

## Unit 1:- Networking

### Introduction

- ❑ The simplest definition of the Internet is that it is the largest computer network in the world.
- ❑ But technically speaking, the Internet is actually a network of many smaller networks that exists all over the world.
- ❑ This chapter shall introduce some newer and more useful features of the Internet along with Internet history, addressing, websites etc.

#### Definition

A **computer network** is a group of interconnected computers so as to facilitate sharing of resources and enhanced communication.

### What is Network?

- ✓ A *computer network* is a collection of computers connected together for sharing information and hardware, software resources. A network can be formed with wired or wirelessly.
- ✓ Computer network facilitates the sharing of hardware & software resources among different users working on different computers.
- ✓ These shared resources can be data files, any application software and hardware devices like printer, modems etc.
- ✓ Interconnected computers from the computer networks.

# Internet

## Introduction

- ✓ Internet is computer-based worldwide information network.
- ✓ It provides many services to make our work easier.
- ✓ Internet is one of the best technologies used in the present world of computers.
- ✓ It has brought the entire world at your home.
- ✓ Internet is a network of millions of computers, which are connected to each other & their number is growing day by day.

## History of the Internet

- ✓ Internet was introduced in 1969, when US. Department of Defense sponsored a project name ARPANET (stands for Advanced Research Project Agency Network).

The original ARPANET was shut down in 1990, & the government funding for NSFnet discontinued in 1995.

But the commercial Internet services came into picture, which are still running the Internet.

## What is Internet?

The word Internet can be split into two words that is 'Inter' that means **inside** or **within** & 'net' which means **mesh**.

### Definition

**Internet** is a computer based works wide communications network, which is composed of large number of smaller interconnected networks.

More formally, the internet may be defined as follows:

The Internet is a network of computer, spread all over the world, that allows users to share information & to communicative with each other

- ❖ A computer that isn't connected to a network is known as a **Stand-Alone Computer**.
- ❖ A computer connected to a network is known as **A Workstation** or a **Node** or a **Host**.

## Uses of Internet

i) **Access to information**: On internet we can find information regarding anything, either personal, professional or study related problem. We can read newspaper online, read a book, check the latest movie

reviews, order for flowers, and get latest information on the latest software.

ii) **International Communications:** Over half of the world's nations have sites on Internet. Even more have access to e-mail gateways to exchange electronic with Internet sites. We can communicate with friends & colleagues anywhere in the world.

iii) **Research:** With every major university in the USA & Europe connected to internet, we can find information that will help us in our research.

iv) **Education**

v) **Fun**

## Advantage of Internet

- ❖ Greater access to information reduces research times.
- ❖ Global reach enables one to connect to anyone on the Internet.
- ❖ Easy communication with other people.
- ❖ Publishing documents on the Internet save papers.

- ❖ Useful communication links.

## Disadvantage of Internet

- ❖ Cyber frauds may take place involving Credit/Debit card numbers and Details.
- ❖ Computer viruses get downloaded and spread across machines connected to networks & have detrimental effects.
- ❖ Much of the information isn't checked & may be incorreced or irrelevant.
- ❖ Too much time spent on the Internet could result in a lack of face-to-face interaction with others & a loss of social skills.
- ❖ Going on-line runs the risk of malicious hackers or viruses being able to damage your computer.

## WWW (World Wide Web)

From the late 1960s to the early 1990s, the Internet was a communication and research tool used almost exclusively for academic & military purposes.

Before WWW, Internet was mainly used for obtaining textual information.

It was developed in 1989 by **Tim Berners- Le in Switzerland.**

The protocol used in the exchange is called Hyper Text Transfer Protocol (HTTP). Web page are written in simple markup language called Hyper Text Markup Language (HTML).

Hypertext concept was given by **Ted Nelson, 1965.**

## Meaning of WWW

The World Wide Web is a collection of documents stored on the computers around the world.

These documents are available on the Internet and may contain a wide variety of resources such as text, graphics, multimedia etc.

## Definition

The **World Wide Web (WWW)** is a set of *programs, standards, & protocols* that allows the multimedia & hypertext files to be created, displayed & linked on the Internet.

## History of WWW

Present day WWW has its official birth date as April 30, 1993. In the following table, we are giving a brief history of WWW.

