Caching at the Mobile Edge: a Practical Implementation

Thanks to recent advances in mobile networks, it is becoming increasingly popular to access heterogeneous content from mobile terminals. There are, however, unique challenges in mobile networks that affect the perceived quality of experience (QoE) at the user end. One such challenge is the higher latency that users typically experience in mobile networks compared to wired ones. Cloud-based radio access networks with content caches at the base stations are seen as a key contributor in reducing the latency required to access content and thus improve the QoE at the mobile user terminal. In this paper, a prototype implementation of a mobile edge cache system is presented. The proposal focuses on compliance with existing LTE deployment and content-location solutions. The prototype is designed to perform assessment tests and evaluation of caching solutions. Results are then shown for the QoE improvements for the mobile user obtained by caching content at the base stations. This is quantified with a comparison to non-cached content by means of ping tests (10–11% shorter times), a higher response rate for web traffic (1.73–3.6 times higher), and an improvement in the jitter (6% reduction).

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