

## Scroll Down for KEY TERMS

### Key Terms

- **802.11a:** capable of transmitting data at speeds up to 54 Mbps.
- **802.11b:** the most common wireless connection technology for use on LANs.
- **802.11g:** has the 54-Mbps speed of 802.11a and is compatible with 802.11b devices.
- **802.11n:** the technology should provide bandwidths in the 300 to 450 Mbps range.
- **Anchor tag:** used to create HTML hyperlinks.
- **Asymmetric connection:** provides different bandwidths for each direction.

- **Asymmetric digital subscriber line (ADSL or DSL):** provides transmission bandwidths from 100 to 640 Kbps upstream and from 1.5 to 9 Mbps (million bits per second) downstream.
- **Asynchronous transfer mode (ATM):** technology used by NAPs.
- **Backbone router:** very large computers that can each handle more than 3 billion packets per second.
- **Bandwidth:** the amount of data that can travel through a communication line per unit of time.
- **Base 2 (binary):** number system in which each digit is either a 0 or a 1, corresponding to a condition of either off or on.
- **Bluetooth:** one of the first wireless protocols, designed for personal use over short distances.
- **Border router:** the computer that decides how best to forward each packet.
- **Broadband:** connections that operate at speeds of greater than about 200 Kbps.
- **Bulk mail:** electronic junk mail.
- **Byte:** an 8-bit number.
- **Cascading style sheets (CSS):** sets of instructions that give Web developers more control over the format of displayed pages.
- **Circuit:** the combination of telephone lines and the closed switches that connect them to each other.
- **Circuit switching:** centrally controlled, single-connection model.
- **Client/server architecture:** combination of client computers running Web client software and server computers running Web server software.
- **Closed architecture:** in the early days of computing, each computer manufacturer created its own protocol, so computers made by different manufacturers could not be connected to each other.
- **Closing tag:** HTML tag that formats text.
- **Colon hexadecimal (colon hex):** notation system that uses eight groups of 16 bits ( $8 \times 16 = 128$ ) with each group expressed as four hexadecimal digits and separated by colons.
- **Computer network:** any technology that allows people to connect computers to each other.
- **Configuration table:** information stored includes lists of connections that lead to particular groups of other routers, rules that specify which connections to use first, and rules for handling instances of heavy packet traffic and network congestion.
- **Data-grade lines:** made more carefully and of higher-grade copper than voice-grade lines.
- **Deep Web:** the store of information that is available though the Web.
- **Digital subscriber line (DSL):** connection methods do not use a modem. They use a piece of networking equipment that is similar to a network switch.
- **Domain name:** set of words that are assigned to specific IP addresses.
- **Dotted decimal:** four numbers separated by periods.
- **Download:** a measure of the amount of information that can travel from the Internet to a user in a given amount of time.
- **Downstream bandwidth (downlink bandwidth):** a measure of the amount of information that can travel from the Internet to a user in a given amount of time.
- **Electronic mail (e-mail):** mail sent across the Internet.
- **E-mail client software:** used to read and send e-mail.
- **E-mail server:** devoted to handling e-mail.

- **Encapsulation:** placing the encrypted packets inside another packet.
- **Extensible Hypertext Markup Language (XHTML):** a reformulation of HTML version 4.0 as an XML application.
- **Extensible Markup Language (XML):** another markup language that was derived from SGML for use on the Web.
- **Extensible Stylesheet Language (XSL):** used to write XML formatting instructions.
- **Extranet:** an intranet that has been extended to include specific entities outside the boundaries of the organization, such as business partners, customers, or suppliers.
- **Fixed-point wireless:** uses a system of repeaters to forward a radio signal from the ISP to customers.
- **Fractional T1:** transmitter-receiver devices (also called transceivers) that receive a signal and retransmit it toward users' roof-mounted antennas and to the next repeater.
- **Frame relay:** used by NAPs and the computers that perform routing functions on the Internet backbone.
- **Gateway computer:** the computer that decides how best to forward each packet.
- **Generalized Markup Language (GML):** emerged from early efforts to create standard formatting styles for electronic documents.
- **Generic top-level domain (gTLD):** .biz, .info, .name, and .pro.
- **Graphical user interface (GUI):** a way of presenting program control functions and program output to users.
- **Hexadecimal (base 16):** numbering system that uses 16 digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, a, b, c, d, e, and f).
- **Hierarchical hyperlink structure:** in this structure, the Web user opens an introductory page called a home page or start page.
- **High-speed DSL (HDSL):** connection service can provide more than 768 Kbps of symmetric bandwidth.
- **Home page:** an introductory page.
- **Hot spot:** WAP that is open to the public.
- **HTML extensions:** additional HTML features created by Web browser software developers to work solely in their browsers.
- **Hypertext:** system in which text on one page links to text on other pages.
- **Hypertext element:** text elements that are related to each other.
- **Hypertext link (hyperlink):** points to another location in the same or another HTML document.
- **Hypertext Markup Language (HTML):** a language that includes a set of codes (or tags) attached to text.
- **Hypertext server:** a computer that stores files written in Hypertext Markup Language (HTML).
- **Hypertext Transfer Protocol (HTTP):** the set of rules for delivering Web page files over the Internet is in a protocol.
- **IEEE:** originally an acronym for an organization named the Institute of Electrical and Electronic Engineers, the letters are now used as the title of the organization and are pronounced eye-triple-E
- **Integrated Services Digital Network (ISDN):** the first technology developed to use the DSL protocol suite and has been available in parts of the United States since 1984.
- **Interactive Mail Access Protocol (IMAP):** a newer e-mail protocol that performs the same basic functions as POP, but includes additional features.
- **Internet, internet (small "i"):** a large system of interconnected computer networks that spans the globe; a group of computer networks that have been interconnected.

