Demo: Mapping Global Mobile Performance Trends with Mobilyzer and MobiPerf

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ABSTRACT

Mobilyzer is an open-source network measurement library that coordinates network measurement tasks among different applications, facilitates measurement task design, and allows for more effective measurement task management than in existing standalone approaches. Unifying various network tasks into one framework greatly simplifies the problem of developing, deploying and managing measurement tasks which may otherwise interfere with one another. An intelligent scheduler, coordinated by a central server, dynamically schedules tasks to run in the background, preserving the user's battery life and respecting limits set by the user on task frequency and data consumption. We will demo MobiPerf, an open-source mobile network measurement tool built using the Mobilyzer library. MobiPerf collects a wide range of network performance data, ranging from the latency and throughput measurements common in existing client-based measurement frameworks, to HTTP loading times for specific URLs, to inferring RRC state configuration parameters and their impact on performance. We will also demo an interface for viewing a large, open dataset of performance data from around the world collected by MobiPerf.

Categories and Subject Descriptors

C.2.1 [**Network Architecture and Design**]: Wireless communication; C.4 [**Performance of systems**]: Measurement techniques

Keywords

Network performance measurements; Cellular networks; LTE; 4G; network measurement libraries

1. DEMONSTRATION

We will demonstrate the Mobilyzer library [1] using MobiPerf [2], on several phones and three different carriers. Audience members will be able to schedule measurements from both the app and the web interface, and view results in real time. This demo shows how Mobilyzer enables on-demand measurements after the app release, and how it manages multiple simultaneous measurement requests. An example screenshot from a device running MobiPerf, as well as data shown in the web interface, are shown in Figure 1. A wide range of measurements are suppported, including latency, the time to complete DNS lookups, and packet loss rates. Most recently, to demonstrate Mobilyzer's ability to support more complex measurements, we have introduced a task for inferring RRC state timers and their performance impact, which accounts for interfering traffic from all applications on the device.

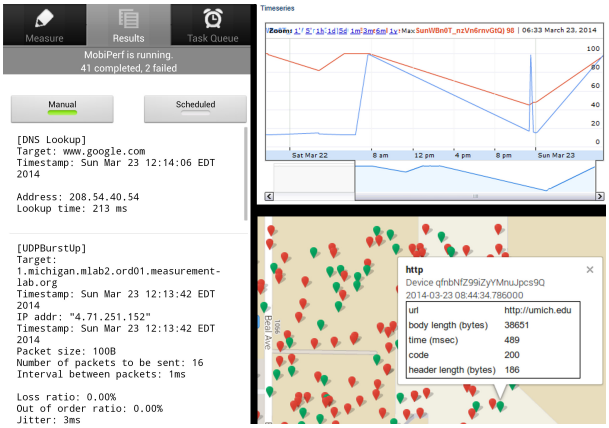

Figure 1: Screenshot of the MobiPerf application, and a map and timeline of data from one device in the web interface.

We have collected data on network performance around the world, demonstrating the effectiveness of a global mobile network measurement platform for monitoring performance trends. We make anonymized data from MobiPerf publicly available, and will also demo an interactive visualization of the data collected to date (available on the MobiPerf website), adapted from work by Zarifis et al. [3].

2. REFERENCES

[1] Mobilyzer. `http://mobilyzer-project.mobi/`.
[2] MobiPerf. `http://mobiperf.com`.
[3] K. Zarifis, T. Flach, S. Nori, D. Choffnes, R. Govindan, E. Katz-Besset, Z. M. Mao, and M. Welsh. Diagnosing Path Inflation of Mobile Client Traffic. In *Passive and Active Measurement*, 2014.

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