

A Review Paper on the Comparison of Routing Protocols in MANET

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Abstract— In mobile ad-hoc networks, the task of routing protocols is to control the node's decision to route the packet from the source to destination. A very significant factor in the determination of efficiency of any Manet protocol is the task of discovering and sustaining the routes in the network. In this network nodes links with other nodes present in the network without any centralized power, instead every node acts as a router that forwards or route the packets to other nodes. In ad hoc networks the node announces its presence and other nodes listens to the announcements made by the nodes in its locality, in this way they come to know the other nodes with which communication can be done. Reactive routing protocols come crossways out the route by flooding the preparation with Route Request packets. The basic target of each network protocol is to find the legitimate route between the two nodes that want to interact. In this paper we will review and evaluate the performances of these protocols.

Key words: Manet, Routing Protocols, Efficiency

I. INTRODUCTION

In wireless communication systems, a valid communication requires the two most important factors that are adaptability and quick deployment of routes between the mobile users. A mobile ad hoc network fulfils these characteristics. Manet provides the factor of adaptability and speedy deployment as it is the sort of self-organising network. In Manet the protocols are mainly categorised into three categories i.e. Proactive, Reactive and Hybrid. The nodes that work by using Proactive routing protocols attempt to maintain the latest information of routing of every former node working in the network. This maintenance of information leads to the opening out of the time, that is for connection set up the time gets reduced because the information is stored previously before sending even the first packet. The disadvantage is that even when there is no traffic in the network the utility of resources is still present which declines the network lifespan. Reactive routing protocols only setups the route on demand that is when a node wants to communicate with other node to which it has no direction, the reactive protocols try to establish the link between them. The overhead of messaging gets reduced with these protocols which are an advantage but the discovery of new route may leads to delay in time hence hindrance in connection contributes to the disadvantage of this protocol. The purpose of Hybrid protocols are to join the positive points of both the proactive and reactive protocols and to conquer the negatives of the both the protocols.

II. RELATED WORKS

In [1] author compares the DSR and TORA routing protocols. Mobile ad-hoc networks are wireless networks that use multi-hop as an alternative to static networks infrastructure to provide network connectivity. From the new results author conclude that increase in the number of nodes will cause enhance in the mean time for loop detection. When pause

time increases, it leads to a decrease in the mean end-to-end delay and increase in the density of nodes yields to an increase in the mean end-to-end delay. Overall, DSR suits for networks with reasonable mobility rate Whereas TORA is appropriate for operation in large mobile networks.

In [2] author shows the performance of MANET with five Routing Protocols with FTP, Video and Voice traffic using OPNET simulator. The output shows that AODV protocol provides higher delay for 25 nodes as DSR provides higher load in 50 nodes and GRP provides elevated throughput for 25 nodes in FTP Traffic. AODV protocol provides elevated delay for 25 nodes as DSR provides higher consignment in 50 nodes and GRP provides elevated throughput for 25 nodes in video Traffic. GRP protocol provides elevated delay for 50 nodes as AODV provides higher load in 25 nodes and AODV provides more throughput for 25 nodes in voice Traffic. TORA had bad show.

In [3] author has made an effort to concentrate on the behavioural study and performance analysis of various prominent routing protocols viz. DSDV, AODV, DSR and TORA on the basis of quantitative and qualitative metrics. Based on the performance analysis, recommendations have been made about the merit of each protocol under different conditions and the analysis make the conclusion that every protocol is well in performance in their held categories. Moreover, due to the vigorously changing topology and communications less property, safe and power aware routing is tough to achieve in mobile ad hoc networks.

