Glossary

This list provides a list of terms and their definitions used to describe various Internet functions. We have attempted to use capitalisation conventions commonly encountered in Internet documentation and electronic mail,

10BaseT A variant of Ethernet which allows stations to be attached via twisted pair cable. See *also*: Ethernet, twisted pair.

acceptable use *policy (AUP)* Many transit networks have policies which restrict the use to which the network may be put. A well known example is NSFNET's AUP which does not allow commercial use. Enforcement of AUPs varies with the network.

access control list (ACL) Most network security systems operate by allowing selective use of services An Access Control List is the usual means by which access to, and denial of, services is controlled. It is simply a list of the services available, each with a list of the hosts permitted to use the service.

address There are three types of addresses in common use within the Internet. They are email address; IP, internet or Internet address; and hardware or MAC address.

address resolution Conversion of an internet address into the corresponding physical address. Software handles this conversion so the user can enter a more user friendly mnemonic.

administrative domain (AD) A collection of hosts and routers, and the interconnecting network(s), managed by a single administrative authority.

Advanced Research Projects Agency Network (ARPANET) A pioneering long-haul network funded by ARPA (now Defense Advanced Research Projects Agency, or DARPA). ARPA served as the basis for early networking research, as well as a central backbone during the development of the Internet. The ARPANET consisted of individual packet switching computers interconnected by leased lines.

agent In the client-server model, the part of the system that performs information preparation and exchange on behalf of a client or server application.

alias A name, usually short and easy to remember, that is translated into another name, usually long and difficult to remember.

American National Standards Institute (ANSI) This organisation is responsible for approving US standards in many areas, including computers and communications. Standards approved by this organisation are often called ANSI standards (e.g., ANSI C is the version of the 'C' language approved by ANSI). ANSI is a member of ISO.

American Standard Code for Information Interchange (ASCII) A standard character-to-number encoding widely used in the computer industry. See also ASCII, below.

anonymous FTP Anonymous FTP (File Transfer Protocol) allows a user to retrieve documents, files, programs and other archived data from anywhere in the Internet without having to establish a userid and password. By using the special userid of 'anonymous', the network user will by-pass local security checks and will have access to publicly accessible files on the remote system.

ANSI Computers use several different methods for deciding how to put information on your screen and how your keyboard interacts with the screen, ANSI is one of these terminal emulation methods, Although most popular on PC-based bulletin-board systems, it can also be found on some Net sites. To use it properly, you will first have to turn it on, or enable it, in your communications software.

Appletalk A networking protocol developed by Apple Computer for communication between Apple Computer products and other computers. This protocol is independent of the network layer on which it is run. Current implementations exist for Localtalk, a 235Kb/s local area network; and Ethertalk, a 10Mb/s local area network.

application A program that performs a function directly for a user. FTP, mail and Telnet clients are examples of network applications.

application *layer* The top layer of the network protocol stack. The application layer is concerned with the semantics of work (e.g.. formatting electronic mail messages). How to represent those data and how to reach the foreign node are issues for lower layers of the network.

Application Program *Interface (API)* A set of calling conventions which define how a service is invoked through a software package.

archie A system to automatically gather, index and serve information on the Internet. The initial implementation of archie provided an indexed directory of filenames from all anonymous FTP archives on the Internet. Later versions provide other collections of information.

archive site A machine that provides access to a collection of files across the Internet. An anonymous FTP archive site, for example, provides access to this material via the FTP protocol.

ASCII The acronym has two meanings. ASCII is a universal computer code for English letters and characters. Computers store all information as binary numbers. In ASCII, the letter *A* is stored as 1000001, whether the computer is made by IBM, Apple or Commodore. ASCII also refers to a method, or protocol, for copying files from one computer to another over a network, in which neither computer checks for any errors that might have been caused by static or other problems.

Asynchronous Transfer Mode (ATM) A method for the dynamic allocation of bandwidth using a fixed-size packet (called a cell). ATM is based on the concept of fast packet switching.

backbone The top level in a hierarchical network. Stub and transit networks which connect to the same backbone are guaranteed to be interconnected.

bandwidth Technically, the difference, in Hertz (Hz), between the highest and lowest frequencies of a transmission channel. It regulates the speed that data that can be sent through a given communications circuit.

bang path A series of machine names used to direct electronic mail from one user to another, typically by specifying an explicit UUCP path through which the mail is to be routed.

baseband A transmission medium through which digital signals are sent without complicated frequency shifting. In general, only one communication channel is available at any given time. Ethernet is an example of a baseband network.

baud A unit used by telecom engineers to express modulation rate. One baud equals one change of condition per second. This corresponds to a data signalling rate of 1 bit per second if only two signalling states are in use (which is the case with simple systems). But modem modems employ more sophististicated techniques that provide faster data throughput for the same circuit conditions.

big-endian A format for storage or transmission of binary data in which the most significant bit (or byte) comes first. The term comes from *Gulliver's Travels* by Jonathan Swift.

birds of a feather (BOF) A birds of a feather (flocking together) is an informal discussion group. It is formed, often *ad hoc,* to consider a specific issue and, therefore, has a narrow focus.

