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Distributed Routing Protocol which increasing Quality of Service for Hybrid Wireless Network

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***Abstract*—** Wireless transmission is the reserch field for the researcher for increasing the quality of service. With the expanding level of wireless transmission in today's condition, individuals regularly required QOS for sharing their information between the hubs. For bearing QOS to the client, numerous specialists proposed a lot many techniques to give QOS ensured directing to hybrid systems, they endeavor to enhance the system limit and dependability yet they avoid oblige in QOS. For this issue, our principle goal of this paper is to enhance the QOS and proficiency of directing methodology with compels over hybrid wireless data spilling utilizing QOD convention. This expects to build up the QOS based reliable architecture against the hybrid wireless routing issues. The framework likewise goes for giving both proactive and responsive answers for powerful routing. The objective of this paper is to give a proficient element routing management to bargain with difficulties of information transmission to channel the neighbor hubs through which the next hop transmission happens.

***Keywords*—** Hybrid Network, Wireless Sensor Network, QoS Routing, Distributed Routing.

I. INTRODUCTION

For instance Hybrid Wireless Network integrates a mobile wireless Ad Hoc Network (MANET) and infrastructure that is wireless showed a better approach subsequent generation wireless companies hybrid wireless channels (for example., multi-hop cellular networks) have now been proven to be an improved network structure for the following generation wireless systems and can help deal with the stringent end-to-end QoS criteria of various solutions. Hybrid channels infrastructure that synergistically combines and MANETs to leverage each other. Especially, infrastructure networking sites improve the scalability of MANETs, while MANETs instantly establish self-arranging networks, extending the insurance coverage regarding the system channels.

The APs include a configuration to use a single or several readily available networks. Mobile host and wireless routers can identify their operating stations dynamically through station switching hybrid wireless networks (for example., multihop cellular systems) are been shown to be a far better network design for the generation that is next networking sites. It will also help to deal with the strict end to end QoS specifications of various solutions. Hybrid networks synergistically blend system channels and MANETs to leverage each other. In a vehicle opportunistic access system (a case of hybrid companies), folks in automobiles have to publish or install video from remote Internet machines through accessibility guidelines (APs) (for example. base stations) spreading call at an urban area. Since it is not likely that the bottom programs include the entire town to keep sufficiently strong transmission everywhere to guide a credit card application demanding higher website link costs, the vehicles themselves can develop a MANET to increase the coverage regarding the base station, providing steady circle relationships.

In this paper, we are going to achieve the QoS with the help of AODV and DSDV techniques. The proposed technique is explained in the following section. The section III briefly explains the implementation following with the results and the conclusion concludes the paper.

II. RELATED WORK

Dynamic source routing (DSR)

Dynamic source routing (DSR) is an on-demand/ reactive routing protocol of MANET where the nodes on the network utilize the source routing mechanism [10]. It involves two main phases one is routed discovery phase and the other is route maintenance phase [8] and DSR works in two phases: route discovery and route mechanism [1]. It doesn't send periodic beacons for route maintenance. It uses route cache instead of routing tables [1].

The source node adds the routes that have to be taken by each packet after the route disco very. This route information is stored in a cache memory of the nodes. To discover a route, the source node that needs to send the packet to the destination node floods a Route Request (RREQ) message. The RREQ has sender's address, destination address and a unique sequence ID determined by the sender. Whenever the RREQ reaches a neighboring node they will check their cache memory for a route to the destination. If there is a route to the destination or if this node is the target (destination) node they will append their ID and send Route Reply (RREP) message back to the source node in the reverse path followed by the RREQ.

If the node is not the destination node, then it will append its ID in the RREQ and forwards this to its neighboring nodes. After this route discovery process, the source will append the whole path in the other packets and will send it to the destination [10] [5].The dynamic source routing protocol does not have any detection mechanisms to find out the presence of malicious nodes in the network [10].

AODV Routing Protocol

It is compensation or improvement protocol form DSR and DSDV protocols it borrows the routing mechanism and routes discovery form DSR [11]. The main advantage for AODV over DSR is the source route does not need to be included in each packet. So this will give less overhead than DSR . So in our research, we go to use AODV to simulate ad hoc Mobile network (MANET), for this reason. The routing messages do not contain information about the whole route path, but only about the source and the destination [22]. In AODV when source node needs to send the packet to the destination node, it broadcast its request (RREQ) to its neighbors.

Then each node that found in neighbors do reverse route toward the source node to tell it about the fresh route to the destination when the destination receives RREQ, it relies on (RREP).

III. METHODOLOGY

In this section we are going to propose a technique made using the techniques explained below:

(A) AD HOC ON DEMAND DISTANCE VECTOR ROUTING PROTOCOL(AODV):

Being a reactive routing protocol AODV makes use of routing that is traditional, one admission per location and series data are widely used to see whether routing suggestions was current also to prevent routing loops. Route Request message to their neighbors to get the path to resort. The foundation node broadcast the RREQ in other words. Destination Sequence Number may be the sequence number that is latest obtained in past times by the foundation for almost any path to the resort and supply Sequence quantity could be the latest series number to be utilized within the path entryway pointing to the way to obtain the path request.

If any node from a listing of friends is resorted or understands the path to the location, it may send RREP information to the origin. AODV makes use of <RREQ, RREP> pair to get the route. It can help both in unicasting and multicasting. The RREQ message contains the supply and resort target, lifetime of content, sequence variety of supply and resort and request ID as distinctive identification.

The main advantage for AODV is the source route does not need to be included in each packet. So this will give less overhead than other protocols. So in our research, we go to use AODV to simulate ad hoc Mobile network (MANET), for this reason. The routing messages do not contain information about the whole route path, but only about the source and the destination. In AODV when source node needs to send the packet to the destination node, it broadcast its request (RREQ) to its neighbors.

