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A Neighbour Coverage using Probalistic Rebroadcast in Mobile Ad-Hoc Network

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ABSTRACT

Wireless network is the special type of network. In this there is no special type of static topology present due to node mobility. Which leads to following things path failure, link breakage and path discovery .That reduces the packet delivery ratio and throughput. Overcome such problem in the MANET. We propose a solution which would decrease the link breakage and many such problems present in the MANET with the help of NCPR. The NCPR protocol discovers the uncovered node. But in NCPR protocol there is a problem of getting the same RREQ packet to the node again and again. To improve the performance of this protocol we consider a stable node with the help NCPR protocol to reduce the routing overhead and increase the efficiency of throughput and PDR. It will help to reduce the delay in the network.

Keywords: Ad Hoc Networks, MANET, RREQ, NCPR, Link Breakage.

I. INTRODUCTION

Routing is a fundamental challenge in freely moving nodes and dynamic environment one of the challenges is to design routing protocol which overcomes the broadcasting challenges. There is a link breakage because of unstable network it leads to the frequent link breakage in network and frequent path failure .Which will leads to overhead in routing protocols. In traditional on-demand routing, it use flooding to discover a route they broadcast REQUEST packet to the network and which leads to storm flooding. To decrease the storm flooding and packet collision in complex and dense network some method has been evolved in past few years. Willliam and camp[5] divides broadcasting protocol into four parts classes simple flooding, probability based method, area based method and neighbor knowledge method. As the NCPR protocol has better performance over all the broadcasting technique, but to enhance the performance of broadcasting if enhanced algorithms is used then it will improve the scalability, bandwidth, robustness and performance of network.

II. PROBLEM STATEMENT

So many challenges are there to design the protocol stack for ad-hoc network. It has been due to the non static, mobility and dynamic topology of nodes. This system purpose is to enhance the following things 1) End to End delay 2) Throughput increase 2) Overheads in routing 4) Packet delivery ratio. In our proposed system we try to enhance the broadcasting to reduce the RREQ packet sending again and again. As there are drawbacks in previous algorithm we implement a new algorithm of selecting the node in the NCPR to reduced overhead of the network. This technique of the broadcasting and node selection can improve the performance of above problems. So the improvement in the all aspect can be seen through the proposed system which has been given.

III. PROPOSED SYSTEM

To implement the proposed system we will consider the three aspects in the module which will help to enhance the performance of the network and many more thing

1) Additional coverage ratio, which is the ratio of the number of nodes that should be covered by a single broadcast to the total number of neighbors
2) Connectivity factor, which reflects the relationship of network connectivity and the number of neighbors of a given node.
3) Considering the head node in the network and for connecting to other network the gateway node an remaining node will be consider as the general node in the network.

This algorithm uses architecture for performing routing functions. Following steps will be performed when RREQ request is received by node

Step 1. Make a scenario in the Network with NCPR broadcasting protocol.
Step 2. Consider each node in network for calculation
Step 3. Now decide the head (CH) having the low mobility and the maximum number of neighbor.
Step 4. Head must have node information and its neighbor for forwarding packet to another neighbor.
Step 5. RREQ request is send by source node to all head which are resides in network.
Step 6. Whenever RREQ request is received, head forward RREQ request to every head in a network.
Step 7. Now destination node will be checked in the network

If it is alive go-to step 8
If it is not alive go-to step 9

Step 8. RREQ request is broadcasted
Step 9. RREQ request is discarded.
Step 10. Stop

IV. MODULES

There are the following modules which are going to be implemented in the system.

1). Network formation with different mobile nodes
In this module we form the mobile network. The network contains number of nodes and one base station. We can construct a topology to provide communication paths for wireless network. Here the node will give the own details such as Node ID and port number through which the transmission is done and similarly give the known nodes details such as Node ID, IP address and port number which are neighbors to given node.

2). Rebroadcasting Delay calculation
The conventional on-demand routing protocols use flooding to discover a route. They broadcast a Route request (RREQ) packet to the networks, and the broadcasting induces excessive redundant retransmissions of RREQ packet and causes the broadcast storm problem, which leads to a considerable number of packet collisions, especially in dense networks.

