Special Issue Published in International Journal of Trend in Research and Development (IJTRD), ISSN: 2394-9333, www.ijtrd.com

Performance Analysis of DYMO, AODV and TORA in MANET

[1]V.Vallinayagi M.sc Ph.D, [2]J.Jenifa Arul Mary M.Phil and [3]S.Maha rani M.Phil
[1]Associate professor, [2,3]Scholar
[1,2,3]Dept. of Computer Science, Sri Sarada College for Women, Tirunelveli, TamilNadu, India

Abstract-- In Mobile Adhoc Network routing is the major task. The main goal of routing is sending information from node to node. MANET is the wireless network and routing protocols are designed to provide continual changes in the topology. A dynamic Mobile Adhoc network on demand routing protocols which is used in wireless multi hop Adhoc Networks. Routing in MANET is a challenging task because the dynamic topology and the lack of an existing fixed infrastructure. Protocols used in Mobile Ad Hoc Networks are used for finding the route and sending data frequently in Mobile Adhoc Network (MANET). This paper gives a comparative study latest protocol of dynamic MANET on demand routing on protocols (DYMO). Dymo routing protocol is new and which is developed by IEFT and which is also refered to as a thing of AODV routing protocols. Dymo routing protocol is better in mobile nodes of network. This paper presents a comprehensive, and a comparative study of Dymo protocol. Comparative study shows that Dymo is only good selection if the nodes are mobile and wireless multihop. Our findings retrieve that Dymo with suitable for multihop routing Protocols during transferring information. The performances of network are measured by using NS223.4.

Keywords-- *MANET, DYMO, AODV, TORA, Routing Protocol, Topology.*

I. INTRODUCTION

MANET Mobile Ad- Hoc Network is an infrastructure of fewer networks. MANET is a dynamic wireless network. MANET is a system of mobile routers and is connected by wireless links. MANET is a collection of mobile nodes with network. MANET is a self-configuring network. Each node in MANET is free to movements of nodes and arranges in a random. A different challenge is that a node at information to neighbours to packet route and each node require other neighbor node to forward the packets. Due to nodes limited transmission range and transmits packets of by evaluating the near of next available node. The multihop routing is used to communication in every mobile node of MN in the MANET. The network topology changes in a MANET. They are many types of routing protocols in To Proactive (Table-Driven), and Reactive (On-Demand).

II. ROUTING PROTOCOLS

Routing protocols for Ad-Hoc-Networks can be classified as:

Proactive: Each node is maintains of routing information. Proactive is also known as Table –Driven Routing protocol. Routing information to keep the routing tables and periodically up to date to the topology of network of changes.

Reactive: Reactive also known as on - Demand Routing protocol and hybrid routing. Each node is doing maintain of routing information of the network. The reactive protocol of the network to flood of discover the route, they or not optimal of in terms in bandwidth. A brief classification of Ad-hoc-routing protocols is given in Figure 1

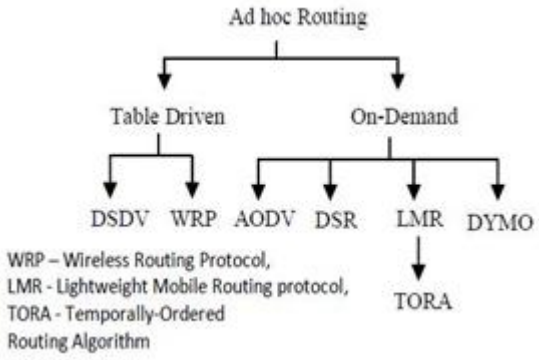

Figure 1:

III. RELATED WORK

Kristian L. Espensen Mads K. Kjeldsen, and Lars MKristensen Proposes an advanced AODV protocols called DYMO protocol. They key properties of using to spaces. The implementation is made with NS2 2.34. Protocols ON Demand basis are made for routing process. The routing messages in to contain of the routing information.

Junho Chung, Yonghwan Kwon, Bosung Kim, Hakkwan Kim, Kyungmin Lee, Dowon Hyun and Juwook Jang to enhance of performance to DYMO. Each node more distance and routing path. The route discovery is involves to nodes. The node is assigned the neighbours of existing route, of data packet of transmit in to operation. RREQ messages an average route recovery time, packets delivery rate and distance hops and speed of nodes.

J Broch et al. they performed of experiments for performance comparison of both proactive and reactive routing protocols. The simulation was done with ns-2 simulator.

Arunkumar B R et. Al. They perform extensive simulations, using NS-2 simulator. Their studies have shown that reactive protocols perform better than proactive protocols.

Nilesh. P. Bobade & Nitiket. N. Mhala et. Al: The evaluates the performance of routing protocol with varying network size and simulation time.

Amandeep & Gurmeet Kaur et. al: the analyse the Performace of AODV Routing Protocol in MANET.AODV perform better in term of packet delivery ratio but delay & some packet loss is happen.

