

ADSL Technology Glossary

address mask

A bit mask used to select bits from an Internet address for subnet addressing. The mask is 32 bits long and selects the network portion of the Internet address and one or more bits of the local portion. Sometimes called subnet mask.

AAL5

ATM Adaption Layer. This layer maps higher layer user data into ATM cells, making the data suitable for transport through the ATM network.

ADSL

Asymmetric Digital Subscriber Line. A digital subscriber line (DSL) technology in which the transmission of data from server to client is much faster than the transmission from the client to the server.

ADSLAM

Advanced Digital Subscriber Line Access Multiplexer. Concentrates and multiplexes signals at the telephone service provider location to the broader wide area network.

ATM

Asynchronous Transfer Mode. A cell-based data transfer technique in which channel demand determines packet allocation. ATM offers fast packet technology, real time, demand led switching for efficient use of network resources.

authentication

A security feature that allows access to information to be granted on an individual basis.

auto-negotiation

Procedure for adjusting line speeds and other communication parameters automatically between two computers during data transfer.

AWG

American Wire Gauge. The measurement of thickness of a wire.

bandwidth

The range of frequencies a transmission line or channel can carry: the greater the bandwidth, the greater the information-carrying capacity of a channel. For a digital channel this is defined in bits. For an analog channel it is dependent on the type and method of modulation used to encode the data.

bandwidth on demand

The ability of a user to dynamically set upstream and downstream line speeds to a particular rate of speed.

bps

Bits per second. A standard measurement of digital transmission speeds.

bridge

A device that connects two or more physical networks and forwards packets between them. Bridges can usually be made to filter packets, that is, to forward only certain traffic. Related devices are: repeaters which simply forward electrical signals from one cable to the other, and full-fledged routers which make routing decisions based on several criteria. See repeater and router.

broadband

Characteristic of any network that multiplexes independent network carriers onto a single cable. This is usually done using frequency division multiplexing (FDM). Broadband technology allows several networks to coexist on one single cable; traffic from one network does not interfere with traffic from another since the “conversations” happen on different frequencies in the “ether” rather like the commercial radio system.

Broadband Remote Access Server

Device that terminates remote users at the corporate network or Internet users at the Internet Service Provider (ISP) network, such as the Cisco FireRunner product that provides firewall, authentication, and routing services for remote users.

broadcast

A packet delivery system where a copy of a given packet is given to all hosts attached to the network. Example: Ethernet.

CAP encoding

Carrierless Amplitude Modulation and Phase. A modulation technology for ADSL.

central office

Refers to equipment located at a Telco or service provider's office.

customer premise

Refers to equipment located in a user's premises.

downstream rate

The line rate for return messages or data transfers from the network machine to the user's customer's premise machine.

DRAM

Dynamic Random Access Memory. A type of semiconductor memory in which the information is stored in capacitors on a metal oxide semiconductor integrated circuit.

DSLAM

Digital Subscriber Line Access Multiplexer.

encapsulation

The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the physical layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), followed by the application protocol data.

Ethernet

One of the most common local area network (LAN) wiring schemes, Ethernet has a transmission rate of 10 Mbps; a newer standard called Fast Ethernet will carry 100 Mbps.

FCC

Federal Communications Commission. A U.S. government agency that regulates interstate and foreign communications. The FCC sets rates for communication services,

FTP

File Transfer Protocol. The Internet protocol (and program) used to transfer files between hosts.

hop count

A measure of distance between two points on the Internet. It is equivalent to the number of gateways that separate the source and destination.

HTML

Hypertext Markup Language. The page-coding language for the World Wide Web.

HTML browser

A browser used to traverse the Internet, such as Netscape or Microsoft Internet Explorer.

http

Hypertext Transfer Protocol. The protocol used to carry world-wide web (www) traffic between a www browser computer and the www server being accessed.

ICMP

Internet Control Message Protocol. The protocol used to handle errors and control messages at the IP layer. ICMP is actually part of the IP protocol.

Internet address

An IP address assigned in blocks of numbers to user organizations accessing the Internet. These addresses are established by the United States Department of Defense's Network Information Center. Duplicate addresses can cause major problems on the network, but the NIC trusts organizations to use individual addresses responsibly. Each address is a 32-bit address in the form of x.x.x.x where *x* is an eight-bit number from 0 to 255. There are three classes: A, B and C, depending on how many computers on the site are likely to be connected.

Internet

A collection of networks interconnected by a set of routers which allow them to function as a single, large virtual network. When written in upper case, Internet refers specifically to the DARPA (Defense Advanced Research Projects Agency) Internet and the TCP/IP protocols it uses.

Internet Protocol (IP)

The network layer protocol for the Internet protocol suite.

