Efficiency Improvement of Dynamic Source Routing Protocol in MANET

Nupur Gajjar[1],
Prof. S.V.Patel[2]
Computer Engineering Department,
Sankalcghand Patel Collage of Engineering(SPCE), Visnagar,India

Abstract -Mobile ad-hoc networks are based on the concept that "Each and every node participating into the network act both as Host and Router and must be willing to forward packet for the other nodes". The DSR is a simple and efficient routing protocol designed specifically for use of multi hop wireless ad hoc network of movable nodes. Due to the source routing characteristic of DSR, overhead is increased. Moreover, during the route discovery process, each node takes part in forwarding Route Request (RREQ) packet. Each node except the intended destination forwards the Route Reply (RREP) packet to create the route. Though, these RREPs increase the number of multiple paths to reach destination, they increase the control packet load of the network. In our topic we will modify the DSR to reduce the redundant RREPs and the control packet overhead and also to reduce broadcasting overhead, multicasting approach is used. The number of control packet is reduced, number of sent packet is also reduced. So there is less traffic in the network and delivery ratio is high.

Index Terms – Packet Delivery Ratio Speed, Packet loss with varying Speed, Routing overload with varying Speed, Throughput with varying Speed

I. INTRODUCTION

A Mobile Ad Hoc Network (MANET) is a set of mobile nodes that perform basic networking functions like packet forwarding, routing, and service discovery without the need of an established infrastructure[3]. It guarantees that the network will not stop functioning just because one of the mobile nodes moves out of the range of the others[5]. The topology of ad hoc networks is dynamic and changes with time as nodes move, join or leave the ad hoc network[7].

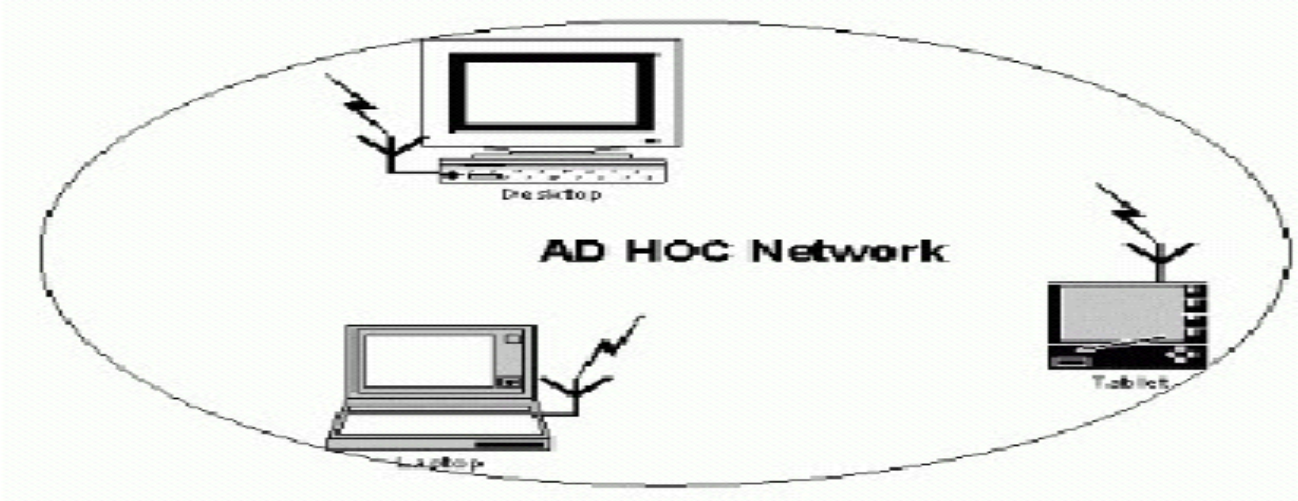

Fig.1 Ad Hoc Network

All the nodes of an ad hoc network depend on each another in forwarding a packet from source to its destination, due to the limited transmission range of each mobile node's wireless transmissions. As nodes wish, they should be able to enter and leave the network. Multiple intermediate hops are generally needed to reach other nodes, due to the limited range of the nodes[1]. This unsteadiness of topology needs a routing protocol to run on each node to create and maintain routes among the nodes[7].

II. LITERATURE SURVEY

Gurpreet singh, Atinderpal Singh, Anantdeep Kaur. [1] have been found out This evolution work is carried out using network simulation NS-2 to compare the performance of AODV and DSR protocols under VBR traffic. The performance is compared in terms of number of packets received, throughput, routing overhead and network overload when number of nodes is constant. Simulation results show that in case of number of packets received AODV outperforms DSR. Thus from above investigations we conclude that AODV is a better option for VBR multimedia traffic. We plans to investigate the performance of these protocols for congestion control mechanism by varying the number of nodes for VBR traffic.

