoder. This is a package of system software based on Microware's OS-9 Real-Time Operating System software that allows manufacturers to port to new hardware and offer the ability to create application programs to execute on the device.

DAVID is a full package offering easy to port code to address most of the needs of the device manufacturer. DAVID offers more finished software so there is less left to the manufacturer to develop, resulting in lowered costs and quicker time to market.

DAVIDlite

This package was previously offered as a scaled down version of the DAVID package to address the reduced needs of manufacturers of less sophisticated, or receive only devices. It offered a lower initial cost and lower royalty rates than DAVID did.

Today we offer only one DAVID OEM package but there are two royalty rates to reflect the actual usage of the device.

DBE - Digital Broadcast Environment

DAVID DBE packages include integrated software solutions for ATSC and DVB standards that are designed to take advantage of the advanced architecture of DAVID.

These two packages are natural add-ons to DAVID for manufacturers who want to make devices for these two market standards.

DCE

Data Circuit-terminating Endpoint.

DCH

Data Channel communications path.

deblocking drivers

Deblocking drivers reorganize physical disk sectors into the logical sectors that RBF requires.

decibel (dB)

Unit for stating the logarithmic ratio between two amounts of power. It can be used to express gain or loss without reference to absolute quantities. dBm is a decibel referenced to 1 milliwatt: 0 dBm = 1 milliwatt, with a logarithmic relationship as the values increase or decrease.

default system device

Refers to the system device (such as disk or RAM) that stores information and programs used by a computer. The OS-9 mnemonic for this device is /dd.

delta

The set of differences between one revision of a work file and its immediate ancestor.

demodulation

Process of retrieving an original signal from a modulated carrier wave. This is the technique used in data sets to makes communications signals compatible with business machine signals. See also Modem.

demultiplex

To separate two or more signals previously combined by compatible multiplexing equipment. The device that pulls the streams of data out of a larger data stream is called a "demultiplexer" or DEMUX.

demultiplexer

A hardware device (or software simulator) that transforms the MPEG input data stream into the form the output devices can consume. In most cases, it means demultiplexing the input transport streams, parsing the stream underlying the transport system level, PES packet level, notifying the events related to both input and output devices, and passing the data to the output devices.

Demultiplexer Manager

See DUXMAN

demultiplexing

A function performed by a layer entity identifying and separating SDUs from a single connection to more than one connection.

DENC

Digital Encoder. In a set-top box, all of the video and graphics information is in digital format. In order to display that on an analog device such as a standard television, the signal needs to be converted from digital to analog. This is the function of the DENC hardware in a set-top box.

DENC hardware can also support Closed Captioning and Anti-taping technologies. Both of these capabilities are supported by DENCMAN.

DENCMAN

This is the DAVID software component that controls the DENC hardware, supplying the video signal to the television.

destination address

Information sent in the forward direction indicating the address of the called station or customer.

device arbitration

A method used for sharing a device between multiple applications. MAUI devices support a simple arbitration scheme where the last path opened to a device is the one that controls it. When that new path is closed, control reverts back to the path that had control before the new path was opened.

device descriptor

A description of the attributes of a device. All device descriptors contain basic information such as:

- device address
- interrupt vector
- IRQ (interrupt) level and priority
- associated file manager
- valid access modes
- device name
- initialization table

device descriptor module

A type of module that contains the identification and initialization values for a specific I/O device. The name of the device descriptor module is also the logical name by which the device is referred to by the software.

device driver module

Handles the basic physical I/O functions for specific I/O controllers. A device driver operates on the actual hardware device, sending data to and from the device on behalf of the file manager. See file managers.

device list

A linked list of device list entries. A device list entry contains pointers to various static storages and other data elements in use on the device. The structure definition of a device list entry is defined in the io.h header file.

device manager

A device driver that performs functions on behalf of other drivers in the system and does not have its own file manager. It has a device descriptor and a data module for global storage of the device manager. It interfaces an API to other device drivers.

device status descriptor

An entry in the configuration status descriptor (CSD). Each DSD consists of a name, a type, and a list of parameters that describe the functional capabilities of the device.

dial tone or dialtone

Signal (350 - 440 Hz) from a switch at the local exchange carrier indicating that telephone service is live and prepared to accept the number that a customer dials. When a PBX is used, the dial tone is provided by the PBX.

dial-up

Connection made between computers using phone lines and modems. Often, dial-up only refers to the kind of connection made when using a terminal emulator and a regular modem (switched character-oriented asynchronous communication). The term can also refer to a port that accepts dial-up connections. A dial-up connection is often called a "dial-up line." Likewise, an on-line service or Internet provider that offers dial-up connectivity is said to offer "dial-up service."

digital

Divided into discrete, discontinuous steps. A digital signal can only reach certain values on a scale but no intermediate values. When viewed on an oscilloscope, a digital signal is "squared." This compares with an analog signal, which typically looks more like a sine wave. In data communications, digital refers to the binary (off/on) output of a computer or terminal. Modems convert the pulsating digital signals into analog waves for transmission over conventional analog phone lines.

Digital Audio/Visual Interactive Committee

DAVID. A standards body/group for standards.

Digital Audio/Video Interactive Decoder

See DAVID.

Digital Loop Carrier (DLC)

Term to describe fiber component of the local telephone network. DLC systems are deployed between central offices and access nodes, from which copper lines run to the end-user. As of 1995, between 5 and 10% of all lines are served by DLCs, as are roughly 50% of all new lines built each year.

Digital Signal Processor (DSP)

Specialized digital microprocessor that performs calculations on digitized signals that are originally analog (such as voice). There are two main advantages of DSPs. First, they have powerful math computation abilities, much greater than normal computer microprocessors. Sophisticated math computation skills are necessary to manipulate analog signals. For example, when DSPs are used to compress video signals, each sample must be examined and compressed individually.

The second advantage of a DSP lies in the programmability of digital microprocessors. Just as digital microprocessors have operating systems, DSPs are acquiring their own operating systems. Analog Devices, AT&T, Motorola, and NEC are leading manufacturers of DSPs. New manufacturers such as MicroUnity will introduce revolutionary DSPs in 1996 or 1997, which may dramatically alter the telecommunications industry. DSPs are already a chief means of grafting the impact of Moore's Law onto telecommunications capabilities.

Digital Storage Medium Command and Control (DSM-CC)

A messaging format that provides a high-speed media communications path for true and real-time video-on-demand.

digital subscriber line

Disc label information in the first track of the disc specifying disc type and format.

digital television

A television network that transmits digital, as opposed to analogue, television signals. Digital television enables interactivity and provides improved capacity and picture quality.

digital to analog conversion

Circuit that accepts digital signals and converts them to analog signals. A modem typically has such a circuit.

digital video

Video stored or transmitted in a digital format. Several digital video formats exist, but MPEG-2 is quickly becoming an industry standard. Other standards include Microsoft's Audio/Video Interleaved (AVI) and Intel's Digital Video Interactive (DVI).

Digital Versatile Disc

New standard for digital, full-length movies encoded on CDs. Aims to replace video cassettes, laser discs, CD-ROMs, and audio CDs. The erasable format will be set at 2.6 GB, and the write-once, CD-Recordable version will start off at 3.8GB, although this format is expected to increase to 4.7 GB. The mainstream ROM version will hold 4.7GB of data with a provision for doubling to 8.5GB using double layering, a 3M technology adopted by Sony/Philips. Another combination of technologies, may eventually increase the ROM version to 17 GB of storage capacity. At 4.7GB, a single disc can store a two-hour movie using the MPEG-2 compression standard. DVD is expected to make its commercial debut in late 1996 or early 1997 and is not expected to have a real commercial impact until mid-1997 at the earliest. Also see Compact Disc.

digital watermark

An invisible identification code permanently embedded into data as a means to prevent piracy or fraud.

Direct Broadcast Satellite (DBS)

System of transmitting digital video directly to the home by a 200-watt, high-powered satellite for reception by small, relatively inexpensive antennas. Programming transmitted or broadcast by satellite directly to the subscribers' premises without the use of ground receiving or distribution equipment, except at the subscribers' premises or in the uplink process to the satellite. Also sometimes called Direct Satellite Service (DSS) or Direct-to-home satellite service. Hughes Electronics's DirecTV is a well-known DBS service provider.

discrete mode

When the remote pointer is in discrete mode, the cursor control characters update the coordinate position of the pointer and pass those characters to an input buffer that the application can read.

disk allocation map

A data structure on each OS-9 disk indicating which blocks have been allocated to files and which are free. Each bit in the allocation map represents a block on the disk.

dispatch manager

Set of functions that receive messages from the user and transfer the messages to the appropriate call-back functions.

display screen manager

Subroutine module that provides multi-tasking execution of graphics applications, full-featured message sending and receiving, functions for inter-process communication, complete graphics cursor management based on locations within the display, and support for premastered, advanced local special effects.

DOCSIS

Data Over Cable Service Information Specification. Cable Television Laboratories, Inc., (CableLabs) and the cable television industry have defined a complete set of internal and external interface specifications associated with the delivery of data over cable. The Data Over Cable Service Interface Specifications ("DOCSIS") internal interfaces include those that are required for interoperability of cable modems with head-end equipment. External interfaces include those that insure interoperability of cable modem systems with external networks and operation and business systems. These interface specifications enable the definition, design, and development of data-over-cable systems on a uniform, consistent, open, multi-vendor, interoperable basis.

downstream

Transmission on a network that is traveling away from a central distribution point toward the end user. Downstream network capacity is usually significantly greater than upstream capacity.

DRAM (or Dynamic RAM)

Directly accessible memory where the information is usually stored in the form of charges in a capacitor. Because all the capacitors are gradually discharged by leak currents, the storage capacitor, and therefore the whole DRAM, must be periodically refreshed, hence the name dynamic.

DSA

Digital Signature Algorithm defined in FIPS PUB 186

DSC

Decoder System Clock.

DSD

Device Status Descriptor. An entry in the Configuration Status Descriptor (CSD). Each DSD consists of a name, a type, and a list of parameters that describe the functional capabilities of the device.

DSL

Broadband transmission technology using digital filtering to remove noise from twisted-pair copper lines. There are several varieties of DSL using varying hardware, modulation software, and compression techniques.

DSM

See display screen manager

DSM-CC

See Digital Storage Medium Command and Control DSM-CC

DTE

Data Terminal Endpoint.

DTMF

Dual Tone Multi-Frequency tones.

DTS

Decoding Time Stamp.

duplex

Capable of transmitting data in both directions simultaneously. A telephone conversation is duplex since two people can talk at the same time.

DUXMAN

DUXMAN is a software product within DAVID that controls the MPEG transport stream demultiplexing hardware in the set-top box. This product contains some of the characteristics of a hardware driver and some of the characteristics of a file manager. Typical uses of DUXMAN are to control which MPEG audio and video packets get forwarded to the MPEG decoding hardware and also register to receive private data in the stream and make it available to programs operating in the CPU.

DVB

Digital Video Broadcast. The Digital Video Broadcasting Project (DVB) includes over 220 well known organizations in more than 30 countries worldwide.

Members include broadcasters, manufacturers, network operators and regulatory bodies, committed to designing a global family of standards for the delivery of digital television. DVB-compliant digital broadcasting and reception equipment for professional, commercial and consumer applications is widely available on the market, distinguished by the now instantly recognizable DVB Logo.

Numerous broadcast services using DVB standards are now operational, in Europe, North and South America, Africa, Asia, and Australia.

DVD

See Digital Versatile Disc.

dynamic update

This refers to OS-9 and DAVID's ability to update software on the device while it is running. OS-9 was designed to allow for this. Our customers are then able to improve or fix devices after they are deployed. This is a big advantage for devices that have long lives and are used by customers who will not expect to bring the device to an inconvenient service center for updates.

E

E.164

A public network addressing standard utilizing up to a maximum of 15 digits. ATM uses E.164 addressing for public network addressing.

EBS

Emergency Broadcast System.

EmbeddedJava

EmbeddedJava consists of core and standard extension APIs, and is designed specifically for severely resource-constrained environments. EmbeddedJava includes a feature level subset of Java and is used to run a variety of products including mobile phones, pagers, process control, instrumentation, office peripherals, and networking routers and switches. See permanent virtual channel connection.

encoder

The device at a digital video headend or digital production facility that compresses the broadcast signal and modulates it for digital transmission. At the consumer end, a decoder (built into the TV) demodulates the signal and provides analog, decompressed signal for display.

encryption

The manipulation of data into a form unreadable by anybody except the sender or recipient. See also Public Key Encryption and PGP.

end station

Enables the communication between among ATM end stations or ATM end stations and end stations on legacy LAN.

end user

An individual, business, or organization that uses products.

Enhanced Pay-Per-View

See Near-Video-On-Demand.

environment variables

OS-9 keeps strings of characters available in memory for use by programs. Each string value is associated with an environment variable.

equal access

Concept of allowing telephone subscribers access to different carriers (typically long-distance telephone carriers) with equal ease and connection quality. One of the effects of the Modified Final Judgment (MFJ), which broke up AT&T, was to provide U.S. long distance customers with equal access to carriers.

Erasable Programmable Memory (EPROM)

Programmable, read-only memory that can be programmed and erased using irradiation by UV light. EPROMS are mainly implemented with FAMOST technology.

error-rate

Ratio of incorrectly received data (bits, elements, characters, or blocks) to the total amount of data transmitted. See also bit error rate.

Ethernet

Baseband LAN marketed by XEROX and developed jointly by XEROX and Intel. Ethernet is a networking standard running at a maximum speed of 10 Mbps. Ethernet connections, even between only two hosts, require use of T-connectors and terminators for proper operation. Since Ethernet uses the Carrier Sense Multiple Access with Collision Detection (CSMA/CD) access method, heavy traffic can result in an excessive number of collisions and degraded network performance. Several different types of wiring support different communications speeds ranging from 2 to 10 Mbps. The core function of Ethernet is to determine the way computers on the network decide whose turn it is to talk. Computers using TCP/IP are frequently connected to the Internet over Ethernet.

extens

The offset to the list of customization modules to be loaded at startup. This offset is located in the `init` module.

extension module

Enhance OS-9 capabilities when added to the system at boot time. Extension modules provide a convenient way to install a new system call or collection of system calls. The kernel calls the modules at boot time if their names are specified in the extension list of the init module and the kernel can locate them in memory.

exception

A special hardware control signal that diverts the attention of the computer from the main program because of a particular event, signal, or set of circumstances.

external cache

Implemented as a fast access memory array that resides between the processor and (slower) system memory.

F

fast block-move

Process of quickly moving blocks of contiguous memory from one location to another.

Federal Communications Commission (FCC)

Primary federal regulator of telecommunications in the U.S. The FCC derives its authority from the Communications Act of 1934 and was set up to regulate both common carriage and broadcast. Title I of the act established the FCC as an independent federal agency reporting directly to Congress. The Commission is broadly empowered to regulate "interstate and foreign commerce in communication by wire and radio so as to make available to all the people of the United States, so far as possible, a rapid, efficient, nationwide, and worldwide wire and radio communication service with adequate facilities at reasonable charges...." To learn much more about the FCC, visit its Web site at http://www.fcc.gov.

FD

See file descriptor block.

feed

Term generally used to describe signals supplied to satellite uplink terminals or signals received from a satellite downlink.

feeder

Portion of the cable TV or telco network to which subscribers are connected. For cable TV, the feeder is a group of wires, usually 25-pair or multiples of 25-pair in a single cable sheath. These cables may or may not be terminated with a connector at both ends. Feeder cable is sometime used to mean backbone wiring. Bellcore defines it as a large pair-size loop cable emanating from a central office and usually placed in an underground conduit system with access available at periodically placed manholes.

Feeder Distribution Interface (FDI)

Interface that splits and distributes signals from a fiber trunk into multiple fiber feeders.

Fiber Distributed Data Interface (FDDI)

Set of ANSI/ISO standards that define a high-speed (100 Mbps) local area networking standard using fiber optics as the transfer medium. FDDI is a powerful improvement of the Token Ring with a maximum length of 100 to 200 kilometers and a total of 500 to 1000 stations. The two-core fiber provides two rings: a primary ring and a secondary ring, where the secondary ring is operated as a backup for reliability reasons.

Fiber In The Loop (FITL)

Architecture term used in telephony circles to describe any networks in which fiber is used between the central office and customer premises, (e.g. the portion of plant known as the loop). This part of the network has the highest cost since economies of scale are limited.

fiber miles

Miles of actual fiber strands deployed in a network. Since multiple strands are bound in a sheath, fiber miles is usually a multiple of the sheath, or route miles, deployed.

fiber-optic cable

Glass fiber cable used to carry large volumes of data transmitted by laser pauses. Light transmission through optical fibers is used for communication or signaling. Fiber-optic cable is a relatively long thin strand of transparent substance, usually glass, capable of conducting an electromagnetic wave of optical wavelength with some ability to confine the lightwaves to its interior by means of interior reflection. The first field trial of an AT&T fiber-optic system took place in 1977. Since then the technology has continued to improve dramatically in capability and to decrease in cost.

fiber-optic transmission system

System used to transmit data over fiber-optic cable using light sources, optical fiber strands and light detectors. A light source is rapidly switched on and off in a way that corresponds to a code representing the message to be translated; the light source(s) are switched through glass fibers and received by a detector (solid state diode). Diodes convert the light signals back into electronic signals so that the message is reconstructed. Regenerative repeaters can be used to increase the transmission distance.

Fiber-to-the-Curb (FTTC)

A broadband architecture in which fiber-optic lines are extended deep into the neighborhood and past every home while twisted-pair copper or passive coaxial drops carry signals to and from homes. In this topology, Optical Network Units (ONUs) perform optical-to-electrical signal conversion for clusters of eight to twelve homes.

Fiber-to-the-Home (FTTH)

Ideal advanced topology for bringing broadband services to customers. Replacing traditional twisted-pair copper drops with fiber enables bandwidth-intensive services such as high-definition television (HDTV). Though installation costs are falling, fiber-to-the-home is still prohibitively expensive.

Fiber-to-the-Serving Area (FTSA)

Network architecture in which fiber is run to a neighborhood node, from which point coaxial or twisted-pair copper feeders run to the customer premises. Optimal node size has decreased in recent years from 2,000 homes to 400 to 500 homes.

Fido/FidoNet

One of the earliest types of bulletin board services (BBSs). The original FidoNet BBS software was invented by Tom Jennings in 1984. Fido BBSs communicated with each other via dial-up connections using FidoNet protocols.

FIFO

First In, First Out.

file descriptor block

A sector containing a list of the data segments with their starting logical number blocks (LBNs) and sizes. Information such as file attributes, owner, and time of last modification is stored here. This block is used only by the system and is not directly accessible by the user. See logical block number.

file managers

Process the raw data stream to or from device drivers for a class of similar devices. They make device drivers conform to the OS-9 standard I/O and file structure by removing as many unique device operational characteristics as possible from I/O operations. They are also responsible for mass storage allocation and directory processing, if applicable, to the class of devices they service.

File managers usually buffer the data stream and issue requests to the kernel for dynamic allocation of buffer memory. They may also monitor and process the data stream.

