CCNP Glossary

A

Term	Definition
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	1.) Asynchronous Balanced Mode. HDLC (and derivative protocol) communication mode supporting peer-oriented, point-to-point communications between two stations, where either station can initiate transmission. 2.) Accunet Bandwidth Manager.
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*.
AC	Alternating Current. Electrical current that reverses its direction regularly and continually. It is the form of electrical power found in residential and commercial buildings. The abbreviation for this term is AC.
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*.
acknowledgment number	Next expected TCP octet.
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.
AFI	Authority and Format ID (AFI) is one byte of the NSAP address, actually a binary value between 0 and 99, used to specify the IDI format and DSP syntax of the address and the authority that assigned the address. See also *NSAP Address*.

AFI	Address Family Identifier (AFI) is a 2 byte field in a RIP message. It identifies the routed protocol and is normally set to two for IP. The only exception is a request for a router's (or host's) full routing table, in which case it will be set to zero. AFI is set to all 1s if authentication is enabled in RIPv2.
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	Program that performs a function directly for a user. FTP and telnet clients are examples of network applications.
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*.
Authentication	In security, the verification of the identity of a person or process.

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.

B

Term	Definition
B8ZS	Binary 8-zero substitution. Line-code type, used on T1 and E1 circuits, in which a special code is substituted whenever 8 consecutive zeros are sent through the link. This code is then interpreted at the remote end of the connection. This technique guarantees ones density independent of the data stream. Sometimes called *bipolar 8-zero substitution*. Compare with *AMI*. See also *ones density*.
backbone	The part of a network that acts as the primary path for traffic that is most often sourced from, and destined for, other networks.
backbone cabling	Cabling that provides interconnections between wiring closets, wiring closets and the POP, and between buildings that are part of the same LAN. See *vertical cabling*.
back end	Node or software program that provides services to a front end. See also *client*, *front end*, and *server*.
backoff	The retransmission delay enforced when a collision occurs.
backplane	Physical connection between an interface processor or card and the data buses and power distribution buses inside a Cisco chassis.
back pressure	Propagation of network congestion information upstream through an internetwork.
backward explicit congestion notification	See *BECN*.
backward learning	Algorithmic process used for routing traffic that surmises information by assuming symmetrical network conditions. For example, if node A receives a packet from node B through intermediate node C, the backward-learning routing algorithm will assume that A can optimally reach B through C.
balanced configuration	In HDLC, a point-to-point network configuration with two combined stations.
balanced, unbalanced	See *balun*.
balun	Balanced, unbalanced. Device used for matching impedance between a balanced and an unbalanced line, usually twisted-pair and coaxial cable.
bandwidth	The difference between the highest and lowest frequencies available for network signals. The term is also used to describe the rated throughput capacity of a given network medium or protocol.

bandwidth allocation	See *bandwidth reservation*.
bandwidth reservation	Process of assigning bandwidth to users and applications served by a network. Involves ssigning priority to different flows of traffic based on how critical and delay-sensitive they are. This makes the best use of available bandwidth, and if the network becomes congested, lower-priority traffic can be dropped. Sometimes called *bandwidth allocation*. See also *call priority*.
banner motd	Command used to configure a message of the day which is displayed at login and is useful for conveying messages that affect all network users, such as impending system shutdowns.
Banyan VINES	See *VINES*.
BARRNet	Bay Area Regional Research Network. Regional network serving the San Francisco Bay Area. The BARRNet backbone is composed of four University of California campuses (Berkeley, Davis, Santa Cruz, and San Francisco), Stanford University, Lawrence Livermore National Laboratory, and NASA Ames Research Center. BARRNET is now part of BBN Planet. See also *BBN Planet*.
baseband	Characteristic of a network technology where only one carrier frequency is used. Ethernet is an example of a baseband network. Also called *narrowband*. Contrast with *broadband*.
bash	Bourne-again shell. Interactive UNIX shell based on the traditional Bourne shell, but with increased functionality. The LynxOS bash shell is presented when you log in to a LightStream 2020 ATM switch as root (bash#) or fldsup (bash$). See also *fldsup account* and *root account*.
basic configuration	The minimal configuration information entered when a new router, switch, or other configurable network device is installed on a network. The basic configuration for a LightStream 2020 ATM switch, for example, includes IP addresses, the date, and parameters for at least one trunk line. The basic configuration enables the device to receive a full configuration from the NMS.
basic encoding rules	See *BER*.
Basic Rate Interface	See *BRI*.
Basic Research and Human Resources	See *BRHR*.
baud	Unit of signaling speed equal to the number of discrete signal elements transmitted per second. Baud is synonymous with bits per second (bps), if each signal element represents exactly 1 bit.

Bay Area Regional Research Network	See *BARRNet*.
BBN	Bolt, Beranek, and Newman, Inc. High-technology company located in Massachusetts that developed and maintained the ARPANET (and later, the Internet) core gateway system. See also *BBN Planet*.
BBN Planet	Subsidiary company of BBN that operates a nationwide Internet access network composed in part by the former regional networks BARRNET, NEARNET, and SURAnet. See also *BARRNet*, *BBN*, *NEARNET*, and *SURAnet*.
Bc	Committed Burst. Negotiated tariff metric in Frame Relay internetworks. The maximum amount of data (in bits) that a Frame Relay internetwork is committed to accept and transmit at the CIR. See also *Be* and *CIR*.
B channel	Bearer channel. In ISDN, a full-duplex, 64-kbps channel used to send user data. Compare to *D channel*, *E channel*, and *H channel*.
Be	Excess Burst. Negotiated tariff metric in Frame Relay internetworks. The number of bits that a Frame Relay internetwork will attempt to transmit after Bc is accommodated. Be data is, in general, delivered with a lower probability than Bc data because Be data can be marked as DE by the network. See also *Bc* and *DE*.
beacon	Frame from a Token Ring or FDDI device indicating a serious problem with the ring, such as a broken cable. A beacon frame contains the address of the station assumed to be down. See also *failure domain*.
bearer channel	See *B channel*.
Because It is Time Network	See *BITNET*.
BECN	Backward explicit congestion notification. Bit set by a Frame Relay network in frames traveling in the opposite direction of frames encountering a congested path. DTE receiving frames with the BECN bit set can request that higher-level protocols take flow control action as appropriate. Compare with *FECN*.
Bell Communications Research	See *Bellcore*.
Bellcore	Bell Communications Research. Organization that performs research and development on behalf of the RBOCs.
Bellman-Ford routing algorithm	See *distance vector routing algorithm*.
Bell operating company	See *BOC*.
BER	1. Bit error rate. The ratio of received bits that contain errors.2. Basic encoding rules. Rules for encoding data units described in the ISO ASN.1 standard. See also *ASN.1*.

Berkeley Standard Distribution	See *BSD*.
BERT	Bit error rate tester. Device that determines the BER on a given communications channel. See also *BER (bit error rate)*.
best-effort delivery	Describes a network system that does not use a sophisticated acknowledgment system to guarantee reliable delivery of information.
BGP	Border Gateway Protocol. Interdomain routing protocol that replaces EGP. BGP exchanges reachability information with other BGP systems. It is defined by RFC 1163. See also *BGP4* and *EGP*.
BGP4	BGP Version 4. Version 4 of the predominant interdomain routing protocol used on the Internet. BGP4 supports CIDR and uses route aggregation mechanisms to reduce the size of routing tables. See also *BGP* and *CIDR*.
BIGA	Bus Interface Gate Array. Technology that allows the Catalyst 5000 to receive and transmit frames from its packet-switching memory to its MAC local buffer memory without the intervention of the host processor.
big-endian	Method of storing or transmitting data in which the most significant bit or byte is presented first. Compare with *little-endian*.
binary	A numbering system characterized by ones and zeros (1 = on, 0 = off).
binary 8-zero substitution	See *B8ZS*.
binary coded alternate mark inversion	See *AMI*.
binary synchronous communication	See *BSC*.
biphase coding	Bipolar coding scheme originally developed for use in Ethernet. Clocking information is embedded into and recovered from the synchronous data stream without the need for separate clocking leads. The biphase signal contains no direct current energy.
bipolar	Electrical characteristic denoting a circuit with both negative and positive polarity. Contrast with *unipolar*.
bipolar 8-zero substitution	See *B8ZS*.
BISDN	Broadband ISDN. ITU-T communication standards designed to handle high-bandwidth applications such as video. BISDN currently uses ATM technology over SONET-based transmission circuits to provide data rates from 155 to 622 Mbps and beyond. Contrast with *N-ISDN*. See also *BRI*, *ISDN*, and *PRI*.

bisync	See *BSC*.
bit	Binary digit used in the binary numbering system. Can be 0 or 1.
bit error rate	See *BER*.
bit error rate tester	See *BERT*.
BITNET	"Because It is Time" Networking Services. Low-cost, low-speed academic network consisting primarily of IBM mainframes and 9600-bps leased lines. BITNET is now part of CREN. See also *CREN*.
BITNET III	Dialup service providing connectivity for members of CREN. See also *CREN*.
bit-oriented protocol	Class of data link layer communication protocols that can transmit frames regardless of frame content. Compared with byte-oriented protocols, bit-oriented protocols provide full-duplex operation and are more efficient and reliable. Compare with *byte-oriented protocol*.
bit rate	Speed at which bits are transmitted, usually expressed in bits per second (bps).
bits per second	Abbreviated *bps*.
black hole	Routing term for an area of the internetwork where packets enter, but do not emerge, due to adverse conditions or poor system configuration within a portion of the network.
blocking	In a switching system, a condition in which no paths are available to complete a circuit. The term is also used to describe a situation in which one activity cannot begin until another has been completed.
block multiplexer channel	IBM-style channel that implements the FIPS-60 channel, a U.S. channel standard. This channel is also referred to as *OEMI channel* and *370 block mux channel*.
blower	Internal cooling fan used in larger router and switch chassis such as the Cisco AGS+, the Cisco 7000, and the LightStream 2020.
BNC connector	Standard connector used to connect IEEE 802.3 10BASE2 coaxial cable to an MAU.
BNN	Boundary network node. In SNA terminology, a subarea node that provides boundary function support for adjacent peripheral nodes. This support includes sequencing, pacing, and address translation. Also called *boundary node*.
BOC	Bell operating company. See *RBOC*.

Bolt, Beranek, and Newman, Inc.	See *BBN*.
BOOTP	Protocol used by a network node to determine the IP address of its Ethernet interfaces, in order to affect network booting.
boot programmable read-only memory	See *boot PROM*.
boot PROM	Boot programmable read-only memory. Chip mounted on a printed circuit board used to provide executable boot instructions to a computer device.
Bootstrap Protocol	See BOOTP
border gateway	Router that communicates with routers in other autonomous systems.
Border Gateway Protocol	See *BGP*.
boundary function	Capability of SNA subarea nodes to provide protocol support for attached peripheral nodes. Typically found in IBM 3745 devices.
boundary network node	See *BNN*.
boundary node	See *BNN*.
BPDU	Bridge protocol data unit. Spanning-Tree Protocol hello packet that is sent out at configurable intervals to exchange information among bridges in the network. See also *PDU*.
bps	Bits per second.
BRHR	Basic Research and Human Resources. Component of the HPCC program designed to support research, training, and education in computer science, computer engineering, and computational science. See also *HPCC*.
BRI	Basic Rate Interface. ISDN interface composed of two B channels and one D channel for circuit-switched communication of voice, video, and data. Compare with *PRI*. See also *BISDN*, *ISDN*, and *N-ISDN*.
bridge	Device that connects and passes packets between two network segments that use the same communications protocol. Bridges operate at the data link layer (layer 2) of the OSI reference model. In general, a bridge will filter, forward, or flood an incoming frame based on the MAC address of that frame. See also *relay*.
bridge forwarding	Process that uses entries in a filtering database to determine whether frames with a given MAC destination address can be forwarded to a given port or ports. Described in the IEEE 802.1 standard. See also *IEEE 802.1*.

bridge group	Cisco bridging feature that assigns network interfaces to a particular spanning-tree group. Bridge groups can be compatible with the IEEE 802.1 or the DEC specification.
BVI	Integrated Routing and Bridging (IRB) provides the capability to route between a bridge group and a routed interface using a concept called Bridge-Group Virtual Interface (BVI). The BVI is a virtual interface within the router that acts like a normal routed interface that does not support bridging, but represents the corresponding bridge group to routed interfaces within the router.
bridge number	Number that identifies each bridge in an SRB LAN. Parallel bridges must have different bridge numbers.
bridge protocol data unit	See *BPDU*.
bridge static filtering	Process in which a bridge maintains a filtering database consisting of static entries. Each static entry equates a MAC destination address with a port that can receive frames with this MAC destination address and a set of ports on which the frames can be transmitted. Defined in the IEEE 802.1 standard. See also *IEEE 802.1*.
broadband	Transmission system that multiplexes multiple independent signals onto one cable. In telecommunications terminology, any channel having a bandwidth greater than a voice-grade channel (4 kHz). In LAN terminology, a coaxial cable on which analog signaling is used. Also called *wideband*. Contrast with *baseband*.
Broadband ISDN	See *BISDN*.
broadcast	Data packet that will be sent to all nodes on a network. Broadcasts are identified by a broadcast address. Compare with *multicast* and *unicast*. See also *broadcast address*.
broadcast address	Special address reserved for sending a message to all stations. Generally, a broadcast address is a MAC destination address of all ones. Compare with *multicast address* and *unicast address*. See also *broadcast*.
broadcast and unknown server	See *BUS*.
broadcast domain	The set of all devices that will receive broadcast frames originating from any device within the set. Broadcast domains are typically bounded by routers because routers do not forward broadcast frames.
broadcast search	Propagation of a search request to all network nodes if the location of a resource is unknown to the requester. See also *directed search*.

broadcast storm	Undesirable network event in which many broadcasts are sent simultaneously across all network segments. A broadcast storm uses substantial network bandwidth and, typically, causes network time-outs.
brouter	Concatenation of *bridge* and *router*. Used to refer to devices that perform both bridging and routing functions.
browser	See *WWW browser*.
BSC	Binary synchronous communication. Character-oriented data link layer protocol for half-duplex applications. Often referred to simply as *bisync*.
BSD	Berkeley Standard Distribution. Term used to describe any of a variety of UNIX-type operating systems based on the UC Berkeley BSD operating system.
BT	Burst tolerance. Parameter defined by the ATM Forum for ATM traffic management. For VBR connections, BT determines the size of the maximum burst of contiguous cells that can be transmitted. See also *VBR*.
buffer	Storage area used for handling data in transit. Buffers are used in internetworking to compensate for differences in processing speed between network devices. Bursts of data can be stored in buffers until they can be handled by slower processing devices. Sometimes referred to as a *packet buffer*.
burst tolerance	See *BT*.
bursty	Communications characterized by sudden high traffic loads followed by low traffic periods.
BUS	Broadcast and unknown server. Multicast server used in ELANs that is used to flood traffic addressed to an unknown destination, and to forward multicast and broadcast traffic to the appropriate clients. See also *ELAN*.
bus	1. Common physical signal path composed of wires or other media across which signals can be sent from one part of a computer to another. Sometimes called *highway*.2. See *bus topology*.
bus and tag channel	IBM channel, developed in the 1960s, incorporating copper multiwire technology. Replaced by the ESCON channel. See also *ESCON channel* and *parallel channel*.
Bus Interface Gate Array	See *BIGA*.
bus topology	Linear LAN architecture in which transmissions from network stations propagate the length of the medium and are received by all other stations. Compare with *ring topology*, *star topology*, and *tree topology*.

bypass mode	Operating mode on FDDI and Token Ring networks in which an interface has been removed from the ring.
bypass relay	Allows a particular Token Ring interface to be shut down and thus effectively removed from the ring.
byte	Term used to refer to a series of consecutive binary digits that are operated upon as a unit (for example, an 8-bit byte).
byte-oriented protocol	Class of data-link communications protocols that use a specific character from the user character set to delimit frames. These protocols have largely been replaced by bit-oriented protocols. Compare with *bit-oriented protocol.*
byte reversal	Process of storing numeric data with the least-significant byte first. Used for integers and addresses on devices with Intel microprocessors.

C

Term	Definition
CA	See *congestion avoidance*.
cable	Transmission medium of copper wire or optical fiber wrapped in a protective cover.
cable range	Range of network numbers that is valid for use by nodes on an extended AppleTalk network. The cable range value can be a single network number or a contiguous sequence of several network numbers. Node addresses are assigned based on the cable range value.
cable television	See *CATV*.
caching	Form of replication in which information learned during a previous transaction is used to process later transactions.
California Education and Research Federation Network	See *CERFnet*.
call admission control	Traffic management mechanism used in ATM networks that determines whether the network can offer a path with sufficient bandwidth for a requested VCC.
call priority	Priority assigned to each origination port in circuit-switched systems. This priority defines the order in which calls are reconnected. Call priority also defines which calls can or cannot be placed during a bandwidth reservation. See also *bandwidth reservation*.
call setup time	The time required to establish a switched call between DTE devices.
CAM	Content-addressable memory. See *associative memory*.
Canadian Standards Association	See *CSA*.
carrier	Electromagnetic wave or alternating current of a single frequency, suitable for modulation by another, data-bearing signal. See also *modulation*.
Carrier Detect	See *CD*.
carrier sense multiple access collision detect	See *CSMA/CD*.
Catalyst 1600 Token Ring Switch	Cisco Token Ring switch that offers full-duplex dedicated LAN segments to individual servers and other workstations that require high-speed switching access. The Catalyst 1600 provides up to 12 switched Token Ring interfaces and low latency switching between servers and clients across a backbone.

Catalyst 5000	Cisco modular switching system that allows connection to Ethernet, CDDI, FDDI, and ATM LANs and backbones. The Catalyst 5000 switch performs store-and-forward packet switching and allows the user to dedicate 10- or 100-Mbps connections to existing LAN segments or high-performance end stations.
Catalyst Workgroup Switch	Series of Cisco workgroup switches that enhance the network performance of Ethernet client/server workgroups. The Catalyst Workgroup Switch integrates software enhancements for network management and provides a 100-Mbps interface to servers and dedicated Ethernet-to-desktop workstations.
Catchment areas	Zone that falls within area that can be served by an internetworking device such as a hub.
Category 1 cabling	One of five grades of UTP cabling described in the EIA/TIA-568B standard. Category 1 cabling is used for telephone communications and is not suitable for transmitting data. Compare with *Category 2 cabling*, *Category 3 cabling*, *Category 4 cabling*, and *Category 5 cabling*. See also *EIA/TIA-568B* and *UTP*.
Category 2 cabling	One of five grades of UTP cabling described in the EIA/TIA-568B standard. Category 2 cabling is capable of transmitting data at speeds up to 4 Mbps. Compare with *Category 1 cabling*, *Category 3 cabling*, *Category 4 cabling*, and *Category 5 cabling*. See also *EIA/TIA-568B* and *UTP*.
Category 3 cabling	One of five grades of UTP cabling described in the EIA/TIA-568B standard. Category 3 cabling is used in 10BASE-T networks and can transmit data at speeds up to 10 Mbps. Compare with *Category 1 cabling*, *Category 2 cabling*, *Category 4 cabling*, and *Category 5 cabling*. See also *EIA/TIA-568B* and *UTP*.
Category 4 cabling	One of five grades of UTP cabling described in the EIA/TIA-568B standard. Category 4 cabling is used in Token Ring networks and can transmit data at speeds up to 16 Mbps. Compare with *Category 1 cabling*, *Category 2 cabling*, *Category 3 cabling*, and *Category 5 cabling*. See also *EIA/TIA-568B* and *UTP*.
Category 5 cabling	One of five grades of UTP cabling described in the EIA/TIA-568B standard. Category 5 cabling is used for running CDDI and can transmit data at speeds up to 100 Mbps. Compare with *Category 1 cabling*, *Category 2 cabling*, *Category 3 cabling*, and *Category 4 cabling*. See also *EIA/TIA-568B* and *UTP*.
catenet	Network in which hosts are connected to diverse networks, which themselves are connected with routers. The Internet is a prominent example of a catenet.

CATV	Cable television. Communication system where multiple channels of programming material are transmitted to homes using broadband coaxial cable. Formerly called *Community Antenna Television*.
CBDS	Connectionless Broadband Data Service. European high-speed, packet-switched, datagram-based WAN networking technology. Similar to SMDS. See also *SMDS*.
CBR	Constant bit rate. QOS class defined by the ATM Forum for ATM networks. CBR is used for connections that depend on precise clocking to ensure undistorted delivery. Compare with *ABR (available bit rate)*, *UBR*, and *VBR*.
CCITT	Consultative Committee for International Telegraph and Telephone. International organization responsible for the development of communications standards. Now called the ITU-T. See *ITU-T*.
CCS	Common channel signaling. Signaling system used in telephone networks that separates signaling information from user data. A specified channel is exclusively designated to carry signaling information for all other channels in the system. See also *SS7*.
CD	Carrier Detect. Signal that indicates whether an interface is active. Also, a signal generated by a modem indicating that a call has been connected.
CDDI	Copper Distributed Data Interface. Implementation of FDDI protocols over STP and UTP cabling. CDDI transmits over relatively short distances (about 100 meters), providing data rates of 100 Mbps using a dual-ring architecture to provide redundancy. Based on the ANSI Twisted-Pair Physical Medium Dependent (TPPMD) standard. Compare with *FDDI*.
CDDI/FDDI	See *Cisco Workgroup Concentrator*.
CDP	Cisco Discovery Protocol. Media- and protocol-independent device-discovery protocol that runs on all Cisco-manufactured equipment including routers, access servers, bridges, and switches. Using CDP, a device can advertise its existence to other devices and receive information about other devices on the same LAN or on the remote side of a WAN. Runs on all media that support SNAP, including LANs, Frame Relay, and ATM media.
CDPD	Cellular Digital Packet Data. Open standard for two-way wireless data communication over high-frequency cellular telephone channels. Allows data transmissions between a remote cellular link and a NAP. Operates at 19.2 Kbps.
CDVT	cell delay variation tolerance. Parameter defined by the ATM Forum for ATM traffic management. In CBR transmissions, determines the level of jitter that is tolerable for the data samples taken by the PCR. See also *CBR* and *PCR*.

cell	The basic unit for ATM switching and multiplexing. Cells contain identifiers that specify the data stream to which they belong. Each cell consists of a 5-byte header and 48 bytes of payload. See also *cell relay*.
cell delay variation tolerance	See *CDVT*.
cell line card	See *CLC*.
cell loss priority	See *CLP*.
cell payload scrambling	Technique used on the LightStream 2020 ATM switch to maintain framing on some medium-speed edge and trunk interfaces.
cell relay	Network technology based on the use of small, fixed-size packets, or cells. Because cells are fixed-length, they can be processed and switched in hardware at high speeds. Cell relay is the basis for many high-speed network protocols including ATM, IEEE 802.6, and SMDS. See also *cell*.
cells per second	Abbreviated *cps*.
Cellular Digital Packet Data	See *CDPD*.
cellular radio	Technology that uses radio transmissions to access telephonecompany networks. Service is provided in a particular area by a low-power transmitter.
CEMAC	Circuit emulation access card. T1 or E1 circuit emulation card in the LightStream 2020 ATM switch. See also *access card*.
central office	See *CO*.
Centrex	AT&T PBX that provides direct inward dialing and automatic number identification of the calling PBX.
CEPT	Conférence Européenne des Postes et des Télécommunications. Association of the 26 European PTTs that recommends communication specifications to the ITU-T.
CERFnet	California Education and Research Federation Network. TCP/IP network, based in Southern California, that connects hundreds of higher-education centers internationally while also providing Internet access to subscribers. CERFnet was founded in 1988 by the San Diego Supercomputer Center and General Atomics and is funded by the NSF.
CFRAD	See *Cisco FRAD*.
CGMP	Cisco Group Management Protocol. A Cisco-developed protocol that runs between Cisco routers and Catalyst switches to leverage IGMP information on Cisco routers to make Layer 2 forwarding decisions on Catalyst switch ports that are attached to interested receivers.

CGS	Compact Gateway Server. Cisco midrange multiprotocol router designed for medium to small regional and district environments. The CGS is a 2-slot router that supports up to four interfaces (all of the same type).
chaining	SNA concept in which RUs are grouped together for the purpose of error recovery.
Challenge Handshake Authentication Protocol	See *CHAP*.
channel	1. A communication path. Multiple channels can be multiplexed over a single cable in certain environments.2. In IBM, the specific path between large computers (such as mainframes) and attached peripheral devices.
channel-attached	Pertaining to attachment of devices directly by data channels (input/output channels) to a computer.
Channel Interface Processor	See *CIP*.
channelized E1	Access link operating at 2.048 Mbps that is subdivided into 30 B-channels and 1 D-channel. Supports DDR, Frame Relay, and X.25. Compare with *channelized T1*.
channelized T1	Access link operating at 1.544 Mbps that is subdivided into 24 channels (23 B-channels and 1 D-channel) of 64 Kbps each. The individual channels or groups of channels connect to different destinations. Supports DDR, Frame Relay, and X.25. Also referred to as *fractional T1*. Compare with *channelized E1*.
channel service unit	See *CSU*.
CHAP	Challenge Handshake Authentication Protocol. Security feature supported on lines using PPP encapsulation that prevents unauthorized access. CHAP does not itself prevent unauthorized access, it merely identifies the remote end. The router or access server then determines whether that user is allowed access. Compare to *PAP*.
chat script	String of text that defines the login "conversation" that occurs between two systems. Consists of expect-send pairs that define the string that the local system expects to receive from the remote system and what the local system should send as a reply.
Cheapernet	Industry term used to refer to the IEEE 802.3 10BASE2 standard or the cable specified in that standard. Compare with *Thinnet*. See also *10BASE2*, *Ethernet*, and *IEEE 802.3*.

checksum	1.) Method for checking the integrity of transmitted data. A checksum is an integer value computed from a sequence of octets taken through a series of arithmetic operations. The value is recomputed at the receiving end and compared for verification. 2.) Calculated checksum of the header and data fields.
choke packet	Packet sent to a transmitter to tell it that congestion exists and that it should reduce its sending rate.
CIA	See *classical IP over ATM*.
CICNet	Regional network that connects academic, research, nonprofit, and commercial organizations in the Midwestern United States. Founded in 1988, CICNet was a part of the NSFNET and was funded by the NSF until the NSFNET dissolved in 1995. See also *NSFNET*.
CICS	Customer Information Control System. IBM application subsystem allowing transactions entered at remote terminals to be processed concurrently by user applications.
CIDR	Classless interdomain routing. Technique supported by BGP4 and based on route aggregation. CIDR allows routers to group routes together in order to cut down on the quantity of routing information carried by the core routers. With CIDR, several IP networks appear to networks outside the group as a single, larger entity. See also *BGP4*.
CIO	Cisco Information Online. Online service available to Cisco customers that provides electronic services and online information relating to Cisco products. CIO services include product information, software updates, release notes, technical tips, configuration notes, brochures, and download offerings.
CIP	Channel Interface Processor. Channel attachment interface for Cisco 7000 series routers. The CIP is used to connect a host mainframe to a control unit, eliminating the need for an FEP for channel attachment.
CIR	Committed information rate. The rate at which a Frame Relay network agrees to transfer information under normal conditions, averaged over a minimum increment of time. CIR, measured in bits per second, is one of the key negotiated tariff metrics. See also *Bc*.
circuit	Communications path between two or more points.
circuit emulation access card	See *CEMAC*.

circuit group	Grouping of associated serial lines that link two bridges. If one of the serial links in a circuit group is in the spanning tree for a network, any of the serial links in the circuit group can be used for load balancing. This load-balancing strategy avoids data ordering problems by assigning each destination address to a particular serial link.
circuit switching	Switching system in which a dedicated physical circuit path must exist between sender and receiver for the duration of the "call." Used heavily in the telephone company network. Circuit switching can be contrasted with *contention* and *token passing* as a channel-access method, and with *message switching* and *packet switching* as a switching technique.
Cisco 1000	Any of the Cisco 1000 series LAN Extenders and routers. The Cisco 1000 series are easy-to-install, inexpensive, multiprotocol access products designed for small offices and other remote sites. The Cisco 1000 series includes an ISDN router, an asynchronous router, and LAN extenders. See also *LAN Extender*.
Cisco 2500	Any of the Cisco 2500 series routers and access servers, including single LAN routers; mission-specific, low-end routers; router/hub combinations; access servers; and dual LAN routers. The Cisco 2500 is designed for small offices and other remote sites and runs the Cisco IOS software. Sometimes called the *Cisco Access Server 2500* series.
Cisco 4000	Any of the Cisco 4000 series routers designed for a wide variety of network computing environments. The Cisco 4000 series routers run the Cisco IOS software and can be optimized for particular environments with custom configurations.
Cisco 5100	Cisco data communications platform that combines the functions of a Cisco access server with analog and digital modems, CSUs, and T1 channel banks. The Cisco 5100 is optimized for high-speed modem access and is well-suited for dialup applications, including host access, electronic mail, file transfer, and dial-in access to a LAN. Also known as the *Cisco Access Server 5100*.
Cisco 7000	Any of the Cisco 7000 series of routers (the Cisco 7000 or the Cisco 7010), a high-end router platform that supports a wide range of network interfaces and media types and is designed for use in enterprise networks. Cisco 7000 series routers run the Cisco IOS software and support online software reconfiguration, OIR, fast boot, environmental monitoring, self-diagnostics, redundant power supplies, and Flash memory.
Cisco 7500	Any of the Cisco 7500 series of routers, a high-end multiprotocol router platform designed for use in enterprise networks. Cisco 7500 series routers run the Cisco IOS software and implement a distributed multiprocessor architecture consisting of the CyBus, the RSP, and the VIP. See also *CyBus*, *RSP*, and *VIP*.

Cisco Access Server 2500	See *Cisco 2500*.
Cisco Access Server 5100	See *Cisco 5100*.
CiscoBus controller	See *SP*.
Cisco Discovery Protocol	See *CDP*.
Cisco Extended Bus	See *CxBus*.
Cisco FRAD	Cisco Frame Relay access device. Cisco product that supports Cisco IOS Frame Relay SNA services and can be upgraded to be a full-function multiprotocol router. The Cisco FRAD connects SDLC devices to Frame Relay without requiring an existing LAN. However, the Cisco FRAD does support attached LANs and can perform conversion from SDLC to Ethernet and Token Ring. See also *FRAD*.
Cisco Frame Relay access device	See *Cisco FRAD*.
CiscoFusion	Cisco internetworking architecture that "fuses" together the scalability, stability, and security advantages of the latest routing technologies with the performance benefits of ATM and LAN switching, and the management benefits of VLANs. See also *Cisco IOS software*.
Cisco Information Online	See *CIO*.
Cisco Internetwork Operating System software	See *Cisco IOS software*.
Cisco IOS software	Cisco Internetwork Operating System software. Cisco system software that provides common functionality, scalability, and security for all products under the CiscoFusion architecture. The Cisco IOS software allows centralized, integrated, and automated installation and management of internetworks, while ensuring support for a wide variety of protocols, media, services, and platforms. See also *CiscoFusion*.
Cisco LightStream 100	Cisco LightStream 100 ATM switch, a fully nonblocking ATM switch operating at up to 2.4 Gbps and supporting multiple ATM lines of 155-Mbps data speed as well as a variety of LAN and WAN interfaces. The LightStream 100 switch can serve as part of an ATM workgroup or small campus backbone connecting a number of ATM routers, multilayer LAN switches, and high-performance servers and clients.
Cisco LightStream 2020	Cisco LightStream 2020 Enterprise ATM switch, for campus and wide-area applications. The LightStream 2020 ATM switch supports trunks operating at T1/E1 data rates and provides a migration path through T3/E3 into a SONET/SDH OC-3 trunk. The LightStream 2020 intelligent edge modules support a variety of services including frame forwarding, Frame Relay, ATM UNI, and LAN internetworking.

CiscoView	GUI-based device-management software application that provides dynamic status, statistics, and comprehensive configuration information for Cisco internetworking devices. In addition to displaying a physical view of Cisco device chassis, CiscoView also provides device monitoring functions and basic troubleshooting capabilities, and can be integrated with several leading SNMP-based network management platforms.
Cisco Workgroup Adapter	Series of Cisco workgroup adapters that allow workstations to connect to CDDI or FDDI interfaces operating at 100 Mbps.
Cisco Workgroup Concentrator	Series of Cisco workgroup concentrators that combines the compact form factor of workgroup concentrators with the versatility of modular hubs. Supports from 4 to 32 combinations of CDDI or FDDI ports.
CiscoWorks	Series of SNMP-based internetwork management software applications. CiscoWorks includes applications for monitoring router and access server status, managing configuration files, and troubleshooting network problems. CiscoWorks applications are integrated on several SNMP-based network management platforms, including SunNet Manager, HP OpenView, and IBM NetView.
Class A station	See *DAS*.
Class B station	See *SAS*.
classfull network	Network that uses traditional IP network addresses of class A, class B, and class C.
classical IP over ATM	Specification for running IP over ATM in a manner that takes full advantage of the features of ATM. Defined in RFC 1577. Sometimes called *CIA*.
classless interdomain routing	See *CIDR*.
classless network	Network that does not use the traditional IP network addressing (class A, class b, and class c), but defines the network boundary using a prefix value that indicates the number of bits used for the network portion.
class of service	See *COS*.
CLAW	Common Link Access for Workstations. Data link layer protocol used by channel-attached RISC System/6000 series systems and by IBM 3172 devices running TCP/IP off-load. CLAW improves efficiency of channel use and allows the CIP to provide the functionality of a 3172 in TCP/IP environments and support direct channel attachment. The output from TCP/IP mainframe processing is a series of IP datagrams that the router can switch without modifications.

