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A Reliable data delivery in Mobile Ad hoc Network, Simulation Study

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Abstract:- In this, the problem of delivering data packets for highly dynamic mobile ad hoc network in a consistently good in quality or performance and the data to be trusted. The existing ad hoc routing protocols are vulnerable to node mobility. If route fails , the existing protocol called end-to-end protocol is not capable of discovering and recovering of route. To overcome the problem of existing protocol we introduce a new protocol called Position based routing protocol. The position based opportunistic routing protocol which takes the advantage of property of stateless indicates that no node in a network does not maintain any routing table and broadcast nature of wireless network. In the case of communication, virtual destination based void handling scheme is further proposed to work together with position based opportunistic routing protocol.

Keywords:- Geographic routing, Mobile adhoc network, reliable data delivery.

I. INTRODUCTION

By definition, Mobile Ad hoc Network (MANET) is a collection of mobile nodes equipped with both a wireless source and destination that communicate with each other via bidirectional wireless links either directly or indirectly.

A mobile ad hoc network (MANET) is a continuously self-configuring, infrastructure-less network of mobile devices connected without wires. Each device in a MANET is free to move independently in any direction, therefore change its links to other devices frequently. Geo-graphic routing uses hop by hop routing to forward the packets by making use of the location information.

The problem in the existing protocol is delivering of data packets in reliable and timely manner. The problem occurs because the existing protocol uses predetermination of route, this problem occurs because, if there is a route failure discovering of new route and recovering of failed route consume more time.

So to overcome the above problem the position based opportunistic routing protocol will be introduced. In position based opportunistic routing protocol nodes are made as forwarding candidates and the suboptimal nodes also involved in packet forwarding.

If the best forwarder node does not forward the packet in certain time slot, the suboptimal candidates will forward the packets according to their order and from this any one of the candidates succeeds in receiving and forwarding the packets to destination and transmission route will not be interrupted for any reason.

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II. EXISTING SYSTEM

Geo-graphic routing uses hop-by-hop routing which forwards the packets by using location information. To select next node forwarder with the positive progress towards the destination the greedy forwarding is used.

In the greedy forwarding, the node which is far from the sender node is chosen as next node and if this node moves out of the senders coverage area the transmission will fails.

The error in wireless channel and the dynamic network infrastructure, reliable data delivery in MANETs, in challenged environments with high mobility remains an issue.

It is very difficult to maintain route deterministic for constant and fast changing network topology .Once the path fails it consumes more time for path recovery and discovery of new path.

III. PROPOSED SYSTEM

To overcome the existing system problem, the position based opportunistic routing protocol is proposed.

In the position based opportunistic routing protocol the nodes which are involved in the transmission will be used as forwarding candidates and suboptimal node also used as forwarder if main forwarding nodes are not involve in the transmission. If the best forwarder node does not forward the packet in a given time slot, the suboptimal node involved in the transmission of the packets[2].

The modules which are used in the proposed system are given as follows:

A. Position based opportunistic routing protocol (POR)
B. Selection and prioritisation of forwarding candidate

A. Position based opportunistic routing protocol (POR)

The POR (position based opportunistic routing protocol) design is based on geographic routing and opportunistic forwarding. The nodes which are involved in the POR operation are assumed to be aware of their location and position of the neighbors node. The neighbors node information can be exchanged using piggyback in the data packets header. While for the position of the destination, we assumed that location registration and lookup service which maps node addresses.

In the POR operation if the source node wants to forward the packet, the source node gets the location of the destination and attaches it to the packet header. Due to destination nodes transmission the multiple node path may splits from the original or true location of the final destination and the packet may drop even if it has already been delivered into the destination.

B. Selection and prioritisation of forwarding candidate

The selection and prioritization of forwarding nodes are one of the key problems in POR. The nodes located in the forwarding area would get the chance to be backup nodes. Forwarding area is found by source node and next node of the source node. There are two conditions which satisfies the node which is located in the given range of forwarding area

a) It makes the positive progress towards the receiver
b) In the forwarding region all nodes must have distance in such a way that they all must here one another and it should not be half of the transmission range of wireless node (i.e., R=2).