Bitnet An academic computer network that provides interactive electronic mail and tile transfer services, using a store-and-forward protocol, based on IBM Network Job Entry protocols. Bitnet-II encapsulates the Bitnet protocol within IP packets and depends on the Internet to route them. It is an academically oriented, international computer network, which uses a different set of computer instructions to move data. It is easily accessible to Internet users through e-mail, and provides a large number of conferences and databases. Its name comes from Because If's *Time.*

bounce The return of a piece of mail because of an error in its delivery.

bridge A device which forwards traffic between network segments based on datalink layer information. These segments would have a common network layer address,

broadband A transmission medium capable of supporting a wide range of frequencies. It can carry multiple signals when the total capacity of the medium is divided into multiple, independent bandwidth channels, then each channel operates only on a specific range of frequencies.

broadcast A special type of multicast packet which all nodes on the network are always willing to receive.

broadcast storm An incorrect packet broadcast on to a network that causes multiple hosts to respond all at once, typically with equally incorrect packets which causes the storm to grow exponentially in severity.

brouter A device which bridges some packets (i.e., forwards based on datalink layer information) and routes other packets (i.e., forwards based on network layer information). The bridge/route decision is based on configuration information.

BTW By the way

Bulletin Board System (BBS) An online system operated from a home or other organisation to provide online access to a electronic information. BBSs were the domain of hobbyists, an increasing number of BBSs are connected directly to the Internet, and many BBSs are currently operated by government, educational and research institutions.

Campus Wide Information System *(CWIS)* A CWIS makes information and services publicly available on campus via kiosks, and makes interactive computing available via kiosks, interactive computing systems and campus networks, Services routinely include directory information, calendars, bulletin boards, databases.

CCITT See under Comité Consultatif

circuit switching A communications paradigm in which a dedicated communication path is established between two hosts, and on which all data travel. The telephone system is an example of a circuit switched network.

client A computer system or process that requests a service of another computer system or process. A workstation requesting the contents of a file from a tile server is a client of the file server.

client-server model A common way to describe the paradigm of many network protocols. Examples include the name-server/name-resolver relationship in DNS and the file-server/file-client relationship in NFS.

Coalition for Networked Information (CNI) A consortium formed by American Research Libraries, CAUSE, and EDUCOM to promote the creation of, and access to, information resources in networked environments in order to enrich scholarship and enhance intellectual productivity.

Comité Consultatif International de Télégraphe et Téléphone (CCITT) This organisation is part of the International Telecommunications Union (ITU) and is responsible for making technical recommendations about telephone and data communications systems. Following a re-organisation in 1993, CCITT has beer renamed ITU-T (International Telecommunications Union — Telecommunication Standardisation Sector)

common *carriers* Generally the national and regional telephone companies, although recently local carriers have started to compete with the regional operating companies, especially in large cities. Common carriers publish their services and prices in a document called a tariff. In the United States they are regulated by the Federal Communications Commission and State public utility commissions. The more common name for common carriers has become PTOs (Public Telecommunication Operators).

Computer Emergency Response Team (CERT) The CERT was formed by DARPA in November 1988 in response to the needs exhibited during the Internet worm incident (see *below* under 'worm'). CERT's charter is to work with the Internet community to facilitate its response to computer security events involving Internet hosts, take proactive steps to raise the community's awareness of computer security issues, and conduct research targeted at improving the security of existing systems. CERT offers 24-hour technical assistance for responding to computer security incidents, product vulnerability assistance, technical documents and tutorials. CERT maintains a number of mailing lists and provides an anonymous FTP server, at *cert.org*, where security-related documents and tools are archived. The CERT may be reached by email at *cert@cert.org*.

congestion Congestion occurs when the offered load exceeds the capacity of a data communication path.

connection-oriented The data communication method in which communication proceeds through three well-defined phases: connection establishment, data transfer, connection release. TCP is a connection-oriented protocol.

connectionless The data communication method in which communication occurs between hosts with no previous set-up. Packets between two hosts may take different routes, as each is independent of the other. User Datagram Protocol (UDP) is a connectionless protocol.

Co-ordinuting Committee for Intercontinental Research Networks (CCIRN) A committee that includes the United States FNC and its counterparts in North America and Europe. Co-chaired by the executive directors of the FNC and the European Association of Research Networks (RARE), the CCIRN provides a forum for co-operative planning among the principal North American and European research networking bodies.

core *gateway* Historically, one of a set of gateways (routers) operated by the Internet Network Operations Center at Bolt, Beranek and Newman. The core gateway system formed a central part of Internet routing in that all groups must advertise paths to their networks from a core gateway.

Corporation for Research and Educational Networking (CREN) This organisation was formed in October 1989, when Bitnet and CSNET (Computer + Science NETwork) were combined under one administrative authority. CSNET is no longer operational, but CREN still runs Bitnet.

cyberspace A term coined by William Gibson in his fantasy novel *Neuromancer* to describe the world of computers, and the society that gathers around them.

daemon An otherwise harmless Unix program that normally works out of sight of the user. On the Internet, you will most likely encounter it only when your e-mail is not delivered to your recipient — you will get back your original message plus an ugly message from a mailer daemon.

data encryption key (DEK) Used for the encryption of message text and for the computation of message integrity checks (signatures).

data encryption standard (DES) A popular, standard encryption scheme. This term originated as 'Defense Encryption Standard' from the US Dept. of Defense.

datagram A self-contained, independent entity of data carrying sufficient information to be routed from the source to the destination computer without reliance on earlier exchanges between this source and destination computer and the transporting network.

