Monitoring and Analysis of Quality of Experience in Mobile Broadband Networks

MOTIVATION

Mobile network traffic explosion
- In 2016, the average smartphone usage grew 38%.
- Global mobile data traffic reached 7.2 exabytes per month at the end of 2016.
- Mobile video traffic accounted for 60% of total mobile data traffic in 2016.

Requirements for the network providers are significantly changing.
How to manage customers’ traffic in order to maintain high user satisfaction?

QoE MEASUREMENTS
- Quality of Experience (QoE) as a measure for evaluating user satisfaction.
- Input criterion for optimizations.

Quality of Experience Measurement Tool
- Run YouTube videos on headless Firefox.
- Monitor QoE-related performance indicators on application, network, and metadata layer.

First measurements on MONROE platform.

MOBILE NETWORK TESTBED
- Fixed and mobile LTE nodes distributed over Norway, Sweden, Spain and Italy.
- Platform to run experiments in Docker containers in mobile networks.

RESULTS: VIDEO PERFORMANCE

- Study on the adaptive behavior of video streaming in mobile communications.

OUTLOOK
- Extension of the measurement tool to monitor QoE factors of other applications like Facebook, Spotify, or usual web browsing.
- Investigation of the impact of location, used network operator, and mobility on QoE factors.
- Comparison to subjective user experiences received from field trials.

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