PDR AND ENERGY BASE ROUTING PROTOCOL AOMDV IN MANET

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Abstract: In Mobile Ad hoc Network (MANET) all the nodes are mobile in nature having limite battery capacity that is called energy. Because of the dynamic behavior of network link are not maintained for long time. All nodes in network are energy dependent and efficient energy utilization is one of the important issues in MANET. Our Work is towards a new performance based energy efficient scheme with AOMDV protocol. In this scheme energy dependent nodes are do routing with AOMDV protocol by using shortest path. Nodes in network are not intimated about their energy status, for that remove the suddenly link breakage. If the nodes in network are know about the energy status and also about the status of location of receiver that reduces the energy consumption with better throughput. The main aim of proposed scheme is to improve the performance of network by using improvement in AOMDV protocol. Simulation can be done by using ns-2 simulator, omnet, opnet, omnet++ or netsim to reduce energy consumption with better packet delivery ratio. The performance is measure on the basis of performance parameter like Routing Protocol, Simulation time, Traffic type (TCP & UDP), Packet size, Node movement at maximum Speed, Transmission range, Contention Window, CPU Utilization, Transmission Energy, Receiving Energy, Idle Energy Consumption, Sleep Energy Consumption, Normal Routing Load and Packet Delivery Ratio

Index Terms: AOMDV, better energy and throughput, wireless ad-hoc network, MANET.

I. INTRODUCTION

Wireless ad-hoc network can be characterized by various categories like Mobile ad-hoc network, Vehicular ad-hoc network and wireless sensor network. A variety of widely differing techniques and methodologies for scheduling processes of saving energy with better throughput have been proposed. There are various protocols available to improve energy with better throughput. These protocols are mainly classified into three different types: Reactive protocol, Proactive protocol, and Hybrid protocol. Reactive protocol also called as on demand routing protocol. Reactive protocol is based upon some sort of request –reply dialog. Reactive protocol is better than the proactive protocol. For example reactive protocols are AODV, EEAODV etc. In the proactive protocol all the nodes maintains the information about the next node. All the nodes of any protocol have to depends on its entire to its adjacent nodes. Hybrid protocol is based upon distance vector protocol but contain many features and advantage of link state protocol. The main goal of most of the protocols is to equalize the workload among the nodes by minimizing the energy requirement, increasing the network capacity, minimizing communication delays, maximizing resource utilization and maximizing throughput The main goal of MANET is to increase the mobility into the realm of autonomous, mobile and wireless domains, where a set of nodes form the network routing infrastructure in an ad-hoc structure. We also focus on the improvement of the PDR of the network by providing higher cpu utilization in the network. The table for the PDR will maintain the information of the destination routing path. The next packet forwarding path should be selected on the basis of node having higher residual energy with shortest path in descending order to improve the throughput of the network. After this selection, a new route with maximum residual energy is selected to forward rest of the data packets. These results in the improvement of the individual node's battery power consumption and enhance the entire network lifetime.
So the network always works better for the nodes with higher residual energy with shortest path.

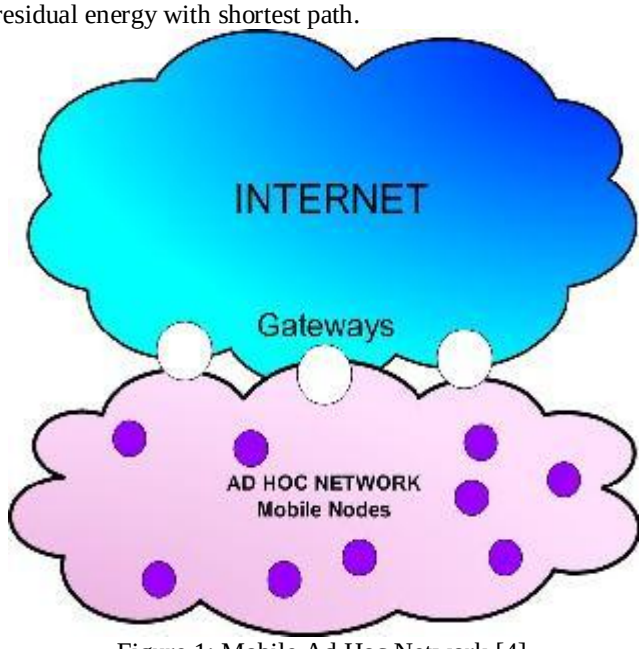


Figure 1: Mobile Ad Hoc Network [4]

II. RELATED WORK

In Wireless ad-hoc network, energy efficiency and throughput have gained interest among researchers and lots of work had been done in this regard to provide better network with each node having advanced advantages.

