A&B bit signaling

Procedure used in T1 transmission facilities in which each of the 24 T1 subchannels devotes one bit of every sixth frame to the carrying of supervisory signaling information. Also called *24th channel signaling*.

AAL

ATM adaptation layer. Service-dependent sublayer of the data link layer. The AAL accepts data from different applications and presents it to the ATM layer in the form of 48-byte ATM payload segments. AALs consist of two sublayers, CS and SAR. AALs differ on the basis of the source-destination timing used, whether they use CBR or VBR, and whether they are used for connection-oriented or connectionless mode data transfer. At present, the four types of AAL recommended by the ITU-T are AAL1, AAL2, AAL3/4, and AAL5. See *AAL1*, *AAL2*, *AAL3/4*, *AAL5*, *CS*, and *SAR*. See also *ATM* and *ATM layer*.

AAL1

ATM adaptation layer 1. One of four AALs recommended by the ITU-T. AAL1 is used for connection-oriented, delay-sensitive services requiring constant bit rates, such as uncompressed video and other isochronous traffic. See also *AAL*.

AAL2

ATM adaptation layer 2. One of four AALs recommended by the ITU-T. AAL2 is used for connection-oriented services that support a variable bit rate, such as some isochronous video and voice traffic. See also *AAL*.

AAL3/4

ATM adaptation layer 3/4. One of four AALs (merged from two initially distinct adaptation layers) recommended by the ITU-T. AAL3/4 supports both connectionless and connection-oriented links, but is primarily used for the transmission of SMDS packets over ATM networks. See also *AAL*.

AAL5

ATM adaptation layer 5. One of four AALs recommended by the ITU-T. AAL5 supports connection-oriented, VBR services, and is used predominantly for the transfer of classical IP over ATM and LANE traffic. AAL5 uses SEAL and is the least complex of the current AAL recommendations. It offers low bandwidth overhead and simpler processing requirements in exchange for reduced bandwidth capacity and error-recovery capability. See also *AAL* and *SEAL*.

AARP

AppleTalk Address Resolution Protocol. Protocol in the AppleTalk protocol stack that maps a data-link address to a network address.

AARP probe packets

Packets transmitted by AARP that determine if a randomly selected node ID is being used by another node in a nonextended AppleTalk network. If the node ID is not being used, the sending node uses that node ID. If the node ID is being used, the sending node chooses a different ID and sends more AARP probe packets. See also *AARP*.

ABM

Asynchronous Balanced Mode. An HDLC (and derivative protocol) communication mode supporting peer-oriented, point-to-point communications between two stations, where either station can initiate transmission.

ABR

1. available bit rate. QOS class defined by the ATM Forum for ATM networks. ABR is used for connections that do not require timing relationships between source and destination. ABR provides no guarantees in terms of cell loss or delay, providing only best-effort service. Traffic sources adjust their transmission rate in response to information they receive describing the status of the network and its

capability to successfully deliver data. Compare with *CBR*, *UBR*, and *VBR*.

2. area border router. Router located on the border of one or more OSPF areas that connects those areas to the backbone network. ABRs are considered members of both the OSPF backbone and the attached areas. They therefore maintain routing tables describing both the backbone topology and the topology of the other areas.

Abstract Syntax Notation One

See *ASN.1*.

access card

I/O card in the LightStream 2020 ATM switch. Together with their associated line cards, access cards provide data transfer services for a switch using physical interfaces such as OC-3c. A LightStream 2020 switch can have up to 10 access cards. Occasionally referred to as a *paddle card*.

access list

List kept by Cisco routers to control access to or from the router for a number of services (for example, to prevent packets with a certain IP address from leaving a particular interface on the router).

access method

1. Generally, the way in which network devices access the network medium.

2. Software within an SNA processor that controls the flow of information through a network.

AccessPro PC card

Multiprotocol router card from Cisco that can be installed in an IBM-compatible PC equipped with an ISA or EISA bus. This series of PC-compatible router cards is based on Cisco 2500 series technology. Provides scalable wide-area connectivity and flexible full-function routing support. AccessPro PC cards run autonomously using only their own processing power, thus offering routing capabilities without impacting existing applications.

access server

Communications processor that connects asynchronous devices to a LAN or WAN through network and terminal emulation software. Performs both synchronous and asynchronous routing of supported protocols. Sometimes called a *network access server.* Compare with *communication server*.

accounting management

One of five categories of network management defined by ISO for management of OSI networks. Accounting management subsystems are responsible for collecting network data relating to resource usage. See also *configuration management, fault management, performance management,* and *security management*.

