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A cram on mobile AD-HOC networks

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ABSTRACT

Networks are used to communicate between two or more devices. Networks are of two types one is wired network and another is a wireless network. In the computer world, the wireless networks become more powerful. MANET is a wireless network which is a collection of different separate devices which is used to communicate with other devices directly. Ad-hoc networks are mostly local area network where the computers or any other devices that are used to share the data or any other information directly to one another without the use of centralized access point. MANET is an infrastructure less network. MANET is a suburbanized communication. Each and every devices or computer act as a server and client. In this paper, a survey of a mobile ad-hoc network is presented.

Keywords— *Wireless, Access point, Routers, Topology, Fixed physical representation,*

1. INTRODUCTION

Wireless networks are becoming more popular in the computing industry (field) [3]. An ad-hoc network is a collection of autonomous system nodes with the wireless link. Without the help of physical representation, the nodes communicate with each other [1] and while communicating it uses radio waves. The devices are connected with each other using without any fixed station access point. There are two types of the mobile wireless network [3].

The first type is named as infrastructure networks [3]. In this type, the nodes or devices are connected with fixed physical representation where the nodes are connected through AP (Access Point). Examples for infrastructure networks are GSM (Global System for Mobile communication), UMTS (Universal Mobile Telecommunication System), and WLL (Wireless Local Loop) [1].

The second type is named as infrastructure less network [3]. In this type, the nodes are communicated without any fixed physical representation. One of the wireless and infrastructure fewer networks is known as MANET (Mobile Ad-hoc Network) which is a standalone network. It becomes more popular in the field of research and it can be connected to the internet network. MANET is a Latin word, which means "for this purpose only". In MANET the information is exchanged by the wireless nodes in a dynamic manner. It transforms the information directly within its wireless communication range around the nodes.

Fig. 1: Infrastructure network

The goal of MANET: To extend quality into the realm of mobile, autonomous, wireless domains, where a group of nodes can combine routers and hosts with themselves from the network routing infrastructure in ad- hoc fashion [5].

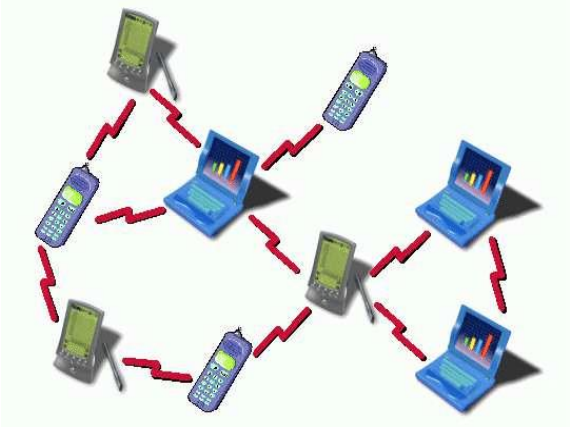

Fig. 2: Infrastructure less Network

2. PROS OF MANET

a. Wireless routers

The main advantage of MANET is the connection of nodes without any router. An Ad-hoc network is more modest than a traditional network. [5]

b. Fault tolerance

It is a property that enables a system to continue operating properly in the event of failure. The MANET assists the connection failures, to maintain these situations the transmission protocol and routing are designed [5].

c. No infrastructure and no cost

The MANET is a wireless network so it reduces cost when compared to a wired network because it doesn't use any costly infrastructure. So, MANET is more affordable than the infrastructure network [9].

d. Quick deployment

MANETS are very easy to locate when compared to the wired network because there is no use of cables to connect the nodes and it also reduces the deployment time [6].

e. Dynamic topology

In a wireless network, we have continuously movable devices or nodes like Laptops, Tabs, Pads, etc. These can still communicate with its neighbors with the help of MANET topology. So in MANETs, the topologies are dynamic in nature [6][8].

3. CONS OF MANET

a. The famine of authorization facilities [11].

b. Resources are restricted due to various curtailments like noise, interference conditions, etc. [11].

c. More vulnerable to attack the network due to the limited security [11].

4. CHARACTERISTICS OF MANET

a. Autonomous network

In this type of network, no concentrate administration is available to maintain the operation of the individual devices or nodes because of each and every node act as routers [8].

b. Infrastructure less network

MANET is an infrastructure-less network. The nodes or devices are connected through the wireless link. It doesn't require any particular hardware to make the connections between the devices [8].

c. Multi-hop routing

While transmitting information from one node to another node, which is out of its communication range, then it is transmitted as packets through the intermediate nodes [2].

d. Lightweight terminals

In most of the cases, the devices or nodes in MANET which has less CPU utility, low power consumption and less storage [4].

5. APPLICATIONS OF MANET

a. Military sector

The MANET is mainly used in this field. The basic artistry of ad-hoc network comes from this field. It is mainly used by the soldiers, in military vehicles, and in military headquarters to communicate [6].

b. Sensor networks

The sensor network is a technology of a network composed of a very large number of compact sensors. These will accustomedly notice, any variety of properties of a district. Examples embody temperature, pressure, toxins, pollutions, etc. The capabilities of every sensing element square measure are terribly restricted, and each must transfer to others in order to forward information to a central computer [8].

c. Healthcare

A network to form an interaction between all members within the system easily and transfer the information from patients to their doctors is made economical and flexible by implementing MANET technology. Along with decision making for the system to help both patients and the healthcare provider. Finally, the system should be reliable and scalable.

d. Educational system

MANET is a network technology is used to transfer the information without any wired links. This system is used in education to set up virtual class & conference rooms [6][8].

e. Commercial use

For sanctioning communications in exhibitions, conferences and enormous gatherings. For a few business situations, the requirement for cooperative computing may be a lot of vital importance outside workplace environments than within a building. After all, it's typically the case wherever individuals ought to have outside conferences to get together and exchange info on a given project [9].

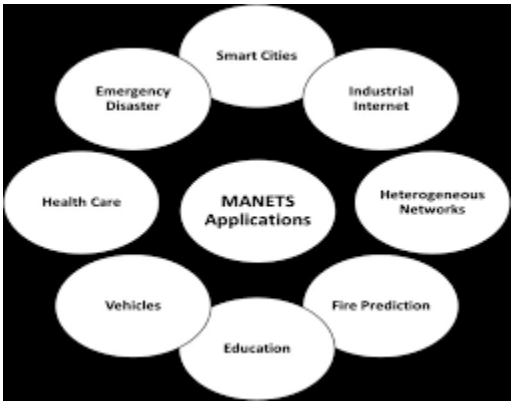

Fig. 3: Applications of MANET

6. CONCLUSION

MANET is an infrastructure-less network which is used to connect the devices or nodes without any medium. Nowadays MANET is becoming very popular in all the fields. The nodes can communicate or transfer the information to each other directly. In this paper, the application, advantages, characteristics, and disadvantages of MANET are discussed.

In future, this paper is enhanced by the topic of routing protocols used in MANET.

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