CHAPTER 6

INTERNET AND WWW

Internet

Internet is a network of networks. Millions of computer all over the world are connected through the internet. Computer users on the internet can contact with one another anywhere in the world. If a computer is connected to the internet, one can connect to millions of computers. It is very much similar to the telephone connection where one can talk with any person anywhere in the world.

Due to the tremendous information resources the internet can provide, it is now indispensable to every organization and personal activities.

Some of the popular services of the internet are:

1. E-mail: Sending and receiving mail electronically.
2. File Transfer: Transferring files from one computer to another.
3. WWW (World Wide Web): Retrieving information residing on the internet servers in the form of websites.
4. Chat: Exchanging views or communicating information instantly.

The development of internet started when US Defense Department set up the ARPANET (Advanced Research Project Agency Network) to have a failure proof communication network for defense department of US.

This architecture was later adopted by an educational institute for an exchange of views among research scholars and then, it was thrown open to the public. Since 1994, the internet has grown by leaps and bounds driven by cheaper cost, easier to use and increase in information.

History of Internet

1965: Two computers at MIT Lincoln Lab communicate with one another using packet-switching technology.
1968: Beranek and Newman, Inc. (BBN) unveils the final version of the Interface Message Processor (IMP) specifications. BBN wins ARPANET contract.
1969: On Oct. 29, UCLA's Network Measurement Center, Stanford Research Institute (SRI), University of California-Santa Barbara and University of Utah install nodes. The first message is "LO," which was an attempt by student Charles Kline to "LOGIN" to the SRI computer from the university. However, the message was unable to be completed because the SRI system crashed.
1972: BBN's Ray Tomlinson introduces network email. The Internetworking Working Group (INWG) forms to address need for establishing standard protocols.
1973: Global networking becomes a reality as the University College of London (England) and Royal Radar Establishment (Norway) connect to ARPANET. The term Internet is born.

1974: The first Internet Service Provider (ISP) is born with the introduction of a commercial version of ARPANET, known as Telenet.

1974: Vinton Cerf and Bob Kahn (the duo said by many to be the [Fathers of the Internet](#)) publish "A Protocol for Packet Network Interconnection," which details the design of TCP.

1976: Queen Elizabeth II hits the "send button" on her first email.

1979: USENET forms to host news and discussion groups.

1981: The National Science Foundation (NSF) provided a grant to establish the Computer Science Network (CSNET) to provide networking services to university computer scientists.

1982: Transmission Control Protocol (TCP) and Internet Protocol (IP), as the protocol suite, commonly known as TCP/IP, emerge as the protocol for ARPANET. This results in the fledgling definition of the Internet as connected TCP/IP internets. TCP/IP remains the standard protocol for the Internet.

1983: The [Domain Name System](#) (DNS) establishes the familiar .edu, .gov, .com, .mil, .org, .net, and .int system for naming websites. This is easier to remember than the previous designation for websites, such as 123.456.789.10.

1984: William Gibson, author of "Neuromancer," is the first to use the term "cyberspace."

1985: Symbolics.com, the website for Symbolics Computer Corp. in Massachusetts, becomes the first registered domain.

1986: The National Science Foundation's NSFNET goes online to connected supercomputer centers at 56,000 bits per second — the speed of a typical dial-up computer modem. Over time the network speeds up and regional research and education networks, supported in part by NSF, are connected to the NSFNET backbone — effectively expanding the Internet throughout the United States. The NSFNET was essentially a network of networks that connected academic users along with the ARPANET.

1987: The number of hosts on the Internet exceeds 20,000. Cisco ships its first [router](#).

1989: World.std.com becomes the first commercial [provider of dial-up access to the Internet](#).

1990: [Tim Berners-Lee](#), a scientist at CERN, the European Organization for Nuclear Research, develops HyperText Markup Language (HTML). This technology continues to have a large impact on how we navigate and view the Internet today.

1991: CERN introduces the [World Wide Web](#) to the public.

1992: The first audio and video are distributed over the Internet. The phrase "surfing the Internet" is popularized.

1993: The number of websites reaches 600 and the White House and United Nations go online. Marc Andreesen develops the Mosaic Web browser at the University of Illinois, Champaign-Urbana. The number of computers connected to NSFNET grows from 2,000 in 1985 to more than 2 million in 1993. The National Science Foundation leads an effort to outline a new Internet architecture that would support the burgeoning commercial use of the network.

1994: Netscape Communications is born. Microsoft creates a Web browser for Windows 95.

1994: Yahoo! is created by Jerry Yang and David Filo, two electrical engineering graduate students at Stanford University. The site was originally called "Jerry and

David's Guide to the World Wide Web." The company was later incorporated in March 1995.

