COMPARISON OF

IPV6 TRANSITION MECHANISM

NOOR HAFIZA ABD RAHMAN

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

MALAYSIA

ACKNOWLEDGEMENT

ABSTRACT

Exhaustion of the current version of IPv4 led to the new alternative which is by migrating IPv4 to a new protocol, IPv6. The migration to IPv6 will be facilitated with several transition mechanisms. Even though every process requires compliances with corresponding capabilities, all transition mechanisms have a similar objective which is to ensure smooth transition. This paper focuses on the performance comparison of IPv6 transition namely dual stack and 6to4 tunneling. The evaluations are based on test bed setup where IPv6 transition mechanisms of data transmission were tested. The network performance application software has been applied to end-to-end devices to obtain the throughput and round trip time for TCP and UDP on the transport layer. The performance of IPv6 was compared with the native IPv4 environment. The results proved that dual stack IPv6 transition mechanism is a more preferable method in the case of TCP data transmission.

CONTENTS

CHAPTER 1

INTRODUCTION

1.0   Background of Study

In recent years, the number of unused Internet Protocol (IP) addresses is nearly depleted. As an alternative, Internet users have started some efforts to find a solution by introducing IPv6. Referring to [1], they believed that IPv6 is a great potential as a replacement to the current IPv4. The main reason is to fulfill the needs of the number of addresses while reducing other weaknesses the protocol have. Since a decade ago, many attentions possessed to ensure IPv6 reliability for future IP implementations. Until present, both IPv6 and IPv4 protocol are used concurrently in the Internet network. The implementation of a dual-stack protocol on IPv4-IPv6 network uses both protocols simultaneously. This method is called the transition mechanism. The transition mechanism is proposed to create a smooth transition from IPv4 to IPv6. Consequently, the Internet Engineering Task Force (IETF) has established a working group named the Next Generation Transition (NGTRANS) which aims to develop mechanisms that support operations between IPv4 and IPv6 [2]. As regards, numerous corresponding transmission mechanisms have been created.

The evolving of the network IPv4 from the small scalability to worldwide Internet over the years has proof and shown in terms of performance, capability and bring to occupy a leading position in the growth of internet usage. From 1981 which TCP/IP is