

Subject: Library and Information Science

Production of Courseware
 -Content for Post Graduate Courses



Paper No: 05 ICT for Libraries

Module : 12 Internet: Background, Basic services and features



Development Team

Principal Investigator
&
Subject Coordinator

Dr. Jagdish Arora, Director
INFLIBNET Centre, Gandhinagar

Paper Coordinator

Dr. Usha Mujoo Munshi, Librarian,
Indian Institute of Public Administration

Content Writer

Mrs. Hema C and Dr Jagdish Arora,
Senior Technical Officer, INFLIBNET Centre /
Director, INFLIBNET Centre

Content Reviewer

Dr. Usha Mujoo Munshi, Librarian
Indian Institute of Public Administration

Internet: Background, Basic services and features

I. Objectives

The objective of this module is to impart knowledge on the following aspects of Internet and some of the aspects of this module have been already discussed in other modules:

- Evolution of Internet;
- World Wide Web;
- Protocols used to address, retrieve, present and transfer information resources;
- Internet applications and services;
- Internet benefits and issues; and
- Internet security and privacy.

II. Learning Outcomes

After going through this lesson, learners would attain knowledge about evolution of Internet from its establishment by ARPANET in the year 1960 to Web 3.0 technology in 2010. You will learn about the Client-Server Architecture, Hypertext Transfer Protocol (HTTP), Hypertext Markup Language (HTML), Web Servers, Web Browsers, Universal Resource Locators (URLs) and protocols such as TCP / IP, SMTP and FTP that make the Web work. You would also be imparted knowledge on some of the popular applications and services offered by the Internet including e-mail, mailing lists and list servers, chats and instant messaging, voice over Internet, e-commerce, cloud computing and telnet.

III. Module Structure

1. Introduction
 - 1.1 Definitions
2. Evolution of Internet
3. World Wide Web (WWW)

- 3.1 How does Web Work?
 - 3.1.1 Client Server Architecture
 - 3.1.2 Hypertext Transfer Protocol (HTTP)
 - 3.1.3 Hypertext Mark-up Language (HTML)
 - 3.1.4 Web Servers and Web Browsers
 - 3.1.5 Uniform Resource Locator (URL)
 - 3.1.6 Domain Name System (DNS)
- 3.2 Internet Protocol
 - 3.2.1 Transmission Control Protocol (TCP/IP)
 - 3.2.2 File Transfer Protocol (FTP)
 - 3.2.3 Simple Mail Transfer Protocol (SMTP)
- 4. Internet Applications and Services
 - 4.1 Electronic Mail (E-Mail)
 - 4.2 Mailing Lists and Listserv
 - 4.3 Chats and Instant Messaging
 - 4.4 Voice over Internet Protocol (VoIP)
 - 4.5 E-Commerce
 - 4.6 Online Surveys
 - 4.7 Online Discussion Forums
 - 4.8 Telnet
- 5. Benefits of the Internet
 - 5.1 Faster Communication
 - 5.2 Abundant Information Resources
 - 5.3 Social Networking
 - 5.4 Online Service and E-Commerce
 - 5.5 Global Audience
 - 5.6 Relatively Inexpensive
 - 5.7 Entertainment for Everyone
- 6. Internet Issues
 - 6.1 Theft of Personal Information
 - 6.2 Spamming
 - 6.3 Malware Threats
 - 6.4 Age-inappropriate Content
 - 6.5 Social Isolation, Obesity, and Depression
- 7. Summary
- 8. References

1. Introduction

The Internet, also called "the Net" is a global network of networks. It is a worldwide system of computer networks conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1970. People and organizations connect into the Internet so that they can access its massive store

of shared information. Internet can be used to receive all kinds of information such as text, graphics, voice, video, and computer programs. It can be connected through computer using phone line, cable, DSL, wireless. A number of Internet Service Providers (ISP) provides Internet connectivity to organizations and individuals using the above mentioned media. While telegram service has been completely replaced by email, other postal services are being replaced gradually by the Internet. One can also carry on live "conversations" with other computer users, using Internet Relay Chat (IRC). Internet telephony hardware and software can be used for real-time voice conversations. No one owns Internet, although several organizations the world over collaborate in its functioning and development.

World Wide Web (WWW) is the most widely used service of the Internet. Its outstanding feature is hypertext, a method of instant cross-referencing. Millions of Web pages of information can be accessed through Internet, using Web browsers like Microsoft Internet Explorer, Mozilla, Firefox, Google Chrome, etc. It displays text, graphics, and animations, and supports easy search and navigation tools.