IP

See Internet Protocol.

IP address

The 32-bit address assigned to hosts that want to participate in a TCP/IP Internet.

IP datagram

The fundamental unit of information passed across the Internet. It 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 say whether the datagram can be or has been fragmented.

ISO

International Standards Organization. A voluntary, non-treaty organization founded in 1946, responsible for creating international standards in many areas, including computers and communications.

ISP

Internet Service Provider. A company that allows home and corporate users to connect to the Internet.

ITU-T

International Telecommunications Union, Standardization Sector. ITU-T is the telecommunication standardization sector of ITU and is responsible for making technical recommendations about telephone and data (including fax) communications systems for service providers and suppliers.

LAN

Local Area Network. A limited distance (typically under a few kilometers or a couple of miles) high-speed network (typically 4 to 100 Mbps) that supports many computers (typical two to thousands).

LED

Light Emitting Diode. The lights indicating status or activity on electronic equipment.

line rate

The speed by which data is transferred over a particular line type, express in bits per second (bps).

logical port

A logical entry to a server machine. These ports are mostly invisible to the user, though you may occasionally see a URL with a port number included in it. These ports do not refer to physical locations; they are set up by server administrators for network trafficking.

loopback

A diagnostic test that returns the transmitted signal back to the sending device after it has passed through a network or across a particular link. The returned signal can then be compared to the transmitted one. The discrepancy between the two help to trace the fault. When trying to locate a faulty piece of equipment, loopbacks will be repeated, eliminating satisfactory machines until the problem is found.

MAC

Media Access Control Layer. A sub-layer of the Data Link Layer (Level Two) of the ISO OSI Model responsible for media control.

MIB

Management Information Base. A collection of objects that can be accessed via a network management protocol, such as SNMP and CMIP (Common Management Information Protocol).

modem pooling

The ability of a service provider to dynamically switch users' messages between modems, rather than requiring a modem to be dedicated to a particular user on a network.

multiplexer

A device that can send several signals over a single line. They are then separated by a similar device at the other end of the link. This can be done in a variety of ways: time division multiplexing, frequency division multiplexing and statistical multiplexing. Multiplexers are also becoming increasingly efficient in terms of data compression, error correction, transmission speed and multi-drop capabilities.

NAT

Network Address Translation.

network layer

The OSI layer that is responsible for routing, switching, and subnetwork access across the entire OSI environment.

node

A general term used to refer to a computer or related device; often used to refer to a networked computer or device.

NVT

Network Virtual Terminal.

octet

A networking term that identifies 8 bits. In TCP/IP, it is used instead of *byte*, because some systems have bytes that are not 8 bits.

OSI

Open Systems Interconnection. An international standardization program to facilitate communications among computers from different manufacturers. See ISO.

packet

The unit of data sent across a packet switching network.

PAP

Password Authentication Protocol.

PCI

Peripheral Component Interconnect. An industry local bus standard. Supports up to 16 physical slots but is electrically limited to typically three or four plug-in PCI cards in a PC. Has a typical sustained burst transfer rate of 80 Mbs, which is enough to handle 24-bit color at 30 frames per second (full-color, full-motion video).

Permanent Virtual Connection (PVC)

A fixed virtual circuit between two users: the public data network equivalent of a leased line. No call setup or clearing procedures are needed.

physical layer

Handles transmission of raw bits over a communication channel. The physical layer deals with mechanical, electrical, and procedural interfaces.

physical port

A physical connection to a computer through which data flows. An “Ethernet port”, for example, is where Ethernet network cabling plugs into a computer.

port

The abstraction used by Internet transport protocols to distinguish among multiple simultaneous connections to a single destination host. See selector.

POTS

Plain Old Telephone Service.

PPP

Point-To-Point-Protocol. The successor to SLIP, PPP provides router-to-router and host-to-network connections over both synchronous and asynchronous circuits. See SLIP.

protocol

A formal description of messages to be exchanged and rules to be followed for two or more systems to exchange information.

PVC

See Permanent Virtual Connection.

RADIUS

Remote Authentication Dial-In User Service (RADIUS). A client/server security protocol created by Livingston Enterprises. Security information is stored in a central location, known as the RADIUS server.

RADIUS Accounting Client

Permits system administrators to track dial-in use.

RADIUS Security Client

Controls access to specific services on the network.

RADSL

Rate Adaptive Digital Subscriber Line (RADSL). A technique for keeping the quality of transmissions within specified parameters.

remote address

The IP address of a remote server.

remote server

A network computer that allows a user to log onto the network from a distant location.

