

# Optimization in conventional AODV using probability and drop factor

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**Abstract - There's one significant difficulty and problem in AODV i.e. Efficiency. The distinct traits of AODV reward a new set of great and principal challenges to protocol design; these incorporate open peer-to-peer network structure, shared Wi-Fi medium, stringent useful resource constraints, and totally dynamic network topology. In this Dissertation, we attention upon the congestion manipulate hassle in on-demand distance vector routing (AODV) protocol for cellular and wireless ad hoc networks. We endorse to look at mechanisms to deal with the congestion hassle inside AODV routing protocol. First, we look at a randomized technique of AODV protocol. Then we present a preemptive ad hoc on-call for distance vector routing protocol for cell ad hoc networks. We discuss the implementation of each algorithm, and file on the overall performance results of simulation of numerous scenarios the usage of the ns-2 ad hoc network simulator. AODV protocol is increased with a drop factor that induces a randomness characteristic to result in our proposed ad-Hoc On-Demand Routing protocol. Throughout the route discovery method, each intermediary or router nodes between the supply and the vacation spot nodes makes a determination to either broadcast/ahead the RREQ packet further closer to the destination or drop it.**

*Index term: AODV, Drop Factor and RREQ*

## I. INTRODUCTION

AODV is a totally challenged network atmosphere due to its precise traits comparable to decentralization, dynamic topology and neighbor headquartered routing. They don't count on existing infrastructure to support communication. Every cellular node acts as an finish node when it's the source or destination of a conversation and forwards packets for other nodes when it is an intermediate node of the route. Mobile ad-Hoc community is a system of wireless cell nodes that self-organizes itself in dynamic and transitorily network topologies.

On-demand routing protocols are handy to comprehend and their overhead is low. But routes in on-demand routing protocols are convenient to smash within the case of topology editions. In AODV node doesn't have any expertise about different nodes except a communiqué is wanted. By broadcasting hello packets in a common interval, regional connectivity understanding is maintained by using each and every node. Local connectivity continues information about all of the neighbors. Contemporary QoS options are deliberate to function on depended on environments and fully count on the collaborating nodes to be cooperative and good behaved. Such assumptions usually are not legitimate in dynamic environments like AODV. Providing different high-quality of carrier phases in a constantly changing atmosphere is a challenge on account that: Unrestricted mobility explanations QoS periods to endure due to recurrent path breaks, thereby requiring such periods to be reestablished over new paths. The hyperlink-designated and state-precise knowledge in the nodes is inherently imprecise due to the dynamically changing topology and channel traits. Hence, wrong routing selections could chop down QoS parameters efficiency. Inadequate bandwidth, space for storing and battery life additionally enormously has an impact on the performance of the QoS parameters.

Most security schemes urged for AODV tend to build upon some predominant assumptions related to the trustworthiness of the participating hosts and the underlying networking method. If AODV is to obtain the same level of acceptance as typical wired and wi-fi network infrastructures, then a framework for trust management must become an intrinsic phase of its infrastructure. The inherent freedom in self equipped mobile ad hoc networks introduces challenges for trust administration, especially when nodes do not need any prior knowledge of every different. To assure that entry to assets is given most effective to rely on nodes; the trustworthiness amongst anonymous nodes needs to be formalized. The notion of believe at the beginning derives from social sciences and is outlined because the degree of subjective belief about the behaviors of a distinctive entity. There are four foremost homes of trust they usually are, Context Dependence the place believe relationships are most effective meaningful in the particular contexts.

Function of Uncertainty the place believe is an analysis of probability of if an entity will participate in the motion. Quantitative worth is the place trust can be represented by way of numeric either steady or discrete worth. Uneven Relationship are the place believe is the opinion of one entity for an extra entity.

There's one significant difficulty and problem in AODV i.e. Efficiency. The distinct traits of AODV reward a new set of great and principal challenges to protocol design; these incorporate open peer-to-peer network structure, shared wi-fi medium, stringent useful resource constraints, and totally Dynamic network topology. These forms of challenges naturally make a case for creating solutions that attain both secure and efficient network performance.

