Appendix 1, Definitions

GLOSSARY

A

Access Network	That portion of the PSTN that connects access nodes to individual subscribers. The Access Network consists mainly of twisted pair wire.
Access Node	Concentration point for Broadband and Narrowband data. The Access Node may be located at a Central Office or a remote site. They are on the edge of the Access Network and concentrate individual access lines into a smaller number of feeder lines. They may also perform various forms of protocol conversion. Typical Access Nodes are Digital Loop Carrier systems concentrating individual voice lines to T1 lines, cellular antenna sites, PBXs, and Optical Network Units
ADSL	Asymmetrical Digital Subscriber Loop. Modems attached to twisted pair copper wiring that transmits from 1.5 Mbps to 9 Mbps downstream and from 16 Kbps to 640 Kbps upstream, depending on line length.
Answer Mode	The operating state of a modem that is expecting a call from another computer. The modem transmits at the designated high channel and receives in the low channel.
Asynchronous	Data transmission in which a data group contains its own start and stop bits to indicate the beginning and end of each character.
AT Command Set	The set of industry standard commands for modem control. Each command line must start with the two-character attention [AT] code
AT Code	A two character code to indicate one or more modem commands follow.
ATM	Asynchronous Transfer Mode
ATU-C	ADSL Transmission Unit at the network end. The ATU-C may be integrated within an Access Node.
ATU-R	ADSL transmission Unit at the customer premises end. The ATU-R may be integrated within an SM.

B

B	Auxiliary data input (such as a satellite feed) to Service Module (such as a Set Top Box).
Baud	the smallest signaling unit.
Baud Rate	the number of signaling elements per second. This number may be equal to or less than the bit rate.
Broadband Network	Switching system for data rates above 1.5 - 2.0 Mbps.
Bias Distortion	a net charging of the line and hence change in threshold caused by a unequal number of marks and spaces.
Binary	a signal with only two states or symbols
B-ISDN	Broadband Integrated Digital Network: A digital network with ATM switching operating at data rates in excess of 1.544 or 2.048 Mbps. ATM enable transport and switching of voice, data, image, and video over the same infrastructure.
Bit	a binary digit
Broadcast	Broadband data input in simplex mode (typically broadcast video).

C

CAP	Carrierless AM/PM a line code proposal for VDSL
	Competitive Access Provider
CDMA	Code Division Multiple Access
C-message noise	the terminated rms power measurement at the receive end of a circuit, with the transmit end terminated in the characteristic impedance of the telephone line.
C-message Weighting	a curve based on the response of the human ear as it listens on a standard 500 set telephone. It is a measure of annoyance and is purely subjective.
C-notched noise	a C-message noise measurement made while a holding tone of 1004 or 2804 Hz is applied to transmit end of the circuit. This tone is notched out at the receive end before the power measurement is made.
Command Mode	
Core Network	Combination of switching offices and transmission plant connecting switching offices together. In the U.S. Core Networks are linked by several competing Interexchange networks; in the rest of the world the Core Network extends to national boundaries.

D

Data — the sequence of electrical units or signals

DAVIC — Digital Audio-Visual Council

dB — a unit for describing the ratio of two powers or intensities.

$$dB = 10\log\frac{P_1}{P_2}$$

$$= 10\log\frac{V_1^2/R_1}{V_2^2/R_2} = 20\log\frac{V_1}{V_2} + \underbrace{10\log\frac{R_2}{R_1}}_{\text{impedance correction factor}}$$

dBm — the dB value referenced to 1 mW. This is an absolute power level and the impedance must be specified.

dBmO — an absolute power measurement relative to 1 mW and corrected to 0 TLP. This indicates what the power level would read if it was measured at 0 TLP, and therefor compares the actual signal at any point to what it should be.

dBrn — a noise level measurement with respect to -90 dBm, usually made with a 3 KHz flat filter unless otherwise specified.

dBrnC — a noise level measurement with respect to -90 dBm, made with a C-message filter.

dBrnCO — a noise level measurement with respect to -90 dBm, made with a C-message filter, and corrected to 0 TLP.

dBmp — noise power as determined by a psophometric measurement. For 3 KHz flat noise dBp = dBrnC - 0.5 This relationship is not exact for other noise shapes because of the differences between the two weighting curves.