1995: Compuserve, America Online and Prodigy begin to provide Internet access. Amazon.com, Craigslist and eBay go live. The original NSFNET backbone is decommissioned as the Internet's transformation to a commercial enterprise is largely completed.

1995: The first online dating site, Match.com, launches.

1996: The browser war, primarily between the two major players Microsoft and Netscape, heats up. CNET buys tv.com for $15,000.

1996: A 3D animation dubbed "The Dancing Baby" becomes one of the first viral videos.

1997: Netflix is founded by Reed Hastings and Marc Randolph as a company that sends users DVDs by mail.

1997: PC makers can remove or hide Microsoft's Internet software on new versions of Windows 95, thanks to a settlement with the Justice Department. Netscape announces that its browser will be free.

1998: The Google search engine is born, changing the way users engage with the Internet.

1998: The Internet Protocol version 6 introduced, to allow for future growth of Internet Addresses. The current most widely used protocol is version 4. IPv4 uses 32-bit addresses allowing for 4.3 billion unique addresses; IPv6, with 128-bit addresses, will allow 3.4 x 1038 unique addresses, or 340 trillion trillion trillion.

1999: AOL buys Netscape. Peer-to-peer file sharing becomes a reality as Napster arrives on the Internet, much to the displeasure of the music industry.

2000: The dot-com bubble bursts. Web sites such as Yahoo! and eBay are hit by a large-scale denial of service attack, highlighting the vulnerability of the Internet. AOL merges with Time Warner

2001: A federal judge shuts down Napster, ruling that it must find a way to stop users from sharing copyrighted material before it can go back online.

2003: The SQL Slammer worm spread worldwide in just 10 minutes. Myspace, Skype and the Safari Web browser debut.

2003: The blog publishing platform WordPress is launched.

2004: Facebook goes online and the era of social networking begins. Mozilla unveils the Mozilla Firefox browser.

2005: YouTube.com launches. The social news site Reddit is also founded.

2006: AOL changes its business model, offering most services for free and relying on advertising to generate revenue. The Internet Governance Forum meets for the first time.

2006: Twitter launches. The company's founder, Jack Dorsey, sends out the very first tweet: "just setting up my twttr."

2009: The Internet marks its 40th anniversary.

2010: Facebook reaches 400 million active users.

2010: The social media sites Pinterest and Instagram are launched.

2011: Twitter and Facebook play a large role in the Middle East revolts.

2012: President Barack Obama's administration announces its opposition to major parts of the Stop Online Piracy Act and the Protect Intellectual Property Act, which would have enacted broad new rules requiring internet service providers to police copyrighted

content. The successful push to stop the bill, involving technology companies such as Google and nonprofit organizations including Wikipedia and the Electronic Frontier Foundation, is considered a victory for sites such as YouTube that depend on user-generated content, as well as "fair use" on the Internet.

2013: Edward Snowden, a former CIA employee and National Security Agency (NSA) contractor, reveals that the NSA had in place a monitoring program capable of tapping the communications of thousands of people, including U.S. citizens.

2013: Fifty-one percent of U.S. adults report that they bank online, according to a survey conducted by the Pew Research Center.

2015: Instagram, the photo-sharing site, reaches 400 million users, outpacing Twitter, which would go on to reach 316 million users by the middle of the same year.

2016: Google unveils Google Assistant, a voice-activated personal assistant program, marking the entry of the Internet giant into the "smart" computerized assistant marketplace. Google joins Amazon's Alexa, Siri from Apple, and Cortana from Microsoft.

Applications/Uses of Internet

- **On-line communication:**

Computer users around the world use the E-mail services to communicate with each other extensively.

- **Feedback about products:**

Commercial organizations are also using the internet to gather information about the satisfaction of existing products and market opportunities of new products. This is usually accomplished by putting up an interactive survey application by the organization on a WWW site on the Internet.

- **Product promotion:**

Several commercial organizations are effectively using the internet services for promoting their products by the use of different social networks.

- **Customer Support Service:**

Many organizations are also using the internet to provide timely customer support.

- **On-line shopping:**

The Internet has also facilitated the introduction of a new market concept, which consists of virtual shops. These shops remain open 24 hrs all the year round and are accessible to make purchase all around the world.

- **On-line journals and magazines:**

There are many WWW sites on the internet, which consists of an electronic version of many journals and magazines.

- **Real-time updates:**

It helps to provide news and other happenings that may be on-going in different parts of the word but with the use of the internet, we come to know about the real-time updates in every field be it in business, sports, finance, politics, entertainment and others very easily. Many time the decisions are taken on the real-time updates that are happening in the various parts of the world and for this, the internet is very essential and helpful.

