

Annex A – Abbreviations and Specialized Terms

Throughout this document specialized terms are used and defined as and when they occur. In addition to these, many of the words and acronymic abbreviations used are a jargon familiar to those in the television production, post production, broadcasting, telecommunications and computer industries. To assist readers who are unfamiliar with these terms, an alphabetic listing of some of the more common ones is given below.

-A-	
A/D	Analog to Digital conversion
AAL (ATM adaptation layer)	<p>The AAL translates digital voice, image, video, and data signals into the ATM cell format and vice versa. Five AALs are defined:</p> <p>AAL1 supports connection-oriented services needing constant bit rates and specific timing and delay requirements. (e.g., DS-3 circuit)</p> <p>AAL2 supports connection-oriented services needing variable bit rates. (e.g., certain video transmission schemes)</p> <p>AAL3/4 supports both connectionless and connection-oriented variable rate services.</p> <p>AAL5 supports connection-oriented variable bit rate data services. AKA: Simple and Efficient Adaptation Layer (SEAL)</p>
Adaptive predictor	A predictor whose estimating function is made variable according to the short term spectral characteristics of the sampled signal. For ADPCM in particular, an adaptive predictor is a time-varying process that computer an estimate of the input signal from the quantized difference signal.
Adaptive quantizing	Quantizing in which some parameters are made variable according to the short-term statistical characteristics of the quantized signal.
Address Translation	The process of converting external addresses into standardized network addresses and vice versa. It facilitates the interconnection of multiple networks in which each have their own addressing scheme.
ADPCM (adaptive differential pulse code modulation)	ADPCM algorithms are compression algorithms that achieve bit rate reduction through the use of adaptive prediction and adaptive quantization.
Analog	A type of transmission in which a continuously variable signal encodes an infinite number of values for the information being sent. (Compare with "digital.")
Analog signal	A signal one of whose characteristic quantities follows continuously the variations of another physical quantity representing information.
Anisochronous	The essential characteristic of a time-scale or a signal such that the time intervals between consecutive significant instants do not necessarily have the same duration or durations that are integral multiples of the shortest duration.
ANSI	The American National Standards Institute is a US-based organization that develops standards and defines interfaces for telecommunications systems.
API (Application Programming Interface)	A set of interface definitions (functions, subroutines, data structures, or class descriptions) which together provide a convenient interface to the

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	functions of a subsystem and insulate the application programmer from the minutiae of the implementation.
Asynchronous	The essential characteristic of time-scales or signals such that their corresponding significant instants do not necessarily occur at the same average rate.
Asynchronous transmission	A term used to describe any transmission technique that does not require a common clock between the two communicating devices, but instead derives timing signals from special bits or characters (i.e., start/stop bits, flag characters) in the data stream itself. (Compare with "synchronous.")
ATM (Asynchronous Transfer Mode)	A form of digital transmission based on the transfer of units of information known as cells. It is suitable for the transmission of image, voice, video, and data.
ATM Layer	The protocol layer that relays cells from one ATM node to another. It handles most of the processing and routing activities including: each cell's ATM header, cell muxing/demuxing, header validation, payload-type identification, quality-of-service specification, prioritization, and flow control.
-B-	
Bandwidth	A measure of capacity, usually, the capacity of a communications line to transmit voice, data, video, or image traffic through a network. Bandwidth is usually expressed in bits per second (bps), thousands of bits per second (kbps), millions of bits per second (Mbps), or billions of bits per second (Gbps).
BER	Bit error ratio (or rate)
Binary digit (bit)	A member selected from a binary set. Bit is an abbreviation for binary digit.
Broadband	A service or system requiring transmission channels capable of supporting rates greater than the Integrated Services Digital Network (ISDN) primary rate (1.544 Mbit/s (e.g. USA) or 2.048 Mbit/s (e.g. Europe)).
Broadcast (Messages)	Transmissions sent to all stations (or nodes, or devices) attached to the network.
Buffer	An area of storage that provides an uninterrupted flow of data between two computing devices.
-C-	
CBO	Continuous bit-stream oriented (services)
CBR	Constant bit rate
CBR (Constant Bit Rate)	A type of traffic that requires a continuous, specific amount of bandwidth over the ATM network (e.g., digital information such as video and digitized voice).
CCITT	The Consultative Committee on International Telephony and Telegraphy, now the International Telecommunications Union (ITU), is an international organization that develops standards and defines interfaces for telecommunications systems.