ACF

Advanced Communications Function. A group of SNA products that provides distributed processing and resource sharing. See also *ACF/NCP*.

ACF/NCP

Advanced Communications Function/Network Control Program. The primary SNA NCP. ACF/NCP resides in the communications controller and interfaces with the SNA access method in the host processor to control network communications. See also *ACF* and *NCP*.

ACK

See *acknowledgment*.

acknowledgment

Notification sent from one network device to another to acknowledge that some event (for example, receipt of a message) has occurred. Sometimes abbreviated *ACK*. Compare to *NAK*.

ACR

allowed cell rate. Parameter defined by the ATM Forum for ATM traffic management. ACR varies between the MCR and the PCR, and is dynamically controlled using congestion control mechanisms. See also *MCR* and *PCR*.

ACSE
association control service element. An OSI convention used to establish, maintain, or terminate a connection between two applications.

active hub
Multiported device that amplifies LAN transmission signals.

active monitor
Device responsible for managing a Token Ring. A network node is selected to be the active monitor if it has the highest MAC address on the ring. The active monitor is responsible for such management tasks as ensuring that tokens are not lost, or that frames do not circulate indefinitely. See also *ring monitor* and *standby monitor*.

adapter
See *NIC (network interface card)*.

adaptive differential pulse code modulation
See *ADPCM*.

adaptive routing
See *dynamic routing*.

ADCCP
Advanced Data Communications Control Protocol. An ANSI standard bit-oriented data link control protocol.

address
Data structure or logical convention used to identify a unique entity, such as a particular process or network device.

addressed call mode
Mode that permits control signals and commands to establish and terminate calls in V.25bis. See also *V.25bis*.

address mapping
Technique that allows different protocols to interoperate by translating addresses from one format to another. For example, when routing IP over X.25, the IP addresses must be mapped to the X.25 addresses so that the IP packets can be transmitted by the X.25 network. See also *address resolution*.

address mask
Bit combination used to describe which portion of an address refers to the network or subnet and which part refers to the host. Sometimes referred to simply as *mask*. See also *subnet mask*.

address resolution
Generally, a method for resolving differences between computer addressing schemes. Address resolution usually specifies a method for mapping network layer (Layer 3) addresses to data link layer (Layer 2) addresses. See also *address mapping*.

Address Resolution Protocol
See *ARP*.

address translation gateway
See *ATG*.

adjacency
Relationship formed between selected neighboring routers and end nodes for the purpose of exchanging routing information. Adjacency is based upon the use of a common media segment.

adjacent nodes
1. In SNA, nodes that are connected to a given node with no intervening nodes.
2. In DECnet and OSI, nodes that share a common network segment (in Ethernet, FDDI, or Token Ring networks).

administrative distance
A rating of the trustworthiness of a routing information source. In Cisco routers, administrative distance is expressed as a numerical value between 0 and 255. The higher the value, the lower the trustworthiness rating.

admission control
See *traffic policing*.

ADPCM
adaptive differential pulse code modulation. Process by which analog voice samples are encoded into high-quality digital signals.

ADSU
ATM DSU. Terminal adapter used to access an ATM network via an HSSI-compatible device. See also *DSU*.

Advanced Communications Function
See *ACF*.

Advanced Communications Function/Network Control Program
See *ACF/NCP*.

Advanced Data Communications Control Protocol
See *ADCCP*.

Advanced Peer-to-Peer Networking
See *APPN*.

Advanced Program-to-Program Communication
See *APPC*.

Advanced Research Projects Agency
See *ARPA*.

Advanced Research Projects Agency Network
See *ARPANET*.

advertising
Router process in which routing or service updates are sent at specified intervals so that other routers on the network can maintain lists of usable routes.

AEP
AppleTalk Echo Protocol. Used to test connectivity between two AppleTalk nodes. One node sends a packet to another node and receives a duplicate, or echo, of that packet.

agent

1. Generally, software that processes queries and returns replies on behalf of an application.
2. In NMSs, process that resides in all managed devices and reports the values of specified variables to management stations.
3. In Cisco hardware architecture, an individual processor card that provides one or more media interfaces.

AGS+

Multiprotocol, high-end Cisco router optimized for large corporate internetworks. The AGS+ runs the Cisco IOS software and features a modular approach that provides for easy and efficient scalability.

AIP

ATM Interface Processor. ATM network interface for Cisco 7000 series routers designed to minimize performance bottlenecks at the UNI. The AIP supports AAL3/4 and AAL5. See also *AAL3/4*, *AAL5*, and *Cisco 7000*.

