ABSTRACT

Stable and affordable internet access is a fundamental need for society, especially in rural areas that often face limited telecommunication infrastructure. This research focuses on the design and implementation of an RT/RW Net model in Girimukti Village, West Java, aiming to provide a reliable and efficient internet network. The design process includes field surveys, needs analysis, topology selection, hardware and software implementation, and bandwidth capacity calculation to ensure optimal service distribution tailored to user needs.

The implemented RT/RW Net model utilizes RouterOS and Mikrotik Hotspot Monitor (MIKHMON) for bandwidth management, supported by supplementary devices designed to reach remote areas. This solution is expected to expand internet coverage, improve residents' quality of life, and stimulate local economic development.

Testing results show that the network can distribute 1 Mbps bandwidth per user, covering two households optimally. Optical power measurements indicate good and stable signal quality (averaging -6.82 dBm at the first house and -8.17 dBm at the second house), and Link Power Budget (LPB) calculations confirm the system remains fully functional. Quality of Service (QoS) evaluation based on TIPHON standards—throughput (652–940 kbps), delay (<15 ms), jitter (<0.01 ms), and packet loss ($\leq$0.1)—falls under the "Excellent" and "Good" categories. This implementation is expected to promote digital inclusion and improve internet accessibility in rural areas.

Keywords: Access Point, Bandwidth, Internet, RT/RW Net