

## ABSTRACT

The mobile network congestion remains an extensive barrier to the speed of information transmission due to the increase in the number of network users. To enhance the efficiency and performance of 4G networks, it is necessary to open up Open RAN and Open Core innovations. The presence of Mobile Edge Caching (MEC) is the right technique for this matter as it acts as a content information storage near the user to increase efficiency in access speed. The integrated caching system is Varnish Cache and Apache Traffic Server Cache.

The HTTP multimedia website persegment testing uses two schemes, HTTP with Varnish (RTT 0,76 s, throughput 0,38 MB/s) and ATS (RTT 1,07 s, throughput 0,27 MB/s). HTTPS multimedia website with ATS (RTT 1,58 s, throughput 0,28 MB/s). In testing the scheme of the number of users by 1 and 25 users using Siege on HTTP multimedia website, Varnish has RTT value 6,47s and ATS 6,64s for 1 user while Varnish 45,63s and ATS 70,74s for 25 user. Throughput Varnish 1,62 MB/s and ATS 1,58 MB/s for 1 user while Varnish 5,57 MB/s and ATS 3,71 MB/s for 25 users. On HTTPS website multimedia with ATS has an RTT value 7,78s for 1 user and 68,89s for 25 users while throughput for 1 user s 1,33 MB/s and 3,81 MB/s for 25 users.

The HTTP VoD website persegment testing uses two schemes, HTTP with Varnish (RTT 0.30 s, throughput 4,67 MB/s, interarrival delay 0,80 s) ATS (RTT 0,86 s, throughput 2,42 MB/s, interarrival delay 0,21 s). HTTPS multimedia website with ATS (RTT 0,89 s, throughput 1,86 MB/s, interarrival delay 0,37 s). Then in the scheme of the number of requests for HTTP, Varnish has an RTT value of 0.32s and ATS 0.56s for 3 requests while Varnish 0.35s and ATS 0.97s for 5 requests. Varnish has a throughput value of 4.35 MB/s and ATS 3,10 MB/s for 3 requests while Varnish 3.77 MB/s and ATS 2.36 MB/s for 5 requests. Varnish has an interarrival delay value of 0.097s and ATS 0.3988s for 3 requests while Varnish 0.119s and ATS 0.590s for 5 requests. Then VoD HTTPS using ATS has an RTT value of 0.64s for 3 requests and 1,02s for 5 requests, a throughput value of 3,27 MB/s for 3 requests and 1,42 MB/s for 5 requests, Interarrival delay is 0,63s for 3 requests and 0.35s for 5 requests. It is concluded that the performance of Varnish Cache operates better on HTTP websites than ATS. However, Varnish is not able to operate on HTTPS websites so it needs ATS Cache.

Index-terms: Mobile Edge Caching, 4G LTE, Cache. HTTP, HTTPS