

## ABSTRACT

Developments and trends very fast data traffic has stimulated the development of optical network technology, which could accommodate a very large bandwidth needs (Next Generation Optical Transport Network). For that needed a reliable transport network technology. Optical Transport Network (OTN) is a technology that can increase bandwidth and reliability network by building a network functions into the optical network. An OTN consists of a set of optical network elements connected to fiber optic links. OTN can provide the functionality of transport, multiplexing, routing, management, supervision and durability of optical channels carrying the signals of customers.

In this final project, the simulation analysis will be conducted OTN-based optical backbone network with the implementation of Reed-Solomon FEC Codes. The analysis was done by changing the number of bits / symbol and error correction capability / symbols found on the Reed Solomon Codes, and the results simulated in Matlab 7.8 and compared the output with the system without using Reed-Solomon FEC Codes. Transmission quality assessment using parameters such as the Optical Signal to Noise Ratio (OSNR) and Bit Error Rate (BER).

The analysis results prove that the FEC can correct errors that occur as a result of noise, dispersion and attenuation that arise during the process of transmission lasts. With the same BER, the system without FEC OSNR values up to 9.2 dB, whereas with the addition of FEC, the value of OSNR system becomes 6.4 dB. Transmission quality improvements provided by the FEC is 2.8 dB.

Keywords: OTN, DWDM, FEC, *Reed Solomon Codes*, OSNR