DECnet A proprietary network protocol designed by Digital Equipment Corporation.

default route A routing table entry which is used to direct packets addressed to networks not explicitly listed in the routing table.

Defense Advanced Research Projects Agency (DARPA) An agency of the US Department of Defense responsible for the development of new technology for use by the military. DARPA (formerly known as ARPA) was responsible for funding much of the development of the Internet we know today, including the Berkeley version of Unix and TCP/IP.

Defense Data Network (DDN) A global communications network serving the US Department of Defense composed of MILNET, other portions of the Internet, and classified networks which are not part of the Internet. The DDN is used to connect military installations and is managed by the Defense Information Systems Agency.

Defense Data Network Network Information Center (DDN NIC) Often called The NIC, the DDN NIC's primary responsibility is the assignment of Internet network addresses and Autonomous System numbers, the administration of the root domain, and providing information and support services to the DDN. It is also a primary repository for RFCs.

Defense Information Systems Agency (DISA) Formerly called the Defense Communications Agency (DCA), this is the government agency responsible for managing the DDN portion of the Internet, including the MILNET (see *below).* Currently, DISA administers the DDN, and supports the user assistance services of the DDN NIC.

dialup A temporary, as opposed to dedicated, connection between machines established over a standard telephone line.

directory access protocol X.500 protocol used for communication between a Directory User Agent and a Directory System Agent.

directory system agent (DSA) The software that provides the X.500 Directory Service for a portion of the directory information base. Generally, each DSA is responsible for the directory information for a single organisation or organisational unit.

directory user agent *(DUA)* The software that accesses the X.500 Directory Service on behalf of the directory user. The directory user may be a person or another software element.

distributed computing environment (DCE) An architecture of standard programming interfaces, conventions and server functionalities (e.g., naming, distributed tile system, remote procedure call) for distributing applications transparently across networks of heterogeneous computers. Promoted and controlled by the Open Software Foundation (OSF), a consortium led by Digital Equipment, IBM and Hewlett Packard.

distributed database A collection of several different data repositories that appears as a single database to the user. A prime example in the Internet is the Domain Name System.

domain *Domain* is a heavily over-used term in the Internet. It can be used in the Administrative Domain context, or the Domain Name context.

domain name system (DNS) The DNS is a general purpose distributed, replicated, data query service. The principal use is the lookup of host IP addresses based on host names. The style of host names now used in the Internet is called domain name, because it is the style of names used to look up anything in the DNS. Some important domains are: .COM (commercial), .EDU (educational), .NET (network operations), .GOV (US government), and .MIL (US military). Most countries also have a domain. For example, .US (United States), .NZ (New Zealand), CA (Canada).

download Copying a file from a remote computer to a local machine, via a network. Contrasts with upload: to send a tile from a local machine to a remote machine, via a network. See *also file* transfer.

dynamic adaptive routing Automatic re-routing of traffic based on a sensing and analysis of current actual network conditions, NOTE: this does not include cases of routing decisions taken on pre-defined information.

Ebone A pan-European backbone service.

Electronic Frontier Foundation (EFF) A foundation established to address social and legal issues arising from the impact on society of the increasingly pervasive use of computers as a means of communication and information distribution.

electronic mail (email) A system whereby a computer user can exchange messages with other computer users (or groups of users) via a communications network. Electronic mail is one of the most popular uses of the Internet.

email address The domain-based or UUCP address that is used to send electronic mail to a specified destination. For example an address is *s_arnold@delphi.com.*

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.

encryption Encryption is the manipulation of a packet's data in order to prevent any but the intended recipient from reading those data, There are many types of data encryption, and they are the basis of network security.

ethernet A 10-Mb/s standard for LANs, initially developed by Xerox, and later refined by Digital, Intel and Xerox (DIX). All hosts are connected to a coaxial cable where they contend for network access using a Carrier Sense Multiple Access with Collision Detection (CSMA/CD) paradigm.

ethernet meltdown An event that causes saturation, or near saturation, on an Ethernet. It usually results from illegal or misrouted packets and typically lasts only a short time.

European Academic and Research Network (EARN) A network connecting European academic and research institutions with electronic mail and file transfer services using the Bitnet protocol.

Extended Binary Coded Decimal Interchange Code (EBCDIC) A standard character-to-number encoding used primarily by IBM computer systems.

exterior gateway protocol (EGP) A protocol which distributes routing information to the routers which connect autonomous systems, The term *gateway* is historical, as *router* is currently the preferred term.

external data representation (XDR) A standard for machine-independent data structures developed by Sun Microsystems.

F2F Face to face. When you actually meet those people you been corresponding with/flaming.

FARNET A non-profit corporation, established in 1987, whose mission is to advance the use of computer networks to improve research and education.

FAQ (Frequently Asked Question) A compilation of answers to these. Many Usenet newsgroups have these files, which are posted once a month or so for beginners.

Federal Information Exchange (FIX) One of the connection points between the American governmental intemets and the Internet.

Federal Networking Council (FNC) The co-ordinating group of representatives from those federal agencies involved in the development and use of federal networking, especially those networks using TCP/IP and the Internet. Current members include representatives from Department of Defense, Department of Energy, DARPA, National Science Foundation, NASA, and Health and Human Services.

Fibre Distributed Data Interface (FDDI) A high-speed (100Mb/s) LAN standard. **The underlying** medium is fibre optics, and the topology is a dual-attached, counter-rotating token ring.

file transfer The copying of a file from one computer to another. When this is over a network, the term usually becomes download or upload (see under download).