1989	On March 12, <b>Tim Berners-Lee</b> , a British scientist working at CERN in Switzerland, submits a proposal for a “distributed information system” to allow researchers to deal with huge amounts of information. This is the genesis of the <i>World Wide Web</i> .
1990	On December 20, world’s first website goes live at <b>Info.cern.ch</b> . The first web page is <a href="http://info.cern.ch/hypertext/WWW/TheProject.html">http://info.cern.ch/hypertext/WWW/TheProject.html</a>
1991	On August 6, The <i>World Wide Web</i> is launched publicly as Berners-Lee publishes Details of the project on the Internet.
1993	On April 30, CERN releases the World Wide Web source code and announces it will be available free of charge. It also releases a basic browser along with a library of code.

## Difference between WWW & Internet

A large part of the Internet is the 'world wide web' (WWW). This is made up of website that have one or more web pages.

But the Internet isn't just the web pages that you use every day.

It is also consist of:

- ❖ **Forums** where people can seek help and advice about a topic.
- ❖ **Research databases** used by universities and large companies.
- ❖ **E-mail & Instant Messaging** (IM) system.

It is really important to understand that the Internet is not the same as WWW. The internet is to the World Wide Web as Europe is to Germany. One is the container, the other one is an item within the container.

Note: While Internet is a collecting of computers or networking devices connected together; WWW is a collection of documents, linked via special links called hyperlinks. WWW forms a large part of Internet but is not the Internet.

## Internet Terminology

Before we proceed further, it will be good if we briefly talk about Internet terminology. In the following lines, we are introducing some basic terms related to Internet.

**Client:** Any computer on the networks that requests services from another computer on the Internet.

**Server:** Any computer that receives requests from client computers, processes & sends the output. Web servers respond to web related request. There can be other types of servers to handle different type of requests/actions.

**Webpage:** Any digital page/document hosted on Internet (i.e., accessible via Internet.)

**Website:** A collection of interconnected webpages, designed with a certain goal in mind.

**Web portal:** A website or service that offers a broad array of resources such as e-mail, forums, and search engines among others, e.g., sites like MSN, Yahoo, India times etc.

**Web Browser:** A program or software on a client computer that retrieves information from the web. Examples are: *Internet Explorer, Google chrome, Mozilla Firefox, Netscape, Mosaic, Opera, Safari, and Lynx* etc.

**URL:** *Uniform Resource Locator*. It is the unique address of a web page on Internet.

**Blog:** Short for Web log, a blog is a web page that serves as a publicly accessible personal journal for an individual. A *blog* is frequently updated online personal journal or diary.

**Blogger:** The author of a blog is called blogger. A blogger is the one who regularly writes and updates entries in his/her blog.

**Blogging:** The action of writing blog is called blogging.

**Newsgroup:** *Newsgroups* are Internet discussion forums where groups of users with common interests gather to discuss on a common topic of interest.

**E-mail:** Short for electronic mail, *email* refers to messages distributed by electronic means from one computer user to one or more recipients via a network mostly Internet.

## Web Servers

A **Web Server** is a computer that stores websites on the Internet & delivers web pages to viewers upon request.

A web server is also called **WWW server**.

Web servers are generally programs or software that wait for requests from the web browser. Some examples of web servers are: *Apache, IIS, nginx, GWS, Netsite etc.*

### Definition

A Web Server is a WWW server that stores web documents & responds to the requests made by web browsers.

## Difference between a Server & a Web Server

Before we proceed further, it is important to understand the difference between a *server* & a *web server*.

### Server

A server is a computer or device on a network that manages network resources. A server serves requests mainly related to resources on the network such as for sharing a resources like printer or sharing storage etc.

There are many different types of servers such as a file server or a mail server or a webserver etc.

### Web Server

Web servers are computers that deliver (serves up) web pages. In technical terms, we can say that they handle HTTP requests.

For eg., if you enter the URL

<http://www.ncerttutorials.com/class10computernotes.htm>

in your browser, this sends a request to the web server whose domain name is ncerttutorials.com.

The server then fetches the page named class10computernotes.htm & sends it to your browser.

## **Services Provided by a Server**

As you already know that a server is a computer dedicated for managing network resources, it is responsible for handling the requests related to the resources on network.

Services provided by a server on a network include the following among many others :

1. Equipment/Resource sharing
2. Centralised File Saving for Data Sharing
3. Centralised Virus Scanning
4. Centralised Backups

## **Services Provided by Webservers**

A Web Server is completely dedicated to handling requests for webpages. It provides following major services:

1. Serving Webpages
2. Running Gateway Programs (CGI) & returning output
3. Monitoring & logging all Access

# How Servers are different from Desktop

## Computers:-

Servers are also computers but they have specific features. Servers tend to differ from the average computer in terms of following things/features:

**Memory:** - Servers require large amounts of RAM to work efficiently.

**Storage:** - Servers need very large and fast hard disks.

**Processing power:** - Servers like application servers have more processing power with multiple strong CPUs.

**Backup drivers:** - Most servers have inbuilt high-capacity tape backup drivers to protect against data loss.

**Connectivity:** - Servers often have two or more fast network cards to multiply the rate at which they can send and receive data to the rest of the network.

