

CHAPTER I

INTRODUCTION

1.1 Background

In mobile wireless network, there are two typical network, that mobile wireless needed infrastructure network and infrastructure less networks. MANETs is a typical infrastructure less network. As we known that MANETs are collections of mobile nodes that have desirable features such as fast deployment and have the ability to communicate while on the move situation[1].

One of a critical challenge in MANETs design is how to development of efficient routing protocols effectively. The nodes in MANETs have limited communication resources such as bandwidth, buffer space, battery power, etc. Resources constraints in MANETs require the traffic to be properly distributed among the mobile host[4].

A routing protocol in MANETs should fairly distributed the routing task among the mobile host. With most host power down, the connectivity of the network will be reduced which will lead to call failure due to network partitions. In addition, the nodes with heavy routing duties likely have large queuing delay and high packet loss ratio. Therefore, the end-to-end delay and packet loss ratio are large for the connection using those nodes. Thus load balancing is emerging as a key tool to better use MANETs resources and improves MANETs performance. With load balancing, MANETs can minimize traffic congestion and load unbalance, as result, end-to-end packet delay can be minimized, mobile nodes lifetime can be maximized and network energy consumption can be balanced [4].

1.2 Research Purpose

This research about analysis performance and fairness of AODV and DSDV based on ACO in MANETs. We present a modification to optimize AODV and

DSDV routing protocols using on of the swarm intelligence Ant Colony Optimization.

We have taken the existing implementation of AODV and DSDV then applied the ACO algorithm to them without removing any pre-existing mechanism. And then take measuring performance AODV and DSDV between conventional routing protocols and have been modified ACO. In addition, we also measured load balancing contained in each conventional routing protocols and modified routing protocols by calculate its fairness index.

Our methods to validated routing protocols performance is implementing them by simulation in Network Simulator and measuring parameter including throughput, delay time, and overhead routing of each routing protocol used. While for validated fairness index using Jains Fairness Index.

1.3 Formulation of Problems

In this research we used problem formulation:

- Modeling and simulating conventional routing protocols AODV, DSDV, and ACO (using AntHocNet Algorithms) in mobile adhoc network structure.
- Measuring performance parameters for conventional routing protocols, determine weakness parameters can be improved.
- Modelling and simulating ACO algorithm (AntHocNet) to improve conventional routing protocols AODV and DSDV
- Measuring performance parameters for modification routing protocols AODV+Ant and DSDV+Ant.
- Analysis comparison performance parameters for conventional AODV, DSDV, AntHocNet, and both of modification AODV+AntHocNet and DSDV+AntHocNet

- For validate performance parameter, we determine of the simulation model i.e scenario node movement (node speed, node pause time), data application, number of node, and user connection

1.4 Scope of Problems

- Routing Protocol is used AODV, DSDV, and Ant Colony Optimazation (AntHocNet)
- Node distribution is regularly generates, and nodes are mobile during the simulation.
- Number of nodes scenario are 10 - 50 nodes in the area of 750 x 750 meters
- Time simulation for 120 seconds
- Node speed scenario between 2m/s - 10m/s (walking speed) for
- Pause time scenario: dynamics movement nodes between 0s - 60s
- User connection scenario for validated fairness index between 1 – 5 user connection.
- Simulations carried out by using the tool Network Simulator NS V.2.35
- Performance parameters analyzed include throughput, delay, overhead routing, and fairness index of each routing algorithms and protocols used
- Make analysis table dan figure for both of routing protocols algorithms based on literature.

1.5 Methods of Research

1. Modelling Algorithms

Modeling AODV, DSDV, and AntHocNet with Linux Platform using tools Network Simulator NS V.2.35.

2. Simulation and Analysis

Making simulation for Fairness and Performance AODV, DSDV, AntHocNet, and both of modified routing protocols AODV+AntHocNet and DSDV+AntHocNet.

Analysis performance parameters includes Throughput, Delay Time, Over Head Routing, and Fairness Index.

1.6 Wiriting Sysyhematic

This thesis report divided into five chapters and sequence arranged as follow:

CHAPTER I INTRODUCTION

In this chapter are described about purpose and background reasearch. In addition, described about formulation and scope of problems.

CHAPTER II LITERATURE REVIEW

This chapter described the fundamental theory of routing algorithms in MANETs mainly AODV, DSDV, and Ant Colony Optimazation as well as various development-related research based journals.

CHAPTER III MODELING SYSTEM

This chapter described associated with modeling algorithms performed, object modeling and simulation of routing protocols AODV, DSDV, AntHocNet algorithms and various assumptions used in modeling and simulation. At the end of the chapter will be given an overview of the test parameters to be analyzed in the next chapter.

CHAPTER IV SIMULATION AND ANALYSIS

This chapter described the results of modeling and simulation then analyzed and evaluated. Results of the modeling and simulation of routing protocols AODV, DSDV, AntHocNet algorithm, then made a comparison of its performance and fairness.

CHAPTER V CONCLUSION AND SUGGEST

This chapter described conclusions on the results of the simulation analysis has been done in Chapter III and Chapter IV. The author also gives various suggestions and prospects for future research.