File Transfer Protocol (FTP) A protocol which allows a user on one host to access, and transfer files to and from, another host over a network. FTP is usually the name of the program the user invokes to execute the protocol.

Film at 11 One reaction to an overwrought argument: *Imminent death of the Net predicted. Film at 11.*

finger A program that displays information about a particular user, or all users, logged on the local system or on a remote system. It typically shows full name, last login time, idle time, terminal line and terminal location (where. applicable). It may also display plan and project files left by the user.

frame A strong opinion and/or criticism of something, usually as a frank inflammatory statement, in an electronic mail message. It is common to precede a flame with an indication of pending fire (i.e., FLAME ON!). Flame Wars occur when people start flaming other people for flaming when they should not have.

foo/foobar A common method of referring to directories and file names in explanations of computer procedures.

fortune cookie An inane/witty/profound comment that can be found around the net.

For Your Information (FYI) A sub-series of Requests for Comments (RFCs) that are not technical standards or descriptions of protocols. FYIs convey general information about topics related to TCP/IP or the Internet.

fragment A piece of a packet. When a router is forwarding an IP packet to a network that has a maximum packet size smaller than the packet size, it is forced to break up that packet into multiple fragments. These fragments will be reassembled by the IP layer at the destination host.

frame A frame is a data-link layer packet which contains the header and trailer information required by the physical medium. That is, network layer packets are encapsulated to become frames.

freenet Community-based bulletin board system with email, information services, interactive communications, and conferencing. Freenets are funded and operated by individuals and volunteers -in one sense, like public television. They are part of the National Public Telecomputing Network (NPTN), an organisation based in Cleveland, Ohio, devoted to making computer telecommunication and networking services as freely available as public libraries.

freeware Software author does not want payment for the programs.

fully qualified domain name (FQDN) The FQDN is the full name of a system, rather than **just** its host-name. For example, *delphi* is a hostname and *delphi.com* is an FQDN.

gatedaemon. A program which supports multiple routing protocols and protocol families. It may be used for routing, and makes an effective platform for routing protocol research. The software is available by anonymous FTP from *gated.cornell.edu.*

gateway The term *router* is now used in place of the original definition of *gateway.* Currently, a gateway is a communications device/program which passes data between networks having similar functions but dissimilar implementations. This should not be confused with a protocol converter. By this definition, a router is a layer 3 (network layer) gateway, and a mail gateway is a layer 7 (application layer) gateway.

GNU Gnu is not Unix. A project of the Free Software Foundation to write a free version of the Unix operating system.

Gopher A distributed information service that makes available hierarchical collections of information across the Internet. Gopher uses a simple protocol that allows a single Gopher client to access information from any accessible Gopher server, providing the user with a single *Gopher space* of information. Public domain versions of the client and server are available.

Government OSI Profile (GOSIP) A sub-set of OSI standards specific to US Government procurements, designed to maximise interoperability in areas where plain OSI standards are ambiguous or allow excessive options.

hacker A person who delights in having an intimate understanding of the internal workings of a system, computers and computer networks in particular. The term is often misused in a pejorative context. Some Internet enthusiasts prefer the term *cracker* to describe a person who makes an unauthorised entry into a system.

header The portion of a packet, preceding the actual data, containing source and destination addresses, and error checking and other fields. A header is also the part of an electronic mail message that precedes the body of a message and contains, among other things, the message originator, date and time,

heterogeneous network A network running multiple network layer protocols,

hierarchical routing A way to reduce the complexity of routing by a network into a hierarchy of networks, where each level is responsible for its own routing. The Internet has, basically, three levels: the backbones, the mid-levels, and the stub networks. The backbones know how to route between the mid-levels, the mid-levels know how to route between the sites, and each site (being an autonomous system) knows how to route internally.

High Performance Computing and Communications (HPCC) High performance computing encompasses advanced computing, communications and information technologies, including scientific workstations, supercomputer systems, high speed networks, special purpose and experimental systems, the new generation of large scale parallel systems, and application and systems software with all components well integrated and linked over a high speed network.

High Performance Parallel Interface (HIPPI) An emerging ANSI standard which extends the computer bus over fairly short distances at speeds of 800 and 1600 Mb/s. HIPPI is often used in a computer room to connect a supercomputer to routers, frame buffers, mass-storage peripherals and other computers.

hop A term used in routing. A path to a destination on a network is a series of hops, through routers, away from the origin.

host A computer that allows users to communicate with other host computers on a network. Individual users communicate by using application programs, such as electronic mail, Telnet and FTP.

hostname The name given to a machine on a network.

Host system A public-access site; provides Net access to people outside the research and government community.

hub A device connected to several other devices. In ARCnet, a hub is used to connect several computers together. In a message handling service, a hub is used for the transfer of messages across the network.

IMHO In My Humble Opinion

Integrated Services Digital Network (ISDN) A technology allowing the combination of all digital network services in a single medium, making it possible to offer customers digital data services as well as voice connections through a single wire. The standards that define ISDN are specified by CCITT. An attempt to convert analogue telephone systems to digital systems to provide voice and data services on a single carrier wire. ISDN is based on a two 64- kilobits-per-second data channel plus one 16-bit signalling channel and can be multiplexed like T- I lines. Unfortunately, many of the advanced services that ISDN can offer have been eclipsed by other, less expensive technology.

