

## ABSTRACT

Performance and utility network became one of the main focus on the development of the infrastructure packet-based network. This is the reason to led the method of forwarding packages such as MPLS has. MPLS is expected to be the solution to increase the performance of packet transfer speeds on the network. However, in addition data transfer reliability aspects and quality assurance services also became important to maintain user convenience in communicating.

Some methods which can use to do to increase the performance or reliability of a network such as the Resource Reservation Protocol (RSVP), Multi Protocol Label Switching (MPLS) and use of the routing protocol. Multi-Protocol Label Switching (MPLS) is a method of forwarding data over a network by using the information in the label attached on the IP packet. Along with its development, MPLS offers an efficient traffic-engineering function, using the tunnelling function which can make the forwarding packet more efficient and the fast reroute feature which can make the network more reliable. Whereas in order to guarantee the quality of a service normally used method of Differentiated Service (DiffServ) or Integrated Service (IntServ).

In this final task implemented MPLS-TE and apply methods of differentiated service on the network by using the mikrotik router as MPLS Routers for Triple Play services. The test results of adding the diffserv methode on MPLS-TE network showed decrease 26% in delay for VoIP services, 51.57% for streaming Video service, and 11,14% for FTP service. For jitter parameters showed a decrease 26.30% for voip services, 50,51% for streaming video services. For throughput parameter showed a increase of 0,026% for voip services, and 1.22% for the streaming video service, as well as of 4,46% for the FTP service.

Keywords: MPLS, MPLS-TE, Differentiated Service, Triple Play Services