# ABSTRACT

MPLS is a technology that comes as a solution of user who wants to send data faster and safer. This technology has been developed and used by the Service Provider on their main network widely. Theoretically, MPLS capable for delivering data transfer rates better than IP because of its advantages that packet forwarding using labels no longer use IP lookup. MPLS VPN is one of implementation of MPLS that provides privatization through the public network, where routers PE (Provider Edge) participate in customer routing to ensure optimal routing between sites and carry a set of separate routes for each customer site. Whereas IMS is an implementation of the concept of NGN that can support migration to full packet-based technology.

This final project is testing the performance of multimedia services in IMS-based MPLS-VPN. The multimedia services tested are VoIP and Videocall, using the application OpenIMS as the IMS server and five pieces mikrotik router to be configured for MPLS-VPN integration.

From the experiment results, the general model of MPLS VPN is better than non-MPLS VPN. The highest delay value of VoIP and VideoCall is 20.191 ms and 22,143 ms both on non MPLS-VPN network when background traffic is 80 Mbps. For Jitter, the value of Voip and Videocall on non MPLS-VPN is 3% and 6,68% of MPLS-VPN when background traffic 80Mbps. The highest throughput for VoIP is 4433,611 bytes/sec on MPLS VPN and for videocall is 10368 bytes/sec on MPLS VPN without background traffic. Packet loss occurs when the background traffic starts to rise from 60 Mbps on voip and from 40Mbps on video call. The highest packet loss rate in Voip is 0.828% and 2,348% for videocall when background traffic is 80 Mbps on non MPLS VPN network.

keywords : MPLS, MPLS VPN, IMS, VoIP, Video Call