

ABSTRACT

The development of the telecommunications world is always going fast. One of these developments is fifth-generation cellular technology or 5G. One implementation is the use of a private 5G network which is carried out in the form of an open-source 5G core network virtualization project. The 5G core network used is called Free5GC and OpenAirInterface. Both of them run the core and access network on the Cloud Computing platform, which is assisted by Docker containerization.

From the results of the Quality of Services testing conducted by the author in accordance with the four parameters measured, namely Throughput, Delay, Jitter, and Packet Loss. The author conducted tests with three user schemes, namely 1 UE, 3 UE, and 5 UE which were carried out within 15 seconds. The test is carried out by sending packets from the EU via the 5G network to the core network using a network measurement software, namely IPerf. The time used is in accordance with the analysis considerations of the author in making observations

The results of Quality of Services measurements from both networks have been carried out and on the OpenAirInterface network with scenarios 1,3, and 5 UE, the Throughput is 1.5566 Gbps, 1.5103 Gbps, and 1.4283 Gbps. Meanwhile, Free5GC with 1.3 and 5 UE scenarios got 1.9782 Gbps, 1.8721 Gbps, and 1.6591 Gbps. For Delay OpenAirInterface obtained 0.1537 ms, 0.2002 ms, and 0.2172 ms. On Free5GC obtained 0.1114 ms, 0.1491 ms, and 0.1764 ms. The results for Jitter on OpenAirInterface are 0.15379 ms, 0.20022 ms, and 0.21728 ms. While Free5GC obtained 0.11145 ms, 0.14911 ms, and 0.17643 ms. For Packet Loss on both networks the results are 0% or none.

Keywords: 5G Network, Containerization, Quality of Services, Telco Cloud, Free5GC, OpenAirInterface