File managers are re-entrant. One file manager may be used for an entire class of devices having similar operational characteristics. OS-9 can have any number of file manager modules.

file pointer

An indicator of where the next access in a file will occur.

file server

Device on a local area network (LAN) that stores and serves files to other computers on the LAN. A file server allows everyone on the network to retrieve files in a single place. File servers typically combine data management software with a large amount of storage capacity. The term file server is often used to describe a computer that has a large amount of RAM and an array of hard drives to support these function on the network. See also Client/Server.

File Transfer Protocol (FTP)

Protocol that defines the way in which files are exchanged around the Internet. FTP also refers to the name of the application that uses the FTP protocol.

fill-out forms

HTML tags that were added to HTML 2.0 to enable documents to display interactive elements used on forms, such as radio buttons, checkboxes, and text-entry boxes.

finalizer

A method called just before an object is reclaimed by the garbage collector. A finalizer method should release any system resources (other than memory) held by the object.

finger

UNIX application that shows information about all of the users logged on to a system. On the Internet, the finger command is a useful way to find out information about a particular user. By typing "finger username@host.com" at a UNIX prompt, users can learn the full name, last login time, idle time, terminal line, and terminal location of "username."

firewall

Barrier set up to contain designated LAN or Internet traffic within a specified area. Firewalls function as security enhancement devices and have their packet-gatewaying facilities disabled in an attempt to protect internal networks from intrusion by unauthorized users. Firewalls are most often used to protect Internet users from accessing corporate networks. However, as more companies deploy internal Internets, or Intranets, internal firewalls, which restrict access from within a company, are becoming more popular. For more information on Internet firewalls visit Raptor Systems, one of the leading vendors.

Firewire

See IEEE1394.

Fixed Satellite Service (FSS)

Radio communication service between earth stations located at specified fixed points which uses one or more satellites. In some cases, this service includes links between satellites.

flame

A critical, emotional, or angry on-line attack. Readers of many USENET newsgroups have experienced numerous flame wars between angry -- often irrational -- newsgroup posters. Flame can also be used as a verb, as in "to flame someone." People who flame are known as "flamers."

FLASH

A type of non-volatile memory that can be erased, typically in sectors, and reprogrammed.

FM

See Frequency Modulation.

fork

Activate a new process (for example, a shell).

FPCP

Floating Point Co-Processor (for example, 68881 or 68882).

FPS

Frames per second.

fractal compression

Objects or patterns coded into algorithms, which reveal increasing detail as they are magnified. Fractals are the basis of an effective compression technique that can produce extremely high compression ratios. Fractal compression is an asymmetrical technique that shrinks an image into extremely small, resolution-independent files by storing it as a mathematical equation. The underlying mathematics are based on fractal geometry.

frame

In data communications, a frame is generally a logical transmission unit. A frame usually contains its own control information for addressing and error checking. It is considered the basic data transmission unit employed in bit-oriented protocols.

In video, a frame is a complete video image, consisting of two fields. Each NTSC frame is made up of 525 scan lines, half of which are allocated to each field. For full motion video, frames are transmitted at the rate of 30 per second. The European PAL standard dictates frames of 625 scan lines sent at the rate of 25 per second.

On the Internet, frames refer to a method of displaying information in Web browsers so that multiple boxes, each with its own scroll bars, appear on a single screen. Netscape introduced frames in the second version of its popular Netscape Navigator software.

frame grabber

Typically an add-on board or a peripheral for a personal computer that allows single frames to be captured and digitized from an analog video feed such as a VHS tape or a camcorder. A frame grabber is sometimes called a video digitizer.

frame relay

Form of packet switching that uses smaller packets and requires less error checking than other forms of packet switching. Frame relay is very good at efficiently handling high-speed, bursty data over wide area networks. To learn more about frame relay, visit the Frame Relay Forum, an organization of frame-relay equipment vendors and service providers.

franchise

Government-granted right or license to provide a service, such as cable TV (CATV) service. CATV franchises are typically granted to CATV operators by local governments in exchange for franchise fees, which are usually a percentage of the CATV operator's revenues.

frequency

Number of cycles per unit of time, denoted by Hertz (Hz). Thus, 1 Hertz = 1 cycle per second. Frequency is also a measure of energy, as one or more waves per second in an electrical or lightwave information signal.

frequency band

Portion of the electromagnetic spectrum within a specified upper- and lower-frequency limit. A frequency band is sometimes called a "frequency range." The FCC restricts different broadcast services (e.g. cellular telephones, broadcast TV, broadcast radio etc.) to specific frequency bands to eliminate potential conflicts and minimize interference.

Frequency Division Multiplexing (FDM)

Technique in which the available bandwidth of a circuit is divided by frequency into narrower bands with each used for a separate voice or data transmission channel. FDM was once the most common method of multiplexing long-haul connections when they were transmitted using analog microwave signals. Today's fiber-optic trunks use time division multiplexing (TDM).

Frequency Modulation (FM)

Use of various frequencies to convey an analog or digital signal. With frequency modulation, the frequency of the carrier is varied according to the amplitude of the transmitted signal. FM radio is an example of frequency modulation.

frequency reuse

Ability to use the same frequencies repeatedly within a single system, made possible by the basic design approach for cellular. Since each cell is designed to use radio frequencies only within its boundaries, the same frequencies can be reused in other cells not far away with little potential for interference. Reuse of frequencies is what allows a cellular system to handle a huge number of calls within a limited number of channels. Frequency reuse also performs a similar function in hybrid fiber/coax (HFC) broadband networks, where each of several coaxial trunks feeding into an optical network unit use the same set of frequencies, thus increasing the total number of channels available along each coaxial trunk.

Frequency Shift Keying (FSK)

Type of modulation used in 300 bps modems. FSK is the most common form of frequency modulation, in which the two possible states (1/0) are transmitted as two separate frequencies.

Frequently Asked Questions (FAQs)

List of frequently asked questions and their answers. Often found on Websites and in USENET newsgroups. FAQs can be a valuable tool for quickly learning about new subjects.

FSN

See Full-Service Network (FSN).

FSS

See Fixed Satellite Service (FSS).

FTP

See File Transfer Protocol (FTP).

FTSA

See Fiber-to-the-Serving Area (FTSA).

FTTC

See Fiber-to-the-Curb (FTTC).

FTTH

See Fiber-to-the-Home (FTTH).

full duplex

Term used to describe communications systems or components capable of transmitting data simultaneously in two directions.

full-motion video

Video displayed by a multimedia system at rates approaching 30 frames per second (in the U.S.) or 25 frames per second (in the U.K.). Full-screen, full-motion video is used to describe systems that have the necessary capacity and processing power to display full-screen images at full motion video rates.

Full-Service Network (FSN)

Term used to describe a broadband network capable of supporting a wide range of interactive services, including switched video-on-demand. Time Warner coined the phrase with its high-profile advanced hybrid fiber/coax (HFC) network trial in Orlando, Florida.

G

gateway

Program or device that passes information between networks or applications. A gateway can communicate using two protocols and translates services between the two networks. A mail gateway, for example, translates mail sent from one network into messages traveling over another network. When referring to the Internet and TCP/IP, gateway is sometimes used interchangeably with router, and refers to a system that interfaces on two or more heterogeneous physical networks, linking the network layers by routing packets between them.

generic cell rate algorithm

Defines conformance with respect to the traffic contract of the connection. For each cell arrival the algorithm determines whether the cell conforms to the traffic contract. The UPC function may implement the algorithm, or one or more equivalent algorithms to enforce conformance. The algorithm is defined with two parameters: the increment (I) and the limit (L).

generic flow control

GFC is a field in the ATM header used to provide local functions (flow control). It has local significance only and the value encoded in the field is not carried end-to-end.

GetStat

A call used to get the status of a file or device. A GetStat handles individual device parameters that are not uniform on all devices, or that are highly hardware dependent. See SetStat.

GFC

See generic flow control.

GIF

See Graphic Interchange Format.

giga-

Prefix meaning one billion. Giga- is a prefix used for many units of measurement in the computer and communications industries.

gigabyte (GB)

230 bytes or 1,073,741,800 bytes.

gigaflops (GFLOPS)

One-billion floating point operations per second. A supercomputer can maintain a throughput of over one billion floating point operations per second. A 25 MHz 486 computer can only sustain about one MFLOP or one million floating point operations per second. Speculative engineers have begun thinking about how to build a computer that can maintain a sustained throughput of one PFLOP (PetaFlop) or 1015 floating point operations per second.

gigahertz (Ghz)

One billion cycles per second.

gigabit (Gb):

One billion bits. Gigabits per second (Gbps) is a common unit for measuring bandwidth.

global path number table

An array of path descriptor addresses indexed by system path numbers.

global variable

A variable that belongs to a program or process and may be used for the duration of the program. Global variables may also be referred to as static variables or static storage.

glue code

Code that connects two component blocks.

Graphic Interchange Format (GIF)

A format for storing image files. The most popular format for images on the World Wide Web, GIF is the only format that can be read as an inline image in HTML files by all Web browsers. The JPEG format is another popular Web image format but requires helper applications to be displayed by a Web browser.

Graphical User Interface (GUI)

Method of interacting with a computer using windows, icons, menus, and other graphic devices to create what is, ideally, a simple and intuitive way of performing operations on a computer system. Microsoft's Windows and the Macintosh operating desktop metaphor are classic examples of GUIs. Part of the dramatic appeal of the World Wide Web is that it provides a GUI for the Internet.

graphics adapter

Adapter (often called a "card") for a PC bus slot used to display graphics and text on a monitor. Examples of different types of graphics adapters include CGA, HGC, EGA, VGA, SVGA, and TIGA.

graphics processor

Specialized microprocessor that processes graphics commands. A graphics processor relieves the CPU of ordinary graphics tasks, speeding up those tasks and freeing up the CPU for other operations.

group attributes

Group read, group write, and group execute. A member of the group is a user with the same group ID as the person who created the file. If set, the group attributes allow access to the file by members of the owner group. See owner attributes and public attributes.

group.user ID

This number is used for file system security purposes. Files have owner and public access permissions. If no public access permissions are set, only the owner of a file may access it. There are two types of file ownership: group and user. Each file is stored with a group.user ID. Any user with the same user ID as the file is considered an owner. Any user with the same group ID as the file is also considered an owner. This enables people who work on the same project to access the same files via their group number. See also super user.

growth method

The system startup method. A system cold-start typically occurs from a power-up/reset condition. A system warm-start occurs when the system is restarted by software.

H

half duplex

A transmission mode where data is not echoed back over the data link.

header file

Definitions or instructions to be placed toward the beginning of another file is a header file.

HDSL

See High Bit Rate Digital Subscriber Line.

HDTV

See High Definition Television.

headend

Originating point of a signal in a cable TV system. Also the electronic equipment located at the start of a cable television system, usually including antennas, Earth stations, preamplifiers, frequency converters, demodulators, modulators, and related equipment.

hertz (Hz)

Unit of frequency equal to one period per second.

HFC

See Hybrid Fiber/Coax.

High Bit Rate Digital Subscriber Line

Technology using adaptive signal processing to create two-way T-1 capacity on a normal copper twisted pair without using repeaters. Also sometimes called HSDL or High-Speed Subscriber Data Line.

High Definition Television (HDTV)

Generic term for television systems that boast around 1,200 lines of resolution (roughly twice the resolution of current systems). A high definition television will have the resolution of a 35 mm slide, requiring at least two million pixels. In its ideal form (with onboard memory and processing power and with interactive networked links to satellite, cable, and computer networks), HDTV could be the principal home information and entertainment system of the early twenty-first century. The consortium of companies developing the U.S. HDTV standard is known as the Grand Alliance. To learn more about digital HDTV standards, visit the HDTV Newsletter.

High-Resolution TV

Often used interchangeably with High Definition TV (HDTV). Television with over 1,000 lines of resolution.

High Speed Subscriber Data Line

See High Bit Rate Digital Subscriber Line.

high split

Broadband cable system in which the bandwidth used for upstream signaling is about 6 MHz to 180 MHz, and the bandwidth used to send signals downstream is about 220 MHz to 400 MHz. The guardband between the upstream and downstream signals (180 MHz to 220 MHz) prevents the upstream and downstream signals from interfering with each other.

hookswitch status

The concept of being on-hook (the telephone receiver is on the hook and therefore able to receive calls) or off-hook (the telephone receive is off the hook and therefore in use).

homes passed

Expresses number of dwellings that a cable or other communications service provider's distribution facilities pass in a given service area, expressing the market potential of the area. Thus, if a cable TV operator says that its system passes one million homes, it's potential market is one million subscribers. The actual number of subscribers, expressed as a percentage of the total number of homes passed, is called the penetration rate.

host

Central computer, usually connected to a network. Computer or computer element that represents the kernel of a computer system.

host system

The development system used to edit and re-assemble OS-9 source files.

HSDL

See High Bit Rate Digital Subscriber Line.

HTML

See HyperText Markup Language.

HTTP

See HyperText Transfer Protocol.

human-computer interface

Description of the natural way in which people interact with computer systems and software. The most common human-computer interfaces in use today are graphical, such as Microsoft's Windows and Apple's Mac OS operating systems.

Hybrid Fiber Coax (HFC)

Cable television network topology consisting of fiber-optic feeders and traditional coaxial cables with amplifiers in the branch lines. A hybrid of fiber networks and coaxial cable networks, HFC is currently the favored broadband network topology among many telecommunications companies because it is relatively scalable and inexpensive.

Hybrid fiber/coax (HFC) network

A broadband network using standard cable television transmission components, such as optical transmitters and receivers, coaxial cable, amplifiers, and power supplies. The broadband output stream is transmitted as an optical signal over the high-speed, fiber-optic transmission lines to local service areas where it is split, converted to electrical RF signals, and distributed to HCTs over coaxial cable.

hypermedia

Linking mechanism that may include text and non-text elements such as images, video and sound, that allow users to use information non-linearly or non-sequentially, by following links either hardwired or dynamically added to a document. The term "hypermedia" was coined in the 1970s by Theodore "Ted" Nelson to describe a new media form utilizing the power of computers to store, retrieve, and display information in all forms. The concept of hypermedia was first articulated by United States Presidential science advisor Dr. Vannevar Bush in a July 1945 article in the Atlantic Review entitled "As We May Think." Dr. Bush envisioned this "memory extension" system, which he called "Memex," in terms of the photo-mechanical technologies available in the 1940s. The World Wide Web is an example of a hypermedia system.

hypertext

Text containing links to other texts. In hypertext, textual material is interlinked, providing a system which can break down traditional subject classification, and allow individual users to pursue their own lines of inquiry. A core building block for the World Wide Web and much interactive media. This document is an example of hypertext. Theodore "Ted" Nelson invented the concept in 1965 using the term "hypertext" to describe a system of non-sequential writing: "text that branches and allows choices to the reader."

HyperText Markup Language (HTML)

Simple programming language with which Web documents are written. HTML uses tags to identify formatting for characters in a file. A browser reads the tags and applies the formatting to the characters as it displays them.

HyperText Transfer Protocol (HTTP)

Protocol used to request and transfer HTML documents on the World Wide Web.

Hz

See Hertz.

I

ID

MAUI uses IDs as handles for private data structures. Examples include device IDs and context object IDs.

identification block

Located in logical block zero (LBN 0 on a disk), this block describes the physical and logical format of the disk as well as the volume name, date, and time of creation.

IDTV

Interactive Digital Television.

IIEEE

See Institute of Electrical and Electronics Engineers.

IEEE1394

The 1394 digital link standard was conceived in 1986 by technologists at Apple Computer, who chose the trademark 'FireWire', in reference to its speeds of operation. The first specification for this link was completed in 1987. It was adopted in 1995 as the IEEE 1394 standard. A number of IEEE 1394 products are now available including digital camcorders with the IEEE 1394 link, IEEE 1394 digital video editing equipment, digital VCRs, digital cameras, digital audio players, 1394 IC's and a wealth of other infrastructure products such as connectors, cables, test equipment, software toolkits, and emulation models.

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 devices.

Although extremely fast and flexible, 1394 is also expensive. Like USB, 1394 supports both Plug-and-Play and hot plugging, and also provides power to peripheral devices. The main difference between 1394 and USB is that 1394 supports faster data transfer rates and is more expensive. For this reason, it is expected to be used mostly for devices that require large throughputs, such as video cameras, whereas USB will be used to connect most other peripheral devices.

IETF

See Internet Engineering Task Force.

I Frames

Information frames used to send data from higher layers over the link.

IMA

See Interactive Multimedia Association.

image map

In HTML, a graphical image containing "hot spots." When a hot spot is clicked on by a user, the browser loads the corresponding document, similar to hypertext linking. For a good example of an image map, see Time Warner's Pathfinder home page.

InATMARP

See inverse ATM address resolution protocol.

in-band signaling

Signaling made up of tones that pass within the voice frequency band and are carried along the same circuit as the voice path that is being established by the signals. Virtually all signaling, such as request for service, dialing, and disconnect, is in-band signaling.

include

To use information provided in a secondary source or file as part of the primary source or file. Usually this does not refer to a circumstance where the actual sources or files are joined or modified.

information service

Any service providing the capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications. Includes electronic publishing but does not include the use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.

infrared

Band of electromagnetic wavelengths between 0.75 micron and 1,000 microns.

ingress

Interference caused by conflicting frequencies bleeding into a frequency. HFC systems are hampered, for example, by ingress in sub-band upstream communications.

init module

Init is a non-executable module of type `Systm`, which contains a table of system startup parameters. During startup, `init` specifies initial table sizes and system device names, but it is always available to determine system limits. It must be in memory when the system is booting and usually resides in the `sysboot` file or in ROM.

initial license

The Initial License for DAVID allows the customer to port the DAVID package to hardware so that the set-top device runs the DAVID software. This license does not allow the customer to distribute the set-top devices to others. In order to distribute the set-top boxes with DAVID software installed, the customer will need to sign a distribution license and pay royalty fees to allow distribution.

in-line image

Images in HTML documents embedded in the document, and not requiring an external viewer.

input/output manager

IOMAN. Coordinates the I/O system by passing I/O requests to the appropriate file managers. IOMAN manages various data structures and ensures that the appropriate file manager and device driver modules process a particular I/O request.

input simulation

Two classes of input devices include pointer and key symbol. The MAUI Input Process and Protocol Modules enable a key symbol device to generate pointer messages or a pointer device to generate key symbol messages.

inside plant

Equipment and wiring inside a telephone company's central office.

inside wiring

Wiring located between the telephone company's Demarcation Point and the actual telephone equipment. The inside wiring belongs to the customer.

Institute of Electrical and Electronics Engineers (IEEE)

U.S. engineering organization that defines many standards, most notably a series of LAN standards.

Integrated Services Digital Network (ISDN)

Digital line capable of circuit and packet transmission for voice and data communications at data rates up to 1.544 Mbps, or T-1 rates. Basic Rate ISDN (BRI) provides two B channels at 64 kbps each and a D channel at 16 kbps. Primary Rate ISDN (PRI) provides twenty-three (U.S.) or thirty (Europe) B channels and a single D channel at 64 kbps. Visit Dan Kegel's ISDN Page for a thorough introduction to ISDN and ISDN resources on the Web.

