



Technology Guide 5

The Internet and the Web

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The Internet

The **Internet** ("*the Net*") is a network that connects hundreds of thousands of internal organizational computer networks worldwide. Participating computer systems, called **nodes**, include PCs, local area networks, databases, and mainframes. A node may include several networks of an organization, possibly connected by a wide area network. The main network that links the nodes is referred to as the **backbone**, a fiber-optic network currently operated mainly by telecommunications companies.

- ARPAnet (Advance Research Project Agency) 1969 for DOD
- Defense related companies & universities 1970's
- TCP/IP became the standard during the 1970's (Unix)
- Most companies & universities 1980's
- All connected networks became TCP/IP based during 80's
- NSF in 1986 6 – Super computers as the backbone
- Individual users were allowed access in 1992



Next-Generation Internet

The broad goals of the **NGI** initiative are to research and develop advanced end-to-end networking technologies, focusing primarily on reliability, robustness, security, quality of service guarantees for multicasting and video, and bandwidth allocation. In other words, the NGI initiative aims to create an Internet that is fast, always on, every-where, natural, intelligent, easy, and trusted.

- **Internet2** is a collaborative effort to develop advanced Internet technologies and applications. The primary goals of Internet2 are to create a leading-edge network capability to enable revolutionary Internet applications; and ensure the rapid transfer of new network services and applications. It will use part of vBNS as a backbone for providing high-speed connectivity.
- **Very-high-speed Backbone Network Service (vBNS)** is a high-speed network designed to support the Internet2 and the government-sponsored Next-Generation Internet (NGI) initiative TCP/IP became the standard during the 1970's (Unix).



Internet Characteristics Accessing the Internet

There are several ways to access the Internet. You can access an Internet-connected file server on a LAN. Log onto the Internet using a modem or wireless connections or connection through commercial providers.

- Connecting via LAN server
- Connecting via serial line internet protocol/point-to-point protocol (slip/ppp)
- Connecting via an online service
- Using the TV as a channel to the internet
- Internet kiosks

Internet Characteristics Protocol

Procedures and rules for transferring data across the Internet are called telecommunications **protocols**. The original participants of the Internet used *TCP/IP* which is now the **Internet Protocol (IP)**.

- **Packets** represent information that has been divided into small portions to be passed through the Internet. Their creation and transmission are governed by TCP/IP to provide for more consistent delivery and control.
- One member of the TCP/IP family of protocols is **Telnet**, a service that allows users to connect to computers other than their own and interactively search for files, text, software, and so forth.

Internet Characteristics Resources

Accessing a resource (file, image, document, etc.) on the Internet.

- **Addresses on the internet.** Each computer on the Internet has an assigned address, called the **IP (Internet Protocol)** address, that uniquely identifies and distinguishes it from all other computers.
- **Domain Names.** Most computers also have names, which are easier for people to remember than IP addresses. These names are derived from a naming system called the **domain name system (DNS)**.
- **URLs.** A uniform resource locator (URL) indicates the location (or address) of a Web site you want to visit. The address consists of several parts.

Internet Characteristics Resources

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ZONE	USED FOR	ZONE	USED FOR
com	commercial sites	arts	cultural and entertainment activities
edu	educational sites	rec	recreational activities
mil	military sites	nom	individuals
gov	government sites	aero	air-transport industry
net	networking organizations	biz	businesses
org	organizations	coop	cooperatives
firm	businesses and firms	museum	museums
store	businesses offering goods for purchase	name	registration by individuals
info	information service providers	pro	accountants, lawyers, physicians
web	entities related to World Wide Web activities		

Internet Characteristics Resources

URLs. A uniform resource locator (URL) indicates the location (or address) of a Web site you want to visit. The address consists of several parts.

URL = protocol//host computer or IP/path/file
server

Protocol is http hypertext transfer protocol

Host computer is the domain name

IP is actual address

Path filesystem or directory

File is the specific page name (Index, Home, Default)

Optional
Start page

Browsing the Web

You browse the vast resources of the Internet through the **World Wide Web (or “the Web”)**. The **Web** is a vast collection of interconnected pages of information that are stored on computers connected to the Internet. It is a system with universally accepted standards for storing, retrieving, formatting, and displaying information (text, pictures, video, and so on) via a client/server architecture. Documents accessible on the Web contain **hyperlinks (links)** to other documents. Such links are used to connect documents and are an implementation of *hypertext*.

- The most widely used browsers are:
 - Netscape Navigator
 - Microsoft explorer
- **New browsers:**
 - Opera
 - NeoPlanet
- **Offline browsers** enable a user to retrieve pages automatically from Web sites at predetermined times.

Creating Web Documents

To write a Web document for the Internet or an intranet, various software languages can be used. The most common is [HyperText Markup Language \(HTML\)](#), which formats documents and incorporates dynamic hypertext links to other documents stored on the same or different computers.

Other Languages

- Dynamic HTML (DHTML)
- eXtensible Markup Language (XML)
- Virtual Reality Modeling Language (VRML)
- Java
- PHP
- Coldfusion

Search Tools

A **search engine** is a tool that makes your browser more effective. It enables you to locate information by using *key words* in the same way that you would search online library resources

Selection

Search engines select pages for inclusion in their data-bases in two primary ways:

- **Web crawlers** traverse the Web automatically, collecting index data on search principles
- **Registration** Web developers register their sites

Some Engines

- Google
- Yahoo
- Lycos
- HotBot
- WebCrawler
- Alta Vista
- Excite

Download

*Many of the documents are transferable from the Internet using **file transfer protocol (FTP)***



Communication Tools

Several communication tools are available on the Internet.

- Electronic Mail
- Online Chatting
- Newsgroups
- Mailing Lists and Electronic Bulletin Boards
- Portals
- Internet Telephony
- Internet Fax



Other Internet Tools

- Streaming Audio and Video
- Real-Time Audio and Video
- Web Services
- Push Technology
- Information Filters
- Clipping Services
- Web Authoring

Internet Tools

TABLE T-5.1 Evaluation of Internet Tools

Category	Product Name	Beneficial Features
E-mail client	Outlook Express 6	Offers strong security measures and a smooth interface; can accommodate many users with multiple e-mail accounts.
Instant messaging	AOL Instant Messenger	Has a simple interface but still gives you powerful features like multiuser chat and voice chat.
Media player	RealNetworks RealOne	Attractive, simple-to-use interface; copies music to both its own format and MP3.
Ad blocker	WebWasher 3	Filters out ads, pop-up windows, scripts, cookies, Web bugs, other Web annoyances.
Cookie manager	The Limit Software Cookie Crusher	Provides detailed control over bits of code that Web sites and advertisers use to identify you.
Newsgroup reader	Forte Free Agent 1.21	Great for offline news reading and for downloading and decoding batches of file attachments.
File sharing system	BearShare 2.3	Anonymous; easy for former Napster users to understand.
Metasearch engine	Copernic 2001 Basic	Searches as many as 80 engines in seven categories.
Web archiver	AskSam SurfSaver 2.2	Gives you great control over what's saved; creates searchable archives; works with Netscape Navigator 4.x and IE 4 or higher.
Web authoring	Evrsoft 1 st Page 2000	Includes samples for creating Web effects; allows real-time previews; grows with your skills.
File transfer	RhinoSoft.com FTP Voyager 8	Offers a sophisticated interface and a transfer scheduler; allows for one-click Web site synchronization.
Firewall	Zone Labs ZoneAlarm 2.6	Blocks hackers trying to access your system; prevents applications on your PC from gaining unauthorized Internet access.

Source: Compiled from various files in the *PCWorld.com* site (accessed June–July 2003).



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