



Numerics

- 10BaseT** 10-Mbps baseband Ethernet specification for using two pairs of twisted-pair cabling (Category 3, 4, or 5): one pair for transmitting data and one pair for receiving data. 10BaseT, which is part of the IEEE 802.3 specification, has a distance limit of approximately 100 meters per segment.
- 100BaseT** 100-Mbps baseband Fast Ethernet specification for unshielded twisted-pair wiring. Based on the IEEE 802.3 standard.

A

- 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 regarding the source-destination timing used, whether they use CBR or BVR, and whether they are used for connection-oriented or connectionless mode data transfer. See *AAL5*.
- AAL5** ATM adaptation layer 5. One of four AALs recommended by the ITU-T. AAL5 supports connection-oriented VBR services, and is used primarily for the transfer of classical IP over ATM and LANE traffic.
- ABR** Available bit rate. QoS class defined by the ATM Forum, which is used for connections that do not require timing relationships between source and destination. ABR offers no guarantees in terms of cell loss or delay, providing only best-effort service.
- ADSL** Asymmetric digital subscriber line. ADSL delivers downstream data at rates ranging from 1.5 Mbps to 9 Mbps, and upstream bandwidth ranges from 16 kbps to 640 kbps. ADSL transmissions work at distances up to 18,000 feet over a single copper twisted pair.
- ATM** Asynchronous Transfer Mode. International standard for cell relay in which multiple service types (such as voice, video, and 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 used in high-speed transmission media such as E3, SONET, and T3.

B

- 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.
- Bellcore** Bell Communications Research, Inc., now known as Telcordia Technologies, Inc. Organization that performs research and development on behalf of the RBOCs and sets telephony standards (in the United States).

B

BITS	Building Integrated Timing Supply. A single building master timing supply that supplies DS1 and DS0 level timing throughout an office.
bootflash	Separate Flash memory device used primarily to store the Cisco IOS boot helper image, operational Cisco IOS images, and system configuration information.
boot helper	For the NSP or the NRP, the boot helper loads a full-function, operational Cisco IOS image. Also referred to as “rxboot.”
BOOTP	Bootstrap protocol. Protocol used by a network node to determine the IP address of its Ethernet interfaces, so that network booting can proceed.

C

CCO	Cisco Connection Online.
Cisco 6400	Cisco 6400 broadband aggregator. An ATM-based multilayer switch/router optimized for aggregating and managing access shelves.
Cisco IOS software	Cisco IOS software allows centralized, integrated, and automated installation and management of internetworks and supports a wide variety of protocols, media, services, and platforms.
CLI	Command-line interface. An interface that allows you to interact with the operating system by entering commands and optional arguments. Compare with <i>GUI</i> .
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.

D

DNS	Domain name server. The part of the distributed database system for resolving a fully qualified domain name into the four-part Internet Protocol (IP) number used to route communications across the Internet.
downlink	A network connection between the Cisco 6400 chassis and an aggregated modem shelf.
DRAM	Dynamic random access (read/write) memory.
DS0	Digital signal level 0. Framing specification used in transmitting digital signals at 64 kbps. Twenty-four DS0s equal one DS1.
DS1	Digital signal level 1. Framing specification used in transmitting digital signals at 1.544 Mbps on a T1 facility. Twenty-four DS0s equal one DS1.
DS3	Digital signal level 3. Framing specification used for transmitting digital signals at 44.736 Mbps on a T3 facility.

D

- DSL** Digital subscriber loop. A public network technology that delivers high bandwidth data transmission over conventional copper wire.
- DUART** Dual Universal Asynchronous Receiver/Transmitter.

E

- E1** Wide-area digital transmission scheme used predominantly in Europe. It carries data at a rate of 2.048 Mbps. Compare with *T1*.
- EHSA** Enhanced high system availability. A processor redundancy scheme that reduces switchover time by requiring that the redundant processor be running in standby mode.
- 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*.
- EMI** Electromagnetic interference. Interference by electromagnetic signals that can cause reduced data integrity and increased error rates on transmission channels.
- ESD** Electrostatic discharge. Discharge of stored static electricity that can damage electronic equipment and impair electrical circuitry, resulting in complete or intermittent failures.
- Ethernet** Baseband LAN specification originated 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*, *10BaseT*, and *Fast Ethernet*.
- ETSI** European Telecommunication Standards Institute. An organization that proposes telecommunication standards for Europe.