International journal of engineering research and applications (IJERA)," Energy Efficient Load Balancing Approach to Improve AOMDV Routing in MANET", Bhavna Sharma, Shaila Chugh, Vismay Jain ,2014.[1]
Functional Description: The author has given simulation results shows that the proposed EEBL protocol has better delivery ratio and throughput with less delay and with more energy consumption when compared with existing AOMDV Protocol.
Conclusion: EELB protocol overcomes the disadvantages of existing multicast congestion control protocols which depend on individual receivers to detect congestion and adjust their receiving rates. Because of the on-the-spot information collection and rate control, this scheme has very limited control traffic overhead and delay. Moreover, the proposed scheme does not impose any significant changes on the queuing, scheduling or forwarding policies of existing networks. Simulation results have shown that our proposed protocol has better delivery ratio and throughput with less delay and energy consumption when compared with existing protocol and the performance is better than existing multicast congestion control protocols. EELB concluded that energy efficient and congestion control for multicasting in mobile ad-hoc networks works far better than multicast congestion control protocols in giving more lifetimes to the network.

International joint conference on information & communication technology," QoS Enhancement of AOMDV Routing Protocol using Queue Length Improvement", Abhinav Vidwans, Ajit Kumar Shrivastava, Manish Manoria,2014.[2]
Functional Description: This paper survey aims to improve the QoS performance of AOMDV protocol and is called Enhanced AOMDV (EAOMDV) on the basis of queue length, which enhances the routing capability of AOMDV protocol. In this technique the queue length has handled the data and network performance has improved. The performance of both the protocol has been measured on the basis of performance metrics and packet loss.
Conclusion: The multipath routing AOMDV has improved the routing capability and handled the load of network more efficiently to improve the QoS in MANET dynamic mobility environment. The proposed queue based approach has handled the data more efficiently and improved the routing performance. The proposed Enhanced (EAOMDV) multipath routing protocol has improved routing capability on the basis of queue length

Journal of information, knowledge and research in computer engineering," A Scenario Based Simulation Analysis and Performance Evaluation of Energy Efficiency Enhancement of Routing Protocols in MANET", Bhabani Sankar Gouda, Chandan Kumar Behera, Ranjit Kumar Behera,2013.[3]
Functional Description: In MANETs, the nodes make the mobile and battery operated. Since the nodes have limited battery resources and multi-hop routes are used over a changing network environment due to behavior of the node mobility, it requires energy aware efficient routing protocols to limit the power consumption, make longer the battery life time and to improve the robustness of the system.
Conclusion: From this paper I conclude that AOMDV consumes minimum energy compared to other routing protocols. It also proposed routing protocol EAOMDV in order to sense of balance the traffic load among diverse nodes according to their capacity of nodal residual battery and make longer the individual node's lifetime and thus the entire system lifetime. Simulation results shows that the EAOMDV protocol is performing well compared to the existing routing protocols.

III. AD-HOC ON DEMAND MULTIPATH DISTANCE VECTOR ROUTING PROTOCOL

One of the most commonly used AOMDV is a multipath routing protocol provides loop-free extension to another multipath routing protocol AODV. [6] AOMDV with a route tables contain a list of paths for each destination, to support multipath routing. All the paths have the same destination sequence number to a destination. All the routes with the old sequence number are removed, once a rout advertisement with higher sequence number is received. Two additional fields, hop count and last hop, are stored in the route table entry to help address respectively the problems of loop freedom and path disjointness. The loop freedom guarantee from AODV is no longer required here, because the multipath routing protocol implement multipath discovery. [6] In AOMDV, RREQ propagation from the source towards the destination establishes multiple reverse paths both at intermediate nodes as well as the destination. Multiple RREPs traverse these reverse paths back to form multiple forward paths to the destination at the source and intermediate nodes. Note that AOMDV also provides intermediate nodes with alternate paths as they are found to be useful in reducing route discovery frequency[9]. The core of the AOMDV protocol lies in ensuring that multiple paths discovered are loop-free and disjoint, and in efficiently finding such paths using a flood-based route discovery.[22] AOMDV having two table fields hop count field and last hop field, in which hop count field initialized once at the time of the first advertisement for that sequence number and contains length of the longest path for a specific destination sequence number. That's why hop count field remain unchanged till a path for a higher destination sequence number is received. To ensure disjointness of that path in the route table, a node discards a path advertisement that has either a common last hop or a common next hop as already stored in the route table.

IV. PROBLEM STATEMENT

AOMDV Protocol will provide an efficient value of energy but it will not provide higher throughput because there will be an unnecessary flooding in the network in order to improve the performance of AOMDV protocol we should have some algorithm to improve Energy consumption and packet delivery ratio of the network and other parameters.

