

Result Analysis of an effect of node breakdown on MANET Protocol

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Abstract— In MANET nodes works on battery. So due to use of battery it is possible that the battery gone dead. Due to this node stop working. So In this paper this effect of node failure is analysed on the performance of AODV, OLSR, GRP and mix. To analyse this performance further the nodes are moved at different speed in same scenario. To analyse this effect Opnet Modeller 14.5 is used, the performance is taken.

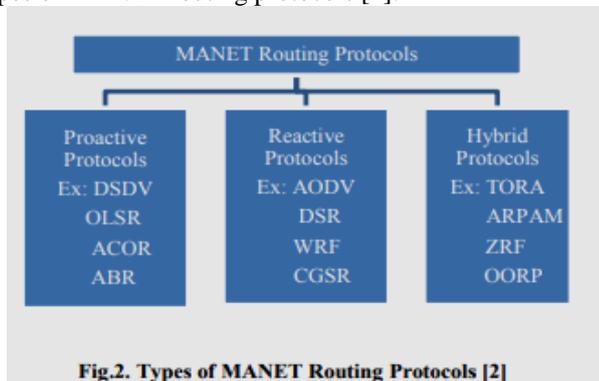
Keyword-Manet, Protocol, mobility, varying nodes, node failure

I. INTRODUCTION

In this paper to analyse the effect of node failure different scenarios are made. Firstly 87 nodes are taken by using protocol AODV. In this scenario some Nodes are moving with speed fixed speed of 0.6m/s and some nodes are moving at varying speed of 0-10m/s. To analyse the effect of node failure some nodes are failed between 20 sec and recovered at 30 sec. then this scenario is repeated by increasing the no. of nodes to 105. Then these scenarios are repeated by using protocol OLSR, GRP. Further it is possible that different protocol come in same scenario. So to analyse this effect these scenarios are repeated in which some nodes have AODV some have OLSR and some have GRP.

II. MANET ROUTING PROTOCOLS MANET

Routing protocol is a resolution that controls how nodes decide the ways of routing packets between the source and a destination. In mobile ad hoc networks, nodes have to determine their network topology. A new node announces its presence and it listens to the announcements broadcast by its neighbours. MANET routing protocols are three types namely, reactive protocol (on demand), proactive protocol (table driven) and hybrid protocol. Fig.2 represents some types of MANET routing protocols [2]:



MANET routing protocols related with the concerns like appeared and disappeared of nodes in different locations [3]. These routing protocols need to have smaller routing tables in order to reduce routing link overheads.

III. RESULT

In this paper the result is taken in terms of Load, FTP traffic send and Traffic received.

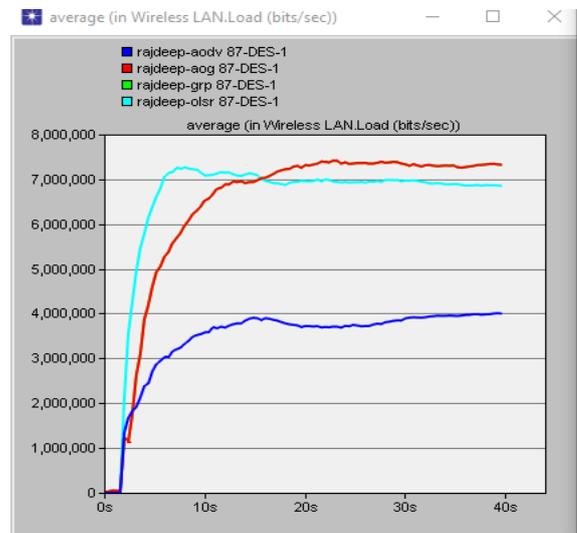


Fig 1: load

Form fig1 it is clear that when AODV is used then load is 4000000 bits/sec. when OLSR is used then load is 7000000 bits/sec .when GRP is used then load is 7500000 bits/sec . When mixed is used then load is 7500000 bits/sec. fig1 also shows that during node failure load decrease because data sending to node is lost and new path is build.

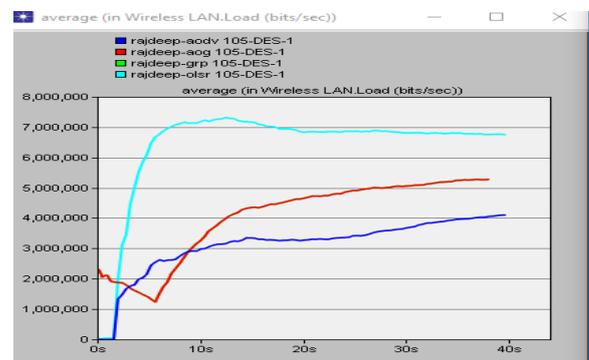


Fig 2 load for 105 nodes

Form fig2 it is clear that when AODV is used then load is 4000000 bits/sec . when OLSR is used then load is 7000000 bits/sec .when GRP is used then load is 5000000 bits/sec . when mixed is used then load is 5000000 bits/sec. fig2 also shows that during node failure load decrease because data sending to node is lost and new path is build.

