

Glossary of Technology and Grant-Related Terms

ADSL or Asymmetric Digital Subscriber Line (DSL)

Commonly called *DSL*. Technology and equipment that allow high-speed communication across standard copper telephone wires. This can include video signals. ADSL can transmit at high rates of speed both upstream and downstream, depending on line distance. "Asymmetric" refers to the fact that ADSL is designed to deliver more speed downstream (from the central office to the customer) than upstream (the other way around).

ARRA

The American Recovery and Reinvestment Act is an economic stimulus package enacted by the United States Congress in February 2009.

Backbone

The high-traffic-density connectivity portion of any communications network. A backbone network connects smaller networks and may exist at all levels from local to national. Backbones can be deployed across many buildings (such as in a campus setting or across cities or states) or within a single building.

Bandwidth

Also called capacity; the volume of data that an Internet connection can handle over a given unit of time. The data is usually measured in bits per second (bps).

Bit

The smallest possible unit of information usually expressed as a simple binary choice: yes or no, on or off, one or zero. In a digital system, all information is expressed as simply very large strings of ones and zeros.

Bits per Second or bps

In data communications, "bits per second" is a common measure of data transfer. It is used to show how many bits of information are traveling through the transmission per second. (see also kbps and mbps).

Broadband

"Broadband" is a general term referring to a dedicated, high speed communication link, whichever medium—fiber, wire, cable, or wireless—is used to provide it. Precisely what speed constitutes broadband is constantly changing as technological capability, applications, and user demands evolve.

BTOP

Broadband Technology Opportunities Program. The American Recovery and Reinvestment Act (ARRA) provided the Department of Commerce's National Telecommunications and Information Administration (NTIA) with \$4.7 billion to support the deployment of broadband infrastructure, enhance and expand public computer centers, encourage sustainable adoption of broadband service, and develop and maintain a nationwide public map of broadband service capability and availability.

Bundled Service

Using multiple services provided by a single company. One advantage (or disadvantage, depending on perspective) of bundled service is that there is usually only one bill and one place to go for customer service regardless of how many services are ordered.

Byte

A unit of storage capable of holding a single character. On almost all modern computers, a byte is equal to 8 bits. Large amounts of memory are indicated in terms of kilobytes (1,024 bytes), megabytes (1,048,576 bytes), and gigabytes (1,073,741,824 bytes).

Cable Modem

Though it serves the same purpose as a dial-up modem, a cable modem is different in many ways. The biggest differences are that a cable modem is much faster and does not use a phone number to connect. A cable modem connects to a digital cable television line. Computers equipped with a cable modem have a continuous or "always on" connection to the Internet. Instead of connecting to a serial port like a dial-up modem, a cable modem connects to a standard Ethernet port with a much faster rate of data transfer.

Central Office or CO

A telecommunications term used to refer to the physical location of the local telephone company's building where home and business subscriber lines are connected to the rest of the network. For the purposes of Internet access, the central office switching equipment receives data transmission from a customer's location and then sends those transmissions to the Internet over telephone companies' or third party networks.

Community Anchor Institution

Community Anchor Institutions include: schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and entities.

Connection Speed

The speed that data is transferred between your computer and the providers Central Office. The two types of speed are receiving (downloading) and sending (uploading). Some circuits are symmetrical—they have the same bandwidth capacity going to and from the network. Asymmetrical systems differ in the bandwidth provisioned. That is, more bandwidth is typically available from the network to the end-user than from the end-user to the network.

Dial-up Access

Accessing the Internet using conventional voice telephone service. It requires the use of a modem to connect the computer to the telephone line. Dial-up speeds are up to 56 kilobits per second (kbps).

Digital Subscriber Line or DSL

DSL is a technology developed to send high-speed transmissions over standard copper telephone wires. See also Asymmetric Digital Subscriber Line (ADSL).

Domain Name, Domain Name Server (DNS) Entry

Any of these terms refers to the initial part of a URL, down to the first /, where the domain and name of the host or SERVER computer are listed (most often in reversed order, name first, then domain). The domain name gives you who "published" a page, made it public by putting it on the Web

A domain name is translated in huge tables standardized across the Internet into a numeric IP address unique the host computer sought. These tables are maintained on computers called "Domain Name Servers." Whenever you ask the browser to find a URL,

the browser must consult the table on the domain name server that particular computer is networked to consult.