Integrated Telecommunications Environment for Multimedia

ITEM. A shared library that provides a unified high level interface to the network using the Stacked Protocol File manager (SPF).

Interactive Multimedia Association (IMA)

Industry association that tries to maintain standard specifications for multimedia systems and support the multimedia industry. The IMA was formed in 1991.

interactive video

System that allows a user to control the audio, stills, and motion sequences of a video presentation. At its most primitive level, a VHS video cassette or a video laserdisc allow some degree of interactivity. More often, the term interactive video is used to refer to a more robust form of interactivity involving non-linear control, control of branching and multiple threads.

Interactive Voice Response (IVR)

Telephone system that uses a digital synthesized voice to interact with callers; IVR systems can also perform voice recognition of simple commands such as "yes" or "no," and can be trained to recognize a caller's voice to facilitate such applications as voice dialing (i.e. service advertised by Sprint, where the caller says "Dial Mom," and the computer dials the number).

interbuilding cable

Communication cable that runs between buildings. Cable can be installed in four ways: in-conduit (in underground conduits), direct buried (in trenches), aerial (on poles), and in-tunnel (in steam tunnels and other utility tunnels).

Interexchange Carrier (IXC)

Currently, a long-distance telephone company. Any telephone company that is allowed to provide long-distance telephone service between LATAs (between exchanges) and has only recently been allowed to provide service within any one LATA (local service).

interface

Point at which two devices or systems are linked. The shared connection or boundary between two devices or systems. Common interface standards include EIA Standards RS-232B/C, adopted by the Electronic Industries Association to insure uniformity among most manufacturers; MIL STD 188B, a mandatory standard established by the U.S. Department of Defense; and CCITT, the global recommendation for interface, mandatory in Europe and closely resembling the American EIA standard. Also short for Human-Computer Interface , the hardware and software through which the user interacts with a computer system.

interlace

A feature built into display devices that supports twice as many horizontal lines at the same frequency. When interlace is enabled, the display device alternates between displaying an odd field and an even field during each frame.

interlaced GIF

Scanlines in an interlaced GIF have been rearranged so that when it is viewed in a browser with appropriate support, it will first appear with poor resolution and then, over time, improve in resolution until the entire image is loaded. This a is useful technique for giving users a quick impression of the contents of a Web page before it is entirely loaded.

interleave

Transmission of pulses from two or more digital sources in time-division sequence over a single path.

International Organization for Standardization (ISO)

International standards body based in Paris that defines many technical standards The ISO has defined a set of network protocols, called the ISO/OSI protocols, which, in theory, would eventually replace Internet protocols. It now appears unlikely that this will happen.

International Telecommunications Union (ITU)

United Nations Agency, headquartered in Geneva, Switzerland, that studies world telecommunications and makes recommendations for standardization. The three main organizations within the ITU are the International Frequency Registration Board, the Consultative Committee on International Radio (CCIR), and the Consultative Committee on International Telegraph and Telephone (CCITT).

Internet

World's largest computer network. With a small "i" it means a network of networks interconnected by routers.

Internet address

See IP Address.

Internet Engineering Task Force

The organization providing the coordination of standards and specification development for TCP/IP networking.

internet protocol

Originally developed by the Department of Defense to support interworking of dissimilar computers across a network. This protocol works in conjunction with TCP and is usually identified as TCP/IP. A connectionless protocol operating at the network layer (layer 3) of the OSI model.

Internet Relay Chat (IRC)

Worldwide "party line" protocol that allows one to converse in real time with other people on the Internet via typed comments. Numerous IRC servers around the world are linked to each other over the Internet. Anyone can create a channel, and anything that someone types in a given channel is seen by everyone else in the channel. Private channels are created for multi-person chat conferences.

Internet Service Provider (ISP)

Organization that provides gateway connections to the Internet. Prominent ISPs include Netcom and PSI.

internet telephony

Telephone services that use IP networks to transmit voice signals.

Internet time

Refers to the speed of change in the network economy. A year of calendar time has been equated in the industry to about four years in Internet time.

inverse ATM address resolution protocol

Allows a host to find the Internet Address of a target host given only the target's ATM address.

inverse multiplexing

Combining one or more B channels into a pipe.

invocation

The required elements at the beginning of a program, often including arguments or parameters.

invoke

To call or start a program, usually by entering the name of the program.

I/O descriptor

Contains information about the process I/O including the I/O paths and counts of bytes read and written. The I/O descriptor is automatically initialized and maintained.

IOMAN

The input/output manager. IOMAN coordinates the I/O system by passing I/O requests to the appropriate file managers. IOMAN manages various data structures and ensures that the appropriate file manager and device driver modules process a particular I/O request.

IP Address

Also called IP Number. The 32-bit address defined by the Internet Protocol in STD 5, RFC 791. Sometimes called a "dotted quad." A unique number consisting of 4 parts separated by dots. For example, 204.215.182.2 is the C4 Lab's IP Address.

Every computer that is on the Internet has a unique IP number. Most computers also have one or more Domain Names (like www.gemconsult.com) which are easier to remember than IP numbers.

IRQ

Interrupt Request. An external, asynchronous hardware signal from a peripheral indicating some type of servicing by the processor is needed.

ISDN

See Integrated Services Digital Network (ISDN).

ISO

See International Organization for Standardization (ISO).

ISP

Microware Internet Support Package (OS-9/Internet).

ISR

Interrupt Service Routine.

ITEM

Integrated Telecommunications Environment for Multimedia. The primary purpose of the Integrated Telecommunications Environment for Multimedia (ITEM) is to provide an open Application Programming Interface (API) for managing network-specific communications between a DAVID-based device and other components in an ITV network. ITEM works closely with the Serial Protocol File Manager (SPF) in a DAVID interactive television decoder to oversee such operations as channel selection, decoder-to-server session set-up and control, and application download procedures.

ITEM includes APIs for channel management, session management and application download management.

The channel manager API is used for applications that need to perform channel management, such as entertainment program guides. This API allows the application to change channels and receive channel information from the network via one standardized channel entry structure, or channel map. A network-specific channel management protocol driver is provided to convert the channel map format from the network to ITEM's channel entry structure. This ensures that any application accessing channel management functions can do so in a network-independent way.

Once a digital ITV channel is selected, the session manager API is used for establishing and terminating connections between the DAVID device and the chosen service provider over a default communication path. Such session connections are handled via the Level 1 gateway or head-end system in an ITV network.

The application download API is used for managing network-specific procedures for requesting and downloading an ITV application from a selected video server (Level 2 gateway) to the DAVID device.

ITU Q.2110

broadband ISDN adapation layer – Service Specific Connection Oriented Protocol.

ITU Q.2130

broadband ISDN adapation layer – Service Specific Connection Oriented Function for Support of Signaling at the UNI.

ITU Q.2931

The signaling standard for ATM to support Switched Virtual Connections. This is based on the signaling standard for ISDN.

ITU-T

International Telecommunications Union-Telecommunications. ITU-T is an international body of member countries whose task is to define recommendations and standards relating to the international telecommunications industry. The fundamental standards for ATM have been defined and published by the ITU-T.

ITU-T I.430

Recommendation defines the layer 1 characteristics of the user- network interface at S- and T-reference points for basic rate ISDN.

J

JAR

See Java archive.

Java

An interpreted programming language based on C. Separate Java applications, called applets, do not have to be compiled for each different operating system. An applet will run identically and without modification in virtually any existing environment. It is the first programming language optimized for the Internet and contains inherent security features and compact code that support the development and delivery of rich content over narrowband connections. Applets are actually hybrids of executable code and data. Browsers like Netscape 2.0 complete the picture by running Java applets directly, without extra appendages like helper applications.

This scheme renders the applets portable, compact, and interactive. Java leverages the network itself as the central computing device. In addition, Sun and Netscape have collaborated to develop JavaScript, a scripting language for writing Java code.

Java archive

JAR. A file format based on the popular ZIP file format and used for aggregating many files into one. Although JAR can be used as a general archiving tool, it was developed so Java applets and their requisite components (`.class` files, images, and sounds) can be downloaded to a browser in a single HTTP transaction, rather than opening a new connection for each piece.

Java Development Kit (JDK)

Java programming language product. Each release of the JDK contains:

- Java Compiler
- Java Virtual Machine
- Java Class Libraries
- Java Applet Viewer
- Java Debugger and other tools

Java linker

A module that builds an executable, complete program from component machine code modules. The Java linker creates a runnable program from compiled classes.

Java Native Interface (JNI)

A native programming interface. It allows Java code that runs inside a Java Virtual Machine (JVM) to interoperate with applications and libraries written in other programming languages, such as C, C++, and assembly. The most important benefit of the JNI is it imposes no restrictions on the implementation of the underlying JVM. Therefore, JVM vendors can add support for the JNI without affecting other parts of the JVM. Programmers can write one version of a native application or library and expect it to work with all JVMs supporting the JNI.

Java TV APIs

The Java TVTM Application Programming Interface (API) is a standard extension of the JavaTM platform, developed through an open process by Sun Microsystems and key leaders in the digital television industry. Major consumer electronics manufacturers have announced their public support for the adoption of this API as a digital television standard worldwide.

Some advantages for service providers are:
Availability of authoring tools and ability to test on a PC
Ability to run applications on hardware with different operating systems
Reduce programming time by 50% compared to C programming

Java Virtual Machine (JVM)

An abstract specification for a computing device that can be implemented in different ways, in software or hardware. You compile to the instruction set of a virtual machine much like you would compile to the instruction set of a microprocessor. The Java Virtual Machine consists of a bytecode instruction set, a set of registers, a stack, a garbage-collected heap, and an area for storing methods.

JDK

See Java Development Kit (JDK).

JNI

See Java Native Interface (JNI).

Joint Photographic Experts Group (JPEG)

Standard format for image storage created by this group. JPEG allows large images to be significantly compressed using a form of lossy compression. Along with the GIF format, it is one of the most common and widely supported image formats used for raster graphics displayed on the World Wide Web.

JPEG

See Joint Photographic Experts Group.

JVM

See Java Virtual Machine (JVM).

K

K

Kilo (one thousand of a quantity). For example, one KHz equals 1000 Hz. One Kbyte, however, is normally considered to mean 210 bytes, or 1024 bytes.

Ka-band

Portion of the electromagnetic spectrum in the high microwave/millimeter range stretching from about 33 to 36 GHz.

Kbit

210 bits = 1024 bits

Kbps

Kilobits per second (thousands of bits per second).

Kbyte

2¹⁰ bytes = 1024 bytes

key code

A key code is the actual code generated by an input device when you press a key. This value is hardware dependent, but the MAUI Input Process turns it into a key symbol which is hardware independent.

key object

Object storing a public, private, or secret encryption/decryption key

key symbol

Key symbols represent the meaning of keys on a device. Key symbols are constant regardless of the key codes generated by the device. Therefore, key symbols are hardware independent values.

KHz

1000 Hz = 1000 periods per second.

killer app

Literally a "must-have" software application that is considered revolutionary or superlative. The phrase also represents technological "must-haves" that are not software related, such as television.

kilo-

K. Prefix meaning one thousand of a quantity.

kilobyte

2¹⁰ bytes = 1024 bytes

L

LAN

 See Local Area Network.

LAP-D

Link Access Procedure over the D channel. LAP-D allows U frames and I frames to be sent and received.

laser

Sharply focused beam of light of high optical quality that consists of a single frequency. Also, a light source with a narrow beam and a narrow spectral bandwidth. The term LASER was originally an acronym for Light Amplification by Stimulated Emission of Radiation.

LATA

See Local Access and Transport Area.

layer entity

An active element within a layer.

layer function

A part of the activity of the layer entities.

layer service

Provided to upper layers at the boundary between a layer and the next higher layer.

layer user data

Transferred between corresponding entities from an upper layer (or layer management entities) for which they are providing services.

LBN

See logical block number

leaky bucket

An analogous description of the algorithm used for conformance checking of cell flows from a user or network. See gateway. The leaking hole in the bucket applies to the sustained rate at which cells can be accommodated, while the bucket depth applies to the tolerance to cell bursting over a given time period.

leased line

A permanently connected private telephone line between two locations. Leased lines are typically used to connect a moderate-sized local network to an Internet service provider.

least significant bit

The lowest order bit in the binary representation of a numerical value.

LEC

See Local Exchange Carrier.

LED

See Light-Emitting Diode.

level 0

On 80386 processors, synonymous with system state. OS-9 system calls and interrupt service routines are executed in this environment. See system state.

light

Technically, electromagnetic radiation visible to the human eye. Commonly, the term is applied to all electromagnetic radiation with properties similar to visible light.

Light-Emitting Diode (LED)

Semiconductor-based device that emits incoherent light when a current passes through it, allowing it to represent many different colors.

line extender

An amplifier used to compensate for loss on amplifier distribution feeder lines.

line feed

A byte with a value 0A in hexadecimal.

line-mode browser

Nongraphical Web browser. These browsers may be used on dumb terminals. Although they cannot display graphics, most of the other features in a graphics-based browser may still be accessed. Lynx is one of the most popular browsers of this type.

link

An OS-9 function that requests the location of a memory module of a given name prior to its use. The use count of the module is increased by one. Unlink is the opposite function. See memory module and module directory.

link

A link or hyperlink is the pointer in a hypertext document that takes the user to another location or another document.

link access procedure

An ISDN data link layer protocol.

link connection

A connection at the virtual path level that is capable of transferring information transparently across a link without adding any overhead, such as cells for purposes for monitoring. It is delineated by connection points at the boundary of the subnetwork.

link count

The number of processes using a module. When a module is loaded into memory, it is added to the module directory. Each directory entry contains a link count.

LIS

See logical IP subnet.

LLC

See logical link control.

LLC/SNAP

logical link control/Sub-Network Attachment Point.

LMDS Local Multichannel Digital Service (LMDS)

Wireless cable service providing multiple channels of video programming over high-frequency microwave channels in the 27.5- to 29.5-GHz spectrum. LMDS antennas serve overlapping cells of approximately three to six miles in radius. Only a 4.5-inch antenna is required to receive LMDS signals. CellularVision in the New York City metropolitan area is the only commercial LMDS operator at this time, but new digital technology is likely to make LMDS an attractive broadband technology in the coming years.

Local Access and Transport Area (LATA)

Contiguous geographic area defined before the date of enactment of the Telecommunications Act of 1996 by a Bell operating company such that no exchange area includes points within more than one metropolitan statistical area, consolidated metropolitan statistical area, or state, except as expressly permitted under the AT&T Consent Decree; or established or modified by a Bell operating company after such date of enactment and approved by the Commission.

Local Area Network (LAN)

Short-distance networks, such as Ethernet networks and Token Ring networks. LANs are data networks that are restricted in space. Typical distances are less than 500 meters. LANs are usually low-cost, high-bandwidth networks that connect many nodes in a limited geographic area such as an office or a building.

local bus

Bus system for the PC that operates at 32 bits and, unlike EISA, up to 50MHz. Currently used for the integration of fast graphics adapters and hard disk controllers. Intel's PCI standard and the VESA VL-bus are two current local bus standards.

locale

Locale is supported by ANSI-C as a way of interpreting the local language, nationality, and culture. See the ANSI-C specification for more details.

local exchange

Technically, the local switch to which telephone customers are first connected. The term is often used to refer to all "local" operations including switching and "last-mile" transport.

Local Exchange Carrier (LEC)

Organization that is engaged in the provision of telephone exchange service or exchange access. A U.S. local telephone company, which can be either a Bell Operating Company or an independent such as GTE or Altel. LECs provide intraLATA telephone service.

local loop

Part of the telephone network encompassing the physical wires running between the subscriber's telephone set or PBX and the telephone company's central office.

Local Multichannel Digital Service (LMDS)

Wireless cable service providing multiple channels of video programming over high-frequency microwave channels in the 27.5- to 29.5-GHz spectrum. LMDS antennas serve overlapping cells of approximately three to six miles in radius. Only a 4.5-inch antenna is required to receive LMDS signals. CellularVision in the New York City metropolitan area is the only commercial LMDS operator at this time, but new digital technology is likely to make LMDS an attractive broadband technology in the coming years.

local path numbers

An integer value that specifies a process-specific handle identifying an open I/O path. When executed in system state, local path numbers are converted to system path numbers.

logical block number

To eliminate hardware discrepancies, OS-9 uses a logical block number to identify each block without regard to track and surface numbering. The disk driver module or the disk controller must map logical block numbers to track/surface/block RBF uses LBNs from 0 to (n - 1), where n is the total number of blocks on the drive.

logical IP subnet

IP subnet configured for use on an ATM network as per RFC 1577.

logical link

An abstract representation of the connectivity between two logical nodes. This includes individual physical links, individual virtual path connections, and parallel physical links and/or virtual path connections.

logical link control

Three-byte header for IEEE 802 encapsulation.

logical unit number

A logical unit is storage allocated to a driver containing specific information for a given hardware port.

logical unit static storage

The I/O manager allocates and initializes additional static storage for each logical unit on controllers operating multiple devices.

loss

Attenuation of a signal, normally measured in decibels.

Low-Power Television (LPTV)

Provision of scrambled television channels over VHF and UHF spectrums as a subscription TV service.

LPTV

See Low-Power Television.

LSB

See least significant bit.

LUN

Logical Unit Number. A logical unit is storage allocated to a driver that contains specific information for a given hardware port.

M

M

Mega (one million of a unit). For example, one MHz equals 1,000,000 Hz. However, one Mbyte is usually interpreted to mean 220 bytes, or 1,048,576 bytes.

m

Milli (one thousandth of a quantity). One millimeter equals 0.001 meters.

magneto-optical drive

Erasable mass storage with which the recording and reading of data is carried out by a laser beam. The information itself is written in the form of tiny magnetizations. The data medium has a ferromagnetic coating. Magneto-optical drives use the Curie point for writing and the Faraday effect for reading the information.

mail gateway

Computer that connects two or more electronic mail systems and transfers messages between them.

mailing list

List of e-mail addresses used to send e-mail messages to groups of people providing a forum for a particular topic. Generally, a special interest group mailing list is used to discuss a specific topic.

mail server

Software that takes actions based on the addressee, subject, or body of a mail message. Software program that distributes files or information in response to requests sent via e-mail.

mainframe

Powerful computer that serves many users (sometimes 1,000 or more) and that may execute several tasks in parallel.

make utility

A configuration management tool that can automatically and accurately rebuild an entire software system.

makefile

A text file written by a programmer and read by a make utility. This makefile defines all the modules that make up the system and how these modules depend on each other. It also describes the processes required to build a module from the other modules on which it depends.

MAN

See Metropolitan Area Network.

markup language

Language used to specify document formats by embedding tags within the document. These tags are then interpreted by browsers in order to display the document properly. HTML, which is being used in this document, is a common example of a markup language.

MAUI - Multimedia Application User Interface

The Multimedia Application User Interface (MAUI) is an Application Programming Interface (API) for the Digital Audio/Video Interactive Decoder (DAVID) environment. MAUI provides an extensive set of low-level graphical and communications services that can be used in interactive television decoders connected to telephone, cable, and wireless networks.

