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A Survey on Performance Analysis of Tora with Other Reactive Routing Protocols in Manets

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Abstract: ***Nowadays wireless network places vital role in communication. Mobile Ad hoc Network (MANET) is a popular and backbone for mobile communication. MANET is group of particular mobile nodes which does not follow particular structure. It does not developed with centralized authority. So that such kind of these networks must follow specific protocols and these protocols must specific to dynamic network topology. In this paper survey has been made about performance of the reactive (On –demand) routing protocols TORA, AODV,DSR are considered which are based on performance metrics such as route discovery, route maintenance, etc.***
Keywords:Tora, Aodv, Dsr.

I. INTRODUCTION

MANET is a self-configuring dynamic network with more than one devices connected via the wireless network. In this network devices communicate with one another using multi hop wireless networks in decentralized manner. In this network, the number of communicating nodes is two and they are located closely means there is no need for specific routing decisions or protocols. But if the numbers of mobile nodes are larger routing protocols comes into picture so that decisions have to be made to produce optimal route from source to destination. Nodes in MANET are responsible for finding other nodes in a network to communicate. The basic challenge in MANET is building proper reachability of information from source node to destination node .The group of applications for MANET is diverse and from smaller network to larger network. Due to its properties like flexibility, mobility and portability usability of MANET is increasing.

II. WIRELESS AD HOC ROUTING PROTOCOLS

A. AODV

The Ad-hoc On-demand Distance Vector (AODV) protocol is one of the type of reactive routing protocol which does not keep global routing information for the whole network, so that routing paths are formed whenever there is demand. When the nodes are not in the path they do not need to maintain any details for that path. Therefore they have information only for their active paths. In AODV protocol, asymmetric links are not maintained. Important uses AODV protocol is the particular destination needed paths are created and destination numbers are used to find updated path towards particular destination.

B. DSR

The Dynamic Source Routing protocol allows the sources to find out paths to any destination. Before reaching desired destination, all the data packets of source add all the list of nodes, which the packets must go through. So, all the nodes that listen these packets may collect routing details for future purpose.

With that faster network topology transformation, DSR protocol also provides asymmetric links. Like AODV, DSR has path searching mechanism, if a route is not set up. DSR retain demand path so that no usual packets are needed for topology changes. During the failure of the links, they should have accurate advertisement for routing. Further, DSR allows sources to obtain and reserve more than single path to a specific destination. When a link failure is known midway nodes have the chance to change routing path. DSR is useful in network when it has low mobility.

C. TORA

TORA is temporally ordered routing algorithm based on reversal algorithm. It is used to reduce the control message in dynamic ad-hoc networks. Unlike DSR, a node has to send query information by flooding method when it has passed some information from source to destination.

Since the shortest path finding is not important in TORA, so the longer paths may lead to loss of information than usual. In TORA longer paths are chosen mainly to reduce the overhead in process of finding new paths.

III. PREVIOUS WORK

More than enough amount of research work has been done in evaluation of MANETs, comparisons have been done to find out the apt protocol for routing and lot of algorithms have been developed but process continues till now. Better research is needed in some particular areas. [1] Shilpi Sharma, et. al had compared and analysed TORA with LEACH and AODV in five different parameters like average end to end delay, packet loss, packet delivery fraction, routing overhead and remaining node energy in a NS2 simulation environment**.** AODV and TORA performed better than LEACH for Packet Delivery Fraction because of the way it forms its path based on the height of the graph and with TORA synchronization of clocks is also easy because it gives more options of route during link failure. LEACH gives less delay as compared to AODV, TORA for average end to end delay. For the packet loss AODV shows higher number of packet loss than TORA and TORA gives more routing overhead than other routing protocols.

Dr. R. Shanmugavadivu, B. Chitra,[2] in their paper work, they considered DSR,AODV,TORA protocols and compared parameter like route discovery, route maintenance, network, node overhead. They concluded that there are new challenges for routing protocols in MANETs.They insisted that AODV performance is better for periodic exchange of information required for TCP,so that it is preferred for over DSR with larger number of nodes. TORA is best for operating large mobile networks whose having large number of nodes.Anil Kumar[3],in his paper compared various routing protocols based on the factors like routing type, Loop freedom, presence of multiple routes, Destination update procedure, place where the routing path is stored. He stated that, for TORA link traversal is used as routing type, and it has no loop freedom, neighbour node is used for destination update procedure and route is stored in routing table. He concluded that all protocols have their own importance in their own scenarios.

Gouri M. Patilet. al[4],compared various protocols like OLSR,AODV,DSR,TORA,GRP. In their simulation study,experiments were carried out for three different network area sizes 500*500,1000*1000,2000*2000 square meters. The performance of these routing protocols are measured and compared on ‘Average Routing Load’, ‘Average end-to-end delay’ and ‘Average Throughput’ metrics. In this study the performance of MANET routing protocols OLSR, AODV, DSR, GRP and TORA has been considered to understand the performance with varying network area size. The study results shows that if network load is important factor, then routing protocol TORA is the best choice followed by DSR, AODV, OLSR and GRP for scalable network area size up to 2000 x 2000 square meters.