1.1 Definitions

A few important definitions of Internet are given below:

Oxford Dictionary defines Internet as a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols.

The Federal Networking Council (FNC), a U.S. organization chartered by the National Science and Technology Council's Committee on Computing, Information and Communications Federal, refers the Internet as the global information system that :-

- is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions;
- is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and
- provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure.

The Internet Society (ISOC), an international, non-profit organization at Virginia (U.S.) that provides leadership in Internet related standards, education, and policy defines Internet as a "global network of networks" enables

computers of all kinds to directly and transparently communicate and share services throughout the world using a common communication protocol.

2. Evolution of Internet

The history of Internet can be traced to the launch of Defence Advanced Research Projects Agency (DARPA) by US President Dwight Eisenhower for enhancing military applications and to regain the lead of US in science and technology. By the end of 1960, computer networking and communication technology established communication links between research centres and universities across the country.

In 1969s, ARPANET was commissioned with 15 nodes and 23 hosts. The e-mail was invented in 1972 by Ray Tomlinson to send messages across a distributed network through the new communication technique called TCP. Later split into TCP/IP.

In 1973, “packet-switching” was introduced to allow networked computers to communicate flawlessly across multiple, geographically dispersed locations. The objective was to split the data to be transmitted into tiny packets that can take different routes to their destination and reassembled in the right order. The system of protocols used was known as Transmission Control Protocol (TCP) and Internet Protocol (IP). DARPA also set up the Internet Configuration Control Board (ICCB) in 1977.

In 1981, CSNET (Computer Science Network) was built up by the National Science Foundation to provide networking services to universities and industries in USA. The CSNET server also provided white pages directory service and this software is still used in fifteen countries and approximately 200 sites. In the same year, BITNET (Because it's time network) was formed as a cooperative network at the City University of New York and adopted the IBM RSCS protocol suite that connected participating sites through leased lines in all academic areas. It also provided a number of unique services to its users (e.g., LISTSERV). The University of Wisconsin developed “Name Server” that facilitated translation of names into strings of numbers. Domain Name Servers as distributed databases were introduced in 1984 in place of IP addresses. It is much easier to remember domain name (Example: www.yahoo.com) than its numerical equivalent. In 1986, NSFNET was developed by the U.S. National Science Foundation (NSF) which provides a major backbone communication service for the Internet.

In 1987, BITNET and CSNET merged to form the Corporation for Research and Educational Networking (CREN). DARPA formed the Computer

Emergency Response Team (CERT) for Internet security which was realized for the first time due to spread of computer virus worldwide in the year 1988. The Internet Engineering Task Force (IETF) and Internet Research Task Force (IRTF) also came into existence under the Internet Architecture Board (IAB) in the year 1989. In the same year, several other countries got connected to the NSFNet including Australia, Germany, Israel, Italy, Japan, Mexico, the Netherlands, New Zealand, Puerto Rico and the United Kingdom.

Internet becomes commercialized during the early 1990's. The ARPANET ceased to exist in 1990. Commercial network providers in the U.S. and Europe began to offer Internet backbone and access support on a competitive basis to interested parties. Access to Internet was first offered on commercial basis by "World" (world.std.com), thus it became the first Internet Service Provider (ISP) of Internet dial-up access.

The most significant development in the history of Internet was the invention of World Wide Web (WWW) by Tim Berners-Lee at the CERN Laboratory in 1991. The InterNIC was created in 1993 to provide specific Internet services including i) Directory of database services; ii) Registration services; and iii) Information services. In March 1995, the WWW surpassed FTP as the service with greatest traffic on NSFNet based on packet count. In 1993, the first web browser "Mosaic" was developed by National Center for Supercomputing Applications (NCSA) at the University of Illinois Urbana-Champaign to display images online with text instead of displaying images in a separate window. In 1994, the First Commercial web browser (Netscape) was produced by Netscape Communications Corporation. The year 1999 witnessed the development of Music file sharing (Napster), which changed the entire recording industry.

2004 onwards World Wide Web second version was introduced as Web 2.0 comprising of Blogs, wikis, mash-ups, web services, social networking sites etc., where users can communicate openly with users of other web based community.

Later at the end of the decade due to increasingly empowered consumers and further advances in technology, media became more distributed, personalized and contextualized. Media consumption, mobile advertising, online video advertising, media engagement, real-time social media, cloud computing, webinars and open source improved with extended functionalities.

The third generation of World Wide Web (Web 3.0) is known as the Intelligent Web or Semantic Web. It aims to convert the current web content into standard data format to be shared and reused across applications, enterprises, and community boundaries.

