

ABSTRACT

The development of telecommunication network technology is growing rapidly nowadays. One of them is multimedia network IP based (internet protocol), in the span of a few years various multimedia services increase, such as *video on demand*, *video streaming*, *video conference*, and *video live streaming*. Under these conditions then the internet service providers will attempt to serve customers with different multimedia services and good quality by maximizing the resource on the existing network.

Therefore necessary a technology that can maximize the resource (bandwidth, routing) on the network. One of the technologies developed is MPLS, this technology has forwarding method through a network by using the information in the label attached to the IP packet. By using OSPF routing that's applied to the network, is expected to give rise to the value of QoS. Example of services provided by MPLS is TE (Traffic Engineering). This service minimizes the congestion and increase the network performance. MPLS TE modify the routing pattern to provide mapping the flow of traffic on the network resources maximum.

In this thesis performed simulations using GNS3 simulator and analysis of how big the influence of MPLS – TE on QoS network performance and compare it with the only use MPLS for video traffic with a varying amount of *background* traffic. Network QoS performance parameters analyzed are *delay*, *jitter*, *packet loss*, and *throughput*. From the testing and analysis is known that the use of MPLS-TE network can generate QoS and MOS values are better when compared without MPLS-TE network. Judging from average *delay* generated by MPLS – TE network for densest background traffic at an average of 46,869 ms, *throughput* of 100.549,709 bps, and *packet loss* of 22,921 %. It shows that by using the MPLS-TE network can produce a better QoS performance when compared with normal MPLS routing and network levels traditional routing protocols

Keyword : *Video Streaming, MPLS, MPLS – TE, Traffic Engineering, QoS, Multicast, and simulator GNS.*