- **Research:**

In order to do research, we need to go through hundreds of books as well as the references and that was one of the most difficult jobs to do earlier. Since, the internet came into life, everything is available in just a click. The user just has to search for the concerned topic and will get hundreds of references that may be beneficial for the research and since, the internet is here to make research activity easy and hence, public user can take a large amount benefit from the research work that have been done.

- **Education:**

Education is one of the best things that the internet can provide. There are a number of books, reference books, online help centers, expert`s views and other study oriented material on the internet that can make the learning process very easier as well as a fun to learn.

- **Financial Transaction:**

It is a term which is used when there is an exchange of money. With the use of internet in the financial transaction, the work has become a lot easier. Payments, Funds transfer, banking transactions can be done through on-line banking service.

- **Entertainment:**

The Internet is also used for entertainment. Such as chatting with friends, sharing videos, watching movies, listening music, live telecast of sports and other events, playing games, etc.

Job Search:

Using internet, searching job has become an easier task. There are an endless amount of websites on the internet that provided news about a vacancy in various post as required.

- **Blogging:**

There are many people who are very much interested in writing blogs and for them the internet is the best place. They can not only write blogs as per their wish but can also publicize their work so that their work reaches to most of the people and they get appreciated.

Positive and Negative Impact of Internet

The positive impacts of internet to the society, organization and individual are:

- Faster, cheaper and easier medium of communication.

- Information sharing and browsing.
- File transferring facility.
- Reach to the worldwide viewers.
- Effective, easier, faster and cheaper promotion of product or service.
- Better customer support and customer relationship management (CRM).
- Online services like banking, shopping, education, etc.
- E-mail communication for sending and receiving an electronic document.
- Enhanced collaboration between different organizations.
- Effective Supply Chain Management (SCM).
- Electronic payment system using credit /debit cards, ATM, online payment, electronic cheque, smart card, electronic purse, etc.
- Newsgroups for instant sharing of news and feedback system.
- Creation of new job opportunities related with the internet.
- Source for entertainment.
- Social networking for instant touch with friends and relatives.

Misuses of Internet / Negative impacts of Internet

The negative impacts of internet to the society, organization and individual are:

- It is the most common medium for spreading malicious software like virus, worm, etc..
- It has increased piracy.
- Pornography (uploading, publishing, viewing sexual contents in the form of text, image, audio and video).
- Stealing, modifying or destructing data.
- Piracy of software, audio, video or other intellectual contents.
- Hacking of organizational system, website, database etc.
- It is also used to harass people by sending insulting comments, making vulgar cartoons, blackmailing, etc.
- Unemployment problem for the individuals not having knowledge about the Internet.
- It has increased digital divide.

Email

Commonly known as email or e-mail, electronic mail is a method of exchanging digital messages from an author to one or more persons. Email operates across the Internet or other computer networks. Email is an electronic mail for sending, receiving and storing of our electronic messages. Email has gained popularity with the spread of the Internet. Today, email is the preferred method of communication.

The email system is based on store and forward model in which email server computer system accepts, forwards, delivers and stores the messages on behalf of users to send and receive email messages. Email consists of two parts: the message header and the message body. The header contains the information like one or more sender's address, receiver's address, data, content, length, etc. whereas the body part contains the actual message which the sender has sent to the receiver.

It is one of the most frequently used features of the internet. Many people sign up for internet services so that they can send and receive e-mail messages. The internet is now the world's largest electronic

mail system. More than 30 million people are directly connected to the internet and can send and receive electronic mails.

Uses of Email:

- Email enables individuals and groups to communicate with one another.
- Group of people can work on the same topic through email and generate one common document together.
- Through email, we can stay in touch with our family, relatives and friends who are away from us.
- It is the convenient way of sending job application, sending valuable documents, important images and videos.
- The use of email is essential in today's business culture for communication purpose. Businesses of all sizes, places and types can use email for multiple purposes effectively.
- It is the most efficient and certain way to communicate with management, colleagues, clients and vendors.
- Email is used when colleagues of the same or different departments need to send and receive information about projects.
- Clients and vendors use email to order products and services
- Employees can receive dates and times for meetings, conferences and mandatory training sessions via email.

ADVANTAGES OF E-MAIL

- **Fast:** It can relay our message to the recipient in a matter of minutes or seconds. Many systems also let us check to see if the receiver has seen our message or not.

- **Fun:** International electronic mail system enables us to find 'pen pals' all over the world.