V. PROPOSED ALGORITHM

1) Generate test traffic through TCL script
2) Analysis trace file for finding drop reason and improving network performance
3) If (drop_reason==collision)
{
Set MAC = CSMA/CA
Send RTS and CTS message and avoid collision;
}
Else if (drop_reason ==MAC Busy)
{
Set routing = AOMDV;
}
Else if (route ==Null)
{
wait for next RTT
}
Else if (queue_limit ==max)
{
Sender use alternative path and send data to destination;
}
4) Create updated TCL script
5) Set mobile node = M;
6) Set MAC = CSMA/CA
7) Set RP = AOMDV
8) Compute_Route (S,R, rr)
If(next hop != null && radio range<=250)
{
create rtable;
Forward (route packet)
If (receiver ==true)
{
Receives route packet;
Send's acknowledgment through each existing path;
}
Else
{
node out of range

}
9) Analyze updated trace file
10) Stop analysis

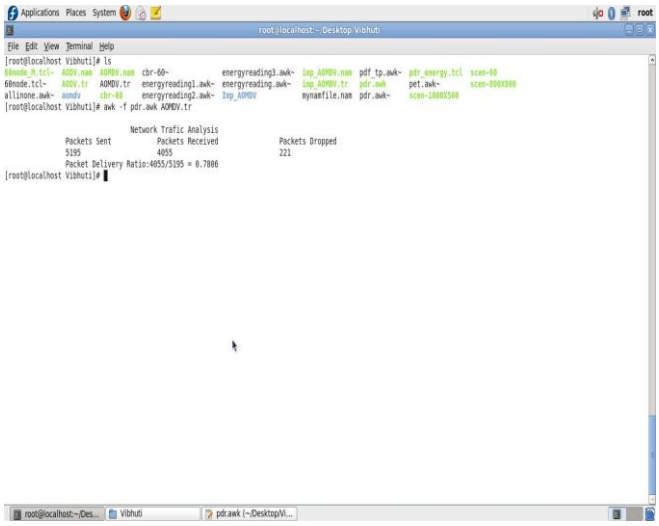
VI. IMPLEMENTATION STRATEGY

A network simulator is software or hardware that predicts the behavior of a computer network without an actual network being present Different types of network simulators can be categorized and explained based on some criteria.

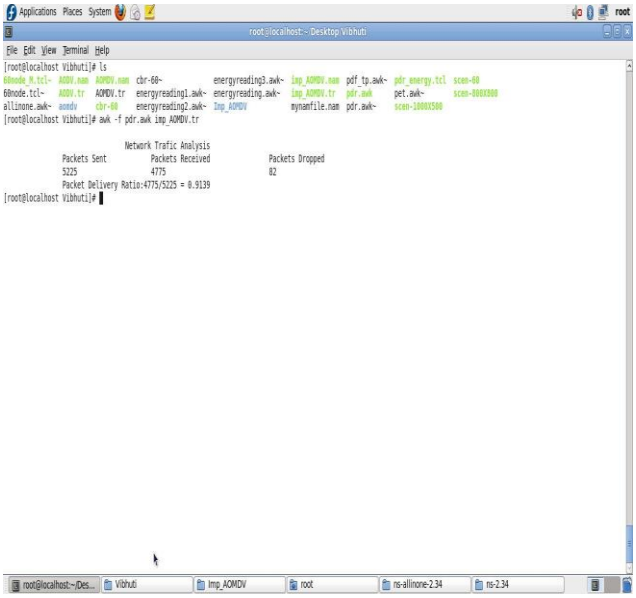
Some of the network simulators are commercial which means that they would not provide the source code of its software or the affiliated packages to the general users for free. Ex OPNET.

On the contrary, the open source network simulator has the advantage that everything is very open and everyone or organization can contribute to it and find bugs in it. Ex. NS2, NS3,OMNET++.

VII. IMPLEMENTATION RESULT



1. The information of the performance of AOMDV protocol with PDR



2. The information of the performance of Improved AOMDV protocol with PDR

VIII. CONCLUSION AND FUTURE REFERENCES

There are various algorithms available for energy efficiency but very few works better with other parameters like packet delivery ratio, Energy Efficiency. The proposed work can be useful to improve values of multiple parameters of the network in multipath routing environment.

Due to less number of packets dropped in proposed multipath routing so it becomes necessry to control the load of the network.

