WIRELESS COMMUNICATIONS

I.Jubitha[1]

Assistant Professor, Department of Computer Applications, AJK College of Arts and Science, Coimbatore, TamilNadu, India.

Abstract: Wireless communication or wireless is the sharing of information between two or more points that are not connected by any wires or cables. It has several advantages and aspects over other communication. There are several technologies used for wireless communication such as Radio and television broadcasting, Satellite communication, Wireless fidelity (WI-FI), Bluetooth.

Keywords: Aspects, Bluetooth, Mesh, satellite.

I. INTRODUCTION

Wireless communication or wireless is the transfer or sharing of information between two or more points without the help of any wires, cables or other type of electrical conductor. wireless communication was introduced in the 19th century. Wireless generally transmits through the air in the form of electromagnetic waves or signals. In this wireless communication there exist a sender and receiver the sender is a sending device or intermediate device with the ability to propagate the singles.

Figure.1. antenna Signal

At the destination or receiving intermediate end singles, were captured. This article gives an overview of wireless communication and types of wireless communications.

II. ASPECTS OF WIRELESS COMMUNICATION:

When the wireless technology emerged in to the globe, it brought many aspects in the field of wireless communication.

- The sharing of data can be anywhere between a few meters and thousands of kilometers. The best example of this is television remote control and radio communication.
- The wireless communication can be used for cellular mobiles and the wireless access to the internet and also for home networking.
- GPS unit's garage door openers, wireless computer mice, keyboards and headsets, headphones, radio receivers, satellite, television, broadcast television are some examples of radio wireless technology.

III. ADVANTAGES OF WIRELESS COMMUNICATION:

There are many advantages in this wireless the most important over them are:

- Profitable – In this wireless, it does not require any infrastructure or maintenance. Because there is no need of any connection wires. Hence the lost is reduced.
- Flexibility - wireless enables the people to communication wherever they may be it is not necessary to be at any specific place.
- Accessibility – wireless device like mobile phones can allow everyone to use it wherever

they may be. There is no need to connect with anything.

- Speed- the connectivity of the network in the wireless is much improved and accuracy is good.
- Easy installation – the wireless network installation is easy due to less hardware.
- Data transfer – the data like audio, video and text can be transmitted simultaneously.
- Connectivity- it ensures that people can reply to emergencies is relatively faster. For example: While travelling a wireless mobile can connect to constant connectivity from place to another place.

IV. DISADVANTAGES OF WIRELESS COMMUNICATION:

- An unauthorized person can easily capture the wireless signals which transmit through the air.
- To secure the wireless network is very important so that the information cannot be misused by any unauthorized users.

V. WIRELESS NETWORK TOPOLOGIES:

There are three ways to connect wireless network:

- Point to point bridge
- Point to multi point bridge
- Mesh or adhoc network

- In point to point bridge the bridge is used to connect two networks, which means bridges enables the users to share files internet connection between two or move locations and other types of data over the network.
- Point to multi Point Bridge can connect two or more local area network located on different floors in across buildings.
- Mesh or adhoc network is an independent LAN it is not connected to a wired infrastructure and all the stations are connected directly to other one.

VI. TYPES OF WIRELESS COMMUNICATION:

If is categorized into many types based on the distance of communication rang of data and type of devices used some of main technologies are:

1. Radio and television broadcasting
2. Satellite communication
3. Wireless fidelity (WI-FI)
4. Bluetooth
5. Microwave communication
6. Infrared communication

1. RADIO & TV COMMUNICATION:

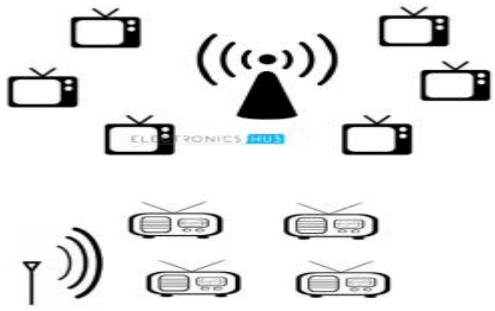

Figure2. RADIO & TV COMMUNICATION

It is the first wireless technology developed and it communication within distances. Sound broadcasts through the air in the form of radio waves.

2. SATELLITE COMMUNICATION:

This technology plays a vital role in the field of wireless communication. It communicates with the orbiting satellite through radio signals. This types of communication benefits the user to connect virtually from anywhere on the globe.

Figure3. SATELLITE COMMUNICATION:

1. **WI – FI COMMUNICATION:**

A low-cost technology which consists of wireless router as a communication medium, linking the portable device with the internet connection. It has many advantages over the other technologies.

- Information can be transmitted quickly with high speed.
- Users can use the internet any where at any time without any cables or wires as a medium.

2. **BLUETOOTH COMMUNICATION:**

The technology which allows the users to connect different electronic device without wires or cables to the system for the purpose of sharing and transfer the data is called Bluetooth. With the help of Bluetooth device the information can share from one device to another device.

3. **MICROWAVE COMMUNICATION**

Microwave wireless communication is a well organized type communication it uses the radio waves and the wavelength are measured in term of centimeters.

4. **INFRARED COMMUNICATION**

Infrared wireless communication communicates information in a device or systems through IR radiation. IR is electromagnetic energy at a wavelength that is longer than that of red light. It is used for security control, TV remote control and short range communications.

VII. BASIC ELEMENTS OF A WIRELESS COMMUNICATION SYSTEM:

It is dividing into 3 parts;

1. The Transmitter
2. The Channel
3. The Receiver

The transmission path

This consists of encoder,encryption,modulation and multiplexing.From the source the signal is passed through a source encoder it converts the signal into a normal form.the redundancy is removed from this process.thus signal is encrypted using an encryption standard so that the nformation is secured.

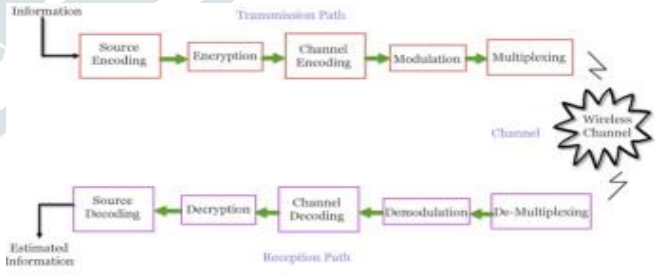

Figure4. Block diagram of wireless communication system

The channel

It indicates the medium of transmisson of the signal. A channel can be interference,distortion,noise, scattering etc..

The Reception Path

Main role of the receiver is to collect the signal from the channel and reproduce it as the source signal.The reception path comprises of demultiplexing, demodulation, channel, decoding, decryption and source encoding.from the above components it is clear that the work of the receiver is opposite to transmitter.

VIII. CONCLUSION

Wireless communications globally is something that people can expect as technology advances. Wireless communications has a lot of benefits and aspects that can make the world a lot more efficient. It has more new advancements. The security problem associated with this communication can be reduced with the help of research and experiments thus make this communication a significant one. Wireless technology will be very important in the upcoming years where the need for wires connecting individual devices seems to be coming to an end.

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