- **Easy:** When we open our email box, we see a list of the message we have received. First, we read the message and then decide how to respond. We can reply to the message if we like or just delete if it requires no reply. We can save it or print it. We can even forward the message to the others.

- **Cheap:** We can send messages to others through email around the world cheaply in comparison to the charge we are paying for telephone services.

- **Flexible:** We can send a message to more than one person if we like.

- **Convenient:** Because it's written, we can compose and review our message before sending which helps in any inconvenience.

- **Word wide presence:** We can check our emails from any computer in the world while on vacation in other countries or from transportation vehicles, etc.

DISADVANTAGES OF E-MAIL

- **Threat of viruses:** Emails may carry viruses. These are small programs that harm your computer system. They can read out your email address book and send themselves to a number of people around the world.
- **Spam:** Having to deal with spam and spoofs is one of the worst avoidable time wasters online. Use some anti spam [software](#).

- **Misunderstandings:** Emails from people who don't take the time to read what they write before clicking 'send'. Time is wasted, either to clarify or, worse, acting on a misinterpretation of the message.

- No guarantee the mail will be read until the user logs on and checks their email.

- **Need of [internet](#):**The recipient needs access to the [Internet](#) to receive email.

(Shrestha & Khanal, 2013)

TYPESOF E-MAIL

Email is probably the most used feature of the web. With this technology, we can not only send text messages but also digital files like images, audio, video, etc. attached to the email message. There are mainly 2 major email types: POP email and Web-based email.

1) POP email account or Application Based Email

This type of email account requires a client application installed on the user's computers. The user has to get the service from the email service provider for free or by paying some amount. The user then gets user id and password along with the POP mail server configuration that is required to setup the email client. The popular email clients are Microsoft Outlook, Opera Mail etc. To send the mail, a user composes the mail using the email client and posts the mail to the email server. The email server then sends the mail to the destination address.

2) Web-based email account:

Web-based email accounts can be accessed using a web browser (yes, the same program that we use for surfing the web) from which we can compose, reply, send, forward and organize email.

To gain access to our account, we use a web browser to visit the home page of the email service and enter our login details. All of our messages and address book (contact list) are stored on web servers owned by the respective companies. We need an active [internet](#) connection to log on to our account and check our emails. For instance, the sign in page for Yahoo is located at www.yahoo.com and to log in at our Hotmail account, we need to enter our full email address and our password.

Advantages of Web-based email:

- No need of third party [software](#) to view it. The simple web browser can access it.
- Most of the webmail services are free on the web.

- The email inbox can be accessed from all around the globe with an [internet](#) connection and computer.
- It can be accessed from the different computer platform i.e. can be accessed through Window, Mac, Linux, etc.

Disadvantages of Web-based email:

- Webmail is slow to access because every email should be accessed and downloaded from the server to view it.
- Webmail does not have off-line messaging services. For that, we need an [internet](#) connection.
- Webmail consists of a large number of advertisers and spam emails.
- Size on the webmail server for one user account is limited. For large spaces, we need to buy spaces.

Internet as Client Server Technology

Client-server is a computer model that separates client and server, and usually interlinked using a computer network. Each instance of a client can send data requests to one of the servers online and expect a response. In turn, some of the available servers can accept these requests, process them and return the result to the client. Although the concept be applied to various uses and applications, the architecture is almost the same.

Often clients and servers communicate through a computer network with separate hardware, but the client and server can reside on the same system. The machine is a host server that is running one or more server programs that share their resources with clients.

A client does not share its resources, but requests content from a server or service function. Clients, therefore, initiate communication sessions with the servers that wait for incoming requests.
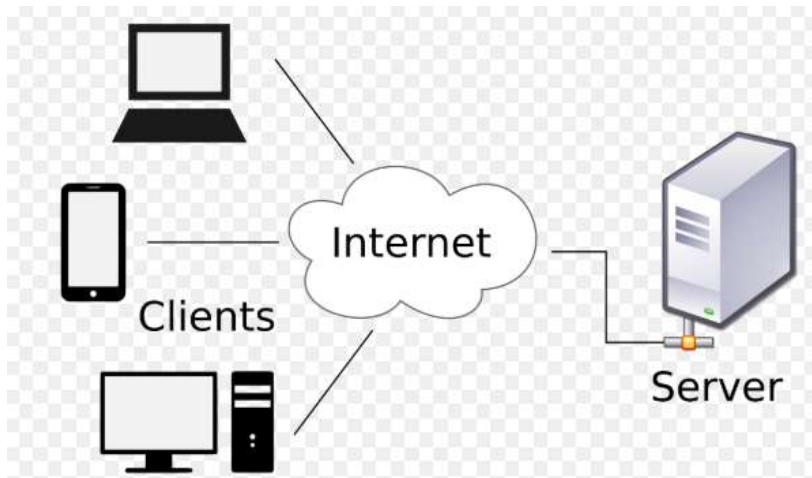
Internet is massive network of networks and World Wide Web is a system of interlinked hypertext documents accessed via the internet. To complete the flow of accessing information over the web there is need of client/server architecture. And client/server describes the flow of information between two computer programs in which one computer program (client) makes a service request to another computer program (the server), which provide service requested by the client. Clients rely on servers for required resources. It is network architecture in which each computer or process on the network is either a client or a server. Hence we could describe internet as client/server technology.