Traffic sent

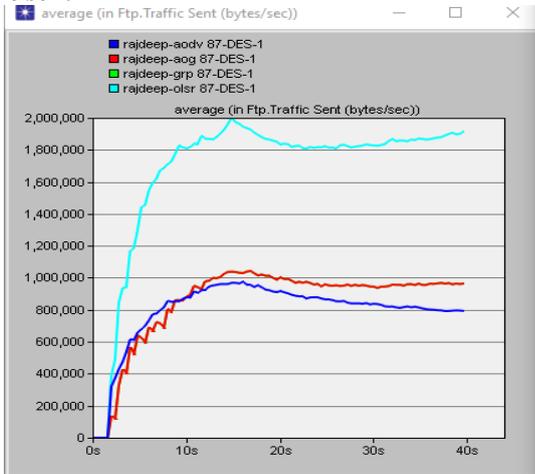


Fig 3: traffic sent

Form fig3 it is clear that when AODV is used then Traffic sent is 500000 bits/sec . when OLSR is used then Traffic sent is 1000000 bits/sec .when GRP is used then Traffic sent is 1000000 bits/sec . when mixed is used then Traffic sent is 2000000 bits/sec. fig 3 also shows that during node failure load decrease because data sending to node is lost and new path is build.

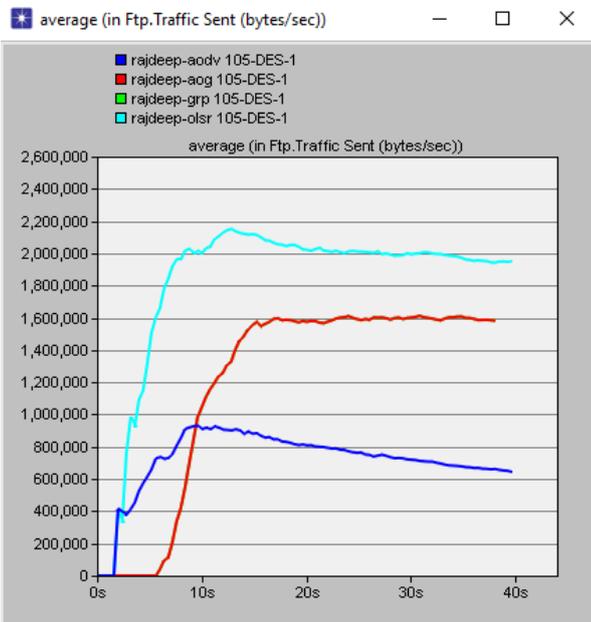


Fig 4 : traffic sent for 105 nodes

Form fig4 it is clear that when AODV is used then Traffic sent is 600000 bits/sec . when OLSR is used then Traffic

sent is 2000000 bits/sec .when GRP is used then Traffic sent is 1600000 bits/sec . when mixed is used then Traffic sent is 1600000 bits/sec. fig 4 also shows that during node failure load decrease because data sending to node is lost and new path is build.

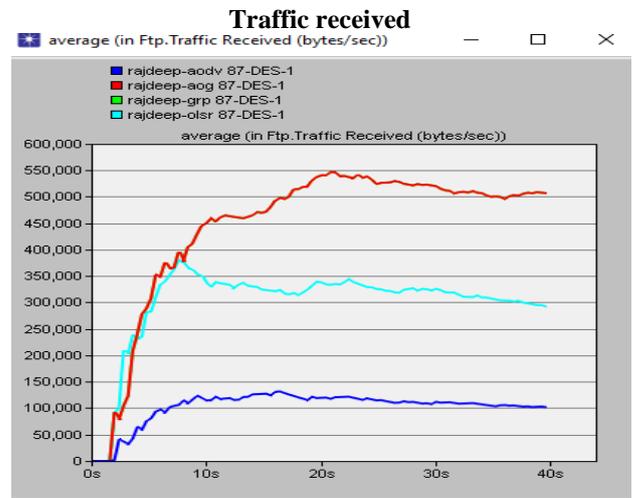


Fig 5: traffic received

Form fig5 it is clear that when AODV is used then Traffic recieved is 100000 bits/sec . when OLSR is used then Traffic recieved is 300000 bits/sec .when GRP is used then Traffic recieved is 500000 bits/sec . when mixed is used then Traffic recieved is 500000 bits/sec. fig 5 also shows that during node failure load decrease because data sending to node is lost and new path is build.

