

# Computer Skills

## CHAPTER 4: NETWORK AND INTERNET

# Required Components to make a local Network

The required components vary from network to network due to many factors, including:

- Number of devices to be connected to the network
- Network coverage area and distance between devices
- Geographical nature of the location (wired or wireless)
- Centralize data, information, software, management and control (peer-to-peer or server and client)
- The type of data and information that is sent and received over the network (text, images, video, voice)
- The amount of data to be traded over the network per second (data speed)
- The amount of data, information and software to be stored on the network
- The required level of security.
- available financial support.

# Required Components to make a local Network

However, there are a number of basic components found in most networks:

- At least 2 computers
- Network Interface Card(NIC): The number of NIC equal the number of connected devices in the network. They are used to connect devices to the means of communication (cables). There are types of them:
  - Built in link cards.
  - Connecting cards purchased and installed on the device.
- The type of means of communication or data transfer, controls the type of network card, including:
  - Wired network link card
  - Wireless network link card
- Media (wired or wireless)
- Network Operating System operating system)
- Devices that connect and connect devices to each other (Switch distributor - Hub organizer - router network router)

# Introduction to the Evolution of the Internet

The Internet, sometimes simply called 'Net', is a global network of computer networks - a network in which users through one computer, if they have permission can obtain information from any other computers (and sometimes speak directly to users on other computers). The U.S. Department of Defense (Pentagon) laid the foundation for the Internet nearly 30 years ago with ARPANET. However, the general person did not use the Internet much even after the development of the World Wide Web in the early 1990s

# Internet definition:

A global network with a huge collection of different networks connected to each other and distributed all over the world with the aim of exchanging and sharing with each other. It is called a network or an abbreviation of the global network (INTERNationalNETWORK) or INTERconnectingNETworks)

Internet network have expanded and spread and included within them all kinds of networks (WAN/MAN/LAN) and therefore are not owned by a particular party or country

# Deference between Web and Internet

World Wide Web (WWW) definition:

It is a service that obtains information stored on the Internet through a huge collection of pages or websites. The World Wide Web is a user interface for the Internet. It consists of a huge collection of hypertext documents stored on the Internet. They are accessed and handled through a program called a browser. Many of these browsers include Google Chrome, Internet Explorer and Mozilla.

# Learn about the Web Browser and Distinguish between Page and Site.

Browser definition: Browser is a program that lets you view web pages and images of content over the Internet. Web Page Definition: A document that uses multimedia (text, image, voice, and video) to display information directly or through a set of interconnected text documents to open other pages or play files. It is called a page for abbreviation. Web Site definition: A collection of web pages those are interconnected to provide a range of information. It is called a site for abbreviation.

# Learn about the Web Browser and Distinguish between Page and Site.

Site components: The site consists of:

- Home Page or Home Page
- A collection of Content Page
- A set of hyper-linking links to link pages together.

The definition of the home page: is the front page of the site and usually contains the name and logo of the site, a welcome phrase, pictures, an index of the contents of the site and a set of cross-sectional links to move to different content pages and may also contain a set of hyperlinks to a range of sites related to the site.

Content page definition: A page or pages that contains the information to be displayed to the user.



# Types of Websites

There are many factors that control the type or classification of the site such as:

A. Owner of the site:

- Private Sites

Government sites: Government sites end up with their internet address.gov

- Corporate sites: Organization Sites and its Internet address ends with.org

# Types of Websites

Content (services and information provided by the site) including:

- Information sites and their Internet address ends with .inf
- Communication Services Sites and their Internet address ends with .comm
- E-newspaper and magazine websites
- E-education sites and their internet address ends with .edu
- E-commerce sites
- Commercial site their internet address ends with .com
- Entertainment Sites

## Interaction with the user

- Static site or non-interactive sites called web 1.0: sites allowed the user is only reading it only. Do not allow the addition, deletion, or editing of its contents.
- Dynamic Sites, Interactive Sites or Web 2.0: sites that allow the user to interact with content from add-on, deleting, or editing.

# Internet Features

The Internet offers many features such as:

- A huge collection of information in various areas that are constantly renewed.
- Easy and fast access to information anywhere in the world.
- Easy and fast communication with millions of people from all over the world directly.
- Watch and interact with international news and events as soon as they happen.

# Basic Uses of the Internet

The services provided by the Internet are numerous and varied, but we will mention some of them in Table 4- 4. Note that all of the services mentioned can be used in the educational and research process.

