Performance Comparison of Stable AOMDV & Queue AOMDV in MANETS

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***Abstract*—** Mobile Adhoc Network(MANETS) is a type of network which is temporary network and it does not have any central node. Moreover, transmission range is very low and hence they communicate with their neighbours to send packets from one place to another. In this case mobile node act as a router as well as host. In some kind of emergency situations where we want to make network instantly, then MANET is needed. .Although there are many applications and advantages of MANETs but still there remains some challenges as well. One of the challenge in MANETs is break down of signal as the Topology is dynamic in nature. In This paper Stable_AOMDV (S_AOMDV) is compared with Queue_AOMDV(Q_AOMDV) on the basis of packet delivery ratio and Throughput parameters. The simulations are performed in NS2. The overall results shows the effectiveness of S_AODV.

Keywords- Q_AOMDV, S_AODV, MANET etc

I. INTRODUCTION

Due to dynamic nature of MANET, the changes in network takes place. Moreover, the nodes are battery powered and hence it limits the power or capacity of CPU, memory and bandwidth. Therefore network should be made in an optimized manner. One way to optimize the network is chose such a protocol that can be effective in dynamic environment in MANET. In this paper advance version of AODV is taken which is AOMDV and the comparison is done between two mechanisms that is stable based routing and Queue length based routing. The process of routing is the process in which the data is relayed from the starting point to the destination. The type of routing protocol shall be responsible for, how the communication will happen among various nodes in a network. Moreover, the path will be chosen when the data will be forwarded through that route. Routing algorithms will look for the particular path which will be chosen by that particular algorithm. Through in the path determination process, routing algorithms will determine & maintain routing tables which will contain the total path knowledge of the packet. The routing table [1] is kind of data table which is either stored on a router or on a computer network which defines routes to certain network destinations & in some cases. Moreover, this routing table also has information about the entire network topology around it. So, the design of routing tables is the main aim of these protocols. The routing are of two types, one is static routing and other is dynamic routing [2]. The process of manually entering routes into the routing table of a device is called static routing. In this type of routing the routing device is run by the router through a configuration file that is loaded. Otherwise also such paths may also be entered via network administrator who manually configures the routes. These statically configured paths hardly change after they have been configured.

Different types of Routing Protocols

A. Proactive Routing Protocols

These kind of routing protocols try to hold consistent routing information. Routing information is maintained in a different routing tables and these routing tables updates consistently after an update is performed. These routing methods are designed for ad hoc networks & such methods are further inherited from traditional routing protocols. Such routing tables are sometimes also called as table based routing protocols. Proactive protocols are further divided into seven other types:

1. Destination-Sequence Distance-Vector Routing (DSDV)
2. State Routing Optimal Link (OLSR)

The primary benefit of such proactive routing protocols is that, others can quickly receive information regarding the path & ghastly maintain a session. On the contrary, the disadvantage is the Overload control.

B. Reactive Routing Protocols:

Reactive routing approaches deviate from traditional approaches to routing. In this case a path between all pairs of network nodes are not constantly same. On the Contrary side, these paths are only discovered when there is a need for a path. Every time a sending node wants to forward data packets to receiving nodes, it will check the path table to look if it has a path. In case, there is no such path, then a route search is run to look for a route to the destination. Some of the reactive protocols are:

1. Dynamic Source Routing (DSR)
2. Adhoc On demand Multipath Distance Vector Routing Protocol (AOMDV)
3. Adhoc On demand Distance Vector Routing Protocol (AODV)

II. LITERATURE REVIEW

Yanfeng Mansoor Ali et al. said that mobility effects the connections and connection errors takes place again and again in ad hoc networks. Therefore, the performance is directly effected if the rate of mobility is too high. Also this happens because of the fact that routing standards in case of ad hoc networks are not made in way that it can manage high mobility. In this paper a new approach is proposed with the help of an algorithm so as to maintain stability of links. This innovative approach relies upon signal strength measures. Hello received or lost packages is used by the OLSR approach to look in case connection can be established or not. But problem occurs when the rate of mobility becomes too high The riddle with this method comes when the mobility is too in which there id frequently breaks the link. In order to mitigate this riddle, the authors proposed used "Signal strength" so as to find if the quality of the link can be improved or whether further deterioration occurs because of some problem. Therefore on combining these two mechanisms makes eradication of problem quite simple & also guide to anticipate breakage of links, greatly improving performance. The authors made an algorithm in which for every received hello packet, destinationed strength of signal is noticed and then the strength of the received signal is calculated & forwarded to the OLSR daemon. While on contrary, if the strength of signal is more than the threshold (ss_threshold_high) then it is counted as received.

