ABSTRACT

Telecommunication network and its use now is no longer dominated by voice communication channel, its portion is shared with the data communication channel. The longer the need for more data transmission speed and accuracy required, especially for metropolitan areas with a very dense population and diverse activities as well. So that required a technology that can meet those needs. One of those technology is Metro Ethernet technology.

In this final assignment is designed a Metro Ethernet network based on real network. It is also simulated the routing of Metro Ethernet network using *Rent or Buy* algorithm to further analyze the performance of a Metro Ethernet network by measuring QoS value of Metro Ethernet network include throughput, delay, jitter, and routing overhead. Next the result is compared with the *link state* algorithm.

The built simulation testing result using NS-2 Version 2.31, it can be recommended that the maximum *user* that can be served by Metro Ethernet network is less than 100 *users* for each service, and maximum *background traffic* is up to 80%. *Rent or buy* algorithm is better than *link state* algorithm when used on a channel with a heavy load and a lot of *link failure* occurs on the network. It can be seen that the simulation result with the number of *user* for each service is 8 and the number of *link failure* is 3 simultaneously, *rent or buy* algorithm indicates a smaller loss packet and higher throughput than link state algorithm.

Key words : Metro Ethernet, *Rent or buy, link state, background traffic.*