"Domain Name Server entry" frequently appears a browser error message when you try to enter a URL. If this lookup fails for any reason, the "lacks DNS entry" error occurs. The most common remedy is simply to try the URL again, when the domain name server is less busy, and it will find the entry (the corresponding numeric IP address).

E-government

The use of technology, predominantly the Internet, as a means to deliver government services to citizens, businesses, and other entities.

E-Rate

E-Rate is the commonly used name for the Schools and Libraries Program of the Universal Service Fund administered by the Universal Service Administrative Company under the direction of the Federal Communications Commission. The program provides discounts to assist schools and libraries in the United States and its territories with obtaining affordable telecommunications and information services.

For a list of acronyms and terms used in the E-Rate program, go to this web site: <http://www.usac.org/si/tools/acronyms-term-list.aspx>

Ethernet

A common method for connecting computers and equipment in a single location often referred to as a LAN or local area network. Ethernet connects computers, printers, workstations, servers, etc. within a building to a hub or router which allows devices to communicate.

Fiber

Fiber is a glass-based transmission medium (as opposed to copper). The "electronics," which use lasers to transmit optical signals, are placed at opposite ends of the path. Fiber optics can have significantly larger capacities over longer distances than copper-based electrical signals, which translates into much higher bandwidth.

Firewall

A system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in both hardware and software, or a combination of both. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially intranets. All messages entering or leaving the intranet pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

Hub

A central location on a network that joins remote workstations or remote locations together. At the center of a Local Area Network (LAN), the hub connects network devices, including computers, printers, and servers. In a Wide Area Network (WAN), a hub can also refer to a central location. Also see *Network Switch*.

Internet Service Provider or ISP

A company that offers its customers access to the Internet. The ISP connects to its customers using a data transmission technology appropriate for delivering Internet Protocol Paradigm, such as dial-up, DSL, cable modem, wireless or dedicated high-speed interconnects.

Intranet

A private network that uses some or all of the protocols of the Internet, but is accessible only by the organization's members, employees, or others with authorization.

IP Address or IP Number

(Internet Protocol number or address). A unique number consisting of 4 parts separated by dots, e.g. 165.113.245.2 Every machine that is on the Internet has a unique IP address. If a machine does not have an IP number, it is not really on the Internet. Most machines also have one or more Domain Names that are easier for people to remember.

IT

Information Technology, which refers to related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies.

Kilobits Per Second or kbps

A unit for expressing the speed of data transfer through a network in terms of thousands of bits per second.

Last Mile

The telecommunications technology that links the end user to the local point of presence (POP) of the area telecommunications provider (such as the telephone company, cable provider, or Internet service provider). This section of the connection is usually the most expensive because it is not shared with other users that would also share the costs. Last mile technologies include fiber optics, copper cable, and satellite transmission.

Last mile refers to any infrastructure project the predominant purpose of which is to provide broadband service to end users or end-user devices (including households, businesses, community anchor institutions, public safety entities, and critical community facilities)

Local Area Network or LAN

A computer network that spans a relatively small area connecting computers, workstations, servers, printers and other peripherals. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance creating a Wide Area Network (WAN).

Megabits Per Second or mbps

A unit for expressing the speed of data transfer through a network in terms of millions of bits per second.

Megabyte or MB

A unit for expressing the amount of physical storage on a storage device—a hard disk, for example. It refers to one million bytes.

Microwave

The radio frequency used for communicating to and from satellites. Microwaves can also be used to transmit telephone, facsimile, video, and data in terrestrial systems.

Middle Mile

The connections between your broadband service provider and the Internet. Middle mile refers to a broadband infrastructure project that does not predominately provide

broadband service to end users or end-user devices, and may include interoffice transport, backhaul, internet connectivity, or special access

Modem

Short for modulator/demodulator. This is a device that connects a computer to a network. Modems work at different speeds; the faster the speed, the faster that information flows to (and from) your computer. A modem's speed is measured in bits per second, or bps.

Network

A network links devices together, such as computers and telephones. LANs and WANs are examples of networks. Computers on a network are sometimes called *nodes*. Computers and devices that allocate resources for a network are called *servers*.

Network Nebraska

A collaborative effort under the auspices of the Nebraska Information Technology Commission (NITC) to share telecommunications resources, network services, and applications among eligible participants.