For example; when you check your bank account from a computer, a client program forward a request to a server program at the bank. That program may in turn forward a request to it's own client program which then sends a request to a database server at another bank computer. Once the account balance is retrieved from database, it is returned back to the client which in turn serves it back to the client in your computer, which then displays the information.

Web Server

A web server is a computer system that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web. The term can refer to the entire system, or specifically to the software that accepts and supervises the HTTP requests. The primary function of a web server is to store, process and deliver web pages to clients. The communication between client and server takes place using the Hypertext Transfer Protocol (HTTP)

ISP and Their Roles

Internet Service Providers (ISP's) refers to a company that provides internet services for personal and business purpose. It is the gateway to the internet and everything that you do online. Below are some important roles and functions of internet services providers.

- Provide internet access to the user through dial up service, DSL Service, and cellular data service.
- Internet Service Providers serve large companies by providing a direct connection from the company's network to the internet.
- Provides internet services like email, access to software tools, security service and web hosting.

- Few Companies provide free ISP Services that require internet occasionally.
- Internet Service Providers host sites for businesses and also build a website themselves.
- Internet Service Providers act as a mediator between the user and internet.
- Domain name registration

IP Address

An Internet Protocol address (IP address) is a logical numeric address that is assigned to every single computer, printer, switch, router or any other device that is part of a TCP/IP-based network.

The IP address is the core component on which the networking architecture is built; no network exists without it. An IP address is a logical address that is used to uniquely identify every node in the network. Because IP addresses are logical, they can change. They are similar to addresses in a town or city because the IP address gives the network node an address so that it can communicate with other nodes or networks, just like mail is sent to friends and relatives.

The numerals in an IP address are divided into 2 parts:

- The network part specifies which networks this address belongs to and
- The host part further pinpoints the exact location.

Every machine on a network has a unique identifier. Just as you would address a letter to send in the mail, computers use the unique identifier to send data to specific computers on a network. Most networks today, including all computers on the Internet, use the TCP/IP protocol as the standard for how to communicate on the network. In the TCP/IP protocol, the unique identifier for a computer is called its IP address.

There are two standards for IP addresses: IP Version 4 (IPv4) and IP Version 6 (IPv6). All computers with IP addresses have an IPv4 address, and many are starting to use the new IPv6 address system as well. Here's what these two address types mean:

- IPv4 uses 32 binary bits to create a single unique address on the network. An IPv4 address is expressed by four numbers separated by dots. Each number is the decimal (base-10) representation for an eight-digit binary (base-2) number, also called an octet. For example: 216.27.61.137
- IPv6 uses 128 binary bits to create a single unique address on the network. An IPv6 address is expressed by eight groups of hexadecimal (base-16) numbers separated by colons, as in 2001: cdba: 0000:0000:0000:0000:3257:9652. Groups of numbers that contain all zeros are often omitted to save space, leaving a colon separator to mark the gap (as in 2001: cdba: 3257:9652).

Protocols

Protocols -Define the rules that govern the communications between two computers connected to the network.

-Roles:

- addressing and routing of messages,

- error detection and recovery,
- sequence and flow controls etc.

-A protocol specification consists of the syntax, which defines the kinds and formats of the messages exchanged, and the semantic, which specifies the action taken by each entity when specific events occur.

- # [Internet](#) Protocol (IP)

  IP is also working with TCP. It is an addressing Protocol. IP addresses packets route them and show different nodes and network unless it reaches its right destination. The IP protocol is developed in 1970.

  ## FTP

  File transfer protocol is basically used for transferring files to different networks. There may be a mass of files such as text files, multimedia files, etc. This way of file transfer is quicker than other methods.

  ## SMTP

  Simple mail transfer protocol manages the transmission and outgoing mail over the [internet](#).

  ## HTTP

  HTTP is based on client and server model. HTTP is used for making a connection between the web client and [web server](#). HTTP shows information in web pages.