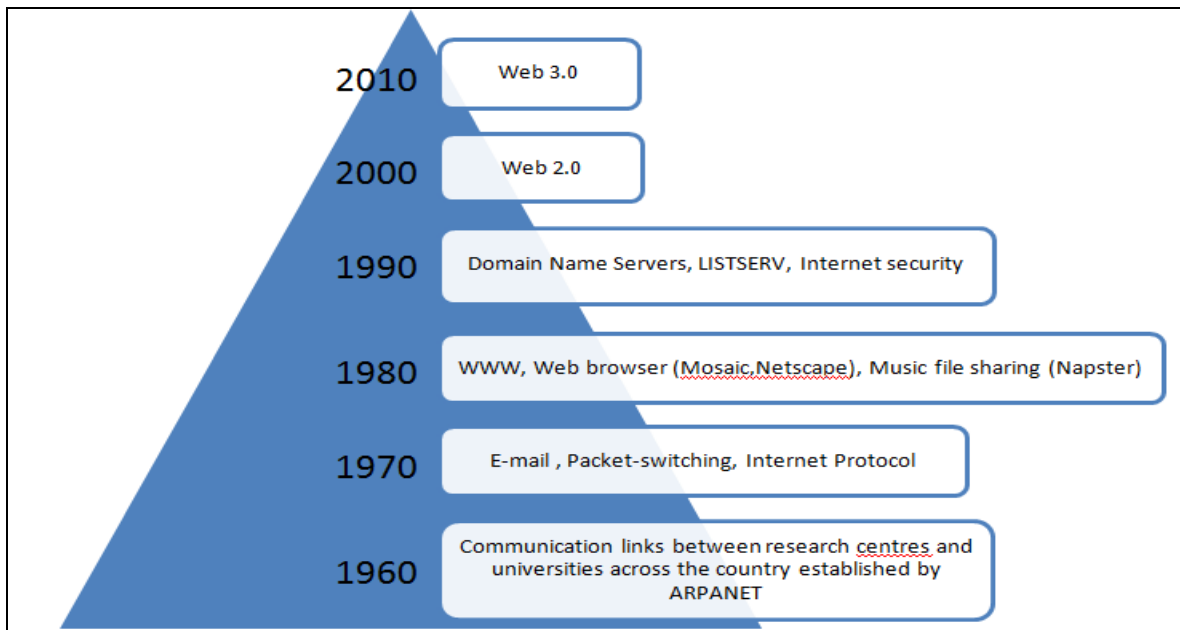


Fig.1: Evolution of Internet

3. World Wide Web (WWW)

Tim Berners Lee led the development of the original World Wide Web in the late 1980's and early 1990's. The term WWW refers to the World Wide Web or simply the Web. It contains all the public Web sites connected to the Internet worldwide, including the client devices that access Web content.

WWW is a system of interlinked hypertext documents that can be accessed via the Internet, the hypertext documents contains text, images, videos and other multimedia messages. WWW is graphical, easy to use, distributed, dynamic and interactive and work across all platforms.



Fig.2: World Wide Web (WWW)

3.1 How does Web Work?

The most important concepts and underlying mechanism that make the Web work are client-server architecture, Hypertext Transfer Protocol (HTTP), Hypertext Markup Language (HTML), Web Servers, Web Browsers and Universal Resource Locators (URLs). These concepts are described below:

3.1.1 Client Server Architecture

The Client-Server Architecture is based on the principle where “client” program installed on the user’s computer (called client) communicates with the “server” program installed on the host computer to exchange information through the network. The client-server model involves two separate but related programs, i.e. client and server. The client program is loaded on the PCs of users hooked to the Internet where as the server program is loaded on to the “host” (usually a PC with large storage capacity and RAM, a mini-computer or a main-frame computer) that may be located at a remote place. The concept of client / server computing has particular importance on the Internet because most of the programs are built using this design. This type of architecture is sometimes referred to as two-tier. It allows devices to share files and resources. Server provides the service and Client is considered as the customer requesting the service. A server usually runs on a computer that is connected to network.

3.1.2 Hypertext Transfer Protocol (HTTP)

HTTP or Hypertext Transfer Protocol is the protocol to exchange or transfer hypertext documents between hosts. It is the technology used to transfer Web pages to ones computer. With the help of Hypertext, a word can contain a link to another Web site or a document or a web page on the same site/different website. All Web pages are written in the hyper-text Markup language (HTML) working in concurrence with Hypertext Transfer Protocol. It is the procedure for transferring files like text, graphic images, sound, video and other multimedia files on the World Wide Web. The web user utilizes HTTP indirectly through Web browser. The Web browser is an HTTP client, sending requests to server machines. When a user enters file requests in his/her browser by either opening a Web file i.e. URL or clicking on the hypertext link, the browser builds an HTTP domain request and sends it to the Internet Protocol address indicated by the URL. The HTTP domain in the destination server

machine receives the request and sends back the requested file or files associated with request.

