Universiti Teknologi MARA

Comparative Study on Multimedia Application over IPV4 and IPV6 Network Using GNS3 and Local Machine

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ABSTRACT

In this day, the use of Internet has growth rapidly in order to communicate with the whole world. There are many internet-enabled mobile devices that are affordable to everybody, thus it can increase the use of Internet. However, there are a huge demand on the IP addresses allocation that leads to the exhaustion of addresses in Internet Protocol Version 4 (IPV4). Therefore, Internet Protocol Version 6 (IPV6) has been introduced to cater this problem. IPV6 uses 128-bit address or approximately 4.3 ×1038 addresses while IPV4 only uses 32-bit logical address. Hence, we have no choice but to migrate to IPV6 as IPV6 provides larger address space than IPV4. The main problem is there are many works need to be done to migrate to IPV6. The two protocols are not designed to be interoperable, complicating the transition to IPV6. Migration includes upgrading, reconfiguring and testing all hardware and software. The migration from IPV4 to IPV6 cannot be force drastically. The study is done to compare the performance of IPV4 and IPV6 network by using Dual stack technology during multimedia streaming. The performance is analysed based on the GNS3 simulator and real Cisco devices. Comprehensive quantifiers were used to measure the performance between the two networks. It will be measured through Latency (delay), Throughput and Round Trip Time (RTT) or also known as Round Trip Delay Time (RTD). The results obtained from the analysis benchmark for the future to see the importance of migrating from IPV4 to IPV6 addresses.

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CHAPTER 1

INTRODUCTION

This chapter provides the background and rationale for the study. It also gives details of the significance of the privacy over the Internet, the issues and problems that led to this research.

1.1   Background of Study

Nowadays, people can accessed data and information from all over the world in various sources, either it in digital or non-digital. It is no doubt that Internet has been a major contributor for all people in accessing the data.

Internet Protocol (IP) is one of the major protocols in the TCP/IP protocols suite. It identifies the logical addresses of hosts and the format of the packets in order to communicate over a network. In Open System Interconnection (OSI) model, this protocol works at the network layer while in TCP/IP model; it operates at the Internet layer. IP uses best effort delivery where it does not guarantee that the packets will be safely arrived at the destination host.

The fourth version of IP, Internet Protocol Version 4 (IPV4) is a connectionless protocol. It has been widely used as the networking protocol of Internet in data communication over different kinds of networks. It uses 32-bit logical address that provides almost 4.3 billion hosts in the world.

In February 2011, Internet Assigned Number Authority (IANA), which is a private American corporation whose manage global IP address allocation and assigns it to Regional Internet Registries (RIRs), had allocated the last global IPV4 addresses space. IP addresses with /eight blocks had not been provided due to the