



Appendix D

Glossary

acknowledgment Notification sent by a receiver to indicate successful reception of information. Acknowledgments can occur at any level. Sometimes called an *ACK*.

Address Resolution Protocol (ARP) A protocol that provides a dynamic mapping from the IP address at the network layer to the physical address at the link layer. See also *Reverse Address Resolution Protocol*.

antenna A device that collects or emits radiated waves.

antenna gain A measure of the efficiency (or merit) of a specific antenna compared with that of a standard reference antenna. The efficiency is measured in terms of the power radiated or received in a given direction as compared with the standard under the same conditions.

application layer The top layer in the TCP/IP protocol suite, this layer provides application services to users and programs. Telnet, FTP, and SNMP are examples of user applications.

ARP See *Address Resolution Protocol*.

autonomous system A collection of routers under a common administration sharing a common routing strategy.

bandpass filter An RF filter that reduces or eliminates signals outside of a range of frequencies. This filter passes a band of frequencies, while attenuating all others.

bit error rate (BER) The measure of the frequency of errors in a digital transmission.

cable loss The amount of signal loss for a particular type of cable at a given length.

connectionless service A service in which no acknowledgment is required between two ends before data is sent. UDP is an example of a connectionless service.

connection-oriented service A service in which a connection must be established and an acknowledgment must occur before either end can send data. TCP is an example of a connection-oriented service.

daemon A process that runs in the background and carries out operations on behalf of the entire system.

datagram A discrete piece of data that is passed between computer systems at the network layer. Datagrams contain source and destination addresses. See also *frame*, *message*, and *packet*.

dipole antenna An antenna consisting of two equal elements that are connected in the center to a transmission cable. A dipole antenna radiates a signal equally off the broad side of the antenna, and little from its ends.

discard server A server that throws away any data it receives. TCP discard servers listen for TCP connections. UDP discard servers listen for UDP datagrams.

DNS See *Domain Name System*.

DNS resolver The facility within the TALnet software that sends DNS requests to the DNS server.

DNS server A name server that contains a cache, or database, of names mapped to IP addresses.

Domain Name System (DNS) A system that provides the mapping between IP addresses and hostnames and domain names.

echo server A server that sends back to the source any data it receives. TCP echo servers listen for TCP connections. UDP echo servers listen for UDP datagrams.

effective radiated power (ERP) The amount of power a transmitter emits with respect to a standard radiator (a dipole antenna is typically used for measuring ERP, while an isotropic antenna is usually used for calculated ERP).

EGP See *exterior gateway protocol*.

encapsulation The process of adding headers to a datagram, packet, or message, as the datagram, packet, or message travels through the layers of the TCP/IP reference model.

ERP See *effective radiated power*.

exterior gateway protocol (EGP) A routing protocol that maintains the routing tables between two or more autonomous systems, thus allowing routers in different autonomous systems to communicate. Also known as *interdomain routing protocol*.

Exterior Gateway Protocol (EGP) A specific implementation of an exterior gateway protocol.

fade margin The measure of how much signal loss the system can endure without dropping below the minimum desired BER.

File Transfer Protocol (FTP) The standard TCP/IP application protocol for transferring files between network nodes.

free space path loss The loss of power of a radiated signal as it travels through space.

frame A discrete piece of data that is passed between computer systems at the link layer. See also *datagram*, *message*, and *packet*.

full duplex The capability for data transmission in two directions simultaneously.

FTP See *File Transfer Protocol*.

half duplex The capability for data transmission in only one direction at a time. Sometimes called *semi duplex* or *simplex*.

hop The transmission link a packet must follow between two internetworking nodes.

ICMP See *Internet Control Message Protocol*.

IGP See *interior gateway protocol*.

interdomain routing protocol See *exterior gateway protocol*.

interior gateway protocol (IGP) A routing protocol that keeps all routes within a single autonomous system updated, thus allowing routers within that autonomous system to communicate with other routers in that autonomous system. Also known as an *intradomain routing protocol*.

Internet The world's largest collection of interconnected networks that uses the TCP/IP protocol suite and functions as a single cooperative virtual network.

Internet Control Message Protocol (ICMP) A network-layer protocol that sends reports of problems about datagrams back to the source that sent the datagram. ICMP must be implemented with IP.

Internet Protocol (IP) A network-layer protocol that breaks data from higher-level protocols such as TCP and UDP into datagrams. IP provides an addressing space and other controls to allow the datagrams to be routed. IP must be implemented with ICMP.

internetwork A collection of networks that are connected by an internetworking device such as a router.

intradomain routing protocol See *interior gateway protocol*.

IP See *Internet Protocol*.

isotropic antenna An antenna that radiates a signal evenly in all directions.

latency Delay; for example, the amount of time between when a router receives a packet and forwards that packet.

lightning arrester A device that directs a lightning charge to an earth ground, thus limiting the amount of energy transferred during a lightning strike.

line of sight An unobstructed view from the transmitting antenna to the receiving antenna.

link layer In the TCP/IP protocol suite, the layer between the physical layer and the network layer. The link layer provides transit of IP datagrams over a physical link. The link layer is sometimes called the network interface layer or the data link layer.

Management Information Base (MIB) The set of performance and administrative data that a router running SNMP maintains. System managers can fetch or store into these variables.

message A logical grouping of data that is passed between computer systems at the application layer. Messages usually are composed of lower-layer logical groupings, such as packets. See also *datagram*, *frame*, and *packet*.

metric A standard of measurement that is used by routing algorithms to determine the best path to a destination. RIP uses hop count as its metric; the path with the fewest hops between the source and destination is considered the best path.