3.1.3 Hypertext Mark-up Language (HTML)

Hypertext is a method of presenting information, where selected objects including text and images can be further expanded to provide additional information about the object. Those objects can be linked to other documents which may be text, file, pictures and video etc. Links can be identified by highlighted (underlined) and coloured text. HTML is the language used to create WWW pages and associated links. HTML elements called tags form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. HTML tags were first published on the Internet by Tim Berners-Lee in late 1991.

3.1.4 Web Servers and Web Browsers

A Web Server is required to publish and deliver information on the web. A web server is a combination of hardware and software. Web server software program at server end hosts web sites and is responsible for replying to requests for files from web browsers at clients end. The Web works on a client / server model in which client software (Browser) runs on a local computer and the server software runs on a web host. Every Web server has an IP address and possibly a domain name. For example, if you enter the URL <http://www.inflibnet.ac.in/about.html> in your browser, this sends a request to the web server whose domain name is inflibnet.ac.in. The server then fetches the page named “about.html” – from the web site “www.inflibnet.ac.in.” and sends it to your browser.

To view / read the WWW pages one must have a special application called web browser. A web browser is an application program that provides a way to look at and interact with all the information on the World Wide Web. Technically, a web browser is a client program that uses the Hypertext Transfer Protocol (HTTP) to make requests to web servers throughout the Internet on behalf of the browser user and then displays web pages by interpreting the HTML that is used to build these pages on the web. To use the web one must make an Internet connection and then launch the web browser.

Examples of popular web browsers are Google Chrome, Internet Explorer and Mozilla Firefox.

3.1.5 Uniform Resource Locator (URL)

URL stands for "Uniform Resource Locator" also called as web address. It consists of words, letters, numbers and symbols that are used to browse a specific website on the Internet. Every website has its own unique URL, divided into three parts, i.e. protocol (http or ftp), host name (eg. www.inflibnet.ac.in) and file or page name (eg. about.html).

URLs are commonly used for web pages (http), but can also be used for file transfer (ftp), email (mail to) and many other applications. The URL was standardized in 1994 by Tim Berners-Lee.

For Example; <http://www.inflibnet.ac.in>



Fig.3: Uniform Resource Locator (URL)

3.1.6 Domain Name System (DNS)

The Domain Name System (DNS) is a distributed naming system for computers, services or any resource connected to the Internet. It translates easily domain names to the numerical IP addresses needed for the purpose of locating computer services and devices worldwide. For example, www.inflibnet.ac.in under the domain name "AC" belongs to IP Address "14.139.116.2". This translation service is available on domain server for "AC" hosted at ERNET India in New Delhi.

A domain name is an identification string for a computer server which represents an Internet Protocol (IP) resource used to access any websites through the Internet. It consists of 2 or more parts, separated by dots. The part on the left is the most specific, and right is general.

The most commonly seen domain names with extension are:

Domain Name	Description
.com	Originally stood for "commercial" to indicate a site used for commercial purposes, but it has since become the most well-known top-level Internet domain, and is now used for any kind of site.
.edu	Used for educational institutions like universities.
.gov.in	Used for Indian Government sites.
.org	Originally intended for non-commercial "organizations", but now used for a wide variety of sites. Was managed by the Internet Society for awhile.
.int	Used by "International" sites, usually NATO sites.
.mil	Used for US Military sites.
.net	Originally intended for sites related to the Internet itself, but now used for a wide variety of sites.
.ac.in	Academic Institutions in India

3.2 Internet Protocol

Internet protocols were first developed in the mid-1970s by DARPA at Stanford University. The Internet Protocol (IP) is a network-layer (Layer 3) protocol that contains addressing information and some control information that enables packets to be routed. IP is documented in RFC 791(DARPA Internet Program Protocol Specification prepared in September 1981) and is the primary network-layer protocol in the Internet protocol suite. Along with the Transmission Control Protocol (TCP), IP represents the heart of the Internet protocols.