MAUI features include:

- Graphics processor independence to facilitate application portability.
- A high speed drawing engine that is modular (for flexibility) and compact (for embedded application environments).
- Windowing, clipping, and inking support.
- Sound processor independence to facilitate application portability.
- Support for authoring system tools for building applications and their associated data structures. By using MAUI, developers can avoid having to modify their runtime engines for each server type, and as a result, decrease development time.

MAUI Input Process

The MAUI Input Process is responsible for insulating the API layer from differences in pointer and keycode devices. This process read raw input from Serial Character File manager (SCF) devices and use protocol modules to translate the data into standardized MAUI messages. These messages are then inserted into the application's mailbox so that the application may act on the user input.

MAUI Mailbox or MAUI Messaging

The Messaging API enables the application to read and write to mailboxes that are named and visible to all applications. MAUI uses mailboxes to pass information between and within application processes.

MAUI Messaging is another form of inter-process communication.

MAUI File Manager (MFM)

This is the OS-9 file manager used by MAUI.

maximum burst size

In the signaling message, the Burst Tolerance (BT) is conveyed through the MBS which is coded as a number of cells. The BT together with the SCR and the gateway determine the MBS that may be transmitted at the peak rate and still be in conformance with the gateway.

Mbit

Megabit. 220 bits = 1,048,576 bits.

Mbps

Megabits per second.

MBS

See maximum burst size.

Mbuf

Mbufs are buffers that encapsulate networking packets. It is a common data structure that can efficiently store variable-length data blocks. They are efficient because they are allocated from the kernel at installation in one contiguous block of memory.

Mbyte

Megabyte. 220 bytes = 1,048,576 bytes.

MD

Message digest or hashing function creating a 16-byte digest

MD5

Message digest or hashing function creating a 16-byte digest

MDS

See Multi-Point Distribution Service.

media access control

IEEE specifications for the lower half of the data link layer (layer 2) defining topology dependent access control protocols for IEEE LAN specifications.

mega-

One million units or, in binary, 1,048,576 (220).

megabyte

1,048,576 bytes of data.

megahertz

MHz. One million hertz.

memory map

OS-9 uses a software memory management system that contains all memory within a single memory map.

memory module

A logical, self-contained program, program segment, or collection of data. A memory module is a named block of program code in memory or can be loaded into memory. Memory modules use a special, standardized format.

memory pools

All unused RAM is assigned to a free memory pool. Memory space is removed and returned to the pool as it is allocated or de-allocated for various purposes. OS-9 automatically assigns memory from the free memory pool when:

- Modules are loaded into RAM

- New processes are created

- Processes request additional RAM

- OS-9 requires more I/O buffers

- OS-9 internal data structures must be expanded

memory search list

OS-9 uses the memory search list to define the usable areas of the target system's RAM and ROM memory. The memory search list is defined by the `MemDefs` macro in the `systype.d` file.

message digest

A fixed-length computationally unique identifier corresponding to a set of data. It can be used to authenticate data by digesting the data at different times and comparing the digests. Unaltered data will have the same message digest.

message frame

A data link layer packet containing the header and trailer information required by the physical medium. Refer to I Frames, S Frames, and U Frames.

Metcalfe's Law

The utility of a network is equal to the square of the sum of its parts. Robert Metcalfe was inventor of the Ethernet networking protocol and founder of 3Com Corporation.

methods

Functions that act on the instance variables of a class.

Metropolitan Area Network (MAN)

Group of local area networks connected together over a distance of up to fifty kilometers. Networks offered by CAPs that typically provide a business customer with an alternative connection among its offices and to long-distance carriers, usually in the form of a high-capacity, fiber-optic network.

MHEG

Multimedia and Hypermedia Information coding Expert Group. MHEG is an abbreviation for the Multimedia and Hypermedia Experts Group. This is another group of specialists, eminent in their field which has been set up by ISO, the International Standards Organization. This group was set the task of creating a standard method of storage, exchange and display of multimedia presentations.

The MHEG-5 standard (ISO/IEC 13522-5) is now at the stage of International Standard and is available from ISO

The MHEG-5 standard was developed to maintain the distribution and development of interactive multimedia applications in client server architecture across different platforms of contrasting types and brands. MHEG-5 defines a final form representation for application interchange. MHEG-5 applications need only be authored once and can run on any platform that is MHEG-5 compliant.

MHz

Megahertz: One million Hertz = 1,000,000 periods per second.

Micro

One millionth of a quantity. One micrometer = 0.000001 meter.

microchip

Highly integrated circuit on a single substrate plate -- the chip. More specifically, a microchip is an integrated circuit with extensive logic. Microprocessors and DRAMs are examples of microchips.

microcoding

Also called Microencoding. Encoding of machine instructions of a processor into a sequence of more elementary instructions to the instruction and execution unit in a CPU. Microcode is stored in the processor's microcode ROM and is not accessible to the programmer. Microcode is burnt-in during the course of manufacture.

Micron

Micrometer. One millionth of a meter = 10-6 meter.

microprocessor

Electronic circuit used to perform mathematical, logical, and control functions. Microchip with high intelligence for the execution of instructions. Microprocessors are programmable and the program is usually stored in a ROM or main memory.

microwave

Any electromagnetic wave in the radio-frequency spectrum above 890 Megahertz.

middleware

Software that connects legacy systems with servers.

Million Instructions Per Second (MIPS)

MIPS indicates the number of instructions executed by a processor within one second and can serve as a rough indicator of the performance of a CPU.

MIME

See Multipurpose Internet Mail Extensions (MIME).

miniserver

This term is used for a small scale, PC hardware based computer that supplies services to a set-top box such as MPEG streaming and private data delivery.

In a DAVID environment, this is referred to as the DAVID UpLink Server. UpLink is an API that is provided with DAVID. The UpLink API communicates with the server to store and retrieve data as well as requesting MPEG-2 streams and private data.

See UpLink.

Minitel

Originally innovative, but now primitive videotex service provided by the French national telephone company, France Telecom. Minitel provides access to electronic telephone directories and has proven immensely popular as an on-line chat medium.

MIPS

See Million Instructions Per Second (MIPS).

mirror site

A second or duplicate Web site that contains the same information as the site it "mirrors." Many software vendors have mirror sites on the Web to bridge long-distances and to handle high volumes of requests for downloadable software.

mixing mode

Drawing operations allow pixels from the source to be mixed with pixels already in the destination drawmap. The method used to perform the mixing is defined by the mixing mode.

MMDS - Multi-channel, Multi-point Distribution Service (MMDS):

Wireless cable technology using frequencies in the 2.5 to 2.7 GHz bands. One antenna can serve line-of-site customers in a thirty-mile radius. Customers use a twelve-inch dish to receive the signal and require a set-top box to descramble it. MMDS is very popular in much of the developing world because of the relatively low cost of passing a large number of subscribers. While analog systems have been limited by a relatively small number of available channels, new digital systems utilizing MPEG-2 compression promise to increase dramatically the capacity and the attractiveness of this broadband technology.

MNET

A SoftStax SPF I/O system comprising the modules needed to communicate with and over any network architecture.

Mobile Telephone Switching Office (MTSO)

Central computer that connects a cellular phone call to the public telephone network. The MTSO controls the entire cellular telephone system's operations, including monitoring calls, billing, and hand-offs.

modem

Contraction of Modulator/Demodulator. A modem is used to transmit digital data over an analog channel, usually a telephone line. A modem is necessary because purely digital transmission would require a higher bandwidth than ordinary telephone lines can handle. A modem modulates a carrier signal with a data signal and extracts the data signal from the modulated carrier signal, respectively. A modem can be used to transmit data over a wireline network or over a radio network.

modulation

Process by which the amplitude of a wave is varied as a function of the instantaneous value of the modulating wave. Sophisticated modulation schemes can greatly increase the amount of data that can be carried over a network. As bandwidth efficiency increases, however, the network must have a lower signal to noise (S/N) ratio in order for the data to be transmitted accurately.

module

In DAVID and OS-9 usage, this is a file that can be loaded into memory. All modules contain a header and trailer that contain information about the module. The header will identify the type of module, permissions, size of the information and location of the trailer along with other information. The header also contains attribute and revision information.

module body

The body of a module contains information such as initialization data, program instructions, and constant tables.

module directory

A list automatically maintained by OS-9 that includes the name, location, and user count of each memory module present in memory. See link and memory module.

module header

The header of a module contains information describing the module and its use. It is defined in assembly language by a `psect` directive. The linker creates the header at link-time. The information contained in the module header includes a pointer to the module name, the module size, type, language, memory requirements, and entry point.

Moore's Law

A 1964 observation made by Gordon Moore, a co-founder of Intel, that the speed of integrated circuits was doubling every twelve months. He predicted that this pattern would continue into the foreseeable future. Processing power has actually doubled approximately every eighteen months, but the pattern has held remarkably steady and promises to continue for some time. This increasing computing capacity has driven much of the computing and telecommunications revolution of the last thirty years.

most significant bit

The highest order bit in the binary representation of a numerical value.

motherboard

Circuit board in a PC that houses the central components such as the CPU, main memory, direct memory access controller, programmable interrupt controller, and programmable interval timer, as well as the bus slots. Also called the mainboard.

MPEG

Moving Pictures Experts Group. MPEG (Moving Pictures Experts Group) is a group of people that meet under ISO (the International Standards Organization) to generate standards for digital video (sequences of images in time) and audio compression.

In particular, they define a compressed bit stream, which implicitly defines a decompressor. However, the compression algorithms are up to the individual manufacturers, and that is where proprietary advantage is obtained within the scope of a publicly available international standard. MPEG meets roughly four times a year for roughly a week each time. In between meetings, a great deal of work is done by the members, so it doesn't all happen at the meetings. The work is organized and planned at the meetings. MPEG itself is a nickname.

The official name is: ISO/IEC JTC1 SC29 WG11.
  ISO: International Organization for Standardization
  IEC: International Electro-technical Commission
  JTC1: Joint Technical Committee 1
  SC29: Sub-committee 29
  WG11: Work Group 11 (moving pictures with audio)

MPEG-1

Digital video compression standard set by the Motion Picture Expert Group. MPEG-1, which offers VHS-quality digital video at 1.5 Mbps, has largely been supplanted by MPEG-2, which produces a higher-quality picture, especially when the video portrays a great deal of rapid movement as in many televised sporting events.

MPEG-2

Digital video compression standard set by the Motion Picture Expert Group allowing for the compression of a standard broadcast video channel into a 4 to 6 Mbps data stream. MPEG-2 provides a higher quality picture than MPEG-1 and is better at crisply displaying rapid motion like that found in many televised sporting events. MPEG-2 is rapidly becoming the standard for mass market digital video services such as DBS.

MPFM

Motion Picture File Manager. This component of DAVID is API for controlling the MPEG decoding hardware on the set-top box.

The MPFM API utilizes the MPFM file manager.

mphone

A telephone emulation program designed to run on any protocol stack compliant with the ITEM API.

MPPM

MAUI Process Protocol Modules

MPTS

MPEG-2 Transport Stream.

MSB

See most significant bit.

MSO

See Multiple System Operator (MSO).

MTSO

See Mobile Telephone Switching Office (MTSO).

MTU

Maximum Transmission Unit.

multi-byte character

A multi-byte character may be one byte or several bytes. The rules used to form a multi-byte character are defined by ANSI C, and when used with locale information, lets the application adjust to different written languages.

Multi-channel, Multi-point Distribution Service (MMDS)

Wireless cable technology using frequencies in the 2.5 to 2.7 GHz band. One antenna can serve line-of-site customers in a thirty-mile radius. Customers use a twelve-inch dish to receive the signal and require a set-top box to descramble it. MMDS is very popular in much of the developing world because of the relatively low cost of passing a large number of subscribers. While analog systems have been limited by a relatively small number of available channels, new digital systems utilizing MPEG-2 compression promise to increase dramatically the capacity and the attractiveness of this broadband technology.

multimedia

Generic term for applications using a wide variety of media, such as video, audio, text, and still graphics.

Multimedia Application User Interface

MAUI. A shared library for managing the display graphics, text, and sounds using the multimedia file manager (MFM).

Multiple System Operator (MSO)

Company that operates more than one CATV system. TCI is the largest MSO in the United States, both in terms of revenues and of homes passed by its systems.

multiplex

To interleave or simultaneously transmit two or more messages on a single channel.

multiplexer

Device that transfers data from several input channels to a smaller number of output channels in a strictly defined manner, i.e., a device that multiplexes signals.

multiplexing

Transmission of a number of messages simultaneously over the same communications channel. Combining individual signals onto a single band of distribution frequencies. Used with satellite, terrestrial broadcast, and cable systems.

Multi-point Distribution Service (MDS)

Wireless cable service using microwave radio channels to transmit video programming. See Multi-Channel, Multi-Point Distribution Service and Local, Multichannel Distribution Service.

Multipurpose Internet Mail Extensions (MIME)

Protocol that allows inclusion of multiple parts within a message, which provides for multimedia enclosures, such as text files, spreadsheets, digital audio, and digital video files. More simply, an extension to Internet e-mail that provides the ability to transfer nontextual data, such as graphics, audio, and fax. It is defined in RFC 1341.

multitasking

Concurrent execution of several tasks by a computer. Users have the impression that the tasks are executed in parallel. Actually, the computer is only switching between tasks very rapidly.

multitasking operating system

Operating system that can manage several tasks in a computer system simultaneously, activating them for a short time and interrupting them again later. Examples of multitasking operating systems include UNIX, OS/2, and Windows NT.

Musical Instrument Digital Interface (MIDI)

Global software standard that allows musical instruments such as synthesizers, keyboards, and drum machines to be controlled from a computer screen.

N

n

Nano. One billionth of a quantity. One nanometer = 0.000000001 meter.

nanometer

One billionth of a meter or 0.000000001 meter.

nanotechnology

Technology first proposed by Nobel-laureate Richard Feynman and later popularized in the late 1980s by Eric Drexler. Nanotechnology is the manipulation of matter at the atomic level in order to construct new materials and machines. Hypothetically, nanotechnology will enable the construction of unlimited numbers of microscopic computers which will each individually possess more computing power than the combined computing power of all of the computers in existence today. Substantial progress is being made toward the development of the fundamental elements of nanotechnology, and many conjectured roadblocks to working at this level, such as quantum effects, have proven not to be limiting factors. The development of useful nanotech devices will probably not occur before 2010. Nanotechnology will fundamentally change the world.

narrowband

Sub-voice channels able to carry data at speeds up to 64 Kbps, up to T-1 rates. Sometimes used to refer to POTS and non-video capable systems.

National Cable Television Association (NCTA)

Association that represents the interests of cable television system operators. The NCTA has aggressively fought the efforts of telephone firms seeking to deliver video services.

National ISDN-1

A specification for a standard ISDN phone line.

National Society of Cable Television Engineers (NSCTE)

Professional association of cable television engineers. The NSCTE sets standards and provides training and technical resources for cable engineers.

National Television Systems Committee (NTSC)

U.S. standards organization that established the U.S. standard for analog broadcast television. The NTSC created the eponymous analog broadcast television transmission standard now use in the United States as well as in Japan and a number of other countries. The standard is based on a 525-line image displayed at thirty frames per second.

native method

Code that allows Java, which is platform-independent, to interact with platform-specific code.

NCTA

See National Cable Television Association (NCTA).

Near Video On Demand (NVOD)

Use of multiple channels to play the same program with staggered start times. For instance, NVOD might consist of beginning a hit movie at ten-minute staggered intervals on a half dozen different channels. With digital technology greatly increasing the number of channels that can be delivered over a given frequency band, NVOD is much cheaper to implement than VOD because it does not require the delivery of switched video to subscribers. Also sometimes called Enhanced Pay-Per-View.

network

Transmission equipment with a server, netnodes, and transmission devices that enable communication between individual network users. Series of points interconnected by communications channels. The switched telephone network consists of public telephone lines normally used for dialed telephone calls. A private network is a configuration of communications channels reserved for the use of a sole customer.

Network Access Points (NAPs)

A juncture between major Internet service providers. Also known as Internet Exchanges (IXs), connection at one or more of these NAPs constitutes connection to the Internet.

network commerce

The commercial exchange of goods, services, or information between two or more parties enabled by a digital medium.

network economy

The emerging economy based on open, interactive, digital networks, such as the Internet, and the capabilities that such technology enables.

network element

Facility or equipment used in the provision of a telecommunications service. Also includes features, functions, and capabilities that are provided by means of such facility or equipment, including subscriber numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing, or other provision of a telecommunications service.

network file manager

The OS-9 network file manager module that supports networking. NFM is responsible for maintaining accurate communication between device drivers across the network.

network information table

A privately defined table containing the physical network parameters such as FDM frequencies, Transponder Numbers, etc. See the ISO/IEC International Standard | Recommendation 13818-1.

network interface module

Interface module between the broadband network communication device and the digital device. It implements network-specific decoding if required.

Network Interface Unit (NIU)

Term used to describe interface between the network and the customer premises. In a broadband network, the NIU may be required to separate and distribute video, data, and telephony signals for use by different devices at the customer premises. The NIU may be incorporated into a set-top box or other multi-use piece of customer premises equipment, or it may be a completely separate device.

Network News Transfer Protocol (NNTP)

Protocol used to transfer network news. It is defined in RFC 977.

network service access point

OSI generic standard for a network address consisting of 20 octets. ATM has specified E.164 for public network addressing and the NSAP address structure for private network addresses.

newsgroup

Name given to the discussion groups on USENET. These are threaded discussions to which individuals post comments and others respond to those posts or post different comments. On USENET, there is probably at least one Newsgroup for every imaginable topic -- and for many topics that are beyond the imagination of most people.

NFM

The Network File Manager is the OS-9 network file manager module that supports networking. NFM is responsible for maintaining accurate communication between device drivers across the network.

NIM

Network Interface Module. In a set-top device the data is received through the network interface module. In digital broadcast television, the NIM is a tuner that gets a signal from a wire connected to an antennae. In digital cable devices it is a tuner that gets the signal from a wire, typically coax cable. In a telecommunications company environment, it may be an ADSL wire connection.

NIT

Network Information Table.

NIU

See Network Interface Unit (NIU).

NNTP

See Network News Transfer Protocol (NNTP).

noise

Generally, any disturbance that tends to interfere with the normal operation of a communications device or system. Random electrical signals, introduced by circuit components or natural disturbances, which degrade the performance of a communications channel.

NSCTE

See National Society of Cable Television Engineers (NSCTE).

NTSC

See National Television Systems Committee (NTSC).

NVRAM

Non-Volatile RAM. This is changeable storage on the device that will retain information over a power down cycle. It is often used to store customer specific data such as channel groups, parental control and privileges.

normal state

Control state in which the control is ready and the user may interact with it; or request state in which an item is selectable but not under the pointer.

NRF

Non-volatile (NVRAM) File Manager. File manager that manages allocation and deallocation of NVRAM files.

NSAP

See network service access point.

O

OAM

See operations administration and maintenance.

OAMF5

Operations And Management Flow 5, is a management function specified in the ATM User-Network Interface (UNI) Specification Version 3.1 for verifying end-to-end connectivity at the virtual channel level.

object-oriented

Modular programming that allows software coding to be reused and interchanged between programs.

off-line

State of a computer when it is not connected to another. A program that allows a user to read and reply to messages without being connected to the network is therefore known as an off-line reader.

