

UNIVERSITI TEKNOLOGI MARA

**ROUTING PERFORMANCE
ANALYSIS BASED ON REAL TIME
APPLICATION**

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ABSTRACT

The purpose of routing protocols is to determine the usable routes on the network, construct the routing tables and create routing decisions. In this project, the routing protocols that chosen are Enhanced Interior Gateway Routing Protocol (EIGRP) and Open Shortest Path First (OSPF). The aim of this project is to improve the network system in term of better performance by selecting the right routing protocols among EIGRP and OSPF for real time application such as video streaming and voice conferencing. Based on studies and literature review on this project, it reveal that there are still lack of analyzing on more parameters of network performance and used OPNET Modeler as the technique of the simulation. So, the purpose of this study is to define the comparison of network performance in term of throughput, jitter, convergence time, packet loss and end to end delay. Before the performance can be analyze and compared, network models are created and simulated using OPNET Modeler. These network models are designed based on three situations which are EIGRP alone, OSPF alone and combination of OSPF and EIGRP. The objective of this project is achieved and completed. The results show that the performance EIGRP routing protocol is better than OSPF and combination of OSPF and EIGRP routing protocol.

Index Terms—EIGRP, OSPF and OPNET Modeler.

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CHAPTER ONE

INTRODUCTION

1.1 RESEARCH BACKGROUND

Nowadays, one of most important aspects in life is networking and communications. Life become much easier because of networking and communication. Every person easier and faster to contact any other person in this world. There are various ways to connect to persons or anything but the main ways is by phones and internet. Every person can communicate with any other person in a group or individual by the internet. However nowadays, by mobile phones it also possible to communicate with a group of people. The communication between computers has increased day by day. By sit in one place, the users can communicate in other places using a variety of communication channels. Aspects of communication that are most important is routing. This can be done using routing protocol. A routing protocols describe about how routers communicate between each other. It also about how the information are broadcast which allow them to select route between any two nodes on a computer network.

EIGRP [2] is an advanced distance vector protocol. The characteristics of the EIGRP almost the same to the link-state protocols. EIGRP is a classless protocol. Classless protocols means that it allows the use of Variable Length Subnet Masks (VLSMs). VLSM is a method that allows network administrators to split an IP address space into subnets of different sizes. In other words, separating the IP addresses into subnets. Then, assigning it depends to the individual need on a network. EIGRP also supports Classless Inter-Domain Routing (CIDR). It is for a scalable allocation of IP addresses. The goal of CIDR is to help delay the rapid exhaustion of IPv4 addresses.

Open Shortest Path First (OSPF) [9] is a link state routing protocol for Internet Protocol (IP) networks. Thus, since it is link state routing it will using a link state routing