

# Design and Implementation of Performance Evaluation of Routing Protocol under Different Mobility Model in Manet”

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**Abstract:-** MANET is self a self-configuring network consisting of mobiles nodes (laptop, cellular phone. Etc )which having routing ability where each node worked as host as well as router to forward data packets each other in the configured network And each one have self organization properties. The self Configuration which enables to form new network area quickly .Routing protocol in MANETs to support send and receive data between the host or mobile nodes.in this paper we are doing study of reactive protocol/On-demand(eg. AODV.DSR,TORA) and proactive protocol/Table-driven(OLSR,DSDV,WRP) and last one mean’s hybrid, it’s not a type, this is only combination of earlier protocol types. These kind of protocols based on various mobility models such as chain model, Disaster model, small world in motion and probabilistic random walk model with respect to various parameters like packet delivery ratio, average end-to-end delay, normalized routing load, throughput etc.in this dissertation our finding show that ,design & implementation performance evaluation of routing protocol under different mobility model in MANET using NS-2 simulator and Bonn-motion tools.

**Keywords:-** MANETs, Mobility Model, Routing Protocols.

## I. INTRODUCTION

MANETS is collection of wireless node instantly forming a temporary network without the aid of any established infrastructure or centralized administration. Manet support several routing protocols this paper consider reactive, proactive & hybrid for performance comparisons with varying mobility model [3,19,20] such as chain model(it’s sequence of Random Waypoint- RWP, Manhattan, RPM-reference point group mobility model),Disaster Area Model, Small World In Motion, Probabilistic Random Walk Model w.r.t. various parameters such as packet delivery, average end to end delay, normalized routing load and throughput. some Advantages of Mobile Ad hoc Networks listed here, like i) low cost of deployment ii) fast deployment iii) dynamic configuration, it is also important for its application such as i) Battlefield ii) Rescue Operation iii) Event Coverage iv) classroom. In this review paper we basically focused on to study the performance of proactive ,reactive and hybrid routing protocols overs different types of mobility models such as chain ,disaster area, small world in motion, probabilistic random walk model w.r.t. various parameters such as packet delivery, average end to end delay, etc.

## II. LITERATURE REVIEW & RELATED WORK:

The below tabular format follow the performance of my thesis over the different Routing Protocols

Sr. No	References	Parameter	Previous Work analysis	Implementation of project
1	Akshai A et al.[12] Sabinaet al.[7]	Nodes	In mobility scenario, they used up to 200 nodes and performance of DSR is worst with increases the nodes	We have used up to 300 nodes so might be used Ex-DSR with neural networks to improve the throughput and packet dropped parameters
2	Suman Kumariet al [23], Kuljit Kauret al [20]	Work	AODV and DSR used on demand route discovery phenomenon's uses source routing and route cache.	Working on route discovery and route maintenance regarding the combination of both in Modified-DSR protocol.
3	Zubair I et cl. [27]	Performance criteria	As per simulation work, AODV protocol better performance in highest number of nodes (up to 200)	As per simulation work DSR perform low as high number of nodes so it will improve the performance of DSR (similar to AODV) with increasing number of nodes (up to 300) using Routing Algorithm for Ex-DSR
4	Preeti G et al.[17]	Packet delivery Ratio	As per graph the DSR PDF performance decline drastically (up to 100 nodes) when the increased no of node	we would improve PDF performance of DSR when increasing no of nodes ( after 100) using the decision algorithm
	Shashank dwivediet al.[2]			
5	Parma Nand et al, [16], VenetisKanakarisetal. [3]	Traffic and Mobility	AODV is DSR preferable for Moderate mobility and low traffic	We have use the M-DSR technology can improve the high mobility and high traffic
6	Gulati et al. [11]	Nodes	A deeper simulation of DSDV, AODV, DSR with performance of all protocol up to 200 mobile nodes and AODV has good one then DSR.	AODV shown the awesome experience in a network with low mobility scenarios while the AODV and DSR showing better output as per their characteristics in all mobility scenario.
7	SamayveerS et. Al [19]	Performance criteria	The simulation analysis carried out AODV and DSR. In this paper that The throughput and the end-to-end delay are used for only 50 to 100 nodes.	We have to use Modified-DSR protocol Algorithm to improve the few performance parameters with highlyutilized of nodes.
8	Dr Mudassar et al [24]	Protocols used	Performance comparison of all three protocols and among that basically normally used protocol which has characteristics of protocol mainly focus on routing for better performance and have little defense capability against the Variation of nodes.	M-DSR preferable for Moderate mobility and low traffic as per AODV protocol.
9	Hasein Issa Sigiuk et al [8]	Performance criteria	In paper tested the comparison of both scenario and DSR protocol perform better due to multiple path registered kept the route cache and provide stability on the network of variation of nodes DSDV has low packet delivery ratio and DSR having low latency and energy consumption	We have used Ex-DSR routing Algorithm to reach the AODV performance parameters and need to make combination mobile sink and static protocols which is best in both scenario.
	Dipankar S et al. [6]			
10	Rajeev Paulus et al [14]	Application Metrics	The authors showing that DSR giving the less dropping ratio than other protocols but other parameter are decreases and also compare few parameters.	We have used Ex-DSR routing Algorithm to reach good performance of all performance parameter.
11	Nitin Tyagi et al [13]	congestion	Worked on upto 100 nodes in CBR traffic in MANET	We should be propose EX-DSR protocol and implement mobility as well as non-mobility nodes constant nodes upto 300 and we would get some positive results in performance parameters.

