



THE NETWORKS/part2

Types of networks according to the transportation ways

- Wire networks.

Some of the transportation types in Wire networks are:

- 1) Ethernet
- 2) Token Ring

Examples of cable types used in the wire networks to transport the data:

a) Coaxial Cables

- **Thin Ethernet 10 Base 2**

It's a thin cable, similar to CCTV cables, and they can carry the signal up to 185 meters.

10BASE2 50 Ohm Coax Cable



- **Thick Ethernet 10 Base 5**

It's a thick cable equipped with greater protection and flexibility. These cables can carry signals up to 500 m and are considered a backbone for connecting subnetworks.

10BASE5 Thicknet Cable





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Coaxial cable design

- It is a thin metal core of copper called a conductor.
- This core is surrounded by an insulating material such as Poly Vinyl Chloride (PVC).
- The insulator is surrounded by a metal mesh shielding and then a plastic wrap



Advantages of coaxial cables

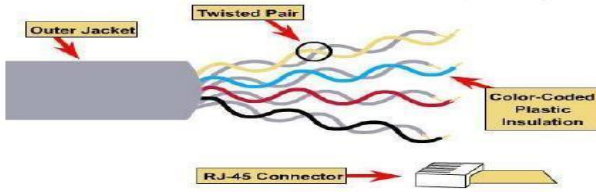
- High frequency range, which means its ability to transfer larger data
- Its ability to protect transmitted data from interference
- It is used to transfer sound, images and data

b) Twisted pair cables

Twisted cables are used for distances not exceeding 100 m. It consists of twisted pair connections made of thin copper wires. The wires are braided to protect them from interference and distortion. It's divided into:

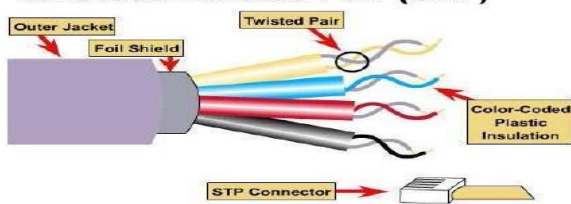
1- Unshielded Twisted Pair (UTP)

Unshielded Twisted Pair (UTP)



2- Shielded Twisted Pair (STP)

Shielded Twisted Pair (STP)

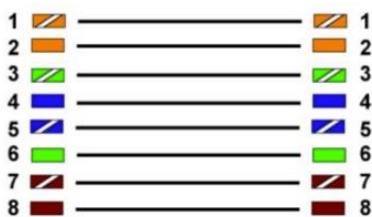


Twisted pair type connection

to connect twisted pair cables from one device to another at the network, there are two connection types

1) Straight Through Cable

Each end of the Straight-through has the same pin out. It uses the same color code throughout the LAN for consistency. This type of twisted-pair cable is used in LAN to connect a computer or a network hub such as a router. It is one of the most common types of network cable.



2) Crossover cable

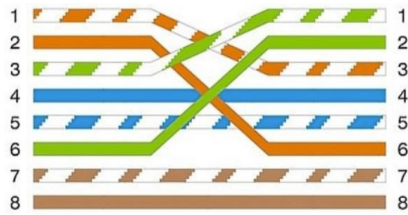
In this type of cable connection, Pin 1 is crossed with Pin 3, and Pin 2 is crossed with Pin 6.



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Crossover cable is used to connect two or more computing devices. The internal wiring of crossover cables reverses the transmission and receive

signals. It is widely used to connect two devices of the same type: e.g., two computers or two switches to each other.

NOTE:

- Like devices require a crossover cable.
- Unlike devices require a straight-through cable.

- **wireless networks.**

Some of the transportation types in Wireless networks:

a) Infrared.

The word infra means under, and this means that we are in the infrared region, whose frequency is lower than the frequency of red rays. Infrared rays are thermal rays and are emitted from all things and are also emitted from our bodies.

An example is remote control devices to control devices remotely.





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Among its downsides:

- The device must be oriented directly, as with remote devices.
- Do not use on computers.

b) Radio Frequency (RF).

