A

AAA — Authentication, authorization, and accounting.

Access list — List kept by a router to control access to or from the router for a number of services. For example, access lists can be used to prevent packets with a certain IP address from leaving a particular interface on the router.

Alarm — A status condition that shows that a module or port is experiencing an abnormal operating condition. See also Critical alarm, Major alarm, and Minor alarm.

APS — Automatic protection switching. A SONET switching mechanism that achieves network resiliency by automatically switching from a primary circuit to a secondary circuit. This switching process occurs if the primary circuit fails or if the error rate on the primary line exceeds a set threshold. The Cisco 10000 series ESR supports 1+1 APS, which provides permanent electrical bridging to the service and protection equipment, placed at both ends of the circuit.

B

Bellcore — Bell Communications Research. An organization that performs research and development on behalf of the Regional Bell Operating Companies (RBOCs).

BER — Bit error rate. The ratio of received bits that contain errors to all received bits.

BGP — Border Gateway Protocol. An interdomain routing protocol that replaces EGP. BGP exchanges connection information with other BGP systems. It is defined by RFC 1163.

Bit error rate — See BER.

Border Gateway Protocol — See BGP.

C

CAR — Committed Access Rate. A QoS feature that classifies packets based on such things as access lists, a MAC address, and IP precedence. It measures traffic rates and can be configured to take actions such as dropping packets or changing the ToS value.

C-bit parity — A modification of the M23 framing method for DS3 which frees the C bits for additional uses. See also M23.

CB-WRED Class-based weighted random early detection. Class-based WRED applies WRED to packets in different traffic classes. See also WRED.

Channel Communication path. Multiple channels can be multiplexed over a single cable in certain environments.

Channel service unit See CSU.

Cisco IOS Cisco system software that provides common functionality, scalability, and security for Cisco products. Cisco IOS allows centralized, integrated, and automated installation and management of internetworks, while ensuring support for a wide variety of protocols, media, services, and platforms.

Clear channel DS3 A framed DS3 signal that is not multiplexed from 28 DS1 signals. Sometimes referred to as unchannelized DS3.

CLI Command line interface. Interface that allows the user to interact with the operating system by entering commands and optional arguments at the command prompt.

Command Line Interface See CLI.

Committed access rate See CAR.

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 then compares the calculated remainder to a value stored in the frame by the sending node.

Critical alarm An alarm condition that might affect most or all subscribers that connect to the reporting node. To obtain more information about a problem, use the **show facility-alarm status** command. See also Major alarm and Minor alarm.

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.

Cyclic redundancy check See CRC.

D

Data service unit See DSU.

Differentiated service code point See DSCP.

DS0 Digital signal level 0. Framing specification used in transmitting digital signals over a single channel at 64 kbps on a T1 facility. Compare with DS1 and DS3.

DS1 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 DS0 and DS3.

DS3 Digital signal level 3. Framing specification used for transmitting digital signals at 44.736 Mbps on a T3 facility. Compare with DS0 and DS1.

DSCP Differentiated service code point. Specifies a precedence value for handling packets belonging to the specified class.

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 used with CSU, as in CSU/DSU. See also CSU.

E

Edge Services Router See ESR.

ESF Extended superframe. 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.

ESR Edge Services Router. A router that aggregates traffic from thousands of low- and medium-bandwidth subscriber connections and routes it on a few high-bandwidth connections to the Internet core.

Ethernet Baseband LAN specification. Ethernet networks use CSMA/CD and run over a variety of cable types at 10 Mbps, 100 Mbps, or 1000 Mbps. Ethernet is similar to the IEEE 802.3 series of standards. See also Fast Ethernet, Gigabit Ethernet.

Extended Superframe Format See ESF.

F

Facility data link See FDL.

Fast Ethernet Any of a number of 100 Mbps Ethernet specifications. Fast Ethernet offers a speed increase 10 times that of the 10BaseT Ethernet specification, while preserving qualities such as frame format, MAC mechanisms, and MTU. Existing 10BaseT applications and network management tools can be used on Fast Ethernet networks. The Fast Ethernet specification is based on an extension to the IEEE 802.3 specification. Compare with Ethernet and Gigabit Ethernet.

FDL Facility data link. Embedded communications channel in ESF DS1 framing. Used to convey both bit-oriented and message-oriented signals.