P. G. Arfaat and A.H. Mir: simulated the Wormhole attack in AODV in wireless Ad-hoc networks and MANET.

K. Singh, R. S. Yadav, and Ranvijay: they have analyzed to the behavior and the different of performance to matrices for MANETs using different protocols.

IV. OVER VIEW OF AODV, DYMO, TORA

A. AODV

(Ad-Hoc On-Demand Distance Vector**)** Ad-Hoc On-Demand Distance Vector (AODV) routing protocol is a reactive protocol. AODV of avoid these problems. AODV is to provide unicast, multicast, and broadcast of communication to ability.

a. Route Discovery

ADOV discovers of routers as the maintain routes of every node to every other. The routers are maintained and the packets send to destination. The destination of current route and the determine of routing table in checks.

1. If yes packets forward in to next hop node
2. If no discovery route process in to initiate.

Route discovery process is the creation of a route request packet (RREQ). The source node first to create it. The packets contains of source node IP address , source node current sequence number ,destination IP address , destination sequence number and broadcast ID. The unicasting and route reply to the source node (RREP). The routed in to reverse path of intermediate nodes with in forward path in to entire of destination route table. The route node from source to destination.

b. Route maintenance

A route is source and destination in to maintain of the source. The RERR messages are sent to other nodes. The RREQ messages of sending in destination and they affected source node to select sending data and a route discovery. The basic operations are route discovery and route maintenance.

B. DYMO (Dynamic Manet-On Demand Routing Protocol)

The dynamic Manet on demand routing protocol is a proposed in IETF internet Draft. It is a reactive protocol. It is a demand source to send data to destination. DYMO route discovery is similar to that of AODV path accumulation function. Route discovers is performance of source node to destination. And is route maintained is the performed. The routing table is reducing to the packet and any route break up or node failure conditions.

a. Route discovery

In this process of Route request in the network to find the target node.DYMO can work as reactive and proactive and both of the routing protocols. This protocol routing information in to active sources and destinations are maintained. The RREP in original node of target node from routes, in the both directions. If the routing table is does not originator contain is one created.RREQ of received in to address of node from the entry to next hop.

The Information of update in to RREQ.

b. Route maintenance

The routing operation is in every each node of has to maintain their routes and continuously the monitor and the links, recent updates and maintain within the routing tables. The RERR message is to be produced in to node, if a link of to any other breaks. The RERR found in the sequence number of greater than and equal to the sequence number.

RERR message is to nodes of which are concerned with the link failure. The entry is updated of routing table, so if the broken of link is deleted.

C. TORA-Temporally –Ordered Routing Algorithm

TORA is an algorithm for routing data in to wireless mesh networks or Mobile –Ad-Hoc-Networks. It was developed by Vincent Park and Scott Corson at the University of Maryland and the naval research laboratory. It is a source-initiated on-demand routing Protocol. TORA is a reactive, highly adaptive, and efficient of routing algorithm based on the link reversal. TORA is multi-hop wireless networks in to a dynamic mobile. TORA is maintains a directed acyclic graph of rooted at a destination. The no nodes of May have same height. TORA is two heights of included in to higher heights and lower heights. Set of ordered heights of at all times in to the totally of TORA. The main feature of TORA is that the Control messages are localized to a very small set of nodes.

The protocol performs three basic function is used:

1. Route creation
2. Route discovery
3. Route erasure

TORA has a unique feature Of maintaining multiple routes to the destination so that Topological changes do not require any reaction at all. The Protocol reacts only when all routes to the destination are Lost. In the event of network partitions the protocol is able to detect the partition. The nodes of maintain and routing information of about two adjacent nodes in and during erase of all invalid routes.

a. Route maintenance

Route maintenance in TORA has five different cases according to the flow chart below.

Example:

B is a downstream link to the destination and action is needed D-F, E-F the links of reverse. Node d is a propagates to the reference level. Node E now is the reflects of reference level. Node c just propagates the new reference level. The node A is a propagation level.

V. COMPARATIVE TABLE

	DYMO	AODV	TORA
Route discover y	RREQ process of initiate forwarding. The RREQ (route request) and RREP (route reply) are the control messages and routing messages in used to communication of forward.	Every node to ever other of routes maintains. The packets send to some destination. The current route to the destination of the routing table in checks.	The multiple routes to the destination so that Topological changes do not require any reaction at all. The nodes of maintain and routing information of about two adjacent nodes in and during erase of all invalid routes.

Route maintenance	RERR messages to all the neigbours in that particular route and will send the link failure. RERR messages in contain of IP address .the data and sending a new RREQ messages.	A RERR message is sent to other nodes. The data and sending or in reinitiate of route discovery for that new messages of RERR.	B is a downstream link to the destination and action is needed D-F, propagation level.
Packet delivery ratio	high	medium	high
Throughput	high	medium	high

a. Simulation

The portion describes the simulation results and the performance parameters used for comparison. The results have been simulated using NS2.34.

