

ABSTRACT

In today's digital era, the needs of people for communication networks are certainly increasing along with the development of technology. The needed is of course fast, efficient and inexpensive communication. The services offered also vary from data, video, and voice services. Based on these conditions, Internet Service Providers (ISP) will strive to serve customers with different services and good quality by maximizing resources on existing networks.

One technology that can maximize resources on the network is the Metro Ethernet network. Metro Ethernet is a network that is implemented in the Metropolitan area that provides LAN services connected to each other, different locations, and becomes a large private LAN network using the MPLS backbone. In this Final Project, performance measurements of existing networks were carried out and the Metro Ethernet network simulation at PT Indonesia Comnets Plus (PT ICON +) was carried out. Simulation is done using NS3 software. The QoS parameters analyzed are throughput, Frame Loss, and Latency.

Real data showed the delivery of 9014 packet size with 1 Gbps of data rate for throughput is 995.793 Mbps, the packet loss is 0% and the delay is 3.68396ms. Simulation showed throughput value of 874.366 Mbps, the packet loss is 0% and the delay is 4.30675 ms. Although Real Data's output is different with Simulation data's, it is still comprehend with the existing standard.

Keywords: Metro Ethernet, MPLS (Multiprotocol Label Switching), QoS(Quality of Service), NS-3(Network Simulator-3).