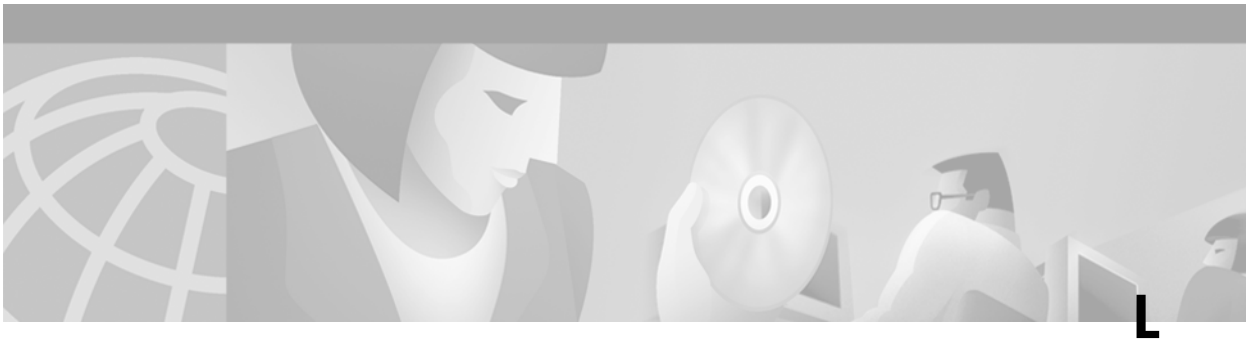

L2F Protocol

Layer 2 Forwarding Protocol. Protocol that supports the creation of secure virtual private dial-up networks over the Internet.

L2TP session

Communications transactions between the LAC and the LNS that support tunneling of a single PPP connection. There is a one-to-one relationship among the PPP connection, L2TP session, and L2TP call.

LAA

Longest Available Agent. The agent that has been continuously in the Available state for the longest time. The ICM can examine services or skill groups from different peripherals and route a call to the service or group with the longest available agent. (This feature is not supported on Rockwell ACDs.)

label

A short fixed-length label that tells switching nodes how the data (packets or cells) should be forwarded.

label controlled switch

The label switch controller and the controlled ATM switch that it controls, viewed together as a unit.

label imposition

The act of putting the first label on a packet.

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.

label switch

A node that forwards units of data (packets or cells) on the basis of labels.

LAC

L2TP access concentrator. A node that acts as one side of an L2TP tunnel endpoint and is a peer to the L2TP network server (LNS). The LAC sits between an LNS and a remote system and forwards packets to and from each. Packets sent from the LAC to the LNS require tunneling with the L2TP protocol as defined in this document. The connection from the LAC to the remote system is either local or a PPP link.

laddr

local address. Address of a host on a protected interface.

lambda

The 11th letter of the Greek alphabet. Lambda is used as the symbol for wavelength in lightwave systems.

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*.

LAN emulation

See *LANE*.

LAN Emulation Client

See *LEC*.

LAN Emulation Configuration Server

See *LECS*.

LAN Emulation Server

See *LES*.

LAN Manager

Distributed NOS, developed by Microsoft, that supports a variety of protocols and platforms. See also *NOS*.

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 often are 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. Compare with *multilayer switch*. See also *cut-through packet switching* and *store and forward packet switching*.

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*.

LANE UNI

LANE User-Network Interface.

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 more than 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 a device receives a frame and the time that frame is forwarded out the destination port.

Layer 2 Tunnel Protocol (L2TP)

An Internet Engineering Task Force (IETF) standards track protocol defined in RFC 2661 that provides tunneling of PPP. Based upon the best features of L2F and PPTP, L2TP provides an industry-wide interoperable method of implementing VPDN.

Layer 3 Switching

Emerging Layer 3 switching technology that integrates routing with switching to yield very high routing throughput rates in the millions-of-packets- per-second range. The movement to Layer 3 switching is designed to address the downsides of the current generation of Layer 2 switches, which functionally are equivalent to bridges. These downsides for a large, flat network include being subject to broadcast storms, spanning tree loops, and address limitations.

LBR

label bit rate. Service category defined by this document for label VC traffic. Link and per-VC bandwidth sharing can be controlled by relative bandwidth configuration at the edge and each switch along a label VC. No ATM traffic-related parameters are specified.

LC-ATM interface

label-controlled ATM interface. An MPLS interface in which labels are carried in the VPI or VCI fields of the ATM cells and in which VC connections are established under the control of MPLS software.

LCD

liquid crystal display. An alphanumeric display on computers and fax devices using liquid crystal sealed between two pieces of glass.

LCI

logical channel identifier. See also *VCN*.

LCN

logical channel number. See also*VCN*.

LCP

link control protocol. Protocol that establishes, configures, and tests data-link connections for use by PPP. See also *PPP*.

LCV

line code violation. Occurrence of a BPV or EXZ error event.