3.2.1 Transmission Control Protocol (TCP/IP)

TCP/IP was developed in 1974 by Robert Kahn of ARPANET and Vinton G. Cerf. TCP/IP is a two-layer program. The higher layer, Transmission Control Protocol, manages the assembling of a message or file into smaller packets that are transmitted over the Internet and received by a TCP layer that reassembles the packets into the original message. The lower layer, Internet Protocol, handles the address part of each packet so that it gets to the right destination. TCP/IP uses the client/server model of communication in which a computer

user (a client) requests and is provided a service (such as sending a Web page) by another computer (a server) in the network.

The Internet Protocol (IP) is the method or protocol by which data is sent from one computer to another on the Internet. Every computer in the Internet has a specific address called Internet protocol address, associated with a user name. It consists of four-parts separated by 'dot' or 'colon'. Every device that accesses the Internet is assigned at least one IP address for tracking purposes. The designers of the Internet Protocol defined an IP address as a 32-bit number consisting of 4 octets and this system, known as Internet Protocol Version 4 (IPv4), which is still in use today. However, due to the enormous growth of the Internet and the predicted depletion of available addresses, a new version of IP (IPv6), using 128 bits for the address, was developed in 1995. IPv6 was standardized as RFC 2460 in 1998, and its deployment has been ongoing since the mid-2000s.

IP addresses are binary numbers, but they are usually stored in text files and displayed in human-readable notations, such as 192.168.15.60 (for IPv4), and 2001:0db8:AC10:FE01:0000:0000:0000:0000 (for IPv6). Technically the IP address is the true identifier of a web server and the domain name is simply a redirector pointer to help people find the web server easily.

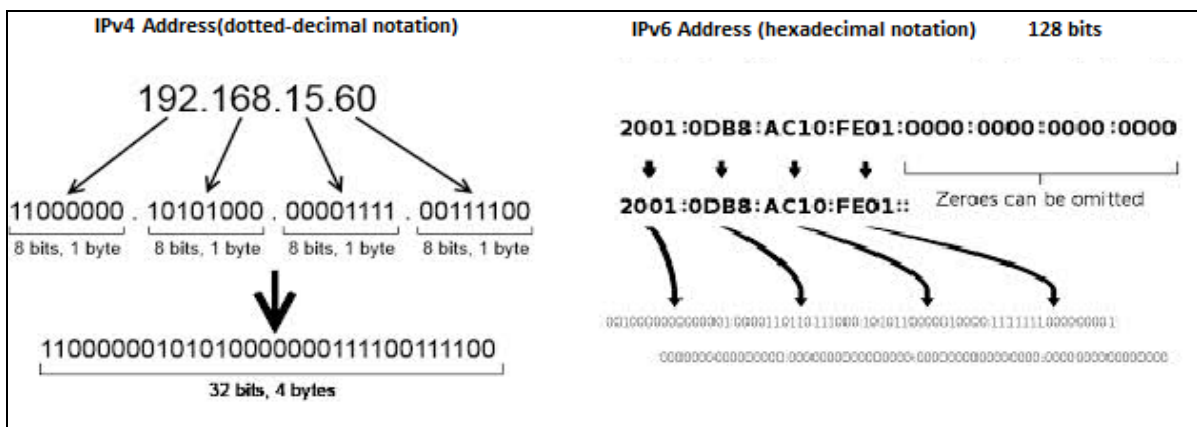


Fig.4: IP Protocols

The TCP provides reliable transmission of data in an IP environment. TCP provides reliable, ordered and error-checked delivery of a stream of octets (a group of 8 bits) between programs running on computers connected to a local area network, Intranet or the public Internet. It resides at the transport layer (Layer 4). Web browsers use TCP when they connect to servers on the World Wide Web, and it is used to deliver email and transfer files from one location to

another. HTTP, HTTPS, SMTP, POP3, IMAP, SSH, FTP, Telnet and a variety of other protocols are typically encapsulated in TCP.

3.2.2 File Transfer Protocol (FTP)

File Transfer Protocol (FTP) allows files to be electronically transferred from one computer to another. The most common use of FTP today is to move software and large text files across the Internet. These types of files are referred to as archives. Like the Hypertext Transfer Protocol (HTTP), which transfers displayable web pages and related files, and the Simple Mail Transfer Protocol (SMTP), which transfers e-mail, FTP is an application protocol that uses the Internet's TCP/IP protocols. It is also used to download programs and other files from servers to the PC or other client devices. One can use FTP with a simple command line interface or with commercial programs (such as WS.FTP) that offers a graphical user interface. Using FTP, one can also update i.e. delete, rename, move and copy files at a server.

