INTERNATIONAL JOURNAL FOR TRENDS IN ENGINEERING & TECHNOLOGY
VOLUME 3 ISSUE 3 – MARCH 2015 – ISSN: 2349 – 9303

Opportunistic Data Forwarding in Manet

Loganathan[1]
[1]Anna University Regional Centre, Coimbatore,
Computer Science and Engineering,
logaacs@gmail.com

Dr. M. Newlin Rajkumar[2]
[2]Anna University Regional Centre, Coimbatore
Computer science and Engineering

Abstract— A MANETs is a self-configuring network is a collection of mobile hosts that are connected via a wireless link. Opportunistic data forwarding has drawn much attention in the research community of multihop wireless networks. Opportunistic data forwarding is the lack of an efficient, lightweight proactive routing scheme with strong source routing capability. In this project proposed to a lightweight proactive source routing (PSR) protocol. PSR can be maintained at different network topology information than distance vector (DV), link state (LS), optimized link State routing (OLSR), then reactive source routing [e.g., dynamic source routing (DSR)]. In this project concentrate on reducing the overhead at the base line protocols, then testing to the better data transportation. Network Simulator (NS-2) help in testing and implementing to this project for effectively reduced to the overhead in the data transportation.

Index Terms— DSR, DV, Link State, OLSR, PSR

1 INTRODUCTION

A Mobile Ad Hoc Network (MANET) is a network consisting of a collection of nodes capable of communicating with each other without help from a network infrastructure. MANETs have following applications are the battlefield applications, rescue work, then civilian applications like an outdoor meeting, or an ad-hoc classroom. With the increasing number of applications to harness the advantages of Ad Hoc Networks, more concerns arise from security issues in MANETs.

There is not any gift fastened infrastructure, that's associate degree array of base stations, makes spontaneous networks speedily distinction to different wireless LANs. Communication from a mobile node is associate degree "infrastructure" network, like a mobile network, it's forever maintained by a hard and fast station, a mobile node in an ad-Hoc network will communicate directly with another node that's such that among its radio region. So as to transmit to a node that's settled outside its radio vary, knowledge area unit relayed over an associate degree array of intermediate nodes employing a store-and-forward "multihop" transmission principle. All nodes in an ad-Hoc network area unit needed to relay packets on behalf of different nodes. Hence, a mobile spontaneous network is typically conjointly referred to as a multihop wireless network.

An ad-hoc network is a wireless network formed by wireless nodes without any help of infrastructure. In such a network, the nodes are mobile and can communicate dynamically in an arbitrary manner. The network is characterized by the absence of central administration devices such as base stations or access points. Furthermore, nodes should be able to enter or to leave the network easily. In these networks, the nodes act as routers. They play an

Important role in the discovery and maintenance of the routes from the source to the destination or from a node to another one. This is the principal challenge to such a network.

If link breakages occur, the network has to stay operational by building new routes. The main technique used is the multi-hopping, which increases the overall network capacity and performances. By using multi-hopping, one node can deliver data on behalf of another one to a determined destination. The protocol used in multi hop packet radio network implemented based on the shortest path routing algorithm. Each node known as a neighbor node in then every network destination and information. An updated message consists of vector for one or more entries, each of which has specified the minimum distance to a given destination. Path forwarding algorithm is an attractive approach to wireless network because of they eliminating counting to infinity problem. PFA substantially reduces temporary looping situations and its limits are updated in the table.

2 METHODOLOGY

2.1 Wireless Routing Protocol

WRP DESCRIBES A MODEL OF THE NETWORK AS A UNIDIRECTIONAL GRAPH AS (V, E) WHERE, E IS THE SET OF

Links or edges, and V are the set of nodes. Each node represents as a route. The purpose of routing table used to updating each node connectivity, and its path and routing information. The update

- *Loganathan P is currently pursuing a masters degree program in Computer science and engineering (Spln. In. Networks) in the Regional Centre of Anna university, Coimbatore, India, PH-+91-9944333547. E-mail: logaacs@gmaill.com*
- *Dr. M. NewlinRajkuamr is currently working as assistant professor in Computer Science and Engineering in Regional Centre of Anna university, India,*

message may be corrupt (or) lost in the due to changes of connection the ACK packet is used to assure the information should be updated in the vector table.