LDAP

Lightweight Directory Access Protocol. Protocol that provides access for management and browser applications that provide read/write interactive access to the X.500 Directory.

LDCELP

low-delay CELP. CELP voice compression algorithm providing 16 kbps, or 4:1 compression. Standardized in ITU-T Recommendation G.728.

LDIF

LDAP Data Interchange Format. An LDAP server interchange format in which each record's field value is on a separate line and records are separated by an empty line.

LDP

label distribution protocol. A standard protocol between MPLS-enabled routers to negotiate the labels (addresses) used to forward packets. This protocol is not supported in Cisco IOS Release 12.0. The Cisco proprietary version of this protocol is the Tag Distribution Protocol (TDP).

LE_ARP

LAN Emulation Address Resolution Protocol. Protocol that provides the ATM address that corresponds to a MAC address.

leaf internetwork

In a star topology, an internetwork whose sole access to other internetworks in the star is through a core router.

leaky bucket

In ATM, a metaphor for the GCRA, which is used for conformance checking of cell flows from a user or a network. The hole in the bucket represents the sustained rate at which cells can be accommodated, and the bucket depth represents the tolerance for cell bursts over a period of time. See also *GCRA*.

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. local exchange carrier. A telephone company that provides customer access to the world-wide public switched network through one of its central offices.

2. 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. An 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*.

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 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.

LFI

low-speed link features.

LFIB

label forwarding information base. A data structure and way of managing forwarding in which destinations and incoming labels are associated with outgoing interfaces and labels.

LFSR

linear feedback shift register. Mechanism for generating a sequence of binary bits. The register consists of a series of cells that are set by an initialization vector that is, most often, the secret key. The behavior of the register is regulated by a clock. At each clocking instant, the contents of the cells of the register are shifted right by one position, and the exclusive-or of a subset of the cell contents is placed in the leftmost cell. One bit of output usually is derived during this update procedure.

LGN

logical group node. The node that represents its peer group in the peer group's parent peer group. See also *parent peer group* and *peer group*.

license

Purchased right to transmit RF waves over a given BTA for typically periods of 10 years. The license tightly governs the design parameters of an RF system and its use. RF licenses typically are purchased from the FCC on an auction basis.

The FCC provides licenses to ensure maximum competition in a free market (although this is not always obvious in the way the FCC manages the auctions) and spectral efficiency, which is another way of stating efficient use of the RF spectrum.

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

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

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 *HDB3*.

line code violation

See *LCV*.

line conditioning

Use of equipment on leased voice-grade channels to improve analog characteristics, thereby allowing higher transmission rates.

line driver

Inexpensive amplifier and signal converter that conditions digital signals to ensure reliable transmissions over extended distances.

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-terminating equipment

See LTE.

link

1. 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.

2. In the context of a transmission network, a link is a point-to-point connection between adjacent nodes, such as two Cisco ONS 15900s. There can be more than one link between adjacent nodes.

link layer

See ***data-link layer***.

link-by-link encryption

Stepwise protection of data that flows between two points in a network, provided by encrypting data separately on each network link, that is, by encrypting data when it leaves a host or subnetwork relay and decrypting when it arrives at the next host or relay. Each link can use a different key or even a different algorithm.

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 therefore are not prone to routing loops; however, 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*.

LIS

logical IP subnet. A group of IP nodes (such as hosts and routers) that connects to a single ATM network and belongs to the same IP subnet.

listserv

Automated mailing list distribution system originally designed for the Bitnet/EARN network. Allows users to add or delete themselves from mailing lists without (other) human intervention.

little-endian

Method of storing or transmitting data in which the least significant bit or byte is presented first. Compare with *big-endian*.

LLAP

LocalTalk Link Access Protocol. Link-level protocol that manages node-to-node delivery of data on a LocalTalk network. LLAP manages bus access, provides a node-addressing mechanism, and controls data transmission and reception, ensuring packet length and integrity. See also *LocalTalk*.

LLC

Logical Link Control. The 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*.

LM/X

LAN Manager for UNIX. Monitors LAN devices in UNIX environments.

LMDS

Local Multipoint Distribution Service; a relatively low power license for broadcasting voice, video, and data. There are typically two licenses granted in three frequencies, each to separate entities within a BTA. These licenses are known as Block A or Block B licenses. Block A licenses operate from 27.5 to 28.35 GHz, 29.10 to 29.25 GHz, and 31.075 to 31.225 GHz for a total of 1.159 MHz of bandwidth. Block B licenses operate from 31.00 to 31.075 GHz and 31.225 to 31.300 for a total of 150 MHz of bandwidth. LMDS systems have a typical maximum transmission range of approximately 3 miles as opposed to the transmission range of an MMDS system, which is typically 25 miles. This difference in range is primarily a function of physics and FCC allocated output power rates.

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 *LMT* in the "Cisco Systems Terms and Acronyms" section.

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.

