

## ABSTRACT

*Quality of Service (QOS)* is a very important aspect in a communication system. There are many consideration that has to be noted in order to have a good quality on our network. Having a large bandwidth is one alternative, but this way is not effective because the traffic passed will not always have a high traffic value. To increase the performance of our network, some solutions are by using *differential service*, *resource reservation protocol (RSVP)*, *multi protocol layer switching (MPTS)*, and the use of routing management

*Multi-Protocol Label Switching (MPLS)* is a method of data *forwarding* through a network using information on a label sticked to an IP packet. With the routing method implemented on the MPLS network, it is expected increase the performance on the QOS value of the network. Since the request of information exchange on the internet increases significantly, MPLS network offers an efficient traffic-engineering function, so that the need of MPLS VPN also increases. BGP (Border Gateway Protocol)/ MPLS VPN is a VPN IP-BASED that offers easeness on expanding users location, because it has a close peer-to-peer relationship between PE (Provider Edge) router and CE (customer Edge) router. BGP/MPLS VPN has a profit that offers traffic-engineering function to a personal network.

This final project will implement RIPvs2, OSPF, and EIGRP routing protocol, on a MPLS-VPN. Where those three protocol will be implemented on GNS3 as MPLS router. The result of this implementation is expected to give a picture on choosing the appropriate routing protocol on MPLS-VPN network.

From the *testbed* result done on laboratorium, the use of OSPF and EIGRP routing protocol results in a better QOS value than using RIP. Viewed from the value of *throughput*, *delay*, *packet loss*, and *jitter* gotten from the network using MPLS-VPN technology.

Kata kunci : MPLS-VPN, OSPF,EIGRP,RIPv2