CLC	Cell line card. Card on the LightStream 2020 ATM switch that, in conjunction with an access card, supports up to two OC-3c edge ports or one OC-3c trunk port. A CLC can be configured as an edge card or a trunk card.
Clear To Send	See *CTS*.
CLI	Command line interface. The command-line interface on the LightStream 2020 that runs on NPs and Sun SPARCstations and is used to monitor and control an ATM network.
client	Node or software program (front-end device) that requests services from a server. See also *back end*, *front end*, and *server*.
client-server computing	Term used to describe distributed computing (processing) network systems in which transaction responsibilities are divided into two parts: client (front end) and server (back end). Both terms (client and server) can be applied to software programs or actual computing devices. Also called *distributed computing (processing)*. Compare with *peer-to-peer computing*. See also *RPC*.
client-server model	Common way to describe network services and the model user processes (programs) of those services. Examples include the nameserver/nameresolver paradigm of the DNS and fileserver/file-client relationships such as NFS and diskless hosts.
CLNP	Connectionless Network Protocol (CLNP) is a protocol stack developed originally as a replacement for TCP/IP with the anticipation that this OSI suite would take over being based upon the standard OSI 7-layer model. This has not happened, however one protocol within CLNP called IS-IS has become very popular within the Internet community due to its scalability as the Internet grows. See also *CLNS*.
CLNS	Connectionless Network Service (CLNS) is the OSI network layer service similar to bare IP service. A CLNS entity communicates over Connectionless Network Protocol (CLNP) with its peer CLNS entity. CLNP is the OSI equivalent of IP. CLNP provides the interface between CLNS and upper layers. CLNS does not perform connection setup or termination because paths are determined independently for each packet that is transmitted through a network. In addition, CLNS provides best-effort delivery, which means that no guarantee exists that data will not be lost, corrupted, miss-ordered, or duplicated. CLNS relies on transport layer protocols to perform error detection and correction. See also *CLNP*.
CLP	Cell loss priority. Field in the ATM cell header that determines the probability of a cell being dropped if the network becomes congested. Cells with CLP = 0 are insured traffic, which is unlikely to be dropped. Cells with CLP = 1 are best-effort traffic, which might be dropped in congested conditions in order to free up resources to handle insured traffic.

cluster controller	1. Generally, an intelligent device that provides the connections for a cluster of terminals to a data link.2. In SNA, a programmable device that controls the input/output operations of attached devices. Typically, an IBM 3174 or 3274 device.
CMI	Coded mark inversion. ITU-T line coding technique specified for STS-3c transmissions. Also used in DS-1 systems. See also *DS-1* and *STS-3c*.
CMIP	Common Management Information Protocol. OSI network management protocol created and standardized by ISO for the monitoring and control of heterogeneous networks. See also *CMIS*.
CMIS	Common Management Information Services. OSI network management service interface created and standardized by ISO for the monitoring and control of heterogeneous networks. See also *CMIP*.
CMNS	Connection-Mode Network Service. Extends local X.25 switching to a variety of media (Ethernet, FDDI, Token Ring). See also *CONP*.
CMT	Connection management. FDDI process that handles the transition of the ring through its various states (off, active, connect, and so on), as defined by the ANSI X3T9.5 specification.
CO	Central office. Local telephone company office to which all local loops in a given area connect and in which circuit switching of subscriber lines occurs.
coaxial cable	Cable consisting of a hollow outer cylindrical conductor that surrounds a single inner wire conductor. Two types of coaxial cable are currently used in LANs: 50-ohm cable, which is used for digital signaling, and 75-ohm cable, which is used for analog signal and high-speed digital signaling.
code bits	Control functions (such as setup and termination of a session).
CODEC	Coder-decoder. Device that typically uses PCM to transform analog signals into a digital bit stream, and digital signals back into analog.
coded mark inversion	See *CMI*.
coder-decoder	See *CODEC*.
coding	Electrical techniques used to convey binary signals.
collapsed backbone	Nondistributed backbone in which all network segments are interconnected by way of an internetworking device. A collapsed backbone might be a virtual network segment existing in a device such as a hub, a router, or a switch.

collision	In Ethernet, the result of two nodes transmitting simultaneously. The frames from each device impact and are damaged when they meet on the physical media. See also *collision domain*.
collision detection	See *CSMA/CD*.
collision domain	In Ethernet, the network area within which frames that have collided are propagated. Repeaters and hubs propagate collisions; LAN switches, bridges and routers do not. See also *collision*.
command line interface	See *CLI*.
Committed Burst	See *Bc*.
committed information rate	See *CIR*.
common carrier	Licensed, private utility company that supplies communication services to the public at regulated prices.
common channel signaling	See *CCS*.
Common Link Access for Workstations	See *CLAW*.
Common Management Information Protocol	See *CMIP*.
Common Management Information Services	See *CMIS*.
common mode	Term used to describe problems involving either the hot or neutral wires and the safety ground wire on a power line. See *normal mode*.
common part convergence sublayer	See *CPCS*.
Common Programming Interface for Communications	See *CPI-C*.
common transport semantic	See *CTS*.
communication	Transmission of information.
communication controller	In SNA, a subarea node (such as an IBM 3745 device) that contains an NCP.
communication server	Communications processor that connects asynchronous devices to a LAN or WAN through network and terminal emulation software. Performs only asynchronous routing of IP and IPX. Compare with *access server*.
communications line	The physical link (such as wire or a telephone circuit) that connects one or more devices to one or more other devices.

community	In SNMP, a logical group of managed devices and NMSs in the same administrative domain.
Community Antenna Television	Now known as CATV. See *CATV*.
community string	Text string that acts as a password and is used to authenticate messages sent between a management station and a router containing an SNMP agent. The community string is sent in every packet between the manager and the agent.
Compact Gateway Server	See *CGS*.
companding	Contraction derived from the opposite processes of compression and expansion. Part of the PCM process whereby analog signal values are logically rounded to discrete scale-step values on a nonlinear scale. The decimal step number is then coded in its binary equivalent prior to transmission. The process is reversed at the receiving terminal using the same nonlinear scale. Compare with *compression* and *expansion*. See also *a-law* and *mu-law*.
complete sequence number PDU	See *CSNP*.
Compressed Serial Link Internet Protocol	See *CSLIP*.
compression	The running of a data set through an algorithm that reduces the space required to store or the bandwidth required to transmit the data set. Compare with *companding* and *expansion.*
Computer Science Network	See *CSNET*.
concentrator	See *hub*.
conductor	Any material with a low resistance to electrical current. Any material capable of carrying an electrical current. See *insulator*.
Conférence Européenne des Postes et des Télécommunications	See *CEPT*.
config-register 0x10f	Command used to enter configuration register values.
Configuration Builder	Cisco software application that lets you create configuration files for multiple routers without knowing the router command-line syntax. Configuration Builder is a Microsoft Windows-based application that enables you to configure multiple routers simultaneously; automatically detect the model, software version, image type, and the number and type of installed interfaces on the router you are configuring; and quickly import predefined priority queuing lists, access lists, and filters into multiple configuration files.

configuration database	File of attribute settings created using the Cisco LightStream configurator. A global database holds configuration information for the entire LightStream-based ATM backbone and is stored on the NMS. A local database, stored in each LightStream 2020 ATM switch, contains just the configuration information for that switch. Configuration data includes definitions of chassis, cards, ports, VCs, and the attributes that describe them. See also *configurator*.
configuration management	One of five categories of network management defined by ISO for management of OSI networks. Configuration management subsystems are responsible for detecting and determining the state of a network. See also *accounting management*, *fault management*, *performance management*, and *security management*.
configuration register	In Cisco routers, a 16-bit, user-configurable value that determines how the router functions during initialization. The configuration register can be stored in hardware or software. In hardware, the bit position is set using a jumper. In software, the bit position is set by specifying a hexadecimal value using configuration commands.
configurator	Management tool used with the LightStream 2020 ATM switch that is used to create configuration database files for the nodes in an ATM network. The configurator is an HP OpenView-based application that runs on an NMS. See also *configuration database*.
configure memory	Command used to load configuration information from NVRAM.
configure terminal	Command used to configure manually from the console terminal.
congestion	Traffic in excess of network capacity.
congestion avoidance	The mechanism by which a LightStream-based ATM network controls traffic entering the network to minimize delays. In order to use resources most efficiently, lower-priority traffic is discarded at the edge of the network if conditions indicate that it cannot be delivered. Sometimes abbreviated *CA*.
connectionless	Term used to describe data transfer without the existence of a virtual circuit. Compare with *connection-oriented*. See also *virtual circuit*.
Connectionless Broadband Data Service	See *CBDS*.
Connectionless Network Protocol	See *CLNP*.
Connectionless Network Service	See *CLNS*.
connection management	See *CMT*.

Connection-Mode Network Service	See *CMNS*.
connection-oriented	Term used to describe data transfer that requires the establishment of a virtual circuit. See also *connectionless*. See also *virtual circuit*.
Connection-Oriented Network Protocol	See *CONP*.
CONP	Connection-Oriented Network Protocol. OSI protocol providing connection-oriented operation to upper-layer protocols. See also *CMNS*.
console	DTE through which commands are entered into a host.
constant bit rate	See *CBR*.
Consultative Committee for International Telegraph and Telephone	See *CCITT*.
content-addressable memory	See *associative memory*.
contention	Access method in which network devices compete for permission to access the physical medium. Contrast with *circuit switching* and *token passing*.
control point	See *CP*.
ControlStream traffic management	Traffic management scheme used by the LightStream 2020 ATM switch. Includes congestion avoidance, traffic shaping, and traffic policing, and allows links to operate at high levels of utilization by scaling back lower-priority, delay-tolerant traffic at the edge of the network when congestion begins to occur.
convergence	The speed and ability of a group of internetworking devices running a specific routing protocol to agree on the topology of an internetwork after a change in that topology.
convergence sublayer	See *CS*.
conversation	In SNA, an LU 6.2 session between two transaction programs.
Cooperation for Open Systems Interconnection Networking in Europe	See *COSINE*.
Copper Distributed Data Interface	See *CDDI*.
copy flash tftp	Command used to copy the system image to a TFTP server.
copy running-config startup-config	Command used to store the current configuration in RAM into NVRAM.
copy running-config tftp	Command used to store the current configuration in RAM on a network TFTP server.

copy tftp flash	Command used to download the new image from the TFTP server.
copy tftp running-config	Command used to load configuration information from a network TFTP server.
core gateway	The primary routers in the Internet.
core router	In a packet-switched star topology, a router that is part of the backbone and that serves as the single pipe through which all traffic from peripheral networks must pass on its way to other peripheral networks.
Corporation for Open Systems	See *COS*.
Corporation for Research and Educational Networking	See *CREN*.
COS	1.) Class of service. Indication of how an upper-layer protocol requires that a lower-layer protocol treat its messages. In SNA subarea routing, COS definitions are used by subarea nodes to determine the optimal route to establish a given session. A COS definition comprises a virtual route number and a transmission priority field. Also called *TOS (type of service)*.2.) Corporation for Open Systems. Organization that promulgates the use of OSI protocols through conformance testing, certification, and related activities.
COSINE	Cooperation for Open Systems Interconnection Networking in Europe. European project financed by the European Community (EC) to build a communication network between scientific and industrial entities in Europe. The project ended in 1994.
cost	Arbitrary value, typically based on hop count, media bandwidth, or other measures, that is assigned by a network administrator and used to compare various paths through an internetwork environment. Cost values are used by routing protocols to determine the most favorable path to a particular destination: the lower the cost, the better the path. Sometimes called *path cost*. See also *routing metric*.
count to infinity	Problem that can occur in routing algorithms that are slow to converge, in which routers continuously increment the hop count to particular networks. Typically, some arbitrary hop-count limit is imposed to prevent this problem.
CP	Control point. In SNA networks, element that identifies the APPN networking components of a PU 2.1 node, manages device resources, and can provide services to other devices. In APPN, CPs are able to communicate with logically adjacent CPs by way of CP-to-CP sessions. See also *EN* and *NN*.

CPCS	Common part convergence sublayer. One of the two sublayers of any AAL. The CPCS is service-independent and is further divided into the CS and the SAR sublayers. The CPCS is responsible for preparing data for transport across the ATM network, including the creation of the 48-byte payload cells that are passed to the ATM layer. See also *AAL*, *ATM layer*, *CS*, *SAR*, and *SSCS*.
CPE	Customer premises equipment. Terminating equipment, such as terminals, telephones, and modems, supplied by the telephone company, installed at customer sites, and connected to the telephone company network.
CPI-C	Common Programming Interface for Communications. Platform-independent API developed by IBM and used to provide portability in APPC applications. See also *APPC*.
cps	Cells per second.
CPU	Central processing unit. The part of a computer that controls all the other parts. It fetches instructions from memory and decodes them. This may cause it to transfer data to or from memory or to activate peripherals to perform input or output.
CRC	Cyclic redundancy check. Error-checking technique in which the frame recipient calculates a remainder by dividing frame contents by a prime binary divisor and compares the calculated remainder to a value stored in the frame by the sending node.
CREN	Corporation for Research and Educational Networking. The result of a merger of BITNET and CSNET. CREN is devoted to providing Internet connectivity to its members, which include the alumni, students, faculty, and other affiliates of participating educational and research institutions, via BITNET III. See also *BITNET*, *BITNET III*, and *CSNET*.
cross talk	Interfering energy transferred from one circuit to another.
CS	Convergence sublayer. One of the two sublayers of the AAL CPCS, responsible for padding and error checking. PDUs passed from the SSCS are appended with an 8-byte trailer (for error checking and other control information) and padded, if necessary, so that the length of the resulting PDU is divisible by 48. These PDUs are then passed to the SAR sublayer of the CPCS for further processing. See also *AAL*, *CPCS*, *SAR*, and *SSCS*.
CSA	Canadian Standards Association. Agency within Canada that certifies products that conform to Canadian national safety standards.
CSLIP	Compressed Serial Link Internet Protocol. Extension of SLIP that, when appropriate, allows just header information to be sent across a SLIP connection, reducing overhead and increasing packet throughput on SLIP lines. See also *SLIP*.

CSMA/CD	Carrier sense multiple access collision detect. Media-access mechanism wherein devices ready to transmit data first check the channel for a carrier. If no carrier is sensed for a specific period of time, a device can transmit. If two devices transmit at once, a collision occurs and is detected by all colliding devices. This collision subsequently delays retransmissions from those devices for some random length of time. CSMA/CD access is used by Ethernet and IEEE 802.3.
CSNET	Computer Science Network. Large internetwork consisting primarily of universities, research institutions, and commercial concerns. CSNET merged with BITNET to form CREN. See also *BITNET* and *CREN*.
CSNP	Complete sequence number PDU (CSNP) contain a list of all LSPs from the current database. CSNPs are used to inform other routers of LSPs that may be outdated or missing from their own database. This ensures that all routers have the same information and are synchronized. The packets are similar to an OSPF database description packet.
CSU	Channel service unit. Digital interface device that connects end-user equipment to the local digital telephone loop. Often referred to together with DSU, as *CSU/DSU*. See also *DSU*.
csumon	Tool available on the LightStream 2020 ATM switch, accessible from the bash shell. Csumon allows connection to an external CSU/DSU on a low-speed line for monitoring and control purposes, and can display statistics on the internal CSU/DSU of a medium-speed line.
CTS	1. Clear To Send. Circuit in the EIA/TIA-232 specification that is activated when DCE is ready to accept data from DTE.2. Common transport semantic. Cornerstone of the IBM strategy to reduce the number of protocols on networks. CTS provides a single API for developers of network software and enables applications to run over APPN, OSI, or TCP/IP.
Customer Information Control System	See *CICS*.
customer premises equipment	See *CPE*.
custom queuing	A method of queuing that is used to guarantee bandwidth for traffic by assigning queue space to each protocol.
cut sheet	A rough diagram indicating where cable runs are located and the numbers of rooms they lead to.
cut-through packet switching	Packet switching approach that streams data through a switch so that the leading edge of a packet exits the switch at the output port before the packet finishes entering the input port. A device using cut-through packet switching reads, processes, and forwards packets as soon as the destination address is looked up, and the outgoing port determined. Also known as *on-the-fly packet switching*. Contrast with *store and forward packet switching*.

CxBus	Cisco Extended Bus. Data bus for interface processors on Cisco 7000 series routers that operates at 533 Mbps. See also *Switch Processor*.
CyBus	1.067-Gbps data bus for interface processors. Used in the Cisco 7500 series routers. See also *Cisco 7500*.
cycles per second	See *hertz*.
cyclic redundancy check	See *CRC*.

D

Term	Definition
D4 framing	See *SF*.
DAC	Dual-attached concentrator. FDDI or CDDI concentrator capable of attaching to both rings of an FDDI or CDDI network. It can also be dual-homed from the master ports of other FDDI or CDDI concentrators.
DARPA	Defense Advanced Research Projects Agency. U.S. government agency that funded research for and experimentation with the Internet. Evolved from ARPA, and then, in 1994, back to ARPA. See also *ARPA*.
DARPA Internet	Obsolete term referring to the Internet. See *Internet*.
DAS	Dual attachment station. Device attached to both the primary and the secondary FDDI rings. Dual attachment provides redundancy for the FDDI ring: if the primary ring fails, the station can wrap the primary ring to the secondary ring, isolating the failure and retaining ring integrity. Also known as a *Class A station*. Compare with *SAS*.
data	Upper-layer protocol data.
database object	1. In general, a piece of information that is stored in a database.2. Chassis, card, or port defined in the configuration database of a LightStream 2020 ATM switch. Database objects have associated attributes that describe them.
data bus connector	See *DB connector*.
data channel	See *D channel*.
data circuit-terminating equipment	See *DCE*.
data communications equipment	See *DCE*.
Data Country Code	See *DCC*.
Data Encryption Standard	See *DES*.
Data Exchange Interface	See *DXI*.
data flow control layer	Layer 5 of the SNA architectural model. This layer determines and manages interactions between session partners, particularly data flow. Corresponds to the *session layer* of the OSI model. See also *data link control layer*, *path control layer*, *physical control layer*, *presentation services layer*, *transaction services layer*, and *transmission control layer*.
datagram	Logical grouping of information sent as a network layer unit over a transmission medium without prior establishment of a virtual circuit. IP datagrams are the primary information units in the Internet. The terms *frame*, *message*, *packet*, and *segment* are also used to describe logical information groupings at various layers of the OSI reference model and in various technology circles.
Datagram Delivery Protocol	See *DDP*.

data-link connection identifier	See *DLCI*.
data link control layer	Layer 2 in the SNA architectural model. Responsible for the transmission of data over a particular physical link. Corresponds roughly to the *data link layer* of the OSI model. See also *data flow control layer*, *path control layer*, *physical control layer*, *presentation services layer*, *transaction services layer*, and *transmission control layer*.
data link layer	Layer 2 of the OSI reference model. This layer provides reliable transit of data across a physical link. The data link layer is concerned with physical addressing, network topology, line discipline, error notification, ordered delivery of frames, and flow control. The IEEE has divided this layer into two sublayers: the MAC sublayer and the LLC sublayer. Sometimes simply called *link layer*. Roughly corresponds to the *data link control layer* of the SNA model. See also *application layer*, *LLC*, *MAC*, *network layer*, *physical layer*, *presentation layer*, *session layer*, and *transport layer*.
data-link switching	See *DLSw*.
Data Movement Processor	See *DMP*.
Data Network Identification Code	See *DNIC*.
data set ready	See *DSR*.
data service unit	See *DSU*.
data sink	Network equipment that accepts data transmissions.
data stream	All data transmitted through a communications line in a single read or write operation.
data terminal equipment	See *DTE*.
data terminal ready	See *DTR*.
dB	decibels.
DB connector	Data bus connector. Type of connector used to connect serial and parallel cables to a data bus. DB connector names are of the format DB-*x*, where *x* represents the number of (wires) within the connector. Each line is connected to a pin on the connector, but in many cases, not all pins are assigned a function. DB connectors are defined by various EIA/TIA standards.
DC	Direct current. Electrical current that travels in only one direction. Direct current is generally used in electronic circuits. See DC.
DCA	Defense Communications Agency. U.S. government organization responsible for DDN networks such as MILNET. Now called DISA. See *DISA*.
DCC	Data Country Code. One of two ATM address formats developed by the ATM Forum for use by private networks. Adapted from the subnetwork model of addressing in which the ATM layer is responsible for mapping network layer addresses to ATM addresses. See also *ICD*.

DCE	Data communications equipment (EIA expansion) or data circuit-terminating equipment (ITU-T expansion). The devices and connections of a communications network that comprise the network end of the user-to-network interface. The DCE provides a physical connection to the network, forwards traffic, and provides a clocking signal used to synchronize data transmission between DCE and DTE devices. Modems and interface cards are examples of DCE. Compare with *DTE*.
D channel	1. Data channel. Full-duplex, 16-kbps (BRI) or 64-kbps (PRI) ISDN channel. Compare to *B channel*, *E channel*, and *H channel*.2. In SNA, a device that connects a processor and main storage with peripherals.
DDM	Distributed Data Management. Software in an IBM SNA environment that provides peer-to-peer communication and file sharing. One of three SNA transaction services. See also *DIA* and *SNADS*.
DDN	Defense Data Network. U.S. military network composed of an unclassified network (MILNET) and various secret and top-secret networks. DDN is operated and maintained by *DISA*. See also *DISA* and *MILNET*.
DDP	Datagram Delivery Protocol. Apple Computer network layer protocol that is responsible for the socket-to-socket delivery of datagrams over an AppleTalk internetwork.
DDR	Dial-on-demand routing. Technique whereby a Cisco router can automatically initiate and close a circuit-switched session as transmitting stations demand. The router spoofs keepalives so that end stations treat the session as active. DDR permits routing over ISDN or telephone lines using an external ISDN terminal adaptor or modem.
DE	Discard eligible. See *tagged traffic*.
deadlock	1. Unresolved contention for the use of a resource.2. In APPN, when two elements of a process each wait for action by or a response from the other before they resume the process.
debug ip rip	Command that displays RIP routing updates as they are sent and received.
decibels	Abbreviated *dB*.
DECnet	Group of communications products (including a protocol suite) developed and supported by Digital Equipment Corporation. DECnet/OSI (also called DECnet Phase V) is the most recent iteration and supports both OSI protocols and proprietary Digital protocols. Phase IV Prime supports inherent MAC addresses that allow DECnet nodes to coexist with systems running other protocols that have MAC address restrictions. See also *DNA*.
DRP	Proprietary routing scheme introduced by Digital Equipment Corporation in DECnet Phase III. In DECnet Phase V, DECnet completed its transition to OSI routing protocols (ES-IS and IS-IS).
decorative raceway	Type of wall-mounted channel with removable cover used to support horizontal cabling. Decorative raceway is big enough to hold two cables.

decryption	The reverse application of an encryption algorithm to encrypted data, thereby restoring that data to its original, unencrypted state. See also *encryption*.
dedicated LAN	Network segment allocated to a single device. Used in LAN switched network topologies.
dedicated line	Communications line that is indefinitely reserved for transmissions, rather than switched as transmission is required. See also *leased line*.
de facto standard	Standard that exists by nature of its widespread use. Compare with *de jure standard*. See also *standard*.
default route	Routing table entry that is used to direct frames for which a next hop is not explicitly listed in the routing table.
Defense Advanced Research Projects Agency	See *DARPA*.
Defense Communications Agency	See *DCA*.
Defense Data Network	See *DDN*.
Defense Information Systems Agency	See *DISA*.
Defense Intelligence Agency	See *DIA*.
de jure standard	Standard that exists because of its approval by an official standards body. Compare with *de facto standard*. See also *standard*.
delay	The time between the initiation of a transaction by a sender and the first response received by the sender. Also, the time required to move a packet from source to destination over a given path.
demand priority	Media access method used in 100VG-AnyLAN that uses a hub that can handle multiple transmission requests and can process traffic according to priority, making it useful for servicing time-sensitive traffic such as multimedia and video. Demand priority eliminates the overhead of packet collisions, collision recovery, and broadcast traffic typical in Ethernet networks. See also *100VG-AnyLAN*.
demarc	Demarcation point between carrier equipment and CPE.
demodulation	Process of returning a modulated signal to its original form. Modems perform demodulation by taking an analog signal and returning it to its original (digital) form. See also *modulation*.
demultiplexing	The separating of multiple input streams that have been multiplexed into a common physical signal back into multiple output streams. See also *multiplexing*.
dense mode PIM	See *PIM dense mode*.
Department of Defense	See *DoD*.
Department of Defense Intelligence Information System Network Security for Information Exchange	See *DNSIX*.

Dependent LU	See *DLU*.
Dependent LU Requester	See *DLUR*.
Dependent LU Server	See *DLUS*.
DES	Data Encryption Standard. Standard cryptographic algorithm developed by the U.S. NBS.
designated bridge	The bridge that incurs the lowest path cost when forwarding a frame from a segment to the route bridge.
designated router	OSPF router that generates LSAs for a multiaccess network and has other special responsibilities in running OSPF. Each multiaccess OSPF network that has at least two attached routers has a designated router that is elected by the OSPF Hello protocol. The designated router enables a reduction in the number of adjacencies required on a multiaccess network, which in turn reduces the amount of routing protocol traffic and the size of the topological database.
destination address	Address of a network device that is receiving data. See also *source address*.
destination MAC	See *DMAC*.
destination port	Number of the called port.
destination service access point	See *DSAP*.
deterministic load distribution	Technique for distributing traffic between two bridges across a circuit group. Guarantees packet ordering between source-destination pairs and always forwards traffic for a source-destination pair on the same segment in a circuit group for a given circuit-group configuration.
Deutsche Industrie Norm	See *DIN*.
Deutsche Industrie Norm connector	See *DIN connector*.
device	See *node*.
DHCP	Dynamic Host Configuration Protocol. Provides a mechanism for allocating IP addresses dynamically so that addresses automatically can be reused when hosts no longer need them.
DIA	Document Interchange Architecture. Defines the protocols and data formats needed for the transparent interchange of documents in an SNA network. One of three SNA transaction services. See also *DDM* and *SNADS*.
dial backup	Feature supported by Cisco routers that provides protection against WAN downtime by allowing the network administrator to configure a backup serial line through a circuit-switched connection.
dialer map	An interface configuration command to configure multiple dialing destinations on a single synchronous interface.
dial-on-demand routing	See *DDR*.
dialup line	Communications circuit that is established by a switched-circuit connection using the telephone company network.

differential encoding	Digital encoding technique whereby a binary value is denoted by a signal change rather than a particular signal level.
differential Manchester encoding	Digital coding scheme where a mid-bit-time transition is used for clocking, and a transition at the beginning of each bit time denotes a zero. The coding scheme used by IEEE 802.5 and Token Ring networks.
Diffusing Update Algorithm	See *DUAL*.
Digital Network Architecture	See *DNA*.
digital signal	Language of computers comprising only two states, on and off which are indicated by a series of voltage pulses.
digital signal level 0	See *DS-0*.
digital signal level 1	See *DS-1*.
digital signal level 3	See *DS-3*.
Dijkstra's algorithm	See *SPF*.
DIN	Deutsche Industrie Norm. German national standards organization.
DIN connector	Deutsche Industrie Norm connector. Multipin connector used in some Macintosh and IBM PC-compatible computers, and on some network processor panels.
directed broadcast	A directed broadcast sends a message to all devices within a given network or subnet range.
directed search	Search request sent to a specific node known to contain a resource. A directed search is used to determine the continued existence of the resource and to obtain routing information specific to the node. See also *broadcast search*.
direct memory access	See *DMA*.
directory services	Services that help network devices locate service providers.
DIS	Designated Intermediate System (DIS) is elected and will conduct the flooding over the media. The DIS is analogous to the designated router in Open Shortest Path First (OSPF) Protocol, even though the details including election process and adjacencies within a multi-access media differ significantly. The DIS is elected by priority. The highest priority becomes the DIS. This is configurable on an interface basis. In the case of a tie, the router with the highest SNPA (MAC) address will become the DIS.
DISA	Defense Information Systems Agency. U.S. military organization responsible for implementing and operating military information systems, including the DDN. See also *DDN*.
discard eligible	See *DE*.
discovery architecture	APPN software that enables a machine configured as an APPN EN to automatically find primary and backup NNs when the machine is brought onto an APPN network.

discovery mode	Method by which an AppleTalk interface acquires information about an attached network from an operational node and then uses this information to configure itself. Also called *dynamic configuration*.
disk assembly	The combination of a hard disk drive, a floppy disk drive, and a disk power supply on a LightStream 2020 ATM switch. Each NP card in a LightStream 2020 chassis has its own disk assembly.
Distance Vector Multicast Routing Protocol	See *DVMRP*.
distance vector routing algorithm	Class of routing algorithms that iterate on the number of hops in a route to find a shortest-path spanning tree. Distance vector routing algorithms call for each router to send its entire routing table in each update, but only to its neighbors. Distance vector routing algorithms can be prone to routing loops, but are computationally simpler than link state routing algorithms. Also called *Bellman-Ford routing algorithm*. See also *link state routing algorithm* and *SPF*.
distortion delay	Problem with a communication signal resulting from nonuniform transmission speeds of the components of a signal through a transmission medium. Also called *group delay*.
distributed computing (processing)	See *client-server computing*.
Distributed Data Management	See *DDM*.
Distributed Queue Dual Bus	See *DQDB*.
DLCI	Data-link connection identifier. Value that specifies a PVC or SVC in a Frame Relay network. In the basic Frame Relay specification, DLCIs are locally significant (connected devices might use different values to specify the same connection). In the LMI extended specification, DLCIs are globally significant (DLCIs specify individual end devices). See also *LMI*.
DLSw	Data-link switching. Interoperability standard, described in RFC 1434, that provides a method for forwarding SNA and NetBIOS traffic over TCP/IP networks using data link layer switching and encapsulation. DLSw uses SSP (Switch-to-Switch Protocol) instead of SRB, eliminating the major limitations of SRB, including hop-count limits, broadcast and unnecessary traffic, timeouts, lack of flow control, and lack of prioritization schemes. See also *DLSw+*, *SRB*, and *SSP (Switch-to-Switch Protocol)*.
DLSw+	Data Link Switching Plus. Cisco implementation of the DLSw standard for SNA and NetBIOS traffic forwarding. DLSw+ goes beyond the standard to include the advanced features of the current Cisco RSRB implementation, and provides additional functionality to increase the overall scalability of data-link switching. See also *DLSw*.
DLU	Dependent LU. An LU that depends on the SSCP to provide services for establishing sessions with other LUs. See also *LU* and *SSCP*.

DLUR	Dependent LU Requester. The client half of the Dependent LU Requestor/Server enhancement to APPN. The DLUR component resides in APPN ENs and NNs that support adjacent DLUs by securing services from the DLUS. See also *APPN*, *DLU*, and *DLUS*.
DLUR node	In APPN networks, an EN or NN that implements the DLUR component. See also *DLUR*.
DLUS	Dependent LU Server. The server half of the Dependent LU Requestor/Server enhancement to APPN. The DLUS component provides SSCP services to DLUR nodes over an APPN network. See also *APPN*, *DLU*, and *DLUR*.
DLUS node	In APPN networks, a NN that implements the DLUS component. See also *DLUS*.
DMA	Direct memory access. The transfer of data from a peripheral device, such as a hard disk drive, into memory without that data passing through the microprocessor. DMA transfers data into memory at high speeds with no processor overhead.
DMAC	Destination MAC. The MAC address specified in the Destination Address field of a packet. Compare with *SMAC*. See also *MAC address*.
DMP	Data Movement Processor. Processor on the Catalyst 5000 that, along with the multiport packet buffer memory interface, performs the frame-switching function for the switch. The DMP also handles translational bridging between the Ethernet and FDDI interfaces, IP segmentation, and intelligent bridging with protocol-based filtering. See also *Catalyst 5000*.
DNA	Digital Network Architecture. Network architecture developed by Digital Equipment Corporation. The products that embody DNA (including communications protocols) are collectively referred to as DECnet. See also *DECnet*.
DNIC	Data Network Identification Code. Part of an X.121 address. DNICs are divided into two parts: the first specifying the country in which the addressed PSN is located and the second specifying the PSN itself. See also *X.121*.
DNS	Domain Naming System. System used in the Internet for translating names of network nodes into addresses. See also *authority zone*.
DNSIX	Department of Defense Intelligence Information System Network Security for Information Exchange. Collection of security requirements for networking defined by the U.S. Defense Intelligence Agency.
Document Interchange Architecture	See *DIA*.
DoD	Department of Defense. U.S. government organization that is responsible for national defense. The DoD has frequently funded communication protocol development.
domain	1. In the Internet, a portion of the naming hierarchy tree that refers to general groupings of networks based on organization-type or geography.2. In SNA, an SSCP and the resources it controls.3. In IS-IS, a logical set of networks.
Domain	Networking system developed by Apollo Computer (now part of Hewlett-Packard) for use in its engineering workstations.

Domain Naming System	See *DNS*.
domain specific part	See *DSP*.
dot address	Refers to the common notation for IP addresses in the form <*a.b.c.d*> where each number *a* represents, in decimal, 1 byte of the 4-byte IP address. Also called *dotted notation* or *four-part dotted notation*.
dotted notation	See *dot address*.
downlink station	See *ground station*.
downstream physical unit	See *DSPU*.
DQDB	Distributed Queue Dual Bus. Data link layer communication protocol, specified in the IEEE 802.6 standard, designed for use in MANs. DQDB, which permits multiple systems to interconnect using two unidirectional logical buses, is an open standard that is designed for compatibility with carrier transmission standards, and is aligned with emerging standards for BISDN. SIP (SMDS Interface Protocol) is based on DQDB. See also *MAN*.
DRAM	Dynamic random-access memory. RAM that stores information in capacitors that must be periodically refreshed. Delays can occur because DRAMs are inaccessible to the processor when refreshing their contents. However, DRAMs are less complex and have greater capacity than SRAMs. See also *SRAM*.
drop	Point on a multipoint channel where a connection to a networked device is made.
drop cable	Generally, a cable that connects a network device (such as a computer) to a physical medium. A type of AUI. See also *AUI*.
DS-0	Digital signal level 0. Framing specification used in transmitting digital signals over a single channel at 64-kbps on a T1 facility. Compare with *DS-1* and *DS-3*.
DS-1	Digital signal level 1. Framing specification used in transmitting digital signals at 1.544-Mbps on a T1 facility (in the United States) or at 2.108-Mbps on an E1 facility (in Europe). Compare with *DS-0* and *DS-3*. See also *E1* and *T1*.
DS-1 domestic trunk interface	See *DS-1/DTI*.
DS-1/DTI	DS-1 domestic trunk interface. Interface circuit used for DS-1 applications with 24 trunks.
DS-3	Digital signal level 3. Framing specification used for transmitting digital signals at 44.736-Mbps on a T3 facility. Compare with *DS-0* and *DS-1*. See also *E3* and *T3*.
DSAP	Destination service access point. The SAP of the network node designated in the Destination field of a packet. Compare to *SSAP*. See also *SAP (service access point)*.
DSP	Domain specific part. The part of a CLNS address that contains an area identifier, a station identifier, and a selector byte.

DSPU	1. Downstream physical unit. In SNA, a PU that is located downstream from the host.2. Cisco IOS software feature that enables a router to function as a PU concentrator for SNA PU 2 nodes. PU concentration at the router simplifies the task of PU definition at the upstream host while providing additional flexibility and mobility for downstream PU devices. This feature is sometimes referred to as *DSPU concentration*. See also *PU* and *SNA*.
DSPU concentration	See *DSPU* and *PU*.
DSR	Data set ready. EIA/TIA-232 interface circuit that is activated when DCE is powered up and ready for use.
DSU	Data service unit. Device used in digital transmission that adapts the physical interface on a DTE device to a transmission facility such as T1 or E1. The DSU is also responsible for such functions as signal timing. Often referred to together with CSU, as *CSU/DSU*. See also *CSU*.
DSX-1	Cross-connection point for DS-1 signals.
DTE	Data terminal equipment. Device at the user end of a user-network interface that serves as a data source, destination, or both. DTE connects to a data network through a DCE device (for example, a modem) and typically uses clocking signals generated by the DCE. DTE includes such devices as computers, protocol translators, and multiplexers. Compare with *DCE*.
DTMF	Dual tone multifrequency. Use of two simultaneous voice-band tones for dialing (such as touch tone).
DTR	Data terminal ready. EIA/TIA-232 circuit that is activated to let the DCE know when the DTE is ready to send and receive data.
DUAL	Diffusing Update Algorithm. Convergence algorithm used in Enhanced IGRP that provides loop-free operation at every instant throughout a route computation. Allows routers involved in a topology change to synchronize at the same time, while not involving routers that are unaffected by the change. See also *Enhanced IGRP*.
dual-attached concentrator	See *DAC*.
dual attachment station	See *DAS*.
dual counter-rotating rings	Network topology in which two signal paths, whose directions are opposite one another, exist in a token-passing network. FDDI and CDDI are based on this concept.
dual-homed station	Device attached to multiple FDDI rings to provide redundancy.
dual homing	Network topology in which a device is connected to the network by way of two independent access points (points of attachment). One access point is the primary connection, and the other is a standby connection that is activated in the event of a failure of the primary connection.
Dual IS-IS	See *Integrated IS-IS*.
dual tone multifrequency	See *DTMF*.