Table 4.4 Description of some basic Internet services

Service	Description
World Wide Web (WWW)	This service is most widespread and used to obtain the required information in its various forms on the Internet through the browser explorer program.
E-mail	E-mail service is a powerful service that has led to the spread of the Internet in all community circles. The message (text, voice, video) can be sent instantly, unlike other means. The message can be read and answered at any time.
File Transfer Protocol (FTP)	Upload and Download Files is an online file sharing and download service. So you can store (upload) your files and documents online and upload them at the worst time you want.
Internet Chat	This service helps users to communicate and interact with each other by writing, chatting, or sending files, whether in the form of photos, sounds or video.

# Types of Internet Connection Lines

## **A. Internet connection is done in two steps- :**

1. Contact with your Internet Service Provider (ISP) and request to subscribe to the Internet.
2. Choose a means (lines) to connect to the Internet because each medium has its own speed and cost.

## **B. Types of Internet connection lines**

The types of internet connection lines are divided into two types:

# Wire Telecommunications

## Wire Telecommunications:

- Dial-Up: In which the public telephone network (Public Switched Telephone Network (PSTN) is used, which is one of the most widely used types of communication lines due to its licenses and spread, but it is the slowest types where its speed reaches about 56 kbps and the telephone line is also busy for the duration of internet use. The connection is done using a modem that is connected to your ISP. To know the role of the modem: We should know that the computer only deals with data in the form of Digital Signal, while data travels over telephone lines in the form of analog signals. Therefore, a device that converts from digital to



# Wire Telecommunications

analogue signals should be used to send it over telephone lines and then reverse analogue signals to digital signals to receive data from telephone lines and can be handled by the computer (modem).

A modem is a device that converts the digital signal into analogue and vice versa. The word modem is an abbreviation of two words: modulation, conversion of digital signals to analogue signals, and demodulation, conversion from analogue to digital signals.

# Integrated Service Digital Network (ISDN))

It is a network that offers many services, including the allocation of a telephone channel and an Internet channel at the same time on the same cable, so that the phone line will not be busy when using the Internet. The signals are transmitted digitally. It reaches a speed of about 64 kbps if you use one channel or 128 kbps when using the two channels.

### **Digital Subscriber Line (DSL)**

A line that allows internet access and download information at speeds of up to 512 kbps.

### **Asymmetric Digital Subscriber Line(ADSL)**

A fast internet connection with a speed of 256 kbps.

### **Leased Line**

A special line rented by companies or agencies to connect their employees to the Internet permanently and at high speed ranging from 56 kbps to 45 Mbps.

### **Fiber Optic**

Fiber optic cable is a very thin tube of flexible glass through which the data is transmitted in the form of pulses of light (each pulse represents a bit) and this tube is covered with a plastic cover. So the data travels at the speed of light.

# Wireless Communications

Wi-Fi: a type of high-speed wireless connection. Audio waves are used to transmit data instead of wires.

- Satellite communication: This connection is very fast and covers very high areas regardless of the geographical nature of these places. But it is burdened with high cost.

# Servers Types

Server definition: It is a computer with high specifications (processor speed - memory space and storage ... It provides data and services to other devices. The server can be a PC or device specifically designed to be a server. The Internet is actually based on a huge number of your servers in the figure of (4- 15).

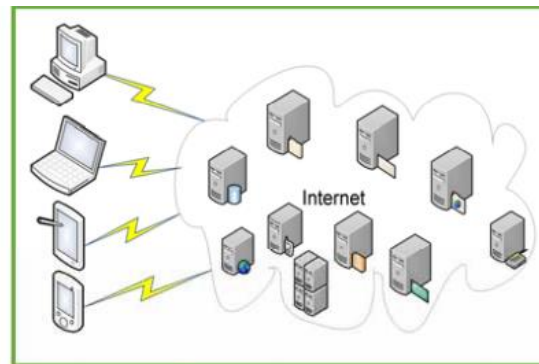


Figure 4-15  
Some  
Servers  
used in  
Internet

# Servers Types

There are many types of servers, such as:

1. Web Server Definition: Is the software responsible for providing web pages, their irradiated or hypertext, and linked text, voice, image or video of the user (web browser) and hosting web pages.
2. Email Server Definition is software provides user email server services to create an account, manage mail servers, send and receive an e-mail, as well as provide space for storing and sharing various documents, etc.
3. Application Server Definition: Software provides a suitable operating environment for running a range of applications and is handled and accessed by the Application Program Interface (API).

