ABSTRACT

Within the vast scope of the network, there is no denying that the number of nodes in the network is increasing. A fast process to overcome data traffic management is needed by prioritizing time efficiency so that users do not need much time. Multi Protocol Label Switching (MPLS) is one of the network tuning methods to improve network performance, offering a method developed to improve the performance of IP technology with the concept of Open Shortest Path First (OSPF) routing protocol to see how the method transmits data under various conditions. MPLS-based technology has the ability to support nested addresses in resolving speed and QoS issues. The purpose of this study was to analyze and compare IPv4 and IPv6 performance on OSPF MPLS networks. By measuring QoS parameters of throughput, packet loss, delay and jitter. This study simulates OSPF routing scenarios in GNS3 software. The results showed that the quality of the OSPF MPLS IPv4 network is better than the OSPF MPLS IPv6 network, it can be seen with a throughput value of 752 bps, an average delay of 0.71 ms, packet loss of 16.3% and jitter of 1.33 ms for IPv4. Overall, this study shows that IPv4 networks have good performance and high reliability in sending data packets quickly and stably. With OSPF MPLS which shows good reliability and stability although with slightly lower throughput compared to IPv6 testing.

Keywords*: MPLS, OSPF, delay, jitter, throughput, packet loss.*