Survey Paper on Secure Multipath Routing Protocol Using Optimization Technique

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Abstract:- *The ad-hoc network have a definite transmission range and the stations that are inside the range are called one hop neighbors. If stations wants to talk to the stations which are more than one hop away then it is done via intermediate stations (or relaying stations) and it is called multi-hop ad-hoc networks. Nodes in the network takes a random path to forward data and information for other nodes and indulge themselves in multi-hop ad-hoc forwarding. Routing methods help the node to route data in the network so these nodes do not just act as hosts rather they act as routers.*

*Key Words***:** MAODV, Ad-hoc network, Energy, Routing.

1. INTRODUCTION

Mobile Ad-Hoc Networks (MANET) is the wireless network in which nodes are mobile phones and is not centralized. The node manages and configures itself. It also indulges in the routing functionality to deliver messages or the information required. It is used army hopping mines and to communicate with the other camps when on a mission. The ad-hoc network have a definite transmission range and the stations that are inside the range are called one hop neighbors. If stations wants to talk to the stations which are more than one hop away then it is done via intermediate stations (or relaying stations) and it is called multi-hop ad-hoc networks. Nodes in the network takes a random path to forward data and information for other nodes and indulge themselves in multi-hop ad-hoc forwarding. Routing methods help the node to route data in the network so these nodes do not just act as hosts rather they act as routers.

1.1 Challenges

In MANET, every node acts as a router so the nodes communicate with each other to transfer packets in the network. So the main issue arises in the routing technique nodes use to perform the functionality in the network. Some of the issues are mentioned below:

- **Security:** Due to malfunctioning of the malicious nodes in the network, it raises the issue for security problems. Interference may disturb the transmission at times and may even authenticate some malfunctions.

- **Reliability:** Wireless transmission has a limited range, hence free mobility of the nodes results in data transfer loss and various transmission errors in multi-hop functionality.

- **Routing:** Dynamic network topology raises an issue of routing the packets properly without any problem. Most protocols are based on proactive routing technique rather it should be based on the reactive routing. Nodes moving in random manner has turned the static multicast routing to the dynamic one in the network. Even the multi-hop communication is complex for nodes to perform routing.

- **Internetworking:** Internetworking exists between fixed networks and MANET to perform operations. It becomes a difficult task to manage the coexisting routing protocols in the network.

- **Quality:** It's a challenge to provide the same good quality when the surroundings are changing abruptly. Some changes should be made so that it can adapt the changes to provide the quality up to the level required.

- **Power Efficiency:** Conservation of power should be considered as the nodes use the power directly from the batteries and sometimes it is difficult to maintain the battery supply. Thus the protocols and the circuit should be designed in such a way that it consumes less power and are energy efficient.

2. OBJECTIVES

The main objective of the research paper is to optimized secure and trust based route**,** in order to handle the problem, the following outline is proposed:

1. To evaluate and analyze the existing ad-hoc routing protocol.

   The assessment and study of on-demand routing protocols will help in better understanding of the basic characteristics and functioning of the protocols. Analysis of the routing protocol can be carried through simulation. Further, the protocol is analyzed under different mobility models proposed.

2. To suggest the improvement in existing routing protocol.

   Based upon the knowledge so gleaned will act as pavement for improving an existing routing protocol. The Modified protocol will be proposed after proper verification and validation through simulations. The verification of the proposed protocol has been done by taking various performance metrics such as, route acquisition time, average end-to-end delay, routing packet and network routing load.

3. To analyze and validate the performance of the proposed (EOT-MAODV) using standard simulator NS-2(v2.34).
4. To compare the performance of proposed method with the existing algorithm based on various parameters.
5. Maximum reliability using energy base routing

2.1 Problem Definition

The nodes in an ad hoc network are constrained by battery power for their operation. To route a packet from a source to a destination involves a sufficient number of intermediate nodes. Hence, battery power of a node is a precious resource that must be used efficiently in order to avoid early termination of a node or a network. Then we design a trust system for increasing reliability and disrupted un- security from the network. Thus, Energy awareness and security is an important issue in such networks as it increases the life of a node as well as network lifetime.

The problem of node failure, which results in network partitioning, is serious in ad-hoc networks. In contrast, as pointed out in a single node failure in sensor networks is usually unimportant if it does not lead to a loss of sensing and communication coverage. Ad-hoc networks are oriented towards personal communications and the loss of connectivity to any node is significant. Real time applications need mechanisms that guarantee restricted delay and delay jitter. For instance, the most important delays that affect the end to end delay in packet delivery from one node to another node are: the queuing delay at the source and intermediate nodes, the processing time at the intermediate nodes, the transmission delay, and the propagation duration over multiple hops from the source node to the destination node. QoS in ad-hoc networks relates not only to the available resources in the network but also to the mobility speed of these resources. This is because mobility of nodes in ad-hoc networks may cause link failures and broken paths. In order to continue a communication therefore, it requires finding a new path.

Communication (transmission and reception) is one of the main sources of energy consumption. Since the rate of battery performance improvement is rather slow and in the absence of breakthroughs in this field, other measures have to be taken to achieve the goal of getting more performance out of the currently available battery resources. Within this study, we focus our efforts on method of energy awareness in communications between ad-hoc network nodes. The problem, of, energy constraints has been addressed in different protocols, which are based on existing protocol. Those nodes which are loss there energy they are not being a part of network, but nodes having a capability to take part in communication having a sufficient energy to do communication in the network. Due to suddenly loss of session following problems are occurring:

- Maximize the loss of packets.
- Maximize the routing load.
- Minimize throughput.

3. CONCLUSIONS

This work describes various routing protocols in MANETs. The main focus of this paper is multipath AODV protocol and other optimization mechanisms. As efficient route selection is the need of a Mobile Adhoc network So, there is a need of optimized routing protocol. This work gives the detail information about routing protocol, multipath routing protocol and optimization algorithms which might be use in future to provide efficient and optimized route selection according to user's requirement.

4. ACKNOWLEDGEMENT

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