MIB See *Management Information Base*.

multipath interference Interference that occurs when a single signal is refracted by a physical obstruction and arrives at the receiving antenna at a later time than the direct signal.

network layer In the TCP/IP protocol suite, the layer between the link layer and the transport layer. The network layer encapsulates packets into IP datagrams and determines how to route the datagrams based on routing metrics. The network layer is sometimes called the internet layer.

notch filter An RF filter that reduces receiver response over a narrow band of frequencies.

omnidirectional antenna An antenna with a radiation pattern that is the same in all horizontal directions.

packet A discrete piece of data that is passed between computer systems at the transport layer. Note that UDP uses the term datagram. See also *datagram*, *frame*, and *message*.

packet filter A method of screening information based on certain characteristics. Packet filters can be applied to data as it comes into or leaves a router.

packet radio A method of radio communications in which information is transmitted in short bursts, or packets. The packets also contain addressing and error-detection information.

path loss The total amount of radio signal loss between the transmitting antenna and the receiving antenna; the sum of loss caused by obstacles located in the path and the free space path loss.

ping Packet Internet Groper. A facility that tests whether another host is reachable by sending an ICMP *Echo Request* datagram to a host and expecting an *Echo Reply* datagram to be returned. The ping facility also measures the round-trip time to the host to determine the distance to the host.

PN code See *pseudorandom noise code*.

point of presence (POP) The physical access point to your service provider's office in your local community.

Point-to-Point Protocol (PPP) A link-layer protocol that allows encapsulation of multiple higher-level protocols over the same point-to-point serial link. PPP supports either asynchronous links with eight bits of data and no parity or bit-oriented synchronous links.

POP See *point of presence*.

PPP See *Point-to-Point Protocol*.

protocol A set of rules that define a common framework and a common language for providing a service.

pseudorandom noise (PN) code An operation in which a random stream of data bits is generated within limited parameters. The stream (sequence) is typically used for encoding data for communication. Also called a *spreading code*.

radio frequency (RF) Electromagnetic waves within the radio spectrum that are propagated without guide (wire or cable) in free space.

radome A protective cover for an antenna.

RARP See *Reverse Address Resolution Protocol*.

Request For Comments (RFC) A document that describes ideas, techniques, observations, and proposed and accepted TCP/IP protocol standards. RFCs are edited but not refereed.

Reverse Address Resolution Protocol (RARP) A protocol that provides a mapping from the physical address at the link layer to the IP address at the network layer. See also *Address Resolution Protocol*.

RF See *radio frequency*.

RFC See *Request For Comments*.

RIP See *Routing Information Protocol*.

round-trip time The time required for a single packet or datagram to leave one machine, reach the other, and return. Round-trip time is used by some routing algorithms to calculate optimal routes.

routed protocol A protocol that is routed over a network. IP is a routed protocol.

router An internetworking device that operates at the network layer and determines the best path a datagram should use based on routing metrics such as path length, delay, bandwidth, load, and communication costs.

router subsystem The router portion of the SubSpace 2001. Includes interfaces to connect to wired LANs, the wireless subsystem, a service console, and PPP connections.

Routing Information Protocol (RIP) An interior gateway protocol that uses hop counts as a metric.

routing protocol A protocol that makes routing decisions at the network layer. RIP is a routing protocol.

semi duplex See *half duplex*.

Simple Network Management Protocol (SNMP) A standard application-layer network management protocol used for reporting anomalous network conditions and setting network thresholds.

simplex See *half duplex*.

SNMP See *Simple Network Management Protocol*.

spreading code See *pseudorandom noise code*.

spread spectrum A modulation technique for multiple access, or for increasing immunity to noise and interference. Spreads a normally narrowband signal over a relatively wide band of frequencies. The receiver correlates these signals to retrieve the original information signal.

standing wave ratio (SWR) The measurement of power delivered to an antenna versus any power reflected back to the radio to which it is attached.

SWR See *standing wave ratio*.

system gain The overall signal gain from input to output of a device or several devices connected as a system.

TCP See *Transmission Control Protocol*.

Telnet The standard TCP/IP application protocol that allows you to connect to a login server from a remote site. Telnet passes keystrokes from your terminal directly to the remote machine as if you were logged into the remote machine directly.

traceroute A facility that allows you to identify the route an IP datagram travels from one host to another.

Transmission Control Protocol (TCP) A connection-oriented transport-layer protocol that provides reliable transport of data from one application to another. TCP breaks messages into packets and provides timeout services, but relies on IP to transmit packets across an internetwork.

transport layer In the TCP/IP protocol suite, the layer between the network layer and the application layer. The transport layer regulates the flow of information and provides reliable transport, ensuring that the data arrives without error and in sequence.

UDP See *User Datagram Protocol*.

User Datagram Protocol (UDP) An unreliable connectionless transport-layer protocol that transports data from one application to another. UDP relies on IP to transmit datagrams across the network but includes its own checksums and port numbers.

wind load The amount of physical resistance an object presents to the wind.

wind survivability The maximum wind speed a given antenna model can experience without damage.

wireless subsystem The equipment that transmits and receives radio signals and converts them to digital for communication with the router subsystem. Includes the radio, an antenna, and the RF cable to connect the radio and the antenna.