F

- Fast Ethernet** Any of a number of 100-Mbps Ethernet specifications. Fast Ethernet offers a speed ten times that of the 10BaseT Ethernet specification, while preserving frame format, MAC mechanisms, and maximum transmission unit (MTU). Based on an extension of the IEEE 802.3 specification. See also *100BaseT*.
- FRU** Field-replaceable unit. Term applied to the Cisco 6400 components that can be replaced in the field, including the NLC, NSP, NRP, and PME units, as well as the blower fans.
- FTP** File Transfer Protocol. The set of standards that allow you to exchange complete files across different computer hosts. Using an FTP client, you can search for files and retrieve them from software archives on the Internet.
- full-duplex** Transmission in two directions simultaneously, or technically, bidirectional, simultaneous two-way communications.

G

Gbps Gigabits per second.

H

half-duplex A circuit designed for data transmission in both directions, but not at the same time.

I

ILMI Interim Local Management Interface. ATM specification for incorporating network-management capabilities into the ATM UNI.

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 over ATM Suite used to send IP datagram packets between nodes on the Internet.

ITU-T International Telecommunication Union Telecommunication Standardization Sector. International body that develops worldwide standards for telecommunications technologies. The ITU-T carries out the functions of the former CCITT.

L

L2TP Layer 2 Tunneling Protocol. Protocol allowing PPP sessions to be tunnelled across an arbitrary medium to a “home gateway” at an ISP or corporation. The Cisco 6400 aggregates user PPP sessions into L2TP tunnels.

LAC L2TP (or local) access concentrator. Aggregates user PPP sessions into L2TP tunnels for transport to upstream LNS. The Cisco 6400 is a LAC.

LED Light emitting diode. Semiconductor device that emits light produced by the conversion of electrical energy. Status lights on hardware devices are typically LEDs.

LNS L2TP Network Server. Device at the ISP or corporation terminating the L2TP tunnels and PPP sessions. May be an NRP or equivalent.

M

- 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.
- 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 through use of SNMP or CMIP commands, usually through a GUI network management system. MIB objects are organized in a tree structure that includes public (standard) and private (proprietary) branches.
- multimode fiber** An optical fiber that provides a transmission medium for multiple lightwaves simultaneously.

N

- NEBS** Network Equipment Building Systems. A standard set of physical and electrical requirements for telecommunications equipment intended for installation in the telephone company Central Office environment. NEBS requirements are specified in various Bellcore documents.
- NLC** Node line card. One of the component cards used in the Cisco 6400 broadband aggregator. These cards provide the interfaces for moving data into and out of the Cisco 6400 system. They can be used as either uplink or downlink interfaces. Different types of line cards support different transmission protocols and data rates.
- NME** Network Management Ethernet. The local area network used to control and manage equipment in a Central Office and branch locations. The NME (ETH) port on the NSP and NRP is an RJ-45 connector for a 10BaseT port.
- NRP** Node route processor. One of the component modules used in the Cisco 6400. This module is the Layer 3 element for the Cisco 6400 responsible for implementing the routing function.
- NSP** Node switch processor. One of the component modules used in the Cisco 6400. This module is responsible for all ATM switching and control functions within the Cisco 6400.
- NVRAM** Nonvolatile RAM. RAM that retains its contents when a unit is powered off.

O

- OAM cell** Operations, Administration, and Maintenance cell. ATM Forum specification for cells used to monitor virtual circuits.
- OC** Optical carrier. A 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 fiber-optic lines at a variety of speeds. The base rate is 51.84 Mbps (OC-1). See also *SONET*, *STS-1*, *STS-3c* and *STS-12c*.

P

- PCMCIA** Personal Computer Memory Card International Association. Refers to a standard used for credit-card sized computer peripherals. Type I devices are very thin memory cards; Type II devices include thicker memory cards, as well as most modems and interfaces; and Type III devices are used for disk drives and thicker components.
- PEM** Power entry module. There are two types of power entry modules, AC PEM and DC PEM.
- The DC PEM filters the incoming –48 VDC to meet EMC requirements. It also provides miswiring protection and internal fault isolation.
- The AC PEM converts the incoming AC power to the correct intermediate DC voltage used by the logic cards and modules within the system. The AC PEM also filters the line cable to meet EMC requirements.**
- ping** Packet internet groper. ICMP echo message and its reply. Often used in IP networks to test whether a network device destination can be reached from the source.
- PNNI**
1. Private Network-Network Interface. ATM Forum specification for distributing topology information among switches and clusters of switches. It is used to compute paths through the network.
 2. Private Network Node Interface. ATM Forum specification for signaling to establish point-to-point and point-to-multipoint connections across an ATM network. The protocol is based on the ATM UNI specification with additional features for source routing, crankback, and alternate routing of call setup requests.
- PPP** Point-to-Point Protocol. Provides host-to-network and switch-to-switch connections over synchronous and asynchronous circuits, allowing one or more user sessions to be tunnelled across a medium. Includes provisions for security and protocol negotiation.
- PSTN** Public Switched Telephone Network. General term referring to the variety of telephone networks and services in place worldwide.
- PVC** Permanent virtual circuit. 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.