AIS

alarm indication signal. In a T1 transmission, an all-ones signal transmitted in lieu of the normal signal to maintain transmission continuity and to indicate to the receiving terminal that there is a transmission fault that is located either at, or upstream from, the transmitting terminal. See also *T1*.

alarm

Message notifying an operator or administrator of a network problem. See also *event* and *trap*.

alarm indication signal

See *AIS*.

a-law

The ITU-T companding standard used in the conversion between analog and digital signals in PCM systems. A-law is used primarily in European telephone networks and is similar to the North American mu-law standard. See also *companding* and *mu-law*.

algorithm
Well-defined rule or process for arriving at a solution to a problem. In networking, algorithms are commonly used to determine the best route for traffic from a particular source to a particular destination.

alias
See *entity*.

alignment error
In IEEE 802.3 networks, an error that occurs when the total number of bits of a received frame is not divisible by eight. Alignment errors are usually caused by frame damage due to collisions.

allowed cell rate
See *ACR*.

all-rings explorer packet
See *all-routes explorer packet*.

all-routes explorer packet
Explorer packet that traverses an entire SRB network, following all possible paths to a specific destination. Sometimes called *all-rings explorer packet.* See also *explorer packet*, *local explorer packet*, and *spanning explorer packet*.

alternate mark inversion
See *AMI*.

AM
amplitude modulation. Modulation technique whereby information is conveyed through the amplitude of the carrier signal. Compare with *FM* and *PAM*. See also *modulation*.

American National Standards Institute
See *ANSI*.

American Standard Code for Information Interchange
See *ASCII*.

AMI
alternate mark inversion. Line-code type used on T1 and E1 circuits. In AMI, zeros are represented by 01 during each bit cell, and ones are represented by 11 or 00, alternately, during each bit cell. AMI requires that the sending device maintain ones density. Ones density is not maintained independent of the data stream. Sometimes called *binary coded alternate mark inversion*. Compare with *B8ZS*. See also *ones density*.

amplitude
Maximum value of an analog or a digital waveform.

amplitude modulation
See *AM*.

analog transmission
Signal transmission over wires or through the air in which information is conveyed through variation of some combination of signal amplitude, frequency, and phase.

ANSI
American National Standards Institute. Voluntary organization comprised of corporate, government, and other members that coordinates standards-related activities, approves U.S. national standards, and develops positions for the United States in international standards organizations. ANSI helps develop international and U.S. standards relating to, among other things, communications and networking. ANSI is a member of the IEC and the ISO. See also *IEC* and *ISO*.

ANSI X3T9.5
See *X3T9.5*.

APaRT
automated packet recognition/translation. Technology that allows a server to be attached to CDDI or FDDI without requiring the reconfiguration of applications or network protocols. APaRT recognizes specific data link layer encapsulation packet types and, when these packet types are transferred from one medium to another, translates them into the native format of the destination device.

API
application programming interface. Specification of function-call conventions that defines an interface to a service.

Apollo Domain
Proprietary network protocol suite developed by Apollo Computer for communication on proprietary Apollo networks.

APPC
Advanced Program-to-Program Communication. IBM SNA system software that allows high-speed communication between programs on different computers in a distributed computing environment. APPC establishes and tears down connections between communicating programs, and consists of two interfaces, a programming interface and a data-exchange interface. The former replies to requests from programs requiring communication; the latter establishes sessions between programs. APPC runs on LU 6.2 devices. See also *LU 6.2*.

AppleTalk
Series of communications protocols designed by Apple Computer. Two phases currently exist. Phase 1, the earlier version, supports a single physical network that can have only one network number and be in one zone. Phase 2, the more recent version, supports multiple logical networks on a single physical network and allows networks to be in more than one zone. See also *zone*.

AppleTalk Address Resolution Protocol
See *AARP*.

AppleTalk Echo Protocol
See *AEP*.

AppleTalk Remote Access
See *ARA*.

AppleTalk Transaction Protocol
See *ATP*.

AppleTalk Update-Based Routing Protocol
See *AURP*.

AppleTalk zone
See *zone*.

application layer
Layer 7 of the OSI reference model. This layer provides services to application processes (such as electronic mail, file transfer, and terminal emulation) that are outside of the OSI model. The application layer identifies and establishes the availability of intended communication partners (and the resources required to connect with them), synchronizes cooperating applications, and establishes agreement on procedures for error recovery and control of data integrity. Corresponds roughly with the *transaction services layer* in the SNA model. See also *data link layer*, *network layer*, *physical layer*, *presentation layer*, *session layer*, and *transport layer*.

application programming interface
See *API*.

applique
Mounting plate, used primarily in the Cisco AGS+, MGS, and CGS chassis, containing connector hardware allowing attachment to the network. Appliques translate communication signals from a network interface into the signals expected by the communication standard being used (such as EIA/TIA-232 or V.35). See also *fantail*.