DVMRP	Distance Vector Multicast Routing Protocol. Internetwork gateway protocol, largely based on RIP, that implements a typical dense mode IP multicast scheme. DVMRP uses IGMP to exchange routing datagrams with its neighbors. See also *IGMP*.
DXI	Data Exchange Interface. ATM Forum specification, described in RFC 1483, that defines how a network device such as a bridge, router, or hub can effectively act as an FEP to an ATM network by interfacing with a special DSU that performs packet segmentation and reassembly.
dynamic address resolution	Use of an address resolution protocol to determine and store address information on demand.
dynamic configuration	See *discovery mode*.
dynamic random-access memory	See *DRAM*.
dynamic routing	Routing that adjusts automatically to network topology or traffic changes. Also called adaptive routing. Requires that a routing protocol be run between routers.

E

Term	Definition
E1	Wide-area digital transmission scheme used predominantly in Europe that carries data at a rate of 2.048 Mbps. E1 lines can be leased for private use from common carriers. Compare with *T1*. See also *DS-1*.
E.164	ITU-T recommendation for international telecommunication numbering, especially in ISDN, BISDN, and SMDS. An evolution of standard telephone numbers.
E3	Wide-area digital transmission scheme used predominantly in Europe that carries data at a rate of 34.368 Mbps. E3 lines can be leased for private use from common carriers. Compare with *T3*. See also *DS-3*.
early token release	Technique used in Token Ring networks that allows a station to release a new token onto the ring immediately after transmitting, instead of waiting for the first frame to return. This feature can increase the total bandwidth on the ring. See also *Token Ring*.
EARN	European Academic Research Network. European network connecting universities and research institutes. EARN merged with RARE to form TERENA. See also *RARE* and *TERENA*.
EBCDIC	Extended binary coded decimal interchange code. Any of a number of coded character sets developed by IBM consisting of 8-bit coded characters. This character code is used by older IBM systems and telex machines. Compare with *ASCII*.
ECC	Edge card control. Process on the NP of a LightStream 2020 ATM switch that performs per-card processing for an edge card. Such processing includes protocol management (ATM connection management) and media-specific (Ethernet and FDDI) management tasks, internetworking operations such as packet forwarding and filtering, and network management tasks. See also *edge card*, *LCC*, and *NP card*.
E channel	Echo channel. 64-kbps ISDN circuit-switching control channel. The E channel was defined in the 1984 ITU-T ISDN specification, but was dropped in the 1988 specification. Compare with *B channel*, *D channel*, and *H channel*.
echo channel	See *E channel*.
echoplex	Mode in which keyboard characters are echoed on a terminal screen upon return of a signal from the other end of the line indicating that the characters were received correctly.
ECMA	European Computer Manufacturers Association. Group of European computer vendors who have done substantial OSI standardization work.

edge card	Line card on the LightStream 2020 ATM switch that is configured to communicate with devices outside the ATM network. Edge cards offer Ethernet, FDDI, frame forwarding, Frame Relay, OC-3c, and UNI interfaces. See also *trunk card*.
edge card control	See *ECC*.
edge device	Network entity such as a LAN segment, host, or router that connects to a LightStream 2020 ATM switch via an edge card. Edge devices send and receive the data that passes through the ATM network.
EDI	Electronic data interchange. The electronic communication of operational data such as orders and invoices between organizations.
EDIFACT	Electronic Data Interchange for Administration, Commerce, and Transport. Data exchange standard administered by the United Nations to be a multi-industry EDI standard.
EEPROM	Electrically erasable programmable read-only memory. EPROM that can be erased using electrical signals applied to specific pins. See also *EPROM*.
EGP	Exterior Gateway Protocol. Internet protocol for exchanging routing information between autonomous systems. Documented in RFC 904. Not to be confused with the general term *exterior gateway protocol*. EGP is an obsolete protocol that has been replaced by BGP. See also *BGP*.
EIA	Electronic Industries Association. Group that specifies electrical transmission standards. The EIA and TIA have developed numerous well-known communications standards, including EIA/TIA-232 and EIA/TIA-449. See also *TIA*.
EIA-530	REFers to two electrical implementations of EIA/TIA-449: RS-422 (for balanced transmission) and RS-423 (for unbalanced transmission). See also *RS-422*, *RS-423*, and *EIA/TIA-449*.
EIA/TIA-232	Common physical layer interface standard, developed by EIA and TIA, that supports unbalanced circuits at signal speeds of up to 64 kbps. Closely resembles the V.24 specification. Formerly known as *RS-232*.
EIA/TIA-449	Popular physical layer interface developed by EIA and TIA. Essentially, a faster (up to 2 Mbps) version of EIA/TIA-232 capable of longer cable runs. Formerly called *RS-449*. See also *EIA-530*.
EIA/TIA-568	Standard that describes the characteristics and applications for various grades of UTP cabling. See also *Category 1 cabling*, *Category 2 cabling*, *Category 3 cabling*, *Category 4 cabling*, *Category 5 cabling*, and *UTP*.

EIA/TIA-606	Administration standard for the telecommunications infrastructure of commercial buildings. It includes the following administration areas: terminations, media, pathways, spaces, and bounding and grounding.
EIGRP	See *Enhanced IGRP*.
EIP	Ethernet Interface Processor. Interface processor card on the Cisco 7000 series routers. The EIP provides high-speed (10-Mbps) AUI ports that support Ethernet Version 1 and Ethernet Version 2 or IEEE 802.3 interfaces, and a high-speed data path to other interface processors.
EISA	Extended Industry-Standard Architecture. 32-bit bus interface used in PCs, PC-based servers, and some UNIX workstations and servers. See also *ISA*.
ELAN	Emulated LAN. ATM network in which an Ethernet or Token Ring LAN is emulated using a client-server model. ELANs are composed of an LEC, an LES, a BUS, and an LECS. Multiple ELANs can exist simultaneously on a single ATM network. ELANs are defined by the LANE specification. See also *BUS*, *LANE*, *LEC*, *LECS*, and *LES*.
electromagnetic interference	See *EMI*.
electromagnetic pulse	See *EMP*.
electrically erasable programmable read-only memory	See *EEPROM*.
electronic data interchange	See *EDI*.
Electronic Data Interchange for Administration, Commerce, and Transport	See *EDIFACT*.
Electronic Industries Association	See *EIA*.
electronic mail	Widely used network application in which mail messages are transmitted electronically between end users over various types of networks using various network protocols. Often called *e-mail*.
Electronic Messaging Association	See *EMA*.
electrostatic discharge	See *ESD*.
EMA	1. Enterprise Management Architecture. Digital Equipment Corporation network management architecture, based on the OSI network management model.2. Electronic Messaging Association. Forum devoted to standards and policy work, education, and development of electronic messaging systems such as electronic mail, voice mail, and facsimile.

e-mail	See *electronic mail*.
EMI	Electromagnetic interference. Interference by electromagnetic signals that can cause reduced data integrity and increased error rates on transmission channels.
EMIF	ESCON Multiple Image Facility. Mainframe I/O software function that allows one ESCON channel to be shared among multiple logical partitions on the same mainframe. See also *ESCON*.
EMP	Electromagnetic pulse. Caused by lightning and other high-energy phenomena. Capable of coupling enough energy into unshielded conductors to destroy electronic devices. See also *Tempest*.
emulated LAN	See *ELAN*.
emulation mode	Function of an NCP that enables it to perform activities equivalent to those performed by a transmission control unit. For example, with CiscoWorks, the NetView PU 2 emulates the IBM 3274.
EN	End node. APPN end system that implements the PU 2.1, provides end-user services, and supports sessions between local and remote CPs. ENs are not capable of routing traffic and rely on an adjacent NN for APPN services. Compare with *NN*. See also *CP*.
enable-password	Command used to restrict access to the privileged EXEC mode.
enable-secret	Password from the System Configuration Dialog to setup global parameters uses a Cisco-proprietary encryption process to alter the password character string.
encapsulation	The wrapping of data in a particular protocol header. For example, Ethernet data is wrapped in a specific Ethernet header before network transit. Also, when bridging dissimilar networks, the entire frame from one network is simply placed in the header used by the data link layer protocol of the other network. See also *tunneling*.
encapsulation bridging	Carries Ethernet frames from one router to another across disparate media, such as serial and FDDI lines. Contrast with *translational bridging*.
encoder	Device that modifies information into the required transmission format.
encoding	Process by which bits are represented by voltages.

encryption	The application of a specific algorithm to data so as to alter the appearance of the data making it incomprehensible to those who are not authorized to see the information. See also *decryption*.
end node	See *EN*.
end of transmission	See *EOT*.
end point	Device at which a virtual circuit or virtual path begins or ends.
end system	See *ES*.
End System-to-Intermediate System	See *ES-IS*.
Energy Sciences Network	See *ESnet*.
Enhanced IGRP	Enhanced Interior Gateway Routing Protocol. Advanced version of IGRP developed by Cisco. Provides superior convergence properties and operating efficiency, and combines the advantages of link state protocols with those of distance vector protocols. Compare with *IGRP*. See also *IGP*, *OSPF*, and *RIP*.
Enhanced Interior Gateway Routing Protocol	See *Enhanced IGRP*.
Enterprise Management Architecture	See *EMA*.
Enhanced Monitoring Services	Set of analysis tools on the Catalyst 5000 switch, consisting of an integrated RMON agent and the SPAN. These tools provide traffic monitoring, and network segment analysis and management. See also *RMON* and *SPAN*.
enterprise network	Large and diverse network connecting most major points in a company or other organization. Differs from a WAN in that it is privately owned and maintained.
Enterprise System Connection	See *ESCON*.
Enterprise System Connection channel	See *ESCON channel*.
entity	Generally, an individual, manageable network device. Sometimes called an *alias*.
EOT	End of transmission. Generally, a character that signifies the end of a logical group of characters or bits.
EPROM	Erasable programmable read-only memory. Nonvolatile memory chips that are programmed after they are manufactured, and, if necessary, can be erased by some means and reprogrammed. Compare with *EEPROM* and *PROM*.

equalization	Technique used to compensate for communications channel distortions.
erasable programmable read-only memory	See *EPROM*.
erase startup-config	Command used to delete the backup configuration file in NVRAM.
error control	Technique for detecting and correcting errors in data transmissions.
error-correcting code	Code having sufficient intelligence and incorporating sufficient signaling information to enable the detection and correction of many errors at the receiver.
error-detecting code	Code that can detect transmission errors through analysis of received data based on the adherence of the data to appropriate structural guidelines.
ES	End system (ES) refers to any non-routing host or node. ES lives in a particular area. See also *IS*, *ES-IS*, *IS-IS*.
ESCON	Enterprise System Connection. IBM channel architecture that specifies a pair of fiber-optic cables, with either LEDs or lasers as transmitters and a signaling rate of 200 Mbps.
ESCON channel	IBM channel for attaching mainframes to peripherals such as storage devices, backup units, and network interfaces. This channel incorporates fiber channel technology. The ESCON channel replaces the bus and tag channel. Compare with *parallel channel*. See also *bus and tag channel*.
ESCON Multiple Image Facility	See *EMIF*.
ESD	Electrostatic discharge. A flow or spark of electricity that originates from a static source such as a carpet and arcs across a gap to another object.
ESF	Extended Superframe Format. Framing type used on T1 circuits that consists of 24 frames of 192 bits each, with the 193rd bit providing timing and other functions. ESF is an enhanced version of SF. See also *SF*.
ESH	End System Hello (ESH) is an IS-IS hello packet type. It is part of the ES-IS spec 9542; similar to ICMP Router Discovery Protocol (IRDP) in TCP/IP; used for routers (ISs) and End Systems (ESs) to detect each other and form adjacencies.

ES-IS	End System-to-Intermediate System (ES-IS) ES-IS discovery protocols used for routing between end systems and intermediate systems. ES-IS is an analogous to Address Resolution Protocol (ARP) in IP. Although not technically a routing protocol, ES-IS is commonly used with routing protocols to provide end-to-end data movement through an internetwork. Routing between end systems and intermediate systems is sometimes referred to as Level 0 routing. See also *ES*, *IS*, *IS-IS*.
ESnet	Energy Sciences Network. Data communications network managed and funded by the U.S. Department of Energy Office of Energy Research (DOE/OER). Interconnects the DOE to educational institutions and other research facilities.
Ethernet	Baseband LAN specification invented by Xerox Corporation and developed jointly by Xerox, Intel, and Digital Equipment Corporation. Ethernet networks use CSMA/CD and run over a variety of cable types at 10 Mbps. Ethernet is similar to the IEEE 802.3 series of standards. See also *10BASE2*, *10BASE5*, *10BASE-F*, *10BASE-T*, *10Broad36*, and *IEEE 802.3*.
Ethernet Interface Processor	See *EIP*.
EtherTalk	AppleTalk protocols running on Ethernet.
ETSI	European Telecommunication Standards Institute. Organization created by the European PTTs and the European Community (EC) to propose telecommunications standards for Europe.
EUnet	European Internet. European commercial Internet service provider. EUnet is designed to provide electronic mail, news, and other Internet services to European markets.
European Academic Research Network	See *EARN*.
European Computer Manufacturers Association	See *ECMA*.
European Telecommunication Standards Institute	See *ETSI*.
European Internet	See *EUnet*.
event	Network message indicating operational irregularities in physical elements of a network or a response to the occurrence of a significant task, typically the completion of a request for information. See also *alarm* and *trap*.
Excess Burst	See *Be*.

excess rate	Traffic in excess of the insured rate for a given connection. Specifically, the excess rate equals the maximum rate minus the insured rate. Excess traffic is delivered only if network resources are available and can be discarded during periods of congestion. Compare with *insured rate* and *maximum rate*.
exchange identification	See *XID*.
EXEC	The interactive command processor of the Cisco IOS software.
expansion	The process of running a compressed data set through an algorithm that restores the data set to its original size. Compare with *companding* and *compression*.
expectational acknowledgment	Type of acknowledgment scheme in which the acknowledgment number refers to the octet expected next.
expedited delivery	Option set by a specific protocol layer telling other protocol layers (or the same protocol layer in another network device) to handle specific data more rapidly.
explicit route	In SNA, a route from a source subarea to a destination subarea, as specified by a list of subarea nodes and transmission groups that connect the two.
explorer frame	Frame sent out by a networked device in a SRB environment to determine the optimal route to another networked device.
explorer packet	Generated by an end station trying to find its way through a SRB network. Gathers a hop-by-hop description of a path through the network by being marked (updated) by each bridge that it traverses, thereby creating a complete topological map. See also *all-routes explorer packet*, *local explorer packet*, and *spanning explorer packet*.
Extended Binary Coded Decimal Interchange Code	See *EBCDIC*.
Extended Industry-Standard Architecture	See *EISA*.
Extended Superframe Format	See *ESF*.
exterior gateway protocol	Any internetwork protocol used to exchange routing information between autonomous systems. Not to be confused with *Exterior Gateway Protocol (EGP)*, which is a particular instance of an exterior gateway protocol.
Exterior Gateway Protocol	See *EGP*.
exterior router	Router connected to an AURP tunnel, responsible for the encapsulation and deencapsulation of AppleTalk packets in a foreign protocol header (for example, IP). See also *AURP* and *AURP tunnel*.

F

Term	Definition
failure domain	Area in which a failure has occurred in a Token Ring, defined by the information contained in a beacon. When a station detects a serious problem with the network (such as a cable break), it sends a beacon frame that includes the station reporting the failure, its NAUN, and everything in between. Beaconing in turn initiates a process called autoreconfiguration. See also *autoreconfiguration*, *beacon*, and *NAUN*.
fan-out unit	Device that allows multiple devices on a network to communicate using a single network attachment.
fantail	Panel of I/O connectors that attaches to an equipment rack, providing easy access for data connections to a LightStream 2020 ATM switch. See also *applique*.
Fast Ethernet	Any of a number of 100-Mbps Ethernet specifications. Fast Ethernet offers a speed increase ten times that of the 10BASE-T Ethernet specification, while preserving such qualities as frame format, MAC mechanisms, and MTU. Such similarities allow the use of existing 10BASE-T applications and network management tools on Fast Ethernet networks. Based on an extension to the IEEE 802.3 specification. Compare with *Ethernet*. See also *100BASE-FX*, *100BASE-T*, *100BASE-T4*, *100BASE-TX*, *100BASE-X*, and *IEEE 802.3*.
Fast Ethernet Interface Processor	See *FEIP*.
Fast Sequenced Transport	See *FST*.
Fast Serial Interface Processor	See *FSIP*.
fast switching	Cisco feature whereby a route cache is used to expedite packet switching through a router. Contrast with *slow switching*.
fault management	One of five categories of network management defined by ISO for management of OSI networks. Fault management attempts to ensure that network faults are detected and controlled. See also *accounting management*, *configuration management*, *performance management*, and *security management*.
FCC	Federal Communications Commission. U.S. government agency that supervises, licenses, and controls electronic and electromagnetic transmission standards.
fcload	Function card load. Low-level software module in the LightStream 2020 ATM switch that is invoked by higher-level modules to load software from the NP to a function card.

FCS	Frame check sequence. Refers to the extra characters added to a frame for error control purposes. Used in HDLC, Frame Relay, and other data link layer protocols.
FDDI	Fiber Distributed Data Interface. LAN standard, defined by ANSI X3T9.5, specifying a 100-Mbps token-passing network using fiber-optic cable, with transmission distances of up to 2 km. FDDI uses a dual-ring architecture to provide redundancy. Compare with *CDDI* and *FDDI II*.
FDDI II	ANSI standard that enhances FDDI. FDDI II provides isochronous transmission for connectionless data circuits and connection-oriented voice and video circuits. Compare with *FDDI*.
FDDI Interface Processor	See *FIP*.
FDM	Frequency-division multiplexing. Technique whereby information from multiple channels can be allocated bandwidth on a single wire based on frequency. Compare with *ATDM*, *statistical multiplexing*, and *TDM*.
FECN	Forward explicit congestion notification. Bit set by a Frame Relay network to inform DTE receiving the frame that congestion was experienced in the path from source to destination. DTE receiving frames with the FECN bit set can request that higher-level protocols take flow-control action as appropriate. Compare with *BECN*.
Federal Communications Commission	See *FCC*.
Federal Networking Council	See *FNC*.
FEIP	Fast Ethernet Interface Processor. Interface processor on the Cisco 7000 series routers. The FEIP supports up to two 100-Mbps 100BASE-T ports.
FEP	Front-end processor. Device or board that provides network interface capabilities for a networked device. In SNA, typically an IBM 3745 device.
FF	See *frame forwarding*.
Fiber Distributed Data Interface	See *FDDI*.
fiber-optic cable	Physical medium capable of conducting modulated light transmission. Compared with other transmission media, fiber-optic cable is more expensive, but is not susceptible to electromagnetic interference, and is capable of higher data rates. Sometimes called *optical fiber*.
fiber-optic interrepeater link	See *FOIRL*.

FID0	Format indicator 0. One of several formats that an SNA TH can use. An FID0 TH is used for communication between an SNA node and a non-SNA node. See also *TH*.
FID1	Format indicator 1. One of several formats that an SNA TH can use. An FID1 TH encapsulates messages between two subarea nodes that do not support virtual and explicit routes. See also *TH*.
FID2	Format indicator 2. One of several formats that an SNA TH can use. An FID2 TH is used for transferring messages between a subarea node and a PU 2, using local addresses. See also *TH*.
FID3	Format indicator 3. One of several formats that an SNA TH can use. An FID3 TH is used for transferring messages between a subarea node and a PU 1, using local addresses. See also *TH*.
FID4	Format indicator 4. One of several formats that an SNA TH can use. An FID4 TH encapsulates messages between two subarea nodes that are capable of supporting virtual and explicit routes. See also *TH*.
field-replaceable unit	See *FRU*.
FIFO Queuing	First In First Out (FIFO) queuing is the classic algorithm for packet transmission. With FIFO, transmission occurs in the same order as messages are received. Until recently, FIFO queuing is the default for all router interfaces with the bandwidth greater then 2.048 Mbps.
file transfer	Popular network application that allows files to be moved from one network device to another.
File Transfer, Access, and Management	See *FTAM*.
File Transfer Protocol	See *FTP*.
filter	Generally, a process or device that screens network traffic for certain characteristics, such as source address, destination address, or protocol, and determines whether to forward or discard that traffic based on the established criteria.
FIP	FDDI Interface Processor. Interface processor on the Cisco 7000 series routers. The FIP supports SASs, DASs, dual homing, and optical bypass, and contains a 16-mips processor for high-speed (100-Mbps) interface rates. The FIP complies with ANSI and ISO FDDI standards.
firewall	Router or access server, or several routers or access servers, designated as a buffer between any connected public networks and a private network. A firewall router uses access lists and other methods to ensure the security of the private network.

firmware	Software instructions set permanently or semipermanently in ROM.
fish tape	Retractable coil of steel tape used to guide cable through a wall from above or below.
flapping	Routing problem where an advertised route between two nodes alternates (flaps) back and forth between two paths due to a network problem that causes intermittent interface failures.
Flash memory	Technology developed by Intel and licensed to other semiconductor companies. Flash memory is nonvolatile storage that can be electrically erased and reprogrammed. Allows software images to be stored, booted, and rewritten as necessary.
flash update	Routing update sent asynchronously in response to a change in the network topology. Compare with *routing update*.
flat addressing	Scheme of addressing that does not use a logical hierarchy to determine location.
fldsup account	One of the four default user accounts that are created in the factory on each LightStream 2020 ATM switch. The fldsup account is for the use of field service personnel. Its default interface is the bash shell. See also *bash*.
flooding	Traffic passing technique used by switches and bridges in which traffic received on an interface is sent out all of the interfaces of that device except the interface on which the information was originally received.
flow	Stream of data traveling between two endpoints across a network (for example, from one LAN station to another). Multiple flows can be transmitted on a single circuit.
flow control	Technique for ensuring that a transmitting entity, such as a modem, does not overwhelm a receiving entity with data. When the buffers on the receiving device are full, a message is sent to the sending device to suspend the transmission until the data in the buffers has been processed. In IBM networks, this technique is called *pacing*.
FM	Frequency modulation. Modulation technique in which signals of different frequencies represent different data values. Compare with *AM* and *PAM*. See also *modulation*.
FNC	Federal Networking Council. Group responsible for assessing and coordinating U.S. federal agency networking policies and needs.

FOIRL	Fiber-optic interrepeater link. Fiber-optic signaling methodology based on the IEEE 802.3 fiber-optic specification. FOIRL is a precursor of the 10BASE-FL specification, which is designed to replace it. See also *10BASE-FL*.
format indicator 0	See *FID0*.
format indicator 1	See *FID1*.
format indicator 2	See *FID2*.
format indicator 3	See *FID3*.
format indicator 4	See *FID4*.
forward channel	Communications path carrying information from the call initiator to the called party.
forward delay interval	Amount of time an interface spends listening for topology change information after that interface has been activated for bridging and before forwarding actually begins.
forward explicit congestion notification	See *FECN*.
forwarding	Process of sending a frame toward its ultimate destination by way of an internetworking device.
forwarding priority	See *transmit priority*.
Fourier transform	Technique used to evaluate the importance of various frequency cycles in a time series pattern.
four-part dotted notation	See *dot address*.
fractional T1	See *channelized T1*.
FRAD	Frame Relay access device. Any network device that provides a connection between a LAN and a Frame Relay WAN. See also *Cisco FRAD* and *FRAS*.
fragment	Piece of a larger packet that has been broken down to smaller units.
fragmentation	Process of breaking a packet into smaller units when transmitting over a network medium that cannot support the original size of the packet. See also *reassembly*.
frame	Logical grouping of information sent as a data link layer unit over a transmission medium. Often refers to the header and trailer, used for synchronization and error control, that surround the user data contained in the unit. The terms *datagram*, *message*, *packet*, and *segment* are also used to describe logical information groupings at various layers of the OSI reference model and in various technology circles.

frame check sequence	See *FCS*.
frame forwarding	Interface on the LightStream 2020 ATM switch that allows any traffic based on HDLC or SDLC frames to traverse the ATM network. Frame forwarding circuits are port-to-port, and only one PVC is allowed between a pair of ports. Frame forwarding is supported by the low-speed interface module, which offers V.35, EIA/TIA-449, or X.21 physical interfaces. Sometimes abbreviated *FF*.
Frame Relay	Industry-standard, switched data link layer protocol that handles multiple virtual circuits using HDLC encapsulation between connected devices. Frame Relay is more efficient than X.25, the protocol for which it is generally considered a replacement. See also *X.25*.
Frame Relay Access Device	See *FRAD*.
Frame Relay Access Support	See *FRAS*.
Frame Relay bridging	Bridging technique, described in RFC 1490, that uses the same spanning-tree algorithm as other bridging functions, but allows packets to be encapsulated for transmission across a Frame Relay network.
frame switch	See *LAN switch*.
FRAS	Frame Relay Access Support. Cisco IOS software feature that allows SDLC, Token Ring, Ethernet, and Frame Relay-attached IBM devices to connect to other IBM devices across a Frame Relay network. See also *FRAD*.
free-trade zone	Part of an AppleTalk internetwork that is accessible by two other parts of the internetwork that are unable to directly access one another.
frequency	Number of cycles, measured in hertz, of an alternating current signal per unit time.
frequency-division multiplexing	See *FDM*.
frequency modulation	See *FM*.
from switch unit	See *FSU*.
front end	Node or software program that requests services of a back end. See also *back end*, *client*, and *server*.
front-end processor	See *FEP*.
FRU	Field-replaceable unit. Hardware component that can be removed and replaced by Cisco-certified service providers. Typical FRUs include cards, power supplies, and chassis components.

FSIP	Fast Serial Interface Processor. The default serial interface processor for Cisco 7000 series routers. The FSIP provides four or eight high-speed serial ports.
FST	Fast Sequenced Transport. Connectionless, sequenced transport protocol that runs on top of the IP protocol. SRB traffic is encapsulated inside of IP datagrams and is passed over an FST connection between two network devices (such as routers). Speeds up data delivery, reduces overhead, and improves the response time of SRB traffic.
FSU	From switch unit. Subsystem of each line card on a LightStream 2020 ATM switch that accepts calls from the switch card, verifies their checksums, and passes them to the reassembly unit. The FSU selectively drops cells if the network becomes congested.
FTAM	File Transfer, Access, and Management. In OSI, an application layer protocol developed for network file exchange and management between diverse types of computers.
FTP	File Transfer Protocol. Application protocol, part of the TCP/IP protocol stack, used for transferring files between network nodes. FTP is defined in RFC 959.
full duplex	Capability for simultaneous data transmission between a sending station and a receiving station. Compare with *half duplex* and *simplex*.
full mesh	Term describing a network in which devices are organized in a mesh topology, with each network node having either a physical circuit or a virtual circuit connecting it to every other network node. A full mesh provides a great deal of redundancy, but because it can be prohibitively expensive to implement, it is usually reserved for network backbones. See also *mesh* and *partial mesh*.
function card	Line card or an NP card in a LightStream 2020 ATM switch.
function card load	See *fcload*.
Fuzzball	Digital Equipment Corporation LSI-11 computer system running IP gateway software. The NSFnet used these systems as backbone packet switches.

G

Term	Definition
G.703/G.704	ITU-T electrical and mechanical specifications for connections between telephone company equipment and DTE using BNC connectors and operating at E1 data rates.
G.804	ITU-T framing standard that defines the mapping of ATM cells into the physical medium.
gateway	In the IP community, an older term referring to a routing device. Today, the term *router* is used to describe nodes that perform this function, and *gateway* refers to a special-purpose device that performs an application layer conversion of information from one protocol stack to another. Compare with *router*.
Gateway Discovery Protocol	See *GDP*.
gateway host	In SNA, a host node that contains a gateway SSCP.
gateway NCP	NCP that connects two or more SNA networks and performs address translation to allow cross-network session traffic.
Gateway-to-Gateway Protocol	See *GGP*.
GB	Gigabyte.
GBps	Gigabytes per second.
Gb	Gigabit.
Gbps	Gigabits per second.
GDP	Gateway Discovery Protocol. Cisco protocol that allows hosts to dynamically detect the arrival of new routers as well as determine when a router goes down. Based on UDP. See also *UDP*.
generic routing encapsulation	See *GRE*.
Get Nearest Server	See *GNS*.
GGP	Gateway-to-Gateway Protocol. MILNET protocol specifying how core routers (gateways) should exchange reachability and routing information. GGP uses a distributed shortest-path algorithm.
GHz	Gigahertz.

GID	Global information distribution. Process that runs on the NP of every LightStream 2020 ATM switch in a network. GID maintains a database and keeps nodes in the network apprised of changes in topology such as ports, cards, and nodes being added or removed, and trunks going up or down. This information is supplied by the ND process. Sometimes called *global information distribution daemon*, or *GIDD*. See also *ND*.
GIDD	Global information distribution daemon. See *GID*.
gigabit	Abbreviated *Gb*.
gigabits per second	Abbreviated *Gbps*.
gigabyte	Abbreviated *GB*.
gigabytes per second	Abbreviated *GBps*.
gigahertz	Abbreviated *GHz*.
global configuration database	See *configuration database*.
global information distribution	See *GID*.
global information distribution daemon	See *GID*.
GNS	Get Nearest Server. Request packet sent by a client on an IPX network to locate the nearest active server of a particular type. An IPX network client issues a GNS request to solicit either a direct response from a connected server or a response from a router that tells it where on the internetwork the service can be located. GNS is part of the IPX SAP. See also *IPX* and *SAP (Service Advertisement Protocol)*.
GOSIP	Government OSI Profile. U.S. government procurement specification for OSI protocols. Through GOSIP, the government has mandated that all federal agencies standardize on OSI and implement OSI-based systems as they become commercially available.
Government OSI Profile	See *GOSIP*.
grade of service	Measure of telephone service quality based on the probability that a call will encounter a busy signal during the busiest hours of the day.
graphical user interface	See *GUI*.

GRE	Generic routing encapsulation. Tunneling protocol developed by Cisco that can encapsulate a wide variety of protocol packet types inside IP tunnels, creating a virtual point-to-point link to Cisco routers at remote points over an IP internetwork. By connecting multiprotocol subnetworks in a single-protocol backbone environment, IP tunneling using GRE allows network expansion across a single-protocol backbone environment.
ground	Electrically neutral contact point.
ground loop	Arrangement that exists when a multi-path connection exists between computers. Usually this occurs when computers are connected to each other through a ground wire and when computers are attached to the same network using twisted pair cable.
ground station	Collection of communications equipment designed to receive signals from (and usually transmit signals to) satellites. Also called a *downlink station*.
group address	See *multicast address*.
group delay	See *distortion delay*.
guard band	Unused frequency band between two communications channels that provides separation of the channels to prevent mutual interference.
GUI	Graphical user interface. User environment that uses pictorial as well as textual representations of the input and output of applications and the hierarchical or other data structure in which information is stored. Conventions such as buttons, icons, and windows are typical, and many actions are performed using a pointing device (such as a mouse). Microsoft Windows and the Apple Macintosh are prominent examples of platforms utilizing a GUI.
gutter	Type of wall-mounted channel with removable cover used to support horizontal cabling. Gutter is big enough to hold several cables.

H

Term	Definition
half duplex	Capability for data transmission in only one direction at a time between a sending station and a receiving station. Compare with *full duplex* and *simplex*.
hammer drill	Tool resembling an oversized electric drill used for drilling into masonry. As it turns the bit, it hammers rapidly.
handshake	Sequence of messages exchanged between two or more network devices to ensure transmission synchronization.
hardware address	See *MAC address*.
HBD3	Line code type used on E1 circuits.
HCC	Horizontal cross-connect. Wiring closet where the horizontal cabling connects to a patch panel which is connected by backbone cabling to the main distribution facility.
H channel	High-speed channel. Full-duplex ISDN primary rate channel operating at 384 Kbps. Compare with *B channel*, *D channel*, and *E channel*.
HDLC	High-Level Data Link Control. Bit-oriented synchronous data link layer protocol developed by ISO. Derived from SDLC, HDLC specifies a data encapsulation method on synchronous serial links using frame characters and checksums. See also *SDLC*.
headend	The end point of a broadband network. All stations transmit toward the headend; the headend then transmits toward the destination stations.
header	Control information placed before data when encapsulating that data for network transmission. Compare with *trailer*. See also *PCI*.
header checksum	Field within an IP datagram that indicates the integrity check on the header.
heartbeat	See *SQE*.
HELLO	Interior routing protocol used principally by NSFnet nodes. HELLO allows particular packet switches to discover minimal delay routes. Not to be confused with the *Hello protocol*.
hello packet	Multicast packet that is used by routers for neighbor discovery and recovery. Hello packets also indicate that a client is still operating and network-ready.
Hello protocol	Protocol used by OSPF systems for establishing and maintaining neighbor relationships. Not to be confused with *HELLO*.

helper address	Address configured on an interface to which broadcasts received on that interface will be sent.
HEPnet	High-Energy Physics Network. Research network that originated in the United States, but that has spread to most places involved in high-energy physics. Well-known sites include Argonne National Laboratory, Brookhaven National Laboratory, Lawrence Berkeley Laboratory, and the Stanford Linear Accelerator Center (SLAC).
hertz	Measure of frequency, abbreviated *Hz*. Synonymous with *cycles per second*.
heterogeneous network	Network consisting of dissimilar devices that run dissimilar protocols and in many cases support dissimilar functions or applications.
hexadecimal	Base 16. A number representation using the digits 0 through 9, with their usual meaning, plus the letters A through F to represent hexadecimal digits with values of 10 to 15. The right-most digit counts ones, the next counts multiples of 16, then 16^2=256, etc.
hierarchical routing	Routing based on a hierarchical addressing system. For example, IP routing algorithms use IP addresses, which contain network numbers, subnet numbers, and host numbers.
hierarchical star topology	Extended star topology where a central hub is connected by vertical cabling to other hubs that are dependent on it.
High-Energy Physics Network	See *HEPnet*.
High-Level Data Link Control	See *HDLC*.
High Performance Computing and Communications	See *HPCC*.
High Performance Computing Systems	See *HPCS*.
High-Performance Parallel Interface	See *HIPPI*.
High Performance Routing	See *HPR*.
High-Speed Communications Interface	See *HSCI*.
High-Speed Serial Interface	See *HSSI*.
highway	See *bus*.
HIP	HSSI Interface Processor. Interface processor on the Cisco 7000 series routers. The HIP provides one HSSI port that supports connections to ATM, SMDS, Frame Relay, or private lines at speeds up to T3 or E3.