Interagency Interim National Research and Education Network (IINREN) An evolving operating network system. Near term (1992-96) research and development activities will provide for the smooth evolution of this networking infrastructure into the future gigabit NREN.

interior gateway protocol (IGP) A protocol which distributes routing information to the routers within an autonomous system. The term *gateway* is an older term; *router* is often used today.

intermediate system (IS) An OSI system which performs network layer forwarding. It is analogous to an intemet protocol router that directs packets.

International Organisation for Standardisation (ISO) A voluntary, non-treaty organisation founded in 1946 which is responsible for creating international standards in many areas, including computers and communications. Its members are the national standards organisations.

Internet A three level hierarchy composed of backbone networks (e.g., NSFNET, MILNET), mid-level networks, and stub networks. The Internet is a multi-protocol intemet. While an intemet is a network, the term *internet* is usually used to refer to a collection of networks interconnected with routers

internet address An IP address that uniquely identifies a node on an intemet. An Internet address (capital *I*), uniquely identifies a node on the Internet.

Internet Architecture Board (IAB) The technical body that oversees the development of the Internet suite of protocols. It has two task forces: the IETF and the IRTF.

Internet Assigned Numbers Authority (IANA) The central registry for various Internet protocol parameters, such as port, protocol and enterprise numbers, and options, codes and types. To request a number assignment, contact the IANA at *ianaisi.edu*.

Internet control message protocol (ICMP) ICMP is an extension to the Internet Protocol, It allows for the generation of error messages, test packets and informational messages related to IP.

internet draft (I-D) Internet drafts are working documents of the Internet Engineering Task Force, its areas and its working groups. They are valid for a maximum of six months and may be updated or replaced by other documents at any time.

Internet Engineering Steering Group (IESG) The IESG is composed of the IETF Area Directors and the IETF Chairman. It provides the first technical review of Internet standards and is responsible for day-to-day management of the IETF.

Internet Engineering Task Force (IETF) The IETF is a large, open community of network designers, operators, vendors and researchers whose purpose is to co-ordinate the operation, management and evolution of the Internet, and to resolve short-range and mid-range protocol and architectural issues, It is a major source of proposals for protocol standards which are submitted to the IAB for final approval. The IETF meets three times a year.

Internet *monthly report (IMR)* Published monthly, the purpose of *the Internet Monthly Reports* is to communicate to the Internet Research Group the accomplishments, milestones reached, or problems discovered by the participating organisations.

Internet Protocol (IP) The Internet Protocol, defined in STD 5, RFC 791, is the network layer for the TCP/IP Protocol Suite. It is a connectionless, best-effort packet switching protocol.

Internet relay chat (IRC) A world-wide party line protocol that allows one to converse with others in real time. IRC is structured as a network of servers, each of which accepts connections from client programs, one per user.

Internet Research Steering Group (IRSG) The governing body of the IRTF.

Internet Research Task Force (IRTF) The IRTF is chartered by the IAB to consider long-term Internet issues from a theoretical point of view. It has Research Groups, similar to IETF Working Groups, which are each tasked to discuss different research topics. Multi-cast audio/video conferencing and privacy enhanced mail are samples of IRTF output.

Internet Society (ISOC) The Internet Society is a non-profit, professional membership organisation which facilitates and supports the technical evolution of the Internet, stimulates interest in and educates the scientific and academic communities, industry and the public about the technology, uses and applications of the Internet, and promotes the development of new applications for the system. The Society provides a forum for discussion and collaboration in the operation and use of the global Internet infrastructure.

Intemetworkpacket exchange (IPX) Novell's protocol used by Netware. A router with IPX routing can interconnect LANs so that Novell Netware clients and servers can communicate.

interoperability The ability of software and hardware on multiple machines from multiple vendors to communicate meaningfully.

ITU International Telecommunications Union. See under CCITT.

Kermit A popular tile transfer protocol developed by Columbia University. Because Kermit runs in most operating environments, it provides an easy method of tile transfer.

killfile A tile that lets you filter Usenet postings to some extent, by excluding messages on certain topics *or* from certain people.

knowbot An experimental white pages directory service.

layer Communication networks for computers may be organised as a set of more or less independent protocols, each in a different layer (also called level). The lowest layer governs direct host-to-host communication between the hardware at different hosts; the highest consists of user applications. Each layer builds on the layer beneath it. For each layer, programs at different hosts use protocols appropriate to the layer to communicate with each other. TCP/IP has five layers of protocols; OSI has seven. The advantages of different layers of protocols is that the methods of passing information from one layer to another are specified clearly as part of the protocol suite, and changes within a protocol layer are prevented from affecting the other layers. This greatly simplifies the task of designing and maintaining communication programs.

leased line Also known as private circuit. A point-to-point facility for voice or data transmission provided by rental on a continuous basis.

listserv An automated mailing list distribution system originally designed for the Bitnet/EARN network.

little-endiun A format for storage or transmission of binary data in which the least significant byte (bit) comes first.

local area network (LAN) A data network where the terminals can normally be linked via direct connections. Network signal protocols permit data rates up to 100Mb/s.

lurking No active participation on the part of a subscriber to a mailing list or USENET newsgroup. A person who is lurking is listening to the discussion.