**Robustness:** - Since servers run all day for years on end, the components used in them need to be of higher quality than those in the average desktop computer.

**Scalability:** - Servers are designed to be expandable as network demand grows. Scalability is the ability to increase the size and power of equipment and networks as required.

# Website

A website is a collection of webpages which are digital files generally written using *Hyper Text Markup Language (HTML)*. For a website to be available to everyone in the world at all times, it must be stored or “hosted” on a computer that is connected to the Internet round the clock.

## Definition

A **Website** or a site is a group of related web pages hosted on a web server and are linked together and share a common interface and design.

## Components of a Website

As you know that a website is a collection of related webpages hosted on a server. There are some components essential for making a website.

These are being listed below:-

**Webhost:** - Hosting is where a website is physically located. Group of linked webpages qualify to be called a website **only when hosted on a webserver.**

**Address:** - This is the address of the website (also called URL of the site). When someone asks to see a website, he needs to put this address into the web browser, and the asked site is delivered by the webserver.

**Homepage:** - Every website has a *home page*. It is the **first web page that appears** when viewers go to a website.

**Design:** - It is the overall look and feel the website has as a result of proper use and integration elements like *navigation menus, graphics, layout* etc.

**Content:** - All the webpages contained in the website together makeup the content of the website.

**The navigation Structure:** - It is order of the pages, the collection of what links to what. Usually it is held together by at least one navigation menu.

## Web Pages

A Web page is a digital document that is linked to the **World Wide Web** and viewable by anyone connected to the internet having a web browser.

### Components of a webpage

As you already know that a webpage is a digital document containing information in digital form, still we are asking this question – What does it contain or what are its components?

Well, this question can be answered in more than one way:

- Components of a webpage, Content wise
- Components of a webpage, Structure wise

## Content wise

Content wise the components of a webpage are:  
*Hypertext and Hyperlinks.*

**Hypertext** refers to a digital text, which is more than just text as it can include information in various media formats such as:

- Text
- images
- graphics
- video
- Sound
- Hyperlinks

Hyperlink refers to a link from a hypertext file to another such file. A *Hyperlink* can be in the form of a **graphic** or **text**, upon clicking where the linked document opens up.

## Structure Wise

Structure wise the components of a web page are:

- ❖ Page Title
- ❖ Header
- ❖ Body of the web page

- ❖ Navigational Links
- ❖ Footer

## Web Browser

A web browser is a program that lets you visit different sites on the Net and display their offerings on your computer.

You visit a site by supplying the browser with an address, or URL.

There are many browser available in the market *e.g.*, [Google Chrome](#), [Mozilla Firefox](#), [Internet Explorer](#), [Safari](#) etc.

*MOSAIC* was the first web browser to come into market.

1. Graphical Browser
2. Text only browser

## Blogs

A blog is a kind of website. The term “Blog” is the shortened form of “weblog” - a diary or journal on the Web.

The owner of the blog writes on the blog & is known as **Blogger** or author of the blog.

The activity of updating or writing for blog is called **blogging**.

## Definition

A person who writes and maintains a blog is called **blogger** & art of writing a blog is called **blogging**.

**Blogs usually have a few features that are useful for the blogger & the readers.**

## Types of Blogs

Web of today has millions upon millions blogs.

1. Personal Blog
2. News and views
3. Company blogs
4. Micro- blogs

**Note: While blog poses no restriction on number of characters / words for a post, microblog generally limits a post to certain number of characters e.g., 140 characters is the limit for a post (tweet) on twitter.**

## Advantages and Disadvantages of blog

### Advantages:

- Enables you to write down your thoughts on anything that interests you.
- Easy to set up; don't need much technical knowledge.
- Easy and quick to updated or add new posts.
- People can leave comments on your blog.
- If you want to read other people's blogs there are literally millions to choose from.

### Disadvantages:-

- Whatever you publish is available for everyone to see. If you write a post in anger you might regret later.
- Personal blogs may biased or contain inaccurate information.
- Blogs can be time-consuming. Finding tome to write regular updates can become a chore.
- People may leave rude or inappropriate comments.
- There are many are dull blogs round. You may have to look at many before you find some worth reading.

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