- **Internet access provider (IAP):** companies that provide Internet access to individuals, businesses, and other organizations.
- **Internet backbone:** routers that handle packet traffic along the Internet's main connecting points and the telecommunications lines connecting them.
- **Internet host:** computers directly connected to the Internet.
- **Internet Protocol (IP):** specifies the addressing details for each packet, labeling each with the packet's origination and destination addresses.
- **Internet Protocol version 4 (IPv4):** uses a 32-bit number to identify the computers connected to the Internet.
- **Internet Protocol version 6 (IPv6):** uses a 128-bit number for addresses instead of the 32-bit number used in IPv4.
- **Internet service provider (ISP):** offers many different types of connections to the Internet.
- **Internet2:** an experimental test bed for new networking technologies that is separate from the original Internet.
- **Intranet:** an interconnected network (or internet), usually one that uses the TCP/IP protocol set and does not extend beyond the organization that created it.
- **IP address:** a 32-bit number used to identify the computers connected to the Internet.
- **IP tunneling:** effectively creates a private passageway through the public Internet that provides secure transmission from one computer to another.
- **IP wrapper:** the outer packet of an encrypted packet.
- **Leased line:** a permanent telephone connection between two points.
- **Linear hyperlink structure:** resembles conventional paper documents in that the reader begins on the first page and clicks the Next button to move to the next page in a serial fashion.
- **Local area network (LAN):** a network of computers that are located close together.
- **Mailing list:** an e-mail address that forwards any message it receives to any user who has subscribed to the list.
- **Markup tags (tags):** provide formatting instructions that Web client software can understand.
- **Mesh routing:** directly transmits Wi-Fi packets through hundreds, or even thousands, of short-range transceivers that are located close to each other.
- **Metalanguage:** a language that can be used to define other languages.
- **Mobile commerce (m-commerce):** term used to describe the kinds of resources people might want to access (and pay for) using wireless devices.
- **Multipurpose Internet Mail Extensions (MIME):** a set of rules for handling binary files, such as word-processing documents, spreadsheets, photos, or sound clips that are attached to e-mail messages.
- **Net bandwidth:** the actual speed that information travels.
- **Network access points (NAPs):** originally located in San Francisco, New York, Chicago, and Washington, D.C., each operated by a separate telecommunications company.
- **Network access provider:** sell Internet access rights directly to larger customers and indirectly to smaller firms and individuals
- **Network Address Translation (NAT) device:** converts those private IP addresses into normal IP addresses when it forwards packets from those computers to the Internet.
- **Network Control Protocol (NCP):** protocol used by ARPANET.
- **Network specification:** the set of rules that equipment connected to the network must follow.

- **Newsgroup:** the more than 1000 different topic areas used by Usenet.
- **Octet:** an 8-bit number.
- **Ontology:** a set of standards that defines, in detail, the relationships among RDF standards and specific XML tags within a particular knowledge domain.
- **Open architecture:** included the use of a common protocol for all computers connected to the Internet and four key rules for message handling.
- **Opening tag:** HTML tag that formats text.
- **Optical fiber:** technology used by NAPs.
- **Packet:** files and e-mail messages are broken down into small pieces.
- **Packet-switched:** on this network, files and e-mail messages are broken down into small pieces, called packets, that are labeled electronically with their origins, sequences, and destination addresses.
- **Personal area network (PAN):** small Bluetooth network.
- **Piconet:** small Bluetooth network.
- **Plain old telephone service (POTS):** uses existing telephone lines and an analog modem to provide a bandwidth of between 28 and 56 Kbps.
- **Post Office Protocol (POP):** used by an e-mail client program running on a user's computer to request mail from the organization's e-mail server.
- **Private IP address:** a series of IP numbers that are not permitted on packets that travel on the Internet.
- **Private network:** a private, leased-line connection between two companies that physically connects their intranets to one another.
- **Proprietary architecture:** in the early days of computing, each computer manufacturer created its own protocol, so computers made by different manufacturers could not be connected to each other.
- **Protocol:** a collection of rules for formatting, ordering, and error checking data sent across a network.
- **Public network:** any computer network or telecommunications network that is available to the public.
- **Repeater:** transmitter-receiver devices (also called transceivers) that receive the signal and then retransmit it toward users' roof-mounted antennas and to the next repeater.
- **Resource description framework (RDF):** a set of standards for XML syntax. It would function as a dictionary for all XML tags used on the Web.
- **Roaming:** shifting from one WAP to another, without requiring intervention by the user.
- **Router:** the computer that decides how best to forward each packet.
- **Router computer (routing computer):** the computers that decide how best to forward each packet.
- **Routing algorithm:** programs on router computers that determine the best path on which to send each packet contain rules.
- **Routing table:** information stored includes lists of connections that lead to particular groups of other routers, rules that specify which connections to use first, and rules for handling instances of heavy packet traffic and network congestion.
- **Scaling problem:** increasing the number of leased lines in private networks is difficult, costly, and time consuming.
- **Semantic Web:** project envisions words on Web pages being tagged (using XML) with their meanings.
- **Short message service (SMS):** protocol used by many cell phones have a small screen and can be used to send and receive short text messages.

