

ABSTRACT

Multi-Protocol Label Switching (MPLS) is a method of forwarding data over the network using the information in the labels on IP packets. Selection of the proper routing protocol on the MPLS network is important that the network created to be effective and efficient. And expected to be able to provide increased value of Quality of Service (QoS) on the network. This study will use routing protocols EIGRP, OSPF, and RIPv2 which will be applied to MPLS-VPN network to be implemented on GNS3 application. Retrieving data using three scenarios, namely MPLS VPN OSPF, EIGRP MPLS VPN, and MPLS VPN RIPv2. The service used is video streaming and data transfer. In both of these services is added to the condition of the network traffic load to be like the real network. Load traffic for video services at 15 Mbit, 30 Mbit, 45 Mbit and traffic load for data services at 150 Kbit, 250 Kbit, 350 Kbit with data collection for each traffic load as much as 5 times. The QoS parameters used: throughput, delay, jitter and packet loss. In the data collection showed that the routing protocol EIGRP is better than the routing protocol OSPF and RIPv2, refer to the results obtained in this study. In the data transfer services, the value of delay in the EIGRP smaller than the OSPF 0.487 ms and 0.533 ms smaller compared with RIPv2. And for streaming video services, EIGRP delay smaller than the 0.123 ms and smaller OSPF 0.125 compared with RIPv2. In the data transfer services, the value of jitter on a smaller EIGRP 0.487 ms compared to OSPF and is smaller than the RIPv2 0.533 ms. And for streaming video services, EIGRP smaller jitter 1,715 ms compared with OSPF and smaller .233 compared with RIPv2. For packet loss, the video streaming EIGRP smaller value of 0.58% compared with OSPF and smaller 0.98% compared with RIPv2.

Keywords : MPLS VPN, GNS3, OSPF, EIGRP, RIPv2, QoS