Network Nebraska is the term used to describe the statewide multipurpose telecommunications backbone and all of its associated service offerings and support. Network Nebraska is made possible through a consortium of public entities working together to provide a scalable, reliable and affordable infrastructure capable of carrying a spectrum of services and applications.

Network Switch

A switch is used to network multiple computers together. Switches are more advanced than hubs as they can limit the traffic to and from each port so that each device connected to the switch has a sufficient amount of bandwidth. For this reason, you can think of a switch as a "smart hub."

NTIA

National Telecommunications and Information Administration, an agency in the U.S. Department of Commerce that serves as the executive branch agency principally responsible for advising the President on telecommunications and information policies.

Plain Old Telephone Service or POTS

Standard analog telephone service generally associated with making and receiving voice calls. The term is sometimes used in discussion of new telephone technologies in which the question of whether and how existing voice transmission for ordinary phone communication can be accommodated. For example, Asymmetric Digital Subscriber Line and Integrated Services Digital Network connections provide some part of their channels for "plain old telephone service" while providing most of their bandwidth for digital data transmission.

Podcasting or pod-casting

A form of audio broadcasting using the Internet, podcasting takes its name from a combination of "iPod" and broadcasting. iPod is the immensely popular digital audio player made by Apple computer, but podcasting does not actually require the use of an iPod.

Podcasting involves making one or more audio files available as "enclosures" in an RSS feed. A pod-caster creates a list of music, and/or other sound files (such as recorded poetry, or "talk radio" material) and makes that list available in the RSS 2.0 format. The list can then be obtained by other people using various podcast "retriever" software which read the feed and makes the audio files available to digital audio devices (including, but not limited to iPods) where users may then listen to them at their convenience.

Point of Presence or POP

Point Of Presence (POP) is a physical location where an Internet Service Provider aggregates the Internet packets from its customers before forwarding the packets to another location. Internet packets can pass through many POPs at various levels of the Internet (e.g., local, regional or national) before reaching a final destination, like a server or someone's laptop PC. A local ISP may have just one POP but national ISPs can have thousands.

Public Computer Centers (PCC)

One of the project categories in round two of the NTIA Broadband Technology Opportunities Program. "Projects under this category are aimed at expanding broadband access and capacity at community anchor institutions, organizations serving vulnerable populations (e.g., low-income, unemployed, and seniors) or job-creating strategic facilities located in state- or federally-designated economic development areas."

Real Simple Syndication or RSS

A subscription protocol used to aggregate frequently updated websites (such as blogs and news sources). Users subscribe to an RSS feed of a website they want to monitor. The RSS feeds are aggregated and viewed through a web-based (Google Reader) or client side (Netnewswire) application, commonly called a "reader." The reader receives updates from the subscribed websites and displays the updated content in the reader interface. RSS is useful for users who wish to aggregate website updates into one place. A user can click on the headlines and be directed to the full article on the original website.

Router

A hardware device that separates network segments allowing only certain IP addresses to cross boundaries. Routers are typically used to connect Local Area Network (LAN) segments to a Wide Area Network (WAN) connection.

Satellite transmission

A type of transmission that sends a signal to a satellite in orbit. When the orbiting satellite receives the transmission it amplifies it and sends it back to earth. Satellite transmission can be used for high speed Internet access.

Server, Web Server

A computer running that software, assigned an IP address, and connected to the Internet so that it can provide documents via the World Wide Web. Also called HOST computer. Web servers are the closest equivalent to what in the print world is called the "publisher" of a print document. An important difference is that most print publishers carefully edit the content and quality of their publications in an effort to market them and future publications. This convention is not required in the Web world, where anyone can be a publisher; careful evaluation of Web pages is therefore mandatory. Also called a "Host."

T1 Line

A T1 (or T-1) line is a full-duplex digital transmission facility and the common name for a DS1 transmission rate of 1.544 megabits per second (mbps).

T3 Line

A leased-line connection capable of carrying data at 45,000,000 bits per second, or 45 Mbps. This is more than enough to do full-screen, full-motion video.

