

ABSTRACT

Landslides are one of the natural disasters that often occur in Indonesia, landslides are the events of moving land or rocks down or out of slopes caused by disruption of soil stability or rock constituent slopes. Landslides occur not without cause, many factors can trigger landslides. In the long run, signs of landslides can be identified by checking the level of density and slope of the land. However, this is often neglected by the surrounding community until a landslide disaster occurs.

The prototype of the IEEE 802.15.4 landslide-based ZigBee monitoring system and the internet of things will consist of various sensors, microcontrollers, which are interconnected through ZigBee and a website for monitoring. ZigBee end-devices are connected to rotary encoder sensors, vibration sensors, soil moisture sensors, and Accelerometer / gyrometer sensors. The sensors actively send data to the PAN coordinator which is then sent to firebase which acts as the database. In a separate place a web that has been prepared will display data from the database to complete the monitoring system that was built.

To find out the performance of the system that was designed, measurements were taken to test the quality of the network between several nodes with several different scenarios. In this study the smallest ZigBee delay value was 0.605 seconds with throughput 141,283 bytes / s, while in the firebase test the smallest delay value was 0.144 seconds with a throughput of 862,000 bytes / s.

Keywords: Landslides, Microcontrollers, IoT, ZigBee, IEEE 802.15.4.