Table 1:- Referred by Various Research Papers

**III. ROUTING PROTOCOLS AND MOBILITY MODELS**

➤ *Mobile Ad-hoc network routing protocol:*

Manet routing protocol basically classified into two type such as Reactive and proactive routing protocol but accordingly some researchers when combined these two routing protocol and generate third one routing protocol i.e. Hybrid routing protocol.

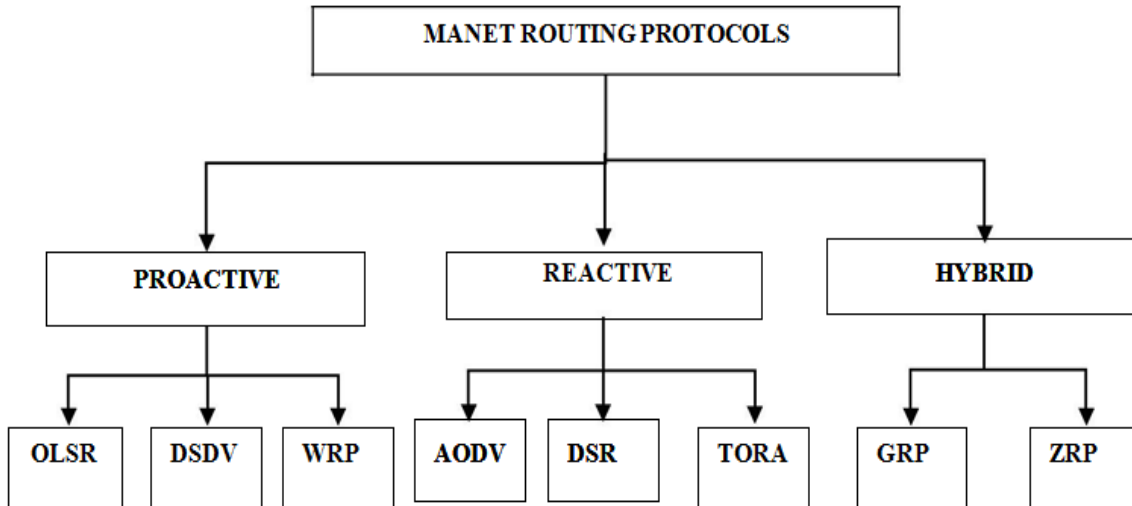


Fig 1

➤ *Reactive Routing Protocol:*

Reactive routing protocol also called as demand routing protocol, in this mechanism source node initiate route discovery broadcasting route request into the given network. A serious issue for MANET occurs when the links are failure due to high node mobility. In reactive routing protocol each node have its own routing table which contains the information about the route/path from current location to destination location.