Manoj Jhuria. [2] have been found out A Mobile Ad-Hoc network has the ability to establish a network where a traditional network infrastructure environment can not be applied. With the significance of MANET relative to its vast potential it has still many challenges left in order to overcome. Performance of MANET is one of the important features for its deployment. Although many solutions have been proposed but still these solutions are not perfect in terms of effectiveness and efficiency. Mobile agent approach not only new approach for improved DSR but also very efficient to reduce searching time of route and reduce also route maintain time. It will not only improve the performance of network, but it will also efficient and improve for mobile ad hoc network.

III. IMPROVEMENT OF DSR

1). Packet Delivery Ratio: It tells about the number of packets delivered from the whole packets.
2). Average end-end delay: This metric is crucial in understanding the delay introduced by path discovery. As we have noticed the time difference between the packets sent and received, divide the total time among total CBR packets gives the average end to end delay for received packets. As per the variation in pause time, simulation time and number of nodes, it is noticed that Improved DSR code.
3).Packet Loss: When a valid route is discovered, the routing protocols send the packets to destination; otherwise it is buffered until a route is discovered. Packet is dropped in two stages, if buffer is full or the time limit exceed when the packets are buffered. Improved DSR packet loss is minimum in all the cases as compared to normal DSR. Normal DSR has more packet loss over varying speed as compared to Improved DSR by varying pause time and number of nodes also.
4).Routing Overhead: Total number of routing packets divided by total number of delivered data packets. Here ,we analyses the average number of routing packets required to deliver a single data packet. The performance of Improved DSR is much better when faced with inimical or malicious node.
5). Throughput: As according to number of nodes and varying speed with fix pause time.
The throughput of normal DSR is way better compared to the inimical or Improved DSR. But when the node starts dropping packets then Improved DSR code is better than inimical DSR.

