ABSTRACT

The rapidly growth of multimedia services causing the needed of complex network with good performance. Increasing performance can be done by decreasing the probability of packet loss because of contention. Contention occurs when two or more packets are trying to leave the switch from the same output port at the same time. One of solution to overcome that problem is apply a buffering model at optical network. Buffering at optical fiber can overcome by using Fiber Delay Line that manage the arrival of packet by giving delay time to the packet that pass it.

One of the method to apply FDL is using sequence of resonators at the one side of waveguide, or Side Coupled Integrated Spaced Sequence of Resonators (SCISSOR). When using SCISSOR, the light need more time to circulate in each resonator than time to propagate between resonator. This concept become orientation to make a Fiber Delay Line.

The simulation results show that packet loss probability and average delay realization definite by delay unit. The optimum delay unit can decrease packet loss probability. In this case, the radius of resonators (R), coefficient r, and resonators refractive index (n) can affect the resultant of delay unit. The simulation results show that microring resonator with 3 µm radius can produce optimum delay, with refractive index 1,5 and coefficient r about 0,01. The SCISSOR's order acknowledge the buffer capacity, also can improve the system performance. SCISSOR at micro size and lossless, can give a lot of advantage if compared with conventional FDL, where need long fiber and also causing fiber loss.