

## ABSTRACT

*The development of the internet is growing rapidly so that the number of IPs in IPv4 is no longer sufficient. Because IP in IPv4 itself only consists of 32 bits and has a very limited number of IP addresses. Thus, to overcome the problem of IPv4 that will run out is to replace it with the development of IPv4 to IPv6. The use of IPv6 is the right solution to sustain the internet today. Because the use of the internet is now increasing, multimedia applications are also very much needed. This can be seen from technological advances that currently make it possible to get data, video and voice services through broadband access which is commonly known as triple play.*

*In this final project, the author compares IPv4 and IPv6 protocols using Software Defined Network (SDN) on triple play services. Performance testing is done by providing background traffic of 100 Mbps, 200 Mbps, 300 Mbps, 400 Mbps and 500 Mbps. Performance can be measured with the parameters of Delay, Jitter, Throughput, Packet Loss and Resource Utilization (CPU and Memory Usage).*

*Based on the test results, the IPv6 protocol has a lower throughput value of 36,62 kbit/s on data services. The packet loss value against IPv6 has a value of 0%. In data services the average delay value for IPv6 is 0,069 ms while the average jitter value for IPv6 is 0.032 ms. While in IPv4 the average value is not much different from IPv6. In the CPU and Memory Usage parameters, IPv4 requires more resources than IPv6. However, the QoS and Resource Utilization (CPU and Memory Usage) performance of IPv6 is better than IPv4 for data, voice and video services.*

**Keywords:** *Software Defined Network, IPv4, IPv6, QoS, Resource Utilization (CPU and Memory Usage).*