  ## HTTPS

  Hyper Text Transfer Protocol Secure (**HTTPS**) is the secure version of HTTP, the protocol over which data is sent between your browser and the website that you are connected to. The 'S' at the end of **HTTPS** stands for 'Secure'. It means all communications between your browser and the website are encrypted.

  ## Ethernet

  Ethernet is a most important for LAN communication. Ethernet transmits the data in digital packets. If any computer wants to use this protocol they should contain Ethernet Network Interface Card (NIC). The card is implemented with unique address code fixed in the microchip.

Telnet (Terminal Network)

Telnet is an established with some rules which are used to connect to another computer. Telnet is mainly used for the remote login process. The computer which is requesting for a connection that is a local computer and which is accepting the connection that is a remote computer. If you give a command in a local computer that command is executed in the remote computer. Telnet is also based on client and server model.

Gopher

Gopher is an application layer protocol, which is used for searching and retrieving documents from remote sites. This is possible to start an online connection with other computers through gopher.

WAIS

WAIS (**Wide Area Information** Servers) is an Internet system in which specialized subject databases are created at multiple server locations, kept track of by a directory of servers at one location, and made accessible for searching by users with WAIS client programs.

WWW and Its Evolution

WWW stands for **World Wide Web.** A technical definition of the World Wide Web is: all the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP).

A broader definition comes from the organization that Web inventor **Tim Berners-Lee** helped found, the **World Wide Web Consortium (W3C).**

The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge.

In simple terms, The World Wide Web is a way of exchanging information between computers on the Internet, tying them together into a vast collection of interactive multimedia resources.
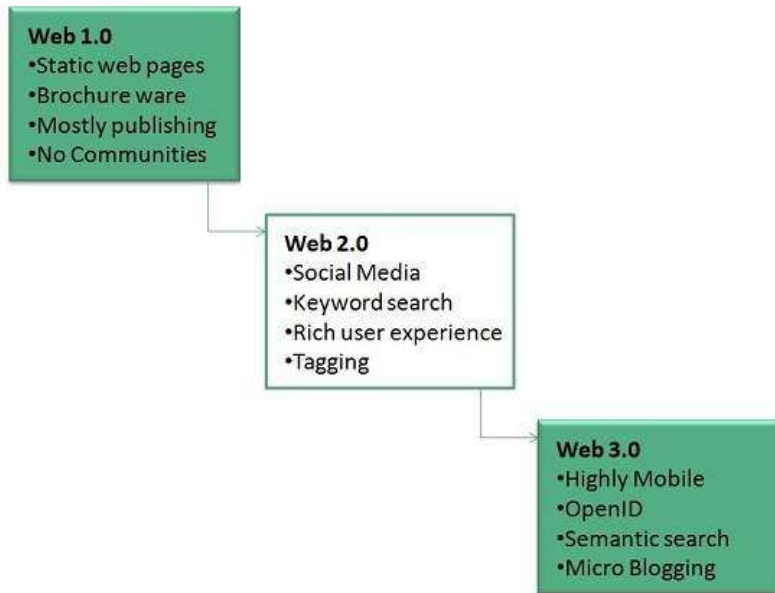
Internet and **Web** is not the same thing: Web uses internet to pass over the information.
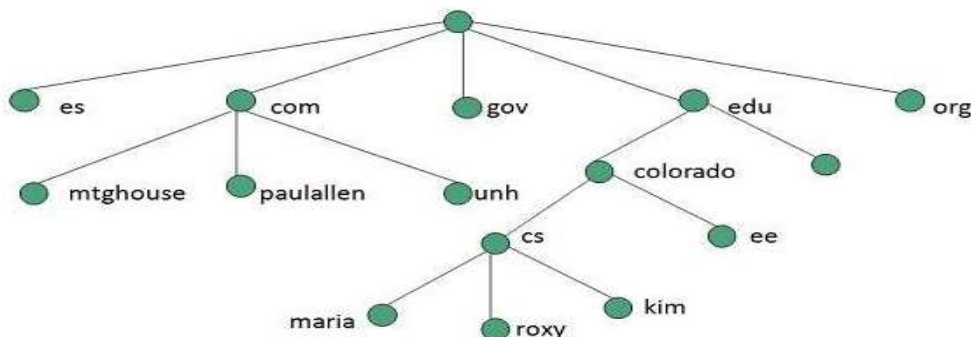
Evolution