APPN
Advanced Peer-to-Peer Networking. Enhancement to the original IBM SNA architecture. APPN handles session establishment between peer nodes, dynamic transparent route calculation, and traffic prioritization for APPC traffic. Compare with *APPN+*. See also *APPC*.

APPN+
Next-generation APPN that replaces the label-swapping routing algorithm with source routing. Also called *high-performance routing*. See also *APPN*.

ARA
AppleTalk Remote Access. Protocol that provides Macintosh users direct access to information and resources at a remote AppleTalk site.

ARCnet

Attached Resource Computer Network. A 2.5-Mbps token-bus LAN developed in the late 1970s and early 1980s by Datapoint Corporation.

area

Logical set of network segments (either CLNS-, DECnet-, or OSPF-based) and their attached devices. Areas are usually connected to other areas via routers, making up a single autonomous system. See also *autonomous system*.

area border router

See *ABR*.

ARM

asynchronous response mode. HDLC communication mode involving one primary station and at least one secondary station, where either the primary or one of the secondary stations can initiate transmissions. See also *primary station* and *secondary station*.

ARP

Address Resolution Protocol. Internet protocol used to map an IP address to a MAC address. Defined in RFC 826. Compare with *RARP*. See also *proxy ARP*.

ARPA

Advanced Research Projects Agency. Research and development organization that is part of DoD. ARPA is responsible for numerous technological advances in communications and networking. ARPA evolved into DARPA, and then back into ARPA again (in 1994). See also *DARPA*.

ARPANET

Advanced Research Projects Agency Network. Landmark packet-switching network established in 1969. ARPANET was developed in the 1970s by BBN and funded by ARPA (and later DARPA). It eventually evolved into the Internet. The term ARPANET was officially retired in 1990. See also *ARPA*, *BBN*, *DARPA*, and *Internet*.

ARQ
automatic repeat request. Communication technique in which the receiving device detects errors and requests retransmissions.

AS
See *autonomous system*.

ASBR
autonomous system boundary router. ABR located between an OSPF autonomous system and a non-OSPF network. ASBRs run both OSPF and another routing protocol, such as RIP. ASBRs must reside in a nonstub OSPF area. See also *ABR*, *non-stub area*, and *OSPF*.

ASCII
American Standard Code for Information Interchange. 8-bit code for character representation (7 bits plus parity).

ASM-CS
Cisco multiprotocol communication server designed to connect asynchronous devices to any LAN or WAN using TCP/IP, LAT, or SLIP. It can be configured to interface with Ethernet or Token Ring LANs or synchronous serial networks.

ASN.1
Abstract Syntax Notation One. OSI language for describing data types independent of particular computer structures and representation techniques. Described by ISO International Standard 8824. See also *BER (basic encoding rules)*.

association control service element
See *ACSE*.

associative memory
Memory that is accessed based on its contents, not on its memory address. Sometimes called *content addressable memory (CAM)*.

AST
automatic spanning tree. Function that supports the automatic resolution of spanning trees in SRB networks, providing a single path for spanning explorer frames to traverse from a given node in the network to another. AST is based on the IEEE 802.1 standard. See *IEEE 802.1* and *SRB*.

ASTA
Advanced Software Technology and Algorithms. Component of the HPCC program intended to develop software and algorithms for implementation on high-performance computer and communications systems. See also *HPCC*.

Asynchronous Balanced Mode
See *ABM*.

asynchronous response mode
See *ARM*.

asynchronous time-division multiplexing
See *ATDM*.

Asynchronous Transfer Mode
See *ATM*.

asynchronous transmission
Term describing digital signals that are transmitted without precise clocking. Such signals generally have different frequencies and phase relationships. Asynchronous transmissions usually encapsulate individual characters in control bits (called start and stop bits) that designate the beginning and end of each character. Compare with *isochronous transmission*, *plesiochronous transmission*, and *synchronous transmission*.

ATDM
asynchronous time-division multiplexing. Method of sending information that resembles normal TDM, except that time slots are allocated as needed rather than preassigned to specific transmitters. Compare with *FDM*, *statistical multiplexing*, and *TDM*.

ATG
address translation gateway. Cisco DECnet routing software function that allows a router to route multiple, independent DECnet networks and to establish a user-specified address translation for selected nodes between networks.

