ABSTRACT

In this final project, an MPLS or Multi Protocol Label Switching network simulation is designed as one of the network optimization techniques used to improve its performance. With the development of computer technology, the use of computer networks is becoming more widespread. MPLS functions to transmit data with a certain priority based on the data label it passes through in order to ensure its security. This research will simulate MPLS networks using Cisco devices based on GNS3 VM Ubuntu - 16. Simulations are carried out using 1 laptop using VMware, the simulator used is GNS3 VM and Cisco 7200 as a router.

Based on the research results, it can be concluded that the verification results on the ping and traceroute methods on each router are successful. Proven by 2 tests on MPLS, namely IP CEF, MPLS LDP Neighbor and MPLS Forwarding-table and testing on MPLS-VPN in the form of IP BGP Summary, IP BGP, and checking routing tables.

***Keywords*:** MPLS, GNS3 VM, Cisco Router