
Internet Connectivity and the Security Assistance Community

By

Stephen F. Wentworth, LT, USN, Instructor, DISAM

The following article is intended to serve as a primer for those new to the Internet, and to provide a listing of valuable resources for those already using it. The Internet is constantly expanding, both in terms of the number of sites accessible, and the range of services offered. Any discussion of the Internet, by the very nature of its rapid growth, may soon be dated. While a variety of sites, both DoD and non-DoD, are discussed and listed in the article, it should be noted that any use of the Internet at cost to the U.S. Government is for official use only.

One of the most radical and all-encompassing revolutions in history is occurring around us today. Information, both raw and processed is freely accessible as never before. People in countries as far-flung as Burkina Faso and Kazakhstan¹ have near-instantaneous access to stock quotes, on-line newspapers, and Congressional legislation. The global implications are staggering, and the potential benefits to the Security Assistance community are enormous.

In 1899, then Commissioner of U.S. Patents Charles Holland Duell petitioned the President to abolish his office because "everything that can be invented has been invented."² While we might admire the Commissioner's zeal for governmental parsimony, we know today that his assertion was more than slightly myopic. In the realm of computer technology alone, invention and refinement of new products advances at a staggering rate. The multimillion-dollar mainframe computer behemoth of yesterday has been outdone by a rapid succession of increasingly sophisticated microcomputers that cost much less and are vastly superior in every quantitative measure of processing and storage ability.

One of the more significant and widely heralded of these advances in computing technology has been the admixture of computer and telecommunications technology, resulting in computer *networks*. Simple networks, called local area networks, or LANs, are composed of a central computer, or *server*, remote computers that can access information contained in the server, or *clients*, and the software and hardware (i.e., cabling, a network operating system such as NetWare or Windows NT, etc.) required to link them. More complex networks may have a telecommunications interface, involving both software and hardware, linking them to other servers or host computers.

The largest of these complex networks, the Internet, is the progeny of a DoD project started in 1969. This project was designed to link DoD and DoD-sponsored activities throughout the United States in an effort to facilitate better communication and information exchange between the activities. While both the DoD, and later the National Science Foundation played an important role in the development of the Internet, it is now almost entirely the purview of commercial companies such as Altnet, MCI, and Sprint. As of May 1995, 94 countries had indigenous servers providing access to the Internet.³

¹ MERIT Network, Inc., "http://nis.nsf.net/nsfnet/statistics/nets.by.country," (May, 1995).

² Bill Gates et al., *The Road Ahead*, (New York: Viking Penguin, 1995), p. xiii.

³ MERIT Network, Inc., "http://nis.nsf.net/nsfnet/statistics/nets.by.country," (May, 1995).

A portion of the Internet which has generated considerable attention recently is the World Wide Web, hereafter referred to simply as the "Web." Like all of the Internet, the Web has undergone considerable growth and change since it was first conceived by the European Laboratory for Particle Physics (CERN) in the late 1980s. The Web was developed as a way to connect physicists throughout the world via *hypertext* (and later, *hypermedia*) a means of electronically linking information with reference or related material. These links provide ready access to media as diverse as text, still images, video, and audio clips.

The Web is governed by a set of protocols, including transfer protocols designed to ferry information from server to client, called *hypertext transfer protocols* (HTTP), and markup protocols designed to create *Web sites*, or *home pages* which contain the information a client wishes to retrieve, called *hypertext markup language* (HTML). These protocols are used to ensure that computers using a variety of operating systems and *Web browser* programs, software designed to navigate through the Web, are able to interact seamlessly.

Connectivity on the Internet is governed by a suite of identifier protocols collectively referred to as the *transmission control protocol/internet protocol*, or TCP/IP. Each site on the Internet has its own unique location name and *IP address*, a string of numbers that identify an individual computer. As an example, the location name for the Census Bureau's 1990 census data is "http://www.census.gov". If this location were given to a Web browser, it would connect to a *domain name server*, a computer containing a "data base" linking location names with the numerical IP address, which automatically converts the Internet location name into a numerical IP address, and allows the computer to connect to the Census Bureau's Web site.

