

ABSTRACT

Dense Wavelength Division Multiplexing (DWDM) is a method to multiplex N optical channels where each channel has a unique wavelength and a certain bit rate into a single fiber optic.

This final project includes in the design Backbone Northern Route especially to accommodate the future need of channel demand up to 2008 with DWDM against the existing network technology (SDH). The network design would be implemented in comparison with SSMF and NZDSF covering the analyze effect of nonlinearity, amplifier and DCF application.

The design is capable of supporting 8×2.5 Gbps with the configuration using NZDSF, 8 OADM placed at Jakarta, Cirebon, Semarang, Surabaya, Madiun, Solo, Bandung, dan Bogor, 17 EDFA with $G = 33$ dB, and 25 STM-16 devices. With respect to the specification of laser and EDFA, this can be upgraded to 32 channels.