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Survey on Dynamic AoDV for Mobile AD-HOC Network

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ABSTRACT

A Mobile Ad-hoc Network (MANET) is anassembly of wireless mobile nodes forming a temporary network without using any centralized access point, infrastructure, or centralized administration. Data transmission between two nodes in MANET's may requires multiple hops as the node's transmission range is limited. Mobility of the different nodes makes the situation even more complicated. Multiple routing protocols especially for these conditions have been developed during the last few years, to find optimized routes from a source to some destination.

KEYWORDS

1. Introduction

An ad-hoc network is a collection of wireless mobile hosts forming a temporary network without the aid of any standalone infrastructure or centralized administration. Mobile Ad-hoc networks are self-organizing and self-configuring multi-hop wireless networks where, the structure of the network changes dynamically. Reactive protocols seek to set up routes on-demand. If a node wants to initiate communication with a node to which it has no route, the routing protocol will try to establish such a route [17]

AODV is a reactive routing protocol instead of proactive. It minimizes the number of broadcasts by creating routes based on demand, which is not the case for DSDV. When any source node wants to send a packet to a destination, it broadcasts a route request (RREQ) packet. The neighboring nodes in turn broadcast the packet to their neighbors and the process continues until the packet reaches the destination. During the process of forwarding the route request, intermediate nodes record the address of the neighbor from which the first copy of the broadcast packet is received. This record is stored in their route tables, which helps for establishing a reverse path. [18]

3. Objectives

Research is a planning based work. All works related to researchingare generally a planning and trying to achieve a specific goal. In this research work, there are some planned objectives that we will try to achieve –

1. Reduce latency time in route finding.
2. Less Route discovery packet flooding.
3. Overcome collisions between route requests propagated by neighboring nodes.
4. Develop aresilient, adoptive and reactive routing protocol.

The main goal of an ad-hocnetwork routing protocol is to establish a correct and efficient routes between a pair of mobile nodes so that messages delivered within the active route timeout interval. So Routing Protocols are too important for networking. So if we are able to prepare a routing protocol having above features, then it's a use full research work.

4. Noteworthy Contribution

The progress of a world is based on research work in different fields. Research is helpful for developing knowledge and also searches new knowledge and played an important role to give progress for that new search. Proposed research work is also based on above points. Reactive protocols to seek to set up

routes on-demand. If a node wants to initiate communication with a node to which it has no route, the routing protocol will try to establish such a route.Reactive routing protocol is truly based on source routing whereby all the routing information is maintained (continually updated) at mobile nodes. It has only two major phases, which are Route Discovery and Route Maintenance. So we will try to achieve these two phases in advance features.The importance to this research work is to reduce latency time in route finding, and Less Route discovery packet flooding. And also overcome collisions between route requests propagated by neighboring nodes.

Proposed Work

This research work will present a solution to reducelatency time in route finding. Generally its typical process to find the shortest path for sending messages, and receiving acknowledgement. So we will use reactive routing protocol for this and Ad-hoc On-Demand distance vector (AODV) finds a route on demand by flooding the network with Route Request packets.

Research Methodology

The main goal of this research is to analysis and designs a resilient, adoptive and responsive routing protocol. So that improve performance of responsive routing protocols compared to last decade. Hence we will use analysis method for getting demerits of reactive routing protocol and study the current status.We will get data from different sources through survey and present a new thought that gives a correct way of our research.

Primary sources will questionnaire and interview whereas secondary sources will research paper and journals. For this, research works to get actual situation, we will use practical work also for which we will be able to find or design new solution or algorithm.For this research work we will mainly use Ad-hoc on demand distance vector (AODV).

Literature Review

S.No.	Authors	Advantages	Problems
1.	Sumit Gwalani et al. [1]	Modified AODV to improve its performance called AODV-PA, this AODV-PA incorporates path accumulation during the route discovery process in AODV to attain extra routing information.	This AODV-PA could also be suitable either if overall routingload or if application oriented metrics such as delay and packet delivery ratio are important for the ad hoc network application.