In other case, if the strength of signal is between the ss_threshold_high & ss_threshold_low, the conclusion depends upon the situation of the connection and the signal strength values. When the incoming packet is received, the set of the connection is privileged as a rule of stability. Utilization of signal strength is to find on if the standard of the link actually becomes better or it deteriorates. While on contrary, the hysteresis mechanism actually looks for packet loss. Therefore it helps in building the links additionally reliable as well as robust whereby also helps to forecast link breaks as well as makes the performance better. More clearly this technique skips loops in the network that makes way to better utilize the system.

Nikhil Saxena et al. showed that the wireless mesh networks (WMNs) are made-up of exclusive nodes which are called "mesh routers". Author also said that all the network routers cannot be managed by the Internet service providers in a WMN community. As the wireless channels are of short capacity range & the shortage of a single reliable authority in these networks can give rise to network routers to perform selfishly, expelling bandwidth & traffic that results in better performance to their users. Traditional or old solutions to uplift co-operation in multi-network networks employ probes for looking or exchanging promiscuous packages to find selfish nodes. Such kinds of schemes hardly or not at all work well when implemented on WMNS having a multi-radio with relatively non-dynamic environment topology. They have proposed blueprint for a WMN community that can look for selfish behavior on the network & implement collaboration between routers on the network. This blueprint acquires a decentralized review technique by dividing the mesh routers into convenient clusters.

III. PROBLEM FORMULATION

According to the literature, the problem is link breakage in MANET is quite difficult due to node mobility or network congestion or limited battery resources. Many new techniques were developed by various researchers to improve the routing in MANETs and out of these; queue length based routing for AOMDV and stable AOMDV. Overall, our aim is to offer a finest routing protocol that can provide best routing method for AOMDV protocol.

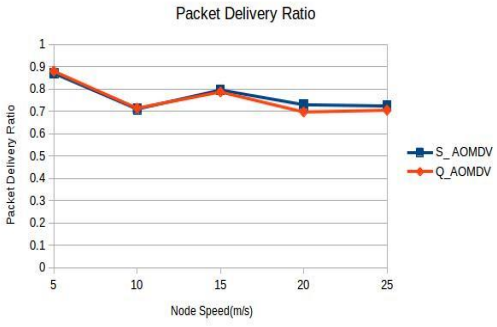
Parameter	**Value**
Areas	1000 x 1000 ($m^{2)}$
No. of Nodes	50
Initial Energy	50J
Layer	MAC 802.11

IV. RESULTS

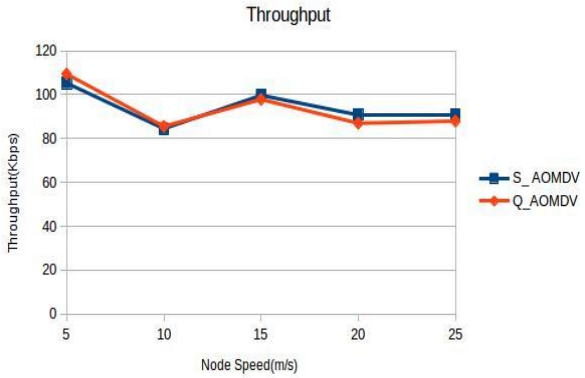
On the basis of above problem formulation, the simulations were carried out for stable as well as queue based AODV and the graphs were generated. The simulation parameters that are taken are presented in the below table:

A. Table 1 Simulation Parameters

A. Packet Delivery Ratio: When the node speed is 5 m/s then at that time both AOMDV with stability routing and AOMDV with Queue based routing performed almost similarly. While at 10 m/s also these perform in much similar way as the no. of packets delivered are same in both the cases. Thereafter, when the speed of the node is increased to 15, the S_AOMDV performs better than Q_AOMDV. Finally, at speed 20 m/s and 25 m/s, again the S-AOMDV has better packet delivery ratio than Queue based routing protocol as shown in below figure 1.



B. Throughput:On comparison of throughput, the S_AOMDV performs good while Q_AOMDV is only better at 5 m/s and 10 m/s. On the other hand, overall comparison proves that S-AOMDV performs in much better way than Q-AOMDV as shown in Figure 2.



V. CONCLUSION

With all the positive features, there are various challenges or disadvantages of MANETs in network performance. With a network that evolves over time, it is clear that we should expect changes in network performance because there is no fixed architecture. In addition, because the network topology determines interference and connectivity, the mobility model of devices within the network will affect network performance, likely causing data to be forwarded many times and ultimately allocating network resources. In this research work a comparison between two routing methods are compared for AOMDV and best is evaluated on basis of throughput and PDR. Overall results indicate that S_AOMDV is better than Q-AOMDV for AOMDV standard protocol.

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