

ABSTRACT

Network security issues always be developed in line with the development of information technology. This is to minimize the actions taken by people who are not responsible. IP Security (IPsec) is a method of encryption to protect the confidentiality and integrity of user data in the public network services so that sensitive data will remain safe to be missed in the network. This is a valuable offer for users who need more security levels.

Multi Protocol Label Switching - Virtual Private Network (MPLS-VPN) is widely used by organizations that require extra security. But in fact this system has not completely secure, this is because MPLS-VPN only form a separate channel from the other channels on the internet while the network through which data has not been encrypted so that the confidentiality and integrity of data is still questioned. IPSec on MPLS-VPN is the perfect solution to improve the security on the service-based IP Multimedia Subsystem (IMS)

From the experiment obtained that network scanning to get an overview of the topology of the outer core into the core MPLS-VPN does not work, it is because of the propagation of the package is in the core using a label to establish Label Switching Path (LSP) through the process of virtual routing and forwarding (VRF) and added a route distinguisher (rd) at MPLS-VPN. Sniffing voice and chat communications in MPLS-VPN core found that the packets can be captured and the contents of the communication can be opened, but with IPSec tunnel the content of the packets cannot be opened because the packet has been encrypted using ESP protocol. Insertion package and modifications MPLS paths can be done using the tools loki in MPLS-VPN core, but with IPSec tunnel the insertion of packets towards client can not be done. The security system MPLS-VPN and IPSec Tunnel not guarantee from Denial of Service (DoS) attack, obtained from the testing of packet loss in the range of 30 percent which means it is still under the ITU-T G.104 standard which has the maximum threshold of 20 percent.

Keywords: Network Security, IPSec, MPLS-VPN, IP Multimedia Subsystem