AOMDV consumes minimum energy compared to other protocol. It also proposed routing protocol EAOMDV in order to sense of balance the traffic load among diverse nodes according to their capacity of nodal residual energy and make longer the life time of nodes as well as entire system

REFERENCES

[1] Fourth International Conference on Communication Systems and Network Technologies" Energy Efficient Load Balancing Approach to Improve AOMDV Routing in MANET" Bhavna Sharma, Shaila Chugh, Vismay Jain,2014
[2] International Journal of Computer Science and Management Research" A NOVEL Approach for Efficient Routing In AOMDV Protocol" MR. SAGAR J. DHOLARIYA, #2 MR. DHAVAL B. PATEL, *3 PROF. NAREN V. TADA
[3] Performance Evaluation of Dynamic-Power AODV, AOMDV, AODV and DSR Protocols in MANETs" Alwi M Bamhdi and Peter J. B. King
[4] Fourth International Conference on Communication Systems and Network Technologies" QoS Enhancement of AOMDV Routing Protocol using Queue Length Improvement" Abhinav Vidwans, Ajit Kumar Shrivastava, Manish Manoria.
[5] International Journal of Advanced Research in Computer Science and Software Engineering," Survey Paper on Energy Efficient Routing Protocol in MANET", Anu Kumari ,Arvind Kumar ,Akhil Sharma,2013.
[6] IOSR Journal of Computer Engineering (IOSR-JCE),"A Research Paper on Comparison between Energy Efficient Routing Protocol with Energy and Location in MANET",Ruchi Gupta, Akhilesh A.Waoo, Sanjay Sharma and P. S Patheja ,2013.
[7] International Journal of Computer Science Issues,"Design of an Energy Efficient Routing Protocol for MANETs based on AODV" ,Annapurna P Patil, Dr K Rajani kanth , BatheySharanya, M P Dinesh Kumar, Malavika J,2011.
[8] International Journal of Computer Science Issues,"A Review of Power Conservation in Wireless Mobile Adhoc Network " , Neeraj Tantubay, Dinesh Ratan Gautamand Mukesh Kumar Dhariwal,2011.
[9] LSR-IMAG laboratory grenoble, france" idle sense: an optimal access method for high throughput and fairness in rate diverse wireless lans".
[10] International Journal of Modern Engineering Research (IJMER),"Enhanced Energy Aware Geographic Routing Protocol in MANET:"Gaurav Sachan, D.K.Sharma, Karishma Tyagi, Abhimanyu Prasad, 2013.
[11] International Journal of Computer Science Issues, "A Performance Comparison of Network Simulators for Wireless Networks" Atta ur Rehman Khana, Sardar M. Bilalb, Mazliza Othman, 2012
[12] A Survey Paper," Analysis and Comparison of different wireless network simulators" Vinita Mishra Smita Jangale,2011
[13] International Journal of Computer Networks and Wireless Communications (IJCNWC), Sujata V. Mallapur, Siddarama . R. Patil,2012
[14] A Survey Paper," A Distance Routing Algorithm For Mobility (DREAM)" Stefano Basagni, Imrich Chlamtac, Violet R. Syrotium.,2012
[15] International Journal of Computer Applications, "Traffic based Energy Consumption Analysis of AOMDV Protocol in a Mobile Ad Hoc Network", S. Malini, E. Kannan, A. Valarmathi, C. Daniel Sundar Rajan, 2011
[16] International Journal of Recent Trends in Engineering, Energy Efficient Ad Hoc On Demand Multipath Distance Vector Routing Protocol, GETSY S SARA, NEELAVATHY PARI.S, SRIDHARAN.D, November 2009
[17] Journal of scientific research, Energy Efficient on–demand Multipath Routing Protocol for Multi-hop Ad Hoc Networks, Yumei Liu, Lili Guo,Huizhu Ma,Tao Jiang,2012.
[18] Ruchi Gupta, Akhilesh A.Waoo and Dr. Sanjay Sharma, "A Survey of Energy Efficient Location Based Multipath Routing In MANET" in IJCA, Dec 2012.
[19] Jaya Jacob and V. Seethalakshmi, "EFFICIENCY ENHANCEMENT OF ROUTING PROTOCOL IN MANET" in IJAET, May 2012.
[20] Stefano Basgani, Irnrich Chlamtac and Violet R. Syrotiuk, "A Distance Routing Effect Algorithm for Mobility (DREAM)".
[21] H.Vijayakumar , M.Ravichandran "Efficient Location Management of Mobile Node in Wireless Mobile Ad-hoc Network" in Proceedings of the National Conference on Innovations in Emerging Technology-2011.
[22] Shwaita Kodesia and Asst. Prof. Prem Narayan Arya, "A REVIEW OF ENERGY EFFICIENT ROUTING PROTOCOLS FOR MOBILE AD-HOC NETWORK", in JGRCS, May 2012.
[23] Farukh Mahmudur Rahman, Mark A Gregory, "Quadrant Based Intelligent Energy Controlled Multicast Algorithm for Mobile Ad Hoc Networks", ICACT2011.
[24] Hua Chen, Hui Xu, Ting Zhang, Baolin Sun, "Performance of Network Coding in Ad Hoc Network Multipath Routing Protocol", IEEE 2012.