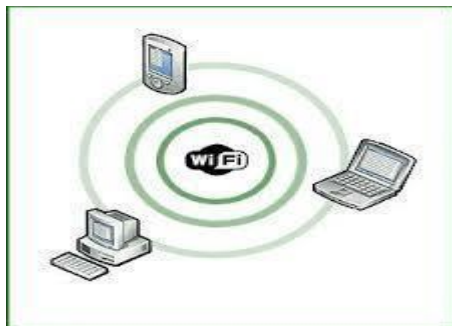
It is a part of electromagnetic waves with a wavelength higher than infrared rays and has many uses, such as radio broadcasting and also in computer networks and cellular communications.

c) Bluetooth

It is a communications technology in the short-range wave band designed to transfer data over short distances and consuming small amounts of energy. This technology is widely used in transferring data between Mobile devices. The Bluetooth features are low energy consumption and low cost.

d) Wireless Fidelity (WIFI)

It is the technology on which most wireless networks are based. It uses radio to exchange information instead of wires and cables. It is also able to penetrate walls and barriers and has a high speed in transmitting and receiving data, up to 54 Mbps.





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Wi-Fi waves are broadcast on frequencies between 2.4Ghz and 5Ghz, which are relatively higher than the frequencies used by wireless phones.

SO, the WIFI features are:

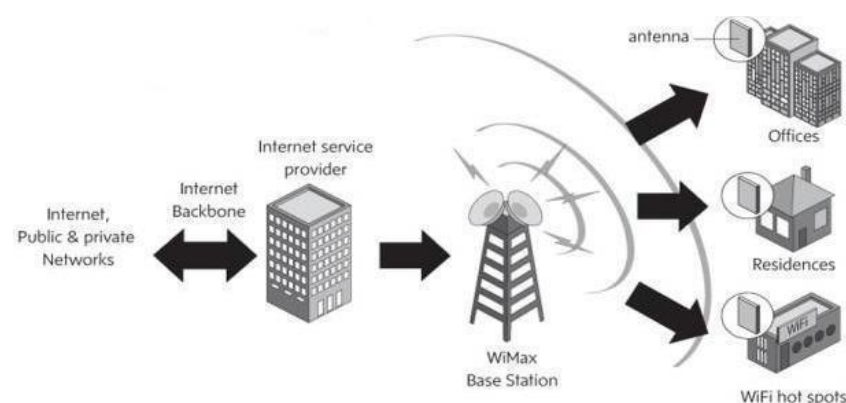
- Its network setup process is quick and easy
- Devices can be moved in all directions
- Connection speed via Wi-Fi reaches 54 MB per second
- It may be installed in places where it is difficult to extend cables.

It has drawbacks too:

- Interference and confusion, High energy consumption, Limited coverage area, and the possibility of personal data being hacked.

e) WIMAX

This method is considered one of the modern broadband technologies for wireless communications, which replaces high-cost cables such as optical fibers. Wireless communications cover large areas without being exposed to the problems of drilling, and WIMAX technology gives high speeds in transferring data between the sender and the receiver over large geographical areas to cover entire cities.





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WiMAX over WIFI technology is superior in several points, including:

Wi-Fi technology can provide wireless Internet in an area of slightly more than 90 square meters at speeds ranging from 11 Mbps to 54 Mbps, while WiMAX can cover an area of 45 kilometers so that it can cover entire cities at speeds of up to 70 Mbps.

Also WiMAX technology operates at frequencies between 2-11 GHz and between 10-66 GHz, while Wi-Fi technologies operate between frequencies ranging between 2.4 GHz and 5 GHz.



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The Internet

1-introduction

It's no secret that more and more the internet is becoming an integral part of our everyday lives. But if you are new to the online experience, it may be a bit overwhelming. You may be wondering, "**What exactly is the internet, and how does it work?**"

In this lecture, we will give a brief overview of the internet.

1.1-The Internet Is Everywhere

A revolution has occurred. It started quietly and has grown to involve the entire world. In the early days, most people just used the internet to search for information. But Today, the internet is a constantly evolving tool, that not only contains an amazing variety of information but also provides new ways of accessing, interacting, and connecting with people and content. Each day, people around the world use Internet services such as:

- A college student uses a smart phone to record a stunning touch-down, and then uploads the video to allow others to view it.
- Parents use a laptop computer to view the weather where their child lives, and are relieved to see the storm has passed.
- A person suffering from a chronic disease wears a battery-powered monitor that sends an update to their doctor every fifteen minutes.
- A family on vacation in Switzerland uses a smart phone to contact their home security system and see views of the interior of their home.



