

ABSTRACT

Currently, many public places provide hand washing facilities as an effort to prevent the spread of the COVID-19 virus, one of which is by utilizing water reservoirs. The advantage of using a reservoir is that it can hold more water, but monitoring the availability of water must be done manually so it is less efficient. Therefore, a monitoring system has been created that utilizes the concept of IoT (Internet of Things) to monitor water availability automatically. Where the system uses several hand washing reservoirs that have different configurations using ultrasonic sensors.

The MQTT protocol is implemented as a system communication protocol, to support the transmission of small and short data. The MQTT broker is used in the cloud so that the communication process between clients can still be carried out even though they are in different positions or networks. One of the MQTT clients plays a role in saving the data obtained to the database.

From the results of implementation and testing, it was found that the designed MQTT topology can run well, where each client consisting of 4 client publishers and 1 client subscriber can communicate through certain topics. The ultrasonic sensor used is more accurate at long distances with an average accuracy of 98.1%. The smallest throughput used in sending MQTT packets is obtained at QoS 0 with an average size of 43,489 Bytes/s, in QoS 1 it reaches 82,687 Bytes/s, in QoS 2 it reaches 156.276 Bytes/s, while in HTTP it reaches 260,736 Bytes/s. The average delay in MQTT QoS 0 reaches 0.000256 seconds, on MQTT QoS 1 it reaches 0.56948 seconds, on MQTT QoS 2 it reaches 0.273032 seconds, while on HTTP it reaches 0.777 seconds. Then the average delay of data storage to the database is 1.36 seconds.

Keywords: *hand washing, monitoring, MQTT, cloud.*