(i) **Information update:**

The each routing node maintain the destination address and routing path information and link cost in separately. The routing table of a node is I, a vector with an entity for each know destination j.

The destination identifier

Destination of distance is (Dji¬)

The shortest path to j (Pj¬i)

The successor is (Sji)

(ii) **Exchange information:**

The routing table should be exchanged the information between each node. This called as the update message contains a following information.

The sending node identifier.

The sending node can have assign a sequence number.

The ACK information

(iii) Updating routing table

The routing node frequently updated the status of the routing table when detecting changes in the information based on the routing information based on a neighbor. In order to update and the ACK entry to the message.

2.2 CORMAN

The CORMAN standing as the cooperative opportunistic routing, mobile ad-hoc networks. It is a solution to the opportunistic data forwarding in the mobile ad hoc network. CORMAN forwards knowledge during a similar batch operated fashion as EXOR. A data packets follow can be divided into the batch. All packets carry the same batches and forward when leaves source node. CORMAN support underlying the proactive source routing protocols PSR provides the complete details about all other nodes in the network.

2.3 Background

The routing algorithm responsible for forwarding the data packets to the destination, and then provide the optimal solutions to the over the network. All the routing protocols maintain the status of the routing status of the routing information in the network. The different routing algorithm is used based on the routing requirements and find the path to the one node to another. The two types of routing algorithm are used to the data forward link state and distance vector algorithm.

2.4 Link State Algorithm

In this approach router maintain the whole details and view of the network topology and the cost associated with the each link. Here topology information is frequently updated. Link State algorithms are basically free of long term loops. The router may not allow the view of the network topology.

2.5 Distance Vector Algorithm

Distance vector algorithm here used for several pocket switched networks such as ARPANET. In this algorithm know to the length of the shortest path (distance) to the each neighbor to every destination in the network and uses this information to compute its own distance and the next routes to each destination

2.6 Reactive Routing Protocol

The routing protocols were designed to reduce the overhead in proactive protocols by maintaining information. The routes determine and maintained for a particular destination. The source node and each routed nodes to carry the complete destination address. Therefore, each node forwarding the data packet to the networks. The largest networks are not performing these operations in, well this is a one of the Drawback.

2.7 AdHoc Demand Distance Vector (AODV)

AODV is implemented based on the DSDV and DSR algorithm. It can have used to periodic and the sequence number procedure of DSDV and similar disadvantage in DSR, AODV have less overhead than DSR.

2.8 Dynamic Source Routing

It requires full address in the each packet from the source to destination. That this not effective in the large network. DSR requires discovery the source and destination address to the each device during the rioting. The information about path is cached by every node processing the route distance packets. This protocol used to react, it terminates the necessity of network flood in periodically. On On-demand approach, a route is created only when it is necessary to find routes to all other nodes. The intermediate nodes conjointly utilize the route cache info expeditiously to scale back the management overhead.

3 ROUTING OVERHEAD

Delay refers to the time taken by packets transmitting source to destination. OLSR has the lowest delay as it is a proactive routing protocol, which means routes in the network are always available wherever, the application layer has a traffic to transmit, periodic routing updates keep fresh routes available for the use. In AODV hop to hop helps to reduce the end to end.