3). Rebroadcast Probability
We propose a neighbor coverage-based probabilistic rebroadcast (NCPR) protocol. Therefore, 1) in order to effectively exploit the neighbor coverage knowledge, we need a novel rebroadcast delay to determine the rebroadcast order, and then we can obtain a more accurate additional coverage ratio; 2) in order to keep the network connectivity and reduce the redundant retransmissions

4). A neighbor coverage-based probabilistic rebroadcast.
The proposed NCPR protocol needs Hello packets to obtain the neighbor information, and also needs to carry the neighbor list in the RREQ packet. Therefore, in our implementation, some techniques are used to reduce the overhead of Hello packets and neighbor list in the RREQ packet. In order to reduce the overhead of Hello packets, we do not use periodical Hello mechanism. Since a node sending any broadcasting packets can inform its neighbors of its existence, the broadcasting packets such as RREQ and route error (RERR) can play a role of Hello packets.

V. PERFORMANCE EVOLUTION

Following are the equations which are used to calculate the following things.

A. Packet Delivery Ratio (PDR)

It is nothing but ratio of packets of data receives by destination to from generated by sources. PDR=s1/s2. Where S1- some of data packets received by every destination S2- some of data packets generated by every source.

B. Throughput

It is nothing but total packets delivered overall total time.

Throughput=N/1000

N- Numbers of beats received by all destinations

C. End to End Delay

It is average time taken by data packet to reach the destination .

Avg EED= S/N

S- Some of time taken to deliver packets for every destination

N- Number of packets received by all destination nodes.

D. Neighbor coverage protocol simulation

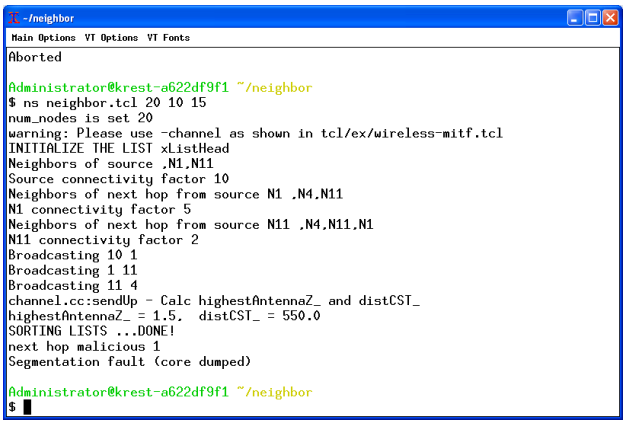

Figure 1: Protocol simulation image

E. Neighbor coverage packet delivery ratio

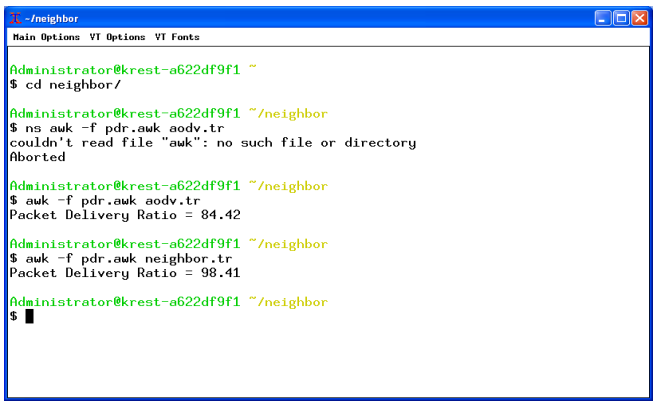

Figure 2 : Packet delivery ratio

F. Aodv and neighbor packet delivery ratio

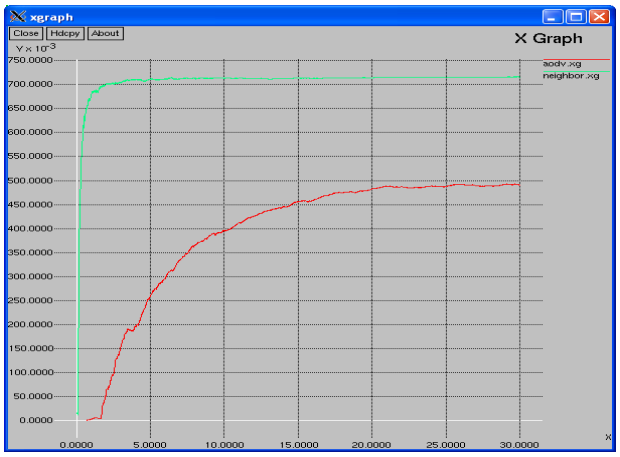

Figure 3: Result graph of AODV and Implemented Protocol

VI. CONCLUSION

The proposed system of with NCPR increase the performance of the Ad-Hoc network and reduces the overhead of the routing and the active nodes works more efficiently and effectively. From the above graph of packet delivery ratio can easily shows the deference between the neighbor and AODV protocol.

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