Telecom transmission rates

Traditional transmission rates build in the following order:

- DS0 is 64 kbps
- DS1 is 1.544 mbps (one DS1 can have 24 DS0)
- DS3 is 45 mbps (one DS3 can have 28 DS1)
- OC3 is 155 mbps (one OC3 can have 3 DS3)
- OC12 is 655 mbps (one OC12 can have 12 DS3)
- OC48 is 2,400 mbps (one OC48 can have 48 DS3)

Transmission Control Protocol/Internet Protocol or TCP/IP

Protocols that provide communications between connected networks and between diverse hardware architectures and different operating systems. These protocols allow us to communicate with others on the Internet or World Wide Web.

URL

Uniform Resource Locator. The unique address of any Web document. May be keyed in a browser's OPEN or LOCATION / GO TO box to retrieve a document. There is a logic the layout of a URL:

Anatomy of a URL:

Type of file (could also say https://)	Domain name (computer file is on and its location on the Internet)	Path or directory on the computer to this file	Name of file, and its file extension (usually ending in .html or .htm)
http://	www.nlc.nebraska.gov	Statistics/	librarymapbtop.html

Upstream/Downstream

There are two directions involved in delivering information over a single circuit. In a symmetrical connection, both upstream and downstream transmission speeds are the same. In an asymmetrical connection one direction can be greater than the other. Typically, the downstream side of the connection (from the network to the end user) is larger than the connection from the user to the network.

VPN -- (Virtual Private Network)

Usually refers to a network in which some of the parts are connected using the public Internet, but the data sent across the Internet is encrypted, so the entire network is "virtually" private.

VOIP (Voice Over IP)

A specification and various technologies used to allow making telephone calls over IP networks, especially the Internet. Just as modems allow computers to connect to the Internet over regular telephone lines, VOIP technology allows humans to talk over Internet connections.

Web 2.0

Generally attributed to Tim O'Reilly, O'Reilly Media, in 2004, Web 2.0 Web sites allow users to do more than just retrieve information. Web 2.0 applications and Web sites are interactive; they encourage users to create and add content to them. Traditional Web sites limit users to viewing and the content can only be modified by the site's owner. Web 2.0 changes the Web to an interactive platform for computing. With Web 2.0 Web sites, however, users can own the data and exercise control over that data. Software applications are run entirely through the Internet browser.

As these interactive applications increase in popularity, they are also increasing in complexity which requires more and more bandwidth to run the added features. One feature of successful Web 2.0 applications is their ability to improve as users add their own content.

Web Application Mashup or Mash-up

A Web-based application created by taking parts of two or more existing applications and combining them into a new application that has components of each of the originals. A mashup can add value by displaying information in new or unusual ways not apparent in the original sources. For example, adding the geographical coordinates from Google Earth to a photo stored on Flickr creates a mashup.

Wide Area Network or WAN

A network that connects two or more remote locations together. Any media connection type from ordinary POTS lines, ISDN, DS1, DSL, satellite, microwave or fiber-based connections can be used in a WAN.

Widget

A generic term for a graphical interface and its corresponding code that allows a user to interact with the application on a website without requiring any additional coding on the part of the user. Widgets are commonly used to enhance websites by adding graphic icons like clocks, weather badges, word-of-the-day, and others. Widgets allow users to link to other websites, frequently social networking sites, like Delicious, Digg, RSS feeds, and Facebook. A primary purpose of adding a widget to a website is to encourage user interaction and participation with the content on the website.

Wireless

Any communications service utilizing electromagnetic waves to transmit signals. In this type of system, the most notable feature is the lack of wires connecting devices. Wireless systems can be used over long and short distances but the type of wireless system used will determine the speed and the distance possible. Wireless operations permit services, such as long-range communications, that are impossible or impractical to implement with the use of wires.

Wi-Fi

Wi-Fi (wireless fidelity) is a wireless LAN technology that lets a laptop, personal digital assistant, or other mobile device connect to another device.

Additional Resources:

This resource sheet is based on one compiled by the American Library Association Office for Information Technology Policy (www.ala.org/oitp). The technology terms were derived from the following sources. Please refer to these sources for additional information.

ATIS Telecom Glossary 2007

<http://www.atis.org/glossary/default.aspx>

Tech Term Glossary

http://www.dsl-experts.com/broadband_glossary_a.htm

TechTerms.com: The Tech Terms Computer Dictionary

<http://www.techterms.com/>

TechSoup

<http://techsoup.org/tools/glossary.cfm>

Webopedia

<http://webopedia.com/>

Newton, Harry. (2006). *Newton's Telecom Dictionary*, (22nd ed). San Francisco: CMP Books.