

**GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES**  
**REVIEW OF REDUCING ENERGY CONSUMPTION USING ROUTING PROTOCOL**  
**BY DETECTING MALICIOUS NODES IN MANET**

**Md Minhajul Islam<sup>\*1</sup> & Dr. Ravindra Kumar Gupta<sup>2</sup>**

<sup>\*1</sup>Student, Dept. of Computer Science Engineering, SRK University Bhopal, Madhya Pradesh, India

<sup>\*2</sup>Asst. Professor, Dept. of Computer Science Engineering, SRK University Bhopal, Madhya Pradesh, India

---

**ABSTRACT**

Mobile ad-hoc networks are network infrastructure that is used for communication between two or more nodes without a common access point. It is a node's assembly which shapes the emerging topology through a remote medium. In versatile specially designated systems, each node is portable in nature and constrained battery charge. Continuous change in the situation of the node in the system thus corrupts the battery charge of the node in this way, it is important to leave the battery energy of that node with this goal that the system life can be sustainable. For later, the node should choose the middle node to forward the bundles from the source to the target.

The proposed methodology utilizes a technique to determine the circumstances under which malicious nodes ought to be checked. In addition to identifying malicious nodes, it has been observed that within this view, ad hoc routing has less protection and fewer communication breaks. MANET has many issues that attract researchers to work in these areas. This research is mainly related to many issues: How to increase the availability of packet power by reducing the energy consumption first? The other thing is how to manage malicious nodes in MANET and detect data protection by detecting malicious nodes?

**Keyword:** *Malicious Node Detection, AODV, efficiency, routing, packets delivery ratio, congestion control & MANETS.*

---

**I. INTRODUCTION**

Mobile Ad-hoc frameworks have been for the most part asked about for quite a while [1]. Among all the contemporary remote frameworks, Mobile Ad hoc Networks (MANETs) is a champion among the most fundamental and unique applications [2]. Adaptable Ad-hoc Networks are a collection of something like two devices equipped with remote correspondences and frameworks organization limit.

A Mobile Ad-hoc Network is a kind of mobile wireless network (Fig 1.1 which fundamentally utilizes idea and highlights of a distributed multi-jump arrange. A MANET has no fixed framework or any brought together server. Every node in a MANET goes about as a switch and speaks with one another. A vast assortment of Mobile specially appointed system applications have been created. System allotments can happen habitually, since node move uninhibitedly in a MANET, making a few information be frequently out of reach to a portion of the node. Subsequently, information availability is a significant act metric in a MANET [3].



Figure 1: View of Mobile Ad-hoc Networks

## II. LITERATURE REVIEW

M. Cant et al [4] At present, the Economic Energy Management Protocol is a collaborator of e-power. It is estimated to cut waste on power consumption and reduce transmission delay on unnecessary tasks for power consumption. High node density significantly improves network performance with all 3 protocols. Logic for high performance After the breakdown of a link, searching for replacement links becomes easier and faster. E-power performance is the best. It has been observed that the higher the node density, the higher the performance of the e-power algorithm program.

C. Gandhi et al. [5] Associate Energy provides the best AODV (EOAODV) routing protocol supported reactive routing protocol. During this projected approach, the supply node does not send any RREQ; No enough energy (battery life time) and RREP was not received until the node density in its neighbor is more than a specific limit. Applying a routing discussion and wishing to avoid unnecessary data quickly.

E. M. Shaktuki et al [6] AODV routing protocol estimates many modern changes, which are related to key issues in efficiency and energy efficiency, such as MANET. It is obtained by evaluating the energy values of the nodes and for forwarding the packets on the least drained nodes route, so that the network is organized in nature.

V. G. Menon et al [7] has proposed a Multipath Routing Single Path Transmission (MARS) plan to reduce adverse effects of abuse. This scheme combines multi-pathway and single path data transmission with an end-to-end feedback mechanism to provide more comprehensive protection against misuse of the person or to assist abusive nodes.

J. Nguyen et al [8] has proposed a certified path for the Ad-Hawk Network (ARAN) Safe Route Protocol, which is the On-Demand Routing Protocol, which uses digital certificates to identify and protect adverse works Which depends on the network.

## III. MOBILE AD-HOC NETWORK ROUTING PROTOCOL

Table-driven routing protocols endeavor to keep up steady, up-to-date routing information in the range in the running position for each node from each node in the network. To maintain routing information in these protocols,

each node needs to maintain one or more tables, and they respond to changes in the network topology by promoting frequent updates throughout the network to maintain network views.