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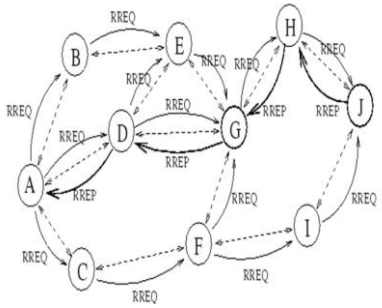


(B) DESTINATION SEQUENCED DISTANCE VECTOR (DSDV):

Destination-Sequenced Distance-Vector (DSDV) Routing Algorithm is founded on the classical BellmanFord Routing Algorithm with some improvements. So, the modification is that it is both time-driven and event-driven. The stations sporadically transfer their particular routing tables for their neighbors that are immediate. A station furthermore transmits its routing desk in cases where a change that is significant took place the table through the last upgrade sent.

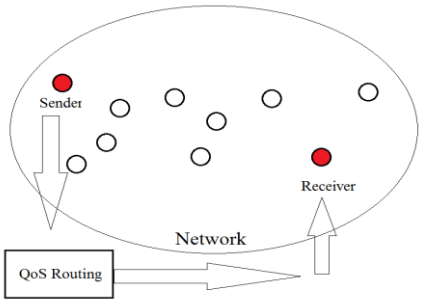
The routing table revisions may be submitted two ways: - a "full dump" or perhaps an update that is incremental. Once the network is fairly stable, incremental revisions include sent to prevent traffic that is extra full dump become fairly rare. The sequence amounts can be used to differentiate routes that are

stale brand new ones and therefore steer clear of the development of loops.
Twenty nodes were used to form the network scenario. Each of which is all mobile nodes.

Detect the location of all nodes. Select source and destination. Then, the source node will send the route request RREQ to all nearest node to reach the Destination and the destination will send the route response RREP to all nearest node to reach the Source .
Enter the choice whichever routing we required whether normal routing, only quality of service or quality of service aware through cluster head.
Find the path between the source and destination. We use to select the secure path between the source and destination using an AOVD protocol which is using RREP mechanism.

Finally, the packets will be transmitted.

We generated Xgraph for Number of Packet in bits vs. routing time which gives us throughput, Xgraph for throughput vs. time, Xgraph for energy vs. time and Xgraph for jitter vs. time.



As observed from the above we can see that there are multiple nodes present in a network the data is to be sent from sender to receiver. The modules of the system are as follows:

- **Input Data:**

In this the data is selected by the system itself. As observed the red dot is the sender in the network it will select the data to be sent.

- **Priority:**

Once the data is selected the system sends the data for processing. If the data is of high priority it is sent first similarly if the data is of low priority it is sent with a small delay. Due to which the efficiency of the network increases.

- **Routing Protocol:**

We are going to use a hybrid algorithm using ASDV and DSDV protocols. According to the priority, the hybrid selects the algorithm to route the data from sender to receiver.

The next section of the paper illustrates the results observed during the initial testing.

IV. RESULTS AND DISCUSSION

In the first scenario, the previous parameters with normal AODV protocol were used. We started our experiment using AODV routing protocol then initialized 30 nodes, given each node the mobility, create the connections between each two nodes.

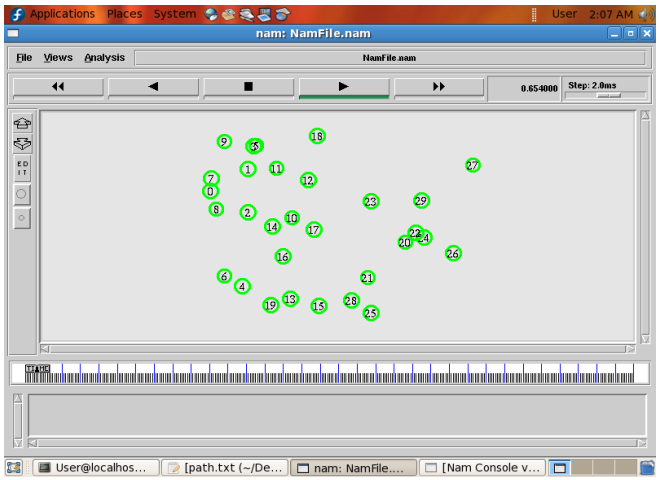


Figure shows the name file for the implementation scenario for that we have 30 circles indicated the mobile nodes.

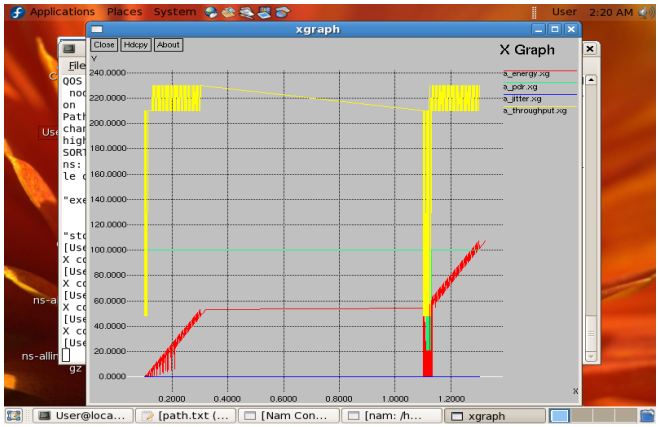


Figure illustrates the all paremeters such as throughput, jitter, energy, pdr in one Xgraph showing all parameters vs. time.

V. CONCLUSION

In this way this paper gives a proficient element routing management to bargain with difficulties of information transmission to channel the neighbor hubs through which the next hop transmission happens via NS2 simulator.

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Authors Profile

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