ABSTRACT

Virtual Local Area Network (VLAN) is a network that allows Personal Computers (PCs) and users in one geographic environment to communicate as if they were on one LAN, where VLANs break up a large network into smaller parts. In addition, Multiprotocol Label Switching (MPLS) as a technology in sending data packets on a backbone network at 2.5 OSI Layer can facilitate packet delivery by looking at the label without having to look at the destination IP address. Therefore, this study aims to apply MPLS technology combined with the OSPF routing protocol in VLAN network planning, especially in the ITTP Campus Rectorate Building. This study has 2 test scenarios, namely OSPF without MPLS and OSPF with MPLS. Furthermore, this test will be simulated using GNS3 software, and measurement of the scenario test will be carried out using D-ITG by sending UDP packets. The parameters for testing the quality of service (QoS) in this study include the parameters of delay, jitter, throughput, and packet loss. This test is carried out by providing variations in data sizes starting from 10 MB, 20 MB, 50 MB, 100 MB, and 150 MB with seven trials for 15s. The results of testing the parameters of delay, jitter, and packet loss in scenario 2 (OSPF with MPLS) have a smaller value than scenario 1 (OSPF without MPLS). Where the value obtained is included in the very good category. Based on the results of the simulation shows that scenario 2 (OSPF with MPLS) is better than scenario 1 (OSPF without MPLS) due to the least number of failures in sending data packets to reach the destination.

Keywords: *VLAN, OSPF, MPLS*