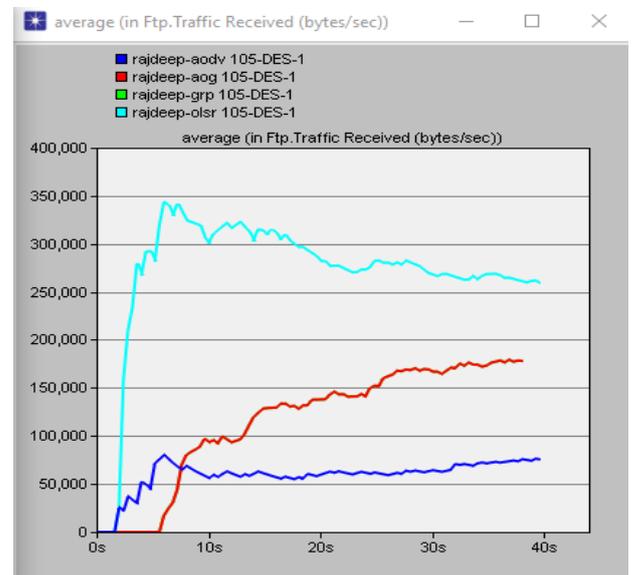


Fig 6: traffic received for 105 nodes

Form fig6 it is clear that when AODV is used then Traffic received is 55000 bits/sec . when OLSR is used then Traffic received is 250000 bits/sec .when GRP is used then Traffic received is 180000 bits/sec . when mixed is used then

Traffic received is 180000 bits/sec. fig 6 also shows that during node failure load decrease because data sending to node is lost and new path is build.

IV. CONCLUSION

In this paper node failure effect is analysed on AODV,OLSR,GRP and combined protocol. To analyze this effect further nodes are moved at different speeds in same scenarios. Further to enhance the work no. node are vary from 87 to 105. The result is taken in terms of LOAD, FTP Data Received and FTP data Sent. Form the result it is clear that performance of DSR and Mix protocol is better for 87 nodes and for 105 nodes OLSR is better. When mix protocol is used then with increase in no. of nodes the performance decreases.

V. REFERENCES

- [1]. Teresa Longjam and Neha Bagoria, February 2013. "Comparative Study of Destination Sequenced Distance Vector and Ad-hoc on-demand Distance Vector Routing Protocol of Mobile Ad-hoc Network".
- [2]. C. E. Perkins, E. M. Belding-Royer and S. R. Das, 25-26 February 1999. "Ad Hoc On-Demand Distance Vector (AODV) Routing," pp. 90-100. 2nd IEEE Workshop on Workshop Mobile Computing Systems and Applications, New Orleans.
- [3]. Rakesh Kumar Jha, Pooja Kharga, March 2015. "A Comparative Performance Analysis of Routing Protocols in MANET using NS3 Simulator".
- [4]. C.Perkins, RFC3561, July 2003. "Ad hoc on demand Distance Vector (AODV) routing".
- [5]. Sreekanth Vakati, Dr.Ch.Balaswamy, July 2013. "Performance Analysis of Routing Protocols in Mobile Ad Hoc Networks".
- [6]. Dilpreet Kaur, Naresh Kumar, 2013. "Comparative Analysis of AODV, OLSR, TORA, DSR and DSDV Routing protocols in Mobile Ad-Hoc Networks," in IJCNIS journal, vol.5, no.3, pp.39.
- [7]. T. Clausen and P. Jacquet, RFC 3626, October 2003. "Optimized Link State Routing (OLSR) Protocol", IETF Networking Group.
- [8]. I.W.H. Ho, K.K. Leung, J.W. Polak, and R. Mangharam, Oct.2007. "Node connectivity in vehicular ad hoc networks with structured mobility," pp. 635-642, in Proc. 32nd IEEE Conference on Local Computer Networks, Clontarf Castle, Dublin, Ireland.
- [9]. Johnson,D.B.;Maltz, D.A. (1996). "Dynamic Source Routing in Ad Hoc Wireless Networks".
- [10].Broch,J.; Maltz,D.A.;Johnson, D. B.; Hu,Y. C.; Jetcheva, J. (1998). "A performance comparison of multi-hop wire-less ad hoc network routing protocols". Proceedings of the 4th annual ACM/IEEE international conference on Mobile computing and networking
- [11].Philipp Sommer, 2007. "Design and Analysis of Realistic Mobility Models for Wireless Mesh Networks", M. Eng. Thesis, Department of Information Technology and Electrical Engineering, Zurich, Switzerland.
- [12].NS-3 tutorial. [Online]. Available: <http://www.nsnam.org/docs/release/3.14/tutorial/singlehtml/index.html>.
- [13].Mohanapriya Marimuthu and Ilango Krishnamurthi, Feb.2013. "Enhanced OLSR for Defense against DOS Attack in Ad-Hoc Networks", Journal of communications.
- [14]. Qutaiba Razouqi, Ahmed Boushehri, Mohamed Gaballah, Lina Alsaleh, 2013. "Extensive Simulation Performance Analysis for DSDV, DSR, and AODV MANET Routing Protocols. IEEE.