



---

# **Analysis of Energy Sustainable Multipath Location Based EL-DMR Routing in MANET**

**Rituraj Jha<sup>1</sup>, Dr. Sadhna K. Mishra<sup>2</sup>**

<sup>1</sup>M. Tech. Scholar, <sup>2</sup>Head & Professor

<sup>1,2</sup>Department of Computer Science & Engineering, LNCT, Bhopal, M.P. (India)

**Abstract:** *A mobile ad hoc network (MANET) is a group of mobile nodes that communicate with each other without a central server or fixed infrastructure. In MANET, each node has a routing capability, but their mobility speeds are random, and due to this, it is difficult to find out the location of mobile nodes. This means that most of the energy of nodes is wasted in flooding. Energy is one of the important constraints in MANET because no source is available for battery charging if it discharges. The nodes with DREAM have a means of disseminating and collectively updating the location table entries for each other, behaving as a proactive protocol. In this paper, we propose a new Energy sustainable Location Dream Multipath Routing (EL-DMR). In this research, the AOMDV protocol is used with the location-aware Dream protocol to enhance the energy efficiency.*

**Keywords:** Routing, Multipath, Location, Energy, EL-DMR, MANET.

## **Introduction**

Ad hoc cellular networks (MANET), which are a type of flexible, independent cellular network that can be set up and changed quickly without infrastructure support and central administration, are a promising way to help with communication [1]. Nodes that are on wheels can move from one place to another.

Mobile nodes can connect to each other without help from a central administration. The nodes in the networks use an equivalent direct access channel that works together in a very user-friendly way to take part in the transmission of multiple hops. The network node is both a host and a router that sends and receives information to and from other network nodes. In a MANET with too much freedom, each device can move independently in any direction and change its connections to the other nodes in a normal way. Everyone must route traffic that doesn't involve them, so everyone must be a router. Since wireless networks were invented, it has been hard to route in a MANET.

## **II. LITERATURE REVIEW**

In this section describe about various existing system of MANET energy and location based routing to improve the MANET service i.e. energy issue, location. Here those are work in the field of MANET service improvement.

Gaurav Soniet.al.[1]“A Multipath Location based Hybrid DMR Protocol in MANET” Based on the hybrid location in MANET, we came up with DREAM Multipath Routing(DMR) for this study. DREAM is an acronym for: It improves the way that multiple routes are routed by keeping track of the locations of the mobile nodes. The DREAM protocol cuts down on extra work by sending packets. This



also cuts down on network delays in MANET. The proposed DMR works better than the usual AOMDV. Route the dream is to keep the information about where how fast the nodes can move. The expected chances of a node Movement is figured out, as is the flooding of routing packets. Minimized Flooding of packages occurs at the appropriate location. Where they are going. The position of the number of nodes moves. The Dream works on each node, and it works all the time. Each node It stores the location information of all nodes in the area.

Sudhir Ketal.[8] Proposed routing solutions based on reinforced learning(RL) for situations in which the locations of nodes change over time. It has been shown that solutions based on reinforcement learning work better than algorithms that don't change. Static algorithms can't change when things change ,but RL-based solutions can adapt to the changes and reduce the average time it takes for a packet to be delivered .The RL-based algorithm is based on the rewards and punishments you get for doing things. There ward step is saved so that it can be used later.But the analysis is done for new cases, so the learning algorithm is always being updated.

Obaidat M.etal.[10]is a single-route version of the AODV routing protocol.T hese are problems that make it hard to figure out how long a route will take. The proposed method sets up the relationship between the PHY, MAC, and routing levels to get information about the communication channels and lines and creates an update package that takes less time to keep these to routes in a good state. Nodes set up a separate path based on what will take the least amount of time.

Kashyap I. et al. [11] came up with a multipath routing protocol (Location-BMP) for special mobile networks that is based on the locations of nodes that don't overlap. In the RREQ route request packet, the nodes mark both where they are and how far away they are. Based on the MP-RREQ it receives, the destination chooses a set of route nodes that are not

connected to each other and sends an MP-RREP route response packet. This allows routes with fewer hops and broadcast numbers to be found.

Arora N. et al. [12] try to choose the next step for packet transmission with fewer calculations, which leads to the GLAAR protocol (Adaptive Geographic Location Routing). GPS shows where the location is on earth. Depending on where the nodes are, GLAAR allows communication with the fewest possible jumps, which makes calculations easier. So, it makes things more efficient in terms of finding routes, using resources, and using bandwidth.

Abdoos M. et al. [13] came up with the "MRF" routing protocol, which is a better version of the "Greedy" routing protocol. The Strategy for the Nearest Neighbor Packet Depending on the distance metric in Greedy, it may not work in all situations, like when the speed of the nearest node is high or when there isn't much power left from the nearest node. In addition to the distance metric, the MRF function uses a combination of speed and power metrics to find the closest node for forwarding packets. This reduces the number of lost packets. A balanced set triangle optimization algorithm is used to group things in STRM. Based on performance indicators, the cluster header is chosen as the node with the most confidence (CH). Lastly, the multiple decision algorithm Please choose the best route.

Sungwook K et al. [14] came up with a plan for how to route a number of simulated annealing routes. The plan comes up with a good way to deal with the conflict on a special mobile network. Using the simulated annealing (SA) method, traffic is loaded based on how well the route can change. Each node can make its own routing decisions and use an adaptive control system to find the best path.

