Abstract

The allocation of the IP that is being used at present, IPv4, is predicted to be used up because of its limitation. The limitation of IPv4 in the amount made technique such as NAT to enable hosts so they can be connected by borrowing the Public IP.

IPv6[1] has been proposed by the Internet Engineering Task Force (IETF) to replace the existing IPv4[2]. To enable the integration of IPv6 to the existing network, several mechanisms have been proposed by the IETF IPng Transition Working Group, a work group that was formed to develop the next generation Internet Protocol.

In this final project were implemented two mechanisms, 6over4[6] and IPv6 in IPv4 tunneling using 6to4[7], which is connected with the performance of IPv6. The impact of the usage of the implementation will be discussed on end-to-end application using the parameter of *Throughput, Delay, Jitter, Packet Loss, TCP Connection Time,* and *CPU Utilization.* Based on the observation of the HTTP application and video streaming, influenced by different background traffic, the implementation showed better result for video streaming using 6to4 method. This fact was proved by the bigger throughput and less delay, jitter, and packet loss on the network using 6to4 method by video streaming. On the other side, for HTTP, the delay, TCP Connection Time showed better results using 6over4. The CPU Utilization result also showed the bigger usage on 6over4 method by mean of 10% higher.

The conclusions that can be depicted are the 6to4 method is better for multimedia application such as video streaming, meanwhile the TCP communication via HTTP is better on 6over4.

Keyword: *IPv4, IPv6, 6over4, 6to4, encapsulation, tunneling, performance comparation.*