Implementation of Energy Efficient Data Delivery over MANTE'S

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Abstract— **The mobile adhoc network has light weighted nodes with autonomic behavior subjected to change its structure dynamically. A major challenge that lies in MANET (Mobile Adhoc Network) communication is the unlimited mobility and more frequent failures due to link breakage. The group-oriented services which take advantage of the broadcasting nature of wireless networks are of much importance. Therefore, broadcasting/multicasting protocols in MANETs are receiving increased attention. A mobile ad hoc network (MANET) is a collection of wireless mobile nodes dynamically forming a temporary network without the use of any existing network infrastructure or centralized administration. By utilizing such in-the-air backup, communication is maintained without being interrupted. The concept of in-the-air backup significantly enhances the robustness of the routing protocol .In the case of communication hole, Virtual Destination-based Void Handling (VDVH) Scheme is further proposed to work together with PBOR. We propose a new energy-efficient broadcast protocol, called EBOLSR, which adapts the EOLSR protocol to the broadcasting domain.**

Index Terms— **MANET, OLSP, Wireless Network**

I. INTRODUCTION

Due to the limited transmission range of wireless network interfaces, to communicate with nodes outside its transmission range, a node needs multiple hops to forward packets to the destination across the network. Mobile ad hoc networks (MANETs) are infrastructure less networks consist of wireless mobile nodes which dynamically exchange data among themselves. Position of nodes in MANET changes frequently. The goal of MANETs is to broaden mobility into the area of autonomous, mobile and wireless domains, where a set of nodes form the network routing infrastructure in an ad-hoc manner. In mantes the nodes are communicate with others using radio signals by broadcast nature. In multicasting the Transmission is initiated by a single node but will be received by more number of nodes.

In recent years, a variety of routing protocols have been proposed for MANETs. Such protocols can be classified as proactive or reactive, depending on whether they keep routes continuously updated, or whether they react on demand. They can also be classified as unicast routing, broadcast routing and multicast routing, according to the type of applications. Unicast routing supports communications between one source and one destination. Dynamic Source Routing (DSR), Ad Hoc On-demand Distance Vector (AODV), Destination Sequenced Distance Vector (DSDV), Optimized Link State Routing (OLSR) protocol and so on are the typical unicast routing protocols proposed for MANETs.

It is necessary to have reliable communications during large-scale emergency situations in today's world. Information such as text, audio, or video may be broadcast or multicast to survivors to inform them of shelter locations, details of the disaster, how to respond to 2010-01-12 - 4 - the disaster, and so on. Moreover, situational awareness data may be broadcast or multicast to various rescue teams such as the crisis center, police department, emergency medical services (i.e., hospitals, ambulances), and fire department. Considering the widely use of broadcast protocols and limited energy in MANETs, we focus on the study of some efficient broadcast protocols in MANETs and the design and evaluation of an energy-efficient broadcast protocol.

II. RELATED WORK

M.Mohammed and M. Cheng, J. Shun, M. Min ,Y. Li and W. Wu have studied the performance and capacity of multicast routing protocols over MANETs in Omari et al summarized traffic models for multicast routing protocols in MANETs. They also evaluated the performance of the existing multicast protocols in MANET using similar traffic models to justify their proposal. Multicast routing protocols were categorized into tree-based mesh-based, stateless, hybrid-based and flooding protocols.

A. Multicast Protocols

Multicasting is the transmission of data packets to more than one node sharing one multicasting address. It is intended for group-oriented computing. Several multicast routing protocols have been proposed for MANETs, which can be classified as unicast-based, tree-based, mesh-based, or hybrid protocols, according to how distribution paths among group members are constructed.

B. Protocols Classification

Unicast-based multicast protocols Some primitive broadcast/multicast protocols are just unicast-based. That is, for a source to send to N destinations, the protocol simply set up N unicast connections to achieve the function of multicast. Since few recent research focuses on this type of multicast protocols, we will not describe more about it, and will focus on the following two kinds of multicast protocols.

C. Interface Queue Inspection:

The key points of Efficient PBOR is that when an intermediate node receives a packet with the same ID (i.e., same source address and sequence number), it means a better forwarder has already taken over the function, and with additional inspection of the interface. We further decrease the duplicate packets appearing in the wireless channels.

III. MANETS

Mobile ad-hoc networks (MANETs) are a self-configuring infrastructure less network of mobile devices connected by wireless. Ad hoc is Latin and means "for this purpose". Each device in a MANETs is free to move independently in any direction, and will therefore change its links to other devices frequently. By sending through multiple unicast, it takes more links and it costs too high for communication process. Instead of that, multicast is used for the communication purpose because it utilizes less link consumption, sender and router processing, communication costs and

further reduces delivery delay. Tree-based and Mesh based protocols are the two category used in the Multicast protocols. When the connectivity changes, the network should be readjusted and repaired in the multicast protocol because its structures are frail. The network is frail and gets split due to low battery.