Flash memory Nonvolatile storage that can be electrically erased and reprogrammed so that software images can be stored, booted, and rewritten as necessary. Flash memory was developed by Intel and is licensed to other semiconductor companies.

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.

G

Gigabit Ethernet Gigabit Ethernet. Ethernet running at a transmission speed of 1 billion bits per second.

H

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.

High Level Data Link Control See HDLC.

I

IOS Internet Operating System. See Cisco IOS.

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. Defined in RFC 791.

K

Keepalive message Message sent by one network device to inform another network device that the virtual circuit between the two is still active.

L

LAIS Line Alarm Indication Signal. A SONET port status indicator that activates when an LAIS defect occurs and does not clear throughout the alarm integration period, which is typically 2.5 seconds. An LAIS defect occurs when bits 6, 7, and 8 of the K2 byte are 111 for three consecutive frames. This occurrence begins the alarm integration period. If this period elapses without the detection of three consecutive frames in which K2 bits 6, 7, and 8 show any pattern other than 111, the LAIS indicator activates. The LAIS indicator clears when an LAIS defect does not occur for a time interval equal to the alarm deactivation period (typically 10 seconds).

Line card Any I/O card that can be inserted in a modular chassis.

LOF Loss of Frame. A SONET port status indicator that activates when an LOF defect occurs and does not clear for an interval of time equal to the alarm integration period, which is typically 2.5 seconds. An LOF defect occurs when an out-of-frame (OOF) condition occurs and does not clear for more than 3 microseconds (ms). This occurrence begins the alarm integration period. (OOF occurs when four consecutive frames do not contain a valid frame word. OOF clears when two valid consecutive frames are detected.) The LOF indicator clears when an LOF defect is not detected for a time interval that is equal to the alarm deactivation period (typically 10 seconds).

Loopback test A 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 check network interface usability.

LOS Loss of signal. A SONET port status indicator that activates when an LOS defect occurs and does not clear throughout the alarm integration period, which is typically 2.5 seconds. An LOS defect occurs when the OC-3 port receives all zeros for 20 microseconds (+.3 ms). This occurrence begins the alarm integration period. If this period elapses without the detection of two consecutive frames in which there are no 20-ms periods of signal loss, the LOS indicator activates. The LOS indicator clears when an LOS defect is not detected for an interval equal to the alarm deactivation period (typically 10 seconds).

M

M13 Generic term for equipment that multiplexes DS1s into DS3s. Sometimes used to describe a specific DS3 multiplex format. Some standards use this term to describe a synchronous multiplexing format also know as SYNTRAN. In many cases, however, M13 does not refer to the SYNTRAN format; it refers instead to the format also known as M23.

M23 A method of multiplexing four DS1 signals into a DS2 signal, then multiplexing seven DS2 signals into a DS3 signal.

MAC Media Access Control. The lower of the two sublayers of the data link layer defined by the IEEE. The MAC sublayer handles access to shared media.

MAC address Standardized data link layer address that is required for each 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, MAC-layer address, or physical address.

Maintenance data link See MDL.

Major alarm One of a group of alarm conditions that are considered the second most severe of all reportable alarms. Major alarms affect several subscribers who connect to the reporting node. You can use the **show facility-alarm status** IOS command to obtain more information about the problem. See also Critical alarm and Minor alarm.

Maximum transmission unit See MTU.

MDL Maintenance data link. Embedded communications channel in C-bit parity DS3 framing. Used to convey message-oriented signals.

Minor alarm — One of a group of alarm conditions that are considered the third most severe of all reportable alarms. Minor alarms affect a single or small number of subscribers who connect to the reporting node. You can use the **show facility-alarm status** IOS command to obtain more information about the problem. See also Critical alarm and Major alarm.

MLP — Multilink Point-to-Point Protocol. A method of splitting, recombining, and sequencing datagrams across multiple logical data links.

MTU — Maximum transmission unit. Maximum packet size, in bytes, that a particular interface can handle.

Multilink Point-to-Point — See MLP.

N

NEBS — Network Equipment Building Systems. The Bellcore requirement for equipment deployed in a central office environment. Covers spatial and thermal requirements as well as requirements for hardware, crafts person interface, fire resistance, handling and transportation, earthquake and vibration, airborne contaminants, grounding, acoustical noise, illumination, EMC, and ESD.

Network Equipment Building Systems — See NEBS.

Nonvolatile RAM — See NVRAM.

