

## **ABSTRACT**

*Layer 3 Virtual Private Network (L3VPN) is a service provided on a Multiprotocol Label Switching (MPLS) network to provide a secure and fast virtual private network connection. This service is usually provided by internet service providers and is run on the core network. L3VPN on conventional MPLS networks is considered difficult to manage with the increasing demand for service usage. Using a Software Defined Network (SDN) on an L3VPN network can solve this problem, making the network easy to manage and improving its performance.*

*In this study, we will discuss the performance comparison between conventional L3VPN MPLS networks and L3VPN MPLS SDN networks. A performance comparison was conducted to find out whether the use of SDN on an L3VPN network can solve the problems that have been mentioned. Performance measurements are carried out with the Setup Time parameter or measure how fast SDN can help create L3VPN services.*

*At the end of this study, the L3VPN MPLS service Setup Time measurement has been carried out on both systems with several test scenarios. From the results obtained, the use of SDN can speed up the creation of L3VPN MPLS services from 757.14% to 1246% compared to conventional. The results of this study have shown that the use of SDN in the L3VPN MPLS service can increase the speed of service creation, simplify service management, and open up opportunities for conventional networks to be more programmable. L3VPN service becomes very flexible to use with SDN.*

**Keywords:** *L3VPN, MPLS, SDN, Performance.*