There are a variety of ways to navigate, send, and receive information on the Internet. The most commonly used methods or tools are *telnet sessions*, *file transfer program (ftp) sessions*, *e-mail*, *Usenet newsgroups*, *WAIS*, *Gophers*, and *Web browsers*. While the aforementioned tools vary greatly in terms of power, purpose, and ease-of-use, recent developments make obvious the trend toward graphically-oriented, comprehensive Internet software.

Most computer users are familiar with e-mail, an electronic method of sending messages from one computer to another with a known address. Each e-mail address is unique, which ensures that the message sent arrives where it's supposed to. To send an e-mail message to a DISAM instructor, you'd type in the address "username@san.idss.ida.org" or, alternatively, "username@disam.wpafb.af.mil", where username represents the first initial and last name of a faculty member. The advantages of e-mail are evident for a world-wide community: accurate copies of even large messages transmitted and received without benefit of a message center, responses or forwarding at the click (or push) of a button, and the ability to ignore time zone differentials when "contacting" someone. Many popular programs such as Microsoft Mail™ and Lotus' cc:Mail™ allow a variety of files, such as spreadsheets, images, and lengthy documents to be attached to the e-mail message. The e-mail portion of the Security Assistance Network (SAN), the Security Assistance community's global computer network, can easily handle attached text files of over 150 pages.

The Internet, in many ways, is like an electronic delivery service. As previously mentioned, it allows rapid transfer of electronic messages from one computer to one or many other computers. Relatively speaking, it is just as easy for a computer to send a message to 1,000 computers as it is for the computer to send it to one, as long as the computer knows the address of each computer. Usenets are the byproduct of this reality. They employ massive mailing lists people join called *LISTSERVs*, to periodically transmit all the messages they receive to every member on the list. To make this process more efficient, Usenets are broken up into *newsgroups*, which are distinct

topics or categories within the Usenet. Typical newsgroup categories include computers, sciences, and recreation. Many are even broken up regionally.

Telnet sessions, on the other hand, enable a remote computer to log directly into a host computer in a process called *remote login*. This provides the remote computer with direct access to the host computer's library, a potentially vast selection of files available for viewing. Telnet also allows files to be printed or saved piecemeal using a save or print-screen command. LOCIS, the Library of Congress Information System (telnet address locis.loc.gov), provides, among other things, a complete listing of Congressional legislation, including a description, sponsors, and the status of the legislation.⁵ A newer version of telnet, *tn3270*, is becoming increasingly popular due to its greater speed. Most hosts will allow both regular telnet, and *tn3270* access.

Like telnet, file transfer programs (*ftp*) involve remote access to a host computer. There are, however, two major differences. First, *ftp* allows entire files, whether programs, text, or other media, to be transferred at once. Second, in and of itself, *ftp* does not allow a file to be previewed on screen prior to being transferred. Often however, it is used in conjunction with a Web browser and a special program called a *viewer* to perform that function as well. Online publications such as the Early Bird, which is provided by the Pentagon, require first-time users to *ftp* viewers to allow online or downloaded reading of the news articles it contains. The most important property of file transfer programs is that files are centrally available whenever the end user desires them. This is of particular benefit when updates, patches, or new products are released, especially when timeliness of receipt is essential.