mail bridge A mail gateway that forwards electronic mail between two or more networks while ensuring that the messages it forwards meet certain administrative criteria. A mail bridge is simply a specialised form of mail gateway that enforces an administrative policy with regard to what mail it forwards.

mail *exploder* Part of an electronic mail delivery system which allows a message to be delivered to a list of addresses. Mail exploders are used to implement mailing lists. Users send messages to a single address. The mail exploder sends the message to the individual mailboxes in the list.

mail gateway A machine that connects two or more electronic mail systems (including dissimilar mail systems) and transfers messages between them. Sometimes the mapping and translation can be quite complex, and it generally requires a store-and-forward scheme whereby the message is received from one system completely before it is transmitted to the next system, after suitable translations.

mail path A series of machine names used to direct electronic mail from one user to another.

mail server A software program that distributes tiles or information in response to requests sent via email. Mail servers have also been used in Bitnet to provide FTP-like services.

mailing list A list of email addresses, used by a mail exploder, to forward messages to groups of people. Generally, a mailing list is used to discuss certain set of topics, and different mailing lists discuss different topics. A mailing list may be moderated. This means that messages sent to the list are actually sent to a moderator who determines whether or not to send the messages on to everyone else. Requests to subscribe to, or leave, a mailing list should ALWAYS be sent to the list's *-request* address.

Martian A humorous term applied to packets that turn up unexpectedly on the wrong network because of bogus routing entries. Also used as a name for a packet which has an altogether bogus (non-registered or ill-formed) intemet address.

Maximum transmission unit (MTU) The largest frame length which may be sent on a physical medium.

metropolitan urea network (MAN) A data network intended to serve an area approximating that of a large city.

mid-level network Mid-level networks (a.k.a. regionals) make up the second level of the Internet hierarchy. They are the transit networks which connect the stub networks to the backbone networks.

moderator A person, or small group of people, who manage moderated mailing lists and newsgroups. Moderators are responsible for determining which email submissions are passed on to list.

Mosaic Graphical interface developed at the University of Illinois' National Center for Supercomputer Applications. The software -available for UNIX, Macintosh, and Windows --- allows computer users to access Internet resources using a graphical interface that makes extensive use of a mouse. Instead of complex commands, the user points and clicks. Mosaic, in turn, exploits the WWW (World Wide Web) software developed at CERN.

multicast A packet with a special destination address which multiple nodes on the network may be willing to receive.

multihomed host A host which has more than one connection to a network. The host may send and receive data over any of the links but will not route traffic for other nodes.

multipurpose Internet mail extensions (MIME) An extension to Internet email which provides the ability to transfer non-textual data, such as graphics, audio and fax.

multi-user dungeon (MUD) Text-based role playing games, or simulations played on the Internet. Devotees call them text-based virtual reality adventures. The games can feature fantasy combat, booby traps and magic. Players interact in real time and can change the world in the game as they play it. Most MUDs are based on the Telnet protocol.

National Research and Education Network (NREN) The NREN is the realisation of an interconnected gigabit computer network devoted to High Performance Computing and Communications.

National Science Foundation (NSF) A US government agency whose purpose is to promote the advancement of science. The NSFNET, funded by NSF, is a high-speed network of networks which is hierarchical in nature. At the highest level, it is a backbone network currently comprising 16 nodes connected to a 45Mb/s facility which spans the continental United States. Attached to that are mid-level networks and attached to the mid-levels are campus and local networks. NSFNET also has connections out of the US to Canada, Mexico, Europe and the Pacific Rim. SFNET is part of the Internet.

netiquette A pun on etiquette referring to proper behaviour on a network.

network A computer network is a data communications system which interconnects computer systems at various different sites. A network may be composed of any combination of LANs, MANs or WANs.

network address The network portion of an IP address. For a class A network, the network address is the first byte of the IP address. For a class B network, the network address is the first two bytes of the IP address. For a class C network, the network address is the first three bytes of the IP address. In each case, the remainder is the host address.

network file system (NFS) A protocol developed by Sun Microsystems. It allows a computer system to access files over a network as if they were on its local disks. This protocol has been incorporated in products by more than two hundred companies, and is now a *de facto* Internet standard.

Network Information *Center (NIC)* A NIC provides information, assistance and services to network users.

Network Information Services (NIS) A set of services, generally provided by a NIC, to assist users in using the network.

network operations center (NOC) A location from which the operation of a network or intemet is monitored and user support provided. The centre serves as a clearinghouse for connectivity problems.

network time protocol (NTP) A protocol that assures accurate local timekeeping with reference to radio and atomic clocks located on the Internet.

newbie Somebody new to the Net. Often used derogatorily by net veterans who have forgotten that, they, too, were once newbies who did not innately know the answer to everything.

nic.ddn.mil The domain name of the US Department of Defense network.

nodal switching system (NSS) Main routing nodes in the NSFnet backbone.

node An addressable device attached to a computer network. One computer may support a number of nodes.

octet An octet is 8 bits. This term is used in networking, rather than byte, because some systems have bytes that are not 8 bits long.

open *systems interconnection (OSI)* A suite of protocols, designed by IS0 committees, to be the international standard computer network architecture.

OSI reference *model* A seven-layer structure designed to describe computer network architectures and the way that data passes through them. This model was developed by the ISO in 1978 to define the interfaces in multi-vendor networks and provide users of those networks with conceptual guidelines for use in the construction of open networks.

packet The unit of data sent across a network. *Packet* a generic term used to describe unit of data at all levels of the protocol stack, but it is most correctly used to describe application data units.