➤ *Proactive Routing Protocol:*

Also known as table driven protocols, this algorithm is used for finding shortest path between the multiples path.it is based on Bellman-ford algorithm, routing table entries updates by two ways 1)full dump method and incremental method.

➤ *Hybrid Routing Protocol:*

This kind of protocol combine the advantages of proactive routing protocol and reactive routing protocol(e.g. ZRP,LANMAR,HSR.,etc.)

➤ *Mobility Model:*

Mobility model plays an important role in movement , dictates to the nodes their initial places and movement patterns, emulate real life scenarios. The main aspect of mobility models is, user friendly , sufficient and easy to understand ,mathematical properties, scope and validity, realistic model.it is describe to movement of mobile nodes and how their location, velocity and acceleration changes over time in different scenario, it also play an important role to evaluate the performance of different protocols.in mobility modeling, the activity of node movement can be

described using both analytical and simulation models. The various mobility model used in review paper to evaluate the performance of any network with mobile nodes. These mobility models help to provide an effective routing algorithms for MANET and also help to estimate their performance for different mobility scenarios. The performance of MANET depends on what kind of application can used ,number of nodes, mobility of nodes, routing algorithm employed, packet size etc.in this review paper we know how convert existing mobility model into new model like Chain Model, Probabilistic Random Walk Model, Disaster area model and finally Small world in motion.

➤ *Chain Model:*

It is not new one model, it is only chaining of more than one advantages of an existing model like Random Waypoint Model (RWP), Manhattan Mobility Model (MMM) and Reference Point Group Mobility Model(RPGM).RWP first time proposed by Johanson & Maltz [3,9,20] and it is part of entity mobility model. The RWP is a random model for the movement of the mobile users and how their location, velocity & acceleration change with position respective time.it is most common mobility model used in research community[3]. RPGM is a part of group mobility model where the model form a group and then moves in a co-ordinate manner. Last one means Manhattan Mobility Model is also part of group mobility model. It can be useful in modeling movement in an urban area where a pervasive computing service between portable devices is provided. so indirectly we can conclude here to generate new mobility model using existing mobility model.

➤ *Small World In Motion(SWIM):*

SWIM is a simple and efficient mobility model such as SWIM reflects correctly kernel properties of human movement & at same time, allow to evaluate accurately protocol in this environment. We show that SWIM not only able to extrapolate key properties of human mobility but also it is very accurate in predicting performance of protocol based on social human sub structures.

➤ *Disastrous Model(DM):*

Disastrous model are one the most challenging application of multi hop ad-hoc network due to possible damages of communication infrastructure might be partially or completely destroyed after natural disaster. Multi hop ad-hoc network communication is an disastrous scenarios .they have evolved since their origin, leading to different ad-hoc paradigms such as MANETs, VANETs, DTNs, or WSN. Communication between victim peoples & rescue team members involved in rescue operations is crucial in order to decrease the disaster consequences & save lives .the first 72 hrs after the occurrence of the disaster are the most important according to some studies[1,2],that time is called “Golden Relief Time .”

➤ *Probabilistic Random Walk Model:*

In this model[4,7] nodes next position discovered by set of probabilities .A node can be move forward ,backward or remain in x and y direction depends on the probability defined in probability matrix. There are three state of node is defined by 0(current position),1(previous position) and 2(next position).where, in the matrix P (a, b) means the probability that a node will move from state a to state b.

#### IV. CONCLUSION

MANET is one of the most busy and required public area network.in this paper we reviewed on some can be implemented mobility model like chain model, disaster area model, small world in motion model, probabilistic random walk model out of these some mobility model generate using existing mobility model. Newly generated mobility model overcome their drawbacks.

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