While telnet and file transfer programs are both useful tools, they have a significant limitation: they require you to be at least passingly familiar with a number of specialized commands. With the advent of *Gopher*, the need to invoke arcane commands to travel from site to site, or retrieve information is alleviated. Gopher is menu driven, and allows a client to move from one location to another, download data, or (in some cases) read files on the screen, all at the click of a mouse button. Without a doubt, this represents a major step forward in terms of practicality and ease-of-use. According to Mark McCahill, one of Gopher's developers, "The strength of **Gopher** is that it's simple and painless to use, and that's why it has grown."⁶ In addition to its intrinsic ease-of-use, Gopher also benefits from powerful search tools like *Veronica* and *Jughead*. These programs, accessible from a variety of Gopher sites, allow a user to search Gophers throughout the Internet to find a particular site of interest. Someone desiring information from the Library of Congress' Gopher site (marvel.loc.gov), for example, could query Veronica and be taken there immediately. Gopher can even connect a user to a telnet or *ftp* session without requiring any addresses to be typed in. Once a telnet session has started, however, the user still needs to use the commands required by the host computer.

The tools mentioned in the paragraphs above all have their own unique strengths and benefits. In every case, however, they share a common weakness: you need to know specifically what you're looking for in order to find it. All too often, searches using the aforementioned conventional methods are lengthy, frustrating, and often fruitless. The fact is, we often *don't* know exactly what we're looking for in cyberspace. This quandary was resolved in 1992 with the introduction of Thinking Machine Corporation's *WAIS* (Wide-Area Information Server) system. Rather than merely searching a given network or just Gopher sites, WAIS will search the entire

⁴ John R. Levine and Carol Baroudi, *The Internet for Dummies* 2d ed., (Foster City: IDG Books Worldwide, 1994), p.130-131.

⁵David R. Noack, "Of, by and for the People," *Internet World* 6 (August 1995): 30.

⁶ Paul Gilster, *The Internet Navigator* 2d ed., (New York: John Wiley and Sons, 1994), p.335.

Internet to find sites containing the requested information.⁷ Like Veronica or Jughead, WAIS can be accessed, and queries run at a number of sites on the Internet.

Perhaps the most important development on the Internet has been the explosion in popularity of the World Wide Web. The reason why the Web has flourished is evident: its hypermedia-supported, graphics-oriented basis allows access not just to other, similar sites, but to the text-oriented telnet, ftp, WAIS, and Gopher sites as well. Web sites are usually referred to as *home pages*, and can contain a dizzying array of multimedia as well as links to other sites on the Internet. For instance, Air Force members can have instantaneous access to the latest promotion board results at the Air Force Personnel Center's home page (<http://www.afpc.af.mil>), or take advantage of the Air Force's locator service. The U.S. Navy's home page (<http://www.navy.mil>), called "NavyOnLine," contains links to nearly 100 other Navy home pages ranging from Antarctic Development Squadron Six (VXE-6) to the UYK-44 Technical Support Center, and is constantly growing. NASA's home page (http://www.gsfc.nasa.gov/NASA/NASA_homepage.html) contains links to a huge library of high resolution photos, videos, and audio clips available for downloading.

There are several popular software applications, called *browsers* or *Navigators*, that enable client computers to browse the Web. The first of these, *Mosaic*, was developed by the National Center for Supercomputing Applications (NCSA), and has since been modified and repackaged by several commercial vendors. Other popular browsers include Netscape Communication Corporation's Netscape Navigator™, and Microsoft Corporation's Internet Explorer™. Figure 1 is an example of the aforementioned NavyOnLine as viewed on Netscape Navigator™. Each item underlined on the page is actually a link to a separate document or Web site. All of these products are available for use with x-windows or Macintosh operating systems. Generally speaking, these programs require a user to have TCP/IP installed on their computer prior to installing the browser software.

Although the Internet has wide potential, one note of caution is in order. It cannot be automatically assumed that the Internet is a "free lunch." Depending on the users' geographic location, say at a CONUS military installation, accessing the Internet may not generate any additional telecommunications costs to the using activity. On the other hand, this could be a totally different story at overseas locations where Internet usage is subject to data volume or long-distance service costs. Thus, users are advised to be aware of local policies concerning Internet access before generating costs which may prove to be unauthorized.

