PERFORMANCE APPRAISAL OF AODV, AOMDV, DSDV & DSR ROUTING PROTOCOL IN MANET

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Abstract: A mobile ad hoc network (MANET) is a kind of autonomous network that involves of mobile nodes that can communicate with each other over wireless acquaintances. All mobile nodes that are the part of ad hoc network handovers arbitrarily and acts like a router along as host node. A wireless ad hoc network contains of number of "peer" mobile nodes that made up to communicating through each other deprived of help from a fixed infrastructure. The interconnections between mobile nodes are talented of moving on a continual and arbitrary basis. In Mobile Ad-Hoc network, routing protocol is the main significant for the basic functionality of network. Network performance not only depends upon type of protocol used in MANET but also number of nodes communicating in network. In this paper, we studied number of routing protocols used in MANETs, in this research exercise and I examine the overall performance of different protocols in MANET in different scenario.

Index Terms **– AODV, AOMDV, DSDV, D SR and MANET.**

I. INTRODUCTION

Wireless devices form a network as they become aware of each other's presence. They communicate directly with devices inside their radio range in a peer-to-peer nature. If they wish to communicate with a device outside their range, they can use an intermediate device or devices within their radio range to relay or forward communications to the device outside their range. An Ad-hoc network is self-organizing and adaptive [2 and 10].

Networks are formed on-the-fly, devices can leave and join the network during its lifetime, devices can be mobile within the network, the network as a whole may be mobile and the network can be deformed on-the-fly. Devices in mobile ad hoc networks should be able to detect the presence of other devices and perform the necessary set-up to facilitate communications and the sharing of data and services. A mobile ad hoc network (MANET) is a kind of autonomous network that involves of mobile nodes that can communicate with each other over wireless acquaintances. Like in ordinary network communication, performance parameters in MANET also depend upon number of parameters and positioning of nodes. In MANET, we have a large amount of routing algorithms and protocols; it can be difficult to decide which algorithms are superior to others under certain conditions. For a successful deployment, this is an important problem, since a wrong choice may have a severe impact on the performance. Also providing just any protocol may not be feasible due to the different requirements on hardware and cross- layer interoperability. Various applications includes: Military Battlefield, Sensor Networks, Commercial Sector and Medical Services.

II. LITERATURE REVIEW

Maltz D. et al [1], analyze that the use of on-demand behavior in different routing protocol proposed for the use in multi-hop wireless Ad-hoc networks. Fundamentally they are focuses on its effect on routing protocol's forward latency, overhead cost, and routing caching correctness, drawn from the simulation of DSR protocol. They also study the behavior and the changes introduced by variations on some of the mechanisms that make up the protocol, and also examine that which mechanism have great impact and explore the tradeoff that exist between them.

Perkins C. et al. [2], perform the comparison between two of the on-demand routing protocol for Ad-hoc networks. They evaluate DSR and AODV on different parameters such as packet delivery ratio, average delay of data packets, standardized routing load, and distributed MAC load.

Gupta S. et al. [3], proposed a new advancement in the DSR routing protocol. As we all know that DSR routing protocol works only in the case when the source node and the sink node are in the same network but when they are separated the working of DSR protocols fails, means when source node and sink node are present in two different networks then it will not possible to communicate between them using this routing protocol. This can be defined as the partial connected network in which DSR working fails. So for this reason, they proposed a fresh algorithm which is known as "Smart DSR Protocol", abbreviated form as "SDSR Protocol". In this algorithm they use the concept of smart node which carry the data from one network to another network acting as external router. Two extra fields are added

in this algorithm with the existing field named as SRREQ, and SRREP. They use the same route maintenance technique which previously exists in DSR.

Velagaleti S. et al. [4], has done the simulation and analysis of S-DSR protocol. The simulation is done out for distinct number of nodes using NS2 by taking the aid of 1000 mobile nodes. They compared S-DSR with DSR, and AODV. They have shown the improved results in terms of packet delivery, packet drop, and delay even in the presence of additional number of malignant nodes. In existing DSR the problem is present if the network size is increased then DSR becomes unsteady until a packet propagates in the complete network.