Simulation Table

Parameters Used	Value
Nodes Used	100
Terrain Area	750*800
Start Time	1 sec
End Time	100 sec
Packet Interval	2 sec
Simulation Time	20ms

VI. PERFORMANCE METRICS

The following performance metrics are used to compare the performance of the routing protocols in the simulation.

Throughput: It is the amount of data per time unit that is delivered from one node to another via a communication link. The throughput is measured in bits per second (bits/or bps).

Packet delivery ratio: It is defined as the ratio of number of packets received by the destination to that of the generated packets.

Comparative study

The figure 6.1 shows the throughput of DYMO, AODV and TORA which are closer to each other. This Indicate that the PDR of DYMO is better than other protocols with minimum number of packets. The PDR of DYMO is higher than other two On Demand protocols. It reduces packet delay.

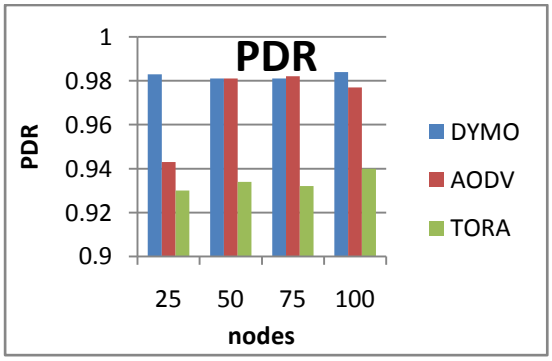

Figure 2: PDR of three protocols

The below figure 6.2, shows the throughput of the DYMO, AODV, TORA routing Protocol. They are closer to each other but DYMO effect of throughput is better than other on demand protocols. This Indicate that the throughput increases then compare to AODV and TORA.

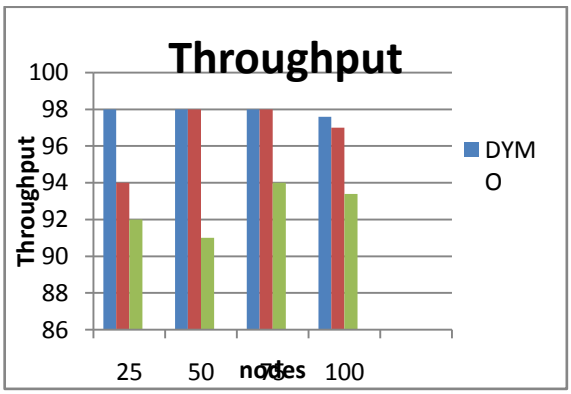

Figure 3: Throughputs of three protocols

CONCLUSION

Based on simulation and analysis it is established that DYMO ,TORA and AODV owing to their proactive and reactive protocols. DYMO exhibits low delay with better throughput and packet delivery ratio. It is support routers connected with internet to give fast access

References

[1] Mehdi Alilou, Mehdi Dehghan.t, Upgrading Performance of DSR Routing Protocol in Mobile Ad Hoc Networks, World Academy Of Science, Engineering and Technology 5, March 29 2005.

[2] Ian D. Chakeres and Charles E. Perkins.Dynamic MANET ondemand (DYMO) Routing protocol. Internet-Draft Version 4, IETF, March2006. draft-ietf- manet – dymo - 04.txt, (Work in Progress).

[3] C.E. Perkins, E.M. Belding-Royerand,I.D. Chakeres, Ad Hoc On-Demand Distance Vector (AODV) Routing, IETF Internet Draft,draftperkins-manet-aodvbis-01.txt, January 2004.

[4] C.E. Perkins and E. Royer, Ad hoc on-Demand distance vector (AODV) routing, in Proceedings of the 2nd IEEE Workshop on Mobile Computing Systems and Applications (WMCSA), February 1999, pp. 90–100.

[5] Ian D. Chakeres and Charles E. Perkins.Dynamic MANET on demand (DYMO) routing protocol. Internet-Draft Version 17, IETF, October 2006, (Work in

Progress). http://tools.ietf.org/html/draft-ietf-manet-dymo-17.

[6] Amitava Mukherjee, Somprakash Bhandyopadhyay, Debashis Saha. Location Management and Routing in Mobile Wireless Networks, Artech House Mobile Communication Series, ISBN 1-58053-355-8

[7] Elizabeth Belding-Royer, Ian Chakeres, David Johnson, and Charlie Perkins. DYMO – dynamic MANET on-demand routing protocol. In Rebecca Bunch, editor, Proceedings of the Sixty-First Internet Engineering Task Force, Washington, DC,USA, November 2004. IETF.

[8] Ian D. Chakeres and Elizabeth M.Belding-Royer. AODV routing protocol implementation design. In ICDCSW '04: Proceedings of the 24th International Conference on Distributed Computing Systems Workshops - W7: EC (ICDCSW'04), pages 698–703, Washington, DC, USA, 2004. IEEE.

[9] Koojana Kuladinithi, Asanga Udugama, Nikolaus A. Fikouras, and Carmelita G¨org. Experimental performance evaluation of AODV implementations in static environments. http://www.comnets.uni-bremen.de/~koo/AODV-Perf- ComNets.pdf