Performance is among the key points to boost a communication protocol in AODV. Routing protocol needs to have a best performance to enhance the best of communication, i.e. communication Daley, packet delivery ratio, throughput and overhead.

Routing protocol need to have a minimal delay, packet delivery ratio and minimum overhead throughout the communication process. Several causes of the network performance degradation are external assault and rapid changing of the network Topology.

#### RELATED WORKS

Nagaraj M. Lutimath et al. [1] proposed an Energy Aware Multipath AODV protocol (EAMAODV) based on AODV. EAMAODV obtains nodes energy by using upgrading the route discovery and course maintenance procedure of AODV. It calculates drop rate derived by routes total hops. Drop threshold changed into utilized in determining the direction.

**Pravanjan Das et al. [2]** in this research they had restriction our attention to The overall performance of diverse MANET routing protocols this is notably affected due to often changing network topology, limited network resources and protection of facts packets. In this paper, a simulation primarily based performance contrast of one of the most normally used on-demand utility oriented routing protocols, AODV (Ad hoc on-call for Distance Vector) and its optimized versions R-AODV (Reverse AODV) and PHR-AODV (Path hopping based totally Reverse AODV) has been presented.

**Prof. Dr. P. R. Deshmukh [3]** in this research work they determined Rapid exchange of topology causes that the route respond could not arrive to the supply node, i.e. After a supply node sends several direction request messages; the node obtains a reply message, in particular on high velocity mobility. This increases both in verbal exchange postpone and energy intake as properly as decrease in packet transport ratio

Kwan-Wu Chin and Darryn Lowe [4] in this paper they define a easy approach, known as ROAR, that allows the Ad-Hoc On-Demand Distance Vector (AODV) routing protocol to strengthen its routes with the aid of recruiting associates of nodes at the least cost route as aid nodes throughout the route production method, and running carefully with the medium get admission to manage (MAC) to hire an opportunistic forwarding scheme that takes benefit of the node range at each hop.

Xu Ning et al. [5] on this paper they take a look at Performance of routing protocols specifically relies upon on green channel route status quo, direction optimization and manage overhead. Route optimization plays a pivotal role in self-recuperation” and “self-configuring” wi-fi mesh networks (WMN). State-of-the art routing protocols rely upon IEEE 802.11 MAC and TCP congestion manipulate mechanisms to optimize the performance of routing protocols

Tian Jie and Wang Yu. [6] They confirmed Streaming media on wi-fi Ad hoc network becomes increasing famous, because of its large capability marketplace call for. In their research work advise a PS-AODV routing protocol based on an set of rules for direction selecting and well known refused, make upgrades on AODV

S. S. Sarangdevot. [7] in this paper, they approached the trouble of Routing in advert hoc networks is a completely challenging trouble because of nodes mobility, dynamic topology, common hyperlink breakage, problem of nodes reminiscence, battery, bandwidth, and processing energy and absence of relevant factor like base stations or servers. Mobile ad hoc network (MANET) is an independent machine of cellular nodes.

## II. PROPOSED METHODOLOGY

AODV protocol is increased with a drop factor that induces a randomness characteristic to result in our proposed ad-Hoc On-Demand Routing protocol. Throughout the route discovery method, each intermediary or router nodes between the supply and the vacation spot nodes makes a determination to either broadcast/ahead the RREQ packet further closer to the destination or drop it.

Earlier than forwarding a RREQ packet, each node computes the drop element which is a function of the inverse of the quantity of hop counts traversed by way of the RREQ packet. This drop component lies in the variety of zero to 1. Also, the node generates a random number from 0 to 1. If this random quantity is greater than the drop element, the node forwards the RREQ packet. Or else, the RREQ packet is dropped. Dropping of RREQ packets does no longer necessarily effect in a brand new route discovery system by using the supply node. This is because that the common broadcast by the supply node results in more than one RREQ packets by way of the neighbors and this diffusing wave outcome rapidly in a massive quantity of RREQ packets traversing the community on the lookout for the vacation spot. A most important share of those packets are redundant given that that within the ideal case, a single RREQ packet can to find the pleasant route. Also, a number of those packets diffusing in directions faraway from the destination shall ultimately timeout.