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Cell	A transmission unit of fixed length used in cell relay transmission techniques such as ATM. An ATM cell is made up of 53 bytes (octets) including a 5-byte header and a 48-byte data payload.
Cell Relay	Any transmission technique that uses packets of a fixed length. ATM, for example, is a version of cell relay using 53-byte cells. Other versions use cells of a different length.
CEPT	The Conference on European Post and Telegraph is a European organization that develops standards and defines interfaces for telecommunications systems.
Channel, transmission channel	A means of unidirectional transmission of signals between two points.
Circuit Switching	A switching technique in which a dedicated path is set up between the transmitting device and the receiving device, remaining in place for the duration of the connection. (e.g., a plain old telephone call is a circuit-switched connection)
Clock	Equipment that provides a timing signal.
Codec	A combination of an encoder and a decoder operating in opposite directions of transmission in the same equipment.
Compression	The process of reducing the number of bits required to represent information by removing redundancy. In the case of information content such as video and audio it is usually necessary to extend this process by removing in addition information that is not redundant but is considered less important.
Connectionless	A type of communication in which no fixed path exists between a sender and receiver, even during a transmission. (e.g., packet switching) Shared media LANs are connectionless.
Connection-oriented	A type of communication in which an assigned path must exist between a sender and a receiver before a transmission occurs. (e.g., circuit switching) ATM networks are connection-oriented.
CRC	Cyclic redundancy check
CVD (Cell Delay Variation)	A measurement of the allowable variation in delay between the reception of one cell and the next. (Usually expressed in thousandths of a second, or milliseconds (ms.). Important in the transmission of voice and video traffic, CDV measurements determine whether or not cells are arriving at the far end too late to reconstruct a valid packet.
-D-	
DCT	Discrete cosine transform
DEMUX	Demultiplexer
Descrambler	A device that performs the complementary operation to that of a scrambler.
Digital	A type of transmission that encodes a discrete value (e.g., "0" or "1") for each unit of information being encoded. (Compare with "analog.")
Digital channel, digital transmission channel	The means of unidirectional digital transmission of digital signals between two points.

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Digital connection	A concatenation of digital transmission channels, switching and other functional units set up to provide for the transfer of digital signals between two or more points in a network, to support a single communication.
Digital demultiplexing	The separation of a (larger) digital signal into its constituent digital channels.
Digital multiplexing	A form of time division multiplexing applied to digital channels by which several digital signals are combined into a single (larger) digital signal.
Digital signal	A discretely timed signal in which information is represented by a number of well-defined discrete values that one of its characteristic quantities may take in time.
Digital transmission	The transmission of digital signals by means of a channel or channels that may assume in time any one of a defined set of discrete states.
DPCM (differential pulse code modulation)	A process in which a signal is sampled, and the difference between each sample of this signal and its estimated value is quantized and converted by encoding to a digital signal.
DSP	Digital signal processor
-E-	
Error ratio [error rate]	The ratio of the number of digital errors received in a specified period to the total number of digits received in the same period.
Error, digital error	An inconsistency between a digit in a transmitted digital signal and the corresponding digit in the received digital signal.
-F-	
Frame	Variable-length packet of data used by traditional LANs such as Ethernet and Token Ring as well as WAN services such as X.25 or Frame Relay. An edge switch will take frames and divide them into fixed-length cells using an AAL format. A destination edge switch will take the cells and reconstitute them into frames for final delivery.
FSK	Frequency shift keying
-G-	
Gbit/s (Gigabit per second)	A digital transmission speed of billions of bits per second.
-H-	
Header Error Control (HEC)	An 8-bit Cyclic Redundancy Code (CRC) computed on all fields in an ATM header; capable of detecting single bit and certain multiple bit errors. HEC is used by the Physical Layer for cell delineation.
-I-	
Interface	The common boundary between two associated systems.
Internet Protocol (IP) Address	An identifier for a network node; expressed as four fields separated by decimal points (e.g., 136.19.0.5.); IP address is site-dependent and assigned by a network administrator.

