

# Increased Multicast Capacity, Reduced Packet Loss and Delay, in Mobile Ad-Hoc Network

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**Abstract--**The multicast capacity delay tradeoff in both homogeneous and heterogeneous mobile networks. To perform the network in MANET nodes are infrastructure less and dynamic. In the multicasting from one to many nodes is the basic. The sender must decide the receiver, so select the nodes in multicast and send the packet to the particular group. Increasing the multicast node size using two schemes, they are Hybrid Routing Scheme and Geographic Multicast Protocol. Hybrid Routing Scheme using to increasing the numbers of nodes in multicasting and Geographic Multicast Protocol is using to increasing the distance of the node in multicasting. Increasing the multicast nodes and the distance, packet loss and delay occurs. To reduce the delay and avoid the packet loss using EPAR algorithm. An efficient Power Aware Routing is a new type of power aware routing protocol that increases the MANET lifetime. Comparing to Previous power aware algorithms, EPAR identifies node capacity and it's not just by battery power, but also the energy lost in reliability forwarding packets data over a specific network. This is by a mini-max formulation, EPAR select one path that has maximum number of packet capacity at the lowest residual packet capacity. Also, slow mobility models brings good performance than fast mobility model because there are more possible routing schemes.

**Keywords:** EPAR, Multicast capacity and delay tradeoffs, Mobile ad-hoc network (MANET), Hybrid routing Schemes, Heterogeneous networks.

## I. INTRODUCTION

A wireless network is a flexible data communication to the system, which usage of wireless media such as radio frequency technology to transfer and receive data over the air, minimizing the need of wired connections. Wireless networks are used in many places rather than wired networks. In wireless networks provide normal security and robust security protections. Most commonly used to connect a mobile user in a wireless network.

Ad-Hoc Network: The network is Ad-hoc because it does not pertain on a pre-existing infrastructure, such routers in wired networks or access points to managed wireless networks. Instead, each node must participates in routing by forwarding data to the other nodes, so the determination of which node forward data is made dynamically on the base of network connectivity.

Mobile Ad-Hoc Network: Wireless Network has provided an infrastructure less and fast distribution method to establish communication and has inspired many future networks such as mobile ad hoc networks, which has broad potential applications works in personal area networks, emergency saving operations and military battlefield applications. Mobile computing between the human computer interactions by which a computer is an expected to be carry during normal usage. Mobile computing involves mobile communication, mobile software, and mobile hardware. Above the past few years, there has been a lot of interest in self-knowledge the capacity of MANETs under a range of mobility models. Most of these work assumes traffic flows in unicast and studies the unicast capacity. However, multicast flows are expected to be frequent in many of emerging applications.

In battlefield network, instructions need to be broadcast in the system or sent to a specific collection of soldiers. In a wireless video conference, the video and audio needs to be sent to all participants. To maintain these emerging applications, it is leading to have a basic considerate of the multicast capacity of wireless networks. In this paper, we give an analysis on the Increasing multicast capacity and reduce the delay tradeoffs in MANETs. Increasing the multicast number of nodes and changes the global position of the same nodes. After complete this steps using EPAR algorithm maintain the network life time and send the data without loss.

## II. RELATED WORK

In this section we discuss the conventional Hybrid Routing Scheme and the geographic multicast algorithms for MANET. In [6] this paper the multicast-capacity and delay tradeoffs is established for specific routing or scheduling algorithm. To study the multicast capacity of large-scale MANETs under a general delay constraint called D. The main thing of this paper is to figure out the scaling law of delay-constrained multicast in MANETs. And also The Effective routing scheme is mainly focused in the routing and table driven method. An MANET consisting the ns multicast sessions of every multicast session has one source s and p destinations.

[8]The wireless mobile are assumed to shift according to a two dimensional independently and identically distributed model. Each source send same message to the p destinations in the multicast session, and the same message is required to be delivered to all the destinations P within D time-slots. To avoid interruption caused by transmissions in adjoining cells, the cells are scheduled according to the scheduling algorithm. In [10] paper discussed about the limited battery time and need to increase the battery time to maintain the network life time. The active communication energy can be reduced by adjusting each nodes of power level to reach the receiving node but not more than that level.

This transmission power control approach determines the optimal routing path that minimizes the overall transmission power required to deliver packets to the destination. In addition, we introduce the concept of co-operation to improve the performance of multicast network.

### III. SYSTEM OVERVIEW-OUTLINE OF THE APPROACH

The architecture of the proposed system is illustrated in the following figure.