NVRAM — Nonvolatile RAM. RAM that retains its contents when a unit is powered off.

P

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.

Packet over SONET — See POS.

PCMCIA Flash disk card — A portable (credit-card size), nonvolatile storage device. PCMCIA Flash disk cards use Flash technology to store data. PCMCIA stands for Personal Computer Memory Card International Association, which sets the standard for this technology. Also called PC card.

Performance Routing Engine — See PRE.

Point-to-Point Protocol — See PPP.

POS Packet Over SONET. A high-speed means of transmitting data over a SONET fiber-optic transmission system through a direct fiber connection to a data switch or router. POS is a point-to-point dedicated leased-line approach intended purely for high-speed data applications. POS allows a user organization to pass data in its native format, without the addition of any significant level of overhead in the form of signaling and control information.

PPP Point-to-Point Protocol. Provides router-to-router and host-to-network connections over synchronous and asynchronous circuits.

PRE Performance routing engine. The central routing unit for the Cisco 10000 series ESR. The PRE performs all Layer 2 and Layer 3 packet manipulation related to routing and forwarding through the Cisco 10000 ESR. Dual PREs can be configured in a single chassis for redundancy.

Q

QoS Quality of service. A measure of performance for a transmission system that reflects its transmission quality and service availability.

QoS Policy Propagation on BGP See QPPB.

QPPB QoS Policy Propagation on BGP. A feature involving the classification of packets by IP precedence based on BGP community lists, BGP autonomous system paths, and access lists. After a packet is classified, other quality of service features such as committed access rate (CAR) and weighted random early detection (WRED) can specify and enforce policies to fit a business model.

Quality of Service See QoS.

R

RAM Random-access memory. Volatile memory that can be read and written by a microprocessor.

Random Access Memory See RAM.

Redundancy 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.

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.

S

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 rate of 155.52 Mbps, designated as STM-1. See also SONET and STM-1.

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.

Simple Network Management Protocol See SNMP.

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 SNMP2.

SNMP2 SNMP Version 2. Version 2 of the 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.

SONET Synchronous Optical Network. High-speed synchronous network specification developed by Bellcore and designed to run on optical fiber. STS-1 is the basic building block of SONET. It was approved as an international standard in 1988. See also SDH and STS-1.

SPE Synchronous Payload Envelope. The major portion of the SONET frame format used to carry the STS-1 signal; it is divided into an information payload section and a transport overhead system. SPE is used to address three payload structures: direct to STS-1 line rate muliplexing; asynchronous DS3 multiplexing; and synchronous DS3 multiplexing.

STM-1 Synchronous Transport Module level 1. Basic building block signal of SDH, operating at 155.52 Mbps. Faster SDH rates are defined as STS-*n*, where *n* is a multiple of 155.52 Mbps. See also SDH.

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.

Subrate DS3 A generic term to describe a process in which the bandwidth of a clear channel DS3 is limited to a lower rate. Many proprietary formats exist.

Super Frame See SF.

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 rate of 155.52 Mbps, designated as STM-1. See also SONET and STM-1.

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.

T

T1 Digital WAN carrier facility. T1 transmits DS1-formatted data at 1.544 Mbps through the telephone switching network.

T3 Digital WAN carrier facility. T3 transmits DS3-formatted data at 44.736 Mbps through the telephone switching network.

TAC A Cisco Technical Assistance Center. There are four TACs worldwide.

Telnet Standard terminal emulation protocol in the TCP/IP protocol stack. Telnet is used for remote terminal connection, enabling users to log in to remote systems and use resources as if they were connected to a local system. Telnet is defined in RFC 854.

TFTP Trivial File Transfer Protocol. A simplified version of FTP that allows files to be transferred from one computer to another over a network.

U

Unchannelized DS3 See Clear channel DS3.

V

VT-*n* Virtual tributary level n. The SONET format for mapping a lower-rate signal into a SONET payload. For example, VT-1.5 is used to transport a DS1 signal. See also DS1 and SONET.

W

Weighted Random Early Detection See WRED.

WRED Weighted random early detection. RED uses an algorithm to randomly discard packets.The result of the drop is that the source detects the dropped traffic and slows its transmission. WRED combines the capabilities of the RED algorithm with IP precedence. This combination provides for preferential traffic handling for higher-priority packets. It can selectively discard lower-priority traffic when the interface starts to get congested and provide differentiated performance characteristics for different classes of service.