World Wide Web was created by **Timothy Berners Lee** in 1989 at **CERN** in **Geneva.** World Wide Web came into existence as a proposal by him, to allow researchers to work together effectively and efficiently at **CERN.** Eventually it became **World Wide Web.**
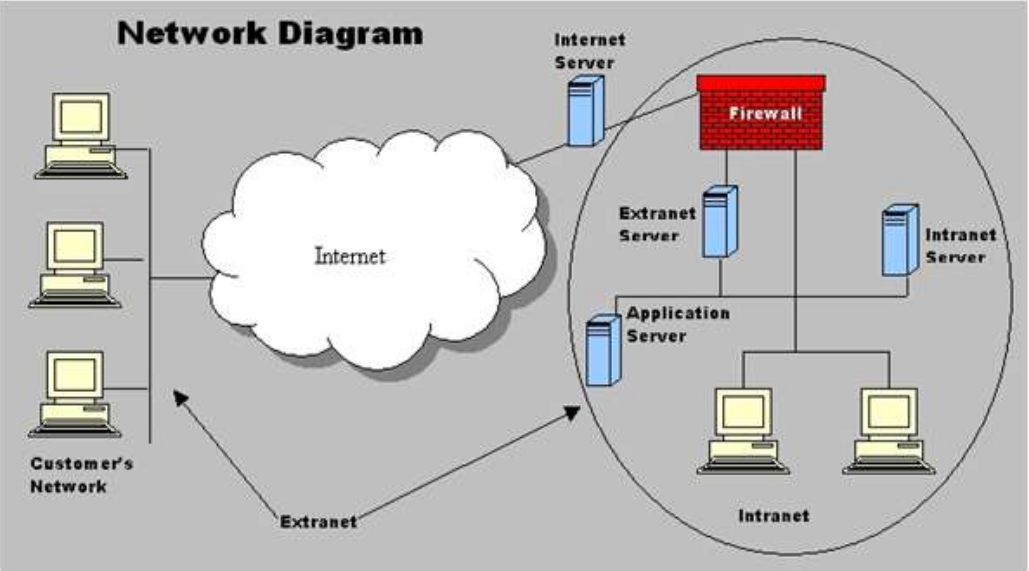
The following diagram briefly defines evolution of World Wide Web:

Web 1.0
- Static web pages
- Brochure ware
- Mostly publishing
- No Communities

Web 2.0
- Social Media
- Keyword search
- Rich user experience
- Tagging

Web 3.0
- Highly Mobile
- OpenID
- Semantic search
- Micro Blogging

Internet, Extranets, and Intranets

The Internet, extranets, and intranets all rely on the same TCP/IP technologies. However, they are different in terms of the levels of access they allow to various users inside and outside the organization and the size of the network. An intranet allows for restricted access to only members of an organization; an extranet expands that access by allowing non-members such as suppliers and customers to use company resources. The difference between the Internet and extranets is that while the extranet allows limited access to non-members of an organization, the Internet generally allows everyone to access all network resources.

- **Intranet** is shared content accessed by members within a single organization.
- **Extranet** is shared content accessed by groups through cross-enterprise boundaries.
- **Internet** is global communication accessed through the Web.

Network Diagram

Internet Server

Firewall

Extranet Server

Intranet Server

Internet

Application Server

Customer's Network

Intranet

Extranet

Comparison between Internet, Intranet and Extranet

Parameter	Internet	Intranet	Extranet
Type of Network	Public	Private	Private/VPN
Size	Large number of connected devices	Limited number of connected devices	Limited number of connected devices over internet
Security	Depends on the device connected to the device	Firewall protected	Firewall separates Internet and Extranet
Policy	Internet Communication Protocols	Organizational Policies	Organizational policies, contractual policies and Internet Policies
Accessibility	Anyone	Authorized people	Authorized people
Information Sharing	Information can be shared across the world	Information can be shared securely within an Organization	Information can be shared between employees and external people
Owner	Not owned by anyone	Owned by a particular Organization	Owned by one or more Organizations
Example	World Wide Web, Email, Chat, Social Media	Internal Operations Network of an Organisation	Network of Collaboration between two Corporations

URL

A uniform resource locator (URL) is the address of a resource on the Internet. A URL indicates the location of a resource as well as the protocol used to access it.

A URL contains the following information:

- The protocol used to a access the resource
- The location of the server (whether by IP address or domain name)
- The port number on the server (optional)
- The location of the resource in the directory structure of the server
- A fragment identifier (optional)

Also known as a Universal Resource Locator (URL) or Web address. A URL is a type of uniform resource identifier (URI). In common practice, the term URI isn't used, or is used synonymously with URL, even though this is technically incorrect.

Tim Berners-Lee and the Internet Engineering Task Force working group is credited with developing the URL in 1994. It is formally specified in RFC 1738.