A separate come within reach of for table-driven routing is source-initiated on-demand routing. This type of routing makes the route only when desired by the source node. When the node requires a route to the destination, it starts the route search process within the network. After completing a route or after examining all the possible root permits, this process is completed.

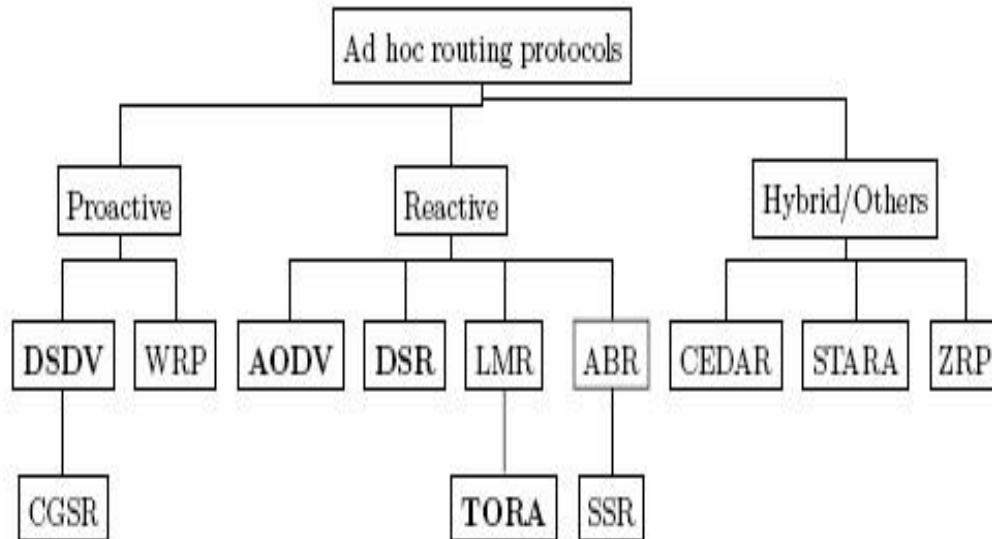


Figure 2:- Categorization of Ad-Hoc Routing Protocol

#### IV. PROPOSED WORK

In this research paper, to protect data reliability in the wireless mobile ad-hoc network, we introduce a resolution enhanced wireless network to identify malicious nodes in MANETs using the proposed work AODV.

Nodes inside an ad hoc network for the most part depend on batteries (or comprehensive energy sources) for power. Since the life span of these energy sources is limited, availability of power is one of the most important obstacles to administer the ad hoc network. There are various sources of energy consumption in a mobile node. Correspondence is one of the main sources of energy consumption.

This routing table keeps a evidence of every one the nodes present in the network. Energy consumption is limited by changing transmission scope of every node and furthermore keeps on detect malicious node based on the confidence level and the complete data rate.

In our proposed research work, we characterize the accompanying nodes:

- ❖ **Selected node:** In the initial configuration on the network, a node that can broadcast both the original packet and the next to the other packet.
- ❖ **Detection Malicious Node:** We detect such nodes that a node with a stolen shared key with which it can prove the packet and data mask falsification by other malicious nodes and obstruct the sending of data.
- ❖ **Shortest routing:** - In this process the smallest route discovery procedure after then data is moving of transmission range.
- ❖ **Energy consumed:** Reducing the consumption of energy while sending and receiving packets. Also calculating while idle and sleep, saving time and energy not sending the packets to those nodes.

It should be well-known that by reducing the energy consumption of all the means consumed during the packet, network life increases by growing the level of energy source of the mobile node.

## V. AODV OVERVIEW

AODV [9] is a legendary on-demand routing for MANETs. This is the development of the proactive Routing Protocol Destination-Seed Distance Vector [10]. This dynamic route reduces the quantity of packet broadcast by creating an on-demand route unlike the protocol.

It has two processes (i) route search and (ii) maintenance of routing, which are discussing about in the accompanying areas.

### Route Search

In this process, the path demand (RREQ) produced by the AODV resource node stops the flood of packets. In these packets the destination is known and it is transmitted by the intermediate nodes. To find a way to destination, the source node broadcasts a RREQ packet. In return, neighbors distribute packets to their neighbors

An intermediate node or destination. The information of the RREQ packet is forwarded by the intermediate nodes, which can be modified or modified based on the hop-by-hop process.