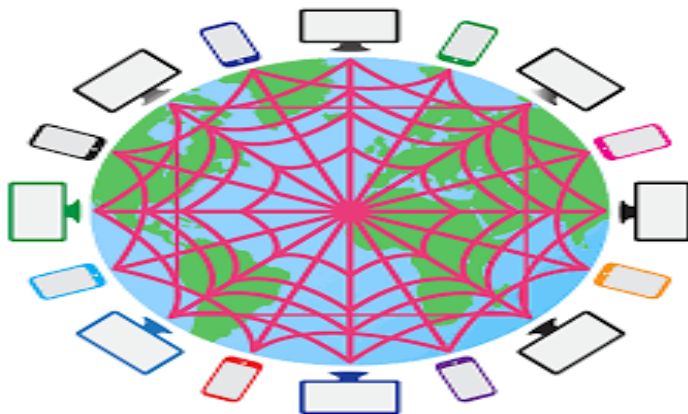
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- A grandparent uses a laptop computer to view photos their grandchild has uploaded. Later, the grandparent uses the laptop to find airline flights, make a reservation, and purchase a ticket to visit the grandchild.
- A company runs a computer program at the close of business each day that sends encrypted copies of the daily activity to multiple storage locations.

1.2-what is the internet

The internet is the largest computer network in the world, connecting millions of computer systems.



1.3-the world wide web (WWW)

When most people think of the internet, the first thing they think about is the World Wide Web. Nowadays, the terms "internet" and "World Wide Web" are often used interchangeably— but they're not the same thing.

- The internet is the physical network of computers all over the world.
- The World Wide Web is a virtual network of web sites connected by hyperlinks (or "links"). Web sites are stored on servers on the internet, so the World Wide Web is a part of the internet.

HTML



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The backbone of the World Wide Web is made of HTML files, which are specially-formatted documents that can contain links, as well as images and other media. All web browsers can read HTML files. In addition to HTML, it's also very common for websites to use technologies like CSS (Cascading Style Sheets) and JavaScript to do more advanced things.



URL

To get to a web page, you can type the URL (Uniform Resource Locator) in a browser. The URL, also known as the web address, tells the browser exactly where to find the page. However, most of the time, people get to a web page by following a link from a different page or by searching for the page with a search engine.



NOTE:

- The World Wide Web was created in 1989 by Tim Berners-Lee, a software engineer. Before then, computers could communicate over the internet, but there were no web pages.



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- The foundation of the internet began in 1969, when the US Department of Defense created ARPAnet, a project to allow military personnel to communicate with each other in an emergency.

2- connecting to the internet

you're interested in getting an internet connection in your home, or maybe you'd just like to upgrade to a faster service. There are a lot of factors to consider, such as how much speed you need and where you live.

2.1- how do I connect to the internet.

Once you've set up your computer, you'll probably want to get internet access so that you can send and receive email, browse the web, watch movies, and more. Before you can access the internet.

There are three things that you need: **internet service, a modem, and a web browser.**

2.2-choosing an internet service

Will begin with question, **Which Service is Best for Me?**

It all depends on where you live and how much speed you need. Internet Service Providers usually offer different levels of speed based on your needs. If you're mainly using the internet for e-mail and social networking, a slower connection might be all you need, but if you want to download a lot of music or watch streaming movies, you'll want a faster connection. You'll need to do some research to find out what the options are in your area.



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2.3-Types of Internet Service

Choosing an Internet Service Provider

Once you have decided which type of internet access you are interested in, you can determine which ISPs are available in your area that offer the type of internet access you want. Then, you will need to purchase internet service from one of the available ISPs. Talk to friends, family members, and neighbors to see what ISP they use. Below are some things to consider as you research ISPs:

- Speed
- Price
- Ease of Installation
- Service Record
- Technical Support

Although dial-up has traditionally been the cheapest option, many ISPs have raised dial-up prices to be the same as broadband. This is intended to encourage people to switch over to broadband. Generally, you should only use dial-up if it's the only option available.

2.4- Setting Up Your Internet Connection

Once you have chosen an ISP and purchased the appropriate modem, you can use the instructions provided by your ISP (or included with the modem) to set up your internet connection. Depending on what type of service you have, your ISP may need to send a technician to your house in order to turn the connection on.

3-search engine

With billions of web pages on the World Wide Web, how can you find exactly what you're looking for? By using a search engine. Search engines are specialized web sites that help you find what you're looking for on the Web. All



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you have to do is type in one or more keywords, and the search engine will look for matching web sites from all over the Web.

3.1-finding information online

The most common way to find information online is with a search engine. All you have to do is type in a few words, and the search engine will give you a list of results that you can click on. There are many different search engines that you can use, but **GOOGLE** is the most popular one.

The remaining part we will apply in the practical lecture

"Search methods and keywords to find information in the Google search engine"