

ABSTRACT

The main network or backbone which connects every telecommunication facility functions as the most important part or backbone of connection availability. It is really necessary to have a reliable national backbone with a quality network which has a high bandwidth and bit rate. For users who need high-speed and long-distance data connection, the best choice of communication media is fiber optic since it has very high speed and very low delay.

A performance measurement of existing network and network simulation process are done in this thesis. A simulation is done by using Software Network Simulator-2. the analyzed QoS parameters are throughput, delay and packet loss.

The result acquired from the simulation indicates that the use of link backbone is still adequate; however, to anticipate connection interruption and overload data, a backup backbone is built to make the backbone network of Kota2-Tanjung Priok Connection to be no break system so that customers do not feel any trouble when it happens. From the measurement process at core network Cisco it is found out that there is a maximum 30.02% bandwidth utilizing and 1.369ms average delay, while the measurement of link backup backbone indicates a maximum 28% bandwidth utilizing. Therefore it is predicted that the core network backbone will be full if the number of users in the simulation reaches 2600 users with an 80% network trouble, so the backup backbone development is really required to increase service top customers.

Keywords: Metro Ethernet, backup backbone, QoS Parameter