HIPPI	High-Performance Parallel Interface. High-performance interface standard defined by ANSI. HIPPI is typically used to connect supercomputers to peripherals and other devices.
HLEN	Number of 32-bit words in the header.
HODSP	High-Order DSP (HODSP) is a NSAP address field that is used for subdividing the domain into areas. This is roughly equivalent to a subnet in IP. See also *NSAP Address*.
holddown	State into which a route is placed so that routers will neither advertise the route nor accept advertisements about the route for a specific length of time (the holddown period). Holddown is used to flush bad information about a route from all routers in the network. A route is typically placed in holddown when a link in that route fails.
homologation	Conformity of a product or specification to international standards, such as ITU-T, CSA, TUV, UL, or VCCI. Enables portability across company and international boundaries.
hop	Term describing the passage of a data packet between two network nodes (for example, between two routers). See also *hop count*.
hop count	Routing metric used to measure the distance between a source and a destination. RIP uses hop count as its sole metric. See also *hop* and *RIP*.
horizontal cross connect	See *HCC*.
host	Computer system on a network. Similar to the term *node* except that *host* usually implies a computer system, whereas node generally applies to any networked system, including access servers and routers. See also *node*.
host address	See *host number*.
host node	SNA subarea node that contains an SSCP.
host number	Part of an IP address that designates which node on the subnetwork is being addressed. Also called a *host address*.
Hot Standby Router Protocol	See *HSRP*.
hot swapping	See *OIR* and *power-on servicing*.
hot wire	Ungrounded lead wire that connects the transformer and electrical devices or appliances via an electrical outlet and power plug.

HPCC	High Performance Computing and Communications. U.S. government funded program advocating advances in computing, communications, and related fields. The HPCC is designed to ensure U.S. leadership in these fields through education, research and development, industry collaboration, and implementation of high-performance technology. The five components of the HPCC are *ASTA*, *BRHR*, *HPCS*, *IITA*, and *NREN*.
HPCS	High Performance Computing Systems. Component of the HPCC program designed to ensure U.S. technological leadership in high-performance computing through research and development of computing systems and related software. See also *HPCC*.
HPR	High Performance Routing. Second-generation routing algorithm for APPN. HPR provides a connectionless layer with nondisruptive routing of sessions around link failures, and a connection-oriented layer with end-to-end flow control, error control, and sequencing. Compare to *ISR*. See also *APPN*.
HSCI	High-Speed Communications Interface. Single-port interface, developed by Cisco, providing full-duplex synchronous serial communications capability at speeds up to 52 Mbps.
HSRP	Hot Standby Router Protocol. Provides high network availability and transparent network topology changes. HSRP creates a Hot Standby router group with a lead router that services all packets sent to the Hot Standby address. The lead router is monitored by other routers in the group, and if it fails, one of these standby routers inherits the lead position and the Hot Standby group address.
HSSI	High-Speed Serial Interface. Network standard for high-speed (up to 52 Mbps) serial connections over WAN links.
HSSI Interface Processor	See *HIP*.
HTML	Hypertext markup language. Simple hypertext document formatting language that uses tags to indicate how a given part of a document should be interpreted by a viewing application, such as a WWW browser. See also *hypertext* and *WWW browser*.
HTTP	Hypertext Transfer Protocol. The protocol used by Web browsers and Web servers to transfer files, such as text and graphics files.
hub	1. Generally, a term used to describe a device that serves as the center of a star-topology network.2. Hardware or software device that contains multiple independent but connected modules of network and internetwork equipment. Hubs can be active (where they repeat signals sent through them) or passive (where they do not repeat, but merely split, signals sent through them).3. In Ethernet and IEEE 802.3, an Ethernet multiport repeater, sometimes referred to as a *concentrator*.

hybrid network	Internetwork made up of more than one type of network technology, including LANs and WANs.
hypertext	Electronically-stored text that allows direct access to other texts by way of encoded links. Hypertext documents can be created using HTML, and often integrate images, sound, and other media that are commonly viewed using a WWW browser. See also *HTML* and *WWW browser*.
hypertext markup language	See *HTML*.
Hz	See *hertz*.

I

Term	Definition
IAB	Internet Architecture Board. Board of internetwork researchers who discuss issues pertinent to Internet architecture. Responsible for appointing a variety of Internet-related groups such as the IANA, IESG, and IRSG. The IAB is appointed by the trustees of the ISOC. See also *IANA*, *IESG*, *IRSG*, and *ISOC*.
IANA	Internet Assigned Numbers Authority. Organization operated under the auspices of the ISOC as a part of the IAB. IANA delegates authority for IP address-space allocation and domain-name assignment to the NIC and other organizations. IANA also maintains a database of assigned protocol identifiers used in the TCP/IP stack, including autonomous system numbers. See also *IAB*, *ISOC*, and *NIC*.
ICC	IDF that connects the horizontal cross-connect to the main cross-connect. See horizontal cross-connect. See main cross-connect.
ICD	International Code Designator. One of two ATM address formats developed by the ATM Forum for use by private networks. Adapted from the subnetwork model of addressing in which the ATM layer is responsible for mapping network layer addresses to ATM addresses. See also *DCC*.
ICMP	Internet Control Message Protocol. Network layer Internet protocol that reports errors and provides other information relevant to IP packet processing. Documented in RFC 792.
ICMP Router Discovery Protocol	See *IRDP*.
Identification, Flags, Frag Offset	Field within an IP datagram that provides fragmentation of datagrams to allow differing MTUs in the internet.
IDF	Intermediate distribution facility. Secondary communications room for a building using a star networking topology. The IDF is dependent on the MDF. See also *MDF*
IDI	Inter-Domain ID (IDI) is a NSAP address field that identifies the domain. See also *NSAD Address*.
IDN	International Data Number. See *X.121*.
IDP	Inter-Domain Part (IDP) is a NSAP address field that consists of the AFI and IDI together. This is roughly equivalent to a classful IP network, in decimal format. See also *NSAD Address*.

IDPR	Interdomain Policy Routing. Interdomain routing protocol that dynamically exchanges policies between autonomous systems. IDPR encapsulates interautonomous system traffic and routes it according to the policies of each autonomous system along the path. IDPR is currently an IETF proposal. See also *policy routing*.
IDRP	IS-IS Interdomain Routing Protocol. OSI protocol that specifies how routers communicate with routers in different domains.
IEC	International Electrotechnical Commission. Industry group that writes and distributes standards for electrical products and components.
IEEE	Institute of Electrical and Electronics Engineers. Professional organization whose activities include the development of communications and network standards. IEEE LAN standards are the predominant LAN standards today.
IEEE 802.1	IEEE specification that describes an algorithm that prevents bridging loops by creating a spanning tree. The algorithm was invented by Digital Equipment Corporation. The Digital algorithm and the IEEE 802.1 algorithm are not exactly the same, nor are they compatible. See also *spanning tree*, *spanning-tree algorithm*, and *Spanning-Tree Protocol*.
IEEE 802.12	IEEE LAN standard that specifies the physical layer and the MAC sublayer of the data link layer. IEEE 802.12 uses the demand priority media-access scheme at 100 Mbps over a variety of physical media. See also *100VG-AnyLAN*.
IEEE 802.2	IEEE LAN protocol that specifies an implementation of the LLC sublayer of the data link layer. IEEE 802.2 handles errors, framing, flow control, and the network layer (Layer 3) service interface. Used in IEEE 802.3 and IEEE 802.5 LANs. See also *IEEE 802.3* and *IEEE 802.5*.
IEEE 802.3	IEEE LAN protocol that specifies an implementation of the physical layer and the MAC sublayer of the data link layer. IEEE 802.3 uses CSMA/CD access at a variety of speeds over a variety of physical media. Extensions to the IEEE 802.3 standard specify implementations for Fast Ethernet. Physical variations of the original IEEE 802.3 specification include *10BASE2*, *10BASE5*, *10BASE-F*, *10BASE-T*, and *10Broad36*. Physical variations for *Fast Ethernet* include *100BASE-T*, *100BASE-T4*, and *100BASE-X*.
IEEE 802.3i	Physical variation of the original IEEE 802.3 specification that calls for using Ethernet type signaling over twisted pair networking media. The standard sets the signaling speed at 10 megabits per second using a baseband signaling scheme transmitted over twisted pair cable employing a star or extended star topology. See *10BASE2*, *10BASE5*, *10BASE-F*, *10BASE-T*, and *10Broad36*.

IEEE 802.4	IEEE LAN protocol that specifies an implementation of the physical layer and the MAC sublayer of the data link layer. IEEE 802.4 uses token-passing access over a bus topology and is based on the token bus LAN architecture. See also *token bus*.
IEEE 802.5	IEEE LAN protocol that specifies an implementation of the physical layer and MAC sublayer of the data link layer. IEEE 802.5 uses token passing access at 4 or 16 Mbps over STP cabling and is similar to IBM Token Ring. See also *Token Ring*.
IEEE 802.6	IEEE MAN specification based on DQDB technology. IEEE 802.6 supports data rates of 1.5 to 155 Mbps. See also *DQDB*.
IESG	Internet Engineering Steering Group. Organization, appointed by the IAB, that manages the operation of the IETF. See also *IAB* and *IETF*.
IETF	Internet Engineering Task Force. Task force consisting of over 80 working groups responsible for developing Internet standards. The IETF operates under the auspices of ISOC. See also *ISOC*.
IFIP	International Federation for Information Processing. Research organization that performs OSI prestandardization work. Among other accomplishments, IFIP formalized the original MHS model. See also *MHS*.
IGMP	Internet Group Management Protocol. Used by IP hosts to report their multicast group memberships to an adjacent multicast router. See also *multicast router*.
IGP	Interior Gateway Protocol. Internet protocol used to exchange routing information within an autonomous system. Examples of common Internet IGPs include IGRP, OSPF, and RIP. See also *IGRP*, *OSPF*, and *RIP*.
IGRP	Interior Gateway Routing Protocol. IGP developed by Cisco to address the problems associated with routing in large, heterogeneous networks. Compare with *Enhanced IGRP*. See also *IGP*, *OSPF*, and *RIP*.
IIH	Intermediate System-to-Intermediate System Hello (IIH) – Used by routers to detect neighbors and form adjacencies. In addition to the IIH, which is an IS-IS protocol data unit (PDU), there is an ISH and an ESH, which are End System-to-Intermediate System (ES-IS) PDUs.
IITA	Information Infrastructure Technology and Applications. Component of the HPCC program intended to ensure U.S. leadership in the development of advanced information technologies. See also *HPCC*.

ILMI	Interim Local Management Interface. Specification developed by the ATM Forum for incorporating network-management capabilities into the ATM UNI.
IMP	Interface message processor. Old name for ARPANET packet switches. An IMP is now referred to as a PSN (packet-switch node). See also *PSN (packet-switch node)*.
in-band signaling	Transmission within a frequency range normally used for information transmission. Compare with *out-of-band signaling*.
Industry-Standard Architecture	See *ISA*.
Information Infrastructure Technology and Applications	See *IITA*.
infrared	Electromagnetic waves whose frequency range is above that of microwaves, but below that of the visible spectrum. LAN systems based on this technology represent an emerging technology.
initial domain identifier	See *IDI*.
initial domain part	See *IDP*.
INOC	Internet Network Operations Center. BBN group that in the early days of the Internet monitored and controlled the Internet core gateways (routers). INOC no longer exists in this form.
input/output	See *I/O*.
Institute of Electrical and Electronics Engineers	See *IEEE*.
insulator	Any material with a high resistance to electrical current. See *conductor*.
insured burst	The largest burst of data above the insured rate that will be temporarily allowed on a PVC and not tagged by the traffic policing function for dropping in the case of network congestion. The insured burst is specified in bytes or cells. Compare with *maximum burst*. See also *insured rate*.
insured rate	The long-term data throughput, in bits or cells per second, that an ATM network commits to support under normal network conditions. The insured rate is 100 percent allocated; the entire amount is deducted from the total trunk bandwidth along the path of the circuit. Compare with *excess rate* and *maximum rate*. See also *insured burst*.
insured traffic	Traffic within the insured rate specified for the PVC. This traffic should not be dropped by the network under normal network conditions. See also *CLP* and *insured rate*.

Integrated IS-IS	Routing protocol based on the OSI routing protocol IS-IS, but with support for IP and other protocols. Integrated IS-IS implementations send only one set of routing updates, making it more efficient than two separate implementations. Formerly referred to as *Dual IS-IS*. Compare with *IS-IS*.
Integrated Services Digital Network	See *ISDN*.
interarea routing	Term used to describe routing between two or more logical areas. Compare with *intra-area routing*.
Interdomain Policy Routing	See *IDPR*.
interface	1. Connection between two systems or devices.2. In routing terminology, a network connection.3. In telephony, a shared boundary defined by common physical interconnection characteristics, signal characteristics, and meanings of interchanged signals.4. The boundary between adjacent layers of the OSI model.
interface message processor	See *IMP*.
interface module	Combination of a line card and an access card that together allow you to connect a LightStream 2020 ATM switch to other devices.
interface processor	Any of a number of processor modules used in the Cisco 7000 series routers. See *AIP*, *CIP*, *EIP*, *FEIP*, *FIP*, *FSIP*, *HIP*, *MIP*, *SIP (Serial Interface Processor)*, and *TRIP*.
interference	Unwanted communication channel noise.
Interim Local Management Interface	See *ILMI*.
Interior Gateway Protocol	See *IGP*.
Interior Gateway Routing Protocol	See *IGRP*.
intermediate cross connect	See *ICC*.
intermediate distribution facility	See *IDF*.
intermediate routing node	See *IRN*.
Intermediate Session Routing	See *ISR*.
intermediate system	See *IS*.
Intermediate System-to-Intermediate System	See *IS-IS*.
International Code Designator	See *ICD*.
International Data Number	See *X.121*.

International Electrotechnical Commission	See *IEC*.
International Federation for Information Processing	See *IFIP*.
International Organization for Standardization	See *ISO*.
International Standards Organization	Erroneous expansion of the acronym ISO. See *ISO*.
International Telecommunication Union Telecommunication Standardization Sector	See *ITU-T*.
Internet	Term used to refer to the largest global internetwork, connecting tens of thousands of networks worldwide and having a "culture" that focuses on research and standardization based on real-life use. Many leading-edge network technologies come from the Internet community. The Internet evolved in part from ARPANET. At one time, called the *DARPA Internet*. Not to be confused with the general term *internet*. See also *ARPANET*.
internet	Short for internetwork. Not to be confused with the *Internet*. See *internetwork*.
Internet Architecture Board	See *IAB*.
Internet address	See *IP address*.
Internet Assigned Numbers Authority	See *IANA*.
Internet Control Message Protocol	See *ICMP*.
Internet Engineering Steering Group	See *IESG*.
Internet Engineering Task Force	See *IETF*.
Internet Group Management Protocol	See *IGMP*.
Internet Network Operations Center	See *INOC*.
Internet Protocol	See *IP*.
Internet protocol	Any protocol that is part of the TCP/IP protocol stack. See *TCP/IP*.
Internet Research Steering Group	See *IRSG*.
Internet Research Task Force	See *IRTF*.
Internet Society	See *ISOC*.

internetwork	Collection of networks interconnected by routers and other devices that functions (generally) as a single network. Sometimes called an *internet*, which is not to be confused with the *Internet*.
internetworking	General term used to refer to the industry that has arisen around the problem of connecting networks together. The term can refer to products, procedures, and technologies.
Internetwork Packet Exchange	See *IPX*.
interNIC	Organization that serves the Internet community by supplying user assistance, documentation, training, registration service for Internet domain names, and other services. Formerly called Network Information Center (NIC).
interoperability	Ability of computing equipment manufactured by different vendors to communicate with one another successfully over a network.
Inter-Switching System Interface	See *ISSI*.
intra-area routing	Term used to describe routing within a logical area. Compare with *interarea routing*.
Inverse Address Resolution Protocol	See *Inverse ARP*.
Inverse ARP	Inverse Address Resolution Protocol. Method of building dynamic routes in a network. Allows an access server to discover the network address of a device associated with a virtual circuit.
I/O	input/output.
IOS	See *Cisco IOS software*.
IP	Internet Protocol. Network layer protocol in the TCP/IP stack offering a connectionless internetwork service. IP provides features for addressing, type-of-service specification, fragmentation and reassembly, and security. Documented in RFC 791.
IP access-group	Command that links an existing access list to an outbound interface.

IP address	1.) 32-bit address assigned to hosts using TCP/IP. An IP address belongs to one of five classes (A, B, C, D, or E) and is written as 4 octets separated with periods (dotted decimal format). Each address consists of a network number, an optional subnetwork number, and a host number. The network and subnetwork numbers together are used for routing, while the host number is used to address an individual host within the network or subnetwork. A subnet mask is used to extract network and subnetwork information from the IP address. Also called an Internet address. 2.) Command used to establish the logical network address of this interface. See also IP and subnet mask.
IP datagram	Fundamental unit of information passed across the Internet. Contains source and destination addresses along with data and a number of fields that define such things as the length of the datagram, the header checksum, and flags to indicate whether the datagram can be (or was) fragmented.
IP host	Command used to make a static name-to-address entry in the router's configuration file.
IP multicast	Routing technique that allows IP traffic to be propagated from one source to a number of destinations or from many sources to many destinations. Rather than sending one packet to each destination, one packet is sent to a multicast group identified by a single IP destination group address.
IP name-server	Command used to define which hosts can provide the name service.
IP options	Field within an IP datagram that deals with network testing, debugging, security, and others.
IP Security Option	See *IPSO*.
IPSO	IP Security Option. U.S. government specification that defines an optional field in the IP packet header that defines hierarchical packet security levels on a per interface basis.
IPV6	IP version 6. Replacement for the current version of IP (version 4). IPv6 includes support for flow ID in the packet header, which can be used to identify flows. Formerly called IPng (IP next generation).
IPX	Internetwork Packet Exchange. NetWare network layer (Layer 3) protocol used for transferring data from servers to workstations. IPX is similar to IP and XNS.
IPXWAN	Protocol that negotiates end-to-end options for new links. When a link comes up, the first IPX packets sent across are IPXWAN packets negotiating the options for the link. When the IPXWAN options have been successfully determined, normal IPX transmission begins. Defined by RFC 1362.

IRDP	ICMP Router Discovery Protocol. Enables a host to determine the address of a router that it can use as a default gateway. Similar to ESIS, but used with IP. See also *ES-IS*.
IRN	Intermediate routing node. In SNA, a subarea node with intermediate routing capability.
IRSG	Internet Research Steering Group. Group that is part of the IAB and oversees the activities of the IRTF. See also *IAB* and *IRTF*.
IRTF	Internet Research Task Force. Community of network experts that consider Internet-related research topics. The IRTF is governed by the IRSG and is considered a subsidiary of the IAB. See also *IAB* and *IRSG*.
IS	Intermediate system (IS) refers to a router which participates in routing IS-IS information. See also *ES*, *ES-IS*, *IS-IS.*
ISA	Industry-Standard Architecture. 16-bit bus used for Intel-based personal computers. See also *EISA*.
isarithmic flow control	Flow control technique in which permits travel through the network. Possession of these permits grants the right to transmit. Isarithmic flow control is not commonly implemented.
ISDN	Integrated Services Digital Network. Communication protocol, offered by telephone companies, that permits telephone networks to carry data, voice, and other source traffic. See also *BISDN*, *BRI*, *N-ISDN*, and *PRI*.
ISH	Intermediate System Hello (ISH) packets are a type of a hello packet. ISH is part of the ES-IS spec 9542; similar to IRDP in TCP/IP; used for ISs and ESs to detect each other. ISH packets are sent out to all IS-IS-enabled interfaces. On LANs they are sent out periodically, destined to a special multicast address. Routers will become neighbors when they see themselves in their neighbor's hello packets and link authentication information matches.
IS-IS	Intermediate System-to-Intermediate System. OSI link-state hierarchical routing protocol based on DECnet Phase V routing whereby ISs (routers) exchange routing information based on a single metric to determine network topology. Compare with *Integrated IS-IS*. See also *ES-IS* and *OSPF*.
IS-IS Hello	See *IIH*.
IS-IS Interdomain Routing Protocol	See *IDRP*.
ISO	International Organization for Standardization. International organization that is responsible for a wide range of standards, including those relevant to networking. ISO developed the OSI reference model, a popular networking reference model.

ISO 3309	HDLC procedures developed by ISO. ISO 3309:1979 specifies the HDLC frame structure for use in synchronous environments. ISO 3309:1984 specifies proposed modifications to allow the use of HDLC in asynchronous environments as well.
ISO 9000	Set of international quality-management standards defined by ISO. The standards, which are not specific to any country, industry, or product, allow companies to demonstrate that they have specific processes in place to maintain an efficient quality system.
ISOC	Internet Society. International nonprofit organization, founded in 1992, that coordinates the evolution and use of the Internet. In addition, ISOC delegates authority to other groups related to the Internet, such as the IAB. ISOC is headquartered in Reston, Virginia, U.S.A. See also *IAB*.
isochronous transmission	Asynchronous transmission over a synchronous data link. Isochronous signals require a constant bit rate for reliable transport. Compare with *asynchronous transmission*, *plesiochronous transmission*, and *synchronous transmission*.
ISODE	ISO development environment. Large set of libraries and utilities used to develop upper-layer OSI protocols and applications.
ISO development environment	See *ISODE*.
ISR	Intermediate Session Routing. Initial routing algorithm used in APPN. ISR provides node-to-node connection-oriented routing. Network outages cause sessions to fail because ISR cannot provide nondisruptive rerouting around a failure. ISR has been replaced by HPR. Compare with *HPR*. See also *APPN*.
ISSI	Inter-Switching System Interface. Standard interface between SMDS switches.
ITU-T	International Telecommunication Union Telecommunication Standardization Sector (ITU-T) (formerly the Committee for Internatiional Telegraph and Telephone ([CCITT]). An international organization that develops communication standards. See also *CCITT*.

J

Term	Definition
jabber	1. Error condition in which a network device continually transmits random, meaningless data onto the network. 2. In IEEE 802.3, a data packet whose length exceeds that prescribed in the standard.
JANET	Joint Academic Network. X.25 WAN connecting university and research institutions in the United Kingdom.
Japan UNIX Network	See *JUNET*.
jitter	Analog communication line distortion caused by the variation of a signal from its reference timing positions. Jitter can cause data loss, particularly at high speeds.
John von Neumann Computer Network	See *JvNCnet*.
Joint Academic Network	See *JANET*.
jumper	1.)Term used for patchcords found in a wiring closet. 2.)Electrical switch consisting of a number of pins and a connector that can be attached to the pins in a variety of different ways. Different circuits are created by attaching the connector to different pins.
JUNET	Japan UNIX Network. Nationwide, noncommercial network in Japan, designed to promote communication between Japanese and other researchers.
JvNCnet	John von Neumann Computer Network. Regional network, owned and operated by Global Enterprise Services, Inc., composed of T1 and slower serial links providing midlevel networking services to sites in the Northeastern United States.

K

Term	Definition
Karn's algorithm	Algorithm that improves round-trip time estimations by helping transport layer protocols distinguish between good and bad round-trip time samples.
KB	kilobyte.
Kb	kilobit.
kBps	kilobytes per second.
kbps	kilobits per second.
keepalive interval	Period of time between each keepalive message sent by a network device.
keepalive message	Message sent by one network device to inform another network device that the virtual circuit between the two is still active.
Kermit	Popular file-transfer and terminal-emulation program.
KERN	kernel trap logging facility. Process that runs on each NP of every LightStream 2020 ATM switch in a network. KERN converts LynxOS kernel messages, sent to the console, into SNMP messages.
kilobit	Abbreviated *Kb*.
kilobits per second	Abbreviated *kbps*.
kilobyte	Abbreviated *KB*.
kilobytes per second	Abbreviated *kBps*.

L

Term	Definition
label swapping	Routing algorithm used by APPN in which each router that a message passes through on its way to its destination independently determines the best path to the next router.
LAN	Local-area network. High-speed, low-error data network covering a relatively small geographic area (up to a few thousand meters). LANs connect workstations, peripherals, terminals, and other devices in a single building or other geographically limited area. LAN standards specify cabling and signaling at the physical and data link layers of the OSI model. Ethernet, FDDI, and Token Ring are widely used LAN technologies. Compare with *MAN* and *WAN*.
LANE	LAN emulation. Technology that allows an ATM network to function as a LAN backbone. The ATM network must provide multicast and broadcast support, address mapping (MAC-to-ATM), SVC management, and a usable packet format. LANE also defines Ethernet and Token Ring ELANs. See also *ELAN*.
LAN emulation	See *LANE*.
LAN Emulation Client	See *LEC*.
LAN Emulation Configuration Server	See *LECS*.
LAN Emulation Server	See *LES*.
LAN Extender	Any of the products in the Cisco 1000 series. Cisco LAN Extenders provide a transparent connection between a central site and a remote site, logically extending the central network to include the remote LAN. LAN Extender products support all standard network protocols and are configured and managed through a host router at the central site, requiring no technical expertise at the remote end. See also *Cisco 1000*.
LAN Manager	Distributed NOS, developed by Microsoft, that supports a variety of protocols and platforms.
LAN Manager for UNIX	See *LM/X*.
LAN Network Manager	See *LNM*.
LAN Server	Server-based NOS developed by IBM and derived from LNM. See also *LNM*.

LAN switch	High-speed switch that forwards packets between data-link segments. Most LAN switches forward traffic based on MAC addresses. This variety of LAN switch is sometimes called a *frame switch*. LAN switches are often categorized according to the method they use to forward traffic: cut-through packet switching or store-and-forward packet switching. Multilayer switches are an intelligent subset of LAN switches. An example of a LAN switch is the Cisco Catalyst 5000. Compare with *multilayer switch*. See also *cut-through packet switching* and *store and forward packet switching*.
LAPB	Link Access Procedure, Balanced. Data link layer protocol in the X.25 protocol stack. LAPB is a bit-oriented protocol derived from HDLC. See also *HDLC* and *X.25*.
LAPD	Link Access Procedure on the D channel. ISDN data link layer protocol for the D channel. LAPD was derived from the LAPB protocol and is designed primarily to satisfy the signaling requirements of ISDN basic access. Defined by ITU-T Recommendations Q.920 and Q.921.
LAPM	Link Access Procedure for Modems. ARQ used by modems implementing the V.42 protocol for error correction. See also *ARQ* and *V.42*.
laser	Light amplification by stimulated emission of radiation. Analog transmission device in which a suitable active material is excited by an external stimulus to produce a narrow beam of coherent light that can be modulated into pulses to carry data. Networks based on laser technology are sometimes run over SONET.
LAT	Local-area transport. A network virtual terminal protocol developed by Digital Equipment Corporation.
LATA	Local access and transport area. Geographic telephone dialing area serviced by a single local telephone company. Calls within LATAs are called "local calls." There are well over 100 LATAs in the United States.
latency	1. Delay between the time a device requests access to a network and the time it is granted permission to transmit.2. Delay between the time when a device receives a frame and the time that frame is forwarded out the destination port.
LCC	Line card control. Process that runs on the NP for each CLC, LSC, and MSC of a LightStream 2020 ATM switch. LCC establishes VCCs, maintains the link management protocol for the line card, continually monitors line quality on each trunk using TUD, and performs other functions. See also *ECC*.
LCI	Logical channel identifier. See *VCN*.
LCN	Logical channel number. See *VCN*.
leaf internetwork	In a star topology, an internetwork whose sole access to other internetworks in the star is through a core router.

learning bridge	Bridge that performs MAC address learning to reduce traffic on the network. Learning bridges manage a database of MAC addresses and the interfaces associated with each address. See also *MAC address learning*.
leased line	Transmission line reserved by a communications carrier for the private use of a customer. A leased line is a type of dedicated line. See also *dedicated line*.
LEC	1.) LAN Emulation Client. Entity in an end system that performs data forwarding, address resolution, and other control functions for a single ES within a single ELAN. A LEC also provides a standard LAN service interface to any higher-layer entity that interfaces to the LEC. Each LEC is identified by a unique ATM address, and is associated with one or more MAC addresses reachable through that ATM address. See also *ELAN* and *LES*.2.) Local exchange carrier. Local or regional telephone company that owns and operates a telephone network and the customer lines that connect to it.
LECS	LAN Emulation Configuration Server. Entity that assigns individual LANE clients to particular ELANs by directing them to the LES that corresponds to the ELAN. There is logically one LECS per administrative domain, and this serves all ELANs within that domain. See also *ELAN*.
LED	Light emitting diode. Semiconductor device that emits light produced by converting electrical energy. Status lights on hardware devices are typically LEDs.
LEN node	Low-entry networking node. In SNA, a PU 2.1 that supports LU protocols, but whose CP cannot communicate with other nodes. Because there is no CP-to-CP session between a LEN node and its NN, the LEN node must have a statically defined image of the APPN network.
LES	LAN Emulation Server. Entity that implements the control function for a particular ELAN. There is only one logical LES per ELAN, and it is identified by a unique ATM address. See also *ELAN*.
Level 1 IS	Level 1 IS provides routing within an area. It keeps track of the routing within its own area. For a packet destined for another area, a Level 1 IS sends the packet to the nearest Level 2 IS in its own area, regardless of what the destination area is.
Level 2 IS	Level 2 IS provides routing between Level 1 areas and form an intradomain routing backbone. It keeps track of the paths to destination areas. A level 1 must go through a level 2 IS to communicate with another area. See also *Level 1 IS*, *Level 3 IS*.
Level 3 IS	Level 3 IS provides routing between separate domains. See also *Level 1 IS*, *Level 2 IS*.
Level 1 router	Device that routes traffic within a single DECnet or OSI area.

Level 2 router	Device that routes traffic between DECnet or OSI areas. All Level 2 routers must form a contiguous network.
light amplification by stimulated emission of radiation	See *laser*.
light emitting diode	See *LED*.
limited resource link	Resource defined by a device operator to remain active only when being used.
limited-route explorer packet	See *spanning explorer packet*.
line	1. In SNA, a connection to the network.2. See *link*.
line card	Card on a LightStream 2020 ATM switch that, together with its access card, provides I/O services for the switch. There are four types of line cards: *CLC*, *LSC*, *MSC*, and *PLC*.
line card control	See *LCC*.
line code type	One of a number of coding schemes used on serial lines to maintain data integrity and reliability. The line code type used is determined by the carrier service provider. See also *AMI*, *B8ZS*, and *HBD3*.
line conditioning	Use of equipment on leased voice-grade channels to improve analog characteristics, thereby allowing higher transmission rates.
line console 0	Command used to establish a password on the console terminal.
line driver	Inexpensive amplifier and signal converter that conditions digital signals to ensure reliable transmissions over extended distances.
Line Interface	See *LINF*.
line of sight	Characteristic of certain transmission systems such as laser, microwave, and infrared systems in which no obstructions in a direct path between transmitter and receiver can exist.
line printer daemon	See *LPD*.
line turnaround	Time required to change data transmission direction on a telephone line.
line vty 0 4	Command used to establish password protection on incoming Telnet sessions.
LINF	Line Interface. Interface card used on the LightStream 100 ATM switch. The LINF receives cells sent over a line, checks them for errors, and forwards them toward their destination.

link	Network communications channel consisting of a circuit or transmission path and all related equipment between a sender and a receiver. Most often used to refer to a WAN connection. Sometimes referred to as a *line* or a *transmission link*.
Link Access Procedure, Balanced	See *LAPB*.
Link Access Procedure for Modems	See *LAPM*.
Link Access Procedure on the D channel	See *LAPD*.
link layer	See *data link layer*.
link-layer address	See *MAC address*.
link-state advertisement	See *LSA*.
link-state packet	See *LSA*.
link state routing algorithm	Routing algorithm in which each router broadcasts or multicasts information regarding the cost of reaching each of its neighbors to all nodes in the internetwork. Link state algorithms create a consistent view of the network and are therefore not prone to routing loops, but they achieve this at the cost of relatively greater computational difficulty and more widespread traffic (compared with distance vector routing algorithms). Compare with *distance vector routing algorithm*. See also *Dijkstra's algorithm*.
little-endian	Method of storing or transmitting data in which the least significant bit or byte is presented first. Compare with *big-endian*.
LLC	Logical Link Control. Higher of the two data link layer sublayers defined by the IEEE. The LLC sublayer handles error control, flow control, framing, and MAC-sublayer addressing. The most prevalent LLC protocol is IEEE 802.2, which includes both connectionless and connection-oriented variants. See also *data link layer* and *MAC*.
LLC2	Logical Link Control, type 2. Connection-oriented OSI LLC-sublayer protocol. See also *LLC*.
LMI	Local Management Interface. Set of enhancements to the basic Frame Relay specification. LMI includes support for a keepalive mechanism, which verifies that data is flowing; a multicast mechanism, which provides the network server with its local DLCI and the multicast DLCI; global addressing, which gives DLCIs global rather than local significance in Frame Relay networks; and a status mechanism, which provides an on-going status report on the DLCIs known to the switch. Known as *LMT* in ANSI terminology.
LMT	See *LMI*.
LM/X	LAN Manager for UNIX. Monitors LAN devices in UNIX environments.

LNM	LAN Network Manager. SRB and Token Ring management package provided by IBM. Typically running on a PC, it monitors SRB and Token Ring devices, and can pass alerts up to NetView.
load balancing	In routing, the ability of a router to distribute traffic over all its network ports that are the same distance from the destination address. Good load-balancing algorithms use both line speed and reliability information. Load balancing increases the utilization of network segments, thus increasing effective network bandwidth.
local access and transport area	See *LATA*.
local acknowledgment	Method whereby an intermediate network node, such as a router, responds to acknowledgments for a remote end host. Use of local acknowledgments reduces network overhead and, therefore, the risk of time-outs. Also known as *local termination*.
local-area network	See *LAN*.
local-area transport	See *LAT*.
local bridge	Bridge that directly interconnects networks in the same geographic area.
local database	See *configuration database*.
local exchange carrier	See *LEC*.
local explorer packet	Generated by an end system in an SRB network to find a host connected to the local ring. If the local explorer packet fails to find a local host, the end system produces either a spanning explorer packet or an all-routes explorer packet. See also *all-routes explorer packet*, *explorer packet*, and *spanning explorer packet*.
local loop	Line from the premises of a telephone subscriber to the telephone company CO.
Local Management Interface	See *LMI*.
LocalTalk	Apple proprietary baseband protocol that operates at the data link and physical layers of the OSI reference model. LocalTalk uses CSMA/CD media access scheme and supports transmissions at speeds of 230 Kbps.
local termination	See *local acknowledgment*.
local traffic filtering	Process by which a bridge filters out (drops) frames whose source and destination MAC addresses are located on the same interface on the bridge, thus preventing unnecessary traffic from being forwarded across the bridge. Defined in the IEEE 802.1 standard. See also *IEEE 802.1*.
logical address	See *network address*.

logical channel	Nondedicated, packet-switched communications path between two or more network nodes. Packet switching allows many logical channels to exist simultaneously on a single physical channel.
logical channel identifier	See *LCI*.
logical channel number	See *LCN*.
Logical Link Control	See *LLC*.
Logical Link Control, type 2	See *LLC2*.
logical unit	See *LU*.
Logical Unit 6.2	See *LU 6.2*.
loop	Route where packets never reach their destination, but simply cycle repeatedly through a constant series of network nodes.
loopback test	Test in which signals are sent and then directed back toward their source from some point along the communications path. Loopback tests are often used to test network interface usability.
lossy	Characteristic of a network that is prone to lose packets when it becomes highly loaded.
low-entry networking node	See *LEN node*.
low-speed line card	See *LSC*.
LPD	Line printer daemon. Protocol used to send print jobs between UNIX systems.
LSA	Link-state advertisement. Broadcast packet used by link-state protocols that contains information about neighbors and path costs. LSAs are used by the receiving routers to maintain their routing tables. Sometimes called a *link-state packet (LSP)*.
LSC	Low-speed line card. Card on the LightStream 2020 ATM switch that can be configured as an edge or a trunk card. An LSC, in conjunction with an access card, supports eight trunk or edge ports (Frame Relay or frame forwarding) at individual port speeds up to 3.584 Mbps, or an aggregate rate of 6 Mbps per line card. See also *edge card*, *MSC*, and *trunk card*.
LSP	Link-state packet. See *LSA*.
LSPD	link-state PDU database (LSPD) is the database maintained each router running a link-state routing protocol. It provides a global view of the area itself and the exit points to neighboring areas.
LU	Logical unit. Primary component of SNA, an LU is an NAU that enables end users to communicate with each other and gain access to SNA network resources.