Ohm

Unit of measurement for the resistance (DC) and impedance (AC) of an electrical circuit.

on-chip cache

An on-chip cache is an array implemented internal to the processor chip.

on-line

State of a computer when it is connected to another.

on-line system

System in which the data to be input enters the computer directly from the point of origin (which may be remote from a central site) and/or the output data is transmitted directly to the location where it is to be used.

OpenCable

Cable Television Laboratories, Inc. (CableLabs®) and its members have established "OpenCable" a project aimed at obtaining a new generation of set-top boxes that are interoperable. These new devices will enable a new range of interactive services to be provided to cable customers. The open specification project is patterned after the industry's successful Data-Over-Cable Service Interface Specification (DOCSIS) process which continues within CableLabs.

Open Network Architecture (ONA)

Telephone switches and circuits designed to enable unbundling of features to facilitate interconnection with services provided by outside vendors.

operations administration and maintenance

A group of network management functions providing network fault indication, performance information, and data and diagnosis functions.

open standard

A technological standard that allows a variety of autonomous electronic terminals to interact together with publicly-accessible specifications.

open video system

Term used in the Telecommunications Act of 1996 to describe a video carrier providing common carrier services. The Telecommunications Act requires operators of open video systems to make a high percentage of their channels available to other programmers in exchange for relief from requirements to obtain local cable franchises.

operating system (OS)

Program that controls a computer's hardware. Operating systems typically control the use of the CPU (through a scheduler), memory, and peripheral devices (through device drivers). User applications send requests to the operating system to access the computer. Software that operates close to the hardware level and controls and supervises operation of a computer, establishes interface between application programs and the hardware and files system and manages the various tasks.

Optical Network Interface (ONI)

Device that performs electrical-to-analog conversion and serves as an interface between the optical network and the customer premises equipment in a FTTH network.

Optical Network Unit (ONU)

Device used to convert transmitted signals onto a single band of distribution frequencies. It is a form of access node that converts optical signals to electrical signals and vice versa, enabling the transmission of signals to and from customer premises over coax and copper twisted pairs. There are three standard sizes of ONUs with the largest serving forty-eight users, an intermediate size serving twenty-four users, and a small ONU serving only twelve users.

OS

See operating system (OS).

OS-9™ and OS-9 for 68K™

OS-9 and OS-9000 are operating systems created by RadiSys Microware Communications Software Division, Inc. OS-9 is the generic term used to describe Microware Operating systems. In the past, OS-9 referred to OS-9 for the 68K processor and OS-9000 was the operating system for all other processors.

OS9P2

The name of the default extension module. Typically, the `OS9P2` module is used to install new system service requests. See extension module.

out-of-band signaling

Signaling that is separated from the channel carrying the information. Typically the separation is accompanied by a filter. See Signaling System 7.

outside plant

Part of the telephone system located outside of the telephone company's buildings. Includes access lines, load coils, conduits, utility poles, and closures.

overbuild

Cable system built in an area where another cable operator has already established service.

overlap sending

The act of sending one digit at a time while dialing a telephone or modem.

overlay memory

Overlay memory is memory contained in an external device (for example, an emulator) used to hold programs or data that need to be tested. The overlay memory is installed in the system so it sits above (overlays) portions of the system's memory devices. Overlay memory is typically used to load or test programs residing in system ROM prior to committing the code to the ROM or RAM memory.

overlay window

A temporary window used for dialog boxes and menus.

overlay window manager

A set of functions that handles the creation, deletion, and framing of overlay windows.

owner attributes

Owner read, owner write, and owner execute. The owner of a file is any user with the same user ID as the person who created the file. If set, the owner attributes allow access to the file by the owner, but denies access to the file by the group and public. See group attributes and public attributes.

P

P2 modules

Abbreviation for OS9P2, the default name string for the OS-9 customization modules. See customization module.

packet

Bundle of data. Group of binary digits, including data and call-control signals, switched as a composite whole. A series of bytes communicated in sequence that conform to a particular format. Packets include fields for items such as error detection, packet size, and packet type. Each packet traverses the network independently. Packet sizes can vary from roughly 40 to 32,000 bytes, depending on network hardware and media, but are normally less than 1,500 bytes long.

PacketCable

PacketCable is a project conducted by Cable Television Laboratories, Inc. (CableLabs®) and its member companies aimed at identifying, qualifying, and supporting Internet-based voice and video products over cable systems. These products will represent new classes of services utilizing cable-based packet communication networks. New service classes include telephone calls and videoconferencing over cable networks and the Internet. The services would be delivered using the basic Internet Protocol (IP) technology that is used to send data via the Internet.

packet identifier

A unique 13-bit integer value used to associate elementary streams of a program in a single or multi-program transport stream. See the ISO/IEC International Standard | Recommendation 13818-1.

packet mode

The mode that a decoder is in when it expects only elementary stream data and `DATA_DELIVERY_TYPE` is set to `DDT_PACKET`.

packetize

For the MPFM subsystem, parse the MPEG bitstream into MPEG-1 packets or MPEG-2 PES packets.

packetized elementary stream

In MPEG-2, after the media stream has been digitized and compressed, it is formatted into packets before it is multiplexed into either a program stream or transport stream.

packetized elementary stream packet

A PES header followed by a quantity of bits from either an Audio Elementary Stream or a Video Elementary Stream. See the ISO/IEC International Standard | Recommendation 13818-1.

packet switching

Data transmission method using packets, where a channel is occupied only for the duration of transmission of the packet. Packets are independently transmitted from point to point between source and destination and reassembled into proper sequence at the destination.

Packet Internet Groper (PING)

Software used to debug the data link and network layers of an Internet connection.

packet switched network

Network of computers that communicates via a defined packet format. Packet switched networks are capable of using a single communications line for multiple conversations.

pack mode

The mode a decoder is in when it can process MPEG-1 packets, MPEG-2 PES packets, or MPEG-2 program stream packets.

PAL

See Phase Alternate Line (PAL).

parallel interface

PC interface that provides or receives data in the parallel form of one byte.

parity

Simple means of detecting errors in data recording or transmission. For that purpose, a data quantity is allocated a "parity bit" whose value is computed from the data bits. With even parity, the number of ones of all data and parity bits is even. With odd parity, the number of ones is odd. Mark and space parities also exist.

parity check

Checking system that tests to ensure that the number of ones or zeros in any array of binary digits is consistently odd or even. Parity checking detects characters, blocks, or any other bit grouping that contains single errors.

PAT

See program association table.

patch locations

A program or data table location that can be modified by a programmer to modify the software operation. Typically, patch locations are used for data values (for example, the address of a device register).

path

A path is the optional part of a file name that precedes the root and defines the subdirectory in which the file resides.

The OS-9 path is an environment variable that lists the subdirectories OS-9 should search to find commands and programs the user attempts to execute.

path descriptor

A data structure used by file managers and device drivers to perform I/O functions. A path descriptor contains information specific to an open path. Every open path is represented by a path descriptor. Path descriptors are allocated and de-allocated as paths are opened and closed.

path identifier

A number used as a handle to read and write down a path.

path table

An array of system path numbers in each I/O process descriptor indexed by local path numbers.

Pay-Per-View (PPV)

Cable television service in which a particular broadcast is sold directly to viewers. Used often to market sporting events such as boxing title fights and professional wrestling. A cable television customer typically calls a toll-free telephone number provided by the cable television provider to request the PPV program.

PBX

See Private Branch Exchange (PBX).

PC Card

See Personal Computer Memory Card International Association.

PCI

See Peripheral Component Interconnect (PCI).

PC file manager

The PC file manager (PCF) reads or writes PC-DOS disks.

PCF

See PC file manager.

PCMCIA

Personal Computer Memory Card International Association. PCMCIA (Personal Computer Memory Card International Association) is an international standards body and trade association with over 300 member companies that was founded in 1989 to establish standards for Integrated Circuit cards and to promote interchangeability among mobile computers where ruggedness, low power, and small size were critical. As the needs of mobile computer users have changed, so has the PC Card Standard. By 1991, PCMCIA had defined an I/O interface for the same 68 pin connector initially used for memory cards. At the same time, the Socket Services Specification was added and was soon followed by the Card Services Specification as developers realized that common software would be needed to enhance compatibility.

PCS

See Personal Communications Services (PCS).

PCR

Program Clock Reference.

PDA

See Personal Digital Assistant (PDA).

peak cell rate

The Peak Cell Rate, in cells/sec, is the cell rate the source may never exceed.

pedestal

An above-ground closure for splicing and terminating buried cables.

penetration

Percentage of households out of a given population using a product or receiving a service. An example is the percentage of homes subscribing to cable TV out of a given number of homes passed by cable in an area.

Peripheral Component Interconnect (PCI)

Local bus standard initiated by Intel. It usually has a bus width of 32 bits and operates at a maximum of 33 MHz. PCI version 2.0 has a 64-bit bus width. PCI decouples the processor and expansion bus by means of a bridge. The transfer rate reaches 133 Mbps at 32 bits and 266 Mbps at 64 bits. Bursts are carried out with any length. PCI, unlike the VL local bus, is specified processor-independent, and PCI buses are now being used in Apple Macintosh computers as well as Intel-based PCs.

PERL

See Practical Extraction and Report Language (PERL).

permanent virtual channel connection

A virtual channel connection (VCC) is an ATM connection where switching is performed on the VPI/VCI fields of each cell. A permanent VCC is one provisioned through some network management function and left up indefinitely.

permanent virtual circuit

In ATM usage, this is a link with static route defined in advance, usually by manual setup. It connects one device to another over a network. It is like having a phone that only connects to one other phone in the world.

Personal Communications Services (PCS)

FCC terminology describing intelligent, digital wireless, personal two-way communications systems. Based on "microcells" using frequencies in the 1.5- to 1.8-MHz range with low-power transmitters to serve small areas such as buildings and neighborhoods.

Personal Computer Memory Card International Association

See PCMCIA.

Personal Digital Assistant (PDA)

Apple Computer term for a portable computing device that is usually capable of transmitting data. These devices make possible in one extremely small, portable package services such as paging, data messaging, electronic mail, stock quotations, handwriting recognition, personal computing, facsimile transmission and retrieval, calendars, and other information handling capabilities. The Apple Newton is an example of a PDA.

PersonalJava

Consists of core and standard extension (optional) APIs. It is designed specifically for resource-limited environments, with the addition of specific features required by consumer applications. Applications in development for PersonalJava include hand-held computers, set-top boxes, game consoles, mobile hand-held devices, and smart phones. See EmbeddedJava.

PES

See packetized elementary stream.

PGP

See Pretty Good Privacy (PGP).

Phase Alternate Line (PAL)

European analog color television standard using 625 scan lines per frame, twenty-five frames per second, and 2:1 interlace. It is the analog television standard used in Britain, parts of Europe, and parts of the Far East (with the notable exception of Japan).

photon

Quantum of electromagnetic energy.

physical hardware interface

ISDN hardware that performs OSI Layer 1 functions.

physical medium

Physical medium refers to the actual physical interfaces. Several interfaces are defined including STS-1, STS-3c, STS-12c, STM-1, STM-4, DS1, E1, DS2, E3, DS3, E4, FDDI-based, Fiber Channel-based, and STP. These range in speeds from 1.544Mbps through 622.08 Mb/s.

PING

See Packet Internet Groper (PING).

pipeman

Pipe file Manager. Manages named and unnamed pipes for interprocess communication.

pixel

Short for Picture Element. A point on a computer monitor. The smallest unit of the computer display screen. On a black-and-white (1-bit) screen, the pixel is either black or white. On a color (8-bit, 24-bit, or 32-bit) monitor, pixels can be any color from a choice of hundreds to several million colors depending upon the pixel depth (the number of bits available to describe the color values for each pixel). Pixels are also the measure of resolution of a screen (as in 72 pixels per inch).

pixel aspect ratio

The pixel aspect ratio defines the ration of pixel width (x) to pixel height (y). A pixel with an aspect ratio of 1:1 is square.

pixel expansion

Pixel expansion is the process used to convert the size of a pixel while it is being copied from a source drawmap to a destination drawmap with a different depth.

Plain Old Telephone Service (POTS)

Basic analog telephone service supplying access to the public switched telephone network. POTS uses the lowest 4 KHz of bandwidth on copper twisted pair wiring. Any service sharing a line with POTS must either use frequencies above POTS or convert POTS to digital and interleave with other data signals.

platform

Computing or networking hardware, software, and services.

player shell

The player shell is responsible for the following functions in a DAVID set top box environment:

- Attaching the base-case devices
- Performing channel tuning
- Initiating communications with the network gateways
- Downloading and executing applications from the network

plug-in

A plug-in is a modular software add-on to a browser that enables it to support additional functions, such as audio or video.

PMT

Program Map Table.

Point-of-Presence (POP)

Term used to denote the location of a switching dial-in facility, usually for a long-distance telecommunications provider such as AT&T or MCI or an Internet service provider such as Netcom or PSI.

point-to-point lines

Lines allowing only one endpoint per ISDN line.

Point-to-Point Protocol (PPP)

Standard consisting of multiple protocols defined in RFC 1171 providing for transmission of packets over serial lines. Since PPP defines a data link layer with a protocol field, it can be used with other protocols such as AppleTalk in addition to the Internet Protocol. PPP also includes support for error correction via a dialect of HDLC, header or data compression, and link characteristic negotiation. PPP is more complex than SLIP, but it has largely replaced SLIP because of its robust features.

point-to-point transmission

Carrying a signal between two points without branching to other points.

polarization

If the electric or magnetic field of an electromagnetic wave is oscillating in one direction only, the wave is linearly polarized. The direction of the magnetic field is called the polarization direction.

polarization filter

Device for separating the part of a certain polarization direction from an electromagnetic wave. Only that part whose polarization direction coincides with the polarization direction of the filter passes through the filter.

pole rent

Rent paid to the owner of a utility pole by other utilities using the pole. Pole rental fees are governed by the FCC.

POP

See Point-of-Presence (POP) or Post Office Protocol (POP).

portal

Designation given to Internet sites used as main points of entry to the World Wide Web. The Web sites of AOL, Yahoo!, Excite, and Netscape's Netcenter are all portals.

position independent code

A module that can be placed loaded anywhere into the memory. This allows OS-9 to load the program wherever memory space is available. OS-9 determines the appropriate load address only when the program is run.

Post Office Protocol (POP)

Client/server protocol designed to allow clients to pick up their mail from the server. Allows subscribers with dial-up Internet Protocol accounts to log on to a POP server from which they can pick up their e-mail. There are three versions:

POP, POP2 and POP3. Later versions are incompatible with earlier versions.

POTS

See Plain Old Telephone Service (POTS).

PPP

Point-to-Point Protocol.

Practical Extraction and Report Language (PERL)

Interpreted computer language created by Larry Wall. PERL has played an important role in the creation of many Internet applications. Originally based on UNIX systems, it is now available on other platforms, including DOS. Among the Internet tools and application written in PERL are a number of useful HTML filters.

predefined composite privileges

Combinations of two or more base privileges provided with the access control option. These are not case-sensitive.

Pretty Good Privacy (PGP)

Public key encryption program written by Philip R. Zimmermann in 1991 and given away free on the Internet.

PRI

See Primary Rate Interface.

price-cap regulation

Regulation that places a ceiling on telephone prices rather than attempting to assess costs and rates of return. LECs have lobbied for and increasingly obtained price-cap regulation from state PUCs. See rate-of-return regulation.

Primary Rate Interface

Is 23-64Kb/s bearer channels (30 in Europe) and one 64Kb/s Data channel that carries both call setup and user packet data across the network. It may also be referred to as a 23B+D (30B+D in Europe) connection.

Private Branch Exchange (PBX)

On-premises switch that operates as a private local exchange, typically providing reduced-digit dialing for internal calls.

private line sources

Generally, a dedicated communications channel between telephone terminals in the same or different telephone exchanges. Usually used by business customers.

private object

Object visible to an application only after a user has been authenticated to the token by a PIN

private key

Key known only to the owner and used in conjunction with a public key for Public-key Cryptography. The private key is used for decryption, signing, and message digesting.

process

An individual running program; synonymous with task.

process age

The age of a process is a number between 0 and 65535 based on the initial priority of the process and the length of time the process has waited for execution. A process is entered into the active queue with an age equal to its initial priority. The initial priority is set in the password file on multi-user systems by the system manager. Each time the process is passed by for execution, its age is incremented by one.

process descriptor

A table containing the following information about a process such as its state, memory allocation, priority, and I/O paths. The process descriptor is automatically initialized and maintained.

process ID

A unique code number assigned by OS-9 when a new process is created. It is used to identify the process in subsequent commands or system calls.

processor

Often used synonymously with CPU. An intelligent microchip that is highly programmable.

process priority

A priority is assigned to each process on a system. This process priority is used when the kernel determines which process to execute. Each process inherits the process priority of its parent unless a process priority modifier (^) is used.

processing speed

The amount of time required for a microchip to process a given amount of information.

process state

A process can be in one of five states: active, waiting, sleeping, suspended, or waiting on an event.

profile

Subset of the Java classes created to make Java function more efficiently. See EmbeddedJava and PersonalJava.

program

Group of instructions to a CPU to process data or to control machines.

program association table

PAT associates a program number with a program map table. See the ISO/IEC International Standard | Recommendation 13818-1.

Programmable ROM (PROM)

Read-only memory where the stored data can either be programmed during manufacture or in the field by the user.

program map table

PMT specifies PID values for components (for example, elementary streams) for one or more programs. See the ISO/IEC International Standard | Recommendation 13818-1.

program module

A memory module that contains executable code. All OS-9 programs are required to be kept in memory module format. See memory module.

program specific information

PSI consists of normative data needed for demultiplexing transport streams and successful program regeneration. See the ISO/IEC International Standard | Recommendation 13818-1.

PROM

See Programmable ROM (PROM).

protocol

Standard procedure or system. A communications protocol is a standard communication format allowing networked computers to exchange information. Protocols are developed for each kind of information exchange. For example, electronic mail uses the SMTP protocol and Web browsers use the HTTP protocol, among other protocols.

protocol control

Protocol control is a mechanism a given application protocol may employ to determine or control the performance and health of the application. For example, protocol liveness may require protocol control information be sent at some minimum rate; some applications may become intolerable to users if they are unable to send at least at some minimum rate.

protocol control information

Information exchanged between corresponding entities, using a lower layer connection, to coordinate their joint operation.

protocol data unit

A PDU is a message of a given protocol comprising payload and protocol-specific control information, typically contained in a header. PDUs pass over the protocol interfaces which exist between the layers of protocols (per OSI model).

proxy server

Maintains local copies of documents requested by users. The proxy server acts as a stand-in or proxy for the remote server. When a local user requests a document, the proxy server is first consulted to see if a copy is held there. If the document is located on the local proxy server, the user receives the document much more quickly than if it were remotely retrieved.

psect

Program section. A `psect` contains the program instructions and variable declarations. Each source file may have only one `psect`. Global symbols in this section are accessible from all other program segments. Similarly, statements in this section may also appear in linkage maps and symbolic debugger symbol lists. A `psect` is terminated by a matching `ends` or `endsect` statement. See vsect.

pseudo memory

Pseudo memory is memory the CPU cannot directly access (read or write). For example, the graphics memory in a system may only be accessible to the graphics hardware. The Shaded Memory API and Graphics Device API provide a mechanism to manage this type of memory.

