

HISTORY OF THE INTERNET

What is the Internet?

The Internet began in 1969 as a project of the U.S. Department of Defense called ARPANET, or Advanced Research Projects Agency Network. The goal of this project was to design a nationwide computer network that could withstand major disasters. If one part of the network was destroyed, the other parts would continue to function due to the decentralized structure of the network.

In the early days of ARPANET, there were four computers in the United States attached to the network. Today, there are millions all over the world. Most people define the Internet as a collection of computer networks, but what exactly is a network? A network is a group of two or more computers connected together with cables that allow the computers to share information. Computers that are “on the Internet” all use the same protocols to send information back and forth, allowing them to communicate with each other. As long as a computer uses these protocols, it doesn't matter what type of hardware or software it uses.

In the Internet's early days (the 1960s and 1970s), only government, military, and educational institutions had computers connected to the Internet. The Internet was originally designed for research and scholarly communication. But as it grew, its services became more popular, and new ways of using the Internet multiplied. For example, the Internet began to be used for informal communication, entertainment, and eventually commerce, as more businesses connected to the Internet in the 1990s. According to statistics compiled by Nua Internet Surveys Ltd., some 605.60 million people worldwide were connected to the Internet as of September 2002.

Today, the Internet remains decentralized, but it is no longer structured entirely around government computers. It is comprised of independently owned and managed individual networks of all sizes. The larger networks with high-speed connections are sometimes called backbone providers.

Internet Service Providers (ISPs) lease Internet connections from the backbone providers and sell connections (also called Internet accounts) to consumers. Most home and small business

users connect to the Internet with dial-up accounts to ISPs using a modem and special communications software.

Uses for the Internet

The Internet has a special significance for the library community because it allows patrons -- both children and adults -- who do not have computers to keep up with the Internet for business and academic purposes. Libraries, to a great extent, help bridge what is called the "digital divide." The services listed below would be unattainable for many unless they were provided free of charge by the community's public library.

- E-mail allows libraries and patrons to send messages back and forth to individuals or groups.
- Telnet allows libraries and patrons to connect to a remote computer and use it as if you were there.
- File Transfer Protocol (FTP) allows libraries to transfer files to and from other computers.
- Usenet allows libraries and patrons to participate in group discussions on specific topics.
- Internet Relay Chat (IRC) allows libraries and patrons to chat in real time with one or many users.
- World Wide Web allows libraries and patrons access to literally millions of Web sites worldwide.

What is the World Wide Web?

One reason for the Internet's growth explosion is the ease of use and popularity of the World Wide Web and its graphical, "point-and-click" user interface. The World Wide Web was invented in 1989 by Tim Berners-Lee, a scientist at the European Particle Physics Laboratory (CERN) in Geneva, Switzerland. Lee wanted to make the information he used for research on the Internet more organized and accessible.

The World Wide Web is based on hypertext, which is a method of linking documents using embedded hyperlinks. Hyperlinks can be text, which is usually underlined or a different color

than the main text, or graphics. World Wide Web documents are created using a special computer language called HTML (Hypertext Markup Language). HTML coding embeds clickable links in documents and enables simple formatting.

Documents written in HTML are stored in computers called servers. Any Internet user who has a Web browser can retrieve the documents. A Web browser is a computer program that knows how to read and display hypertext documents. It also knows how to communicate with servers that store HTML files. The protocol used for this kind of communication is called Hypertext Transfer Protocol (HTTP). Documents on the World Wide Web are called Web pages. Web pages are organized into Web sites. Each Web page has its own address, known formally as a Uniform Resource Locator or URL.

Here is a made-up example of a URL for a page on the CNN site:

`http://www.cnn.com/WEATHER/cities/asiapcf.html`.

- `http://` is the protocol used to retrieve the document.
- `www.cnn.com` is the domain name for the server where the document is stored.
- `/WEATHER/cities/` is the path to the document in the server's directory structure.
- `asiapcf.html` is the name of the actual HTML file.

When you enter a URL in a Web browser, or if you click a hypertext link, the browser sends a message using the HTTP protocol to the computer identified in the URL. This message contains a request for the document specified in the URL. The server sends a copy of the document back to the browser, and it is displayed on your screen.

Understanding a few things about URLs and other Internet addresses can make using the Web a lot easier. The domain name (the name of the computer) in a URL can be assigned by a large number of businesses. Just type "domain name" into your search engine, and you will find companies who can register your top level domain name. The Internet Corporation for Assigned Names and Numbers (ICANN) Web site at www.icann.org has a long list of accredited domain name registrars. There are standard suffixes for domain names, called extensions, which help identify what type of organization owns the domain. For example, domain names ending in `.com` indicate a commercial organization.

Common extensions to domain names include:

- .net is used for major networks (such as a backbone provider), but is also in general use
- .edu is used for colleges and universities.
- .gov is used for U.S. federal government agencies.
- .mil is used for U.S. military organizations.
- .org is commonly used for nonprofit and other organizations.

Because so many domain names were snapped up at a rapid pace, more top level domains have been created. In the latter part of 2000, ICANN selected seven new top-level domains (TLDs):

- .aero is used to the air transport industry.
- .biz is used for all-purpose business sites.
- .coop is used for cooperatives.
- .info has unrestricted use.
- .museum is used for museums.
- .name is used for individual Web sites.
- .pro is used for professionals such as doctors, lawyers, accountants, and others.

Domain names in countries outside the United States usually end with a two-letter code representing the country; for example, Canadian Web sites end in .ca. Some state and county Web pages, including many belonging to libraries, have domain names ending in .us.

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