LU 6.2	Logical Unit 6.2. IN SNA, an LU that provides peer-to-peer communication between programs in a distributed computing environment. APPC runs on LU 6.2 devices. See also *APPC*.
LynxOS	Real-time, UNIX-like operating system that runs on the NP of a LightStream 2020 ATM switch.

M

Term	Definition
MAC	Media Access Control. Lower of the two sublayers of the data link layer defined by the IEEE. The MAC sublayer handles access to shared media, such as whether token passing or contention will be used. See also
MAC address	Standardized data link layer address that is required for every port or device that connects to a LAN. Other devices in the network use these addresses to locate specific ports in the network and to create and update routing tables and data structures. MAC addresses are 6 bytes long and are controlled by the IEEE. Also known as a *hardware address*, a *MAC-layer address*, or a *physical address*. Compare with *network address*.
MAC address learning	Service that characterizes a learning bridge, in which the source MAC address of each received packet is stored so that future packets destined for that address can be forwarded only to the bridge interface on which that address is located. Packets destined for unrecognized addresses are forwarded out every bridge interface. This scheme helps minimize traffic on the attached LANs. MAC address learning is defined in the IEEE 802.1 standard. See also *learning bridge* and *MAC address*.
MacIP	Network layer protocol that encapsulates IP packets in DDS or transmission over AppleTalk. MacIP also provides proxy ARP services.
MAC-layer address	See *MAC address*.
Main cross connect	See *MCC*.
Main distribution facility	See *MDF*.
Maintenance Operation Protocol	See *MOP*.
MAN	Metropolitan-area network. Network that spans a metropolitan area. Generally, a MAN spans a larger geographic area than a LAN, but a smaller geographic area than a WAN. Compare with *LAN* and *WAN*.
managed object	In network management, a network device that can be managed by a network management protocol.
Management Information Base	See *MIB*.
management services	SNA functions distributed among network components to manage and control an SNA network.
Manchester encoding	Digital coding scheme, used by IEEE 802.3 and Ethernet, in which a mid-bit-time transition is used for clocking, and a 1 is denoted by a high level during the first half of the bit time.

Manufacturing Automation Protocol	See *MAP*.
MAP	Manufacturing Automation Protocol. Network architecture created by General Motors to satisfy the specific needs of the factory floor. MAP specifies a token-passing LAN similar to IEEE 802.4. See also *IEEE 802.4*.
mask	See *address mask* and *subnet mask*.
master management agent	See *MMA*.
MAU	Media attachment unit. Device used in Ethernet and IEEE 802.3 networks that provides the interface between the AUI port of a station and the common medium of the Ethernet. The MAU, which can be built into a station or can be a separate device, performs physical layer functions including the conversion of digital data from the Ethernet interface, collision detection, and injection of bits onto the network. Sometimes referred to as a *media access unit*, also abbreviated *MAU*, or as a *transceiver*. In Token Ring, a MAU is known as a *multistation access unit* and is usually abbreviated *MSAU* to avoid confusion. See also *AUI* and *MSAU*.
maximum burst	Specifies the largest burst of data above the insured rate that will be allowed temporarily on an ATM PVC, but will not be dropped at the edge by the traffic policing function, even if it exceeds the maximum rate. This amount of traffic will be allowed only temporarily; on average, the traffic source needs to be within the maximum rate. Specified in bytes or cells. Compare with *insured burst*. See also *maximum rate*.
maximum rate	Maximum total data throughput allowed on a given virtual circuit, equal to the sum of the insured and uninsured traffic from the traffic source. The uninsured data might be dropped if the network becomes congested. The maximum rate, which cannot exceed the media rate, represents the highest data throughput the virtual circuit will ever deliver, measured in bits or cells per second. Compare with *excess rate* and *insured rate*. See also *maximum burst*.
maximum transmission unit	See *MTU*.
MB	megabyte.
Mb	megabit.
MBONE	Multicast backbone. The multicast backbone of the Internet. MBONE is a virtual multicast network composed of multicast LANs and the point-to-point tunnels that interconnect them.
Mbps	megabits per second.

MBS	maximum burst size. In an ATM signaling message, burst tolerance is conveyed through the MBS, which is coded as a number of cells. The burst tolerance together with the SCR and the GCRA determine the MBS that can be transmitted at the peak rate and still be in conformance with the GCRA.
MCA	Micro channel architecture. Bus interface commonly used in PCs and some UNIX workstations and servers.
MCC	Main cross-connect. Wiring closet that serves as the most central point in a star topology and where LAN backbone cabling connects to the Internet.
MCI	Multiport Communications Interface. Card on the AGS+ that provides two Ethernet interfaces and up to two synchronous serial interfaces. The MCI processes packets rapidly, without the interframe delays typical of other Ethernet interfaces.
MCR	Minimum cell rate. Parameter defined by the ATM Forum for ATM traffic management. MCR is defined only for ABR transmissions, and specifies the minimum value for the ACR. See also *ABR (available bit rate)*, *ACR*, and *PCR*.
MD5	Message Digest 5. Algorithm used for message authentication in SNMP v.2. MD5 verifies the integrity of the communication, authenticates the origin, and checks for timeliness. See also *SNMP2*.
MDF	Main distribution facility. Primary communications room for a building. Central point of a star networking topology where patch panels, hub, and router are located. See also *IDF*
media	Plural of *medium*. The various physical environments through which transmission signals pass. Common network media include twisted-pair, coaxial and fiber-optic cable, and the atmosphere (through which microwave, laser, and infrared transmission occurs). Sometimes called *physical media*.
Media Access Control	See *MAC*.
Media Access Control Address	See *MAC address*.
media access unit	See *MAU*.
media attachment unit	See *MAU*.
media interface connector	See *MIC*.
media rate	Maximum traffic throughput for a particular media type.
medium	See *media*.
medium-speed line card	See *MSC*.
megabit	Abbreviated *Mb*.

megabits per second	Abbreviated *Mbps*.
megabyte	Abbreviated *MB*.
mesh	Network topology in which devices are organized in a manageable, segmented manner with many, often redundant, interconnections strategically placed between network nodes. See also *full mesh* and *partial mesh*.
message	Application layer (Layer 7) logical grouping of information, often composed of a number of lower-layer logical groupings such as packets. The terms *datagram*, *frame*, *packet*, and *segment* are also used to describe logical information groupings at various layers of the OSI reference model and in various technology circles.
message handling system	See *MHS*.
Message Digest 5	See *MD5*.
Message Queuing Interface	See *MQI*.
message switching	Switching technique involving transmission of messages from node to node through a network. The message is stored at each node until such time as a forwarding path is available. Contrast with *circuit switching* and *packet switching*.
message unit	Unit of data processed by any network layer.
Metal oxide varister	See *MOV*.
metasignaling	Process running at the ATM layer that manages signaling types and virtual circuits.
metering	See *traffic shaping*.
metric	See *routing metric*.
metropolitan-area network	See *MAN*.
MGS	Cisco midrange multiprotocol router designed for medium to small regional and district environments. The MGS is a 4-slot router that can handle up to 11 interfaces of different types.
MHS	Message handling system. ITU-T X.400 recommendations that provide message handling services for communications between distributed applications. NetWare MHS is a different (though similar) entity that also provides message-handling services. See also *IFIP*.

MIB	Management Information Base. Database of network management information that is used and maintained by a network management protocol such as SNMP or CMIP. The value of a MIB object can be changed or retrieved using SNMP or CMIP commands. MIB objects are organized in a tree structure that includes public (standard) and private (proprietary) branches.
MIB collection	Polling technique used by the SNMP protocol to gather information needed to monitor the network.
MIB reporting	Technique used by the CMIP protocol to obtain information needed to monitor the network. It is dependent upon network devices to initiate reports regarding their status to a central monitoring station on the network.
MIC	Media interface connector. FDDI *de facto* standard connector.
micro channel architecture	See *MCA*.
microcode	Translation layer between machine instructions and the elementary operations of a computer. Microcode is stored in ROM and allows the addition of new machine instructions without requiring that they be designed into electronic circuits when new instructions are needed.
microsegmentation	Division of a network into smaller segments, usually with the intention of increasing aggregate bandwidth to network devices.
micron	Unit of measure equal to one millionth of a meter or one thousandth of a millimeter. Sometimes the symbol µ is used instead of the word micron.
microwave	Electromagnetic waves in the range 1 to 30 GHz. Microwave-based networks are an evolving technology gaining favor due to high bandwidth and relatively low cost.
midsplit	Broadband cable system in which the available frequencies are split into two groups: one for transmission and one for reception.
Military Network	See *MILNET*.
millions of instructions per second	See *mips*.
MILNET	Military Network. Unclassified portion of the DDN. Operated and maintained by the DISA. See also *DDN* and *DISA*.
minimum cell rate	See *MCR*.

MIP	MultiChannel Interface Processor. Interface processor on the Cisco 7000 series routers that provides up to two channelized T1 or E1 connections via serial cables to a CSU. The two controllers on the MIP can each provide up to 24 T1 or 30 E1 channel-groups, with each channel-group presented to the system as a serial interface that can be configured individually.
mips	Millions of instructions per second. Number of instructions executed by a processor per second.
MMA	Master management agent. SNMP agent that runs on the NP of a LightStream 2020 ATM switch. MMA translates between an external network manager using SNMP and the internal switch management mechanisms.
modem	Modulator-demodulator. Device that converts digital and analog signals. At the source, a modem converts digital signals to a form suitable for transmission over analog communication facilities. At the destination, the analog signals are returned to their digital form. Modems allow data to be transmitted over voice-grade telephone lines.
modem eliminator	Device allowing connection of two DTE devices without modems.
modulation	Process by which the characteristics of electrical signals are transformed to represent information. Types of modulation include AM, FM, and PAM. See also *AM*, *FM*, and *PAM*.
modulator-demodulator	See *modem*.
monitor	Management tool on the LightStream 2020 ATM switch that allows a user to examine individual nodes in the network and learn the status of interface modules and power supplies. The monitor is an HP OpenView-based application that runs on an NMS.
monomode fiber	See *single-mode fiber*.
MOP	Maintenance Operation Protocol. Digital Equipment Corporation protocol, a subset of which is supported by Cisco, that provides a way to perform primitive maintenance operations on DECnet systems. For example, MOP can be used to download a system image to a diskless station.
Mosaic	Public-domain WWW browser, developed at the National Center for Supercomputing Applications (NCSA). See also *WWW browser*.
MOSPF	Multicast OSPF. Intradomain multicast routing protocol used in OSPF networks. Extensions are applied to the base OSPF unicast protocol to support IP multicast routing.

MOV	Metal oxide varistor. Voltage clamping surge suppressor capable of absorbing large currents without damage.
MPLS	Multiprotocol Label Switching (MPLS) is a labeling technique used to increase the speed of traffic flow. Each packet is tagged with the path sequence to the destination. This saves time by not have to do a lookup of the routing table. In another word packet switching is done at layer 2 instead of layer 3. MPLS support multiple protocols such as IP, ATM, and frame relay. See also *MPLS/TE*.
MPLS/TE	Multiprotocol Label Switching Traffic Engineering (MPLS/TE) provides a way to integrate TE capabilities (such as those used on Layer 2 protocols like ATM) into Layer 3 protocols (IP). MPLS TE uses an extension to existing protocols (Resource Reservation Protocol (RSVP), IS-IS, Open Shortest Path First (OSPF)) to calculate and establish unidirectional tunnels that are set according to the network constraint. Traffic flows are mapped on the different tunnels depending on their destination. See also *MPLS*.
MQI	Message Queuing Interface. International standard API that provides functionality similar to that of the RPC interface. In contrast to RPC, MQI is implemented strictly at the application layer. See also *RPC*.
MSAU	Multistation access unit. Wiring concentrator to which all end stations in a Token Ring network connect. The MSAU provides an interface between these devices and the Token Ring interface of, for example, a Cisco 7000 TRIP. Sometimes abbreviated *MAU*.
MSC	Medium-speed line card. Card on the LightStream 2020 ATM switch that can be configured as an edge or a trunk card. The MSC, in conjunction with an access card, supports two trunk or edge (UNI) ports at data rates up to T3 or E3.
MTU	Maximum transmission unit. Maximum packet size, in bytes, that a particular interface can handle.
mu-law	North American companding standard used in conversion between analog and digital signals in PCM systems. Similar to the European alaw. See also *a-law* and *companding*.
multiaccess network	Network that allows multiple devices to connect and communicate simultaneously.
multicast	Single packets copied by the network and sent to a specific subset of network addresses. These addresses are specified in the destination address field. Compare with *broadcast* and *unicast*.
multicast address	Single address that refers to multiple network devices. Synonymous with *group address*. Compare with *broadcast address* and *unicast address*. See also *multicast*.

multicast backbone	See *MBONE*.
multicast group	Dynamically determined group of IP hosts identified by a single IP multicast address.
Multicast OSPF	See *MOSPF*.
multicast router	Router used to send IGMP query messages on their attached local networks. Host members of a multicast group respond to a query by sending IGMP reports noting the multicast groups to which they belong. The multicast router takes responsibility for forwarding multicast datagrams from one multicast group to all other networks that have members in the group. See also *IGMP*.
multicast server	Establishes a one-to-many connection to each device in a VLAN, thus establishing a broadcast domain for each VLAN segment. The multicast server forwards incoming broadcasts only to the multicast address that maps to the broadcast address.
MultiChannel Interface Processor	See *MIP*.
multidrop line	Communications line having multiple cable access points. Sometimes called a *multipoint line*.
multihomed host	Host attached to multiple physical network segments in an OSI CLNS network.
multihoming	Addressing scheme in IS-IS routing that supports assignment of multiple area addresses.
multilayer switch	Switch that filters and forwards packets based on MAC addresses and network addresses. A subset of LAN switch. The Catalyst 5000 is an example of a multilayer switch. Compare with *LAN switch*.
multimode fiber	Optical fiber supporting propagation of multiple frequencies of light. See also *single-mode fiber*.
multiple domain network	SNA network with multiple SSCPs. See also *SSCP*.
multiplexing	Scheme that allows multiple logical signals to be transmitted simultaneously across a single physical channel. Compare with *demultiplexing*.
multipoint line	See *multidrop line*.
Multiport Communications Interface	See *MCI*.
multistation access unit	See *MSAU*.

multivendor network	Network using equipment from more than one vendor. Multivendor networks pose many more compatibility problems than single-vendor networks. Compare with *single-vendor network*.

N

Term	Definition
Nagle's algorithm	Actually two separate congestion control algorithms that can be used in TCP-based networks. One algorithm reduces the sending window; the other limits small datagrams.
NAK	Negative acknowledgment. Response sent from a receiving device to a sending device indicating that the information received contained errors. Compare to *acknowledgment.*
Name Binding Protocol	See *NBP*.
name caching	Method by which remotely discovered host names are stored by a router for use in future packet-forwarding decisions to allow quick access.
name resolution	Generally, the process of associating a name with a network location.
name server	Server connected to a network that resolves network names into network addresses.
NAP	Network access point. Location for interconnection of Internet service providers in the United States for the exchange of packets.
narrowband	See *baseband*.
Narrowband ISDN	See *N-ISDN*.
NAT	Network Address Translation. Only globally unique in terms of the public internet. A mechanism for translating private addresses into publically usable addresses to be used within the public internet. An effective means for hiding actual device addressing within a private network. Also known as *Network Address Translator.*
National Bureau of Standards	See *NBS*.
National Institute of Standards and Technology	See *NIST*.
National Research and Education Network	See *NREN*.
National Science Foundation	See *NSF*.
National Science Foundation Network	See *NSFNET*.
native client interface architecture	See *NCIA.*
NAU	Network addressable unit. SNA term for an addressable entity. Examples include LUs, PUs, and SSCPs. NAUs generally provide upper-level network services. Compare with *path control network.*

NAUN	Nearest active upstream neighbor. In Token Ring or IEEE 802.5 networks, the closest upstream network device from any given device that is still active.
NBMA	Nonbroadcast multiaccess. Term describing a multiaccess network that either does not support broadcasting (such as X.25) or in which broadcasting is not feasible (for example, an SMDS broadcast group or an extended Ethernet that is too large). See also *multiaccess network.*
NBP	Name Binding Protocol. AppleTalk transport-level protocol that translates a character string name into an internetwork address.
NBS	National Bureau of Standards. Organization that was part of the U.S. Department of Commerce. Now known as NIST. See also *NIST*.
NCIA	Native client interface architecture. SNA applications-access architecture, developed by Cisco, that combines the full functionality of native SNA interfaces at both the host and client with the flexibility of leveraging TCP/IP backbones. NCIA encapsulates SNA traffic on a client PC or workstation, thereby providing direct TCP/IP access while preserving the native SNA interface at the end-user level. In many networks, this capability obviates the need for a standalone gateway and can provide flexible TCP/IP access while preserving the native SNA interface to the host.
NCP	Network Control Program. In SNA, a program that routes and controls the flow of data between a communications controller (in which it resides) and other network resources.
NCP/Token Ring Interconnection	See *NTRI.*
ND	Neighborhood discovery. Process that runs on the NP of each LightStream 2020 ATM switch in the ATM network. For call routing purposes, every node in the network needs to know about changes in network topology, such as trunks and ports going up or down. ND learns about such changes at the chassis level and forwards this information to the GID process, which sends the information throughout the network. Sometimes referred to as neighborhood discovery daemon, or NDD. See also *GID*.
NDD	Neighborhood discovery daemon. See *ND*.
NDIS	Network driver interface specification. Specification for a generic, hardware- and protocol-independent device driver for NICs. Produced by Microsoft.
nearest active upstream neighbor	See *NAUN*.

NEARNET	Regional network in New England (United States) that links Boston University, Harvard University, and MIT. Now part of BBN Planet. See also *BBN Planet*.
negative acknowledgment	See *NAK*.
neighborhood discovery	See *ND*.
neighborhood discovery daemon	See *ND*.
neighboring routers	In OSPF, two routers that have interfaces to a common network. On multiaccess networks, neighbors are dynamically discovered by the OSPF Hello protocol.
NET	Network entity title (NET) is an NSAP with an n-selector of zero. All router NETs have an n-selector of zero, implying the network layer of the IS itself (0 means no transport layer). For this reason, the NSAP of a router is always referred to as a NET. See also NSAP.
net	Short for *network.*
NetBEUI	NetBIOS Extended User Interface. Enhanced version of the NetBIOS protocol used by network operating systems such as LAN Manager, LAN Server, Windows for Workgroups, and Windows NT. NetBEUI formalizes the transport frame and implements the OSI LLC2 protocol.
NetBIOS	Network Basic Input/Output System. API used by applications on an IBM LAN to request services from lower-level network processes. These services might include session establishment and termination, and information transfer.
NETscout	Cisco network management application that provides an easy-to-use GUI for monitoring RMON statistics and protocol analysis information. NETscout also provides extensive tools that simplify data collection, analysis, and reporting. These tools allow system administrators to monitor traffic, set thresholds, and capture data on any set of network traffic for any segment.
NetView	IBM network management architecture and related applications. NetView is a VTAM application used for managing mainframes in SNA networks. See also *VTAM.*
NetWare	Popular distributed NOS developed by Novell. Provides transparent remote file access and numerous other distributed network services.
NetWare Link Services Protocol	See *NLSP*.
NetWare Loadable Module	See *NLM*.

network	1.) Collection of computers, printers, routers, switches, and other devices that are able to communicate with each other over some transmission medium. 2.) Command that assigns a NIC-based address to which the router is directly connected. 3.) Command that specifies any directly connected networks to be included.
network access point	See *NAP*.
network access server	See *access server*.
network address	Network layer address referring to a logical, rather than a physical, network device. Also called a *protocol address*. Compare with *MAC address*.
network addressable unit	See *NAU*.
Network Address Translation	See *NAT.*
network administrator	Person responsible for the operation, maintenance, and management of a network. See also *network operator*.
network analyzer	Network monitoring device that maintains statistical information regarding the status of the network and each device attached to it. More sophisticated versions using artificial intelligence can detect, define, and fix problems on the network.
Network Basic Input/Output System	See *NetBIOS*.
Network byte order	Internet-standard ordering of the bytes corresponding to numeric values.
Network Control Program	See *NCP*.
network driver interface specification	See *NDIS*.
network entity title	See *NET*.
Network File System	See *NFS*.
Network Information Center	Organization whose functions have been assumed by the InterNIC. See *InterNIC.*
Network Information Service	See *NIS.*
network interface	Boundary between a carrier network and a privately-owned installation.
network interface card	See *NIC*.

network layer	Layer 3 of the OSI reference model. This layer provides connectivity and path selection between two end systems. The network layer is the layer at which routing occurs. Corresponds roughly with the path control layer of the SNA model. See also *application layer, data link layer, physical layer, presentation layer, session layer, and transport layer.*
network management	Generic term used to describe systems or actions that help maintain, characterize, or troubleshoot a network.
Network Management Processor	See *NMP*.
network management system	See *NMS.*
network management vector transport	See *NMVT*.
Network-to-Network Interface	See *NNI.*
network node	See *NN*.
Network Node Interface	See *NNI.*
Network Node Server	SNA NN that provides resource location and route selection services for ENs, LEN nodes, and LUs that are in its domain.
network number	Part of an IP address that specifies the network to which the host belongs.
network operating system	See *NOS*.
Network Operations Center	See *NOC.*
network operator	Person who routinely monitors and controls a network, performing such tasks as reviewing and responding to traps, monitoring throughput, configuring new circuits, and resolving problems. See also *network administrator.*
network processor card	See *NP card*.
network service access point	See *NSAP.*
networking	Connecting of any collection of computers, printers, routers, switches, and other devices for the purpose of communication over some transmission medium.
neutral wire	Circuit wire that is connected to an earth ground at the power plant and at the transformer.
Next Hop Resolution Protocol	See *NHRP*.

NFS	Network File System. As commonly used, a distributed file system protocol suite developed by Sun Microsystems that allows remote file access across a network. In actuality, NFS is simply one protocol in the suite. NFS protocols include NFS, RPC, XDR (External Data Representation), and others. These protocols are part of a larger architecture that Sun refers to as ONC. See also *ONC*.
NHRP	Next Hop Resolution Protocol. Protocol used by routers to dynamically discover the MAC address of other routers and hosts connected to a NBMA network. These systems can then directly communicate without requiring traffic to use an intermediate hop, increasing performance in ATM, Frame Relay, SMDS, and X.25 environments.
NIC	1.) Network interface card. Board that provides network communication capabilities to and from a computer system. Also called an adapter. See also AUI. 2.) See network information center.
NIS	Network Information Service. Protocol developed by Sun Microsystems for the administration of network-wide databases. The service essentially uses two programs: one for finding a NIS server and one for accessing the NIS databases.
N-ISDN	Narrowband ISDN. Communication standards developed by the ITU-T for baseband networks. Based on 64-kbps B channels and 16- or 64-kbps D channels. Contrast with *BISDN*. See also *BRI*, *ISDN*, and *PRI.*
NIST	National Institute of Standards and Technology. Formerly the NBS, this U.S. government organization supports and catalogs a variety of standards. See also *NBS.*
NLM	NetWare Loadable Module. Individual program that can be loaded into memory and function as part of the NetWare NOS.
NLRI	Network Layer Reachability Informatin. BGP sends routing update messages containing NLRI to describe a route and how to get there. In this context, an NLRI is a prefix. A BGP update message carries one or more NLRI prefixes and the attributes of a route for theNLRI prefixes; the route attributes include a BGP next hop gateway address, community values, and other information.
NLSP	NetWare Link Services Protocol. Link-state routing protocol based on IS-IS. The Cisco implementation of NLSP also includes MIB variables and tools to redistribute routing and SAP information between NLSP and other IPX routing protocols. See also *IS-IS*.
NMP	Network Management Processor. Processor module on the Catalyst 5000 switch used to control and monitor the switch.

NMS	Network management system. System responsible for managing at least part of a network. An NMS is generally a reasonably powerful and well-equipped computer such as an engineering workstation. NMSs communicate with agents to help keep track of network statistics and resources.
NMVT	Network management vector transport. SNA message consisting of a series of vectors conveying network management specific information.
NN	Network node. SNA intermediate node that provides connectivity, directory services, route selection, intermediate session routing, data transport, and network management services to LEN nodes and ENs. The NN contains a CP that manages the resources of both the NN itself and those of the ENs and LEN nodes in its domain. NNs provide intermediate routing services by implementing the APPN PU 2.1 extensions. Compare with *EN*. See also *CP.*
NNI	Network-to-Network Interface. ATM Forum standard that defines the interface between two ATM switches that are both located in a private network or are both located in a public network. The interface between a public switch and private one is defined by the UNI standard. Also, the standard interface between two Frame Relay switches meeting the same criteria. Compare with *UNI.*
no ip domain lookup	Command used to turn off name-to-address translation in the router.
NOC	Network Operations Center. Organization responsible for maintaining a network.
node	1. Endpoint of a network connection or a junction common to two or more lines in a network. Nodes can be processors, controllers, or workstations. Nodes, which vary in routing and other functional capabilities, can be interconnected by links, and serve as control points in the network. Node is sometimes used generically to refer to any entity that can access a network, and is frequently used interchangeably with device. See also host. 2. In SNA, the basic component of a network, and the point at which one or more functional units connect channels or data circuits.
noise	Undesirable communications channel signals.
nonbroadcast multiaccess	See *NBMA*.
nonextended network	AppleTalk Phase 2 network that supports addressing of up to 253 nodes and only one zone.
nonreturn to zero	See *NRZ*.

nonreturn to zero inverted	See *NRZI.*
nonseed router	In AppleTalk, a router that must first obtain, and then verify, its configuration with a seed router before it can begin operation. See also *seed router.*
non-stub area	Resource-intensive OSPF area that carries a default route, static routes, intra-area routes, interarea routes, and external routes. Nonstub areas are the only OSPF areas that can have virtual links configured across them, and are the only areas that can contain an ASBR. Compare with *stub area*. See also *ASAM* and *OSPF*.
nonvolatile random-access memory	See *NVRAM.*
normal mode	Term used to describe problems between the hot and neutral wires on a power line. See *common mode*.
normal response mode	See *NRM.*
Northwest Net	NSF-funded regional network serving the Northwestern United States, Alaska, Montana, and North Dakota. Northwest Net connects all major universities in the region as well as many leading industrial concerns.
NOS	Network operating system. Generic term used to refer to what are really distributed file systems. Examples of NOSs include LAN Manager, NetWare, NFS, and VINES.
Novell IPX	See *IPX.*
npadmin account	One of the four default user accounts that are created in the factory on each LightStream 2020 ATM switch. The npadmin account is for privileged users. Its default interface is the CLI.
NP card	Network processor card. Main computational and storage resource for the LightStream 2020 ATM switch. Each LightStream 2020 switch has one or two NPs. The second card, if present, serves as a backup for the first. Each NP is associated with a floppy disk drive for loading software and a hard disk drive for storing software and configuration data. Each NP also has an access card that provides an Ethernet port.
NP TCS monitoring module	See *NPTMM.*
NP module	On a LightStream 2020 ATM switch, the combination of the NP card, the NP access card, and the disk assembly. See also access card, disk assembly, and NP card.
NPTMM	NP TCS monitoring module. Process that runs on the NP of every LightStream 2020 ATM switch in an ATM network. NPTMM monitors the health of the system through the TCS and coordinates switch cutover when redundant switch cards are present. See also *TCS.*

NREN	National Research and Education Network. Component of the HPCC program designed to ensure U.S. technical leadership in computer communications through research and development efforts in state-of-the-art telecommunications and networking technologies. See also *HPCC.*
NRM	Normal response mode. HDLC mode for use on links with one primary station and one or more secondary stations. In this mode, secondary stations can transmit only if they first receive a poll from the primary station.
NRZ	Nonreturn to zero. NRZ signals maintain constant voltage levels with no signal transitions (no return to a zero-voltage level) during a bit interval. Compare with *NRZI.*
NRZI	Nonreturn to zero inverted. NRZI signals maintain constant voltage levels with no signal transitions (no return to a zero-voltage level), but interpret the presence of data at the beginning of a bit interval as a signal transition and the absence of data as no transition. Compare with *NRZ.*
NSAP	Network Service Access Point (NSAP) is a conceptual point on the boundary between the network and the transport layers. The NSAP is the location at which OSI network services are provided to the transport layer. Each transport layer entity is assigned a single NSAP. See also *NSAP Address*.
NSAP Address	Network Service Access Point (NSAP) address is the network-layer address for CLNS packets. An NSAP describes an attachment to a particular service at the network layer of a node, similar to the combination of IP destination address and IP protocol number in an IP packet. NSAP encoding and format are specified by ISO 8348/Ad2. NSAP address has two major parts: the initial domain part (IDP) and the domain specific part (DSP). The IDP consists of a 1-byte authority and format identifier (AFI) and a variable-length initial domain identifier (IDI), and the DSP is a string of digits identifying a particular transport implementation of a specified AFI authority. Everything to the left of the system ID can be thought of as the area address of a network node. See also *NSAP*.
NSEL	NSAP-Selector (NSEL) is part of the NSAP address field that identifies a process on the device. It is roughly equivalent to a socket or a TCP port number in TCP/IP. The NSEL is not used in routing decisions. Domain-Specific Part (DSP): comprised of the HODSP, the system ID, and the NSEL in binary format. The last byte is the N-Selector (NSEL) and must be specified as a single-byte length preceded by a '.'. A NET definition must set the N-Selector to ’00’. See also *NSAP Address, NET.*
NSF	National Science Foundation. U.S. government agency that funds scientific research in the United States. The now-defunct NSFNET was funded by the NSF. See also *NSFNET.*

NSFNET	National Science Foundation Network. Large network that was controlled by the NSF and provided networking services in support of education and research in the United States, from 1986 to 1995. NSFNET is no longer in service.
NTP	Network Time Protocol. Protocol built on top of TCP that assures accurate local time-keeping with reference to radio and atomic clocks located on the Internet. This protocol is capable of synchronizing distributed clocks within milliseconds over long time periods.
NTRI	NCP/Token Ring Interconnection. Function used by ACF/NCP to support Token Ring-attached SNA devices. NTRI also provides translation from Token Ring-attached SNA devices (PUs) to switched (dialup) devices.
null modem	Small box or cable used to join computing devices directly, rather than over a network.
NVRAM	Nonvolatile RAM. RAM that retains its contents when a unit is powered off. In Cisco products, NVRAM is used to store configuration information.
NYSERNet	Network in New York (United States) with a T1 backbone connecting NSF, many universities, and several commercial concerns.

O

Term	Definition
OAM cell	Operation, Administration, and Maintenance cell. ATM Forum specification for cells used to monitor virtual circuits. OAM cells provide a virtual circuit-level loopback in which a router responds to the cells, demonstrating that the circuit is up, and the router is operational.
OARnet	Ohio Academic Resources Network. Internet service provider that connects a number of U.S. sites, including the Ohio supercomputer center in Columbus, Ohio.
object instance	Network management term referring to an instance of an object type that has been bound to a value.
OC	Optical Carrier. Series of physical protocols (OC-1, OC-2, OC-3, and so on), defined for SONET optical signal transmissions. OC signal levels put STS frames onto multimode fiber-optic line at a variety of speeds. The base rate is 51.84 Mbps (OC-1); each signal level thereafter operates at a speed divisible by that number (thus, OC-3 runs at 155.52 Mbps). See also *SONET, STS-1, and STS-3c.*
octet	8 bits. In networking, the term *octet* is often used (rather than byte) because some machine architectures employ bytes that are not 8 bits long.
ODA	Open Document Architecture. ISO standard that specifies how documents are represented and transmitted electronically. Formally called *Office Document Architecture*.
ODI	Open Data-Link Interface. Novell specification providing a standardized interface for NICs (network interface cards) that allows multiple protocols to use a single NIC. See also *NIC* (network interface card).
OEMI channel	See *block multiplexer channel*.
Office Document Architecture	See *ODA.*
Ohio Academic Resources Network	See *OARnet.*
OIM	OSI Internet Management. Group tasked with specifying ways in which OSI network management protocols can be used to manage TCP/IP networks.
OIR	Online insertion and removal. Feature that permits the addition, replacement, or removal of interface processors in a Cisco router without interrupting the system power, entering console commands, or causing other software or interfaces to shut down. Sometimes called hot swapping. See also power-on servicing.

