

## ABSTRACT

Setraduta residential located at west Bandung is border with cimahi city, it is luxurious and modern housing. Access networks that are used are still using copper cable, it was considered inadequate triple play services. PT. Telkom want to improve the quality of services has had a plan that in 2013 around Bandung by migration the existing copper access network with Fiber Optic To The Home (FTTH). GPON (Gigabit Passive Optical Network) technology is selected PT.Telkom.

In this final project, made forecasting demand to know the number of internet users and bandwidth customers for the next few years. Then design access network FTTH using GPON technology with make initial path then determination of the device, specifications, layout and volume are used. Then to feasibility system of the analyst with parameter Power Link Budget, Rise Time Budget, and the total attenuation.

Results from forecasting demand, it is found that the capacity of current network of 960 users, it is estimated use the Internet in 2017 to reach 1245, is insufficient to serve the overall number of customers. Then from the results of forecasting demand bandwidth requirement for next 10 years, in 2021 at 531.456 Mbps for package of 384Kbps, bandwidth requirements package 512 Kbps of 297.545 Mbps, bandwidth requirements for packet 1 Mbps of 204.343 Mbps and bandwidth requirements package 2 Mbps of 111.1 Mbps. All the packages using quadratic models, because it has the smallest MAPE. Total bandwidth reach 1091,068 Mbps. The results that design of Setraduta residential using 5 pieces ODC and 190 pieces ODP and 1245 ONT. Link Power Budget calculation results are generated on the total attenuation of 24.336 dB for uplink and for downlink total attenuation of 23.951 dB, the attenuation is still below the standard GPON according ITU-T G.984 at 28 dB and the standards PT.Telkom at 28 dB. Power margin value is 4.049 dBm for downlink and 3.664 dBm for uplink, both produce value more than 0(zero) dB. This is indicates that the link meet the eligibility link power budget. The test results Rise Time Budget is for the downlink at the farthest customers resulted in a total time of = 0.2583 ns. The time is below the value of the NRZ system of 0.2917 ns. For the uplink direction the farthest customers result total time = 0.2505 ns. The time is below the value the NRZ system of 0.5833 ns.

Key word : Triple play, FTTH, GPON, Power Link Budget, Rise Time Budget.