### **III. Conclusion**

Nodes of Mobile Ad hoc Network (MANET) generally rely on batteries (or exhaustive energy sources) for power. Since these energy sources have



a limited lifetime, power availability is one of the most important constraints for the operation of the ad hoc network. Communication is one of the main sources of energy consumption. Energy efficiency utilization is one of the major issues in MANET. In this research, proposed an Energy sustainable Location Dream Multipath Routing (EL-DMR) for establish strong connection among the source and destination in MANET. The location information of nodes reduces the extra overhead to forward the route request and take reply from the nearby node to establish connection with destination. The location information sustains by DREAM protocol and also update the location after every change in routing table. The main aim of a proposed EL-DMR protocol is to enhance the energy utilization for and reduces overhead in routing. The performance of EL-DMR protocol is better than the existing energy-based AOMDV and Hybrid DMR routing protocol. The performance results indicate that the proposed scheme is quite adaptive for energy-efficient communication in MANETs. The PDR performance of EL-DMR is 93% and hybrid DMR is 87%. Proposed approach shows the enhancement of 5% but this gap is huge if compare with E-AOMDV protocol. The throughput evaluated in Kbps and proposed EL-DMR through is 1200Kbks which is 400Kbps more than the previous approach. The performance of the energy-based multipath protocol is better in term of overhead and delay. The difference in packets receiving is more than 2000packets. That multipath reduces the route discovery latency and the overheads.

**References:**

- [1] M. Tarique, K.E. Tepe, S. Adibi, S. Erfani, "Survey GauravSoni et.al. "A Multipath Location based Hybrid DMR Protocol in MANET" (ICETCE-2020of Multipath Routing Protocols For Mobile Ad Hoc Networks," Journal of Network and Computer Applications, Vol. 2, No. 6, Pp. 1125–1143, 2009.
- [2] Manu J Pillai, M P Sebastian, S D Madhu kumar, "Dynamic Multipath Routing for MANETs – A QoS

Adaptive Approach" 978-1-4799-0048-0/13/\$31.00 ©2013 IEEE.

[3] Chengyong Liu, Kezhong Liu, Layuan Li, "Research of QoS-aware Routing Protocol with Load Balancing for Mobile Ad-hoc Networks", WiCom' 08, 4<sup>th</sup> International Conference on Wireless communication, 2008.

[4] Yi, J., Adnane, A., David, S. and Parrein, B., "Multipath optimized link state routing for mobile ad hoc networks", Ad- Hoc Networks 9, pp-28-47, 2011.

[5] G. Vijaya Lakshmi Dr. C. Shoba Bindhu, "Congestion Control Avoidance in Ad hoc network using queuing model", International Journal of Computer Technology and Applications, pp 750-760, vol 2, Issue 4, 2011.

[6] Vijayaragavan Shanmugam and Duraiswamy Karuppaswamy "An Analysis of Power Aware Congestion Control Multipath Multicast Protocol for Mobile Ad hoc Network", Journal of Computer Science, pp 1381-1388, 2010.

[7] Sudhir K. Routray, Sharmila K. P., "Routing in dynamically changing node location scenarios: A reinforcement learning approach", Third International Conference on Advances in Electrical, Electronics, Information, Communication and Bio-Informatics (AEEICB), 2017.

[8] A. K. Phulre, M. Kamble and S. Phulre, "Content Management Systems hacking probabilities for Admin Access with Google Dorking and database code injection for web content security," 2nd International Conference on Data, Engineering and Applications (IDEA), 2020, pp.1-5, doi: 10.1109/IDEA49133.2020. 9170655.

[9] S. Phulre, P. Gautam and S. K. Mishra, "Implementation of trusted multitier method for intrusion detection in mobile ad hoc networks with DSR algorithm," 2014 Science and Information



---

Conference, 2014, pp. 666-673, doi:  
10.1109/SAI.2014.6918258.

[10] P. S. Tomar, S. Phulre and M. Shrivastava, "Impact of Varying Physical Links on QoS of Virtual Topology Management in WDM Networks," 2021 10th IEEE International Conference on Communication Systems and Network Technologies (CSNT), 2021, pp. 74-80, doi: 10.1109/CSNT51715.2021.9509699.

[11] S. Sangulle, Sunil Phulre, "Sentiment Detection Using Fish Optimization Genetic Algorithm", International Journal of Engineering Trends and Technology Volume 68 Issue 12, 140-145, December 2020 ISSN: 2231 – 5381 /doi:10.14445/22315381/IJETT-V68I12P223.

[12] Sunil Phulre, "WSN Energy Optimization Using Intelligent Water Drop Genetic Algorithms", International Journal of Advanced Research in Engineering and Technology (IJARET) Volume 11, Issue 12, December 2020, pp.2449-2462, DOI: 10.34218/IJARET.11.12.2020.231, ISSN Print: 0976-6480 and ISSN Online: 0976-6499.

[13] Sukhlal Sangule,, Sunil Phulre "A Survey on Digital Content Sentiment Features and Techniques", International Journal of Computer Sciences and Engineering, Vol.8, Issue.3, Mar 2020 E-ISSN: 2347-2693.

[14] Suhlal Sangulle , Sunil Phulre "Sentiment Detection Using Genetic Feature Vector And Neural Network Model" International Journal of Advanced Research in Engineering and Technology (IJARET) Volume 11, Issue 12, December 2020, pp. 2726-2734,