ONC	Open Network Computing. Distributed applications architecture designed by Sun Microsystems, currently controlled by a consortium led by Sun. The NFS protocols are part of ONC. See also *NFS.*
ones density	Scheme that allows a CSU/DSU to recover the data clock reliably. The CSU/DSU derives the data clock from the data that passes through it. In order to recover the clock, the CSU/DSU hardware must receive at least one 1 bit value for every 8 bits of data that pass through it. Also called *pulse density*
online insertion and removal	See *OIR.*
on-the-fly packet switching	See *cut-through packet switching.*
open architecture	Architecture with which third-party developers can legally develop products and for which public domain specifications exist.
open circuit	Broken path along a transmission medium. Open circuits will usually prevent network communication.
Open Data-Link Interface	Open Data-Link Interface. Novell specification providing a standardized interface for NICs (network interface cards) that allows multiple protocols to use a single NIC. See also *NIC* (network interface card).
Open Document Architecture	See *ODA*.
Open Network Computing	See *ONC*.
Open Shortest Path First	See *OSPF.*
Open System Interconnection	See *OSI*.
Open System Interconnection reference model	See *OSI reference model.*
oper account	One of the four default user accounts that are created in the factory on each LightStream 2020 ATM switch. The oper account is for general users. Its default interface is the *CLI.*
Operation, Administration, and Maintenance cell	See *OAM cell.*
Option	One currently defined: maximum TCP segment size.
Optical Carrier	See *OC*.
optical fiber	See *fiber-optic cable.*
Organizational Unique Identifier	See *OUI.*

oscillation	Secondary signal on top of the 60-Hz waveform. It has a magnitude that ranges from 15 % to 100 % of the normal voltage carried on the power line. See surge, spike, and sag.
OSI	Open System Interconnection. International standardization program created by ISO and ITU-T to develop standards for data networking that facilitate multivendor equipment interoperability.
OSI Internet Management	See *OIM*.
OSINET	International association designed to promote OSI in vendor architectures.
OSI Presentation Address	Address used to locate an OSI Application entity. It consists of an OSI Network Address and up to three selectors, one each for use by the transport, session, and presentation entities.
OSI reference model	Open System Interconnection reference model. Network architectural model developed by ISO and ITU-T. The model consists of seven layers, each of which specifies particular network functions such as addressing, flow control, error control, encapsulation, and reliable message transfer. The highest layer (the application layer) is closest to the user; the lowest layer (the physical layer) is closest to the media technology. The next to lowest layer are implemented in hardware and software, while the upper five layers are implemented only in software. The OSI reference model is used universally as a method for teaching and understanding network functionality. Similar in some respects to SNA. See *application layer, data link layer, network layer, physical layer, presentation layer, session layer,* and *transport layer.*
OSPF	Open Shortest Path First. Link-state, hierarchical IGP routing algorithm proposed as a successor to RIP in the Internet community. OSPF features include least-cost routing, multipath routing, and load balancing. OSPF was derived from an early version of the ISIS protocol. See also *Enhanced IGRP, IGP, IGRP, IS-IS,* and *RIP*.
OUI	Organizational Unique Identifier. The 3 octets assigned by the IEEE in a block of 48-bit LAN addresses.
outframe	Maximum number of outstanding frames allowed in an SNA PU 2 server at any time.
out-of-band signaling	Transmission using frequencies or channels outside the frequencies or channels normally used for information transfer. Out-of-band signaling is often used for error reporting in situations in which in-band signaling can be affected by whatever problems the network might be experiencing. Contrast with *in-band signaling.*

P

Term	Definition
pacing	See *flow control*.
packet	Logical grouping of information that includes a header containing control information and (usually) user data. Packets are most often used to refer to network layer units of data. The terms *datagram*, *frame*, *message*, and *segment* are also used to describe logical information groupings at various layers of the OSI reference model and in various technology circles. See also *PDU*.
packet assembler/disassembler	See *PAD*.
packet buffer	See *buffer*.
packet internet groper	See *ping*.
packet level protocol	See *PLP*.
packet line card	See *PLC*.
packet switch	WAN device that routes packets along the most efficient path and allows a communications channel to be shared by multiple connections. Sometimes referred to as a *packet switch node (PSN)*, and formerly called an *IMP*. See also *IMP*.
packet-switched data network	See *PSN*.
packet-switched network	See *PSN*.
packet switching	Networking method in which nodes share bandwidth with each other by sending packets. Compare with *circuit switching* and *message switching*. See also *PSN (packet-switched network)*.
packet switch exchange	See *PSE*.
packet-switching node	See *PSN*.
PAD	Packet assembler/disassembler. Device used to connect simple devices (like character-mode terminals) that do not support the full functionality of a particular protocol to a network. PADs buffer data and assemble and disassemble packets sent to such end devices.
paddle card	See *access card*.
Palo Alto Research Center	See *PARC*.
PAM	Pulse amplitude modulation. Modulation scheme where the modulating wave is caused to modulate the amplitude of a pulse stream. Compare with *AM* and *FM*. See also *modulation*.

PAP	Password Authentication Protocol. Authentication protocol that allows PPP peers to authenticate one another. The remote router attempting to connect to the local router is required to send an authentication request. Unlike CHAP, PAP passes the password and host name or username in the clear (unencrypted). PAP does not itself prevent unauthorized access, but merely identifies the remote end. The router or access server then determines if that user is allowed access. PAP is supported only on PPP lines. Compare with *CHAP*.
parallel channel	Channel that uses bus and tag cables as a transmission medium. Compare with *ESCON channel*. See also *bus and tag channel*.
parallelism	Indicates that multiple paths exist between two points in a network. These paths might be of equal or unequal cost. Parallelism is often a network design goal: if one path fails, there is redundancy in the network to ensure that an alternate path to the same point exists.
parallel transmission	Method of data transmission in which the bits of a data character are transmitted simultaneously over a number of channels. Compare with *serial transmission*.
PARC	Palo Alto Research Center. Research and development center operated by XEROX. A number of widely-used technologies were originally conceived at PARC, including the first personal computers and LANs.
PARC Universal Protocol	See *PUP*.
parity check	Process for checking the integrity of a character. A parity check involves appending a bit that makes the total number of binary 1 digits in a character or word (excluding the parity bit) either odd (for *odd parity*) or even (for *even parity*).
partial mesh	Term describing a network in which devices are organized in a mesh topology, with some network nodes organized in a full mesh, but with others that are only connected to one or two other nodes in the network. A partial mesh does not provide the level of redundancy of a full mesh topology, but is less expensive to implement. Partial mesh topologies are generally used in the peripheral networks that connect to a fully meshed backbone. See also *full mesh* and *mesh*.
Passive interface	A passive interface receives updates, but does not send them. It is used to control routing update. The `passive-interface` command can be used with all IP interior gateway protocols. That is that it can be use with RIP, IGRP, EIGRP, OSPF, and IS-IS.
Password Authentication Protocol	See *PAP*.

patch panel	An assembly of pin locations and ports which can be mounted on a rack or wall bracket in the wiring closet. Patch panels act like switchboards that connect workstations cables to each other and to the outside.
path control layer	Layer 3 in the SNA architectural model. This layer performs sequencing services related to proper data reassembly. The path control layer is also responsible for routing. Corresponds roughly with the *network layer* of the OSI model. See also *data flow control layer*, *data link control layer*, *physical control layer*, *presentation services layer*, *transaction services layer*, and *transmission control layer*.
path control network	SNA concept that consists of lower-level components that control the routing and data flow through an SNA network and handle physical data transmission between SNA nodes. Compare with *NAU*.
path cost	See *cost*.
path name	Full name of a UNIX, DOS, or LynxOS file or directory, including all directory and subdirectory names. Consecutive names in a path name are typically separated by a forward slash (/) or a backslash (\), as in /usr/app/base/config.
payload	Portion of a frame that contains upper-layer information (data).
PBX	Private branch exchange. Digital or analog telephone switchboard located on the subscriber premises and used to connect private and public telephone networks.
PCI	Protocol control information. Control information added to user data to comprise an OSI packet. The OSI equivalent of the term header. See also *header*.
PCM	Pulse code modulation. Transmission of analog information in digital form through sampling and encoding the samples with a fixed number of bits.
PCR	Peak cell rate. Parameter defined by the ATM Forum for ATM traffic management. In CBR transmissions, PCR determines how often data samples are sent. In ABR transmissions, PCR determines the maximum value of the ACR. See also *ABR (available bit rate)*, *ACR*, and *CBR*.
PDN	Public data network. Network operated either by a government (as in Europe) or by a private concern to provide computer communications to the public, usually for a fee. PDNs enable small organizations to create a WAN without all the equipment costs of long-distance circuits.
PDU	Protocol data unit. OSI term for packet. See also *BPDU* and *packet*.
peak cell rate	See *PCR*.

peak rate	Maximum rate, in kilobits per second, at which a virtual circuit can transmit.
peer-to-peer computing	Peer-to-peer computing calls for each network device to run both client and server portions of an application. Also describes communication between implementations of the same OSI reference model layer in two different network devices. Compare with *client-server computing*.
performance management	One of five categories of network management defined by ISO for management of OSI networks. Performance management subsystems are responsible for analyzing and controlling network performance including network throughput and error rates. See also *accounting management*, *configuration management*, *fault management*, and *security management*.
peripheral node	In SNA, a node that uses local addresses and is therefore not affected by changes to network addresses. Peripheral nodes require boundary function assistance from an adjacent subarea node.
permanent virtual circuit	See *PVC*.
permanent virtual connection	See *PVC*.
permanent virtual path	See *PVP*.
permit processing	See *traffic policing*.
P/F	Poll/final bit. Bit in bit-synchronous data link layer protocols that indicates the function of a frame. If the frame is a command, a 1 in this bit indicates a poll. If the frame is a response, a 1 in this bit indicates that the current frame is the last frame in the response.
PGP	Pretty Good Privacy. Public-key encryption application that allows secure file and message exchanges. There is some controversy over the development and use of this application, in part due to U.S. national security concerns.
phase	Location of a position on an alternating wave form.
phase shift	Situation in which the relative position in time between the clock and data signals of a transmission becomes unsynchronized. In systems using long cables at higher transmission speeds, slight variances in cable construction, temperature, and other factors can cause a phase shift, resulting in high error rates.
PHY	Physical sublayer. One of two sublayers of the FDDI physical layer. See also *PMD*.
physical address	See *MAC address*.

physical control layer	Layer 1 in the SNA architectural model. This layer is responsible for the physical specifications for the physical links between end systems. Corresponds to the *physical layer* of the OSI model. See also *data flow control layer*, *data link control layer*, *path control layer*, *presentation services layer*, *transaction services layer*, and *transmission control layer*.
physical layer	Layer 1 of the OSI reference model. The physical layer defines the electrical, mechanical, procedural and functional specifications for activating, maintaining, and deactivating the physical link between end systems. Corresponds with the *physical control layer* in the SNA model. See also *application layer*, *data link layer*, *network layer*, *presentation layer*, *session layer*, and *transport layer*.
physical layer convergence procedure	See *PLCP*.
physical media	See *media*.
physical medium	See *media*.
physical medium dependent	See *PMD*.
physical sublayer	See *PHY*.
physical unit	See *PU*.
Physical Unit 2	See *PU 2*.
Physical Unit 2.1	See *PU 2.1*.
Physical Unit 4	See *PU 4*.
Physical Unit 5	See *PU 5*.
Physics Network	See *PHYSNET*.
PHYSNET	Physics Network. Group of many DECnet-based physics research networks, including HEPnet. See also *HEPnet*.
piggybacking	Process of carrying acknowledgments within a data packet to save network bandwidth.
PIM	Protocol Independent Multicast. Multicast routing architecture that allows the addition of IP multicast routing on existing IP networks. PIM is unicast routing protocol independent and can be operated in two modes: dense mode and sparse mode. See also *PIM dense mode* and *PIM sparse mode*.

PIM dense mode	One of the two PIM operational modes. PIM dense mode is data-driven and resembles typical multicast routing protocols. Packets are forwarded on all outgoing interfaces until pruning and truncation occurs. In dense mode, receivers are densely populated, and it is assumed that the downstream networks want to receive and will probably use the datagrams that are forwarded to them. The cost of using dense mode is its default flooding behavior. Sometimes called *dense mode PIM* or *PIM DM*. Contrast with *PIM sparse mode*. See also *PIM*.
PIM DM	See *PIM dense mode*.
PIM SM	See *PIM sparse mode*.
PIM sparse mode	One of the two PIM operational modes. PIM sparse mode tries to constrain data distribution so that a minimal number of routers in the network receive it. Packets are sent only if they are explicitly requested at the RP (rendezvous point). In sparse mode, receivers are widely distributed, and the assumption is that downstream networks will not necessarily use the datagrams that are sent to them. The cost of using sparse mode is its reliance on the periodic refreshing of explicit join messages and its need for RPs. Sometimes called *sparse mode PIM* or *PIM SM*. Contrast with *PIM dense mode*. See also *PIM* and *RP (rendezvous point)*.
pin location	A color-coded slot on a patch panel. Cable wires are punched down using a punch tool to make an electrical connection that allows the network to function.
ping	Command that uses the ICMP protocol to verify the hardware connection and the logical address of the network layer. This is a very basic testing mechanism.
ping-ponging	Phrase used to describe the actions of a packet in a two-node routing loop.
pixel	The smallest element of a display image, corresponding to a single displayed spot or color triad on a display, or to a single input spot from a camera. (A word coined from the phrase "picture element.")
plain old telephone service	See *PSTN*.
PLC	Packet line card. Card on the LightStream 2020 ATM switch that can be configured only as an edge card. A PLC, in conjunction with an access card, supports up to eight Ethernet or two FDDI edge ports.
PLCP	Physical layer convergence procedure. Specification that maps ATM cells into physical media, such as T3 or E3, and defines certain management information.

plesiochronous transmission	Term describing digital signals that are sourced from different clocks of comparable accuracy and stability. Compare with *asynchronous transmission*, *isochronous transmission*, and *synchronous transmission*.
PLP	Packet level protocol. Network layer protocol in the X.25 protocol stack. Sometimes called *X.25 Level 3* or *X.25 Protocol*. See also *X.25*.
PLU	Primary LU. The LU that is initiating a session with another LU. See also *LU*.
PMD	Physical medium dependent. Sublayer of the FDDI physical layer that interfaces directly with the physical medium and performs the most basic bit transmission functions of the network. See also *PHY*.
PNNI	Private Network-Network Interface. ATM Forum specification that describes an ATM virtual circuit routing protocol, as well as a signaling protocol between ATM switches. Used to allow ATM switches within a private network to interconnect. Sometimes called *Private Network Node Interface*.
point of presence	See *POP*.
point -to- point connection	One of two fundamental connection types. In ATM, a point-to-point connection can be a unidirectional or bidirectional connection between two ATM end-systems. Compare *point-to-multipoint connection*.
point- to-multipoint connection	One of two fundamental connection types. In ATM, a point-to-multipoint connection is a unidirectional connection in which a single source end-system (known as a root node) connects to multiple destination end-systems (known as leaves). Compare *point-to-point connection*.
Point-to-Point Protocol	See *PPP*.
poison reverse updates	Routing updates that explicitly indicate that a network or subnet is unreachable, rather than implying that a network is unreachable by not including it in updates. Poison reverse updates are sent to defeat large routing loops. The Cisco IGRP implementation uses poison reverse updates.
policy-based routing	See *policy routing*.
policy routing	Routing scheme that forwards packets to specific interfaces based on user-configured policies. Such policies might specify that traffic sent from a particular network should be forwarded out one interface, while all other traffic should be forwarded out another interface.
poll/final bit	See *P/F*.

polling	Access method in which a primary network device inquires, in an orderly fashion, whether secondaries have data to transmit. The inquiry occurs in the form of a message to each secondary that gives the secondary the right to transmit.
POP	Point of presence. Point of presence is the point of interconnection between the communication facilities provided by the telephone company and the building's main distribution facility.
port	1.) Interface on an internetworking device (such as a router). 2.) In IP terminology, an upper-layer process that is receiving information from lower layers. 3.) To rewrite software or microcode so that it will run on a different hardware platform or in a different software environment than that for which it was originally designed. 4. A female plug on a patch panel which accepts the same size plug as an RJ45 jack. Patch cords are used in these ports to cross connect computers wired to the patch panel. It is this cross connection which allows the LAN to function.4.) A female plug on a patch panel which accepts the same size plug as an RJ45 jack. Patch cords are used in these ports to cross connect computers wired to the patch panel. It is this cross connection which allows the LAN to function.
POST	Power-on self test. Set of hardware diagnostics that runs on a hardware device when that device is powered up. On a LightStream 2020 ATM switch, for example, the NP, switch card, and line card all perform the POST.
Post, Telephone, and Telegraph	See *PTT*.
POTS	Plain old telephone service. See *PSTN*.
power-on self test	See *POST*.
power-on servicing	Feature on the LightStream 2020 ATM switch that allows faulty components to be diagnosed, removed, and replaced while the rest of the switch continues to operate normally. Sometimes abbreviated *POS*. Sometimes called *hot swapping*. See also *OIR*.
power tray	Power supply for a LightStream 2020 ATM switch. A LightStream 2020 switch can have one or two bulk power trays. In a redundant system, the two power trays load share, but each can power the entire system in the event that the other fails. The power tray can provide either AC or DC power to the switch.
PPP	Point-to-Point Protocol. A successor to SLIP, PPP provides router-to-router and host-to-network connections over synchronous and asynchronous circuits. See also *SLIP*.

presentation layer	Layer 6 of the OSI reference model. This layer ensures that information sent by the application layer of one system will be readable by the application layer of another. The presentation layer is also concerned with the data structures used by programs and therefore negotiates data transfer syntax for the application layer. Corresponds roughly with the *presentation services layer* of the SNA model. See also *application layer*, *data link layer*, *network layer*, *physical layer*, *session layer*, and *transport layer*.
presentation services layer	Layer 6 of the SNA architectural model. This layer provides network resource management, session presentation services, and some application management. Corresponds roughly with the *presentation layer* of the OSI model. See also *data flow control layer*, *data link control layer*, *path control layer*, *physical control layer*, *transaction services layer*, and *transmission control layer*.
Pretty Good Privacy	See *PGP*.
PRI	Primary Rate Interface. ISDN interface to primary rate access. Primary rate access consists of a single 64-Kbps D channel plus 23 (T1) or 30 (E1) B channels for voice or data. Compare to *BRI*. See also *BISDN*, *ISDN*, and *N-ISDN*.
primary	See *primary station*.
Primary LU	See *PLU*.
Primary Rate Interface	See *PRI*.
primary ring	One of the two rings that make up an FDDI or CDDI ring. The primary ring is the default path for data transmissions. Compare with *secondary ring*.
primary station	In bit-synchronous data link layer protocols such as HDLC and SDLC, a station that controls the transmission activity of secondary stations and performs other management functions such as error control through polling or other means. Primary stations send commands to secondary stations and receive responses. Also called, simply, a *primary*. See also *secondary station*.
print server	Networked computer system that fields, manages, and executes (or sends for execution) print requests from other network devices.
priority queuing	Routing feature in which frames in an interface output queue are prioritized based on various characteristics such as packet size and interface type.
private branch exchange	See *PBX*.
Private Network-Network Interface	See *PNNI*.

Private Network Node Interface	See *PNNI*.
process switching	Operation that provides full route evaluation and per-packet load balancing across parallel WAN links. Involves the transmission of entire frames to the router CPU where they are repackaged for delivery to or from a WAN interface, with the router making a route selection for each packet. Process switching is the most resource-intensive switching operation that the CPU can perform.
programmable read-only memory	See *PROM*.
PROM	Programmable read-only memory. ROM that can be programmed using special equipment. PROMs can be programmed only once. Compare with *EPROM*.
propagation delay	Time required for data to travel over a network, from its source to its ultimate destination.
protocol	1.) Formal description of a set of rules and conventions that govern how devices on a network exchange information. 2.) Field within an IP datagram that indicates the upper layer (Layer 4) protocol sending the datagram.
protocol address	See *network address*.
protocol analyzer	See *network analyzer*.
protocol control information	See *PCI*.
protocol converter	Enables equipment with different data formats to communicate by translating the data transmission code of one device to the data transmission code of another device.
protocol data unit	See *PDU*.
Protocol Independent Multicast	See *PIM*.
protocol stack	Set of related communications protocols that operate together and, as a group, address communication at some or all of the seven layers of the OSI reference model. Not every protocol stack covers each layer of the model, and often a single protocol in the stack will address a number of layers at once. TCP/IP is a typical protocol stack.
protocol translator	Network device or software that converts one protocol into another, similar, protocol.
proxy	Entity that, in the interest of efficiency, essentially stands in for another entity.
proxy Address Resolution Protocol	See *proxy ARP*.

proxy ARP	Proxy Address Resolution Protocol. Variation of the ARP protocol in which an intermediate device (for example, a router) sends an ARP response on behalf of an end node to the requesting host. Proxy ARP can lessen bandwidth use on slow-speed WAN links. See also *ARP*.
proxy explorer	Technique that minimizes exploding explorer packet traffic propagating through an SRB network by creating an explorer packet reply cache, the entries of which are reused when subsequent explorer packets need to find the same host.
proxy polling	Technique that alleviates the load across an SDLC network by allowing routers to act as proxies for primary and secondary nodes, thus keeping polling traffic off of the shared links. Proxy polling has been replaced by SDLC Transport. See *SDLC Transport*.
PSDN	Packet-switched data network. See *PSN (packet-switched network)*.
PSE	Packet switch exchange. Essentially, a switch. The term PSE is generally used in reference to a switch in an X.25 PSN. See also *switch*.
PSN	1. Packet-switched network. Network that utilizes packet-switching technology for data transfer. Sometimes called a *packet-switched data network (PSDN)*. See *packet switching*. 2. Packet-switching node. Network node capable of performing packet switching functions. See also *packet switching*.
PSNP	Partial sequence number PDU (PSNP)—PSNPs are used to request an LSP (or LSPs) and acknowledge receipt of an LSP (or LSPs).
PSTN	Public Switched Telephone Network. General term referring to the variety of telephone networks and services in place worldwide. Sometimes called *plain old telephone service (POTS)*.
PTT	Post, Telephone, and Telegraph. Government agency that provides telephone services. PTTs exist in most areas outside North America and provide both local and long-distance telephone services.
PU	Physical unit. SNA component that manages and monitors the resources of a node, as requested by an SSCP. There is one PU per node.
PU 2	Physical Unit 2. SNA peripheral node that can support only DLUs that require services from a VTAM host and that are only capable of performing the secondary LU role in SNA sessions.

PU 2.1	Physical Unit type 2.1. SNA network node used for connecting peer nodes in a peer-oriented network. PU 2.1 sessions do not require that one node reside on VTAM. APPN is based upon PU 2.1 nodes, which can also be connected to a traditional hierarchical SNA network.
PU 4	Physical Unit 4. Component of an IBM FEP capable of full-duplex data transfer. Each such SNA device employs a separate data and control path into the transmit and receive buffers of the control program.
PU 5	Physical Unit 5. Component of an IBM mainframe or host computer that manages an SNA network. PU 5 nodes are involved in routing within the SNA path control layer.
public data network	See *PDN*.
Public Switched Telephone Network	See *PSTN*.
pull string	Strong, heavy string used to pull cable in multiple runs.
pulse amplitude modulation	See *PAM*.
pulse code modulation	See *PCM*.
pulse density	See *ones density*.
Punch Tool	Spring-loaded tool used for cutting and connecting wire in a jack or on a patch panel.
PUP	PARC Universal Protocol. Protocol similar to IP developed at PARC.
PVC	Permanent virtual circuit. Virtual circuit that is permanently established. PVCs save bandwidth associated with circuit establishment and tear down in situations where certain virtual circuits must exist all the time. Called a permanent virtual connection in ATM terminology. Compare with *SVC.*
PVP	Permanent virtual path. Virtual path that consists of PVCs. See also *PVC* and *virtual path*.

Q

Term	Definition
Q.920/Q.921	ITU-T specifications for the ISDN UNI data link layer. See also *UNI*.
Q.922A	ITU-T specification for Frame Relay encapsulation.
Q.931	ITU-T specification for signaling to establish, maintain, and clear ISDN network connections. See also *Q.93B*.
Q.93B	ITU-T specification signaling to establish, maintain, and clear BISDN network connections. An evolution of ITU-T recommendation Q.931. See also *Q.931*.
QLLC	Qualified Logical Link Control. Data link layer protocol defined by IBM that allows SNA data to be transported across X.25 networks.
QOS	Quality of service. Measure of performance for a transmission system that reflects its transmission quality and service availability.
QOS parameters	Quality of service parameters. Parameters that control the amount of traffic the source router in an ATM network sends over an SVC. If any switch along the path cannot accommodate the requested QOS parameters, the request is rejected, and a rejection message is forwarded back to the originator of the request.
Qualified Logical Link Control	See *QLLC*.
quality of service	See *QOS*.
quartet signaling	Signaling technique used in 100VG-AnyLAN networks that allows data transmission at 100 Mbps over four pairs of UTP cabling at the same frequencies used in 10BASE-T networks. See also *100VG-AnyLAN*.
query	Message used to inquire about the value of some variable or set of variables.
queue	1.) Generally, an ordered list of elements waiting to be processed.2.) In routing, a backlog of packets waiting to be forwarded over a router interface.
queuing delay	Amount of time that data must wait before it can be transmitted onto a statistically multiplexed physical circuit.
queuing theory	Scientific principles governing the formation or lack of formation of congestion on a network or at an interface.

R

Term	Definition
RACE	Research on Advanced Communications in Europe. Project sponsored by the European Community (EC) for the development of broadband networking capabilities.
raceway	Wall-mounted channel with a removable cover used to support horizontal cabling.
radio frequency	See *RF*.
radio frequency interference	See *RFI*.
RAM	Random-access memory. Volatile memory that can be read and written by a microprocessor.
random-access memory	See *RAM*.
Rapid Transport Protocol	See *RTP*.
RARE	Réseaux Associés pour la Recherche Européenne. Association of European universities and research centers designed to promote an advanced telecommunications infrastructure in the European scientific community. RARE merged with EARN to form TERENA. See also *EARN* and *TERENA*.
RARP	Reverse Address Resolution Protocol. Protocol in the TCP/IP stack that provides a method for finding IP addresses based on MAC addresses. Compare with *ARP*.
rate enforcement	See *traffic policing*.
rate queue	Value that is associated with one or more virtual circuits, and that defines the speed at which an individual virtual circuit will transmit data to the remote end. Each rate queue represents a portion of the overall bandwidth available on an ATM link. The combined bandwidth of all configured rate queues should not exceed the total bandwidth available.
RBHC	Regional Bell Holding Company. One of seven telephone companies created by the AT&T divestiture in 1984.
RBOC	Regional Bell Operating Company. Local or regional telephone company that owns and operates telephone lines and switches in one of seven U.S. regions. The RBOCs were created by the divestiture of AT&T. Also called *Bell Operating Company (BOC)*.
rcp	Remote copy protocol. Protocol that allows users to copy files to and from a file system residing on a remote host or server on the network. The rcp protocol uses TCP to ensure the reliable delivery of data.

rcp server	Router or other device that acts as a server for rcp. See also *rcp*.
read-only memory	See *ROM*.
Ready To Send	See *RTS*.
reassembly	The putting back together of an IP datagram at the destination after it has been fragmented either at the source or at an intermediate node. See also *fragmentation*.
redirect	Part of the ICMP and ES-IS protocols that allows a router to tell a host that using another router would be more effective.
redirector	Software that intercepts requests for resources within a computer and analyzes them for remote access requirements. If remote access is required to satisfy the request, the redirector forms an RPC and sends the RPC to lower-layer protocol software for transmission through the network to the node that can satisfy the request.
redistribution	Allowing routing information discovered through one routing protocol to be distributed in the update messages of another routing protocol. Sometimes called *route redistribution*.
redundancy	1.) In internetworking, the duplication of devices, services, or connections so that, in the event of a failure, the redundant devices, services, or connections can perform the work of those that failed. See also *redundant system*. 2.) In telephony, the portion of the total information contained in a message that can be eliminated without loss of essential information or meaning.
redundant system	Computer, router, switch, or other computer system that contains two or more of each of the most important subsystems, such as two disk drives, two CPUs, or two power supplies. For example, on a fully redundant LightStream 2020 ATM switch, there are two NP cards with disks, two switch cards, and two power trays. A partially redundant LightStream 2020 switch might have two NPs, one switch card, and one power tray.
Refraction	The measure of how much a given material bends light.
Regional Bell Holding Company	See *RBHC*.
Regional Bell Operating Company	See *RBOC*.
registered jack connector	See *RJ connector*.
relay	OSI terminology for a device that connects two or more networks or network systems. A data link layer (Layer 2) relay is a bridge; a network layer (Layer 3) relay is a router. See also *bridge* and *router*.

reliability	Ratio of expected to received keepalives from a link. If the ratio is high, the line is reliable. Used as a routing metric.
Reliable SAP Update Protocol	See *RSUP*.
reload	The event of a Cisco router rebooting, or the command that causes the router to reboot.
remote bridge	Bridge that connects physically disparate network segments via WAN links.
remote copy protocol	See *rcp*.
remote job entry	See *RJE*.
remote login	See *rlogin*.
Remote Monitoring	See *RMON*.
Remote Operations Service Element	See *ROSE*.
remote-procedure call	See *RPC*.
remote shell protocol	See *rsh*.
remote source-route bridging	See *RSRB*.
rendezvous point	See *RP*.
repeater	Device that regenerates and propagates electrical signals between two network segments. See also *segment*.
Request For Comments	See *RFC*.
request/response unit	See *RU*.
Research on Advanced Communications in Europe	See *RACE*.
Réseaux Associés pour la Recherche Européenne	See *RARE*.
reserved	Set to zero.
Reverse Address Resolution Protocol	See *RARP*.
Reverse Path Multicasting	See *RPM*.
RF	Radio frequency. Generic term referring to frequencies that correspond to radio transmissions. Cable TV and broadband networks use RF technology.

RFC	Request For Comments. Document series used as the primary means for communicating information about the Internet. Some RFCs are designated by the IAB as Internet standards. Most RFCs document protocol specifications such as Telnet and FTP, but some are humorous or historical. RFCs are available online from numerous sources.
RFI	Radio frequency interference. Radio frequencies that create noise that interferes with information being transmitted across unshielded copper cabling.
RIF	Routing Information Field. Field in the IEEE 802.5 header that is used by a source-route bridge to determine through which Token Ring network segments a packet must transit. A RIF is made up of ring and bridge numbers as well as other information.
RII	Routing Information Identifier. Bit used by SRT bridges to distinguish between frames that should be transparently bridged and frames that should be passed to the SRB module for handling.
ring	Connection of two or more stations in a logically circular topology. Information is passed sequentially between active stations. Token Ring, FDDI, and CDDI are based on this topology.
ring group	Collection of Token Ring interfaces on one or more Cisco routers that is part of a one-bridge Token Ring network.
ring latency	Time required for a signal to propagate once around a ring in a Token Ring or IEEE 802.5 network.
ring monitor	Centralized management tool for Token Ring networks based on the IEEE 802.5 specification. See also *active monitor* and *standby monitor*.
ring topology	Network topology that consists of a series of repeaters connected to one another by unidirectional transmission links to form a single closed loop. Each station on the network connects to the network at a repeater. While logically a ring, ring topologies are most often organized in a closed-loop star. Compare with *bus topology*, *star topology*, and *tree topology*.
RIP	Routing Information Protocol. IGP supplied with UNIX BSD systems. The most common IGP in the Internet. RIP uses hop count as a routing metric. See also *Enhanced IGRP*, *hop count*, *IGP*, *IGRP*, and *OSPF*.
RIPv2	Routing Information Protocol version 2 (RIPv2) is defined in RFC 1723 and is supported in IOS versions 11.1 and later. RIPv2 is not a new protocol, just RIPv1 with some extensions to bring it up-to-date with modern routing environments. RIPv2 has be updated to supports VLSM, authentication, and multicast updates. See also *RIP*.

RJ connector	Registered jack connector. Standard connectors originally used to connect telephone lines. RJ connectors are now used for telephone connections and for 10BASE-T and other types of network connections. RJ-11, RJ-12, and RJ-45 are popular types of RJ connectors.
RJE	Remote job entry. Application that is batch-oriented, as opposed to interactive. In RJE environments, jobs are submitted to a computing facility, and output is received later.
rlogin	Remote login. Terminal emulation program, similar to Telnet, offered in most UNIX implementations.
RMON	Remote Monitoring. MIB agent specification described in RFC 1271 that defines functions for the remote monitoring of networked devices. The RMON specification provides numerous monitoring, problem detection, and reporting capabilities.
ROM	Read-only memory. Nonvolatile memory that can be read, but not written, by the microprocessor.
root account	1.) Privileged account on UNIX systems used exclusively by network or system administrators.2.) One of the four default user accounts that are created in the factory on each LightStream 2020 ATM switch. The root account is for use by the system or network administrator only. Its default interface is the bash shell. See also *bash*.
root bridge	Exchanges topology information with designated bridges in a spanning-tree implementation in order to notify all other bridges in the network when topology changes are required. This prevents loops and provides a measure of defense against link failure.
ROSE	Remote Operations Service Element. OSI RPC mechanism used by various OSI network application protocols.
round-trip time	See *RTT*.
route	Path through an internetwork.
routed protocol	Protocol that can be routed by a router. A router must be able to interpret the logical internetwork as specified by that routed protocol. Examples of routed protocols include AppleTalk, DECnet, and IP.
route extension	In SNA, a path from the destination subarea node through peripheral equipment to a NAU.
route map	Method of controlling the redistribution of routes between routing domains.
Route Processor	See *RP*.

route summarization	Consolidation of advertised addresses in OSPF and IS-IS. In OSPF, this causes a single summary route to be advertised to other areas by an area border router.
Route/Switch Processor	See *RSP*.
router	Network layer device that uses one or more metrics to determine the optimal path along which network traffic should be forwarded. Routers forward packets from one network to another based on network layer information. Occasionally called a *gateway* (although this definition of gateway is becoming increasingly outdated). Compare with *gateway*. See also *relay*.
router IGRP	Command that selects IGRP as a routing protocol.
router rip	Command that selects RIP as the routing protocol.
route redistribution	See *redistribution*.
routing	Process of finding a path to a destination host. Routing is very complex in large networks because of the many potential intermediate destinations a packet might traverse before reaching its destination host.
routing domain	Group of end systems and intermediate systems operating under the same set of administrative rules. Within each routing domain is one or more areas, each uniquely identified by an area address.
Routing Information Field	See *RIF*.
Routing Information Identifier	See *RII*.
Routing Information Protocol	See *RIP*.
routing metric	Method by which a routing algorithm determines that one route is better than another. This information is stored in routing tables. Metrics include bandwidth, communication cost, delay, hop count, load, MTU, path cost, and reliability. Sometimes referred to simply as a *metric*. See also *cost*.
routing protocol	Protocol that accomplishes routing through the implementation of a specific routing algorithm. Examples of routing protocols include IGRP, OSPF, and RIP.
routing table	Table stored in a router or some other internetworking device that keeps track of routes to particular network destinations and, in some cases, metrics associated with those routes.
Routing Table Maintenance Protocol	See *RTMP*.
Routing Table Protocol	See *RTP*.

routing update	Message sent from a router to indicate network reachability and associated cost information. Routing updates are typically sent at regular intervals and after a change in network topology. Compare with *flash update*.
RP	1.) Route Processor. Processor module on the Cisco 7000 series routers that contains the CPU, system software, and most of the memory components that are used in the router. Sometimes called a *supervisory processor*.2.) Rendezvous point. Router specified in PIM sparse mode implementations to track membership in multicast groups and to forward messages to known multicast group addresses. See also *PIM sparse mode*.
RPC	Remote-procedure call. Technological foundation of client-server computing. RPCs are procedure calls that are built or specified by clients and executed on servers, with the results returned over the network to the clients. See also *client-server computing*.
RPF	Reverse Path Forwarding. Multicasting technique in which a multicast datagram is forwarded out of all but the receiving interface if the receiving interface is the one used to forward unicast datagrams to the source of the multicast datagram.
RPM	Reverse Path Multicasting. Multicasting technique in which a multicast datagram is forwarded out of all but the receiving interface if the receiving interface is one used to forward unicast datagrams to the source of the multicast datagram.
RS-232	Popular physical layer interface. Now known as *EIA/TIA-232*. See *EIA/TIA-232*.
RS-422	Balanced electrical implementation of EIA/TIA-449 for high-speed data transmission. Now referred to collectively with RS-423 as EIA-530. See also *EIA-530* and *RS-423*.
RS-423	Unbalanced electrical implementation of EIA/TIA-449 for EIA/TIA-232 compatibility. Now referred to collectively with RS-422 as EIA-530. See also *EIA-530* and *RS-422*.
RS-449	Popular physical layer interface. Now known as *EIA/TIA-449*. See *EIA/TIA-449*.
rsh	Remote shell protocol. Protocol that allows a user to execute commands on a remote system without having to log in to the system. For example, rsh can be used to remotely examine the status of a number of access servers without connecting to each communication server, executing the command, and then disconnecting from the communication server.
RSP	Route/Switch Processor. Processor module used in the Cisco 7500 series routers that integrates the functions of the RP and the SP. See also *Cisco 7500*, *RP (Route Processor)*, and *SP*.