DCE — data communications equipment - typically a modem.

Delay Distortion — a signal distortion caused by the variation of propagation time as a function of frequency. The actual phase variation is difficult to measure since a phase reference cannot be determined at the receiving end. Therefor a carrier is amplitude modulated with a low frequency signal, and the phase difference between two sidebands is measured. Also called envelope delay distortion.

Digital Signal — a sequence of symbols or states, taken from a finite set

DLP — data level point - used as a reference in data transmission and is 13 dB below the TLP.

DMT — Discrete MultiTone. A candidate for a VDSL line code.

Down — downstream, from the network to the subscriber

DS0	Digital Signal 0: 64 Kbps digital representation of voice.
DS1	Digital Signal 1: Twenty-four voice channels packed into a 193-bit frame and transmitted at 1.544 Mbps. The unframed version, or payload, is 192 bits at a rate of 1.536 Mbps.
DS2	Digital Signal 2: Four T1 frames packed into a higher level frame transmitted at 6.312 Mbps.
DSL	Digital Subscriber Line: Modems on either end of a single twisted pair wire that delivers ISDN Basic Rate Access.
DTE	data terminal equipment - typically a keyboard, display unit or some similar device and its associated controllers.
DWMT	Discrete Wavelet MultiTone. A candidate for a VDSL line code.

E

E1	European basic multiplex rate which packs thirty voice channels into a 256 bit frame and transmitted at 2.048 Mbps.
ETSI	European Telecommunications Standards Institute

F

FEC	Forward Error Control
Feeder Network	That part of a public switched network, which connects access nodes to the core network.
FireWire	Apple’s implementation of IEEE 1394, a high-speed serial bus.
Full Duplex	Information can be transmitted in both directions simultaneously. A common example is an ordinary telephone call.
Full/Full Duplex	The primary can transmit to a secondary while simultaneously receiving from another secondary. This situation occurs in a multipoint system.
FSK	Frequency Shift Keying

G

H

Half-Duplex	Information can be transmitted in either direction but not simultaneously. An example is a two-way radio as used in taxicabs.
HDSL	High data rate Digital Subscribe Line: Modems on either end of one or more twisted pair wires that deliver T1 or E1 speeds. At present T1 requires two lines and E1 requires three.
HSAS	High Speed Access Systems, an ETSI VDSL project
Hybrid	a device which separates a two wire path [an electrical path which can transmit and receive simultaneously] into a 4 wire path [an electrical connection which has separate transmit and receive paths], thus allowing amplification in either direction.

I

Impulse Noise	high energy [within 6 dB of the data level], short duration [generally less than 4 mSec] pulses separated by more than 125 µSec are counted while a 2804 Hz holding tone is applied to the circuit. A typical maximum allowable is 15 hits in a 15-minute interval.
Information	a set of symbols or numbers to be encoded
Insertion Loss	the loss of receiver power due to the insertion of some component or device into a transmission path.
Intersymbol Interference	Time domain interference between two consecutive transmitted symbols
ISDN	Integrated Services Digital Network. A digital network with circuit and packet switching for voice and data.

J

K

L

Loop	Twisted-pair copper telephone line. Loops may differ in distance, diameter, age, and transmission characteristics depending on network.

M

Mark	one of two possible line conditions during signaling [the other is a space]. The final or stop bit and the idle line condition is the mark.
MSK	Minimum Shift Keying
Modem	a contraction of modulator - demodulator. The modulator converts binary bits into an analog waveform for injection into the telephone system, and the demodulator performs the inverse function.

N

Narrowband Network	Switching system for data rates at or below 1.5/2.0 Mbps.
NT	Network Termination
Nyquest Rate	the maximum rate at which code elements can be resolved in a band limited communications channel. It is equal to twice the frequency bandwidth.

O

ONU	Optical Network Unit: A form of Access Node that converts optical signals transmitted via fiber to electrical signals that can be transmitted via coaxial cable or twisted pair copper wiring to individual subscribers.
Outside Plant	the signal carrying wires or optical fiber hung on poles or buried outside.

