

## ABSTRACT

Initially, the IP network without any QoS guarantees or called Best Effort. Since the inclusion of multimedia services such as VoIP, QoS guarantees are required. One of the most popular QoS schemes is MPLS VPN. But it is not yet known how much QoS benefits are gained through the addition of MPLS VPN.

So in this final project, QoS measurements for voice, video and data services are carried out in three scenarios, namely the scenario without MPLS VPN, the scenario with MPLS without VPN, and the scenario with MPLS VPN, both in conditions without traffic background or with background traffic. From the experiments with the three scenarios, it can be seen how much profit and increase in QoS occur, so it can be seen the best scenario to be implemented based on service needs.

The results of the test are based on three scenarios that have been carried out, namely, for voice services on the highest traffic background of 700 Mbps, the lowest delay is found in the MPLS scenario without VPN, then for video services with the same traffic background the lowest delay is found in the MPLS scenario without VPN, and for data services with the same traffic background, the highest throughput is found in the MPLS scenario without VPN.

Keyword : MPLS-VPN, OSPF, *Quality of Service*