RSRB	remote source-route bridging. SRB over WAN links. See also *SRB*.
RSUP	Reliable SAP Update Protocol. Bandwidth-saving protocol developed by Cisco for propagating services information. RSUP allows routers to reliably send standard Novell SAP packets only when the routers detect a change in advertised services. RSUP can transport network information either in conjunction with or independently of the Enhanced IGRP routing function for IPX.
RSVP	Resource Reservation Protocol. Protocol that supports the reservation of resources across an IP network. Applications running on IP end systems can use RSVP to indicate to other nodes the nature (bandwidth, jitter, maximum burst, and so forth) of the packet streams they want to receive. Also known as Resource Reservation Setup Protocol.
RTMP	Routing Table Maintenance Protocol. Apple Computer proprietary routing protocol. RTMP was derived from RIP. See also *RIP*.
RTP	1.) Routing Table Protocol. VINES routing protocol based on RIP. Distributes network topology information and aids VINES servers in finding neighboring clients, servers, and routers. Uses delay as a routing metric. See also *SRTP*.2.) Rapid Transport Protocol. Provides pacing and error recovery for APPN data as it crosses the APPN network. With RTP, error recovery and flow control are done end-to-end rather than at every node. RTP prevents congestion rather than reacts to it.
RTS	Ready To Send. EIA/TIA-232 control signal that requests a data transmission on a communications line.
RTT	Round-trip time. Time required for a network communication to travel from the source to the destination and back. RTT includes the time required for the destination to process the message from the source and generate a reply. RTT is used by some routing algorithms to aid in calculating optimal routes.
RU	Request/response unit. Request and response messages exchanged between NAUs in an SNA network.
run-time memory	Memory accessed while a program runs. On a LightStream 2020 ATM switch, this memory contains configuration data that is accessed while the switch operates.

S

Term	Definition
SAC	Single-attached concentrator. FDDI or CDDI concentrator that connects to the network by being cascaded from the master port of another FDDI or CDDI concentrator.
safety ground wire	Circuit wire that connects to a local earth ground and the chassis of an electrical appliance or device via an electrical outlet and plug. It is used to ensure that no voltage potential exists between the chassis of the electrical device and the earth ground.
sag	Any decrease of below 80% in the normal voltage carried by a power line. A sag is sometimes referred to as a brownout. See *surge, spike*, and *oscillation.*
sampling rate	Rate at which samples of a particular waveform amplitude are taken.
SAP	1.) Service access point. Field defined by the IEEE 802.2 specification that is part of an address specification. Thus, the destination plus the DSAP define the recipient of a packet. The same applies to the *SSAP*. See also *DSAP* and *SSAP.* 2.) Service Advertisement Protocol. IPX protocol that provides a means of informing network clients, via routers and servers, of available network resources and services. See also *IPX.*
SAR	Segmentation and reassembly. One of the two sublayers of the AAL CPCS, responsible for dividing (at the source) and reassembling (at the destination) the PDUs passed from the CS. The SAR sublayer takes the PDUs processed by the CS and, after dividing them into 48-byte pieces of payload data, passes them to the ATM layer for further processing. See also *AAL, ATM layer, CPCS, CS,* and *SSCS.*
SAS	Single attachment station. Device attached only to the primary ring of an FDDI ring. Also known as a Class B station. Compare with *DAS*. See also *FDDI.*
satellite communication	Use of orbiting satellites to relay data between multiple earth-based stations. Satellite communications offer high bandwidth and a cost that is not related to distance between earth stations, long propagation delays, or broadcast capability.
SBus	Bus technology used in Sun SPARC-based workstations and servers. The SBus specification has been adopted by the IEEE as a new bus standard.
SCR	Sustainable cell rate. Parameter defined by the ATM Forum for ATM traffic management. For VBR connections, SCR determines the long-term average cell rate that can be transmitted. See also *VBR.*

SCTE	Serial clock transmit external. Timing signal that DTE echoes to DCE to maintain clocking. SCTE is designed to compensate for clock phase shift on long cables. When the DCE device uses SCTE instead of its internal clock to sample data from the DTE, it is better able to sample the data without error even if there is a phase shift in the cable. See also *phase shift.*
SDH	Synchronous Digital Hierarchy. European standard that defines a set of rate and format standards that are transmitted using optical signals over fiber. SDH is similar to SONET, with a basic SDH rate of 155.52 Mbps, designated at STM-1. See also *SONET* and *STM-1.*
SDLC	Synchronous Data Link Control. SNA data link layer communications protocol. SDLC is a bit-oriented, full-duplex serial protocol that has spawned numerous similar protocols, including HDLC and LAPB. See also *HDLC* and *LAPB.*
SDLC broadcast	Feature that allows a Cisco router that receives an all-stations broadcast on a virtual multidrop line to propagate the broadcast to each SDLC line that is a member of the virtual multidrop line.
SDLC Transport	Cisco router feature with which disparate environments can be integrated into a single, high-speed, enterprise-wide network. Native SDLC traffic can be passed through point-to-point serial links with other protocol traffic multiplexed over the same links. Cisco routers can also encapsulate SDLC frames inside IP datagrams for transport over arbitrary (non-SDLC) networks. Replaces proxy polling. See also *proxy polling*.
SDLLC	Feature that performs translation between SDLC and IEEE 802.2 type 2.
SDSU	SMDS DSU. DSU for access to SMDS via HSSIs and other serial interfaces.
SDU	Service data unit. Unit of information from an upper-layer protocol that defines a service request to a lower-layer protocol.
SEAL	Simple and efficient AAL. Scheme used by AAL5 in which the SAR sublayer segments CS PDUs without adding additional fields. See also *AAL, AAL5, CS*, and *SAR.*
secondary	See *secondary station*.
secondary ring	One of the two rings making up an FDDI or CDDI ring. The secondary ring is usually reserved for use in the event of a failure of the primary ring. Compare to *primary ring*.
secondary station	In bit-synchronous data link layer protocols such as HDLC, a station that responds to commands from a primary station. Sometimes referred to simply as a *secondary*. See also *primary station*.

security management	One of five categories of network management defined by ISO for management of OSI networks. Security management subsystems are responsible for controlling access to network resources. See also *accounting management, configuration management, fault management, and performance management.*
seed router	Responds to configuration queries from nonseed routers on its connected AppleTalk network, allowing those routers to confirm or modify their configurations accordingly. See also *nonseed router*.
segment	1.) Section of a network that is bounded by bridges, routers, or switches. 2.) In a LAN using a bus topology, a segment is a continuous electrical circuit that is often connected to other such segments with repeaters. 3.) Term used in the TCP specification to describe a single transport layer unit of information. The terms *datagram, frame, message,* and *packet* are also used to describe logical information groupings at various layers of the OSI reference model and in various technology circles.
segmentation and reassembly	See *SAR.*
sequence number	Number used to ensure correct sequencing of the arriving data.
Sequenced Packet Exchange	See *SPX.*
Sequenced Packet Protocol	See *SPP*.
Sequenced Routing Update Protocol	See *SRTP*.
serial clock transmit external	See *SCTE*.
Serial Interface Processor	See *SIP*.
Serial Line Internet Protocol	See *SLIP*.
serial transmission	Method of data transmission in which the bits of a data character are transmitted sequentially over a single channel. Compare with *parallel transmission*.
serial tunnel	See *STUN*.
server	Node or software program that provides services to clients. See also *back end, client,* and *front end.*
Server Message Block	See *SMB*.
service access point	See *SAP*.

Service Advertisement Protocol	See *SAP.*
service data unit	See *SDU.*
service password-encryption	Command that allows further protection.
service point	Interface between non-SNA devices and NetView that sends alerts from equipment unknown to the SNA environment.
Service Profile Identifier	See *SPID*.
service specific convergence sublayer	See *SSCS*.
session	1.) Related set of communications transactions between two or more network devices. 2.) In SNA, a logical connection enabling two NAUs to communicate.
session layer	Layer 5 of the OSI reference model. This layer establishes, manages, and terminates sessions between applications and manages data exchange between presentation layer entities. Corresponds to the *data flow control layer* of the SNA model. See also *application layer, data link layer, network layer, physical layer, presentation layer,* and *transport layer.*
SF	Super Frame. Common framing type used on T1 circuits. SF consists of 12 frames of 192 bits each, with the 193rd bit providing error checking and other functions. SF has been superseded by ESF, but is still widely used. Also called D4 framing. See also *ESF.*
SGMP	Simple Gateway Monitoring Protocol. Network management protocol that was considered for Internet standardization and later evolved into SNMP. Documented in RFC 1028. See also *SNMP.*
shaping	See *traffic shaping*.
shielded cable	Cable that has a layer of shielded insulation to reduce EMI.
shielded twisted-pair	See *STP*.
shortest path first algorithm	See *SPF*.
shortest-path routing	Routing that minimizes distance or path cost through application of an algorithm.
show access-lists	Command that displays the contents of all access lists.
show flash	1.) Command used to verify that you have sufficient memory on your system for the Cisco IOS software you want to load. 2.) Command used to learn the name of the system image file.

show running-config	Command used to display the current configuration in RAM.
show ip interface	Command that displays the status and global parameters associated with an interface.
show ip protocol	1.) Command that displays values about routing timers and network information associated with the entire router. 2.) Command that displays parameters, filters, and network information about the entire router.
show ip route	Command that displays the contents of an IP routing table.
show startup-config	Command used to display the saved configuration.
signaling	Process of sending a transmission signal over a physical medium for purposes of communication.
signaling packet	Generated by an ATM-connected device that wants to establish a connection with another such device. The signaling packet contains the ATM NSAP address of the desired ATM endpoint, as well as any QOS parameters required for the connection. If the endpoint can support the desired QOS, it responds with an accept message, and the connection is opened. See also *QOS.*
Signaling System number 7	See *SS7.*
signal injector	Device used to measure attenuation of a signal on a network.
signal quality error	See *SQE*.
signal reference ground	Reference point used by computing devices to measure and compare incoming digital signals to.Reference point used by computing devices to measure and compare incoming digital signals to.
silicon switching	Switching based on the SSE, which allows the processing of packets independent of the SSP (Silicon Switch Processor) system processor. Silicon switching provides high-speed, dedicated packet switching. See also *SSE* and *SSP* (Silicon Switch Processor).
silicon switching engine	See *SSE.*
Silicon Switch Processor	See *SSP*.
simple and efficient AAL	See *SEAL*.
Simple Gateway Monitoring Protocol	See *SGMP*.
Simple Mail Transfer Protocol	See *SMTP*.
Simple Multicast Routing Protocol	See *SMRP*.

Simple Network Management Protocol	See *SNMP*.
simplex	Capability for data transmission in only one direction between a sending station and a receiving station. Compare with full duplex and half duplex.
single-attached concentrator	See *SAC.*
single attachment station	See *SAS*.
single-mode fiber	Fiber-optic cabling with a narrow core that allows light to enter only at a single angle. Such cabling has higher bandwidth than multimode fiber, but requires a light source with a narrow spectral width (for example, a laser). Also called monomode fiber. See also *multimode fiber*.
single-route explorer packet	See *spanning explorer packet.*
single-vendor network	Network using equipment from only one vendor. Single-vendor networks rarely suffer compatibility problems. See also *multivendor network.*
SIP	1.) SMDS Interface Protocol. Used in communications between CPE and SMDS network equipment. Allows the CPE to use SMDS service for high-speed WAN internetworking. Based on the IEEE 802.6 DQDB standard. See also *DQDB.* 2.) Serial Interface Processor. Obsolete interface processor for Cisco 7000 series routers that provided either two or four channel-independent ports for synchronous serial connections at speeds from 2.4 Kbps to 4 Mbps. The SIP has been replaced by the FSIP. Sometimes called *SX-SIP* or *Pre-FSIP*. See also *FSIP.*
sliding window	Refers to the fact that the window size is negotiated dynamically during the TCP session.
sliding window flow control	Method of flow control in which a receiver gives transmitter permission to transmit data until a window is full. When the window is full, the transmitter must stop transmitting until the receiver advertises a larger window. TCP, other transport protocols, and several data link layer protocols use this method of flow control.
SLIP	Serial Line Internet Protocol. Standard protocol for point-to-point serial connections using a variation of TCP/IP. Predecessor of PPP. See also *CSLIP* and *PPP*.
slotted ring	LAN architecture based on a ring topology in which the ring is divided into slots that circulate continuously. Slots can be either empty or full, and transmissions must start at the beginning of a slot.
slow switching	Packet processing performed at process level speeds, without the use of a route cache. Contrast with fast switching.

SMAC	Source MAC. MAC address specified in the Source Address field of a packet. Compare with *DMAC*. See also *MAC address.*
SMB	Server Message Block. File-system protocol used in LAN Manager and similar NOSs to package data and exchange information with other systems.
SMDS	Switched Multimegabit Data Service. High-speed, packet-switched, datagram-based WAN networking technology offered by the telephone companies. See also *CBDS*.
SMDS Interface Protocol	See *SIP.*
SMI	Structure of Management Information. Document (RFC 1155) specifying rules used to define managed objects in the MIB. See also *MIB.*
smoothing	See *traffic shaping*.
SMRP	Simple Multicast Routing Protocol. Specialized multicast network protocol for routing multimedia data streams on enterprise networks. SMRP works in conjunction with multicast extensions to the AppleTalk protocol.
SMT	Station Management. ANSI FDDI specification that defines how ring stations are managed.
SMTP	Simple Mail Transfer Protocol. Internet protocol providing electronic mail services.
SNA	Systems Network Architecture. Large, complex, feature-rich network architecture developed in the 1970s by IBM. Similar in some respects to the OSI reference model, but with a number of differences. SNA is essentially composed of seven layers. See *data flow control layer, data link control layer, path control layer, physical control layer, presentation services layer, transaction services layer,* and *transmission control layer.*
SNA Distribution Services	See *SNADS.*
SNA Network Interconnection	See *SNI.*
SNADS	SNA Distribution Services. Consists of a set of SNA transaction programs that interconnect and cooperate to provide asynchronous distribution of information between end users. One of three SNA transaction services. See also *DDM* and *DIA.*

SNAP	Subnetwork Access Protocol. Internet protocol that operates between a network entity in the subnetwork and a network entity in the end system. SNAP specifies a standard method of encapsulating IP datagrams and ARP messages on IEEE networks. The SNAP entity in the end system makes use of the services of the subnetwork and performs three key functions: data transfer, connection management, and QOS selection.
Snapshot routing	Method of gathering routing information during an active time, taking a snapshot of the information and using that routing information for a configured length of time (referred to as the quiet time).
SNI	1.) Subscriber Network Interface. Interface for SMDS-based networks that connects CPE and an SMDS switch. See also UNI. 2.) SNA Network Interconnection. IBM gateway connecting multiple SNA networks.
SNMP	Simple Network Management Protocol. Network management protocol used almost exclusively in TCP/IP networks. SNMP provides a means to monitor and control network devices, and to manage configurations, statistics collection, performance, and security. See also *SGMP* and *SNMP2.*
SNMP communities	Authentication scheme that enables an intelligent network device to validate SNMP requests from sources such as the NMS. A LightStream 2020 ATM switch, for example, responds only to SNMP requests that come from members of known communities and that have the access privileges required for that request. See also *SNMP.*
SNMP2	SNMP Version 2. Version 2 of the popular network management protocol. SNMP2 supports centralized as well as distributed network management strategies, and includes improvements in the SMI, protocol operations, management architecture, and security. See also *SNMP*.
SNPA	Subnetwork point-of-attachment address (SNPA) is the point at which subnetwork services are provided. This is the equivalent of the Layer 2 address corresponding to the Layer 3, NET or NSAP, address and is therefore usually a MAC address on a LAN or Virtual Circuit ID in X.25, Frame-Relay, or ATM.
socket	Software structure operating as a communications end point within a network device.
socket number	An 8-bit number that identifies a socket. A maximum of 254 different socket numbers can be assigned in an AppleTalk node.

SONET	Synchronous Optical Network. High-speed (up to 2.5 Gbps) synchronous network specification developed by Bellcore and designed to run on optical fiber. STS-1 is the basic building block of SONET. Approved as an international standard in 1988. See also *SDH, STS-1*, and *STS-3c.*
source address	Address of a network device that is sending data. See also *destination address*.
source and destination IP addresses	Field within an IP datagram that indicates the 32-bit source and destination IP addresses.
source MAC	See *SMAC.*
source port	Number of the calling port.
source-route bridging	See *SRB*.
source-route translational bridging	See *SR/TLB.*
source-route transparent bridging	See *SRT.*
source service access point	See *SSAP*.
Southeastern Universities Research Association Network	See *SURAnet.*
SP	Switch Processor. Cisco 7000-series processor module that acts as the administrator for all CxBus activities. Sometimes called *ciscoBus controller*. See also *CxBus.*
SPAN	Switched Port Analyzer. Feature of the Catalyst 5000 switch that extends the monitoring abilities of existing network analyzers into a switched Ethernet environment. SPAN mirrors the traffic at one switched segment onto a predefined SPAN port. A network analyzer attached to the SPAN port can monitor traffic from any of the other Catalyst switched ports.
span	Full-duplex digital transmission line between two digital facilities.
spanning explorer packet	Follows a statically configured spanning tree when looking for paths in an SRB network. Also known as a limited-route explorer packet or a single-route explorer packet. See also *all-routes explorer packet, explorer packet,* and *local explorer packet.*
spanning tree	Loop-free subset of a network topology. See also spanning-tree algorithm and Spanning-Tree Protocol.
spanning-tree algorithm	Algorithm used by the Spanning-Tree Protocol to create a spanning tree. Sometimes abbreviated STA. See also *spanning tree* and *Spanning-Tree Protocol*.

Spanning-Tree Protocol	Bridge protocol that utilizes the spanning-tree algorithm, enabling a learning bridge to dynamically work around loops in a network topology by creating a spanning tree. Bridges exchange BPDU messages with other bridges to detect loops, and then remove the loops by shutting down selected bridge interfaces. Refers to both the IEEE 802.1 Spanning-Tree Protocol standard and the earlier Digital Equipment Corporation Spanning-Tree Protocol upon which it is based. The IEEE version supports bridge domains and allows the bridge to construct a loop-free topology across an extended LAN. The IEEE version is generally preferred over the Digital version. Sometimes abbreviated *STP*. See also *BPDU, learning bridge, MAC address learning, spanning tree,* and *spanning-tree algorithm.*
sparse mode PIM	See *PIM sparse mode*.
speed matching	Feature that provides sufficient buffering capability in a destination device to allow a high-speed source to transmit data at its maximum rate, even if the destination device is a lower-speed device.
SPF	Shortest path first algorithm. Routing algorithm that iterates on length of path to determine a shortest-path spanning tree. Commonly used in link-state routing algorithms. Sometimes called Dijkstra's algorithm. See also *link state routing algorithm*.
SPID	Service Profile Identifier. Number that some service providers use to define the services to which an ISDN device subscribes. The ISDN device uses the SPID when accessing the switch that initializes the connection to a service provider.
spike	Any power impulse lasting between .5 and 100 microseconds and possessing an amplitude over 100 % of peak power line voltage. See *surge, sag,* and *oscillation*.
split-horizon updates	Routing technique in which information about routes is prevented from exiting the router interface through which that information was received. Split-horizon updates are useful in preventing routing loops.
spoofing	1.) Scheme used by Cisco routers to cause a host to treat an interface as if it were up and supporting a session. The router spoofs replies to keepalive messages from the host in order to convince that host that the session still exists. Spoofing is useful in routing environments such as DDR, in which a circuit-switched link is taken down when there is no traffic to be sent across it in order to save toll charges. See also *DDR.* 2.) The act of a packet illegally claiming to be from an address from which it was not actually sent. Spoofing is designed to foil network security mechanisms such as filters and access lists.

spooler	Application that manages requests or jobs submitted to it for execution. Spoolers process the submitted requests in an orderly fashion from a queue. A print spooler is a common example of a spooler.
SPP	Sequenced Packet Protocol. Provides reliable, connection-based, flow-controlled packet transmission on behalf of client processes. Part of the XNS protocol suite.
SPX	Sequenced Packet Exchange. Reliable, connection-oriented protocol that supplements the datagram service provided by network layer (Layer 3) protocols. Novell derived this commonly used NetWare transport protocol from the SPP of the XNS protocol suite.
SQE	Signal quality error. Transmission sent by a transceiver back to the controller to let the controller know whether the collision circuitry is functional. Also called *heartbeat.*
SRAM	Type of RAM that retains its contents for as long as power is supplied. SRAM does not require constant refreshing, like DRAM. Compare with *DRAM.*
SRB	Source-route bridging. Method of bridging originated by IBM and popular in Token Ring networks. In a SRB network, the entire route to a destination is predetermined, in real time, prior to the sending of data to the destination. Contrast with *transparent bridging*.
SRT	Source-route transparent bridging. IBM bridging scheme that merges the two most prevalent bridging strategies, SRB and transparent bridging. SRT employs both technologies in one device to satisfy the needs of all ENs. No translation between bridging protocols is necessary. Compare with *SR/TLB.*
SR/TLB	Source-route translational bridging. Method of bridging where source-route stations can communicate with transparent bridge stations with the help of an intermediate bridge that translates between the two bridge protocols. Compare with *SRT.*
SRTP	Sequenced Routing Update Protocol. Protocol that assists VINES servers in finding neighboring clients, servers, and routers. See also *RTP (Routing Table Protocol).*
SS7	Signaling System number 7. Standard CCS system used with BISDN and ISDN. Developed by Bellcore. See also *CCS.*
SSAP	Source service access point. The SAP of the network node designated in the Source field of a packet. Compare to *DSAP.* See also *SAP (service access point).*

SSCP	System services control points. Focal points within an SNA network for managing network configuration, coordinating network operator and problem determination requests, and providing directory services and other session services for network end users.
SSCP-PU session	Session used by SNA to allow an SSCP to manage the resources of a node through the PU. SSCPs can send requests to, and receive replies from, individual nodes in order to control the network configuration.
SSCS	Service specific convergence sublayer. One of the two sublayers of any AAL. SSCS, which is service dependent, offers assured data transmission. The SSCS can be null as well, in classical IP over ATM or LAN emulation implementations. See also *AAL, ATM layer, CPCS, CS,* and *SAR.*
SSE	Silicon switching engine. Routing and switching mechanism that compares the data link or network layer header of an incoming packet to a silicon-switching cache, determines the appropriate action (routing or bridging), and forwards the packet to the proper interface. The SSE is directly encoded in the hardware of the SSP (Silicon Switch Processor) of a Cisco 7000 series router. It can therefore perform switching independently of the system processor, making the execution of routing decisions much quicker than if they were encoded in software. See also *silicon switching* and *SSP (Silicon Switch Processor).*
SSP	1.) Silicon Switch Processor. High-performance silicon switch for Cisco 7000 series routers that provides distributed processing and control for interface processors. The SSP leverages the high-speed switching and routing capabilities of the SSE to dramatically increase aggregate router performance, minimizing performance bottlenecks at the interface points between the router and a high-speed backbone. See also *silicon switching and SSE.* 2.) Switch-to-Switch Protocol. Protocol specified in the DLSw standard that routers use to establish DLSw connections, locate resources, forward data, and handle flow control and error recovery. See also *DLSw.*
STA	See *spanning-tree algorithm.*
stack	See *protocol stack.*
standard	Set of rules or procedures that are either widely used or officially specified. See also *de facto standard.*
standby monitor	Device placed in standby mode on a Token Ring network in case an active monitor fails. See also *active monitor* and *ring monitor.*
StarLAN	CSMA/CD LAN, based on IEEE 802.3, developed by AT&T.

star topology	LAN topology in which end points on a network are connected to a common central switch by point-to-point links. A ring topology that is organized as a star implements a unidirectional closed-loop star, instead of point-to-point links. Compare with *bus topology, ring topology,* and *tree topology.*
start-stop transmission	See *asynchronous transmission.*
static electricity	Unpredictable electrical charges in the atmosphere that interfere with radio reception, computer networking, and the like.
static route	Route that is explicitly configured and entered into the routing table. Static routes take precedence over routes chosen by dynamic routing protocols.
Station Management	See *SMT.*
statistical multiplexing	Technique whereby information from multiple logical channels can be transmitted across a single physical channel. Statistical multiplexing dynamically allocates bandwidth only to active input channels, making better use of available bandwidth and allowing more devices to be connected than with other multiplexing techniques. Also referred to as *statistical time-division multiplexing* or *stat mux*. Compare with *ATDM, FDM, and TDM.*
statistical time-division multiplexing	See *statistical multiplexing.*
stat mux	See *statistical multiplexing*.
STM-1	Synchronous Transport Module level 1. One of a number of SDH formats that specifies the frame structure for the 155.52-Mbps lines used to carry ATM cells. See also *SDH.*
store and forward packet switching	Packet-switching technique in which frames are completely processed before being forwarded out the appropriate port. This processing includes calculating the CRC and checking the destination address. In addition, frames must be temporarily stored until network resources (such as an unused link) are available to forward the message. Contrast with cut-through packet switching.
STP	1. Shielded twisted-pair. Two-pair wiring medium used in a variety of network implementations. STP cabling has a layer of shielded insulation to reduce EMI. Compare with *UTP.* See also *twisted pair.* 2. See *Spanning-Tree Protocol*.

StreamView network management	Cisco suite of SNMP-based network management tools used in conjunction with the LightStream 2020 ATM switch. The StreamView suite includes three GUI-driven applications: a configuration program (the configurator), a network topology map (the topology map), and a node monitoring program (the monitor); and a command-line interface: the CLI. See also *CLI, configurator, monitor,* and *topology map.*
Structure of Management Information	See *SMI.*
STS-1	Synchronous Transport Signal level 1. Basic building block signal of SONET, operating at 51.84 Mbps. Faster SONET rates are defined as STS-n, where n is a multiple of 51.84 Mbps. See also *SONET*.
STS-3c	Synchronous Transport Signal level 3, concatenated. SONET format that specifies the frame structure for the 155.52-Mbps lines used to carry ATM cells. See also *SONET.*
stub area	OSPF area that carries a default route, intra-area routes, and interarea routes, but does not carry external routes. Virtual links cannot be configured across a stub area, and they cannot contain an ASBR. Compare to *non-stub area*. See also *ASBR* and *OSPF.*
stub network	Network that has only a single connection to a router.
STUN	Serial tunnel. Router feature allowing two SDLC- or HDLC-compliant devices to connect to one another through an arbitrary multiprotocol topology (using Cisco routers) rather than through a direct serial link.
subarea	Portion of an SNA network that consists of a subarea node and any attached links and peripheral nodes.
subarea node	SNA communication controller or host that handles complete network addresses.
subchannel	In broadband terminology, a frequency-based subdivision creating a separate communications channel.
subinterface	One of a number of virtual interfaces on a single physical interface.
subnet	See *subnetwork.*
subnet address	Portion of an IP address that is specified as the subnetwork by the subnet mask. See also *IP address, subnet mask,* and *subnetwork.*
subnet mask	32-bit address mask used in IP to indicate the bits of an IP address that are being used for the subnet address. Sometimes referred to simply as mask. See also *address mask* and *IP address.*

subnetwork	1.) In IP networks, a network sharing a particular subnet address. Subnetworks are networks arbitrarily segmented by a network administrator in order to provide a multilevel, hierarchical routing structure while shielding the subnetwork from the addressing complexity of attached networks. Sometimes called a subnet. See also *IP address, subnet address,* and *subnet mask.* 2.) In OSI networks, a collection of ESs and ISs under the control of a single administrative domain and using a single network access protocol.
Subnetwork Access Protocol	See *SNAP*.
subnetwork point of attachment	See *SNPA*.
Subscriber Network Interface	See *SNI.*
subvector	A data segment of a vector in an SNA message. A subvector consists of a length field, a key that describes the subvector type, and subvector specific data.
supernetting	Aggregating IP network addresses advertised as a single classless network address. For example, given four Class C IP networks---192.0.8.0, 192.0.9.0, 192.0.10.0 and 192.0.11.0---each having the intrinsic network mask of 255.255.255.0, one can advertise the address 192.0.8.0 with a subnet mask of 255.255.252.0.
Super Frame	See *SF*.
supervisory processor	See *RP (Route Processor).*
SURAnet	Southeastern Universities Research Association Network. Network connecting universities and other organizations in the Southeastern United States. SURAnet, originally funded by the NSF and a part of the NSFNET, is now part of BBN Planet. See also *BBN Planet, NSF,* and *NSFNET.*
surge	Any voltage increase above 110 % of the normal voltage carried by a power line. See *sag, spike,* and *oscillation.*
sustainable cell rate	See *SCR.*
SVC	Switched virtual circuit. Virtual circuit that is dynamically established on demand and is torn down when transmission is complete. SVCs are used in situations where data transmission is sporadic. Called a switched virtual connection in ATM terminology. Compare with *PVC.*

switch	1.) Network device that filters, forwards, and floods frames based on the destination address of each frame. The switch operates at the data link layer of the OSI model. 2.) General term applied to an electronic or mechanical device that allows a connection to be established as necessary and terminated when there is no longer a session to support.
switch card	Card on the LightStream 2020 ATM switch that handles communication between the other cards on the switch. Each LightStream 2020 switch has one or two switch cards. The second card, if present, serves as a backup for the first.
switched LAN	LAN implemented with LAN switches. See *LAN switch*.
Switched Multimegabit Data Service	See *SMDS.*
Switched Port Analyzer	See *SPAN.*
switched virtual circuit	See *SVC.*
switched virtual connection	See *SVC.*
Switch Processor	See *SP.*
Switch-to-Switch Protocol	See *SSP.*
SwitchVision	Cisco SNMP-based network management software, running on Microsoft Windows, that offers a powerful set of tools to manage an entire network, including switches, hubs, routers, and bridges. SwitchVision can automatically discover and map any SNMP device on the network and show the status of network devices. SwitchVision allows network administrators to set event thresholds, activate actions when error conditions occur, and set up custom tables and graphs to view critical network variables.
synchronization	Establishment of common timing between sender and receiver.
Synchronous Data Link Control	See *SDLC.*
Synchronous Digital Hierarchy	See *SDH.*
Synchronous Optical Network	See *SONET.*
synchronous transmission	Term describing digital signals that are transmitted with precise clocking. Such signals have the same frequency, with individual characters encapsulated in control bits (called start bits and stop bits) that designate the beginning and end of each character. Compare with *asynchronous transmission*, *isochronous transmission*, and *plesiochronous transmission*.
Synchronous Transport Module level 1	See *STM-1.*

Synchronous Transport Signal level 1	See *STS-1.*
Synchronous Transport Signal level 3, concatenated	See *STS-3c.*
sysgen	System generation. Process of defining network resources in a network.
system generation	See *sysgen.*
System ID	System ID is a NSAP address field that identifies an individual OSI device. In OSI, a device has an address, just as it does in DECnet, while in IP an interface has an address. See also *NSAP Address.*
system services control points	See *SSCP.*
Systems Network Architecture	See *SNA.*

T

Term	Definition
T1	Digital WAN carrier facility. T1 transmits DS-1-formatted data at 1.544 Mbps through the telephone-switching network, using AMI or B8ZS coding. Compare with *E1*. See also *AMI*, *B8ZS*, and *DS-1*.
T3	Digital WAN carrier facility. T3 transmits DS-3-formatted data at 44.736 Mbps through the telephone switching network. Compare with *E3*. See also *DS-3*.
TAC	1.) Terminal Access Controller. Internet host that accepts terminal connections from dialup lines.2.) Technical Assistance Center. Cisco TACs provide technical assistance to partners and end users, and form the hub of Cisco global support.
TACACS	Terminal Access Controller Access Control System. Authentication protocol, developed by the DDN community, that provides remote access authentication and related services, such as event logging. User passwords are administered in a central database rather than in individual routers, providing an easily scalable network security solution. See also *TACACS+*.
TACACS+	Proprietary Cisco enhancement to TACACS. Provides additional support for authentication, authorization, and accounting. See also *TACACS*.
tagged traffic	ATM cells that have their CLP bit set to 1. If the network is congested, tagged traffic can be dropped to ensure delivery of higher-priority traffic. Sometimes called *DE (discard eligible)* traffic. See also *CLP*.
TAXI 4B/5B	Transparent Asynchronous Transmitter/Receiver Interface 4-byte/5-byte. Encoding scheme used for FDDI LANs as well as for ATM. Supports speeds of up to 100 Mbps over multimode fiber. TAXI is the chipset that generates 4B/5B encoding on multimode fiber. See also *4B/5B local fiber*.
T-carrier	TDM transmission method usually referring to a line or cable carrying a DS-1 signal.
TCP	Transmission Control Protocol. Connection-oriented transport layer protocol that provides reliable full-duplex data transmission. TCP is part of the TCP/IP protocol stack. See also *TCP/IP*.
TCP/IP	Transmission Control Protocol/Internet Protocol. Common name for the suite of protocols developed by the U.S. DoD in the 1970s to support the construction of worldwide internetworks. TCP and IP are the two best-known protocols in the suite. See also *IP* and *TCP*.