# Servers Types

4. Database Server definition: software contains an application or applications for a database that operates and manages the database and allows other devices to deal with it.
5. Domain Name System server: A software stores information about domain names in the internet database, linking page names and information to domain names, for example, when typing the website of The University of Bisha <http://www.ub.edu.sa> on any browser, converted by DNS to the host server address of the university's website, which is <http://51.211.174.136/>

# Search Tools

Definition of search tools: A set of software that is used in the search to access data and software distributed on the Internet. There are three types of research tools as in the figure (4-16)



**Figure 4-16**  
**Search Tools**  
**Types**



# Search Tools

## Search Engine:

A system that helps in the search for information stored in the World Wide Web and review ranked results. Among the most famous examples: Google chrome - AltaVista –HotBot and Infoseek. In the practical part, we will be exposed to the most famous search engines and how to use one of them. The search engine consists of three programs interconnected together as in the figure (4- 17) Spider Program is a collection of programs used to explore and collect information about web pages in a database.

- **Index Program:** The program indexes and arranges the database. Search and order methods vary from engine to engine.
- **Search Program:** receives key words from the user through the Search Box searches for them in the indexed database, and then displays the user's ranked search results.

# Search Tools

**Search Directories:** It is a program very similar to the search engine in terms of use and work but different from that of the person who is doing the exploration and searches on the Internet is a human crew and not a program. As a result of the presence of the human crew in the process of exploration and the collection of information about the pages, search results are more accurate than the search engine but limited in engine coverage.

One of the most popular search guides is Yahoo (DMOZ) and DMOZ (DMOZ)

**Meta-Search Engine:**The engine does not contain a database of web pages but do the search using other search engines and then display the results to the user. Like Info (Info.com), Mamma(Mamma.com)

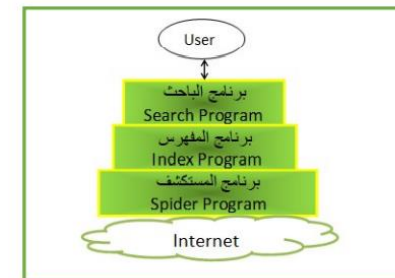


Figure 4-17  
Search  
Engine  
Component

# Types of Protocols

Protocol definition: It is a set of rules and procedures that govern and regulate communication and interaction among network-connected devices and how data is transmitted. There are many types of these protocols, such as:

## **Types of protocols:**

### 1. TCP/IP (Transmission Control Protocol/Internet Protocol)

This protocol uses in the Internet to identify the transmitted and received devices and then the data is sent and received between them.

# Types of Protocols

## 2. HTTP (Hyper-TextTransfer Protocol)

It is responsible for the connection between the web server and the web browser in the user's device, the HTTP protocol is used to send a request from your device (client) via the browser to the web server, and to redial in the form of web pages from the server to the client's browser.

## 3. HTTPS Protocol (Secure HTTP)

HTTPS is responsible for the secure communication between the web server and the web browser, the HTTPS protocol is based on the execution of financial and personal transactions such as the use of credit cards and other private data.

## 4. FTP (File Transfer Protocol)

This service is a TCP/IP application that makes it possible to transfer files between different computers connected to the Internet.

# Internet Search Methods

١. Simple Search: A method used by the majority, especially beginners, in which only a word or search words is entered without any signs or symbols and then searched for them. Therefore, simple search results are inaccurate.
٢. 2. Advanced Search: In this search, we use with keywords (search words) a set of mathematical symbols (e.g., -,\*) or logical ((And, Or, Not) or special tags such as ('?'), etc.The results are accurate. We will explain in detail with examples of the tags and symbols used in the advanced search in practical application in Chapter 12

# General Tips to Run Search in Internet

Select what you want to look for in a set of words

- Use different formulas for these words (singular, Plural, synonyms)
- Make no effort to use prepositions, kindness, identification tools, etc. as Search engines neglect all of it.
- Use advanced search for accurate results.
- Use more than one search engine if you don't get the desired results.

# General Tips to Run Search in Internet

- It is preferable to use specialized search engines in your field of search (there are a group of search engines specialized in certain areas such as medicine, engineering, economics, scientific research and periodicals) and if you do not find use general search engines such as Google.
- Be aware of the main topic you are looking for and sub-topics so that you do not get distracted and you don't get interfered with the information.
- determine which search engine you will use to learn about the data and specialized topics and how to use it optimally.

**The End of lecture**