



A Review On Mobile Ad Hoc Network Routing Protocols(MANET)

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Abstract

MANET is wireless network.ad hoc network. Many devices are directly communicate with each other through wireless network. In ad hoc network, node acts as a router to send and receive the data. The advantage of the system is robustness, flexibility. An ad hoc network is local area network that builds an automatic connection to the nodes in the network. An ad-hoc network is a collection of wireless mobile hosts forming a temporary network without any pre-existing infrastructure. In this paper is to provide a review of MANET including its application or benefits along with the different types of routing protocols used for communication in MANET.

Keywords MANET, wireless, Routing protocols

Introduction

A Network is defined as the group of people or organizations who share their information collectively for their business purpose. MANET is wireless network. A mobile ad hoc network (MANET), it is also called as mobile mesh network. An ad-hoc network is a collection of wireless mobile hosts forming a temporary network without any infrastructure or centralized administration. mobile devices connected through wireless links., a MANET is a collection of communication nodes that wish to communicate with each other, but has no fixed infrastructure.it independently move in any direction and it also change its links from one device to another device. MANET applications like military, communication, conference meeting, creating virtual classrooms and in sensor network. Ad hoc networks can be built around any wireless technology, including infrared, radio frequency (RF), global positioning system (GPS), and so on. An ad hoc network is local area network that builds an automatic connection to the nodes in the network.

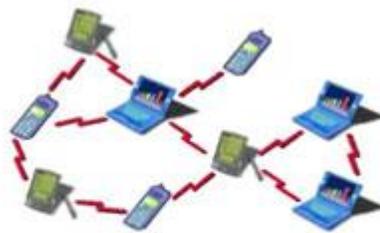


Figure (1): Mobile Ad hoc Network (MANET) sample.

[1]

Benefits of MANET

1. Disaster: Disasters break infrastructures and emergency teams have to establishing the infrastructure they set up themselves. Therefore, the solution can be ad hoc network.
2. In Military: Many military activities are confidential and for security reasons it is best to use ad-hoc network for communication.

3. Instant infrastructure: Without planning meetings, spontaneous interpersonal communications etc. cannot depend on any infrastructure; therefore, It set up ad hoc connectivity.
4. In Remote: In populated area and hilly areas or stations it is too expensive to set up an infrastructure or network. Depending on the communication pattern, the solution can ad hoc network.

Literature Review

We have identified several literature in the field of Mobile ad hoc network routing protocols which highlight existing protocols, mobile ad hoc network is a self created network and devices are connected through wireless links. An effective MANET routing protocol must be equipped to deal with the dynamic and unpredictable topology changes associated with mobile nodes. MANET routing protocols should also be decentralized, self-healing and self-organising.

Routing in MANET

Routing is the process of information exchange from source to the destination in a network. During this process, at least one intermediate node within the internetwork is encountered Routing is the mechanism of forwarding packet towards its destination using most efficient path. The routing concept basically involves, two activities: firstly, determining optimal routing paths and secondly, transferring the packets through an internetwork. Routing protocol for ad-hoc network can be categorized in three strategies.

1. Proactive routing protocol
2. Reactive routing protocol
3. Hybrid routing protocol

A. Proactive routing protocol

Proactive routing protocols are also called as table driven routing protocols. Proactive protocols allow a network node to use the routing table to store routes information for each and every nodes. The routing tables are updated periodically whenever the network topology changes. Proactive protocols are not suitable for large networks as they need to maintain node entries for each and every node in the routing table of every node. There are various well known proactive routing protocols. Example: DSDV, OLSR, WRP etc.

- i) **Dynamic Destination-Sequenced Distance-Vector Routing Protocol (DSDV)** : This protocol was developed on the basis of Bellman–Ford routing algorithm. In this routing protocol, each and every mobile node in the network keeps a routing table. In Each of the routing table contains the list of all available destinations and the number of hops to each. This protocol was use of data exchange along changing and arbitrary paths of interconnection which may not be close to any base station.
- ii) **Wireless Routing Protocol (WRP)** :WRP is based on the path-finding algorithm In this routing nodes communicate the distance and second-to last hop for each destination. WRP reduces the number of cases in which a temporary routing loop can occur. Each node maintains four tables i.e. distance table, routing table, link-cost table and, message retransmission list for the purpose of routing.
- iii) **Optimal Link State Routing (OLSR)** :OLSR is a table driven protocol and an optimization of classical link state protocol [11]. In OLSR each node selects a set of Multipoint Relays (MPR) from the set of neighbors with which it has symmetrical links.

B. Reactive routing protocol

Reactive routing protocol is also known as on demand routing protocol. In this protocol route is discovered whenever it is needed Nodes initiate route discovery on demand basis. The on- demand routing protocols have two major components i.e. Route discovery and Route maintenance.

- i. **Ad-hoc On Demand Distance Vector Routing (AODV)**: AODV is a simple, efficient, and effective routing protocol for Mobile Ad-hoc Networks it do not have fixed topology. AODV routing protocol working on demand basis.

- ii. **Dynamic Source Routing (DSR):** DSR uses a source routing strategy to generate a complete route to the destination, this will be stored temporarily in nodes route cache.

C. Hybrid Routing protocol

Need of these protocols arises with the deficiencies of proactive and reactive routing and there is demand of such protocol that combines good characteristics of both reactive and proactive routing protocols to make routing more scalable and efficient.

- i. **Zone Routing Protocol (ZRP) :** ZRP for reconfigurable wireless networks is based on the idea of routing zones.
- ii. **Sharp Hybrid Adaptive Routing Protocol (SHARP) :** SHARP adapts between reactive and proactive routing by dynamically varying the amount of routing information shared proactively. This protocol defines the proactive zones around some nodes.

Conclusion

In this paper, A review on Mobile ad hoc networks (MANETs) routing protocols is presented including its applications or benefits and also include number of routing protocols of MANET which are broadly categorized as proactive and reactive and Hybrid protocols. We concluded that MANET routing protocols are designed based on the application area and environment and it is not possible to design a single or only one protocol, which is suitable for all MANETs.

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