

## ABSTRACT

IP Multimedia Subsystem (IMS) representing standard International released by Third Generation Partnership Project (3GPP) at release 5, as control domain for service multimedia of third mobile system generation or Universal Mobile Telecommunication System (UMTS). IMS network earn to become core network or backbone for network 3G and also for wireless such as wireless LAN, PDAS, home DSL, and others with support of adequate Quality of Service. Need of QoS at IMS network is defined in 3GPP standard which focused in QoS need of a network at core backbone. QoS which is provided at IMS network is MPLS technology.

Multi-Protocol Label Switching (MPLS) is a method of forwarding data through a network by using information in label attached at packet IP. By Using QoS MPLS, service provider earn to give warranty bandwidth, warranty of delay and burden controller and able to serve assorted of service class (Class of Services) with guarantee QoS to all client.

There are various queue mechanism which can be used at router MPLS and at network non-MPLS (OSPF), such as FIFO (First In First Out), DRR (Deficit Round Robin), and RED (Random Early Detection).

Result of analysis from simulation that have been done that by applying MPLS in backbone network, forwarding packet give the repair of performance QoS from facet throughput, packet loss, delay, and jitter compared with non-MPLS (OSPF). While for the applying of some queue mechanism, obtained the result that RED mechanism own the better performance from FIFO and DRR, with the smallest acquirement of delay and packet loss that is equal to 15.17713 ms for the delay and 0.095232 % for the packet loss and also the best throughput that is equal to 365.9636 Kbps