Khaled O. Basulaim, et. al[5],evaluated the performance of AODV,DSR,GRP,OLSR,andTORA.Their evaluation parameters are end-to-end delay, network load and throughput. In this paper they used IPV6 in addition to MPLS technology. They worked with OPNET modular 14.5 and used random way point model. They concluded that some routing protocols performed better than other, but none of the five protocols performed better among all the scenarios and techniques used in our experiments.KomalKhalsa,et.al.,[6] have measured the performance of MANET routing protocols such as AODV,DSR,OLSR,TORA,GRP with load, throughput , delay, traffic sent, traffic received, etc. as metrics. They analysed the performance of these routing protocols by varying number of mobile nodes. They finalized their result that AODV provides higher delay for 25 nodes as DSR provides higher load in 50 nodes and GRP provides higher throughput for 25 nodes in FTP traffic. GRP provides higher delay for 50 nodes as AODV provides higher load in 25 nodes and AODV provides higher throughput for 25 nodes in voice traffic but TORA had bad performance compared with other protocols.

IV. CONCLUSION

In this paper, various routing protocols for MANET have been discussed. Performance of these routing protocols under various simulation parameters was analysed. By this we can conclude that TORA protocol works well for particular parameters and bad for some parameter metrics. So while choosing the protocol for MANET we must consider about performance metrics and mobility models and based on that we must choose the protocol so that we can obtain better performance.

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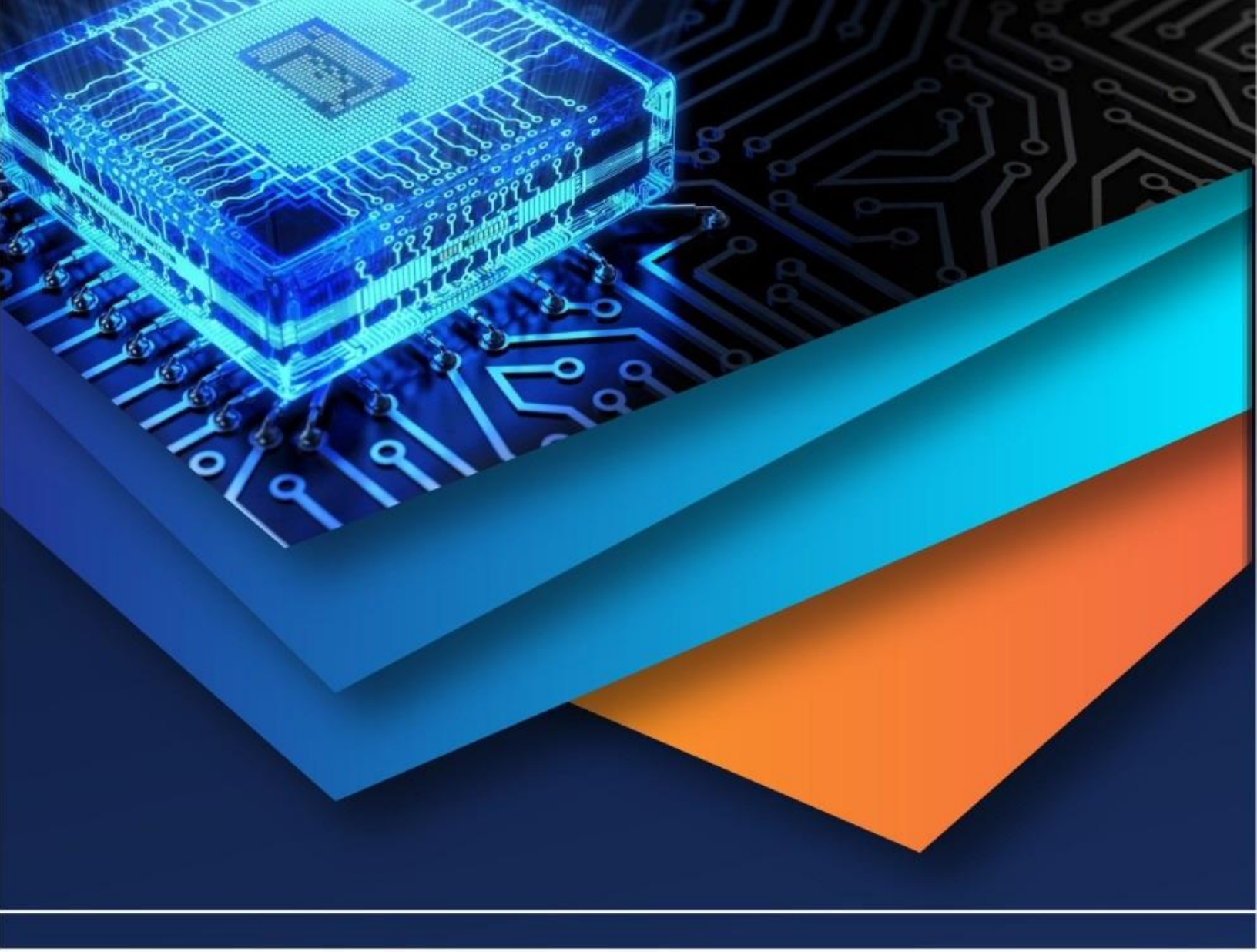

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