

## ABSTRACT

Optic communication system has been rapidly developed until Tbps (Terra bit per second) and the usage of WDM (wavelength division multiplex) technology viewed as a best solution. The usage of electronic switching on high bit rate transmission process make a packet congestion at the output port. These packet congestion will occurs a packet loss that caused by contention between two or more packet in the output port at the same time. The implementation of WDM-optical buffer on photonic packet switch network could overcome the problems. This technology will keep and queued up the contention packet in optical buffer that will be delivered one by one at the output port. This final project this optical buffer can reach by using FDL (fiber delay line). Packet that have contention will be collected at FDL so that the packet will occupy output port at a different time. FDL used in this final project is FDL that used ring resonator applicated as optical buffer which could collect and delay the arrival of packet at the output port.

In FDL those packet will be queued up and collected in order to get the smallest time delay packet. This packet will be elapsed for the first time, followed by the packet with bigger delay time and so on. This final project is used to analyse and evaluate how the optimalization ring resonator can be used as fiber delay line compare with conventional FDL. From the experiment get radius combination ring resonator that can separate one packet to another in reflectation 0.25, that is 8.5  $\mu\text{m}$ . Fiber length if using FDL conventional is  $4.0895 \times 10^{-5}$  m, but if using FDL ring resonator, fiber length is  $1.256 \times 10^{-5}$  m.