

ABSTRACT

In the development of communication technology today, the need for telecommunication facilities and information is very much needed. The need for telecommunication services is not only for voice services but also data, image, and video services. To be able to access these services, a supportive and adequate internet network is needed. Telaga Ngebel is quite far from the city, which is 23 km from the city of Ponorogo and 30 km from the city of Madiun. Fiber Optic networks are used to enhance internet services, support the local economy, and attract tourists to Telaga Ngebel. FTTH (Fiber To The Home) facilitates activities such as uploading photos, videos, or using Google Maps. This technology provides high-speed internet services optimized for Telaga Ngebel.

The design of this FTTH network uses Gigabit Capable Passive Optical Network (GPON) technology. GPON technology provides transmission bandwidth up to 2.5 Gbps. I took this FTTH network design in Telaga Ngebel which still does not have Fiber Optic. The design of the FTTH network using GPON technology will make it easier for the public and tourists to access internet services with fast and stable network speeds. Then for the feasibility parameters of the FTTH design system, calculations will be carried out. These parameters include Power Link Budget, Rise Time Budget, BER (Bit Error Rate). For software that supports this FTTH design, OptiSystem and Google Earth Pro are used. The FTTH network design focuses on internet service providers in Telaga Ngebel, especially for lodging and also cafes or angkringan located around Telaga Ngebel. The technology used is GPON, because its installation, maintenance and development are more efficient. By using this FTTH network, it allows for a wider range of internet services to be used by the public and tourists, thereby increasing the economy of the community around Telaga Ngebel with fast and stable internet services.

Keywords: *Fiber Optik, FTTH, GPON, Power Link Budget, Rise Time Budget, BER.*