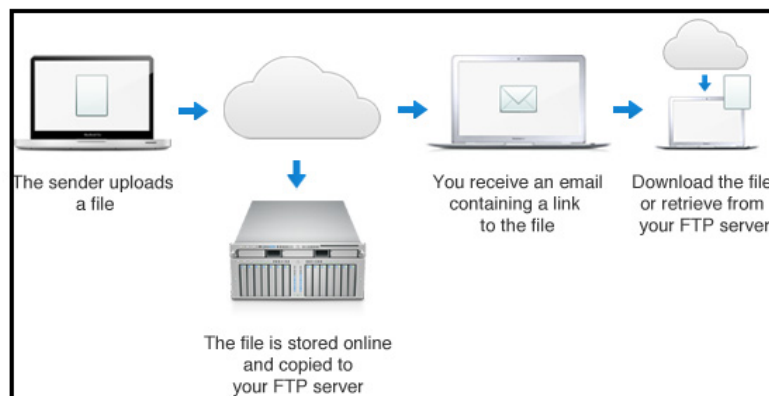


Fig.5: File Transfer Protocol (FTP)

3.2.3 Simple Mail Transfer Protocol (SMTP)

Simple Mail Transfer Protocol (SMTP) is a communication protocol for mail servers to transmit electronic mail (e-mail) over the Internet. The SMTP is used as the common device for transporting e-mails among different hosts within the departments. SMTP was last updated in 2008 with the Extended SMTP additions by RFC 5321 - which is the protocol in widespread use today. Extended SMTP (ESMTP) is a protocol used to transport Internet mail. It is used as both an inter-server transport protocol and (with restricted behaviour enforced) a mail submission protocol. Similarly, there is a Post Office Protocol (POP) which is used for transferring, downloading and uploading email between server and the client computer.

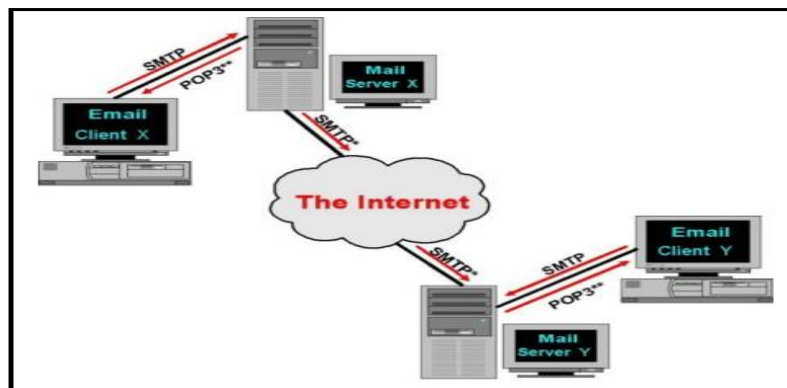


Fig.6: Simple Mail Transfer Protocol (SMTP)

4. Internet Applications and Services

The Internet is the World's largest computer network. The Internet makes it easy to access distribute information at multiple locations. People around the world share ideas, data, information, comments and stories through the Internet. Some of the most popular services offered by the Internet are e-mail, mailing lists and listserv, chats and instant messaging, voice over Internet, e-commerce and telnet.

4.1 Electronic Mail (E-Mail)

The most commonly used Internet service is Electronic mail or e-mail. It allows exchanging mail with millions of users worldwide. E-mail is equivalent to postal mail in e-format. An e-mail message consists of several components such as header, the body of the message, and attachments in any format with limited size. The information that follows the "@" symbol identifies the computer to which the mail is sent. The information that follows the "@" symbol is often referred to as the domain name of the computer to send mail. There is usually no charge for sending and receiving electronic mail, even if a message travels around the world.

Examples: Yahoo.co.in, gmail.com, Rediffmail.com, Hotmail.com, institutional emails like inflibnet.ac.in, ugc.ac.in, nic.in.

4.2 Mailing Lists and Listserv

Mailing lists are a special form of e-mail. It is controlled by the list administrator, who monitors and ensures the mailing list is working. It runs on a

machine called list server or 'listserv'. Messages can be sent to the list server, which sends a copy of the message to everyone who has subscribed to a given listserv, directly to their personal mailbox. A Listserv is a program that the mailing list administrator uses to manage the mailing list. It helps users to subscribe and unsubscribe automatically without human intervention. Listserv also provides a digest of messages on weekly or monthly basis to the subscriber in an organized format making it easier to quickly find information about the topics discussed on the listserv. There are lakhs of listservs that exists in thousands of varied topics. Examples of listserv in Library and Information Science are: LIS-Forum, ILOSC etc.

4.3 Chats and Instant Messaging

Internet Relay Chats (IRC) is a multi-user chat system, where people come together on "channels" (a virtual place, usually with a topic of conversation) to talk in groups, or privately. For example, Google chat, M S chat etc.