IP-over-ATM	The adaptation of TCP/IP and its address resolution protocol for transmission over an ATM network. It is defined by the IETF in RFCs 1483 and 1577. It puts IP packets and ARP requests directly into protocol data units and converts them to ATM cells. This is necessary because IP does not recognize conventional MAC-layer protocols, such as those generated on an Ethernet LAN.
ISDN	Integrated services digital network
Isochronous	A term used to describe signal timing techniques that require a uniform reference point (usually embedded in the data signal).
-J-	
Jitter	Short-term non-cumulative variations of the significant instants of a digital signal from their ideal positions in time.
-K-	
kbit/s (kilobit per second)	A digital transmission speed of thousands of bits per second.
-L-	
LAN (Local Area Network)	A system consisting of computer and communications hardware and software connected by a common transmission medium, usually limited to a scope of a few miles.
LAN Emulation	The process of implementing enough of the MAC layer protocol of a LAN (i.e., Ethernet or Token Ring) to allow existing higher layer protocols (and applications) to be used unchanged over another network, such as an ATM network.
Latency	The time that it takes to process an input bit stream through a compression and decompression process. Buffering and transmission can be major contributors to processing delays.
Link	Any physical connection on a network between two separate devices, such as an ATM switch and its associated end point or end station.
LSB	Least significant bit
-M-	
MAN	Metropolitan area network
Master clock	A clock that is used to control the frequency of other clocks.
Mbit/s (Megabit per second)	A digital transmission speed of millions of bits per second.
Megabits Per Second (Mbit/s)	A digital transmission speed of millions of bits per second.
Metadata	Data describing other data
MSB	Most significant bit
Multicast Messages	A subset of broadcast in which a transmission is sent to all members of a pre-defined group of stations, nodes, or devices.
Multipoint	A term used by network designers to describe network links that have many possible endpoints.

MUX	Multiplexer
-N-	
NNI (Network-to-Network Interface)	In an ATM network, the interface between one ATM switch and another, or an ATM switch and a public ATM switching system.
-O-	
Octet	A group of eight binary digits or eight signal elements representing binary digits operated upon as an entity.
OSI	Open system interconnection
-P-	
Packet Switching	A switching technique in which no dedicated path exists between the transmitting device and the receiving device. Information is formatted into individual packets, each with its own address. The packets are sent across the network and reassembled at the receiving station.
PCM (pulse code modulation)	A process in which a signal is sampled, and each sample is quantized independently of other samples and converted by encoding to a digital signal.
PDH	Plesiochronous digital hierarchy
PDU (Protocol Data Unit)	A unit of information (e.g., packet or frame) exchanged between peer layers in a network.
Permanent Virtual Circuit (PVC)	A generic term for any permanent, provisioned communications medium. NOTE: PVC does not stand for permanent virtual channel. No such term has been defined by any standards organization. Neither has the term "permanent virtual path (PVP)." In ATM, there are two kinds of PVCs: permanent virtual path connections (PVPCs) and permanent virtual channel connections (PVCCs).
Physical Layer	The first layer in the OSI Model. It specifies the physical interface (e.g., connectors, voltage levels, cable types) between a user device and the network.
Plesiochronous	The essential characteristic of time-scales or signals such that their corresponding significant instants occur at nominally the same rate, any variation in rate being constrained within specified limits. Two signals having the same nominal digit rate, but not stemming from the same clock are usually plesiochronous.
Point-to-point	A term used by network designers to describe network links that have only one possible destination for a transmission.
Predictor	A device that provides an estimated value of a sampled signal derived from previous samples of the same signal or from a quantized version of those samples.
-Q-	
QoS (Quality of Service)	The ATM Forum has outlined five categories of performance (Classes 1 through 5) and recommends that ATM's quality of service should be comparable to that of standard digital connections.