PSI

Program Specific Information.

PSTN

See Public Switched Telephone Network (PSTN).

PTS

Program Transport Stream.

PTS

Presentation Time Stamp.

public access channels

Cable channels reserved for the exclusive use of the general public to provide or present uncensored programming on a first-come, first-served basis.

public attributes

Public read, public write, and public execute. The public is defined as any user not having the same user ID or group number as the file. If set, these attributes allow anyone access to the file. See group attributes and owner attributes.

public key

Key known to anyone the owner wishes to receive encrypted information from for Public-key Cryptography. The public key is used for encryption and authentication.

public-key cryptography

Method of cryptography in which each individual has both a private key and a public key.

public key encryption

An RSA encryption system in which a public key is used to encrypt data and a private key is required to decrypt the data.

public object

Object visible to all applications having a session with the token

Public Switched Telephone Network (PSTN)

Term usually used to refer to the world-wide voice telephone network accessible to anyone who has a telephone and access privileges.

components.

Public Utilities Commission (PUC)

State regulatory bodies charged with regulating public utilities such as telephone and electric service providers. State PUCs are playing a key role in telecommunications deregulation. Sometimes called a Public Service Commission (PSC). See price-cap regulation, rate-of return regulation and incentive regulation.

pulse code modulation

Technique for transmitting analogue information in digital form. After the analogue signal is sampled, it is represented by a fixed length binary number which is then transmitted as a corresponding set of pulses.

Push technology

Push software packages automatically deliver Internet text, graphics, and audio to a client machine. Push technologies mimic the ease-of-use of television and appeal to "passive" needs of consumers.

PVC

See permanent virtual circuit.

PVCC

See permanent virtual channel connection.

Q

quality of service

Quality of service is defined on an end-to-end basis in terms of the following attributes of the end-to-end ATM connection:

- Cell Loss Ratio
- Cell Transfer Delay
- Cell Delay Variation

QAM

Quadrature Amplitude Modulation. A frequency modulation technique used by digital video channels to deliver digital broadcast and interactive services over noisy bands in the RF spectrum. QAM channels deliver compressed and encoded multiprogram MPEG transport streams containing interleaved voice, video, and data to HCT's. HCT's can tune to one QAM frequency at a time.

Digital modem technology that is the de facto standard for voiceband modems, high-rate digital microwave radios, and digital cable television transmission.

QPSK

See Quadrature Phase Shift Keying.

Quadrature Phase Shift Keying (QPSK)

FM-oriented (frequency modulation) transmission technique used for digital satellite transmission and upstream signaling in some HFC networks. See Modulation for a comparison of several digital modulation schemes.

Quicktime

Digital video and audio standard developed by Apple Computer. Software for image and audio compression and the integration of multiple media. Cross-platform playback of Quicktime movies is supported.

R

Radio Frequency (RF)

Electromagnetic frequency band located between the frequencies of audio and light. Radio frequencies used for transmission are between 500 KHz and 300 GHz.

RAID

See Redundant Array of Inexpensive Disks (RAID).

RAM

See Random Access Memory (RAM).

RAM disk

An area of memory temporarily assigned to store information in a similar logical manner as a hard disk. Programs can access the data as if it were a real physical disk. Access will be very fast and typically the amount of storage will be small.
All data stored in a RAM disk will be lost when power is removed from the memory.

Random Access Memory (RAM)

Data storage that can be written to and read from. In computers, RAM is volatile, temporary storage that is used to run application programs. In RAM, data can be directly and randomly read or written.

random block file manager

RBF. The OS-9 file manager module that supports random access, block-oriented mass storage devices (such as disk systems). RBF can handle any number or type of such systems simultaneously. It is responsible for maintaining the logical and physical file structure for OS-9. See file managers.

raster

Computer graphics terms describing a predetermined pattern of line that provides uniform coverage of a display space. Raster graphics are computer graphics that are composed of an array of pixels arranged in rows and columns. Bitmapped images are examples of raster graphics. Contrast with vector, or coordinate, graphics.

rate-of-return regulation

Form of regulation under which firms can set prices to recover allowable operating expenses and earn enough of a return to cover the cost of capital acquired in the debt or equity markets. Formerly, rate-of-return regulation was the primary means of regulating the price of telephone services. The FCC and many states have since adopted price-cap regulation. See price-cap regulation and incentive regulation. See Regional Bell Operating Company.

RBF

See RAM disk.

RBOC

See Regional Bell Operating Company (RBOC).

RC4

Symmetric stream encryption algorithm using a keyed pseudo-random sequence.

Read Only Memory (ROM)

ROM characterizes a memory chip from which data that has been written in advance can be read but cannot be written in the field. The stored data is determined once and cannot normally be modified afterwards. Data stored in ROM remains even if the power is turned off.

read-only files

Files that cannot easily be modified or deleted. These files have an attribute bit set that tells OS-9 that these files should be protected.

read-time

The phase of a make process when the makefile is read and the first stage of processing its contents is performed.

real-time

Computer processing that appears to take place instantaneously. An example is real-time digital video, where an encoder may digitally encode a video signal using a standard such as MPEG-2 and display the digital video stream instantaneously. Generally, an operating mode in which receiving data, processing it, and returning results takes place so quickly as to actually affect the functioning of the environment, guide the physical processes in question, or interact instantaneously with the human users. Examples include process control systems used in manufacturing and new digital video encoders.

real-time file

File containing at least one real-time record.

real-time network file manager

The RTNFM component handles data coming across the unidirectional high speed data channel. RTNFM supports access to data streams delivered by servers over broad band-width networks.

real-time system

System in which the data flow through each interface is determined by the disc data flow of 75 sectors/second.

Red-Green-Blue (RGB)

Color model based on the mixing of these three colors, the primary additive colors used by color monitor displays and television sets. The combination and intensities of these three colors can represent the entire visible spectrum. Color television pictures originate as separate red, green and blue pictures which are merged as a composite signal.

Reduced Instruction Set Computer (RISC)

Microprocessors which, compared to Complex Instruction Set Computer (CISC) microprocessors, have a significantly reduced instruction set (typically consisting of less than 100 machine instructions). In a RISC microprocessor, the machine instructions are no longer microcoded but may be executed immediately without decoding. Well-known RISC microprocessors include the PowerPC, SPARC, and MIPS.

Redundant Array of Inexpensive Disks (RAID)

Data storage system in which several inexpensive disk drives are used to create a redundant data storage system. At its simplest, RAID entails disk mirroring or shadowing in which the contents of one disk are automatically backed up on another. In more complex RAID configurations, data is "striped" across several disks in a RAID array.

reference directory

An optional, user-specified directory that serves as a central repository for copies of the latest revisions contained within log files. A reference directory can be defined as a default for all log file directories or associated with individual specific directories. They are defined by means of configuration file parameters.

reference platform

From a DAVID perspective a reference platform is a device that has DAVID software ported to it and the hardware specific software for that device is included in the DAVID OEM distribution package. A user of the DAVID OEM package will be able to build a bootfile for the device to bring it to life without any additional programming.

Reference devices generally are available to other manufacturers so that they can be used to develop and test software or additionally be used as the basis to design and build a final deployment device tailored to the needs of the manufacturer.

Regional Bell Holding Company

See Regional Bell Operating Company (RBOC).

Regional Bell Operating Company (RBOC)

Any one of seven "Baby Bells" created by a consent decree (a negotiated legal settlement) between AT&T and the United States Federal Government that is known as the Modified Final Judgment (MFJ). Also sometimes called a Regional Holding Company (RHC) or a Regional Bell Holding Company (RBHC). Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Telesis, SBC Communications and US West. GTE is not one of the RBOCs, but is the largest local exchange carrier in the United States. See also Bell Operating Company (BOC) and AT&T Consent Decree.

Regional Holding Company

See Regional Bell Operating Company (RBOC).

re-intermediate

To interpose as a new network-enabled intermediary in a direct-to-consumer product or service distribution channel.

relocatable object file

The ROF contains information such as the global data definitions, code entry points, external references, actual object code, and initialized data. An ROF has the following sections: header, external definitions, object code, initialized data, remote initialized data, debug information, external reference section, and local reference section.

remote access server

A computer in a network that provides access to remote users via analogue modem or ISDN connections.

repeaters

Devices that enhance the signal between transmission and termination devices. Signals received over one circuit are automatically repeated in another circuit or circuits, generally amplified, restored, or reshaped to compensate for distortion or attenuation.

request for comment

The development of TCP/IP standards, procedures, and specifications is done via this mechanism. RFCs are documents progressing through several development stages, under the control of IETF, until they are finalized or discarded.

Request For Comments (RFC)

Document series, begun in 1969, which describes the Internet suite of protocols and related experiments. Most RFCs do not describe Internet standards, but all Internet standards are described in RFCs.

reseller

The resale of telecommunications services purchased from a facilities-based carrier.

resolution

Measure of the detail in an image or sound. Images are measured in pixels per inch and in the number of bytes used to describe the color values at each pixel. Audio is measured in the number of samples per second (usually expressed in Kilohertz).

revision tree

Consists of all the revisions of a work file in a hierarchical relationship. The root of the revision tree is the first revision, which begins the trunk of the tree. All revisions except the first have a single parent (predecessor) revision. Unless it is a tip revision, it will have one or more successor revisions (children). A successor revision may be on the same branch (or trunk) as the parent revision, or it may be the first revision of a new branch.

RF

See Radio Frequency (RF).

RFC

See request for comment.

RFC 822

Internet standard format for electronic mail message headers. Mail experts often refer to "822 messages."

RFC 1392

RFC containing an Internet Glossary. If you encounter an Internet-related term that isn't defined in this glossary, check the Internet Glossary.

RFC 1577

Request For Comments 1577, is the Internet Activities Board publication titled Classical IP and ARP over ATM by M. Laubach. It specifies ATMARP and InATMARP.

RGB

See Red-Green-Blue (RGB).

RGB555

Video format in which the primary colors used in television presentation (red, blue, and green) are presented by 5 bits of information, equal to 32 levels of graduation from one extreme value to another.

RGB888

Video format in which the primary colors used in television presentation (red, blue, and green) are presented by 8 bits of information, equal to 32 levels of graduation from one extreme value to another.

RHC

See Regional Bell Operating Company (RBOC).

ring network

Network topology in which terminals are connected in a point-to-point serial fashion forming an unbroken circle.

RISC

See Reduced Instruction Set Computer (RISC).

ROADS

See Robust Open Architecture Distributed Switching (ROADS).

Roaming

The ability of cellular telephone subscribers to use a cellular phone to make and receive calls in places outside of their home calling area.

Robust Open Architecture Distributed Switching (ROADS)

Proposed client/server telephony switching model based on the idea that digital transmission will make it unnecessary to locate a complete switch at each central office. In ROADS control, functions of a switch would be separated from the actual line interfaces and central units would provide switching control for several different line interface platforms. The systems would be connect by a SONET ring.

ROM

See Read Only Memory (ROM).

router

Device that connects two or more networks at the network layer. Routers typically have a TCP/IP address for each physical medium to which they are linked. A router connected to a SLIP link as well as an Ethernet would have two TCP/IP addresses. Routers function based on information in their routing tables, which can be configured statically (as is usually the case with BBSs) or dynamically using routing protocols.

Royalty

Price per device paid to Microware for the rights to distribute Microware software on devices.

RS-232

Serial wiring standard for connecting data terminal equipment (DTE) to data communications equipment (DCE). It is a generally accepted standard for serial interfaces defining the signal levels, the signal meanings, the plug layout, and the procedure to establish a connection between a DCE and a DTE.

RS-422

This is a serial communications technology. RS-422 (differential) was designed for greater distances and higher Baud rates than RS-232

RSA

RSA public-key cryptosystem defined in PKCS-1 RSA Encryption Standard.

RPC

Remote Procedure Call.

RTND

Real Time Network Driver.

RTNFM

Real Time Network File Manager. The RTNFM component handles data coming across the unidirectional high speed data channel. RTNFM supports access to data streams delivered by servers over broad band-width networks.

RTOS

Real-Time Operating System.

Rx

Receive.

S

S Frames

Sent frames are sent as acknowledgments for receiving an I frame.

S-records

Binary data, usually object programs, converted to ASCII hex characters in a standardized format. This Motorola-standard format is often directly accepted by commercial PROM programmers, emulators, logic analyzers, and similar devices that use the RS-232 interface. It can be useful for transmitting files over data links that can only handle character type data. It can also be used to convert OS-9 assembler or compiler generated programs to load on non-OS-9 systems.

SAP

See Separate Audio Program.

SAPI

Service Access Point ID

SAR

Segmentation and Re-assembly. Refers to the handling of packets with reference to a network interface.

Satellite Master Antenna Television (SMATV)

Similar to cable TV and typically used in apartment complexes and hotels and other areas where a large number of subscribers are located in a small geographical area. SMATV is not governed by the same FCC regulations as CATV. SMATV cannot cross public land, for example.

satellite transmission

Common means of long-distance communication using an earth transmitting station (antenna), an orbiting satellite (which receives and transmits signals via its transponders), and a necessary earth receiver (satellite dish). Satellite transmission is now beginning to be used for direct broadcast of video programming and for two-way data communications. See DBS.

SBF

See sequential block file manager.

SCB

Stream Control Block.

SCC

Serial Communications Controller.

SCF

Serial Character File Manager. This is the DAVID / OS-9 file manager that is used to control serial devices that transmit and receive one character at a time. Examples are serial ports to connect to devices such as printers and modems and also infrared input from remote keyboards or keypads.

SCL

Stream Control List. A linked list of structures pointing to buffers for the MPEG data.

screen

Graphics file or display manager mechanism for creating a drawmap larger than the physical display and combining several drawmaps on the display.

scripting language

Simplest form of computer programming using nearly plain English commands. A high-level programming language which uses a language that is recognizable as something like natural language. JAVAScript, developed jointly by SUN and Netscape for writing Web applets, is an example of a scripting language, as is Macromedia's Director scripting language, LINGO, used for writing multimedia. Other examples of scripting languages include Hypertalk and Supertalk.

SCR

System Clock Reference.

SCSI

See Small Computer System Interface (SCSI).

SCTE

See Society of Cable Television Engineers (SCTE).

SDH

See Synchronous Digital Hierarchy (SDH).

SDLC

Synchronous bit-oriented protocol.

SDV

Switched digital video. A type of network that delivers asynchronous transport mode packets to set top boxes.

search engine

An electronic service that scans the Internet for Web sites related to criteria entered by an end user and returns a list of relevant sites.

SECAM

See Systeme Electronique Couleur Avec Memoire (SECAM).

secret-key cryptography

Traditional form of cryptography based on a sender and receiver knowing and using the same secret key.

secret key

Key known only to the sender and receiver and used in Secret-key Cryptography

security officer

A user that can initialize a token, set a normal user's PIN, and manipulate public objects.

segment allocation size

A value that specifies the minimum number of blocks to allocate to an RBF file.

segmentation and reassembly

Method of breaking up and reconstructing arbitrarily sized packets.

Separate Audio Program (SAP)

Audio channel that can be received by new stereo TV sets and used as a second soundtrack. Often used to carry soundtrack dubbed into a second language.

sequential block file manager

The OS-9 file manager module that supports sequential access, block-oriented mass storage devices (tape systems). SBF can simultaneously handle any number or type of such systems. See file managers.

sequential character file manager

The OS-9 file manager module that supports sequential access, character-oriented devices (such as terminals and printers). SCF can simultaneously handle any number or type of such systems. See file managers.

serial interface

PC interface that provides or accepts data in serial form as the bits of a serial data unit.

Serial Line Internet Protocol (SLIP)

An easily implemented and widely available scheme for transmitting Internet Protocol datagrams over serial lines. SLIP specifies mechanisms for framing and header compression. It does not provide error correction or negotiation of connection characteristics, features which are included in the Point-to-Point Protocol (PPP), which has largely replaced SLIP. Protocol used to run IP over serial lines, such as telephone circuits or RS-232 cables, interconnecting two systems. SLIP is defined in RFC 1055. It is a protocol that allows a computer to use the Internet protocols (and become a full-fledged Internet member) with a standard telephone line and a high-speed modem.

serial protocol file manager

The Serial Protocol File manager (SPF, SoftStax) supports asynchronous delivery of network data to applications and hardware devices.

serial transmission

Mode of transmission in which each bit of a character is sent sequentially on a single circuit or channel, rather than simultaneously as in parallel transmission.

server

Program that handles certain types of requests on a continuous basis. For example, a mailing list server handles requests for list subscriptions and may also handle archive file requests from list members. It is also a term used to describe the central computer in a network which manages the common data and supplies it to the workstations in the network (often called a file server). Usually, it controls access of the individual network nodes to peripherals such as printers and modems. See also Video Server.

service access point ID

Identifier located in a device descriptor that specifies the type of network service desired from the network.

service profile identifier

A number or set of numbers assigned to your ISDN line by your service provider. The switch uses SPIDs as unique identification numbers for each ISDN line.

session object

Object visible only to the application creating it; is automatically destroyed when the session is closed

SetStat

A call used to set the status of a file or device. A SetStat handles individual device parameters that are not uniform on all devices, or that are highly hardware dependent. See GetStat.

set-top box

Box that sits on top of the television set and acts as an interface to the broadband network. Set-top boxes encompass a wide range of technologies. Some are simple boxes that merely translate CATV frequencies into frequencies that are compatible with old television sets which are not cable-ready. Others are digital boxes with powerful computer chips decoding MPEG-2 transmissions from DBSs and advanced networks and demodulating them for viewing on an analog television set. Newer boxes may also be addressable, capable of communicating with the headend of the network.

SGML

See Standard Generalized Markup Language (SGML).

shaded memory

Shaded memory is a mechanism, supported by MAUI, for partitioning memory into multiple pools. This is done to avoid problems such as fragmentation. A shade of memory can only be seen by the application that defines it.

SHA-1

Message digest or hashing function creating a 20-byte digest, defined in FIPS PUB 180-1.

shadow register image

A readable image of an `LED_REG` register.

shaper

Traffic shaping is a mechanism used to attain desired characteristics for the stream of cells emitted to/from an ATM virtual channel. Examples of traffic shaping include peak cell rate reduction and burst length limiting. A shaper specifies these traffic characteristics.

Shockwave

Technology developed by Macromedia to enable the transmission and playback across the World Wide Web of interactive multimedia applications produced with Macromedia's Director 4.0. A Shockwave developer kit takes Director movies and compresses them for transmission and playback. Users with browsers such as Netscape 2.0 which support Shockwave playback can then play Director movies. Shockwave does not support all Director functions, but does provide another means for delivering interactive multimedia across the Web.

Si

See Silicon (Si).

SIB

See stream information block.

sideband

Frequencies located on either side of the main frequency in a telecommunications signal. New technology is making these previously noisy, unreliable channels usable, thus broadening the supply of usable bandwidth.

