Quality of Service Analysis for TETRA Communication System on The Indonesian Railways

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ABSTRACT

Nowadays, combined both communication and information systems at Perusahaan Terbatas Kereta Api Indonesia (PT KAI) has not been integrated. The previous communication system is still using analog communication system, such as Very High Frequency (VHF) with a frequency of 400 MHz and microwave with a frequency of 2 GHz, in which those frequencies lead the problem of interference against cellular communication frequency. This analog communication system does not allow it to be integrated with the information provided, because it requires a digital conversion.

In Europe and several countries in Asia has been working of producing integrated train communication and information systems. There are kind of communication systems which applied in train, for instance Terrestrial Trunked Radio (TETRA). In this research, networking topology for area Daop 1 Jakarta, means KRL Jabodetabek and TETRA for area Daop 8 Surabaya is applied by means of OPNET modeler simulator.

Result of QoS shows that traffic division in 4 slots of TDMA is still not sufficient of throughput that is nearby of 115.2 kbps. This condition is happened because of lack of using channel. The results achieve good result of SNR which has the value on average above 30 dB. The differentiation between topology and BTS placement for communication are very influential to gain the quality of networking.

Keywords: VHF, microwave, KAI, TETRA, OPNET, TDMA.