PING A program used to test reachability of destinations by sending them an electronic request and waiting for a reply.

packet-switched network (PSN) A network that does not create a sustained path between devices. Packet-switched networks gather information in packets and forward them to their destinations. (See also packet switching, below).

packet switch node (PSN) A dedicated computer whose purpose is to accept, route and forward packets in a packet switched network.

packet switching A communications paradigm in which packets (messages) are individually routed between hosts, with no previously established communication path.

plan file A tile that lists anything you want others on the Net to know about you. You place it in your home directory on your public-access site. Then, anybody who fingers (see) you, will get to see this file.

point of presence (POP) A site where there exists a collection of telecommunications equipment, usually digital leased lines and multi-protocol routers,

point-to-point protocol (PPP) The point-to-point protocol, defined in RFC 1171, provides a method for transmitting packets over serial point-to-point links.

port A port is a transport layer demultiplexing value. Each application has a unique port number associated with it.

Post To compose a message for a Usenet newsgroup and then send it out for others to see.

post office protocol (POP) A protocol designed to allow single user hosts to read mail from a server.

PPP Point-to-point protocol permits a stand-alone personal computer to establish a full Internet connection over a standard dial-up telephone line. PPP is replacing the older SLIP approach.

privacy enhanced mail (PEM) Internet email which provides confidentiality, authentication and message integrity using various encryption methods.

prospero A distributed tile system which provides the user with the ability to create multiple views of a single collection of files distributed across the Internet. Prospero provides a tile naming system, and file access is provided by existing access methods (e.g., anonymous FTP and NFS). The Prospero protocol is also used for communication between clients and servers in the archie system.

protocol A formal description of message formats and the rules two computers must follow to exchange those messages.

protocol converter A device/program which translates between different protocols.

public data network (PDN) A network that offers its data transmission services to the public.

public telecommunication operator (PTO) See: common carriers.

*Read the F*cking Manual (RTFM)* This acronym is often used when someone asks a simple or common question.

remote login Operating on a remote computer, using a protocol over a computer network, as though locally attached.

remote procedure cull (RPC) A request is sent to a remote system to execute a designated procedure, using arguments supplied, and the result returned to the caller.

Request for Comments (RFC) The document series, begun in 1969, which describes the Internet suite of protocols and related experiments. Not all (in fact very few) RFCs describe Internet standards, but all Internet standards are written up as RFCs. The RFC series of documents is unusual in that the proposed protocols are forwarded by the Internet research and development community, acting on their own behalf, as opposed to the formally reviewed and standardised protocols that are promoted by organisations such as CCITT and ANSI.

Réseaux Associés pour la Recherche Européenne (RARE) European association of research networks.

Réseaux IP Européenne (RIPE) A collaboration between European networks which use the TCP/IP protocol suite.

RFC 822 The Internet standard format for electronic mail message headers. Mail experts often refer to 822 messages. The name comes from *RFC* 822, which contains this specification.

ROT13 A simple way to encode bad jokes, movie reviews that give away the ending, pornography, etc. Essentially, each letter in a message is replace by the letter 13 spaces away from it in the alphabet. There are online decoders to read these; nn has one built in.

round-trip time (RTT) A measure of the current delay on a network.

route The path that network traffic takes from its source to its destination. Also, a possible path from a given host to another host or destination.

route daemon. A program that automatically propagates routes among machines on a local area network.

router A device which forwards traffic between networks. The forwarding decision is based on network layer information and routing tables, often constructed by routing protocols.

routing The process of selecting the correct interface and next hop for a packet being forwarded.

serial line IP (SLIP) A protocol used to run IP over serial lines, such as telephone circuits or RS-232 cables, interconnecting two systems.

server A provider of resources (e.g., tile servers and name servers).

shareware Software that is freely available on the Net, but which, if you like and use it, you should send in the fee requested by the author, whose name and address will be found in a tile distributed with the software.

SIG Special Interest Group

.sig file or .signature file. A tile that, when placed in your home directory on your public-access site will automatically be appended to every Usenet posting you write.

signature The three or four line message at the bottom of a piece of email or a Usenet article which identifies the sender.

simple mail transfer protocol (SMTP) A protocol used to transfer electronic mail between computers. It is a server-to-server protocol, so other protocols are used to access the messages.

simple network management protocol (SNMP) The Internet standard protocol developed to manage nodes on an IP network.

snail mail An Internet user's term for traditional, paper-based mail.

specialised carriers Carriers that offer limited services, such as satellite or long-distance links. Often they use equipment owned by common carriers.

stream-oriented A type of transport service that allows its client to send data in a continuous stream.

stub network A stub network only carries packets to and from local hosts. Even if it has paths to more than one other network, it does not carry traffic for other networks.

subnet A portion of a network, which may be a physically independent network segment, which shares a network address with other portions of the network and is distinguished by a subnet number.

switched multi-megubif data service (SMDS) An emerging high-speed datagran-based public data network service developed by Bellcore and expected to be widely used by telephone companies as the basis for their data networks.

Systems Network Architecture (SNA) A proprietary networking architecture used by IBM and IBM-compatible mainframe computers.

