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Geographical Multicast Routing Protocol for Achieving Efficient and Scalable Group communication over MANET

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Abstract: *Multicast routing plays an important role for enforcing group communication over a Mobile Adhoc Network (MANET).The geographic multicast routing forms a imaginary tree structure with the data of information about location. It is tedious to create a best multicast tree and group maintenance because it needs to fix the link disconnections which is induced properly by node mobility. Here we propose this paper for an efficient Zone based Geographical Multicast Routing (ZGMR) protocol for achieving effective and ascendable group communication in dynamic network topology. It use a homeless unicast routing protocol for transmitting data packets severally to every multicast member which is used to make virtual zone based structure using a set of multiple zone members. This also includes link duration based piggish selection for the execution. It integrates two metrics such as distance and link duration for the selection of data forwarding nodes then correct its tree structure to control dynamic network topology. The sender node plays an important role for precise location information and select its adaptive forwarding nodes with long duration. The settlement of steady paths is to bring down the undue packet transmission this results in proposed ZGMR protocol reaches a high packet delivery rather than other group size, node pause time and temporary disconnection rate.*

Keywords- *MANET, Multicast, piggish, selection, scalability and Efficiency*

INTRODUCTION

A MANET consists of group of mobile nodes that accomplish direct /multi-hop communication with one another without support of centralised authority. In vast and dense wireless MANET, the unpredictable node mobility is real challenge to group management and multicast routing. The proposed system builds a zone based structure using location information that maintains geographical sector to support mobility and scalability.

The piggish selection may shortly move out of the sender nodes communication range. So it is not an optimal solution always for selecting the forwarding node. In order to overcome the above drawback the link duration based piggish selection is introduced for selecting appropriate forwarding nodes. It makes use of stateless unicast routing protocol to transmit the data packets to each multicast member.

Literature Review

Reference 1

S. Basangi, I. Chlamtac, and V. R. Syrotiuk, proposed that dynamic source multicast is a new protocol for an adhoc wireless network. By using the positioning system device the node locates the geographical position of that system and it spreads efficiently to the other nodes and measures it. It uses a Steiner tree to address the multicast group. Time complexity is the drawback of this method.

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Reference 2

X. Xiang and X. Wang had proposed a new technique in group communications in the role of MANETs. The group communications is important in supporting multimedia applications. But it has a greater disadvantage in implementing this technique with high Efficiency.

So in order to overcome the disadvantages they proposed a new technique called EGMP (Efficient Geographical multicast protocol).EGMP uses a Zone-based structure and it gives a higher efficient then the pervious technique. It does not depend on any specific geographic unicast routing protocol.

Algorithm

Step 1: Every node sorts the adjacent list according to the distance based weighting factor,w1.The value of w1 is high when the destination node is closer.
Step 2: Due to its mobility on the distance variation it decides the weighting factor for neighbouring node w2 .When the difference between the node mobility directions is less w2 is increased.
Step3: Depending on the factor w2 it determines the value of w2.
Step4: For a period t permit the data packets selecting from the adjacent list. The process is repeated for the node.

```
Input: Neighbor List, sender, destination;
Output: Adaptive Next Hop;
Begin
for i 0 to length (ListN)
    do
       ListN[i]:dist dist (ListN[i],ND)
end for;
Assign Weight w1 for the sorted list from high to low;
      d=distance (sender,destination);
      t=node speed;
for each i<size(NeighborList)
    do
  tempNode=select(NeighborList,i);
  dt1=distance (tempNode ,sender);
   dt2=distance(tempNode,sender);
Time to cross the node communication range t
     T=[R-(dt1-dt2)]/t
      Difference=[dt2~dt1]t
   end for;
Assign weight w2 for the sorted list from high to low;
end for;
     W=*w1+(1+)w2
     Sort neighbour list based on W
    NextHop=Neighbor having the heighest weight;
    TransmitPacket (Nexthop);
End;
```

This method processed at selected nodes till it reaches the destination node. Hence it is used for all unicast routing for the multiple members for the improvement of efficiency and scalability of multicast routing

Analytical Method

S.NO	Author Name	Paper Title	Methodology used	Network performance	Laggings found
1	Fraser cadger ,et.al	Towards a location and mobility- aware routing protocol for improving multimedia streaming performance in MANETs	Bottom up routing protocol	Supports QoS and multimedia streaming in the presence of mobility	Reliability of network less in presence of location errors
2	Nisha Arora& Ajay jangara	Geographic location Aware Adaptive Routing in Mobile Ad Hoc Networks(MANETs)	Adaptive Location Routing	Achieved high throughput and less jitter	High usage of beacon nodes leads to more overhead

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3	Karim EI Defrawy	Anonymous Location-Aided Routing in suspicious MANETs	Secure Current Map Approach	Support Authentication schemes based on location of neighbours	Effort taken for location error reduction is low.

Conclusion and Future Work

In this technique ZGMR technology is used .This technique has high stability and efficiency by selecting stable forwarding members using the link duration measurement. This technique consist of two metrics namely distance and link duration to select data. Thus mulicasting routing plays an important role for enforcing group communication over a Mobile Adhoc Network (MANET).The true multicast routing forms a imaginery tree structure with the data of information about location. The settlement of steady paths is to bring down the undue packet transmission This results in proposed ZGMR protocol reaches a high packet delivery rather than other group size, node pause time and temporary disconnection rate. Thus is technique is very effective when compared to the previous methods that are proposed.

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