AOMDV Protocols in MANETS : A Review

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Abstract

MANET has received the significant attention in every field of Information and Communication Technology industry. The nodes in Mobile Ad hoc networks continuously move leading to randomly changing topology which further leads to many problems such as link breakages and loss of packets sent by the source node to the destination. AOMDV is a routing protocol in Manets. This paper gives an overview of the Manets and Aomdv protocol.It also explains its advantages and disadvantages.

Keywords

Manets, Routing Protocols,Aomdv Protocol.

I. Introduction

A Mobile Ad-hoc network is composed of number of wireless mobile nodes which are capable of communicating with each other without the use of a network infrastructure or any centralized administration. It is self directed network with collection of mobile users that communicate over relatively bandwidth constrained wireless links. Since the nodes are mobile, the network topology may change dynamically and it is unable to retract over time. The network is distributed, where all activities of network like adapting topology and delivery of messages must be executed by the nodes themselves i.e. routing functionality will be incorporated into mobile nodes. The nodes which are in radio range of each other can communicate directly, and others communicate through intermediate nodes to route their packets.

A. Characterstics of Manets

a) Distributed Operations: In this, all nodes play vital role in controlling the network i.e. control of the network is distributed among the nodes because there is no central background network for controlling the network operation.
b) Dynamic Topology: The network topology in Mobile Ad-hoc network keeps on changing frequently and unpredictably because nodes are mobile and they can move randomly anywhere in the network.
c) Muti-hop Routing: Mobile Ad-hoc network uses multihop routing i.e. when a node wants to communicate with any other node which is not in its radio range then intermediate nodes are used for communication purpose.
d) Energy-Constrained Operations: Nodes in the network rely upon batteries or some other exhaustible means for their energy, which limits their capabilities i.e. services and applications provided by a node.

B. Challenges of Manets:

• Limited Bandwidth : When compared with wired networks, wireless networks continue to have significantly lower capacity.
• Routing Overhead : In wireless ad hoc networks, there is unnecessary routing overhead because of random movement of nodes that generate stale routes in the routing table.
• Packet losses due to transmission errors : There is much higher packet loss in wireless ad hoc network due to hidden terminals.
• Limited capacities of mobile nodes : Short battery life and limited capacities of mobile nodes.

II. Routing Protocols in Manet

A routing Protocol is a set of rules or a standard that determines in which way to route packets between computing devices in a mobile ad hoc network. There are various routing protocols like DSR,TORA,DSDV,ZRP,AODV,AOMDV.

A. AOMDV Protocol

AOMDV stands for Ad-hoc On-demand Multipath   Distance Vector Routing protocol. AOMDV is a multipath extension to the AODV protocol. In AOMDV protocols multiple routes are founded between the source and destination.It uses alternate routes on a route failure. In AOMDV protocols new route discovery is needed when all the routes fail. . In AOMDV protocols multipath routing is the enhancement of unipath routing in which advantage is to handle the load in network and avoid the possibility of congestion and increases reliability.

B. Advantages of AOMDV protocol:

• It establishes route on demand.
• It creates loop free nodes.
• It maintains connectivity
• Fast and efficient recovery from failures.

C. Disadvantages of AOMDV protocol:

The disadvantage of using AOMDV is that it has more message overheads during route discovery due to increased flooding and since it is a multipath routing protocol, the destination replies to the multiple RREQs those results in a longer overhead packets in response to single RREQ packet may lead to heavy control overhead.

III. Literature Survey

1.**Abhinv Vidwans, Ajit Kumar Shrivastava, Manish Manoria et al.[1]** analyzed the performance of AOMDV protocol by using the concept of queue length. In this paper the authors had improved the performance of AOMDV protocol on the basis of queue length, which enhances the routing capability of AOMDV protocol. In this proposed technique the queue length has handled the data and network performance has improved. Thus the results showed the improvement in the proposed enhanced AOMDV than the existing one.

2. **Vivek B. Kute. And M. U. Kharat** et al.[3] discussed the performance analysis of the Ad-hoc On-Demand Multi-Path Distance Vector (AOMDV) routing protocol. Due to the dynamic nature of Mobile Ad-hoc networks(MANETs), the provision of Quality of Service (QoS) guarantees was challenging. Extensive simulations were carried out using ns-2.34 and the study concluded that for CBR traffic AOMDV performance degrades as the data packet generation rate increases.

3. **Geetha S, Dr. Geetharamani** et al.[14] had taken random way point mobility model in order to analyze the performance enhancement of AOMDV with energy efficient routing. Each node in MANET will maintain the information required for proper route traffic. In order to improve the performance of AOMDV in selecting main path, new concept is proposed in this paper called Node state with mobility model (NS-AOMDV). The simulation results showed that the proposed method (NS-AOMDV) had significant reliability improvement as compared to AOMDV.

4. **Sandeep Nayal , Tarun Kumar** et al.[10] had taken two types of On demand routing protocols- Ad-hoc On-demand Distance Vector (AODV) routing protocol and Ad hoc On-demand Multipath Distance Vector (AOMDV) routing protocol and then their performance was evaluated and compared with different performance metrics. In this paper on comparing the performance of AODV and AOMDV it was concluded that AOMDV incurs more routing overhead and packet delay than AODV but it has better efficiency when it comes to number of packets dropped and packet delivery.

5. **A. Ramesh , Dr. P. Sumitha Bhashini, Prof. K. Jaya Bharathi** et al.[5] had taken Proactive, Reactive and Hybrid routing protocols such as, AOMDV, AODV, DSDV, TORA and DSR in MANET and then their performance was evaluated under different network environments. The performance metrics used for evaluation were packet delivery ratio, throughput, and energy consumption. AOMDV was analyzed as the best protocol compared to AODV, TORA, DSR and DSDV when energy efficiency was taken into consideration.

6. **Onkar Singh Bawa ,Mr. Supratik Banerjee** et al.[6] proposed a new congestion based route discovery protocol in AOMDV which used queues to check congestion on each node and source selected only that path which give enough queue size and select as primary path and If it broke then selects another secondary path for transmission .This paper concluded that AOMDV protocol with congestion based route discovery approach performs better than ordinary AOMDV protocol in terms of throughput , delay and packet loss.

7. **Rahul Deshmukh and JitendraRai** et al.[16] compared the performance of AODV with its variation of Multipath version of AOMDV. The comparison had been done under two protocols namely TCP and UDP. The results presented in this paper clearly indicate that the performance of AOMDV protocol is better than AODV with respect to throughput and energy consumption.

IV. Conclusion

In this paper we have studied the the various aspects of AOMDV protocol.After studying the various aspects of AOMDV we have concluded that AOMDV has many advantages but there are some shortcomings in AOMDV which needs to be improved to improve the performance of Manet.

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