Signaling System 7 (SS7)

Out-of-band signaling system that provides fast call setup by means of high-speed, circuit-switched connections and transaction capabilities which deal with remote database interactions. SS7 makes such enhanced telephony features as caller ID, call forwarding, and call waiting widely available. SS7 also plays an integral role in the deployment of ISDN. The SS7 protocol consists of four basic sub-protocols:

Message Transfer Part (MTP), which provides functions for basic routing of signaling messages between signaling points;

Signaling Connection Control Part (SCCP), which provides additional routing and management functions for transfer of messages other than call setup between signaling points.

Integrated Services Digital Network User Part (ISUP), which provides for transfer of call setup signaling information between signaling points;

Transaction Capabilities Application Part (TCAP), which provides for transfer of non-circuit related information between signaling points.

Signal-to-Noise Ratio (SNR or S/N)

Ratio between the usable signal and any extraneous noise present. Expressed in decibels. If the SNR exceeds a certain level, the transmitted signal will become unusable.

Silicon Valley

Area of Northern California stretching from San Jose to San Francisco where many of the leading Internet and technology firms in the United States are located.

SIMM

See Single In-Line Memory Module.

Simple Mail Transfer Protocol (SMTP)

Protocol used to transfer electronic mail between computers. It is a server-to-server protocol, so other protocols are used to access the messages. Defined in STD 10, RFC 821.

Simplex Transmission

Transmission in one direction only.

Single In-Line Memory Module (SIMM)

Form of memory module with a contact strip that can be inserted into a slot on a computer's motherboard similarly to the manner in which an adapter card is inserted into a bus slot.

single key encryption

Encryption method enabling communication sharing a common encryption key. Since this single encryption key must be kept secret to keep the information confidential, a unique shared key is necessary for every pair of communication partners.

single mode fiber

Fiber waveguide on which only one mode will propagate, providing the ultimate in bandwidth. It must be used with laser light sources.

Silicon (Si)

Semiconductor material that has attained an outstanding importance in microelectronics. By doping silicon with impurity atoms such as arsenic or phosphorus, the electrical properties of silicon can be widely varied. As the main component of quartz (which makes up sand), silicon is an extremely abundant element.

SLIP/CSLIP

Serial Line Internet Protocol/Compressed Serial Line Internet Protocol.

SLIP

See Serial Line Internet Protocol (SLIP).

SLIP connection

Term used to describe a connection to the Internet over telephone lines using Serial Line Internet Protocol.

slot

Logical view of a reader or device interface that may contain a token.

Small Computer System Interface (SCSI)

An instruction-oriented, high-level interface for external mass storage devices such as hard drives and CD-ROM drives. The data transfer is usually carried out at a width of eight bits with Wide-SCSI operating at sixteen or even thirty-two bits. SCSI interfaces are designed for data transfer rates up to 10 Mbps in synchronous mode (Fast SCSI). SCSI-I standardized only a very small command set, which was enlarged with the Common Command Set. SCSI-II created a much more robust standard, defining ten SCSI device classes and accompanying commands. SCSI supports the daisy-chaining of peripherals (ability to connect several peripheral devices together serially).

small files

A class of files implemented by OS-9 RBF. A file is considered small when its contents fit in the area of the file descriptor reserved for segments.

SmartCard

Even the name Smart Card captures the imagination, however such a term is ambiguous and is used in many different ways. ISO uses the term, Integrated Circuit Card (ICC) to encompass all those devices where an integrated circuit is contained within an ISO ID1 identification card piece of plastic. The card is 85.6mm x 53.98mm x 0.76mm and is the same as the ubiquitous bank card with its magnetic stripe that is used as the payment instrument for numerous financial schemes.

Integrated Circuit Cards come in two forms, contact and contactless. The former is easy to identify because of its gold connector plate figure 1. Although the ISO Standard (7816-2) defined eight contacts, only 6 are actually used to communicate with the outside world.

The Contactless card may contain its own battery, particularly in the case of a "Super Smart Card" which has an integrated keyboard and LCD display. In general however the operating power is supplied to the contactless card electronics by an inductive loop using low frequency electronic magnetic radiation. The communications signal may be transmitted in a similar way or can use capacitive coupling or even an optical connection.

SMATV

See Satellite Master Antenna Television (SMATV).

SMDS

See Switched Multimegabit Data Service (SMDS).

SMPTE

See Society of Motion Picture and Television Engineers (SMPTE).

SMPTE Time Code

Standardized eighty-bit edit time code adopted by the SMPTE. SMPTE Time Code is used to designate frame-precise edits in video post production.

SMTP

See Simple Mail Transfer Protocol (SMTP).

SNAP

Sub-Network Attachment Point.

SO

Security Officer.

Society of Cable Television Engineers (SCTE)

Training, standards, and certification organization for "broadband communications."

Society of Motion Picture and Television Engineers (SMPTE)

Professional and standards association for motion.

SoftStax

SoftStax™ is the optimal software baseline that provides a simple and understandable application environment with the ability to "snap-in and out" underlying network technologies without disturbing the application.

SoftStax™ environment follows gracefully from the overall architecture and design philosophy of OS-9 itself. OS-9 implements a unified I/O system. The programming interface used by the application is identical whether the application is using a hard drive, serial device, or network interface. This programming interface consists of calls to open, close, read, write, and set/get I/O configuration information

SoftStax™ extends the I/O system philosophy by enabling the mapping of not just one driver on a given path, but allows multiple drivers to be "stacked" on one another. This extension represents the implementation of the OSI 7-layer model as defined by the International Standards Organization. The OSI 7-layer model specifies abstractly the services provided within 7 stackable layers and is used as the foundation design philosophy for all protocol specifications. SoftStax™ represents the concrete implementation of the OSI 7 layer model specification.

SONET

See Synchronous Optical Network (SONET).

SONET Rates

OC Level Line Rates

Capacity

OC-1

52 Mbps

28 DS-1s or 1

DS-3

OC-3

155 Mbps

84 DS-1s or 3

DS-3s

OC-9

466 Mbps

252 DS-1s or 9

DS-3s

OC-12

622 Mbps

336 DS-1s or 12

DS-3s

OC-18

933 Mbps

504 DS-1s or 18

DS-3s

OC-24

1.2 Gbps

672 DS-1s or 24

DS-3s

OC-36

1.9 Gbps

1008 DS-1s or 36

DS-3s

OC-48

2.5 Gbps

1344 DS-1s or 48

DS-3s

source code

The "raw" or "uncompiled" code in which software programs are written.

sp1577

LLC/SNAP driver.

SPARC

SPARC chips, manufactured by SUN are the heart of SUN's family of SPARCStation computers. SPARC is a RISC architecture that includes, as a specified feature, a number of registers (up to 2048 or more). A task or a routine is only allocated a register window of 32 registers.

Specialized Mobile Radio (SMR)

Private business service using mobile radiotelephones and base stations communicating by means of the public telephone network. SMR was used for many years for dispatching truck and taxi fleets. New digital technology is making SMR an attractive voice and data transmission technology because SMR signals can reach about twenty-five times farther than cellular telephone signals, thus significantly reducing the cost of building out a national wireless network.

SPF

See Stacked Protocol File manager (SPF).

SPID

Service Profile Identifier.

splice

Permanent connection of two cables. With fiber-optic cables, a splice is either thermally or mechanically applied.

SPU

System Protection Unit. SPU is special hardware used to protect system memory from accidental modification. If a process tries to access any part of system memory or any other process' memory, the SPU hardware causes a bus error and the system aborts the process.

SRAM

See Static RAM (SRAM).

SS7

See Signaling System 7 (SS7).

stack

An area of memory that holds information temporarily required by a program. It can contain data (for example, local variable storage) and/or program control information (for example, return address for subroutines).

Stacked Protocol File manager (SPF)

The Stacked Protocol File manager supports asynchronous delivery of network data to applications and hardware devices. Manages high speed streaming data, packet based signalling and control communications with the wide area network. Also manages character oriented serial devices such as RS-232 ports or pointer devices (game pads and infrared remote controls).

standard I/O path

The default I/O path used by a program for routine input and output. Every process has three standard I/O paths: input, output, and error output.

Standard Generalized Markup Language (SGML)

A broad term used to encompass a series of specific markup languages. HTML is a particular application of SGML.

standards bodies

Standards bodies, as the name implies, set industry standards. The following is a list of the major standards bodies and related organizations for the telecommunications and computer industries:

ANSI. American National Standards Institute

Bellcore.

CSA. Canadian Standards Association

DIN

DOC. Canadian Federal Government Department of Communications

EIA. Electronics Industry Association

Global Engineering Documents

ICEA. Insulated Cable Engineers Association

IEEE

ITA

NFPA. National Fire Protection Association

OFR. Office of the Federal Register

TIA. Telecommunications Industry Association

UL. Underwriters Laboratory

star coupler

Passive device in which data from one or several input fibers is distributed among a larger number of output optical fibers.

Star Network

Also called Star Bus. Geometric description of network topology in which a series of remote terminals or nodes are connected to a central office or headend. Feeder lines, the bus, run from the points of the star past individual homes in series. Almost all telephone systems use star configurations.

Static RAM (SRAM)

Random Access Memory where the information is usually stored as the state of a flip-flop (bistable multivibrator -- an electronic circuit with two stably defined states that can be switched by a strong write pulse). Because the circuit state of the flip-flop is not changed without a write pulse, an SRAM need not be refreshed as is the case with DRAM and is, therefore, static.

static effect function

High-level special effects function used to redefine specified lines on the screen.

stderr

Standard error device. In most cases this device is the monitor.

stdin

Standard input device. This device is the keyboard unless redirected.

stdout

Standard output device. This device is the monitor unless redirected.

sticky module

A sticky module is not removed from memory until its link count becomes -1 or memory is required for another use. Modules are normally removed from memory when they have a link count of zero. A module is sticky if the third bit in the module header attribute byte is set. See link count.

still mode

The still mode displays a single frame until play is resumed.

stream information block

A structure that stores stream PID-specific information.

streaming

A technique that allows data to be transferred as a steady and continuous stream. With streaming, the client browser or plug-in can start displaying the data before the entire file has been transferred.

submarine cable

Cable that is laid underwater.

sub-network access protocol

Five-byte header for IEEE 802 encapsulation.

subnetwork

A collection of managed entities grouped together from a connectivity perspective, and according to their ability to transport ATM cells.

subroutine library

An OS-9 module that contains a set of related or frequently-used subroutines that enable processes to share common code.

subscriber loop

Circuit that connects the telephone company's central office to the demarcation point on the customer's premises.

subsplit

Hybrid Fiber Coax networking term used to describe an upstream channel located in the 5- to 50-MHz spectrum band.

superscalar architecture

RISC processor architecture which may start more than one instruction in separate pipelines. Using this architecture and skillful programming, some instructions require less than one clock cycle for execution. Intel's Pentium and i860 chips and Motorola's MC88110 use this superscalar architecture.

supertrunk

Cable that carries several video signals between facilities of a cable television company.

super user

A super user has a group.user ID of `0.0`. A super user can access and manipulate any file or directory on the system regardless of the file's ownership.

Super VGA (SVGA)

VESA standard for graphics adapter resolutions and screen modes beyond VGA.

Super-VHS (SVHS)

Professional version of the consumer half-inch VHS videocassette format. SVHS yields image resolution similar to that of U-Matic tape.

supervisor state

On 68000-family processors, synonymous with system state. In this environment, OS-9 system calls and interrupt service routines are executed. See system state.

SVGA

See Super VGA (SVGA).

SVHS

See Super-VHS (SVHS).

switched access

Network connection that can be created and destroyed as needed. Dial-up connections are the simplest form of switched connections. SLIP and PPP also are commonly run over switched connections.

Switched Digital Video (SDV)

Term used to describe a digital video transmission that is received over a switched network.

Switched Multimegabit Data Service (SMDS)

Standard for high-speed data transfer. Connectionless high-speed data services which allow businesses and organizations to connect LANs through the public telephone network.

switched networks

Any network in which switching is used to direct messages from the sender to the ultimate recipient. Usually switching is accomplished by disconnecting and reconnecting lines in different configurations in order to set up a continuous pathway between the sender and the recipient.

switched service

A cable communications service in which each subscriber has a terminal and may communicate with any other subscriber or programming source.

switched telephone network

Network of telephone lines normally used for dialed telephone calls. Generally synonymous with the direct distance dialing network. Any switching arrangement that does not require operator intervention.

switched virtual circuit

A connection established via signaling. The user defines the endpoints when the call is initiated. If you think of signaling like the connection on a phone network, signaling is the logic that establishes a connection between two devices and rings up the other end. It allows greater flexibility than Permanent Virtual Circuits but requires more advanced software to handle all of the required connections.

SVCC

See switched virtual channel connection.

switched virtual channel connection

A connection established and taken down dynamically through control signaling. A virtual channel connection (VCC) is an ATM connection where switching is performed on the VPI/VCI fields of each cell.

switched virtual circuit

A connection established via signaling. The user defines the endpoints when the call is initiated.

switched virtual path connection

A connection established and taken down dynamically through control signaling. A virtual path connection (VPC) is an ATM connection where switching is performed on the VPI field only of each cell.

synchronized mode

The audio and play streams are being processed in tandem and matched to preselected points.

synchronous

Corresponding to a phase or clock signal or with the use of the clock signal.

Synchronous Digital Hierarchy (SDH)

An ITU-T defined standard technically consistent with SONET. See also Synchronous Optical Network (SONET).

Synchronous Optical Network (SONET)

Family of fiber-optic transmission rates ranging from 51.84 Mbps to 13.22 Gbps. It is an optical interface standard that allows interworking of transmission products from multiple vendors. It was created by the Exchange Carriers Standards Association of ANSI and also has been adopted by CCITT as SDH (in Europe SONET is known as SDH).

syndicator

Company supplying syndicated programming to local broadcast TV stations and to cable channels.

sysgo

The first user process started after the system startup sequence. Its standard I/O is on the system console device.

sysmbuf pool

See memory pools.

sysop

Slang term for a System Operator, technically referring to a BBS system operator. The term has expanded to include any system administrator who administers newsgroups or other on-line groups or services. More generally, a person responsible for the physical operations of a computer system or network resource.

system call

A request from a programming language causing OS-9 to perform a specific function such as input/output.

system clock

Functional group in a PC or other computer which generally comprises a PIT, a PIC channel, and a data structure. The group is periodically activated by the PIT to update the data structure automatically so that it always indicates the current time and date. The system clock is part of the operating system. The operating system uses the system clock to provide all files and directories with a time and date mark.

Systeme Electronique Couleur Avec Memoire (SECAM)

Analog television standard used in France and much of Francophone Africa, and used with some modification in Eastern Europe, Russia, and the Former Soviet Union. SECAM uses a 625-line, 50-field scan, transmitting the color difference components (frequency modulated) sequentially on alternate lines, thereby eliminating crosstalk between the color components. A line memory (delay) is thus needed to decode the signal - hence the name. The idea was dreamed up by Monsieur Henri de France and patented in 1956. The earlier French 819-line monochrome system is no longer used.

system global variable

A variable that belongs to the kernel. System global variables keep the system working.

system globals

Variables set in the system global data table.

system path numbers

An integer value that specifies a system handle identifying an open I/O path.

system protection unit

The system protection unit, or SPU, is special hardware used to protect system memory from accidental modification. If a process tries to access any part of system memory or any other process' memory, the SPU hardware causes a bus error and the system aborts the process.

system state

System state is the environment in which OS-9 system calls and interrupt service routines are executed. System-state routines often deal with the physical hardware present on a system.

system tables

System tables are data structures used by the operating system.

system time

The clock time as known to the computer system.

T

T-1

A leased line connection capable of carrying data at 1.544 Mbps. T-1 is the fastest speed commonly used to connect networks to the Internet.

T-3

Leased line connection capable of carrying data at 44.736 Mbps.

tag

Central element in a markup language like HTML. A tag attached to a set of characters will convey information about the formatting of that character which can then be read by a browser and used to apply that formatting when the character is displayed.

talk-through mode

Talk-through mode is a terminal operation mode whereby the commands typed at a terminal are sent to a remote system for action, as opposed to having the local system act on them.

TAMI

Terminal Adapter Microware Interface.

target

The object or goal that a **make** program is rebuilding.

task switching

The action of switching from the execution of one process to another.

Tbyte

Terabyte. 240 bytes.

TCP/IP

TCP. Transmission Control Protocol. An internet working protocol that provides reliable data transport using connection-oriented techniques.

IP. Internet Protocol. A connectionless communications protocol that provides data delivery using port addresses provided by User Datagram Protocol (UDP) or Transmission Control Protocol (TCP).

TDIC

See transport stream demultiplexer integrated circuit

TDM

See Time Division Multiplexing (TDM).

TDMA

See Time Division Multiple Access (TDMA).

TEI

Terminal Endpoint ID.

telco

Telephone company architecture.

Telecommunications Act of 1996

Major reform of United States cable, telecommunications, and Internet laws, enacted on February 1, 1996, and signed into law by President Bill Clinton on February 8, 1996. The law set the framework for competition in the local loop, set terms for LEC entry into long distance, deregulated cable rates, and criminalized conveyance of pornography over Internet systems accessible to children.

telecommuting

Working remotely (usually from home) and communicating with the office or colleagues by network.

telnet

Telnet is the Internet standard protocol for remote terminal connection service. It is defined in STD 8, RFC 854, and extended with options specified in many other RFCs.

tera-

T. One trillion. Tbytes or THz.

terminal

Device for data input and output that has only simple local logic and is usually connected via a serial interface to the computer. Terminals are employed in multi-user systems. So-called "dumb terminals" were a mainstay of the mainframe world but have been displaced by the outward migration of intelligence to the nodes of networks as a result of the PC revolution. As the Internet grows and the network becomes more functional and important, some suggest that the intelligence now concentrated at the nodes of the network may be replaced by the intelligence of the network itself.

This has led to the debate over whether or not a $500 terminal supporting communications and a browser will become a mass market means of access to the World Wide Web.

terminal adapter Microware interface

VME slave board developed with the Orcad system.

terminal endpoint ID

Unique ID assigned by the management entity at either the endpoint or the network.

text-based request

A standard request limited to either a pop-up menu or menu bar display.

thread

A Java class allowing concurrent applications performing multiple simultaneous activities to run.

Time Division Multiple Access (TDMA)

Method of digital wireless communications transmission allowing a large number of users to access (in sequence) a single radio frequency channel without interference by allocating unique time slots to each user within each channel.

time division multiplexer

Device that permits the simultaneous transmission of many independent channels into a single high-speed data stream by dividing the signal into successive alternate bits.