One of the unique aspects of the Security Assistance community is its incredible diversity. United States SA personnel are stationed in over 100 countries, scores of CONUS activities are involved in training and military sales to foreign countries, and an extensive infrastructure has been set up to manage SA programs globally. E-mail messages can be sent back and forth across the Internet from a security assistance directorate at one of the CONUS activities, to a Security Assistance Office overseas, to a Unified Command, to the Defense Security Assistance Agency, gaining electronic attachments and remarks every step of the way. Further, the Internet provides a means for authorized users of the MILNET, the Department of Defense's military communications network, to gain access to various security assistance data information systems, such as the Defense Integrated Financial System (DIFS), the Navy's Management Information System for International Logistics (MISIL), the Air Force's Security Assistance Management Information System (SAMIS), and the Army's Centralized Integrated System for International Logistics (CISIL).

⁷ Daniel P. Dern, *The Internet Guide for New Users*, (New York: McGraw-Hill, 1994), pp. 347-348.

Whether it be e-mail, newsgroups, Web sites, or anything else on the Internet that a potential user is interested in, access to the information or service desired is relatively easy to acquire. Many computer networks, including LANs, already have access to the Internet, and for an individual to gain access simply requires the Network Administrator to assign a IP address to the user's computer. Other services are available which allow a user to access the Internet via modem, by dialing in to a host computer which, in turn, has access to the Internet. While many such services are available, the most popular by far are CompuServ™, America Online™, and Prodigy™, who provide Internet access for a fee. Online providers such as these offer numerous services to subscribers on a pay-as-you-go basis.

Hardware requirements for Internet access aren't as stringent as might be supposed. A 386DX computer with 8 MB RAM provides enough processing power to enable meaningful, albeit sometimes slow, Internet connectivity. Timely Web browsing, however, requires slightly more sophisticated architecture. A 486DX processor running at no less than 66 Mhz, 8 MB RAM, and a video card with 1 MB RAM should be considered minimums for Web browsing. Obviously, faster processors such as Pentiums™, and PowerPCs™, 16 MB or greater RAM, more video memory, and faster network cards, modems, and fiber-optics cabling all increase the speed at which the Internet, especially the Web, can be browsed. Certain limiting environmental factors, like old copper phone lines, or numerous people accessing a particular site, however, can slow Internet connectivity markedly.

The Internet can be as helpful and as efficient a resource as we choose to make it. The trend in both the U.S. Government and the private sector is to embrace this remarkable network and utilize its vast resources to the fullest extent possible. The new, replacement *Security Assistance Network*, soon to be released, will take advantage of several features of the Internet to increase the flow of information and ideas throughout the SA community. By accepting and adopting this technology to suit our interests, we free ourselves from the self-imposed limitations of paper and embark on an extraordinary ameliorative journey where information and knowledge are just a mouse-click away.

Figure 1



Welcome to NavyOnLine

Welcome to NavyOnLine, a gateway to United States Department of the Navy online resources.

New users of NavyOnLine are invited to read the NavyOnLine fact sheet. New additions to NavyOnLine are noted by NEW. New explorers of the Internet might want to browse some of the New Internauts material.

Search Navyonline resources:

NavyOnLine Resources

- Resources frequently requested
 - Guidelines for Naval use of the Internet
 - Answers to frequently asked questions (FAQ)
 - Blue Angels 1996 Schedule
 - CHIPS
 - Navy News Service
 - Navy Public Affairs Library
 - Navy Recruiting Command
 - Navy Internet Dialup Service (NavTAP)
 - Internet Search Sites
- Resources
 - Naval Web Sites (category, News And Information Services.

The NavyOnLine home page is maintained by the NavyOnLine Working Group. Hardware, software, network connections and technical support for the NavyOnLine home page are provided by NCTS Pensacola.

Questions, comments, suggestions, problems and other feedback about NavyOnLine may be submitted by sending email to navyonline@ncts.navy.mil or by completing our online feedback form.