

from: Jim Warner
to: Stephen Blum
date: 19 December 2012 11:17
subject: Broadband performance monitoring in the mobile world

The FCC and its contractor SamKnows will soon be announcing a program to collect crowd source data on mobile broadband performance. A program will trigger tests like iperf and ping and report the results along with handset and location information to a central database. Parameters from the phone that will be reported include bearer (HSPA, CDMA, LTE, WiFi, etc), reported signal strength, tower ID and measurement time stamp.

Target phones will be either Android or Apple iOS. No mention was made of Microsoft handsets. Tablets with cellular radios can participate in the tests. WiFi-only tablets will also be able to run the application -- but of course they will not have any results that will contribute to information about performance of cellular broadband. Likewise, cellular hot spots that interface WiFi clients to carrier networks cannot contribute broadband data. We have been told that handsets served by home femtocells can be identified by their tower IDs to keep from polluting data about the radio network. A presentation on the contractor's work inventories the phone information that is accessible to the measurement application. The Android application will have notably better access to a full range of phone parameters. See slides 6,7:

http://noc.ucsc.edu/docs/CCBC/FCC_Mobile_December_12th.pdf

A few observations: (1) clearly GPS location is available to both Android and iOS. Current thinking is that this is sensitive and perhaps should not be collected. (2) The Unique ID is a one-way hash computed over the handset's IEMI and some other information to allow correlations of measurements from a single handset without identifying the user.

This differs from the California survey in that all data is contributed by users so there will be vastly more of it. A plus for the California approach is that it carries no risk of exposing subscriber's private information since all testing is done by employees. The FCC has not yet settled on a plan to fuzz location information to protect user privacy. Users who opt in to the measurement program may be contributing some of their monthly plan quota to the testing. The FCC has asked carriers if they can exempt traffic to measurement nodes by their IP addresses so that testing carries no user-side incremental cost. The risk here is that announcing the test server addresses to the carriers would give them the information they would need to prioritize test traffic and improve their scores. Of course, the carriers will know the addresses of the test servers anyway, since this information must be public.

The contractor will analyze the data and come up with some presentations. But the network repository of collected information will be available to researchers and anyone who wants to do custom presentations. In parallel with this effort, the IEEE P802.16.3 working group has a project to develop "Architecture and Requirements for Mobile Broadband Network Performance Measurements."

The work is being reviewed at FCC meetings held every 3 weeks with participation via Webex for those with perhaps limited travel budgets.