TCS	Test and control system. Independently-powered subsystem used to initialize, monitor, and troubleshoot the hardware on a LightStream 2020 ATM switch. The TCS consists of a hub residing on the switch card and slaves on NPs and line cards.
TCU	Trunk coupling unit. In Token Ring networks, a physical device that enables a station to connect to the trunk cable.
TDM	Time-division multiplexing. Technique in which information from multiple channels can be allocated bandwidth on a single wire based on preassigned time slots. Bandwidth is allocated to each channel regardless of whether the station has data to transmit. Compare with *ATDM*, *FDM*, and *statistical multiplexing*.
TDR	Time domain reflectometer. Device capable of sending signals through a network medium to check cable continuity, length, and other attributes. TDRs are used to find physical layer network problems.
Technical Assistance Center	See *TAC*.
Technical Office Protocol	See *TOP*.
telco	Abbreviation for telephone company.
telecommunications	Term referring to communications (usually involving computer systems) over the telephone network.
Telecommunications Industry Association	See *TIA*.
telephony	Science of converting sound to electrical signals and transmitting it between widely removed points.
telepole	Telescoping pole with a hook at one end. It is used to get cable across a ceiling or attic quickly.
telex	Teletypewriter service allowing subscribers to send messages over the PSTN.
Telnet	Command used to verify the application layer software between source and destination stations. This is the most complete test mechanism available.
Tempest	U.S. military standard. Electronic products adhering to the Tempest specification are designed to withstand EMP. See also *EMP*.
TERENA	Trans-European Research and Education Networking Association. Organization that promotes information and telecommunications technologies development in Europe. Formed by the merging of EARN and RARE. See also *EARN* and *RARE*.

term ip netmask-format	Command used to specify the format of network masks for the current session.
termid	SNA cluster controller identification. Termid is meaningful only for switched lines. Also called *Xid*.
terminal	Simple device at which data can be entered or retrieved from a network. Generally, terminals have a monitor and a keyboard, but no processor or local disk drive.
Terminal Access Controller	See *TAC*.
Terminal Access Controller Access System	See *TACACS*.
terminal adapter	Device used to connect ISDN BRI connections to existing interfaces such as EIA/TIA-232. Essentially, an ISDN modem.
terminal emulation	Network application in which a computer runs software that makes it appear to a remote host as a directly attached terminal.
terminal server	Communications processor that connects asynchronous devices such as terminals, printers, hosts, and modems to any LAN or WAN that uses TCP/IP, X.25, or LAT protocols. Terminal servers provide the internetwork intelligence that is not available in the connected devices.
terminator	Device that provides electrical resistance at the end of a transmission line to absorb signals on the line, thereby keeping them from bouncing back and being received again by network stations.
test and control system	See *TCS*.
Texas Higher Education Network	See *THEnet*.
TFTP	Trivial File Transfer Protocol. Simplified version of FTP that allows files to be transferred from one computer to another over a network.
TH	Transmission header. SNA header that is appended to the SNA basic information unit (BIU). The TH uses one of a number of available SNA header formats. See also *FID0*, *FID1*, *FID2*, *FID3*, and *FID4*.
THC over X.25	Feature providing TCP/IP header compression over X.25 links, for purposes of link efficiency.
THEnet	Texas Higher Education Network. Regional network comprising over 60 academic and research institutions in the Texas (United States), area.

Thinnet	Term used to define a thinner, less expensive version of the cable specified in the IEEE 802.3 10BASE2 standard. Compare with *Cheapernet*. See also *10BASE2*, *Ethernet*, and *IEEE 802.3*.
throughput	Rate of information arriving at, and possibly passing through, a particular point in a network system.
TIA	Telecommunications Industry Association. Organization that develops standards relating to telecommunications technologies. Together, the TIA and the EIA have formalized standards, such as EIA/TIA-232, for the electrical characteristics of data transmission. See also *EIA*.
TIC	Token Ring interface coupler. Controller through which an FEP connects to a Token Ring.
tie-wraps	Plastic ties used for holding cables together or for holding cables in place.
time-division multiplexing	See *TDM*.
time domain reflectometer	See *TDR*.
time domain reflectometry	Technique of sending an electrical signal down a cable and then timing the signal's reflection back from the end of the cable.
Time Notify	See *TNotify*.
time-out	Event that occurs when one network device expects to hear from another network device within a specified period of time, but does not. The resulting time-out usually results in a retransmission of information or the dissolving of the session between the two devices.
Time To Live	See *TTL*.
TLV	Type, Length, Value (TLV) is in the IS-IS and ES-IS PDUs that contain variable-length fields, depending on the function of the PDU. Each field contains a type code and length, followed by the appropriate values. These fields are identified by one octet of type (T), one octet of length (L) and "L" octets of value (V). The Type field indicates the type of items in the Value field. The Length field indicates the length of the Value field. The Value field is the data portion of the packet. Not all router implementations support all TLVs, but they are required to ignore and retransmit the ignored types.
TN3270	Terminal emulation software that allows a terminal to appear to an IBM host as a 3278 Model 2 terminal. The Cisco TN3270 implementation allows users to access an IBM host without using a special IBM server or a UNIX host acting as a server.

TNotify	Time Notify. Specifies how often SMT initiates neighbor notification broadcasts. See also *SMT*.
token	Frame that contains control information. Possession of the token allows a network device to transmit data onto the network. See also *token passing*.
token bus	LAN architecture using token passing access over a bus topology. This LAN architecture is the basis for the IEEE 802.4 LAN specification. See also *IEEE 802.4*.
token passing	Access method by which network devices access the physical medium in an orderly fashion based on possession of a small frame called a token. Contrast with *circuit switching* and *contention*. See also *token*.
Token Ring	Token-passing LAN developed and supported by IBM. Token Ring runs at 4 or 16 Mbps over a ring topology. Similar to IEEE 802.5. See also *IEEE 802.5*, *ring topology*, and *token passing*.
Token Ring interface coupler	See *TIC*.
Token Ring Interface Processor	See *TRIP*.
Token Talk	Apple Computer's data-link product that allows an AppleTalk network to be connected by Token Ring cables.
TOP	Technical Office Protocol. OSI-based architecture developed for office communications.
topology	Physical arrangement of network nodes and media within an enterprise networking structure.
topology map	Tool for managing a LightStream 2020 ATM switch that examines a network and displays the status of its nodes and trunks. The topology map is an HP OpenView-based application that runs on an NMS.
TOS	Type of service. Field within an IP datagram that indicates how the datagram should be handled. See COS (class of service).
to switch unit	See *TSU*.
total length	Field within an IP datagram that indicates total length of the header + the data.
totally stub area	An area that does not accept external autonomous system (AS) routes and summary routes from other areas internal to the autonomous system. Instead, if the router needs to send a packet to a network external to the area, it sends it using a default route.
TP0	Transport Protocol Class 0. OSI connectionless transport protocol for use over reliable subnetworks. Defined by ISO 8073.

TP4	Transport Protocol Class 4. OSI connection-based transport protocol. Defined by ISO 8073.
trace	Command that uses Time-To-Live (TTL) values to generate messages from each router used along the path. This is very powerful in its ability to locate failures in the path from the source to the destination.
trace route	Program available on many systems that traces the path a packet takes to a destination. It is mostly used to debug routing problems between hosts. There is also a traceroute protocol defined in RFC 1393.
traffic management	See *ControlStream traffic management*.
traffic policing	Process used to measure the actual traffic flow across a given connection and compare it to the total admissable traffic flow for that connection. Traffic outside of the agreed upon flow can be tagged (where the CLP bit is set to 1) and can be discarded en route if congestion develops. Traffic policing is used in ATM, Frame Relay, and other types of networks. Also know as *admission control*, *permit processing*, *rate enforcement*, and *UPC (usage parameter control)*. See also *tagged traffic*.
traffic profile	Set of COS attribute values assigned to a given port on a LightStream 2020 ATM switch. The profile affects numerous parameters for data transmitted from the port including rate, cell drop eligibility, transmit priority, and inactivity timer. See also *COS*.
traffic shaping	Use of queues to limit surges that can congest a network. Data is buffered and then sent into the network in regulated amounts to ensure that the traffic will fit within the promised traffic envelope for the particular connection. Traffic shaping is used in ATM, Frame Relay, and other types of networks. Also known as *metering*, *shaping*, and *smoothing*.
trailer	Control information appended to data when encapsulating the data for network transmission. Compare with *header*.
transaction	Result-oriented unit of communication processing.
transaction services layer	Layer 7 in the SNA architectural model. Represents user application functions, such as spreadsheets, word-processing, or electronic mail, by which users interact with the network. Corresponds roughly with the *application layer* of the OSI reference model. See also *data flow control layer*, *data link control layer*, *path control layer*, *physical control layer*, *presentation services layer*, and *transmission control layer*.
transceiver	See *MAU*.
transceiver cable	See *AUI*.

Trans-European Research and Education Networking Association	See *TERENA*.
transfer priority	See *transmit priority*.
transit bridging	Bridging that uses encapsulation to send a frame between two similar networks over a dissimilar network.
translational bridging	Bridging between networks with dissimilar MAC sublayer protocols. MAC information is translated into the format of the destination network at the bridge. Contrast with *encapsulation bridging*.
transmission control layer	Layer 4 in the SNA architectural model. This layer is responsible for establishing, maintaining, and terminating SNA sessions, sequencing data messages, and controlling session level flow. Corresponds to the *transport layer* of the OSI model. See also *data flow control layer*, *data link control layer*, *path control layer*, *physical control layer*, *presentation services layer*, and *transaction services layer*.
Transmission Control Protocol	See *TCP*.
Transmission Control Protocol/Internet Protocol	See *TCP/IP*.
transmission group	In SNA routing, one or more parallel communications links treated as one communications facility.
transmission header	See *TH*.
transmission link	See *link*.
transmit priority	Queuing scheme in which each internal TOS of a LightStream 2020 ATM switch correlates to a relative priority in queues in the ATM network. This priority determines which traffic is serviced first in the case of contention for a network resource. Also known as *forwarding priority* and *transfer priority*.
TRANSPAC	Major packet data network run by France Telecom.
Transparent Asynchronous Transmitter/Receiver Interface 4-byte/5-byte	See *TAXI 4B/5B*.
transparent bridging	Bridging scheme often used in Ethernet and IEEE 802.3 networks in which bridges pass frames along one hop at a time based on tables associating end nodes with bridge ports. Transparent bridging is so named because the presence of bridges is transparent to network end nodes. Contrast with *SRB*.

transport layer	Layer 4 of the OSI reference model. This layer is responsible for reliable network communication between end nodes. The transport layer provides mechanisms for the establishment, maintenance, and termination of virtual circuits, transport fault detection and recovery, and information flow control. Corresponds to the *transmission control layer* of the SNA model. See also *application layer*, *data link layer*, *network layer*, *physical layer*, *presentation layer*, and *session layer*.
Transport Protocol Class 0	See *TP0*.
Transport Protocol Class 4	See *TP4*.
trap	Message sent by an SNMP agent to an NMS, console, or terminal to indicate the occurrence of a significant event, such as a specifically defined condition or a threshold that has been reached. See also *alarm* and *event*.
tree topology	LAN topology similar to a bus topology, except that tree networks can contain branches with multiple nodes. Transmissions from a station propagate the length of the medium and are received by all other stations. Compare with *bus topology*, *ring topology*, and *star topology*.
TRIP	Token Ring Interface Processor. High-speed interface processor on the Cisco 7000 series routers. The TRIP provides two or four Token Ring ports for interconnection with IEEE 802.5 and IBM Token Ring media with ports independently set to speeds of either 4 or 16 Mbps.
Trivial File Transfer Protocol	See *TFTP*.
trunk	Physical and logical connection between two ATM switches across which traffic in an ATM network travels. An ATM backbone is composed of a number of trunks.
trunk card	Line card on a LightStream 2020 ATM switch that is configured to communicate with other ATM switches. LightStream 2020 trunk cards offer a variety of interface types. CLCs, LSCs, and MSCs can operate as trunk cards. See also *edge card*.
trunk coupling unit	See *TCU*.
trunk up-down	See *TUD*.
TSU	To switch unit. Subsystem on each LightStream 2020 ATM switch line card that appends ATM routing information to outgoing cells and sends the cells to the switch card.
TTL	Time To Live. Field in an IP header that indicates how long a packet is considered valid.
tunneling	Architecture that is designed to provide the services necessary to implement any standard point-to-point encapsulation scheme. See also *encapsulation*.

TUD	Trunk up-down. Protocol used in ATM networks that monitors trunks and detects when one goes down or comes up. ATM switches send regular test messages from each trunk port to test trunk line quality. If a trunk misses a given number of these messages, TUD declares the trunk down. When a trunk comes back up, TUD recognizes that the trunk is up, declares the trunk up, and returns it to service. See also *trunk*.
TUV	German test agency that certifies products to European safety standards.
twisted pair	Relatively low-speed transmission medium consisting of two insulated wires arranged in a regular spiral pattern. The wires can be shielded or unshielded. Twisted pair is common in telephony applications and is increasingly common in data networks. See also *STP* and *UTP*.
two-way simultaneous	See *TWS*.
TWS	Two-way simultaneous. Mode that allows a router configured as a primary SDLC station to achieve better utilization of a full-duplex serial line. When TWS is enabled in a multidrop environment, the router can poll a secondary station and receive data from that station while it sends data to or receives data from a different secondary station on the same serial line.
TYMNET	See *XStream*.
Type 1 operation	IEEE 802.2 (LLC) connectionless operation.
Type 2 operation	IEEE 802.2 (LLC) connection-oriented operation.
type of service	See *TOS*.

U

Term	Definition
UART	Universal Asynchronous Receiver/Transmitter. Integrated circuit, attached to the parallel bus of a computer, used for serial communications. The UART translates between serial and parallel signals, provides transmission clocking, and buffers data sent to or from the computer.
UB Net/One	Ungermann-Bass Net/One. Routing protocol, developed by UB Networks, that uses hello packets and a path-delay metric, with end nodes communicating using the XNS protocol. There are a number of differences between the manner in which Net/One uses the XNS protocol and the usage common among other XNS nodes.
UBR	Unspecified bit rate. QOS class defined by the ATM Forum for ATM networks. UBR allows any amount of data up to a specified maximum to be sent across the network, but there are no guarantees in terms of cell loss rate and delay. Compare with *ABR (available bit rate)*, *CBR*, and *VBR*.
UDP	User Datagram Protocol. Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols. UDP is defined in RFC 768.
UL	Underwriters Laboratories. Independent agency within the United States that tests product safety.
ULP	Upper-layer protocol. Protocol that operates at a higher layer in the OSI reference model, relative to other layers. ULP is sometimes used to refer to the next-highest protocol (relative to a particular protocol) in a protocol stack.
unbalanced configuration	HDLC configuration with one primary station and multiple secondary stations.
Underwriters Laboratories	See *UL*.
Ungermann-Bass Net/One	See *UB Net/One*.
UNI	User-Network Interface. ATM Forum specification that defines an interoperability standard for the interface between ATM-based products (a router or an ATM switch) located in a private network and the ATM switches located within the public carrier networks. Also used to describe similar connections in Frame Relay networks. See also *NNI*, *Q.920/Q.921* and *SNI (Subscriber Network Interface)*.
unicast	Message sent to a single network destination. Compare with *broadcast* and *multicast*.

unicast address	Address specifying a single network device. Compare with *broadcast address* and *multicast address*. See also *unicast*.
uninsured traffic	Traffic within the excess rate (the difference between the insured rate and maximum rate) for a VCC. This traffic can be dropped by the network if congestion occurs. See also *CLP*, *insured rate*, and *maximum rate*.
unipolar	Literally meaning one polarity, the fundamental electrical characteristic of internal signals in digital communications equipment. Contrast with *bipolar*.
unity gain	In broadband networks, the balance between signal loss and signal gain through amplifiers.
Universal Asynchronous Receiver/Transmitter	See *UART*.
Universal Resource Locator	See *URL*.
UNIX	Operating system developed in 1969 at Bell Laboratories. UNIX has gone through several iterations since its inception. These include UNIX 4.3 BSD (Berkeley Standard Distribution), developed at the University of California at Berkeley, and UNIX System V, Release 4.0, developed by AT&T.
UNIX-to-UNIX Copy Program	See *UUCP*.
unnumbered frames	HDLC frames used for various control and management purposes, including link startup and shutdown, and mode specification.
unshielded twisted-pair	See *UTP*.
unspecified bit rate	See *UBR*.
UPC	Usage parameter control. See *traffic policing*.
upper-layer protocol	See *ULP*.
UPS	Uninterruptable power supply. Backup device designed to provide an uninterrupted power source in the event of a power failure. They are commonly installed on all file servers and wiring hubs.
Urgent Pointer	Indicates the end of the urgent data.
URL	Universal Resource Locator. Standardized addressing scheme for accessing hypertext documents and other services using a WWW browser. See also *WWW browser*.
usage parameter control	See *traffic policing*.

USENET	Initiated in 1979, one of the oldest and largest cooperative networks, with over 10,000 hosts and a quarter of a million users. Its primary service is a distributed conferencing service called news.
User Datagram Protocol	See *UDP*.
User-Network Interface	See *UNI*.
UTP	Unshielded twisted-pair. Four-pair wire medium used in a variety of networks. UTP does not require the fixed spacing between connections that is necessary with coaxial-type connections. There are five types of UTP cabling commonly used: *Category 1 cabling*, *Category 2 cabling*, *Category 3 cabling*, *Category 4 cabling*, and *Category 5 cabling*. Compare with *STP*. See also *EIA/TIA-586* and *twisted pair*.
UUCP	UNIX-to-UNIX Copy Program. Protocol stack used for point-to-point communication between UNIX systems.

V

Term	Definition
V.24	ITU-T standard for a physical layer interface between DTE and DCE. V.24 is essentially the same as the EIA/TIA-232 standard. See also *EIA/TIA-232*.
V.25bis	ITU-T specification describing procedures for call setup and tear down over the DTE-DCE interface in a PSDN.
V.32	ITU-T standard serial line protocol for bidirectional data transmissions at speeds of 4.8 or 9.6 Kbps. See also *V.32bis*.
V.32bis	ITU-T standard that extends V.32 to speeds up to 14.4 Kbps. See also *V.32*.
V.34	ITU-T standard that specifies a serial line protocol. V.34 offers improvements to the V.32 standard, including higher transmission rates (28.8 Kbps) and enhanced data compression. Compare with *V.32*.
V.35	ITU-T standard describing a synchronous, physical layer protocol used for communications between a network access device and a packet network. V.35 is most commonly used in the United States and in Europe, and is recommended for speeds up to 48 Kbps.
V.42	ITU-T standard protocol for error correction using LAPM. See also *LAPM*.
variable bit rate	See *VBR*.
variable-length subnet mask	See *VLSM*.
VBR	Variable bit rate. QOS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class. VBR (RT) is used for connections in which there is a fixed timing relationship between samples. VBR (NRT) is used for connections in which there is no fixed timing relationship between samples, but that still need a guaranteed QOS. Compare with *ABR (available bit rate), CBR*, and *UBR*.
VC	See *virtual circuit*.
VCC	Virtual channel connection. Logical circuit, made up of VCLs, that carries data between two end points in an ATM network. Sometimes called a *virtual circuit connection*. See also *VCI*, *VCL*, and *VPI*.

VCI	Virtual channel identifier. 16-bit field in the header of an ATM cell. The VCI, together with the VPI, is used to identify the next destination of a cell as it passes through a series of ATM switches on its way to its destination. ATM switches use the VPI/VCI fields to identify the next network VCL that a cell needs to transit on its way to its final destination. The function of the VCI is similar to that of the DLCI in Frame Relay. Compare to *DLCI*. See also *VCL* and *VPI*.
VCL	Virtual channel link. Connection between two ATM devices. A VCC is made up of one or more VCLs. See also *VCC*.
VCN	Virtual circuit number. 12-bit field in an X.25 PLP header that identifies an X.25 virtual circuit. Allows DCE to determine how to route a packet through the X.25 network. Sometimes called *LCI (logical channel identifier)* or *LCN (logical channel number)*.
vector	Data segment of an SNA message. A vector consists of a length field, a key that describes the vector type, and vector-specific data.
VERS	Version number field with in an IP datagram.
Versatile Interface Processor	See *VIP*.
vertical cabling	Backbone cabling. See *backbone cabling*.
VINES	Virtual Integrated Network Service. NOS developed and marketed by Banyan Systems.
VIP	1.) Versatile Interface Processor. Interface card used in Cisco 7000 and Cisco 7500 series routers. The VIP provides multilayer switching and runs the Cisco IOS software. See also *Cisco 7000* and *Cisco 7500*.2.) Virtual IP. Function that enables the creation of logically separated switched IP workgroups across the switch ports of a Catalyst 5000 running Virtual Networking Services software. See also *Virtual Networking Services*.
virtual address	See *network address*.
virtual channel	See *virtual circuit*.
virtual channel connection	See *VCC*.
virtual channel identifier	See *VCI*.
virtual channel link	See *VCL*.

virtual circuit	Logical circuit created to ensure reliable communication between two network devices. A virtual circuit is defined by a VPI/VCI pair, and can be either permanent (a PVC) or switched (an SVC). Virtual circuits are used in Frame Relay and X.25. In ATM, a virtual circuit is called a *virtual channel*. Sometimes abbreviated *VC*. See also *PVC*, *SVC*, *VCI*, *virtual route*, and *VPI*.
virtual circuit connection	See *VCC*.
virtual circuit number	See *VCN*.
Virtual Integrated Network Service	See *VINES*.
virtual IP	See *VIP*.
virtualization	Process of implementing a network based on virtual network segments. Devices are connected to virtual segments independent of their physical location and their physical connection to the network.
virtual LAN	See *VLAN*.
virtual LAN internetwork	See *VLI*.
Virtual Networking Services	Software on some Catalyst 5000 switches that enables multiple workgroups to be defined across switches and offers traffic segmentation and access control.
virtual path	Logical grouping of virtual circuits that connect two sites. See also *virtual circuit*.
virtual path connection	See *VPC*.
virtual path identifier	See *VPI*.
virtual path identifier/virtual channel identifier	See *VPI/VCI*.
virtual path link	See *VPL*.
virtual ring	Entity in an SRB network that logically connects two or more physical rings together either locally or remotely. The concept of virtual rings can be expanded across router boundaries.
virtual route	In SNA, a logical connection between subarea nodes that is physically realized as a particular explicit route. SNA terminology for virtual circuit. See also *virtual circuit*.
VirtualStream virtual workgroups	Cisco workgroup architecture implemented on the LightStream 2020 ATM switch that allows geographically dispersed stations on connected LANs to be logically grouped. Such grouping provides easy access within the workgroup, while ensuring privacy between workgroups and limiting the impact of the work of each group on the others.

virtual telecommunications access method	See *VTAM*.
Virtual Terminal Protocol	See *VTP*.
VLAN	Virtual LAN. Group of devices on a LAN that are configured (using management software) so that they can communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments. Because VLANs are based on logical instead of physical connections, they are extremely flexible.
VLI	Virtual LAN internetwork. Internetwork composed of VLANs. See *VLAN*.
VLSM	Variable-length subnet mask. Ability to specify a different subnet mask for the same network number on different subnets. VLSM can help optimize available address space.
VNS	See *Virtual Networking Services*.
VPC	Virtual path connection. Grouping of VCCs that share one or more contiguous VPLs. See also *VCC* and *VPL*.
VPI	Virtual path identifier. 8-bit field in the header of an ATM cell. The VPI, together with the VCI, is used to identify the next destination of a cell as it passes through a series of ATM switches on its way to its destination. ATM switches use the VPI/VCI fields to identify the next VCL that a cell needs to transit on its way to its final destination. The function of the VPI is similar to that of the DLCI in Frame Relay. Compare with *DLCI*. See also *VCI* and *VCL*.
VPI/VCI	See *VCI* and *VPI*.
VPL	Virtual path link. Within a virtual path, a group of unidirectional VCLs with the same end points. Grouping VCLs into VPLs reduces the number of connections to be managed, thereby decreasing network control overhead and cost. A VPC is made up of one or more VPLs.
VTAM	Virtual telecommunications access method. Set of programs that control communication between LUs. VTAM controls data transmission between channel-attached devices and performs routing functions.
VTP	Virtual Terminal Protocol. ISO application for establishing a virtual terminal connection across a network. VLAN Trunking Protocol. A Cisco proprietary protocol that uses Layer 2 trunk frames to communicate VLAN information among a group of switches and to manage the addition, deletion, and renaming of VLANs across the network from a central point of control.

W

Term	Definition
WAN	Wide-area network. Data communications network that serves users across a broad geographic area and often uses transmission devices provided by common carriers. Frame Relay, SMDS, and X.25 are examples of WANs. Compare with *LAN* and *MAN*.
watchdog	Watchdog timer manager that runs on the NP of each LightStream 2020 ATM switch in an ATM network. The watchdog process rearms the watchdog timer so that the system automatically restarts if the NP fails. See also *watchdog timer*.
watchdog packet	Used to ensure that a client is still connected to a NetWare server. If the server has not received a packet from a client for a certain period of time, it sends that client a series of watchdog packets. If the station fails to respond to a predefined number of watchdog packets, the server concludes that the station is no longer connected and clears the connection for that station.
watchdog spoofing	Subset of spoofing that refers specifically to a router acting for a NetWare client by sending watchdog packets to a NetWare server to keep the session between client and server active. See also *spoofing*.
watchdog timer	1.) Hardware or software mechanism that is used to trigger an event or an escape from a process unless the timer is periodically reset. See also *watchdog*. 2.) In NetWare, a timer that indicates the maximum period of time that a server will wait for a client to respond to a watchdog packet. If the timer expires, the server sends another watchdog packet (up to a set maximum). See also *watchdog packet*.
waveform coding	Electrical techniques used to convey binary signals.
Weighted fair queuing	A queuing method that prioritizes interactive traffic over file transfers in order to ensure satisfactory response time for common user applications.
wide-area network	See *WAN*.
wideband	See *broadband*.
wildcard mask	32-bit quantity used in conjunction with an IP address to determine which bits in an IP address should be ignored when comparing that address with another IP address. A wildcard mask is specified when setting up access lists.
window	Number of octets that the receiver is willing to accept.

window size	Refers to the number of messages that can be transmitted while awaiting an acknowledgment.
wire map	Feature provided by most cable testers. Used to test twisted pair cable installations, it shows which wire pairs connect to what pins on the plugs and sockets.
wiring closet	Specially designed room used for wiring a data or voice network. Wiring closets serve as a central junction point for the wiring and wiring equipment that is used for interconnecting devices.
WISCNET	TCP/IP network in Wisconsin (United States) connecting University of Wisconsin campuses and a number of private colleges. Links are 56 Kbps and T1.
workgroup	Collection of workstations and servers on a LAN that are designed to communicate and exchange data with one another.
WorkGroup Director	Cisco SNMP-based network-management software tool. Workgroup Director runs on UNIX workstations either as a standalone application or integrated with another SNMP-based network management platform, providing a seamless, powerful management system for Cisco workgroup products. See also *SNMP*.
workgroup switching	Method of switching that provides high-speed (100-Mbps) transparent bridging between Ethernet networks and high-speed translational bridging between Ethernet and CDDI or FDDI.
World Wide Web	See *WWW*.
wrap	Action taken by an FDDI or CDDI network to recover in the event of a failure. The stations on each side of the failure reconfigure themselves, creating a single logical ring out of the primary and secondary rings.
WWW	World Wide Web. Large network of Internet servers providing hypertext and other services to terminals running client applications such as a WWW browser. See also *WWW browser*.
WWW browser	GUI-based hypertext client application, such as Mosaic, used to access hypertext documents and other services located on innumerable remote servers throughout the WWW and Internet. See also *hypertext*, *Internet*, *Mosaic*, and *WWW*.

X

Term	Definition
X.121	ITU-T standard describing an addressing scheme used in X.25 networks. X.121 addresses are sometimes called *IDNs (International Data Numbers)*.
X.21	ITU-T standard for serial communications over synchronous digital lines. The X.21 protocol is used primarily in Europe and Japan.
X.21bis	ITU-T standard that defines the physical layer protocol for communication between DCE and DTE in an X.25 network. Virtually equivalent to EIA/TIA-232. See also *EIA/TIA-232* and *X.25*.
X.25	ITU-T standard that defines how connections between DTE and DCE are maintained for remote terminal access and computer communications in PDNs. X.25 specifies LAPB, a data link layer protocol, and PLP, a network layer protocol. Frame Relay has to some degree superseded X.25. See also *Frame Relay*, *LAPB*, and *PLP*.
X.25 Level 3	See *PLP*.
X.25 Protocol	See *PLP*.
X.28	ITU-T recommendation that defines the terminal-to-PAD interface in X.25 networks. See also *PAD* and *X.25*.
X.29	ITU-T recommendation that defines the form for control information in the terminal-to-PAD interface used in X.25 networks. See also *PAD* and *X.25*.
X.3	ITU-T recommendation that defines various PAD parameters used in X.25 networks. See also *PAD* and *X.25*.
X3T9.5	Number assigned to the ANSI Task Group of Accredited Standards Committee for their internal, working document describing FDDI.
X.400	ITU-T recommendation specifying a standard for electronic mail transfer.
X.500	ITU-T recommendation specifying a standard for distributed maintenance of files and directories.
X.75	ITU-T specification that defines the signalling system between two PDNs. X.75 is essentially an NNI. See also *NNI*.
X Display Manager Control Protocol	See *XDMCP*.
Xerox Network Systems	See *XNS*.

XID	Exchange identification. Request and response packets exchanged prior to a session between a router and a Token Ring host. If the parameters of the serial device contained in the XID packet do not match the configuration of the host, the session is dropped.
Xid	See *termid*.
XDMCP	X Display Manager Control Protocol. Protocol used to communicate between X terminals and workstations running UNIX.
XNS	Xerox Network Systems. Protocol suite originally designed by PARC. Many PC networking companies, such as 3Com, Banyan, Novell, and UB Networks used or currently use a variation of XNS as their primary transport protocol.
XRemote	Protocol developed specifically to optimize support for X Windows over a serial communications link.
XStream	Major public PSN in the United States operated by MCI. Formerly called *TYMNET*.
X terminal	Terminal that allows a user simultaneous access to several different applications and resources in a multivendor environment through implementation of X Windows. See also *X Windows*.
X Windows	Distributed, network-transparent, device-independent, multitasking windowing and graphics system originally developed by MIT for communication between X terminals and UNIX workstations. See also *X terminal*.

Y

Term	Definition
Sorry, there are currently no glossary words beginning with 'Y'.	

Z

Term	Definition
zero code suppression	Line coding scheme used for transmission clocking. Zero line suppression substitutes a one in the seventh bit of a string of eight consecutive zeros. See also *ones density*.
ZIP	Zone Information Protocol. AppleTalk session layer protocol that maps network numbers to zone names. See also *ZIP storm* and *zone*.
ZIP storm	Broadcast storm that occurs when a router running AppleTalk propagates a route for which it currently has no corresponding zone name. The route is then forwarded by downstream routers, and a ZIP storm ensues. See also *ZIP*.
zone	In AppleTalk, a logical group of network devices. See also *ZIP*.
Zone Information Protocol	See *ZIP*.
Zone multicast address	Data-link-dependent multicast address at which a node receives the NBP broadcasts directed to its zone.

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Term	Definition
10BASE2	10-Mbps baseband Ethernet specification using 50-ohm thin coaxial cable. 10BASE2, which is part of the IEEE 802.3 specification, has a distance limit of 185 meters per segment. See also *Cheapernet*, *Ethernet*, *IEEE 802.3*, and *Thinnet*.
10BASE5	10-Mbps baseband Ethernet specification using standard (thick) 50-ohm baseband coaxial cable. 10BASE5, which is part of the IEEE 802.3 baseband physical layer specification, has a distance limit of 500 meters per segment. See also *Ethernet* and *IEEE 802.3*.
10BASE-F	10-Mbps baseband Ethernet specification that refers to the 10BASE-FB, 10BASE-FL, and 10BASE-FP standards for Ethernet over fiber-optic cabling. See also *10BASE-FB*, *10BASE-FL*, *10BASE-FP*, and *Ethernet*.
10BASE-FB	10-Mbps baseband Ethernet specification using fiber-optic cabling. 10BASE-FB is part of the IEEE 10BASE-F specification. It is not used to connect user stations, but instead provides a synchronous signaling backbone that allows additional segments and repeaters to be connected to the network. 10BASE-FB segments can be up to 2000 meters long. See also *10BASE-F* and *Ethernet*.
10BASE-FL	10-Mbps baseband Ethernet specification using fiber-optic cabling. 10BASE-FL is part of the IEEE 10BASE-F specification and, while able to interoperate with FOIRL, is designed to replace the FOIRL specification. 10BASE-FL segments can be up to 1000 meters long if used with FOIRL, and up to 2000 meters if 10BASE-FL is used exclusively. See also *10BASE-F*, *Ethernet*, and *FOIRL*.
10BASE-FP	10-Mbps fiber-passive baseband Ethernet specification using fiber-optic cabling. 10BASE-FP is part of the IEEE 10BASE-F specification. It organizes a number of computers into a star topology without the use of repeaters. 10BASE-FP segments can be up to 500 meters long. See also *10BASE-F* and *Ethernet*.
10BASE-T	10-Mbps baseband Ethernet specification using two pairs of twisted-pair cabling (Category 3, 4, or 5): one pair for transmitting data and the other for receiving data. 10BASE-T, which is part of the IEEE 802.3 specification, has a distance limit of approximately 100 meters per segment. See also *Ethernet* and *IEEE 802.3*.
10Broad36	10-Mbps broadband Ethernet specification using broadband coaxial cable. 10Broad36, which is part of the IEEE 802.3 specification, has a distance limit of 3600 meters per segment. See also *Ethernet* and *IEEE 802.3*.

10 Mbps	Millions of bits per second. A unit of information transfer rate. Ethernet carries 10 mbps.
100BASE-FX	100-Mbps baseband Fast Ethernet specification using two strands of multimode fiber-optic cable per link. To guarantee proper signal timing, a 100BASE-FX link cannot exceed 400 meters in length. Based on the IEEE 802.3 standard. See also *100BASE-X*, *Fast Ethernet*, and *IEEE 802.3*.
100BASE-T	100-Mbps baseband Fast Ethernet specification using UTP wiring. Like the 10BASE-T technology on which it is based, 100BASE-T sends link pulses over the network segment when no traffic is present. However, these link pulses contain more information than those used in 10BASE-T. Based on the IEEE 802.3 standard. See also *10BASE-T*, *Fast Ethernet*, and *IEEE 802.3*.
100BASE-T4	100-Mbps baseband Fast Ethernet specification using four pairs of Category 3, 4, or 5 UTP wiring. To guarantee proper signal timing, a 100BASE-T4 segment cannot exceed 100 meters in length. Based on the IEEE 802.3 standard. See also *Fast Ethernet* and *IEEE 802.3*.
100BASE-TX	100-Mbps baseband Fast Ethernet specification using two pairs of either UTP or STP wiring. The first pair of wires is used to receive data; the second is used to transmit. To guarantee proper signal timing, a 100BASE-TX segment cannot exceed 100 meters in length. Based on the IEEE 802.3 standard. See also *100BASE-X*, *Fast Ethernet*, and *IEEE 802.3*.
100BASE-X	100-Mbps baseband Fast Ethernet specification that refers to the 100BASE-FX and 100BASE-TX standards for Fast Ethernet over fiber-optic cabling. Based on the IEEE 802.3 standard. See also *100BASE-FX*, *100BASE-TX*, *Fast Ethernet*, and *IEEE 802.3*.
100VG-AnyLAN	100-Mbps Fast Ethernet and Token Ring media technology using four pairs of Category 3, 4, or 5 UTP cabling. This high-speed transport technology, developed by Hewlett-Packard, can be made to operate on existing 10BASE-T Ethernet networks. Based on the IEEE 802.12 standard. See also *IEEE 802.12*.
24th channel signaling	See *A&B bit signaling*.
370 block mux channel	See *block multiplexer channel*.
4B/5B local fiber	4-byte/5-byte local fiber. Fiber channel physical media used for FDDI and ATM. Supports speeds of up to 100 Mbps over multimode fiber. See also *TAXI 4B/5B*.
4-byte/5-byte local fiber	See *4B/5B local fiber*.

500-CS	500 series communication server. Cisco multiprotocol communication server that combines the capabilities of a terminal server, a telecommuting server, a protocol translator, and an asynchronous router in one unit.
8B/10B local fiber	8-byte/10-byte local fiber. Fiber channel physical media that supports speeds up to 149.76 Mbps over multimode fiber.
8-byte/10-byte local fiber	See *8B/10B local fiber*.
µ	Micron. See *micron*.