

D. Validation of Volunteers' Service Tier

A previous FCC study¹⁵ of broadband performance had found that a high proportion of consumers are not able to accurately identify their Internet service tier. Consumers' lack of awareness regarding the advertised service tier or speed to which they subscribe was recognized as one of the major challenges for this study. Therefore the methodology included verifying each panelist's service tier and ISP against the record base of participating ISPs. Initial throughput tests were used to confirm reported speeds.

The broadband service tier reported by each panelist was authenticated in the following way:

- At the time of recruitment, each panelist was required to complete a speed test using an M-Lab server. This test provided a rough approximation of the panelist's service tier which served to identify panelists with targeted demographics, and highlighted anomalies in panelist's survey response to measured speed.
- At the time the panelist installed the Whitebox, the device automatically ran an IP test to check that the ISP identified by the volunteer was correct. Based on the results of this test, SamKnows found that 4% of volunteers incorrectly identified their ISP.
- The Whitebox also ran an initial test which flooded each panelist's connection in order to accurately detect the throughput speed when their deployed Whitebox connected to a test node.
- Each ISP was asked to confirm the broadband service tier reported by each selected panelist.
- SamKnows then took the validated speed tier information that was provided by the ISPs and compared this to both the panelist-provided information, and the actual test results obtained, in order to ensure accurate tier validation.

SamKnows manually completed the following four steps for each panelist:

- Verified that the IP address was in a valid range for those served by the ISP in question.

¹⁴ Over 9,000 Whiteboxes were shipped to targeted volunteers, of which approximately 6,800 were online and reporting usable data for the entire month of March 2011.

¹⁵ See John Horrigan and Ellen Satterwhite, *Americans' Perspectives on Online Connection Speeds for Home and Mobile Devices*, 1 (FCC 2010), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-298516A1.doc (finding that eighty percent of broadband consumers did not know what speed they had purchased).

- Reviewed data for each panelist and removed data where speed changes such as tier upgrade or downgrade appeared to have occurred, either due to a service change on the part of the consumer or a network change on the part of the ISP.
- Identified panelists whose throughput appeared inconsistent with the provisioned service tier. Such anomalies were re-certified with the consumer's ISP.¹⁶
- Verified that the resulting downstream-upstream test results corresponded to the ISP-provided speed tiers, and updated accordingly if required.

Of the more than 9,000 Whiteboxes that were ultimately shipped to panelists, 7,377¹⁷ units were reporting data in March 2011. ISPs validated 81% of these panelists, of which 9% were reallocated to a different tier following the steps listed above. The remaining 19% of panelists were validated based on comparing the performance data and line performance characteristics with the available service tiers from the appropriate ISP. Eliminating panelists who either changed ISPs during the month of March 2011 or did not produce data for this trial during that month produced the final data set of the approximately 6,800 volunteers included in this report.

Ultimately, the study found that 51% of panelists accurately identified their service tier, although some of the disparities between reported and actual service tier may have stemmed from volunteers who changed their service tier between the time their service was initially validated and the time that they received a Whitebox. We note that the consumers that volunteered to participate in this study and obtain access to detailed data regarding the performance of their broadband service might be more interested in and knowledgeable about the basic advertised characteristics of their broadband service than most broadband subscribers.

E. Protection of Volunteers' Privacy

A major concern during this trial was to ensure that panelists' privacy was protected. The panel was comprised entirely of volunteers who knowingly and explicitly opted-in to the testing program. Full opt-in documentation was preserved in confidence for audit purposes.

All personal data was processed in conformity with relevant U.S. law and in accordance with policies developed to govern the conduct of the parties handling the data. Data was processed solely for the purposes of this study and is presented here and in all online data sets with all personally identifiable information (PII) removed.

To fulfill these privacy requirements a range of material was created both to inform each panelist regarding the details of the trial, and to gain the explicit consent of each

¹⁶ For example, when a panelist's upload or download speed was observed to be significantly higher than that of the rest of the tier, it could be inferred that a mischaracterization of the panelist's service tier had occurred. Such anomalies, when not resolved in cooperation with the service provider, were excluded from this report, but are present in the raw bulk data set.

¹⁷ This figure represents the total number of boxes reporting during March 2011, the month chosen for this report. Shipment of boxes continued in succeeding months and these results are included in raw bulk data set.