P

POTS	Plain Old Telephone Service. POTS takes the lowest 4 KHz of bandwidth on 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
POTS-C	Interface between PSTN and POTS splitter at network end.
POTS-R	Interface between phones and POTS splitter at premises end.
PDN	Premises Distribution Network: System for connecting ATU-R to Service Modules. May be point-to-point or multipoint; may be passive wiring or an active network. Multipoint may be a bus or star.
Primary	The dominant controller or host.
Psophometric Weighting	the European near equivalent to the North American C-message weighting.
PSTN	Public Switched Telephone Network.

Q

QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying

R

S

SDSL	Single line Digital Subscriber Line: HDSL over a single telephone line. This name has been adopted by a single manufacturer, not a standards group, and may not stick. It important to distinguish, however, as SDSL operates over POTS and would be suitable for symmetric services to premises of individual customers.
Simplex	Information can only be sent in one direction. Common examples would be the UPI and AP news services.
SLC	Simple Line Code. A candidate for a VDSL line code.
SM	Service Module: Performs terminal adaptation functions. Examples are set top boxes, PC interfaces, or LAN router.

SONET	Synchronous Optical NETwork
Space	one of two possible line conditions during signaling [the other is a mark]. The start pulse in a transmission sequence is a space.
Splitter	Filters which separate high frequency (ADSL) and low frequency (POTS) signals at the network and premises end. The splitter may be integrated into the ATU, physically separated from the ATU, or divided between high pass and low pass, with the low pass function physically separated from the ATU. The provision of POTS splitters and POTS-related functions is optional.
STS-1	SONET basic transmission rate of 51.84 Mbps.

T

T	Interface between Premises Distribution Network and Service Modules. May be same as T-SM when network is point-to-point passive wiring. Note that T interface may disappear at the physical level when ATU-R is integrated within a Service Module.
TDMA	Time Division Multiple Access
TLP	transmission level point - this identifies what the signal level should be inside of a system, and is referenced to 0 dBm.
T-SM	Interface between ATU-R and Premises Distribution Network. May be same as T when network is point-to-point passive wiring. An ATU-R may have more than one type of T-SM interface implemented (e.g., a T1/E1 connection and an Ethernet connection). The T-SM interface may be integrated within a Service Module.

U

U-C	Interface between Loop and POTS Splitter on the network side. Defining both ends of the Loop interface separately arises because of the asymmetry of the signals on the line.
U-C2	Interface between POTS splitter and ATU-C. Note that at present ANSI T1.413 does not define such an interface and separating the POTS splitter from the ATU-C presents some technical difficulties in standardizing the interface.
Up	Upstream, from the subscriber to the network

U-R — Interface between Loop and POTS Splitter on the premises side.

$U\text{-}R_2$ — Interface between POTS splitter and ATU-R. Note that at present ANSI T1.413 does not define such an interface and separating the POTS splitter from the ATU-R presents some technical difficulties in standardizing the interface.

V

V_A — Logical interface between ATU-C and Access Node. As this interface will often be within circuits on a common board, the ADSL Forum does not consider physical V_A interfaces. The V interface may contain STM, ATM, or both transfer modes. In the primitive case of point-to-point connection between a switch port and an ATU-C (that is, a case without concentration or multiplexing), then the V_A and V_C interfaces become identical (alternatively, the V_A interface disappears).

VADSL — Very high speed ADSL: same as VDSL (or a subset of VDSL, if VDSL includes symmetric mode transmission)

VDSL — Very high data rate Digital Subscriber Line: Modem for twisted-pair access operating at data rates from 12.9 to 52.8 Mbps with corresponding maximum reach ranging from 4500 feet to 1000 feet of 24 gauge twisted pair.

V_C — Interface between Access Node and network. May have multiple physical connections (as shown) although may also carry all signals across a single physical connection. A digital carrier facility (e.g., a SONET or SDH extension) may be interposed at the VC interface when the access node and ATU-Cs are located at a remote site. Interface to the PSTN may be a universal tip-ring interface or a multiplexed telephony interface such as specified in Bellcore TR-08 or TR-303. The broadband segment of the VC interface may be STM switching, ATM switching, or private line type connections.

W

WAN — Wide Area Network: Private network facilities, usually offered by public telephone companies or CAPs that link business network nodes.

X

Y

Z

EVEN MORE ACRONYMS

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http://www.mtnds.com/af/
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