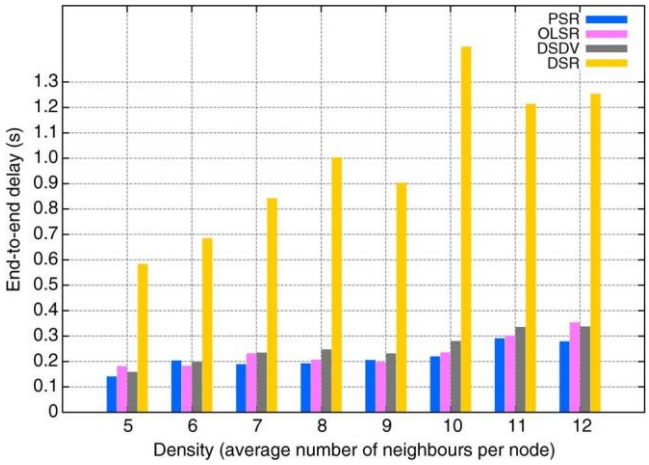

Fig1 Delay

Throughput The amount of throughput is all cases are highest for OLSR as compared with alternative protocols as promptly, on the market for the information to be sent from supply to destination, the number of Outturn for TORA is higher at begin from AODV and DSR just in case of ten and thirty nodes however it falls throughput curve because the mods begin moving. AODV performs higher in the network with comparatively high numbers of traffic supply and better quality. The DSR's outturn is incredibly low within the network altogether the cases.

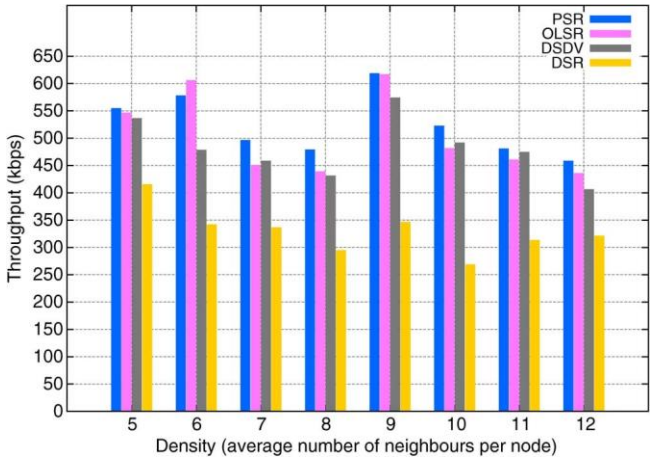

Fig2 Throughput

4 PATH FINDING ALGORITHM

Path finding algorithm eliminates the infinity counting problem. The predecessor information can be used to infer an implicit path to a destination, using this path information, routing loops can be detected, the predecessor information is used to entry the each distance in the routing table.

The distance entry from me to destination j through a neighbor k; D¬k¬ij, predecessor hk¬¬ij=h. Each node maintains a distance table, routing table and link cost table at node I am a matrix containing the distance (Dijk) and predecessor (Pijk) entries for all destinations through all its neighbors (k). When a node I receive an update message from its neighbors k regularly destination j. The distance and the predecessor entries in the distance table are updated. The unique feature of PFA is the node j also determine if the path to destination j through any of its other neighbors {b€ Ni/≠k} includes node b includes node k. If the path of predecessor information reported by node b includes node k, then distance entry of that path is also updated as Dijb=Dikb+Dkjand the predecessor is updated as Pijb=Pkj.

Neighborhood- The PSR broadcast message as hell to node to identify two other nodes are neighbors. Neighbor when lost its contribution to the connectivity of networks is should be released and this process is called as neighbor trimming. Consider node i. The trimming process done at i about neighbor j either by following case.

There is no data packets has been received from this neighbor in given time.

Data transmission to node j has failed, then reported to link layer.

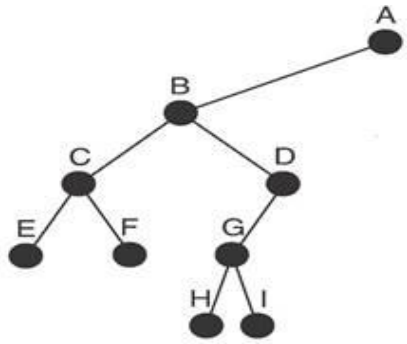

Fig3 Neighborhood

Node j represented by:

First update N (j) with N (i) -{j}

Constructing the union graph with the information of I.