This forwarded information is circulated by an intermediate part. Such a node keeps this record in the routing table. In AODV, the revised information is maintained by the hop count, which is enhanced by 1 (HC + 1) on each hop forwarding RREQ. These RREQ packets keep sequence numbers to ensure that the selected route is loop free, and also ensures that the intermediate node should answer only the latest information (not repetitive / old information). A node leaves the packet, if it has already been received. This information is used to build the path in the reverse path for the answer-packet. As soon as the route returns to the answer packet source, then the intermediate nodes store this forwarded information in their tables.

### Maintenance of routing

In this procedure, if the source node or middle node connects the disappointment of the disappointment, at that point it sends the connection disappointment warning to its upstream neighbors. Along these lines, the source can continue the course seek when required..

## VI. CONCLUSION

This research paper uses a malicious node detection technique to consume energy consumption. Strike of right, this system depends on the energy possible area. Similarly, it can reduce the chance of energy attack of the node, the attacker node maintains a strategic distance from energy exhaustion and besides, the network lengthens the life cycle further. So identify the accelerated malicious node to identify the energy decay, the rest is as follows, the proposal of a technique to choose the right path, to choose dynamic range with reason to increase identity accuracy. At that point, to reflect the assets of MANET, and after that some progressively exact identification can congestion control

## REFERENCE

1. Eiji Nii, Takamasa Kitanouma, "Cooperative Detection for Falsification and Isolation of Malicious Nodes for Wireless Sensor Networks in Open Environment", *IEEE proceeding of 2017 Asia pacific microwave conference*.
2. R. Kachal and S. Suri, —Comparative Study and Analysis of DSR, DSDVAND ZRP in Mobile Ad-Hoc Networks, *International Journal of Computer Sciences and Engineering*, Vol. 2, No. 5, pp: 148-152 (2014)
3. V.G.Muralishankar, E. G. D. P.Raj, — Routing Protocols for MANET: A Literature Survey, *International Journal of Computer Science and Mobile Applications*, Vol. 2, No. 3, pp: 18-24 (2014).
4. A. Lupia and F. De Rango, "A probabilistic energy-efficient approach for monitoring and detecting malicious/selfish nodes in mobile ad-hoc networks," in *Wireless Communications and Networking Conference (WCNC), 2016 IEEE. IEEE, 2016*, pp. 1– 6.



5. M. Chitkara and M. W. Ahmad, —Review on MANET: Characteristics, Challenges, Imperatives and Routing Protocols, Vol. 3, No. 2, pp: 432 – 437 (2014)
6. M. Cont, S. Giordano, —Mobile Ad Hoc Networking: Milestones, Challenges, and New research Directions, IEEE Communications Magazine, pp: 85-96 (2014)
7. C. Gandhi, V. Arya, —A Survey of Energy-Aware Routing Protocols and Mechanisms for Mobile Ad Hoc Networks, Intelligent Computing, Networking, and Informatics, Vol. 243, pp: 111-117 (2014)
8. E. M. Shakshuki, N. Kang and T. R. Sheltami, —EAACK—A Secure Intrusion-Detection System for MANETs, IEEE Transactions on Industrial Electronics, Vol. 60, No. 3 pp: 21-25 (2013)
9. Alok Kumar Jagadev, Binod Kumar Pattanayak, Manoj Kumar Mishra and Manojranjan Nayak, “Power and Delay Aware On- Demand Routing For Ad Hoc Networks”, (IJCSE) International Journal on Computer Science and Engineering, Vol. 02, No. 04, 2010, 917-923
10. Anshu Chaturvedi, D.N. Goswami and Shivjay Singh, “Energy Aware Route Selection Algorithm for Cross Layer Design over MANET” 2015 IEEE, Issue No -978-1-4673-7231-2.
11. V. G. Menon, C.S. Sreekala, V. Johny, T. Tony, E. Alias, —Performance Analysis of Traditional Topology based Routing Protocols in Mobile Ad hoc Networks, The International Journal of Computer Science & Applications (TIJCSA), Vol. 2, No. 1, pp:1-6 (2013)
12. J. Nguyen, R. Cole, R. Cole, J. Yi, J. Dean, —Network Management of Mobile Ad-hoc Networks (MANET): Architecture, Usel, Draft-Nguyen-Manet-Management-00, pp: 6-8 (2013)
13. T. P. Singh, R. K. Singh and Vishal Sharma, "SDR based Energy Efficient Routing for Ad Hoc Networks", —Elixir Adoc Network, pp: 11722-11724 (2012).