Fig.8: Chats and Teleconferencing

4.4 Voice over Internet Protocol (VoIP)

Voice over Internet Protocol (VoIP) is standardized method that is used between computer systems to deliver and receive audio data over the Internet. Other terms that are often used synonymously with VoIP are IP telephony, Internet telephony, voice over broadband (VoBB), broadband telephony and broadband phone. Internet telephony refers to different kinds of communications services such as voice, fax, SMS, and/or voice-messaging applications that use VoIP to transport messages via the Internet, rather than the old fashion telephone network.

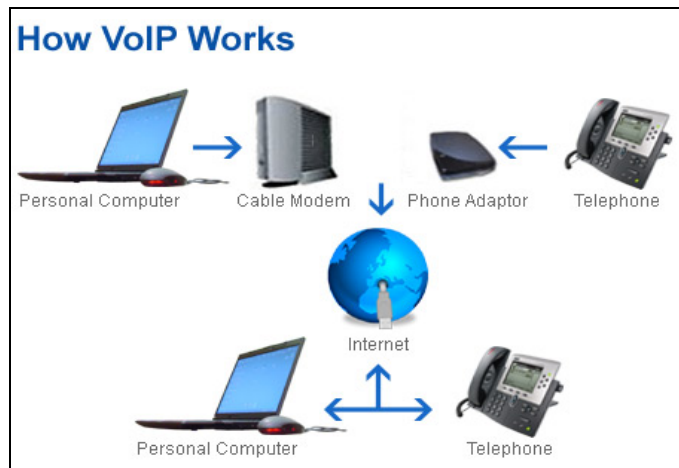


Fig.9: Voice over Internet Protocol (VoIP)

4.5 E-Commerce

Electronic commerce also known as e-commerce refers to use of Internet for buying and selling of products or services online. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. For example: Amazon, Infibeam, Flipkart, Snapdeal etc.



Fig.10: Internet E-commerce

4.6 Online Surveys

Online Surveys can be conducted easily on the Internet through a questionnaire that can be answered online. Results of such a survey can be automatically updated into a database. This database can then be used to keep a pulse on

various opinions and needs of customers. Individual or organization can easily reach out to millions of users in a timely manner.

For example, SurveyMonkey is an online survey platform which provides free, customizable questionnaire as well as a suite of paid back end programs that include data analysis, sample selection, bias elimination, and data representation tools.

4.7 Online Discussion Forums

An application called “WebBoard” is used to set up online discussion forums on the Web that allows user to discuss a given topic with each other, as a group or over the Web. Online Discussion forum forms part of courses offered by organizations like edX, Coursera that enable students and teachers to discuss a given topic for a course.

4.8 Telnet

Telnet is a general purpose client-server application program. The telnet command is used to communicate with another host using the TELNET protocol. Through Telnet, an administrator or another user can access someone else's computer remotely. It is used by program developers to use specific applications or data located at a particular host computer.

TELNET offers three basic services. First, it defines a network virtual terminal that provides a standard interface to remote systems. Second, it includes a mechanism that allows the client and server to negotiate options (e.g., whether data uses the standard 7-bit or an 8-bit ASCII character set). Third, TELNET utilizes a mechanism that allows both ends of the connection to be treated systematically. Prior to WWW, TELNET was the main Internet mechanism for reaching out and using the distant computer.

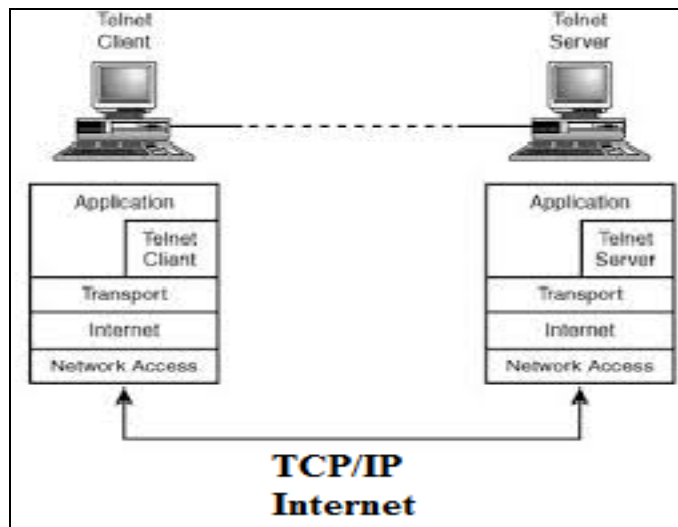


Fig.11: Telnet Remote Terminal Session

5. Benefits of the Internet

5.1 Faster Communication

Through Internet one can communicate easily and speedily with someone who is in another part of the world. It has become effortless to create a kind of global friendship, sharing thoughts and discovering other cultures and ideologies. With new innovations, one can also avail the facilities of video conferencing, chat and messenger services.