Time Division Multiplexing (TDM)

Transmission technique in which several low-speed channels are multiplexed into a high-speed channel for transmission. Each low-speed channel is allocated a specific time-based position.

tip

The most recent revision on the trunk of the revision tree or the most recent revision on a branch of the revision tree.

token

Logical view of a cryptographic device defined by Cryptoki.

token object

Object visible to all applications connected to the token.

touch

To set the timestamp of a file or files to the current date and time without modifying the contents. Also, a program that performs this task.

transmitter

Device that changes electrical signals to optical signals using a laser or LED and associated electronics.

transparency

See alpha channel.

transponder

Satellite component that receives and re-transmits TV signals or many narrowband voice and data channels.

transport protocol

Protocol by which a service is delivered. For mail on the Internet, this is usually SMTP, POP, or UUCP; for news, its is NNTP or UUCP.

transport stream demultiplexer integrated circuit

An integrated circuit designed to parse and demultiplex MPEG-2 transport streams (as defined in ISO/IEC 13818-1 International Standard | Recommendation). Generally, this chip sits between the data stream input device (NIM) and the data stream output device (MPEG decoder) to route data directly and efficiently from the input device to the output device. It transforms the input data stream into the form that the output devices can consume. In DAVID STBs, it means demultiplexing the input transport streams, descrambling data if it is encrypted, parsing the stream to either the PES or elementary stream layer, notifying other software of some events related to both the input and output devices, and transferring the data to the output devices or RAM (for user data)

trunk

Communication line between two switching systems. A trunk might connect two central offices with each other or connect a central office with a PBX.

trunk amplifier

An amplifier to compensate for cable and coupler loss on trunk lines.

TSSITU

Telecommunications Standards Sector International Telecommunications Union. Refer to International Telecommunications Union.

tuner

This hardware device can "tune" to a defined frequency and selectively allow the information on that frequency to pass through to the hardware that will deal with it next. In a digital set-top box this is typically the MPEG-2 demultiplexing hardware. Set-top boxes that typically use a tuner are cable (coax), MMDS and LMDS devices.

twisted pair cable

Typically a pair of twisted copper wires used in the loop plant of a telephone company.

two-way cable system

A cable system with the capacity to conduct signals to the headend as well as away from it. Two-way or bi-directional systems carry data and audio and video television signals in either direction. See Hybrid Fiber Coax.

Tx

Transmit.

types directory

Directory within the resource directory that contains information for each resource type defined in the module.

U

UART

See Universal Asynchronous Receiver Transmitter.

U Frames

Unnumbered frames used for link control at layer 2. The far end does not acknowledge U frames.

UCM

User Communications File Manager.

UDP

See user datagram protocol

UDP/IP

Packet-based network protocol.

UHF

See Ultra High Frequency (UHF).

Ultra High Frequency (UHF)

Part of the radio spectrum ranging from 300 Megahertz to 3 Gigahertz. In the U.S., part of this spectrum is assigned to commercial broadcast television channels 14-69.

ultraviolet

Electromagnetic waves with wavelengths from 10 nm to 400 nm which are invisible to the human eye.

unassigned cells

A cell identified by a standardized virtual path identifier (VPI) and virtual channel identifier (VCI) value, which has been generated and does not carry information from an application using the ATM Layer service.

Uniform Resource Locator (URL)

The address that defines the route to a file on the Web or any other Internet facility. URLs are typed into the browser to access Web pages. They are also embedded within the pages themselves to provide hypertext links to other pages. The format for a URL is:

protocol://pathname

Uninterruptable Power Supply (UPS)

Considered a key component of full-service networks. Telephone networks presently power their own systems, including customer phones, with 48 volts DC. Batteries backup the system during power outages. Cable television systems do not have UPS, and subscribers plug in-home equipment into standard 60-volt AC outlets. The term is also used to describe a device that contains backup batteries to supply power to a computer, like a World Wide Web server in case of a power outage.

Universal Asynchronous Receiver Transmitter (UART)

Chip interfaced to a microprocessor in order to conduct serial communications. Intel Corporation's 8250, 16450, and 16550 are UART chips. An intelligent microchip for a serial interface which carries out the serialization of parallel data and the insertion of start, parity, and stop bits, or the parallelization of serial data and the separation of start, parity, and stop bits.

UNIX

Multitasking operating system for simultaneously serving multiple workstations. UNIX is a manufacturer-independent OS which played an integral role in the development of the Internet. Originally developed by AT&T, UNIX comes in several flavors.

UpLink

UpLink is used by applications running on a DAVID ® device such as a Set Top Box (STB). UpLink is used to request data from a server and to control server data flow.

UpLink is a command protocol Application Programming Interface (API) that resides between DAVID applications and the network. UpLink is used to establish network communications, request data from a server, control server data flow, and manage communications. UpLink provides a common interface layer that hides server-specific details from the application. In this way, applications can be written that are independent of the various servers or networks supporting them. Applications can communicate predictably and transparently with any network or server structure.

See MiniServer

UPS

See Uninterruptable Power Supply (UPS).

upstream

The return path in a network. Typically, upstream bandwidth is much narrower than downstream bandwidth.

URL

See Uniform Resource Locator (URL).

USB

Universal Serial Bus. A new external bus standard that supports data transfer rates of 12 Mbps (12 million bits per second). A single USB port can be used to connect up to 127 peripheral devices, such as mice, modems, and keyboards. USB also supports Plug-and-Play installation and hot plugging.

Starting in 1996, a few computer manufacturers started including USB support in their new machines. Since the release of Intel's 440LX chipset in 1997, USB has become more widespread. It is expected to eventually completely replace serial and parallel ports.

user data packet

UDP. Packet-based network protocol.

user datagram protocol

Part of the TCP/IP protocol suite that enables applications to access the connectionless features of IP. It operates at layer 4 of the OSI reference model and provides for the exchange of datagrams without acknowledgments or guaranteed delivery.

user-defined composite privileges

Combinations of base or pre-defined composite privileges that are defined by the user under the access control option. These definitions are contained in the access control database. They are case-sensitive.

user state

User state is the normal program environment in which processes are executed. Generally, user-state processes do not deal directly with the specific hardware configuration of the system.

V

value-added network

A communications network that provides services beyond normal transmission, such as automatic error detection and correction, protocol conversion, and message storing and forwarding.

variable bit rate

An ATM Forum-defined service category supporting variable bit rate data traffic with average and peak traffic parameters.

VBR

See variable bit rate.

VC

Virtual Calls.

VCC

See virtual channel connection.

VCI

See virtual channel identifier.

VCO

Voltage Controlled Oscillator.

VDSC

Refers to the Motorola VDSC chip

VDT

The remote control Video Dial Tone button, also known as the Services button.

vector graphics

Images defined by sets of straight lines which are defined by the locations of the end-points. Vector graphics require much less storage space than raster or bitmapped graphics.

version label

A symbolic name representing a particular revision in a log file. The same version label may represent different revisions in different log files. Although a version label can represent only one revision per log file, a revision may be represented by an unlimited number of version labels. Often version labels are used to record the exact revision of each module used to build a particular version of the system.

video elementary stream

The compressed video data bitstream as defined by the MPEG-2 standard. See ISO/IEC International Standard | Recommendation 13818-2.

VIP

Video Information Provider.

Vertical Blanking Interval (VBI)

Interval between television frames in which the picture is blanked to enable the trace to return to the upper left-hand corner of the screen where it begins. The vertical blanking interval is being used in the United States to transmit data to television viewers. The new Intel Intercast system makes use of the VBI to broadcast data in HTML format to personal computers.

Very High Asynchronous Digital Subscriber Line (VH-DSL)

Variant of ADSL which holds the promise of delivering switched digital video over existing copper twisted pairs less than 3,000-feet in length. Also called BDSL or VDSL.

Very High Frequency (VHF)

Portion of the electromagnetic spectrum with frequencies between 30 and 300 MHz. Part of the VHF spectrum in the United States is assigned to channels 2-13 for broadcast television service.

Very Large Scale Integration (VLSI)

Refers to the integration of 100,000 to 1,000,000 elements on a single chip.

VESA

See Video Electronics Standards Association (VESA).

VESA Local Bus (VL-Bus)

VESA's local bus standard with a usual bus width of 32 bits operating up to 66 MHz. Version 2.0 has been extended to 64 bits. Unlike PCI, there is no decoupling of processor and expansion bus. The transfer rate reaches 160 Mbps at 32 bits and 267 Mbps at 64 bits.

Vestigial Sideband-Amplitude Modulation (VSB-AM)

Digital modulation scheme. For a comparison of digital modulation schemes, see Modulation.

VGA

See Video Graphics Array (VGA).

VH-ADSL

See Very High Asynchronous Digital Subscriber Line (VH-DSL).

VHF

See Very High Frequency (VHF).

VHS

See Video Home System (VHS).

video codec

Codec that converts an analog video signal to digital form and vice versa. In addition, video codecs generally compress or reduce the data rate to one which can be carried on a narrowband channel.

videoconferencing

Teleconferencing combining audio and motion video.

video dialtone (VDT)

 FCC regulatory category for a common carrier of video service. Video carried on a network and regulated on a common carrier basis. The Telecommunications Act of 1996 has replaced the video dialtone concept with the concept of the open video system.

Video Electronics Standards Association (VESA)

NEC Home Electronics and eight leading video board manufacturers founded VESA to standardize the electrical, timing, and programming features of computer video displays. VESA has created a popular high-speed local bus standard used by a number of PC manufacturers.

Video Graphics Adapter (VGA)

See Video Graphics Array (VGA).

Video Graphics Array (VGA)

VGA was introduced by IBM with the PS/2 series of personal computers as a successor to EGA. Unlike other graphics adapters, VGA supplies an analog signal. Therefore, 256 different colors from a palette of 262,144 (218) may be displayed simultaneously. Also called Video Graphics Adapter.

Video Home System (VHS)

De facto standard in home video players/recorders. Half-inch video tape format introduced by Matsushita and now the most popular form of video tape. VHS won the battle over SONY's superior betamax technology to become the world's leading videocassette tape format.

Video-On-Demand (VOD)

Ability to pull down video programming on demand from a broadband network. VOD also implies VCR-like control of video playback.

Video Random Access Memory (VRAM)

Specifically, dual-port RAM chips used for the video RAM of graphics adapters.

video server

Hardware and software used to serve video to users on a broadband network. A video server requires massive amounts of storage and the capability to support extremely high data throughput.

videotex

Interactive electronic data transmission system using the telephone network. The most successful example of a videotex system is the French Minitel.

viewer

Special-purpose software application for displaying data in specific format. For example, a GIF viewer is used to display graphic images in the GIF format.

virtual channel

A communications channel providing for the sequential unidirectional transport of ATM cells.

virtual channel connection

A concatenation of virtual channel links extending between the points where the ATM service users access the ATM layer. The points at which the ATM cell payload is passed to, or received from, the users of the ATM layer (a higher layer) for processing signify the endpoints of a VCC. VCCs are unidirectional.

virtual channel identifier

A unique numerical tag as defined by a 16-bit field in the ATM cell header identifying a virtual channel over which the cell is to travel.

virtual channel switch

A network element connecting VCLs. It terminates VPCs and translates VCI values. It is directed by control plane functions and relays the cells of a virtual channel.

virtual path

A unidirectional logical association or bundle of virtual channels.

virtual path connection

A concatenation of VPLs between virtual path terminators (VPTs). VPCs are unidirectional.

virtual path identifier

An eight-bit field in the ATM cell header indicating the virtual path over which the cell is routed.

virtual path link

A means of unidirectional transport of ATM cells between the point where a VPI value is assigned and the point where the value is translated or removed.

virtual path switch

A network element connecting VPLs. It translates VPI (not VCI) values and is directed by control plane functions. It relays the cell of the VP.

virtual path terminator

A system unbundling the virtual channels of a virtual path for independent processing of each channel.

Virtual Reality (VR)

Simulation of reality through real-time 3-D animation, position tracking and stereo audio and video techniques. By immersing the user within a computer-generated, simulated environment, VR systems introduce an entirely new way of interacting with multimedia information.

Virtual Reality Modeling Language (VRML)

Specification for displaying 3-D information on World Wide Web pages. Like HTML, VRML is based on a non-platform-specific ASCII file format. VRML files contains data for a 3-D world that is interpreted by the browser. A VRML file can be loaded in pieces, so a browser can start to display the 3-D world for the user before the entire VRML file has been completely downloaded. The first version of VRML supports virtual worlds containing 3-D objects. Like HTML, VRML supports pointers to other documents as well as to other types of data such as audio and video files. A VRML file can contain links to other VRML files and to HTML documents and can be used as an interactive interface to the Web. To learn more about VRML, point your browser to the VRML Repository at http://www.sdsc.edu/vrml/, which contains the VRML 1.0 specification, reports, information, and pointers and links to companies, browsers, and modeling tools.

visible light

Electromagnetic radiation visible to the human eye. Visible light has wavelengths of 400 nm to 700 nm.

VL-Bus

See VESA Local Bus (VL-Bus).

VLSI

See Very Large Scale Integration (VLSI).

voice-grade channel

Channel suitable for the transmission of speech, digital or analog data, or facsimile. A voice-grade channel generally has a frequency range of about 300 to 3,000 Hertz.

voice recognition

Ability of a computer to recognize spoken language. Voice recognition software has grown more accurate and useful, allowing users to use spoken commands to direct basic computer functions.

VP

See virtual path.

VPC

See virtual path connection.

VPI

See virtual path identifier.

VPL

See virtual path link.

VPT

See virtual path terminator.

VRAM

See Video Random Access Memory (VRAM).

VRML

See Virtual Reality Modeling Language (VRML).

VSB

Vestigal Sideband. VSB is a method of RF (Radio Frequency) transmission. RF/Transmission refers to channel coding and modulation. The channel coder takes the data bit stream and adds additional information that can be used by the receiver to reconstruct the data from the received signal which, due to transmission impairments, may not accurately represent the transmitted signal. The modulation (or physical layer) uses the digital data stream information to modulate the transmitted signal. The modulation subsystem offers two modes: a terrestrial broadcast mode (8 VSB), and a high data rate mode (16 VSB).

The terrestrial broadcast mode (known as 8 VSB) will support a payload data rate of 19.28 Mbps in a 6 MHz channel.

8 VSB: Vestigial sideband modulation with 8 discrete amplitude levels.

16 VSB: Vestigial sideband modulation with 16 discrete amplitude levels.

VSB-AM

See Vestigial Sideband-Amplitude Modulation (VSB-AM).

vsect

Variable section. The `vsect` is a variable storage section containing initialized variable, uninitialized variable, or remotely-addressable variable storage definitions. A `vsect` directive causes the assembler to change the location counter from the code location counter to the data location counters. The data location counters used depends on the statement used and the presence of the word remote after the `vsect` directive.

VRR register

VPI/VCI Reduction Register. Contains a mask field that generates a pointer to the receive lookup table.

W

WAIS

See Wide Area Information Servers (WAIS).

WAN

See Wide Area Network (WAN).

waveguide

Conducting or dielectric structure able to support and propagate one or more modes. Another name for fiber-optic transmission media.

wavelength

Distance an electromagnetic wave travels in the time it takes to oscillate through a complete cycle. Wavelengths of light are measured in nanometers (10-9 meter) or micrometers (10-6 meter).

Wavelength Division Multiplexing (WDM)

Technique that employs more than one light source and detector operating at different wavelengths and simultaneously transmits optical signals through the same fiber while message integrity of each signal is preserved.

WDM

See Wavelength Division Multiplexing.

webcasting

"Broadcasting" over the World Wide Web using a streaming media technology such as RealAudio or RealVideo.

whitespace

Non-printing, non-visible characters that separate other printable characters in a text file. The space character and the tab character (and sometimes the carriage return, line feed, and form feed characters) are considered whitespace characters.

Whole Earth 'Lectronic Link (The WELL)

Early and very famous on-line service based in Sausalito, California. Visit the WELL at http://www.well.com.

Wide Area Information Servers (WAIS)

Collection of programs for information retrieval and indexing over a wide variety of data formats. Distributed information service that offers simple natural language input, indexed searching for fast retrieval, and a "relevance feedback" mechanism that allows the results of initial searches to influence future searches. Based on an implementation of the Z39.50 protocol for information retrieval.

Wide Area Network (WAN)

Data network that is not restricted in terms of distance. Typical distances are larger than 100 kilometers. Telecommunications network that covers a large geographic area. Typically links cities, and may be owned by a private corporation or by a public telecom operator.

wideband

Vaguely-defined term used to describe a communications channel broader in bandwidth than a voice-grade channel but implying a channel that is not as wide as a broadband channel. See Broadband and Narrowband.

wide character

A character wide enough to hold any character value from any written language. The rules used to form a wide-character are defined by ANSI C and can be used to help applications support different locales.

wipe

To transfer from one visual image to another by wiping the change across the screen, or partial screen, in one or two super-imposed screens.

wireless

Term used to describe radio-based systems allowing transmission of telephone and/or data signals through the air without a physical connection such as a metal wire or fiber-optic cable.

wireless cable

Oxymoron used to describe MMDS and LMDS terrestrial video distribution systems. Visit the Wireless Cable Association to learn more about the wireless cable industry.

wireless drops

Telephone service distribution solution in which radio transceivers (transmitters/receivers) with limited serving radius would serve as drops to premises. Installation and maintenance costs to the network provider are considerably lower than for copper twisted-pairs or coaxial cable. Wireless access is narrowband and ill-suited for video transmission.

work file

An original or modified source document (source module). Each work file goes through its own independent series of revisions. Each work file in the system has a corresponding log file.

World Wide Web (WWW)

Hypermedia information display medium created for the Internet. In 1989, Tim Berners-Lee and Robert Cailliuau submitted a proposal to their colleagues at CERN for a client/server-based hypermedia system which became the World Wide Web. Also simply the Web or W3.

WORM

See Write Once, Read Many (WORM).

Write Once, Read Many (WORM)

A WORM drive is typically an optical drive where the data carrier may be written by the user without restriction. Unlike magneto-optical drives, WORM drives cannot be erased and rewritten. An optical disc used for storage and archiving of digital data.

X

X.25

CCITT's international standard which defines the interfaces between a packet-mode user device and a public data network. A relatively old packet-switching standard with error correction built into multiple levels of the protocol. It is the basis of many of today's public switching networks, such as TYMNET.

X.75

CCITT's international standard for connecting packet switched networks.

X.400

E-mail exchange standard that is part of the Open Systems Interconnect (OSI) standard.

X.500

E-mail directory standard that is part of the Open Systems Interconnect (OSI) standard.

Xanadu

Utopian hypertext scheme devised by Theodor "Ted" Holm Nelson in the early 1970s and never completely realized. Nelson's Xanadu project is perhaps the most ambitious hypermedia system ever conceived, seeking to integrate the entire library collections of the world into a seamless electronic system. The World Wide Web embodies many of the principles first articulated by Nelson as he envisioned Xanadu. A non-linear exploration of textual and other information. In its ideal form, Xanadu would provide users with hypertext links to and between all the books in all the world's libraries.

XMODEM

First microprocessor modem file transfer protocol, developed in 1977 for the CP/M operating system by Ward Christensen

Y

YUV

A method of representing a color using its intensity luminance (Y) and chrominance (U and V) PUC

See Public Utilities Commission.

Year 2000 (Y2K) problem

A programming error that will result in many computer systems being unable to recognize dates correctly after midnight on December 31, 1999. The problem stems from the fact that early programmers allocated two digits to express years (e.g. "77" instead of "1977") in order to save precious memory. Programs written in this way will interpret the year 2000 as "00."

YMODEM

A data file transfer protocol developed by Chuck Forsberg of Omen Technology. It uses 1K blocks and can handle batch file transfers.

Z

Z4

First freely programmable digital computer from Konrad Zuse. It operated with an electro-mechanical relay.

Z80

A common eight-bit microprocessor for CP/M which was used for such early personal computers as the Sinclair.