Q

- QoS** Quality of service. Measure of performance for a transmission system that reflects its transmission quality and service availability.

R

- ROMMON** Read only memory (ROM) Monitor. Basic system initialization sequence at system power up.

S

SAR	Segmentation and reassembly. One of the two sublayers of the AAL common port convergence sublayer (CPCS). It is 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.
SDH	Synchronous Digital Hierarchy. European standard that defines a set of rate and format standards that are transmitted by means of optical signals over fiber. SDH has a basic rate of 155.52 Mbps, designated as STM-1.
SIMM	Single in-line memory module. Used for DRAM and Flash memory in the Cisco 6400.
single-mode fiber	An optical fiber that provides a transmission medium for one primary light wave mode.
SLIP	Serial Line Interface Protocol. A version of IP that runs over serial links, allowing IP communications over the administrative interface.
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.
SONET	Synchronous Optical Network. SONET is an optical interface standard with transmission rates that range from 51.84 Mbps to 13.22 Gbps. It was created to provide the flexibility needed to transport many digital signals with different capacities, and to provide a design standard for manufacturers. SONET allows interworking of transmission products from multiple vendors.
SRAM	Static random-access memory.
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.
STM-4	Synchronous Transport Module level 4. The SDH format that specifies the frame structure for the 622.08-Mbps lines used to carry ATM cells.
Stratum 3	A precision timing reference that provides a free-run accuracy of +/- 4.6 PPM (parts per million), pull-in capability of 4.6 PPM, and holdover stability of less than 255 slips during first day. Full description can be found in the Bellcore document GR-253-CORE.
Stratum 4	A precision timing reference that provides a free-run accuracy of +/- 32 PPM (parts per million) and pull-in capability of 32 PPM. No holdover stability required. Full description can be found in the Bellcore document GR-253-CORE.
STS-1	Synchronous Transport Signal level 1. Basic building block signal of SONET, operating at 51.84 Mbps.
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.
STS-12c	Synchronous Transport Signal level 12, concatenated. SONET format that specifies the frame structure for the 622.08-Mbps lines used to carry ATM cells.
SVC	Switched virtual circuit. Virtual circuit that is dynamically established on demand and is torn down when transmission is complete. Called a <i>switched virtual connection</i> in ATM terminology.

T

T1	Digital WAN carrier facility. T1 transmits DS1-formatted data at 1.544 Mbps through the telephone switching network, using AMI or B8ZS coding.
T3	Digital WAN carrier facility. T3 transmits DS3-formatted data at 44.736 Mbps through the telephone switching network.
TACACS	Terminal Access Controller Access Control System. Authentication protocol that provides access authentication and related services. User passwords are administered in a central database rather than in individual routers, providing an easily scalable network security solution.
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.
TCP/IP	Transmission Control Protocol/Internet Protocol. Common name for the suite of protocols developed to support the construction of worldwide internetworks.
telco	Abbreviation for telephone company.
Telnet	Standard terminal emulation protocol in the TCP/IP protocol stack. Telnet is used for remote terminal connections, enabling users to log into remote systems and use resources as if they were connected to a local system.
TFTP	Trivial File Transfer Protocol. Simplified version of FTP that allows files to be transferred from one computer to another over a network.
TIA	Telecommunications Industry Association. Organization that develops standards relating to telecommunications technologies. See also <i>EIA</i> .
trunk	Physical and logical connection between two switches across which network traffic travels. A backbone is composed of a number of trunks.
tunneling	Architecture that is designed to provide the services necessary to implement any standard point-to-point encapsulation scheme.

U

UDP	User Datagram Protocol. Enables an application (such as an SNMP agent) on one system to send a datagram to an application (a network management station using SNMP) on another system. It uses IP to deliver datagrams. UDP/IP protocol suites are used by TFTP.
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. UNI versions include UNI3.0, UNI3.1, and UNI4.0.
uplink	A network connection between a system and a WAN. Also known as a trunk.
UTP	Unshielded twisted-pair cable.

V

VCI Virtual channel identifier. The 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.

VPI Virtual path identifier. An 8-bit field in the header of an ATM cell. The VPI, together with the VCI, identifies the next destination of a cell as the cell passes through a series of ATM switches. The function of the VPI is similar to that of the DLCI in Frame Relay.

W

WAN Wide-area network. Data communications network that serves users across a broad geographic area and often uses transmission devices provided by common carriers.

X

xDSL Various types of digital subscriber lines. Examples include ADSL, HDSL, and VDSL.