To overcome the disadvantages of the mobile network like overhead, latency, more energy usage, we propose a new novel energy efficient approach for MANET environment. The proposed methodology uses a good bandwidth and energy usage in the network.
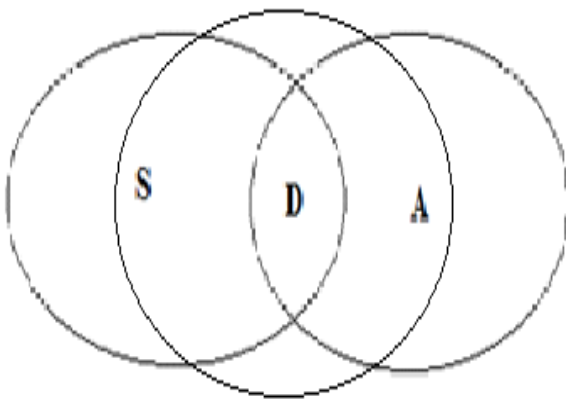

Fig .2 MANET

Ad hoc On Demand Distance Vector (AODV) is a routing protocol designed for ad hoc mobile networks. It searches for routes between nodes only when desired by source node and maintains these routes only as long as they are needed by the sources.

IV. MULTICASTING

Most of the multicast protocols proposed for mobile ad hoc networks can be broadly categorized into two types, namely tree based multicast and mesh-based multicast. Multicast mesh does not perform well in terms of energy efficiency due to excessive overhead as it depends on broadcast flooding within the mesh. On the other hand tree structure is known for its efficiency in utilizing the network resource optimally which is the motivation behind the selection of tree based multicast. Instead of using unicasting the packet for multiple times the Multicasting is used for the packet delivery is described in Fig 3.

Fig. 1 Multichip MANETs

Security in MANET

A lot of research was done in the past but the most significant contributions were the PGP(Pretty Good Privacy) and the trust based security but none of the protocols made a decent trade-off between security and performance. In an attempt to enhance security in MANETs many researchers have suggested and implemented new improvements to the protocols and some of them have suggested new protocols in fig. 3.
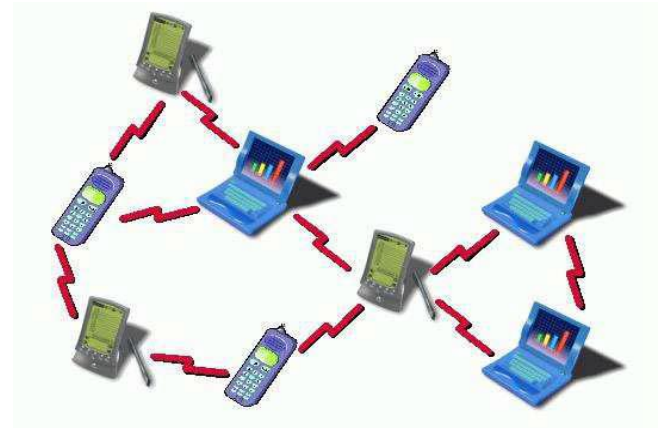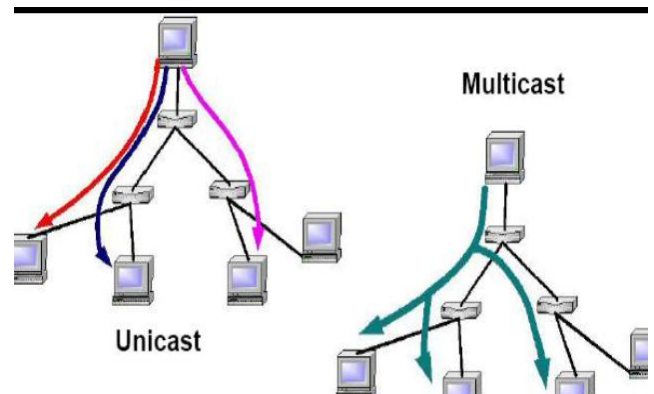

Fig3. (Describes the Unicast & Multicast tree structure)

V. CONCLUSION

MANETs are faced with the problem of energy efficiency in order to maximize the network lifetime. The goal of this project is to explore energy-efficient protocols in broadcasting scenarios and compare a suitable protocol with

three other broadcast protocols in MANETs. In this survey, we have reported on the problem of robustness of efficient data delivery for highly dynamic mobile ad hoc networks. Instead of unicasting, multicasting is used for the speed delivery of the data to all nodes in the network. Novel Scheme is used in the network to eliminate the drawbacks like loss of energy due to less battery power, overhead and the like.

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