RFC

Request for Comment. The document series, begun in 1969, which describes the Internet suite of protocols and related experiments. Not all RFCs describe Internet standards, but all Internet standards are written up as RFCs.

route

The path that network traffic takes from its source to its destination. The route a datagram may follow can include many gateways and many physical networks. In the Internet, each datagram is routed separately.

router

A system responsible for making decisions about which of several paths network (or Internet) traffic will follow. To do this, it uses a routing protocol to gain information about the network and algorithms to choose the best route based on several criteria known as "routing metrics." See bridge and repeater.

routing table

Information stored within a router that contains network path and status information. It is used to select the most appropriate route to forward information along.

RS-232

An EIA standard which is the most common way of linking data devices together.

secret

It is the encryption key used by RADIUS to send authentication information over a network.

serial line

A serial line is used to refer to data transmission over a telephone line via a modem or when data goes from a computer to a printer or other device.

shared secret

RADIUS uses the shared secret to encrypt the passwords in the authentication packets, so outside parties do not have access to the passwords on your network.

SNMP

Simple Network Management Protocol. The network management protocol of choice for TCP/IP-based internets.

socket

- (1) The Berkeley Unix mechanism for creating a virtual connection between processes.
- (2) IBM term for software interfaces that allow two Unix application programs to talk via TCP/IP protocols.

Spanning-Tree Bridge Protocol (STP)

Spanning-Tree Bridge Protocol (STP). Part of an IEEE standard. A mechanism for detecting and preventing loops from occurring in a multi-bridged environment. When three or more LAN segments are connected by bridges, a loop can occur. Because a bridge forwards all packets which are not recognized as being local, some packets can circulate for long periods of time, eventually degrading system performance. This algorithm ensures only one path connects any pair of stations, selecting one bridge as the 'root' bridge, with the highest priority one as identifier, from which all paths should radiate.

spoofing

A method of fooling network end stations into believing that keep-alive signals have come from and return to the host. Polls are received and returned locally at either end of the network and are transmitted only over the open network if there is a condition change.

STP

See Spanning-Tree Bridge Protocol.

subnet

For routing purposes, IP networks can be divided into logical sub nets by using a subnet mask. Values below those of the mask are valid addresses on the subnet.

subnet mask

See address mask.

synchronous connection

During synchronous communications, data is not sent in individual bytes, but as frames of large data blocks.

SYSLOG

SYSLOG allows you to log significant system information to a remote server.

TCP

Transmission Control Protocol. The major transport protocol in the Internet suite of protocols providing reliable, connection-oriented full-duplex streams.

TFTP

Trivial File Transfer Protocol. A simple file transfer protocol (a simplified version of FTP) that is often used to boot diskless workstations and other network devices such as routers over a network (typically a LAN). Has no password security.

Telnet

The virtual terminal protocol in the Internet suite of protocols. Allows users of one host to log into a remote host and act as normal terminal users of that host.

training mode

Characteristic of a router that allows it to use RADSLS technology to adjust its line speed according to noise conditions on the transmission line.

transparent bridging

So named because the intelligence necessary to make relaying decisions exists in the bridge itself and is thus transparent to the communicating workstations. It involves frame forwarding, learning workstation addresses and ensuring no topology loops exist (in conjunction with the Spanning-Tree algorithm).

Trivial File Transfer Protocol (TFTP)

See TFTP.

twisted pair

Two insulated copper wires twisted together with the twists or lays varied in length to reduce potential signal interference between the pairs.

UDP

User Datagram Protocol. A connectionless transport protocol that runs on top of TCP/IP's IP. UDP, like TCP, uses IP for delivery; however, unlike TCP, UDP provides for exchange of datagrams without acknowledgments or guaranteed delivery. Best suited for small, independent requests, such as requesting a MIB value from an SNMP agent, in which first setting up a connection would take more time than sending the data.

UL

Underwriters Laboratories. A private organization that tests and certifies electrical components and devices against rigorous safety standards. A UL Listing Mark on a product means that representative samples of the product have been tested and evaluated to nationally recognized safety standards with regard to fire, electric shock, and other related safety hazards.

UNI signaling

User Network Interface signaling for ATM communications.

upstream rate

The line rate for message or data transfer from the source machine to a destination machine on the network. Also see downstream rate.

VC

See Virtual Connection.

Virtual Connection (VC)

A link that seems and behaves like a dedicated point to point line or a system that delivers packets in sequence, as happens on an actual point to point network. In reality, the data is delivered across a network via the most appropriate route. The sending and receiving devices do not have to be aware of the options and the route is chosen only when a message is sent. There is no pre-arrangement, so each virtual connection exists only for the duration of that one transmission.

WAN

Wide Area Network. A data communications network that spans any distance and is usually provided by a public carrier (such as a telephone company or service provider).

