

ABSTRACT

The rapid development of mobile technology requires significant investment in network infrastructure financing. Traditional 4G RAN architecture also faces vendor lock-in issues, leading operators to use the same vendor for all infrastructure. However, LTE costs are still below optimal, hence innovations such as RAN sharing and the use of Open RAN architecture, which is divided into RU, CU, and DU architectures, enable interoperability among providers and drive innovation.

Therefore, RAN sharing systems using 4G technology with Open RAN architecture are developed with the aim of improving spectrum frequency utilization efficiency, optimizing resource utilization, and enhancing Quality of Service (QoS). The implementation of RAN sharing systems using 4G technology in Open RAN architecture has resulted in end-to-end networks where multiple operators can use the same frequency spectrum and radio access network equipment.

The test result of the implementation of RAN sharing shows that the result of throughput falls in the good category when both smartphones are on simultaneously with values between 24,9 Mbps to 31,6 Mbps, but get an excellent category when both smartphones turn on alternately with values in the range of 54,4 Mbps to 62,7 Mbps. The RSRP of both devices falls in the range of -89 dBm to -87 dBm. The SNR of both devices falls in the range of 2 dB to 3 dB. And the latency of both devices is between 0,79 ms to 3 ms. This test results confirm that the implementation has been carried out can run properly in accordance to the specifications that have been set.

Keywords: Open RAN, RAN sharing, 4G, LTE, QoS, Interoperability, Innovation.