LNNI

LAN Emulation Network-to-Network Interface. Supports communication between the server components within a single ELAN. Phase 1 LANE protocols do not allow for the standard support of multiple LESs or BUSs within an ELAN. Phase 2 addresses these limitations.

LNS

L2TP network server. A node that acts as one side of an L2TP tunnel endpoint and is a peer to the L2TP access concentrator (LAC). The LNS is the logical termination point of a PPP session that is being tunneled from the remote system by the LAC. Analogous to the Layer 2 Forwarding (L2F) home gateway (HGW).

load balancing

In routing, the capability 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 use 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 address

See *laddr*.

local adjacency

See *local adjacency* in the "Cisco Systems Terms and Acronyms" section.

local area network

See *LAN*.

local bridge

Bridge that directly interconnects networks in the same geographic area.

local exchange carrier

See *LEC*.

local explorer packet

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 *LMDS*.

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*.

LocalTalk

Apple Computer's proprietary baseband protocol that operates at the data link and physical layers of the OSI reference model. LocalTalk uses CSMA/CD and supports transmissions at speeds of 230.4 kbps.

LocalTalk Link Access Protocol

See *LLAP*.

location server

A SIP redirect or proxy server uses a location service to get information about the location of a caller. Location services are offered by location servers.

LOCD

loss of cell delineation. A SONET port status indicator that activates when an LOCD defect occurs and does not clear for an interval of time equal to the alarm integration period, which is typically 2.5 seconds.

Lock-and-key

Lock-and-key is a traffic filtering security feature that dynamically filters IP protocol traffic.

LOF

loss of frame. LOF is a generic term with various meanings depending on the signal standards domain in which it's being used.

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.

logic bomb

Malicious logic that activates when specified conditions are met. Usually intended to cause denial of service or otherwise damage system resources.

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.

loop

Route where packets never reach their destination, but simply cycle repeatedly through a constant series of network nodes.

loop start

A method of signaling where a DC closure is applied to a phone line (loop), and the start of DC current flow indicates a change from on-hook to off-hook.

loopback test

Test in which signals are sent and then directed back toward their source from some point along the communications path. Loopback tests often are used to test network interface usability.

loop-start trunk

A two-wire central-office trunk or dial-tone line that recognizes offhook status when a telephone switch hook puts a 1000-ohm short across the tip and ring as the handset is lifted. Also called *POTS line* and *plain-service line*.

LOP

loss of pointer. Failure state in the SONET signal where a receiving network cannot identify/lock on the pointer value of the H1 and H2 bytes to show the location of SPE.

LOS

1. loss of signal. A loss of signal occurs when *n* consecutive zeros is detected on an incoming signal.

2. line of sight. Refers to the fact that there must be a clear, unobstructed path between the transmitters and receivers. This is essential for our LMDS products and enhances general performance in every RF deployment as opposed to partial or completely obstructed data paths. The opposite to LOS is NLOS, or Non Line of Sight.

loss of frame

See LOF.

loss of pointer

See LOP.

loss of signal

See LOS.

lossy

Characteristic of a network that is prone to lose packets when it becomes highly loaded.

low-entry networking node

See *LEN node*.

LPD

line printer daemon. Protocol used to send print jobs between UNIX systems.

LR

long reach. The distance specification for optical systems that operate effectively from 20 to 100 km (12.5 to 62 mi).

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 an *LSP*.

LSB

least significant bit. Bit zero, the bit of a binary number giving the number of ones, the last or rightmost bit when the number is written in the usual way.

LSC

1. label switch controller. Controller that creates cross-connects in an ATM switch so that labeled packets are forwarded through the switch, formerly referred to as Tag Switch Controller (TSC).

2. link state control. SS7 MTP 2 function that provides the overall coordination of a session.

LSP

link-state packet. See also *LSA*.

LSP tunnel

label switched path tunnel. A configured connection between two routers that uses MPLS to carry the packets.

LSR

label switch router. The role of an LSR is to forward packets in an MPLS network by looking only at the fixed-length label.

LSSU

link status signal unit. SS7 message that carries one or two octets (8-bit bytes) of link status information between signalling points at either end of a link. It is used to control link alignment and to provide the status of a signalling point (such as a local processor outage) to the remote signalling point.

LTE

line-terminating equipment. Network elements that originate and/or terminate line (OC-*n*) signals. LTEs originate, access, modify, and/or terminate the transport overhead.

LU

logical unit. Primary component of SNA, an NAU that enables end users to communicate with each other and to 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*.

LUNI

LAN Emulation User-to-Network Interface. The ATM Forum standard for LAN emulation on ATM networks. Defines the interface between the LEC and the LAN Emulation Server components. See also *BUS*, *LES*, and *LECS*.

LVC

label switched controlled virtual circuit. A virtual circuit (VC) established under the control of MPLS. An LVC is neither a PVC nor an SVC. The LVC must traverse only a single hop in a label-switched path (LSP) but the LVC can traverse several ATM hops only if the LVC exists within a VP tunnel.