ABSTRACT

IMS *(IP Multimedia Subsystem)* is an IP-based telecommunication network architecture. This technology is developed by interconnecting the two wireless and wireline technology with various multimedia services (voice, data, video) such as VoIP, chatting, video call, VoD, and IP-based IPTV. Nowadays IPv4 has been proved as a tough technology for internet, but along its usage, the allocated IP addresses keep decreasing. Hence, IPv6 starts to be developed to overcome the decrease of IP addresses in IPv4.

This final task is about testing the performance of multimedia services over IPv4 and IPv6-based network. The services tested are VoIP and video call. While the applications used for its implementation are OpenIMSCore as an IPv4-service server with the component within it including CSCF, HSS, and DNS server; and OpenSIPS as an IPv6-service server with the component within it including the integrated proxy server and DNS server.

From the measurement results obtained highest delay when the service is passed in an IPv6 network no background traffic for 19.99540837ms and with background traffic 75Mbps was also present in IPv6 networks for 20.00993223ms. When the addition of background traffic, a significant increase in delay occurs in the IPv4-based IMS network is equal to 0.1508%. For jitter, no background traffic on the network, the highest jitter present in IPv6 IMS network for 13.48224267ms. And with background traffic 75Mbps on the network, the highest jitter is also available on the IPv6 IMS network for 12.405273ms. For throughput, no background traffic on the network, the resulting throughput greater than with background traffic 75Mbps on the network and IPv6 IMS network throughput value iss greater than IPv4 IMS network. For packet loss on the network with no background traffic, packet loss are highest in IPv6 IMS network is equal to 0.900666667% and with background traffic 75Mbps on the network, the highest packet loss is also present in IPv6 IMS network is equal to 5.0629%.

Keyword: IMS, VoIP, video call, OpenIMSCore, OpenSIPS, VoIP, IPv4, IPv6, delay, jitter, throughput, packet loss