

## ABSTRACT

Several points along the Jakarta-Cikampek (Japek) Elevated Toll road have signal attenuation to the point where they are within the Key Performance Index (KPI) standard threshold. When communicating using data services, especially Voice over Internet Protocol (VoIP) communication, users often experience failure and experience reconnecting automatically. The weakening of the signal causes inconvenience for users to communicate along the Japek Elevated Toll.

Classification of the problem begins with a drive test along the Japek Elevated Toll by analyzing the delay, jitter, packet loss, Reference Signal Received Power (RSRP), Signal to Interference Noise Ratio (SINR), throughput, dan user connected. Improvements to coverage are carried out using network parameter setting scenarios such as changing the antenna azimuth pattern and carrier aggregation.

The results of the analysis that have been carried out show that the average value of the distribution of RSRP in the existing network is -92.31 dBm and has increased after being repaired to -76.66 dBm, with the percentage threshold value also increasing from 100% > -105 dBm to 100% > -100 dBm. The average value of the SINR distribution was 5.17 dB, an increase to 7.79 dB. The SINR threshold percentage value also increased from the previous value of 42.6% to 94.8%. The average value of the distribution of throughput was 19.985 Mbps, an increase to 33.048 Mbps. The results of the analysis regarding the problems of users who failed to connect to the existing network were 3,527 users (9.7%), which decreased to 123 users (0.3%). The delay value is 93.93 ms, the jitter value is 40.4 ms, and the packet loss value is 1.04%. These three values have fulfilled the KPI of Quality of Service (QoS).

**Keywords: VoIP, Japek Elevated Toll, RSRP, SINR, throughput, user connected, delay, jitter, packet loss.**