All URLs are presented in the following order:

- Scheme name
- Colon and two slashes
- Location of the server
- The port (optional) and the location of the resource on the server
- Fragment identifier (optional)

So, the format will look like this:

scheme://location:port/file-on-server.htm?querystring=1

This looks more complex that it is. The most common schemes (protocols) are HTTP and HTTPS, which any WWW user will recognize. The location of the server is generally a domain name. Given this, the following URLs are much more simple to understand:

http://www.google.com/default.htm
https://www.google.com/default.htm

Both these URLs indicate that there is a file named default.htm on a server with the address of "google.com". One uses regular HTTP, while the other uses a secure version of this scheme.

Two common elements of confusion about URLs:

- The "www" is not actually part of the technical protocol. Websites just started using this to indicate the user is using the World Wide Web. This is why if you go to http://google.com, it redirects to http://www.google.com.

- Most users access the Internet via a Web browser, which inserts port 80 on HTTP connections behind the scenes. This is why if you go to http://www.google.com:80, you will see the same website as if there were no port number.

Finally, the following URL demonstrates a fragment identifier, more commonly known as a query string:

http://www.google.com/some-page?search=hello

This is saying that to use the HTTP protocol to send a request to the website at google.com (over port 80) and to ask for "some-page" and send in the search variable "hello". This is why you'll sometimes see an extremely long URL as many variables are being sent to the Web server in more interactive Web applications.

Web Browser

A web browser is a software program that allows a user to locate, access, and display web pages. In common usage, a web browser is usually shortened to "browser." Browsers are used primarily for displaying and accessing websites on the internet, as well as other content created using languages such as Hypertext Markup Language (HTML) and Extensible Markup Language (XML).

Browsers translate web pages and websites delivered using Hypertext Transfer Protocol (HTTP) into human-readable content. They also have the ability to display other protocols and prefixes, such as secure HTTP (HTTPS), File Transfer Protocol (FTP), email handling (mailto:), and files (file:). In addition, most browsers also support external plug-ins required to display active content, such as in-page video, audio and game content.

List of Web Browsers:

- Google Chrome
- Mozilla Firefox
- Apple Safari
- Microsoft Internet Explorer
- Microsoft Edge
- Opera
- Maxthon

Search Engine

A **web search engine** or **Internet search engine** is a software system that is designed to carry out **web search** (**Internet search**), which means to search the World Wide Web in a systematic way for particular information specified in a web search query. The search results are generally presented in a line of results, often referred to as search engine results pages (SERPs). The information may be a mix of web pages, images, videos, info graphics, articles, research papers and other types of files. Some search engines also mine data available in databases or open

directories. Unlike web directories, which are maintained only by human editors, search engines also maintain real-time information by running an algorithm on a web crawler.

List of Most Popular Search Engines In the World (Updated 2019)

- Google.
- **Bing**.
- **Yahoo**.
- **Ask**.com.
- AOL.com.
- **Baidu**.
- **Wolframalpha**.
- **DuckDuckGo**. Etc.

Web server

A Web server is a program that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Web pages to users, in response to their requests, which are forwarded by their computers' HTTP clients. Dedicated computers and appliances may be referred to as Web servers as well.

The process is an example of the client/server model. All computers that host Web sites must have Web server programs. Leading Web servers include Apache (the most widely-installed Web server), Microsoft's Internet Information Server (IIS) and nginx (pronounced *engine X*) from NGNIX. Other Web servers include Novell's NetWare server, Google Web Server (GWS) and IBM's family of Domino servers.

Web servers often come as part of a larger package of Internet- and intranet-related programs for serving email, downloading requests for File Transfer Protocol (FTP) files, and building and publishing Web pages. Considerations in choosing a Web server include how well it works with the operating system and other servers, its ability to handle server-side programming, security characteristics, and the particular publishing, search engine and site building tools that come with it.

Web - Server Types

Apache HTTP Server

This is the most popular web server in the world developed by the Apache Software Foundation. Apache web server is an open source software and can be installed on almost all operating systems including Linux, Unix, Windows, FreeBSD, Mac OS X and more. About 60% of the web server machines run the Apache Web Server.

Internet Information Services

The Internet Information Server (IIS) is a high performance Web Server from Microsoft. This web server runs on Windows NT/2000 and 2003 platforms (and may be on upcoming new Windows version also). IIS comes bundled with Windows NT/2000 and 2003; Because IIS is tightly integrated with the operating system so it is relatively easy to administer it.

Proxy Server

In computer networks, a **proxy server** is a server (a computer system or an application) that acts as an intermediary for requests from clients seeking resources from other servers. A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resource available from a different server and the proxy server evaluates the request as a way to simplify and control its complexity. Proxies were invented to add structure and encapsulation to distributed systems.

YOU   PROXY SERVER   INTERNET