

ABSTRACT

MPLS technology has been developed and widely used by the service provider on their backbone network. With the advantages of forwarding packets based on label lookup and no longer based on an IPlookup, making it faster and core routers no longer need to know about customers routes, so that it does not need to run BGP routing protocol. MPLS consists of two main components, namely control plane to exchange routing information layer 3 and the label and the forwarding plane to forward packets based on destination addresses and labels.

MPLS VPN is one of MPLS implementation that combines the best features of an overlay model and peer-to-peer VPN, which the PE router (Provider Edge) participate in customer routing so as to ensure optimal routing between the site and bring a set of separate routes for each customer site that supports overlapping addressing.

On this final project designed and implemented MPLS VPN L3 network in the lab scale through an Ethernet physical network. Implementation of adirect network using the real router devices. It also carried out QoSperformance measurements using video streaming and FTP services on MPLS VPN network and non MPLS VPN (IP-OSPF).

The experimental results indicate that the MPLS VPN provides improvements to the influence of video streaming services compared with measurements obtained from IP with OSPF routing, because the applications run speed priority (best effort). In streaming video services, MPLS VPN generally provide QoS performance of IP-OSPF with a delay of 10.39% lower, the throughput of 2.54% higher, amounting to 12.96% packet loss is lower, the jitter of 14.82% lower. While on the FTP service, the general performance of MPLS VPN provide QoS to IP-OSPF: throughput of 6.64% lower, retransmission by 194.76% higher, amounting to 56.13% RTT higher.

Keywords: control plane, data plane, MPLS VPN, QoS