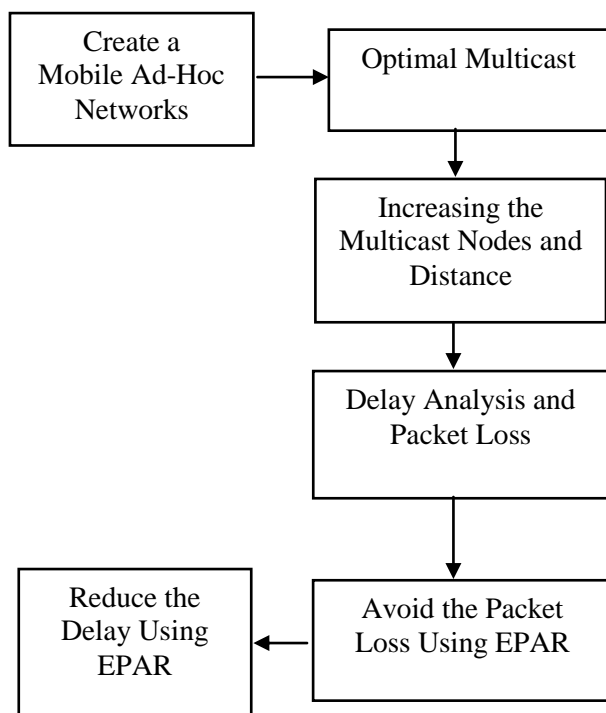


Fig 1: System Overview

It focuses on Optimal Multicasting with Hybrid Routing Scheme and Geographic Multicast Protocol. These two schemes are using to increase the multicast node and distance in MANET, where increase the nodes and distance packet loss may occurs. To avoid the packet loss and maintaining the network lifetime using EPAR algorithm. EPAR means Efficient Power Aware Routing, reduces the Total Energy Consumption and Decreases the mean value

Delay especially for High Load Networks while achieving a Good Packet Delivery Ratio. In mobile ad hoc network is group of mobile nodes that form a network independently of any centralized administration.

#### A. Network Formation

Configuring a MANET with a single subnet prefix shared among the MANET nodes implies that all MANET nodes would be considered as belonging to the same subnet D and as such on the same IP link. To create Ad-Hoc network adding the particular nodes to form the network send the data through the formed network. Before add the node to the network set the node allocation is empty. The empty node should have the IP address to configuration and the routing address is must be updated in the table.

#### B. Optimal Multicast

After formed the multicasting increasing the nodes and distance using the various schemes. That the scheme are Hybrid Routing Scheme and Geographic Multicast Protocol. First scheme, Hybrid Routing Scheme is using to increasing the number of nodes in multicasting and Second scheme Geographic Multicast Protocol using to increase the distance of the multicasting nodes.

Hybrid routing protocol combines the advantages of reactive and proactive routing. The routing is initially established with some proactively chance routes and then serves the demand from moreover activated nodes through reactive nodes are consider in the tree flow. The choice of one or the other method requires predetermination for typical cases. Proactive means this type of protocols maintains fresh lists of destinations and their routes by simultaneously distributing routing tables throughout the network. Reactive means this type of protocols finds a route on demand by flow of the network with Route Request packets.

#### C. Increasing Multicast Nodes and Distance

After create the multicasting using methods as follow to increase the number of nodes and increase the distance in the multicasting. These schemes are act as the forwarding algorithm to avoid the packet loss in the network. Where the sender must be decide the receiver in the multicast so availability of nodes are calculated in the routing table if the packet does not reaches the destination nearest receiver retransmit the packet to destination. Calculated or updates details are must store in the table these values currently update each node transaction. Its mentions the source address and the destination address.

#### D. Delay Analysis and Packet Loss

Delay analysis should done in the increased multicasting network. After increased the multicast node distance must be long and capacity of nodes heavy compare to the normal multicasting. . In MANET the nodes are formed the infrastructure less network after the formed

the group using the multicasting, generates the group id. This id contains the all receiver address. So the packet reaches the receiver and send the acknowledgement to the sender. If the acknowledgement does not received sender re-transmits the packet or command to nearest node forward the packet to the unreachable receiver. After it's send the acknowledgement to sender. To analysis the delay and packet loss through send the sample packet and get the report.

#### E. Avoiding Packet Loss and Delay

Using EPAR algorithm to analysis the delay and packet loss. It's a new power aware routing protocol that increases the network lifetime of MANET. EPAR selects the path that has largest packet capacity at the smallest residual packet transmission capacity. Energy Power Aware Routing is to maximize the network lifetime and to achieve the high packet delivery ratio. This protocol must be able to handle high mobility nodes which often cause changes in the network topology. To conserve energy, there should be minimize the amount of energy consumed by all packets traverse from source node to destination node.

EPAR schemes make routing decisions to efficient performance of power or energy related evaluation metrics. The routing selections of nodes are made single-handedly with regards to performance requirement policies, independent of the implicit in ad-hoc routing protocols deployed. Therefore the power aware routing schemes are moveable from one underlying ad hoc routing protocol to another, the observed relative merits and drawbacks remain valid. Totally two routing objectives for minimum total transmission energy and total operational of network lifetime can be mutually. Path selection using EPAR A typical path in the MANET consists of multiple hops count, and is therefore inclusive to frequent breakage. In network to choose a path that consists of nodes with the largest average battery power.

1) The chosen path of destination node is most likely to meet a target residual path lifetime requirement.

2) The chosen path has the longest residual path lifetime. Efficient power aware routing selects the maximum routing path in the network.

To Select the path and send the data through MANET network the packets reaches the destination with the reduced energy and without loss. It's should be compared with the packet analysis report and the ratio of the received packet increased, Also send the many packets through the network with small loss of energy.

## IV. CONCLUSION

This paper mainly concentrates on delay analysis and capacity increased has done in this project. It's also focusses increasing Multicasting nodes and distance, increasing the multicast using the two schemes. The schemes are Hybrid Routing Scheme is using to increasing the multicasting capacity and Geographic Multicast Protocol using to increasing distance of nodes in MANET. It avoids the Packet loss and Delay by using EPAR algorithm. In future, delay may be avoided in the considerable percentage level compare with the previous stage of result. That result mention the accuracy of the set of nodes used in the MANETs. For more accuracy to avoiding delay and packet loss two different algorithms combined may use to avoid the packet loss and delay in mobile ad-hoc networks.

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