

**UNIVERSITI TEKNOLOGI MARA**

**PERFORMANCE EVALUATIONS OF  
ADAPTIVE DYNAMIC SOURCE ROUTING  
PROTOCOL FOR MOBILE AD HOC  
NETWORK**

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Thesis submitted in fulfillment of the requirements  
for the degree of  
**Master of Science**

**Faculty of Electrical Engineering**

**January 2007**

## Candidate's Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as reference work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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## **ABSTRACT**

Mobile Ad Hoc Network (MANET) is a collection of wireless mobile nodes forming a temporary network without the use of any existing network infrastructure or centralized administration. The topology of the network is dynamic and the changes are often unpredictable. Nodes in ad hoc network find the routes themselves; thus, routing poses a big challenge. Many routing protocol had been proposed in literature. Dynamic Source Routing (DSR) protocol which is an on demand base routing, seems to have good performance and more reliable in dynamic environment. However the routing overhead of DSR needs to be improved. To overcome the weakness, instead of improving the features in the protocol, active source is introduced. This active source is an independent module and does not change any existing aspect of the DSR module. In active source, active packet is deployed. This active packet roams around the network and collects network topology information in its cache. By checking all the contents in active packet when it passes through networks nodes, route cache of network nodes is updates. In this research, both DSR and active source are implemented and combined in OPNET simulation software. The results show the deployment of this active source reduces up to 49 percent routing overhead and reduces end-to-end delay until 20.5 percent. The frequent update of route cache in network nodes, make network nodes always ready with valid route. These contributions improve the routing overhead and end-to-end delay.

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# CHAPTER 1

## INTRODUCTION

This chapter introduces the research. Firstly, some review of research background is presented. Then, the benefits of the research to other party are discussed. The problem statement, the objective, the scope and how the thesis is organized, all of these will be further explained in this chapter.

### 1.1 Review Of Research Background

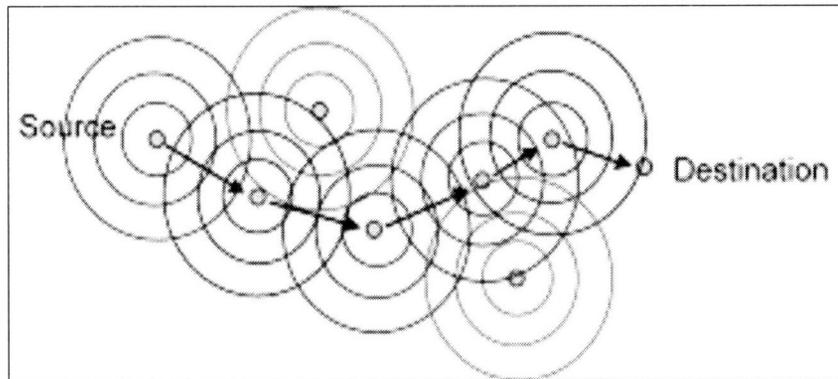


Figure 1.1: Mobile Ad Hoc Network

An Ad Hoc Network is a wireless network that does not rely on any access point to handle transaction or communication between nodes in the coverage area. Intelligent signal is passes from one node to another until it reaches the destination. Meaning that, each node has an ability to receive the intelligent signal as well as route and pass it to another node until the destination node is reached. The ability of an ad hoc's node is optimizing if the node really fulfill the requirement of wireless networking, which is mobility. Thus, the name Mobile Ad Hoc Network (MANET) is really suitable in order to describe how a wireless node really adopts the mobility trend in the dynamic human life style nowadays.