ABSTRACT

Forest fires are one of the issues that threaten the destruction of ecosystems. Early prevention system against indication of forest fire is absolutely necessary. The extent of forest becomes one of the problems faced in monitoring the condition of forests. Therefore, to treat the problem of forest area, forest fire detection system using Wireless Sensor Network (WSN) method.

Each node sensor in WSN has a microcontroller, communication technology devices and sensors. Node sensors allow to collect data from changes in sensors caused by fires at specific points. Node sensors are installed at points of fire prone areas. To expand the distance or area observed by WSN, a multi-hop transmission mode is used. Node sensor sends data to coordinator node. Coordinator node sends back the received data to the gateway node. Data received at the gateway node will be stored in the database available on server antares platform. The data stored in the database is showen on the user android application.

In this final project, the test is will be held at the location of Forest Park Ir. H. Djuanda. Makmimum distance of data transmission from node sensor - node coordinator is 140 meter with average delay 0.0425 second, throughput 3,8001 byte/s and packet loss 0.33%. While the data transmission from the node coordinator - gateway node, maximum distance obtained 160 meters with 0.3005 seconds delay average, 3.7780 bytes / s throughput and 0.28% packet loss. From these results, testing at the location of the Great Forest Park Ir. H. Djuanda, Quality of Service (QoS) generated has an average delay, throughput and packet loss generated greater than the results of testing at the line of sight (LOS) location.

Keywords: *Forest Fires, Wireless Sensor Network, Sensor node, Multi-hop Transmission, Quality of Service (QoS)*