2.	Suhua TANG et al. [2]	Introduce a Robust AODV protocol, where the route is built on demand and maintained by local proactive route updating. . this Robust AODV protocol, mutes adapt to fast topology variations and reach local optimum quickly	But in case Robust AODV well test and consider signal strength to then it make more robust.
3.	Chia-Ching Ooi [3]	Developed and Verified the practicality of AODV-bis routing protocol, this AODV-bis have feature of path accumulation. To enhance AODV-bis, location information is utilized during route discovery to limitforwarding zone by geo-casting. This AODV-bis, compared to AODV, is a more powerful routing protocol.	The overall performance of AODV-bis routing protocol is improved but not so much.
4.	Baolin Sun et al. [4]	A specification-based intrusion detection system was introduce that can detect attacks on the AODV routing protocol. In a specification-based intrusion detection approach, the correct behaviors of critical objects are manually abstracted and crafted as security specifications. The IDS presented in this paper was built on a distributed network monitor architecture that traces AODV request-reply flows.	it can enhance framework by automatically extracting useful features for detection of unknown attacks. And also design an intrusion detection system across multiple network layers to detect more sophisticated attacks.
5.	Rendong Bai et al.[5]	Presented a lightweight hierarchical routing model, called Way Point Routing (WPR), in which a number of intermediate nodes on a route are selected as waypoints and the route is divided into segments by the waypoints. advantage of this model was that when a node on the route moves out or fails, instead of discarding the whole original route and discovering a new route from the source to the destination, only the two waypoint nodes of the broken segment have to find a new segment.	It can includes and utilizing heuristic methods to select waypoint nodes.
6.	Mallapur Veerayya et al. [6]	A cross-layer based stable routing protocol for ad-hoc networks, which enhances support for QoS. The protocol uses only local information at a node without adding any significant overhead in the network. Indeed our scheme can be integrated with any on-demand protocol to improve the protocol's performance.	But this scheme was to combine explicitly with QoS routing, thereby incorporating bandwidth and delay constraints in the path selection process. Another is to consider the effects of mobility and fading in our stable routing protocol.
7.	Pei Tingrui [7]	Proposed a new routing model IH-AODV, which maintains nodes hierarchically based on AODV for WMNs. That routing scheme is hybrid in nature as it uses both flat and hierarchical approach for finding the routes to the destination.	But it can make more, improved route protocol more reliable and available.
8.	Fei Tong et al [8]	Proposed a new scheme called G-AODV by improving AODV with energy consideration for WSN. In GAODV, each node was assigned a grade and this grade helped restrict the useless broadcast of RREQ during the routing process. The network performance of G-AODV was evaluated and compared with the original AODV using OPNET modeler that G-AODV reduced the number of RREQ significantly.	But it could be better when other network topology were used.
9.	Guoping XU et. al [9]	Proposed the AODV_Dprotocol which was more suited to the dynamic network environment. the improved AODV D algorithm can reduce the delay of the route discover, enhance the stability of the path so as to improve the overall performance of the standard AODV protocol.	The proportion of the size of the static node in the wireless mesh network and how to control the quantity can also be good work in this direction.
10.	Lawal Bello et. al [10]	Increase performance of AODV and DSR routing protocols. This performance comparison was aimed to maximize throughput in a large capacity network while minimizing end to-end delay in the presence of increased ambient noise level.	But it will be proper modeling of terrain effect prior to implementation to mitigate the effect of noise on received signal strength of the packet in a multi-hop network.
11.	Tao Yang et. al [11]	Presented simulation results of WSN for different cases of WSN. they used the packet loss, transport loss and routing loss metrics to measure the performance.	But It can be increase the number of mobile sensor nodes and can consider the different topologies and also consider the case of other routing protocols and MAC topology.
12.	Sridhar Subramanian [12]	Designed a trust based reliable protocol TBRAODV . Trust level values for each node are calculated to identify the misbehaving nodes during routing. If node is misbehaving then it leads to an alternate path selection for further reliable routing. This trust based routing mechanism has proved to be increasing the performance of the proposed TBRAODV protocol and also shows good improvement of Qos parameters like PDR and delay.	But The same scheme can also be implemented on other MANET routing protocols and also implement some techniques for authenticating the packet and the node which take part in routing.

13.	D. Arivudainambi et. al [13]	Discussed knowledge added MA for minimum energy broad cast problem. MA actively aims on improving solution and is explicitly concerned in exploiting all available knowledge about the problem. Simulation results show that MA reduces the execution time to a large amount when compared to existing algorithms. The results validate the effectiveness and efficiency of MA to this problem.	but it can more use full when advanced MA will use.
14.	Jeong-Hun Lee et. al [14]	Considered wireless sensor network design under resource restrictions. This research paper developed mathematical models for network design by simultaneously considering multiple periods and distance and energy limits. In this computation experiments demonstrate the usefulness of the presented model.	But research will be develop a meta-heuristic for the models that can reduce the computation time to reasonable levels.
15.	Ruo Jun Cai et. al [15]	Propose a neighborhood connectivity based trust scheme that can detect the single and colluded attackers during route discovery and quarantine them. It can work Even the internal attackers cannot get any benefit to launch the active black hole attacks.	it can increase more robust and prevention system.
16.	Andrea Gorrieri et. al [16]	Proposed a novel reactive routing protocol called iAODV that was derived from AODV protocol. This protocol used in its route discovery phase with the probabilistic forwarding mechanism denoted as IF. by the use of IF protocol the number of control messages is effectively reduced.	But this IF based route discovery process can also apply on DSR that can be more use full.

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