5.2 Abundant Information Resources

Information is probably the biggest advantage that Internet offers. Search engines make information accessible on diverse subjects known to man, covering almost all the fields like medicine, technology, and other domains of science.

5.3 Social Networking

Internet has become means to stay connected with friends and family through portals like Facebook or Twitter with the latest happenings in the world. Jobs and business opportunities on forums and communities can be easily searched and applied online.

5.4 Online Service and E-Commerce

Online services like booking tickets for a movie, transfer funds, pay utility bills and taxes can be availed easily through Internet. Transfer of money in business dealings with its vast reach over a variety of products and services, makes it possible to have the client's orders delivered at their doorsteps. Websites such as Flipkart, eBay, Amazon etc., allow customers to bid, buy, sell, and even auction products online.

5.5 Global Audience

Contents available on Internet are easily accessible to a large audience across the globe and operating 24 hours, 7 days a week.

5.6 Relatively Inexpensive

Internet makes organizations and individuals to distribute information to millions of users economically. Advertising various products using the multimedia capabilities of the World Wide Web makes customers easy to look up various product specification sheets and find out additional information and also putting together a sales catalogue and make it available to millions of users immediately.

5.7 Entertainment for Everyone

Entertainment is one of the foremost reasons why people prefer surfing the Web. Finding the latest updates about celebrities and exploring lifestyle websites have become day-to-day activities of many Internet consumers. On the other hand, even celebrities are using the Internet effectively for promoting their cause and for keeping their fans happy.

6. Internet Issues

6.1 Theft of Personal Information

The Internet services used for banking, social networking or other services may prove irreparable if the hackers access the personal information through unsecured connections by planting phishing software.

6.2 Spamming

The computer system may be blocked by ineffective e-mails, which are of no use, that, in turn, slows down the access to the email account and the important mails are missed out due to the continuous spam mails.

6.3 Malware Threats

Malware also known as Internet virus can infect computers and other computer devices. These virus attacks can harm the computers and important files by simply clicking a safe link. Some viruses affect only particular file or file type, while others affect system and executable boot files otherwise some viruses simply change the symbols on word files.

6.4 Age-inappropriate Content

The biggest disadvantage of Internet is pornography and age-inappropriate content. The Internet content is so vast that one comes across out of place words, images and videos regardless of their relevance.

6.5 Social Isolation, Obesity, and Depression

Excessive surfing Internet, which includes social networking, gaming, gambling may lead to health problems, physical as well as mental issues. Further causing depression, where psychiatric advice may be needed to get out of it.

7. Summary

The Internet, also called "the Net" is a global network of networks. Internet can be used to receive all kinds of information such as text, graphics, voice, video, and computer programs. This module traces the evolution of Internet at different stages from its establishment by ARPANET in the year 1960 to Web 3.0 in 2010. World Wide Web is a collection of information servers linked together through hypertext language called HTML. The module also elaborates on Client-Server Architecture, Hypertext Transfer Protocol (HTTP), Hypertext Markup Language (HTML), Web Servers, Web Browsers and Universal Resource Locators (URLs) that make the Web work. The module also explains the number of protocols including: TCP / IP, SMTP and FTP. Some of the most popular applications and services offered by the Internet like e-mail, mailing lists and listserv, chats and instant messaging, voice over Internet, e-commerce, cloud computing and telnet are covered in this module. Also the benefits and issues related to Internet have been discussed.

8. Reference:

1. Arora, Jagdish (2004). Course material on “Internet Resources and Services” for M.LIS Programme offered by IGNOU, New Delhi.
2. Eddings, J. (1994). How the Internet Works. Ziff-Davis Publ.
3. Gralla, P. (1998). How the Internet works. Que Publishing.
4. Handley, M. (2006). Why the Internet only just works. BT Technology Journal, 24(3), 119-129.
5. Minoli, D. (1997). Internet and Intranet Engineering Technologies, Protocols and Application/United States of America: McGraw-Hill Companies.
6. Pandian, M. P., & Jambhekar, A. (2001). Internet for libraries and information centres. Tata McGraw-Hill.
7. Stout, R. (1995). The World Wide Web Complete Reference. Osborne/McGraw-Hill.