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Quantizing	A process in which a continuous range of values is divided into a number of adjacent intervals, and any value within a given interval is represented by a single predetermined value within the interval.
Reference clock	A clock of very high stability and accuracy that may be completely autonomous and whose frequency serves as a basis of comparison for the frequency of other clocks.
Regeneration	The process of receiving and reconstructing a digital signal so that the amplitudes, waveforms and timing of its signal elements are constrained within specified limits.
-S-	
Sample	A representative value of a signal at a chosen instant, derived from a portion of that signal.
Sampling	The process of taking samples of a signal, usually at equal time intervals.
Sampling rate	The number of samples taken of a signal per unit time.
SCR (Sustainable Cell Rate)	A measure of the maximum throughput that can be achieved by bursty traffic over a given virtual connection without the risk of cell loss.
Scrambler	A device that converts a digital signal into a pseudo-random digital signal having the same meaning and the same digit rate.
SDH (Synchronous Digital Hierarchy)	International version of SONET that is based on 155 Mbit/s increments rather than SONET's 51 Mbit/s increments.
Signal	A physical phenomenon one or more of whose characteristics may vary to represent information.
Signaling (ATM)	The procedures used to establish connections on a ATM network. Signaling standards are based on the ITU's Q.93B recommendation.
Slip	The loss or gain of a digit position or a set of consecutive digit positions in a digital signal resulting from an aberration of the timing processes associated with transmission or switching of a digital signal.
SONET (Synchronous Optical NETWORK)	A set of standards for the digital transmission of information over fiber optics. Based on increments of 51 Mbit/s.
SPVC (Soft Permanent Virtual Circuit)	A generic term for any communications medium which is permanently provisioned at the end points, but switched in the middle.
STM (Synchronous Transfer Mode/ synSynchronous Transport Module)	In ATM, a method of communications that transmits data streams synchronized to a common clock signal (reference clock). In SDH, it is "Synchronous Transport Module" and is the basic unit (STM-1=155 Mbit/s, STM-4=622 Mbit/s, STM-16=2.5 Gbit/s) of the Synchronous Digital Hierarchy.
SVC (Switched Virtual Circuit)	A generic term for any switched communications medium. NOTE: SVC does not stand for switched virtual channel. No such term has been defined by any standards organization. Neither has the term "switched virtual path (SVP)." In ATM, there are two kinds of SVCs: switched virtual path connections (SVPCs) and switched virtual channel connections (SVCCs).
Switch	Device used to route cells through an ATM network.

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Symbol rate	The number of signal elements of the signal transmitted per unit time. The baud is usually used to quantify this, one baud being equal to one single element per second.
Synchronization	The process of adjusting the corresponding significant instants of signals to make them synchronous.
Synchronous	A term used to describe a transmission technique that requires a common clock signal (or timing reference) between two communicating devices to coordinate their transmissions. (Compare with "asynchronous.")
Synchronous network	A network in which the corresponding significant instants of nominated signals are adjusted to make them synchronous.
-T-	
TDM (Time-division multiplexing)	Multiplexing in which several signals are interleaved in time for transmission over a common channel.
Telecommunication	Any transmission and/or emission and reception of signals representing signs, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.
Timing recovery [timing extraction]	The derivation of a timing signal from a received signal.
Timing signal	A cyclic signal used to control the timing of operations.
Traffic Policing	A mechanism used to detect and discard or modify cells (traffic) that do not conform to the Quality of Service parameters specified in the call setup procedure.
Traffic Shaping	A mechanism used to control traffic flow so that a specified Quality of Service is maintained.
Transmission	The action of conveying signals from one point to one or more other points.
Transparency, digital transparency	The property of a digital transmission channel, telecommunication circuit or connection, that permits any digital signal to be conveyed over it with out change to the value or order of any signal elements.
-U-	
UNI (User-to-Network Interface)	A connection that directly links a user's device to a network (usually, through a switch). Also, the physical and electrical demarcation point between the user device and the switch.
-V-	
VBR (Variable Bit Rate)	A type of traffic that, when sent over a network, is tolerant of delays and changes in the amount of bandwidth it is allocated. (e.g., data applications)
VC (Virtual Circuit)	A generic term for any logical communications medium.
VCI (Virtual Channel Identifier)	The field in the ATM cell header that labels (identifies) a particular virtual channel.
Virtual Channel Connection (VCC)	A logical communications medium identified by a VCI and carried with in a VPC. VCCs may be permanent virtual channel connections (PVCCs), switched virtual channel connections (SVCCs), or smart permanent virtual channel connections (SPVCC). Further, VCC is an end-to-

end logical communications medium. Another acronym, VCL (virtual channel link), is more precise, referring to the single segment object identified by a VCI and carried within a VPC. Similarly, a VPC is an end-to-end object and a Virtual Path Link (VPL) is identified a VPI within a link.

Virtual LAN

A logical association of users sharing a common broadcast domain.

VPC (Virtual Path Connection)

A logical communications medium in ATM identified by a virtual path identifier (VPI) and carried within a link. VPCs may be permanent virtual path connections (PVPCs), switched virtual path connections (SVPCs), or smart permanent virtual path connections (SPVPCs). VPCs are uni-directional.

-W-

WAN

Wide area network

Wander

Long-term non-cumulative variations of the significant instants of a digital signal from their ideal positions in time.