

ABSTRACT

One of parameter that needs to be considered in communication system is Quality of Service (QoS). Therefore, to fulfill the QoS requirements of multimedia services on internet network, there are many architecture network that have been developed such as differential service, Reservation Protocol (RSVP), Multi Protocol Label Switching (MPLS) and etc.

MPLS is a method of forwarding data over a network using the information in the label attached to an IP packet. There are many applications that are used in MPLS, one of those is a Virtual Private Network (VPN). MPLS-VPN has many benefits such as scalability and security. MPLS-VPN is usually constructed by using a routing protocol Border Gateway Protocol (BGP). BGP is routing protocol for inter-Autonomous System (AS) in which BGP systems within the AS should connect to all other BGP systems to form a full-mesh configuration. Therefore, increasing number of networks will result to more iBGP session on BGP routers. To overcome this problem can be used in many ways and one of those is to use the mechanism of BGP Confederation. BGP Confederation will reduce the number of connections required of AS by dividing the AS into a single sub-AS in which a sub-AS consists of several AS routers.

In this final project implement an MPLS-VPN technology using BGP Confederation in a small network uses GNS3 as an MPLS Router emulator and compared to uses of Full-Mesh. Measurements taken include QoS consists time delay, jitter, throughput and packet loss. The result of this implementation is expected to provide a snapshot of the MPLS-VPN technology using BGP Confederation.

From the results of measurements, it is showed that the using of BGP-Confederation for MPLS-VPN network can minimized up to 14.93%, increase throughput to 8.55%, minimized packet loss up to 26.16% and minimized jitter up to 15.69 %. This suggests that the using of BGP-Confederation is providing better performance than the use of Full-Mesh topology on MPLS-VPN.

Keyword : QoS, MPLS-VPN, BGP, BGP Confederation