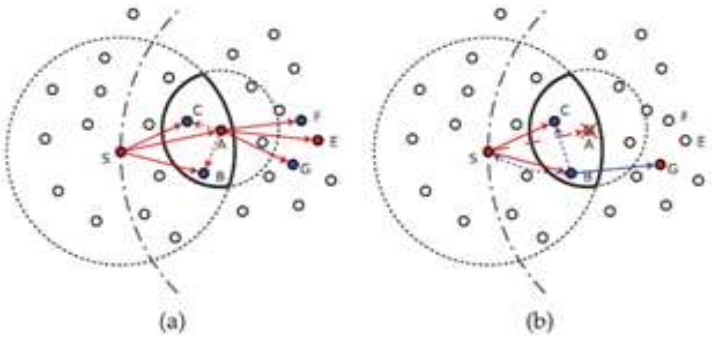


Fig. 1. (a) The operation of POR in normal situation. (b) The operation of POR when the next hop fails to receive the packet.

IV. PERFORMANCE EVALUTION

Network simulation is used to calculate the performance of POR and AOMDV (multipath routing protocol) is comparing with GPSR. Some of the simulation parameters which are using in simulation are given in the following table[1] .

Parameter	Value
MAC protocol	IEEE 802.11
Propagation model	Two ray ground
Transmission range	100m
Traffic type	Constant bit rate
Packet size	100
Number of nodes	40
Simulation time	5.0

The following are used for performance comparison:

A. Packet delivery ratio : The ratio of the no of data packets received at the destination to the no of data packets send by the source.

B. End-to-End latency : The total end-to-end delay are evaluated, together with cumulative distribution function of the delay.

C. Path length: The average end-to-end path length(no of nodes) for successful packet delivery.

Packet forwarding times per hop (FTH): The average number of times a packet Is being forwarded from the routing layer to deliver a data packet over each hop[1].

D. Packet forwarding times per packet (FTP): The average number of times a packet is being forwarded to deliver data packets from source to destination.

V. RELATED WORK

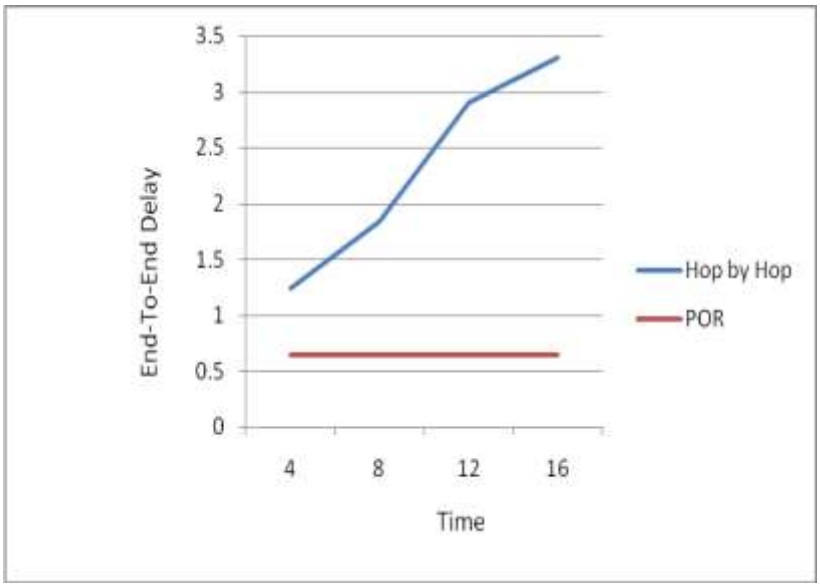
Multipath routing is used in wireless medium to increase the reliability of data transmission [2]. Existing multipath routing protocols are classified into the following types:

a. Using different available paths[3][4]
b. Packets replication with multiple paths
c. Split and multipath delivery and reconstruction using some coding techniques.

The connectivity between the mobile node and base station server can be improved by making use of opportunistic forwarding [5].

VI. RESULT

In this module, the performance of the proposed method is analyzed. Based on the analyzed results X-graphs are plotted. Delay is the basic parameters considered here and X-graph is plotted for this parameters.



In this graph we are comparing existing system with proposed system. By observing this graph we conclude that the delay proposed system is better than existing system.

VII. CONCLUSION

To addresses the problem of data delivery in reliable manner for Highly dynamic Mobile adhoc Networks changing of network infrastructure makes the adhoc protocols incapable of providing required performance. In case of link or path break due to the node mobility the data packets which are within the forwarding area get lost before discovery of new path. To overcome this problem a new protocol is proposed called POR[1].

In the POR the forwarding area will be assumed within and the nodes are selected must be within the transmission range and these nodes will be further use for the transmission of data packets and the distance between them must be in such a way that nodes must her one another and because of this nodes can share all node information from one node to another node and make of this there will be no failure of path and all the data packets must be delivered correctly in time to the destination.

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