

Development of AODV Protocol and its Analysis

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Abstract

In today's centuries the mobile Adhoc network plays very important role. Feasible path routing and protocol selection are basic need of design in wireless network. Adhoc network they are able to self-configure, adaptive which are applicable in many areas. Important classes of routing protocols are Proactive, Reactive, and Hybrid. Most popular routing category is reactive (on-demand) for wireless ADHOC routing. In this paper we will discuss basic introduction of on demand distance routing reactive protocol and simulation it's done in MATLAB.

Index Terms- Adhoc Network, AODV, MANET Protocols, MATLAB.

INTRODUCTION

Nowadays the most popular ad-hoc network is increasingly popular in recent years they are major deploy and which provides the connectivity with their geographical positions. A mobile network it's basically collection of wireless nodes that can dynamically be set up different locations without using previous network infrastructure. Different types of traffic in ad-hoc network are quite different from those in an infrastructure wireless network including

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J. S. Awati et al. have proposed their work in Wireless sensor networks are used for Different applications. In wireless sensor

networks the different routing protocols are implemented for various applications. This paper deals the difference between some routing Protocols. The routing protocols considered are Bellman-Ford, AODV, DSR, DYMO, Fisheye, IARP, IERP and LANMAR. The simulation is performed on Exata developer Version 5.1. This paper helps to understand the different routing protocols. [2]

S. Mohapatraa et al. have proposed the path routing and protocol selection are the primary strategies to design any wireless network. In Mobile Adhoc Network (MANET) the selected protocol should have best in terms of data delivery and data integrity. Hence the performance analysis of the protocols is the major step before selecting a particular protocol. In this paper, the performance analysis is carried out on Adhoc On-demand Distance Vector (AODV), Dynamic Source Routing (DSR), Optimized Link State Routing (OLSR) and Destination Sequenced Distance Vector (DSDV) protocols using NS2 simulator. [3]. Tarun Varshney et al.

have proposed their work in Mobile ad hoc network (MANET) is a Self-configuring network that is formed automatically via wireless links by a collection of Mobile nodes without the help of a fixed infrastructure or centralized management. Hence the Performance analysis of the protocols is the major step before selecting a particular protocol. [4]

TYPES OF ROUTING PROTOCOLS

Routing Protocols

Routing is the one of most important issue in the MANET. Routing protocol for WSN is limited by single nature of local information. An ad hoc routing is a convention, or standard, that controls how the node decide which way to route packets between computing devices in a mobile as hoc network. Mostly routing protocols are classified as for MANET it as be categorized as:

1. Proactive(Table-driven)
2. Reactive(On-demand)
3. Hybrid

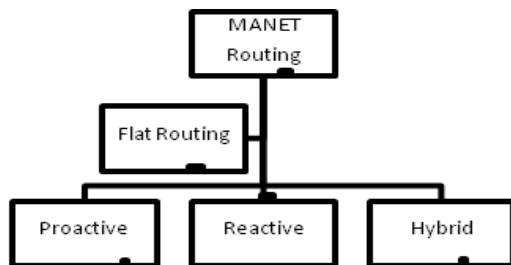


Fig 1: Routing Protocols

Proactive Routing Protocols

Here each node has one or more tables that contain latest information of the routes to the any node in the network. Every row as next hop for reaching the node.

Advantage: it needs the less routing information.

Limitations: it tends to waste the bandwidth and the power in the network.

Reactive(on-dem and) Routing Protocol

AODV (Adhoc on demand vector) routing protocol. It is the reactive routing protocol which the combination of dynamic source

routing protocol and distance source (DSR+DSDV). It takes the lazy approach of routing. They are not able to maintain proper route topology. AODV routing protocol uses a broadcast route discovery mechanism and it depends on dynamically established route. AODV builds routes by using a route request (RREQ)/ route reply (RREP) query cycle. When a source node requires destination route for which it does not have a route already, it broadcasts RREQ packet across the network. The nodes receiving this packet update the information for the source node and sets up backward pointer information for the source node in the routing table.

SIMULATION MODEL

There are various simulation tools used to develop wireless sensor network for creating senciaro . Different tools use such as NS2, NS3, Exata, Qualnet, MATLAB. From these we are using the MATLAB and Exata as network simulator because it is high performance software tools .

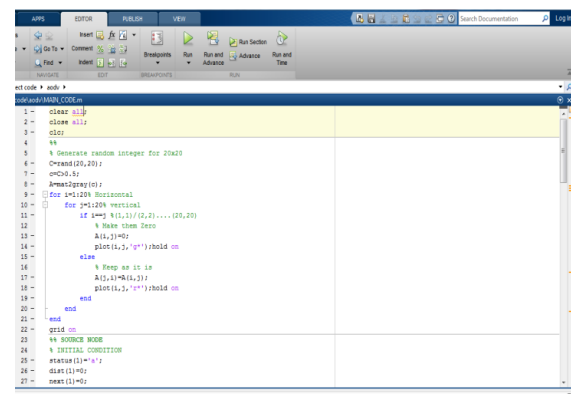


Fig 2: MATLAB Simulator

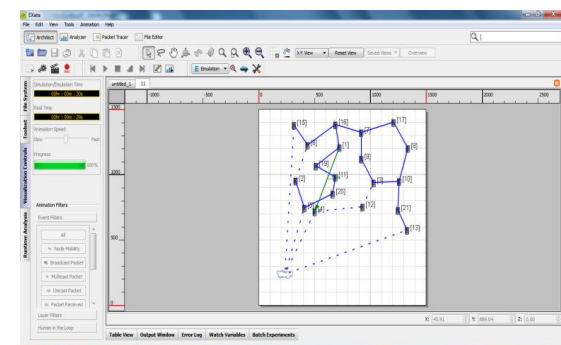


Fig 3: Exata Simulator

**ALGORITHM STEP
AODV PROTOCOL**

Source

If a route to the destination is available, start sending data. Else generate a RREQ packet.

