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*.

Password Authentication Protocol
See *PAP*.

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)* .

ping
packet internet groper. ICMP echo message and its reply. Often used to test the reachability of a network device.

ping-ponging
Phrase used to describe the actions of a packet in a two-node routing loop.

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 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. Physical access point to a long distance carrier interchange.

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.

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
Formal description of a set of rules and conventions that govern how devices on a network exchange information.

protocol address
See *network address*.

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*.

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*.

pulse amplitude modulation
See *PAM*.

pulse code modulation
See *PCM*.

pulse density
See *ones density*.

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*.