Al-Maashri A. et al. [5], has done the investigation about the performance of different MANET routing protocol in the existence of self-similar traffic. In the past few years different routing protocols are designed and analyzed under the assumption of either CBR or Poisson traffic models, which are immensely not capable of capturing the traffic self-similarity. Routing protocols on which implementation are carried out are DSR, AODV, and OLSR. Various performance aspects are investigate which includes delivery fraction, routing overhead, throughput and end- to-end delay. The simulation results shows that DSR routing protocol performs well with bursty traffic models as compared to AODV and OLSR in terms of delivery fraction, routing overhead, throughput and source to sink node delay. While its other scenario shows that OLSR performed inadequately in the existence of self-similar traffic at high mobility especially in terms of data packet delivery ratio, routing overhead delay and AODV routing protocol shows the average performance. Bursty traffic is defined as the traffic which can be generated randomly with peak rates exceeding average rates by factor of 8 to 10.

Grossglauser M. et al. [6], according with them routing in large scale in MANET is very challenging because every nodes is moving potentially but geographical routing should alleviate the problem partially; as nodes take their local routing decision on the basis of their geographical coordinates of the destination nodes. But still they require an efficient location services. In this paper they showed that how node mobility can be exploited to broadcast the sink location information without incurring any communication overhead. They achieve it with the help of that all node maintains the local database of the time and location of its last interaction with each node in the network. For this they develop a new algorithm named as EASE (Exponential Age Search). In this model, where (n) nodes performed the independent random walk over a square lattice of size n and the length of the routes calculated with the help of this algorithm is of similar order as there is separation between the source and the destination even if the value of n is very large. Basically the algorithm is depend on the LER algorithm i.e., it computes the routes based on the last encounters, there is no loss of transmission capacity which explicitly disseminated the location information, the whole some of this algorithm is to facilitate as it provides the perspicacity of the condition beneath which mobility diffusion provides best routes.

Mohapatra S. et al. [7], done the analysis on few of the routing protocols with the help of NS2 simulator and gives their opinion that which protocol gives the best result over which performance metrics. The protocols over which they carried their experiment are AODV, DSR OLSR and DSDV and the various performance parameters PDR (packet delivery ratio), delay, throughput, and the control overhead. According to them DSR gives better packet delivery ratio than other routing protocols. There is a condition with DSR i.e., if the network size is less than or equal to 600*600sqm than DSR outperforms the other protocol but if it is greater than and the PDR and throughput are main criteria than OLSR protocol is superior than all different routing protocols and also outperform in high mobility condition.

Sharma L. et al[8],has done the analysis that what is the effect of mobility/velocity over the performance of DSR, AODV, and DYMO. For simulation of these routing protocols they use scalable network technology (Exata/Cyber 1.2) . They use the performance metrics for the analysis purposes like throughput, packet delivery fraction, average source to destination delay, and jitter. Their simulation showed that AODV performs better in terms of PDR, and delay and DSR perform better in terms of throughput where DYMO fails.

Perrig A. et al. [9], presented the new algorithm and evaluation of Aridane, a secure Ad-hoc routing protocol. It ensures security against arbitrary active attackers and one compromised node, they depend on symmetric cryptographic operations. This protocol operates on-demand; it dynamically searches the routes among the nodes only when needed. Its design is based on operation of the DSR protocol. Rather applying the cryptographic techniques to the existing protocol for achieving security, they re-designed each message and its processing. The security mechanism which they designed is highly effective and general.

III. CONCLUSION

A large number of different kinds of routing protocols are practiced in mobile Ad-hoc networks. The use of a specific routing protocol in mobile Ad hoc network depends upon number factors including size of the network, load, mobility requirements, routing overhead and end-to-end delay. In recent years on-demand routing protocols have attained more attention in mobile Ad hoc networks as compared to other routing schemes due to their potential flexibility in deployment and efficiency in terms throughput. They are able to organize themselves dynamically with lower memory overhead and lower bandwidth requirement than table driven protocols. There exist many on-demand routing protocols for mobile Ad hoc networks (MANETS). Most of the protocols, however, discover a single route and fail to utilize multiple alternate paths. Multipath routing allows the establishment of multiple paths between a single source and single destination node and in the event the path breaks, an alternate path is used instead of initiating a new route discovery. Hence multipath routing stands a promising routing method for wireless mobile Ad hoc networks. Multipath routing protocols achieve lower routing overhead, lower end-to-end delay, more resilient to route failures and alleviate congestion in comparison with single path routing protocols.

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