Increment the RREQID by 1. Increment the sequence number by 1. Destination IP address, currently available sequence number included.

Intermediate Node

Generate route reply, if a 'fresh enough' route is a valid route entry for the destination whose associated sequence number is at least as great as that contained in the RREQ. Change the sequence number of the destination node if stale, increment the hop count by 1 and forward.

Destination

1. Increment sequence number of the destination.
2. Generate a RREQ message and sent back to Originator.

**MATLAB SIMULATION
PARAMETERS**

Parameter	Value
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Node Location	Random
Mobility Model	Random Walk
Routing Protocol used	AODV

RESULTS

The main method of evaluating the performance of MANET is simulation. The simulation of AODV routing protocol is done in MATLAB and Exata. The network is taken as 20 X 20 square kilometres. The performance is recorded taking different number of nodes.

MATLAB Simulation Output:

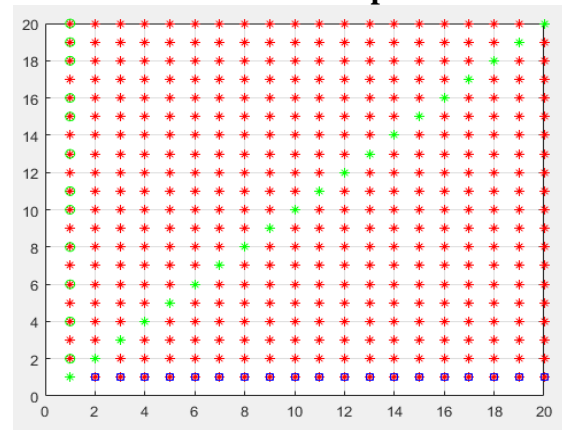
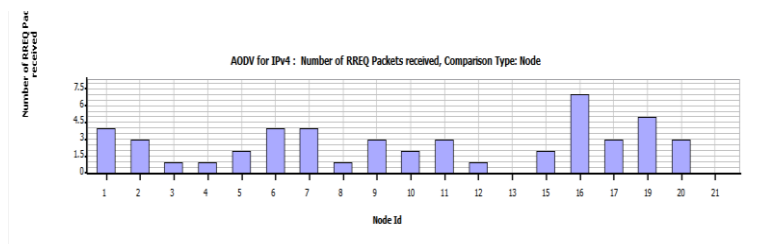
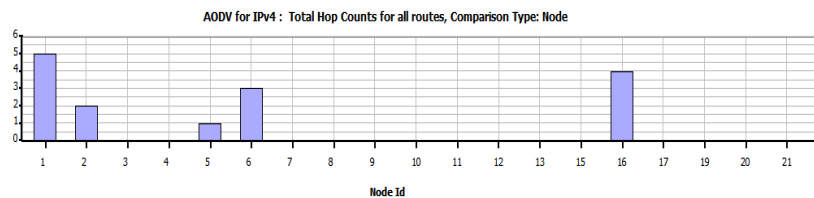
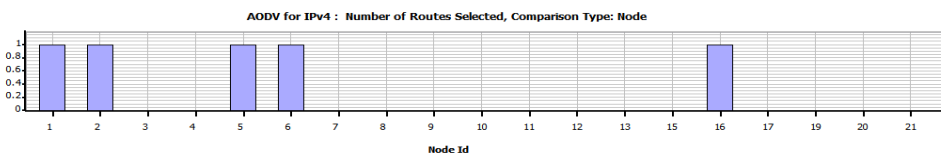
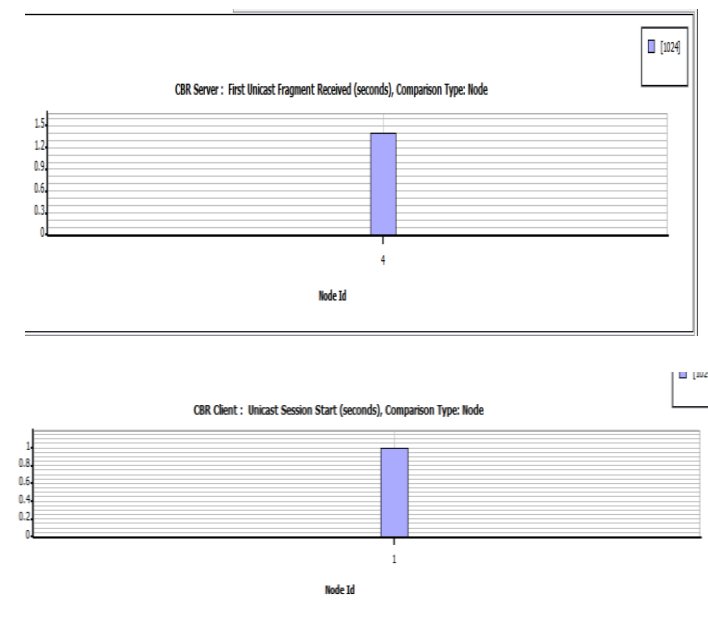


Fig 4: matlab o/p of aodv

Exata Simulation Output





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