For this reason, in our proposed AODV, the goal is to diminish on these redundant RREQ packets, or on the other hand, drop as so much as feasible of those redundant RREQ packets. The drop policy is conservative and its price becomes lesser with better number of hops. As RREQ packets get near the vacation spot node, the probabilities of survival of RREQ packets are bigger. Consequently, the first phase of the route discovering approach, that is, discovering the vacation spot node, is accomplished as soon as feasible and a RREP packet will also be transmitted from the vacation spot node back to the source node In proposed AODV, the losing of redundant RREQ packets reduces a percentage of RREQ packets that shall on no account attain the destination node, resulting in a curb of community congestion. Hence, the ratio of the quantity of packets bought by means of the nodes to the quantity of packets sent via the nodes, namely, throughput, must be higher in proposed AODV in comparison with AODV. The following algorithm is used in the resolution making procedure of whether to drop the RREQ packets by using the intermediary or routing nodes, we introduce the pre-emptive protocol first, then we discuss how this pre-emptive protocol is brought into the long-established AODV, The pre-emptive protocol initiates a route rediscovery before the present route breaks. It overlaps the route discovery hobbies and the use of the present energetic path, thereby decreasing the common delay per packet. During the progress of Pr AODV progress, we now have investigated a few pre-emptive mechanisms. We settled on the following two systems:

(i) Agenda a rediscovery in advance:

on this strategy, when a reply packet returns to the source by way of an intermediate node, it collects the expertise of the links. Therefore, when the packet arrives on the supply, the information concerning the of all links will probably be identified, including the minimum price of the lifetime of the hyperlinks. Thus, we will agenda a rediscovery time before the trail breaks.

(ii) Warn the source earlier than the trail breaks:

Some mechanisms are wanted to deal with discovering which direction is more likely to damage. We can reveal the sign energy of the arrived packets as follows: when the signal vigor is beneath a threshold value, we start the pingpong system between this node and it's on the spot neighbor nodes. This node sends to its neighbours within the upstream a hey packet known as ping, and the neighboring nodes will reply with a hello packet known as pong. Such ping-pong messages should be monitored cautiously. In our approach, when unhealthy packets have been acquired (or we timeout on ping packets) a warning message should be sent back to the supply for the duration of the monitoring period. Upon receiving a warning message, a course rediscovery activity is invoked.

In our pre-emptive AODV protocol, we mix the above two pre-emptive mechanisms, and add them to the usual AODV. Pr AODV protocol is developed situated on the next assumptions. Future work will directed to eliminate such assumptions.

### III. CONCLUSION

Our The genuine challenges and the potential for the biggest dangers to reaching the required MANET talents lie in the networking technology. This method can be utilized for the environment with less scalability and mobility.

We think that it is a manner to find out appropriate operational values the usage of different metrics such as manipulate overhead, routing overhead with extraordinary mobility styles. In this thesis, performance assessment of conventional AODV & our proposed optimized AODV has been done the usage of various metrics. The results have been analyzed the use of a random way point self created network scenario. The widespread commentary from various simulations shows that the updated AODV with drop factor randomness, protocol performs higher. In case of 10 nodes it has differences very much less. As the no of nodes will increase performance of optimized AODV protocol perform very well. It presents better throughput and delivery ratio compared to conventional protocol like AODV. The proposed optimized AODV offers higher throughput than conventional AODV medium. This study can be more desirable for 75 & a hundred nodes. This will provide real existence situations and provide a strong and powerful solution for mobile network. To present that our propose technique that is based on the delivery delay of the data segments can accomplish minimal reallocation delay and hence will also less sensitive to the receiver buffer size. TCP

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