5 SIMULATION ENVIRONMENT

The routing algorithm performance evaluated by simulations. The simulation results of these algorithms have been compared with that of dual and an ideal link state algorithm (ILS), it can be Dijkstra's shortest path algorithm. The actor based simulation can be developed and simulation language called Drama, with a network library, in this library treated both links and routers are actors. Link recovers and failure is simulated by sending a link state message to the routes and to the end to end path. All simulations are performed for unit propagation time. If the links fail, the packets are dropped.

6 RESULTS

The performance of PFA has been compared and with DBF, Dual and ILS. The simulations were from to several network topology, for the routing algorithm under considerations, there is only 1 shortest path between a supplier and destination, try and that we don\'t think

about null ways from a source and destination pair and we do not consider null paths from a route to itself.

7 CONCLUSION

Finally opportunistic data forwarding in this paper we implement to path implementation and the proposed to neighborhood trimming and routing updates in future works.

REFERENCES

[1] Al-Rabayah M and Malaney R, (2012), "A new scalable hybrid routing protocol for VANETs," IEEE Trans. Veh. Technol., vol. 61, no. 6, pp. 2625–2635.

[2] Biswas, S and Morris R, (2005), "ExOR: Opportunistic multi-hop routing for wireless networks," in Proc. ACM Conf. SIGCOMM, Philadelphia, PA, USA, pp. 133–144.

[3] Behrens J and Garcia-Luna-Aceves J J, (1994), "Distributed, scalable routing based on link-state vectors," in Proc. ACM Conf. SIGCOMM, pp. 136–147.

[4] Chen Y P, Zhang J, and Marsic I, (2009), "Link-layer-and-above diversity in multi-hop wireless networks," IEEE Commun. Mag., vol. 47, no. 2, pp. 118–124.

[5] Clausen T and Jacquet P, (2003), "Optimized Link State Routing Protocol (OLSR)," RFC 3626, Oct. [Online]. Available: http://www.ietf.org/rfc/rfc3626.txt

[6] Johnson D B, Hu Y -C, and Maltz D A, (2007) "On The Dynamic Source Routing Protocol (DSR) for mobile ad hoc networks for IPv4," RFC 4728. [Online]. Available: http://www.ietf.org/rfc/rfc4728.txt

[7] Larsson P, (2001) "Selection diversity forwarding in a multihop packet radio network with fading channel and capture," ACM Mobile Comput. Commun. Rev., vol. 5, no. 4, pp. 47–54.

[8] Murthy S and Garcia-Luna-Aceves J J, (1996) "An efficient routing protocol for wireless networks," Mobile Netw. Appl., vol. 1, no. 2, pp. 183–197.

[9] Murthy S, (1996) "Routing in packet-switched networks using path-finding algorithms,"Ph.D. Dissertation, Comput. Eng., Univ. California, Santa Cruz,CA, USA.

[10] Perkins C E and Bhagwat P, (1994) "Highly dynamic Destination-Sequenced Distance-Vector Routing (DSDV) for mobile computers," Comput. Commun. Rev., vol. 24, pp. 234–244.

[11] Perkins C E and Royer E M, (2003) "Ad hoc On-Demand Distance Vector (AODV) routing," RFC 3561, [Online]. Available: http://www. ietf.org/rfc/rfc3561.txt

[12] Rajaraman R, (2002) "Topology control and routing in ad hoc networks: A survey," ACM SIGACT News, vol. 33, no. 2, pp. 60–73.

[13] Wang Z, Chen Y, and Li C, (2014) "PSR: A Lightweight Proactive Source Routing Protocol For Mobile Ad Hoc Networks," IEEE Trans. Veh. Technol., vol. 63, no. 2, pp. 859–868.

[14] Wang Z, Chen Y, and Li C, (2012) "CORMAN: A novel cooperative opportunistic routing scheme in mobile ad hoc networks," IEEE J. Sel. Areas Commun., vol. 30, no. 2, pp. 289–296.

[15] West D, (2000)Introduction to Graph Theory, 2nd Ed. Upper Saddle River, NJ, USA: Prentice-Hall.