T1 A term for a digital carrier facility used to transmit a DS-I formatted digital signal at 1.544 megabits per second. A high-speed digital signal carrier standard adopted by the Dell System in the US. The T-I line consists of 24 channels, multiplexed together. Each channel is capable of carrying data at a speed of 56,000 bits per second I64 Mb/s so the entire T- 1 channel can support 1.344 megabits per second. Higher bandwidth carriers are also available: T-2 at 6.312 megabits per second, T-3 at 44.736 megabits per second, and T-4 at 274.176 megabits per second. Outside of North America and Japan, the available bandwidths are T- 1 at 2.048 megabits per second, T-2 at 8.848 megabits per second, T-3 at 139.264 megabits per second, and T4 at 565.148 megabits per second. These higher rates are due to faster single-channel speeds of 64,000 bits per second and a 32-channel carrier rather than a 24-channel one. T-l lines are frequently used to extend local-area network services across a wide area. In many instances, you can achieve performance similar to that of a locally attached station. T-l lines are generally expensive when going from one city to another. However, full-bandwidth T-l service within the same city can be almost as inexpensive as a single 56-kilobits-per-second leased line. A *Fractional T-l* line is one split into groups of channels, each used for a different purpose. In some cases, both voice and data traffic are passed across a single T-l line using this method. The split is accomplished with a channel service unit or CSU.

T3 A term for a digital carrier used to transmit a DS-3 formatted digital signal at 44.736 Mb/s.

talk A protocol which allows two people on remote computers to communicate in a real-time fashion.

TCP/IP protocol suite Transmission Control Protocol over Internet Protocol. TCP/IP is shorthand for the transport and application protocols which runs over IP.

telnet Telnet is the Internet standard protocol for remote terminal connection service. A remote computer appears to the user as a local machine.

terminal emulator A program that allows a computer to emulate a terminal. The workstation thus appears as a terminal to the remote host.

terminal server A device which connects many terminals to a LAN through one network connection. A terminal server can also connect many network users to its main computer.

time to live (TTL) A field in the IP header which indicates how long this packet should be allowed to survive before being discarded.

token **ring** A token ring is a type of LAN with **nodes** wired into a ring. Each node constantly passes a control message (token) on to the next; whichever node has the token can send a message.

transceiver Transmitter-receiver. The physical device that connects a host interface to a local area network, such as Ethernet. Ethernet transceivers contain electronics that apply signals to the cable and sense collisions.

transit network A transit network passes traffic between networks in addition to carrying traffic for its own hosts. It must have paths to at least two other networks.

Transmission Control Protocol (TCP) An Internet Standard transport layer protocol. It is connection-oriented and stream-oriented.

TTFN Ta-ta for now

tunnelling Tunnelling refers to encapsulation of a protocol in a second protocol, It is used to get data between administrative domains which use a protocol that is not supported by the intemet, **thus** connecting those domains.

twisted pair A type of cable in which conductors are twisted together in pairs to produce certain electrical properties.

Universal Time Co-ordinuted (UTC) This is Greenwich Mean Time.

Unix-to-Unix Copy (UUCP) A program run under the UNIX operating system that allowed one UNIX system to send tiles to another UNIX system via dial-up phone lines. The term is used to describe the large international network which uses the UUCP protocol to pass news and electronic mail.

UploadSee under download

Usenet A collection of thousands of topical electronic discussion groups, the computers which run the protocols, and the people who read and submit news.

virus A program which replicates itself on computer systems by incorporating itself into other programs which are shared among computer systems,

white pages The Internet supports several databases that contain basic information about users, **such as** email addresses, telephone numbers, and postal addresses. These databases can be searched to get information about particular individuals. Because they serve a function akin to the telephone book, these databases are often referred to as *white pages.*

WHOIS An Internet pr· 'gram which allows users to query a database of people and other Internet entities, such as domains, networks, and hosts, kept at the DDN NIC. The information for people shows a person's company name, address, phone number and email address.

wide area information servers (WAIS) A distributed information service which offers simple natural language input, indexed searching for fast retrieval, and mechanism which allows the results of initial searches to influence future searches. Public domain software is available.

wide area network (WAN) A network, usually constructed with serial lines, which normally extends beyond one geographic site.

world wide web (WWW or *W3)* A hypertext-based, distributed information system created by researchers at CERN in Switzerland. Users may create, edit or browse hypertext documents. The clients and servers are freely available.

worm A computer program which replicates itself and is self-propagating. Worms, as opposed to viruses, are meant to spawn in network environments. Network worms were first defined by Shoch & Hupp of Xerox in *ACM Communications* (March 1982). The Internet worm of November 1988 is perhaps the most famous; it successfully propagated itself on over 6,000 systems across the Internet.

WRT With Respect To

X X is the name for TCP/IP based network-oriented window systems. Network window systems allow a program to use a display on a different computer. The most widely-implemented window system is Xl 1 — a component of MIT's Project Athena.

X.25 A data communications interface specification developed to describe how data passes into and out of public data communications networks. The CCITT and ISO approved protocol suite **defines** protocol layers I through 3. A misnomer frequently used to refer to packet-switched networks. In reality, X.25 is an international standard that describes the physical interface between devices and a packet-switched network.

X.400 The CCITT and IS0 standard for electronic mail. It is widely used in Europe and Canada.

X.500 The CCITT and ISO standard for electronic directory (white pages) services.

Yellow Pages (YP) A service used by UNIX administrators to manage databases distributed across a network.