ATM
Asynchronous Transfer Mode. International standard for cell relay in which multiple service types (such as voice, video, or data) are conveyed in fixed-length (53-byte) cells. Fixed-length cells allow cell processing to occur in hardware, thereby reducing transit delays. ATM is designed to take advantage of high-speed transmission media such as E3, SONET, and T3.

ATM adaptation layer
See *AAL*.

ATM adaptation layer 1
See *AAL1*.

ATM adaptation layer 2
See *AAL2*.

ATM adaptation layer 3/4
See *AAL3/4*.

ATM adaptation layer 5
See *AAL5*.

ATM data service unit
See *ADSU*.

ATM Forum
International organization jointly founded in 1991 by Cisco Systems, NET/ADAPTIVE, Northern Telecom, and Sprint that develops and promotes standards-based implementation agreements for ATM technology. The ATM Forum expands on official standards developed by ANSI and ITU-T, and develops implementation agreements in advance of official standards.

ATM interface processor
See *AIP*.

ATM layer
Service-independent sublayer of the data link layer in an ATM network. The ATM layer receives the 48-byte payload segments from the AAL and attaches a 5-byte header to each, producing standard 53-byte ATM cells. These cells are passed to the physical layer for transmission across the physical medium. See also *AAL*.

ATMM
ATM management. Process that runs on an ATM switch that controls VCI translation and rate enforcement. See also *ATM* and *VCI*.

ATM management
See *ATMM*.

ATM UNI
See *UNI*.

ATM user-user connection
Connection created by the ATM layer to provide communication between two or more ATM service users, such as ATMM processes. Such communication can be unidirectional, using one VCC, or bidirectional, using two VCCs. See also *ATM layer*, *ATMM*, and *VCC*.

ATP
AppleTalk Transaction Protocol. Transport-level protocol that allows reliable request-response exchanges between two socket clients.

Attached Resource Computer Network
See *ARCnet*.

attachment unit interface
See *AUI*.

attenuation
Loss of communication signal energy.

attribute

Configuration data that defines the characteristics of database objects such as the chassis, cards, ports, or virtual circuits of a particular device. Attributes might be preset or user-configurable. On a LightStream 2020 ATM switch, attributes are set using the configuration program or CLI commands.

AUI

attachment unit interface. IEEE 802.3 interface between an MAU and a NIC (network interface card). The term AUI can also refer to the rear panel port to which an AUI cable might attach, such as those found on a Cisco LightStream Ethernet access card. Also called *transceiver cable*. See also *IEEE 802.3*, *MAU*, and *NIC (network interface card)*.

AURP

AppleTalk Update-Based Routing Protocol. Method of encapsulating AppleTalk traffic in the header of a foreign protocol, allowing the connection of two or more discontiguous AppleTalk internetworks through a foreign network (such as TCP/IP) to form an AppleTalk WAN. This connection is called an AURP tunnel. In addition to its encapsulation function, AURP maintains routing tables for the entire AppleTalk WAN by exchanging routing information between exterior routers. See also *AURP tunnel* and *exterior router*.

AURP tunnel

Connection created in an AURP WAN that functions as a single, virtual data link between AppleTalk internetworks physically separated by a foreign network (a TCP/IP network, for example). See also *AURP*.

authority zone

Associated with DNS, an authority zone is a section of the domain-name tree for which one name server is the authority. See also *DNS*.

Automated Packet Recognition/Translation

See *APaRT*.

automatic call reconnect
Feature permitting automatic call rerouting away from a failed trunk line.

automatic repeat request
See *ARQ*.

automatic spanning tree
See *AST*.

autonomous confederation
Group of autonomous systems that rely on their own network reachability and routing information more than they rely on that received from other autonomous systems or confederations.

autonomous switching
Feature on Cisco routers that provides faster packet processing by allowing the ciscoBus to switch packets independently without interrupting the system processor.

autonomous system
Collection of networks under a common administration sharing a common routing strategy. Autonomous systems are subdivided by areas. An autonomous system must be assigned a unique 16-bit number by the IANA. Sometimes abbreviated *AS*. See also *area* and *IANA*.

autonomous system boundary router
See *ASBR*.

autoreconfiguration
Process performed by nodes within the failure domain of a Token Ring network. Nodes automatically perform diagnostics in an attempt to reconfigure the network around the failed areas. See also *failure domain*.

available bit rate
See *ABR*.

average rate

The average rate, in kilobits per second (kbps), at which a given virtual circuit will transmit.