In [4] author examined the performance of three source-initiated routing protocols that are AODV, DSR and TORA routing protocols. Even if energy effectiveness is not the plan targets of these routing protocols, every routing protocol behaved in a different way with energy responsive metrics. This is owing to the route detection and maintenance mechanisms of the routing protocols. The simulation results revealed that TORA exceeds AODV and DSR in energy per packet utilization. The network life span of TORA is also better than DSR and AODV. This indicates that less energy expenditure does not lengthen the network lifetime by itself. So, it is an hint that energy efficient routing protocols must consist of battery energy level alert load balancing. Each routing protocol exhibited better performance in definite scenarios and metrics. In general, TORA outperforms in the most of scenarios and metrics. Hence he concluded that TORA is more energy-efficient than DSR and AODV with better performance.

In [5] author presents the abstract study of routing protocols for MANETs. In his study it is clear that due to the casual mobility of node, routing becomes a difficult concern. Till now many routing protocols are used in MANET. Each routing protocol has distinctive features. Based on network environments, need to choose the suitable routing protocol. Proactive routing protocols are well appropriate in tiny networks. In bulky and intense network, proactive routing

protocols can't execute well. Proactive routing protocols are table driven and maintaining thousands of routing tables accurately in large network makes the efficiency poor. Reactive routing approach plays a key role for large and dense networks. Reactive routing protocols make use of potential distance and destination sequence number to guarantee a loop free routing. Hybrid routing protocols use proactive and reactive combined approach in routing operations.

In [6] author says that mobility has a casual impact on protocol performance. Mobility result shows that when mobility is increased in small networks OLSR and DSR performance gets decreased, and TORA and AODV performance gets increased. TORA therefore can be recommended routing protocol in small networks where higher mobility exists. In medium networks AODV reacts in the counter direction as it did in small networks. TORA however reacted favourably with an increase of mobility. The higher the mobility and network size TORA's performance get boost up whereas its delay decreases.

In [7] author concluded that On- Demand (Reactive) protocols are superior for PDF, End to End Delay and Throughput as compared Table driven (proactive) protocols. The hybrid protocol TORA performs most awful and on this basis it is the worst MANET Routing Protocol. Performance of DSR is better than both OLSR and TORA. The mobility model also influences the selection of protocols. DSR performs better in arbitrary Waypoint while OLSR performs normal in both. It furthermore shows how raising the number of nodes decreases the assessment of each parameter for every protocol in both mobility models. For upcoming work, performance can be measured using diverse standards and parameters beneath many other mobility models.

In [8] author concludes that Mobile ad hoc networks are wireless networks that use multi hop routing as an alternative of static networks communications to provide network connectivity. MANETs have applications that are swiftly deployed in military systems. The network topology in MANETs often changes with time. Therefore, there are fresh challenges for routing protocols in MANETs because conventional routing protocols may not be suitable for MANETs.

In [9] author has tried to make an explanation for some of routing protocols for MANETS. Due to mobility and high variety of ad-hoc networks, this is not painless to carry out all the challenges with a sole protocol set. Therefore many algorithms and mechanisms are considered for altered scenarios for example; TORA and ZRP are suitable for large networks while DSR, AODV and OLSR are preferable for small networks.

In [10] the author has made effort on the comparative study of Reactive, Proactive and Hybrid routing protocols. There is a mixture of shortcomings in different routing protocols and it is tricky to decide routing protocol for different situations as there is exchange among various protocols. There are a variety of challenges that require to be met, so these networks are going to have extensive use in the future.

III. CONCLUSION

In this paper the routing protocols (Proactive, Reactive and Hybrid) are compared on different parameters. In a given network the time taken by data to reach destination from

source is variable under reactive routing protocols where as it is fixed in case of proactive protocols. On the count of efficiency, the reactive protocols are ahead than that of proactive protocols. In terms of performance, adeptness of the reactive protocols is better than to proactive protocols. The techniques on which the Proactive, Reactive and Hybrid protocols do routing are Table driven, on-demand and hierarchal network architectures respectively. Routing paths in case of Reactive protocols are only searched when needed where as in case of Proactive they are reliable .In case of hybrid protocols the routing algorithms used by reactive and proactive protocols are exploited at different hierarchal levels.

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