ABSTRACT

Today Optional Northern Route network of Link between Surabaya – Denpasar uses Synchronous Digital Technology (SDH) that has capacity of STM-4 with Add Drop Multiplexer-600 (ADM-600) as the multiplexing - demultiplexing element. The transition needs of Plain Old Telephony Services (POTS) to Non-POTS that increase exponentially are the consequences of telecommunication and information technology progress which caused higher channel demand that need a reanalysis of optional Northern Route network for the following six years.

This final project analyzes the network for its capability of fulfilling the channel demand estimation in the year 2008 with identification existing condition of optional part of Northern Route link between Surabaya – Denpasar. The analysis is continued with choosing the transport technology that will be implemented based on existing fiber optic core using consideration, comparison of several levels SDH system with Wavelength Division Multiplexing (WDM), comparison of the limitation distance for dispersion of Standard Single Mode Fiber (SSMF) and Non Zero Dispersion Shifted Fiber (NZDSF).

The result of this final project analysis are the new configuration of optional part of northern route network using NZDSF fiber optic, SDH transport technology using two STM-64 equipments, seven EDFA's using 24 dB gain, three DCF's that are inserted in the network and the application of Bidirectional Self Healing Ring (BSHR) as the protection system.