- **Simple Mail Transfer Protocol (SMTP):** specifies the format of a mail message and describes how mail is to be administered on the e-mail server and transmitted on the Internet.
- **Site map:** a hierarchical structure included on a page on your Web site that contains a map or outline listing of the Web pages in their hierarchical order.
- **Software agents:** intelligent programs used to read XML tags to determine the meaning of words in their contexts.
- **Spam:** electronic junk mail.
- **Sponsored top-level domain (sTLD):** a TLD for which an organization other than ICANN is responsible.
- **Standard Generalized Markup Language (SGML):** used for many years by the publishing industry to create documents that needed to be printed in various formats and that were revised frequently.
- **Start page:** an introductory page.
- **Style sheet:** defined formatting styles that can be applied to multiple Web pages.
- **Subnetting:** the use of reserved private IP addresses within LANs and WANs to provide additional address space.
- **Symmetric connection:** provides the same bandwidth in both directions.
- **T1:** carries 24 DS0 lines and operates at 1.544 Mbps.
- **T3:** offers 44.736 Mbps (the equivalent of 30 T1 lines or 760 DS0 lines).
- **TCP/IP:** the rules that govern how data moves through the Internet and how network connections are established and terminated.
- **Text markup language:** specifies a set of tags that are inserted into the text.
- **Third-generation (3G) cell phones:** the devices that combine the latest technologies available today.
- **Top-level domain (TLD):** the rightmost part of a domain name.
- **Transceiver:** transmitter-receiver device that receives a signal and then retransmits it toward users' roof-mounted antennas and to the next repeater.
- **Transmission Control Protocol (TCP):** controls the disassembly of a message or a file into packets before it is transmitted over the Internet.
- **Ultra Wideband (UWB):** provides wide bandwidth (up to about 480 Mbps in current versions) connections over short distances (30 to 100 feet).
- **Uniform Resource Locator (URL):** the combination of the protocol name and the domain name.
- **Unsolicited commercial e-mail (UCE):** electronic junk mail.
- **Upload bandwidth:** a measure of the amount of information that can travel from the user to the Internet in a given amount of time.
- **Upstream bandwidth:** a measure of the amount of information that can travel from the user to the Internet in a given amount of time.
- **Usenet (User's News Network):** allows anyone who connects to the network to read and post articles on a variety of subjects.
- **Virtual private network (VPN):** an extranet that uses public networks and their protocols to send sensitive data to partners, customers, suppliers, and employees using a system called IP tunneling or encapsulation.
- **Voice-grade lines:** cost less than telephone lines designed to carry data and are made of lower-grade copper.
- **Web:** a subset of the computers on the Internet that are connected to one another in a specific way that makes them and their contents easily accessible to each other.

- **Web browser:** a software interface that lets users read (or browse) HTML documents and move from one HTML document to another through text formatted with hypertext link tags in each file.
- **Web browser software:** sends requests for Web page files to other computers, which are called Web servers.
- **Web client computer:** sends requests for Web page files to other computers, which are called Web servers.
- **Web server:** a hypertext server.
- **Web server software:** receives requests from many different Web clients and responds by sending files back to those Web client computers.
- **Wi-Fi (wireless Ethernet, 802.11b, 802.11a, 802.11g, 802.11n):** the most common wireless connection technology for use on LANs.
- **Wide area network (WAN):** networks of computers that are connected over greater distances.
- **Wireless access point (WAP):** a device that transmits network packets between Wi-Fi-equipped computers and other devices that are within its range.
- **World Wide Web (Web):** subset of the computers on the Internet that are connected to one another in a specific way that makes them and their contents easily accessible to each other.
- **World Wide Web Consortium (W3C):** a not-for-profit group that maintains standards for the Web, presented its first draft form of XML in 1996.
- **XML parser:** can format an XML file so it can appear on the screen of a computer, a wireless PDA, a mobile phone, or some other device.
- **XML vocabulary:** a set of XML tag definitions.