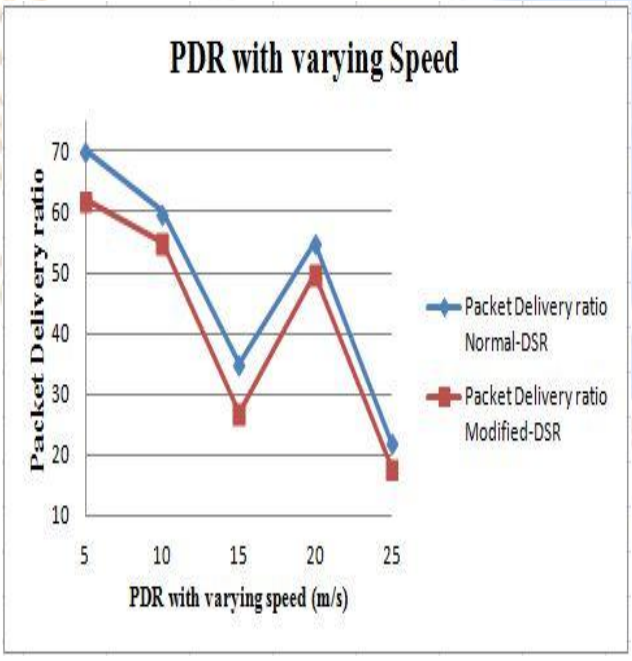

Fig.2 Packet Deliver Ratio

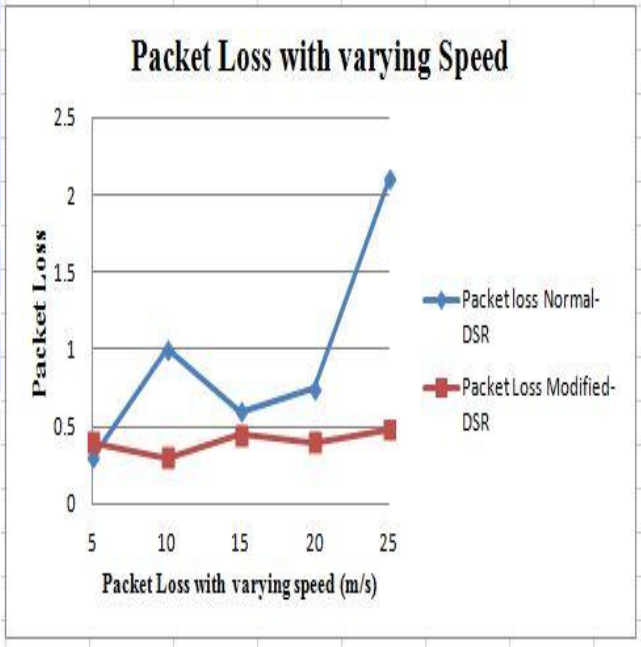

Fig.3 Packet losses

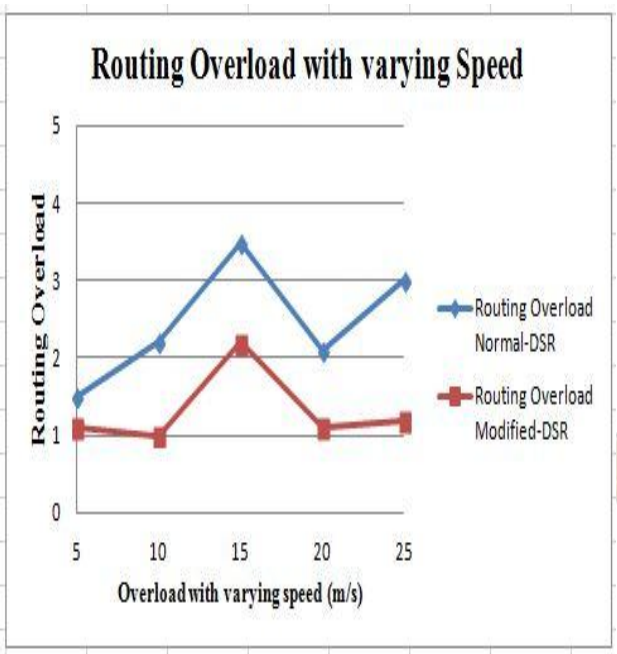

Fig.4 Overload

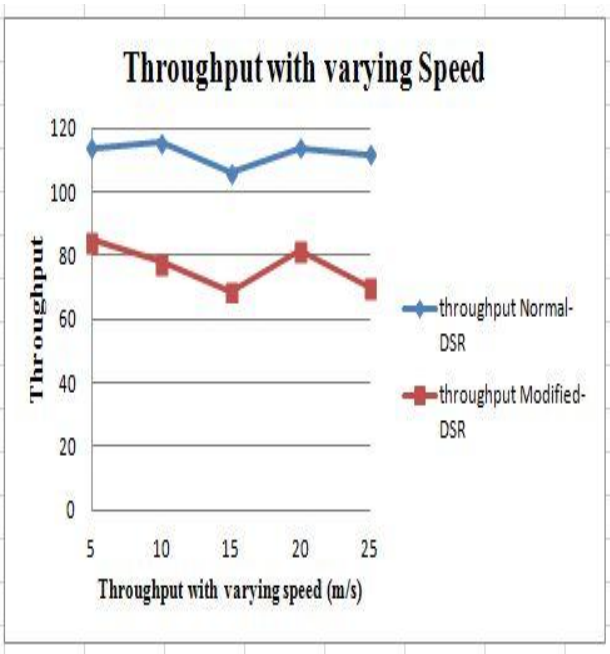

Fig.5 Throughput

IV. REFERENCES

1. Gurpreet singh, Atinderpal Singh, Anantdeep Kaur, Performance Evaluation of AODV and DSR Routing Protocols for VBR traffic in Mobile Ad hoc Networks, International Journal of Engineering Research and Application, Vol.2 , Issue 5,September-october-2012

2. Manoj Jhuria , Improve performance DSR Protocol by Application of Mobile Agent, 2014 Fourth International Conference on Communication System and Network Technologies

3. Dr.P.Nirmal Kumar , A Novel method to avoid stale Route cache Problem of DSR Protocol for Mobile Ad hoc Network, International Conference on Recent Trends in engineering & Technology - 2013(ICRTET'2013)

4. G.Rajkumar, R.Kasiram and D.parthiban , Optimizing throughput with Reduction in Power Consumption and Performance comparison of DSR and AODV Routing Protocols, 2012 International Conference on Computing, Electronics and Electrical Technologies

5. Hefei Hu, Yuan'an Liu ,An Efficient A-DSR Routing algorithm for Asymmetric Space Information Network., University of Posts and Telecommunications Beijing, China

6. Poonam, K. Garg, M.Misra ,Trust Based Multi Path DSR Protocol , 2010 International Conference on Availability , Reliability and Security

7. Shivakumara S Sasanura ,Comparative Performance Analysis of Routing Protocols in Mobile Ad-hoc Networks, International Journal of Innovative Research in Computer and Communication Engineering, Vol.2, Issue 6, June 2014

8. Khalil Al Shaeerat, Adaptive algorithm for increasing the efficiency of DSR algorithm in Ad Hoc Network, 2008 5th International Multi Conference on systems, Signals and Devices

9. Jin-Hee Cho, A Survey on Trust Management for Mobile Ad Hoc Networks , IEEE communication Survey and tutorials, Vol. 13, NO.4 , Fourth Quarter 2011

10. Sunil Taneja and Ashwani Kush , A Survey of Routing Protocols in Mobile Ad Hoc Networks , International Journal of Innovation, Management and Technology, Vol. 1, No. 3, August 2010

11. Arun kumar .B.R , Dr.C. Lokanatha Reddy and Dr.P.S. Hiremath , High performance Modified DSR with Power Consumption Optimization for Mobile Ad hoc Networks , IJCSNS International Journal of Computer Science and Network Security, VOL.7 No.5, May 2007

http://www.isi.edu/nsnam/ns/ns/tutorial/index.html
http://nile.wpi.edu/NS
http://www.scalable-networks.com
http://beta.ece.ucsb.edu/eroyer/aodv.html
http://www.isi.edu/nsnam/ns/doc.