



Federal Communications Commission
Washington, D.C. 20554

August 23, 2010

FILED/ACCEPTED

AUG 25 2010

Federal Communications Commission
Office of the Secretary

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: Consumer Information and Disclosure Public Notice CG Docket No. 09-158, CC Docket No. 98-170,
WC Docket No. 04-36

Dear Ms. Dortch:

On July 28, 2010, the FCC held a meeting open to interested parties to provide an opportunity for a technical discussion of topics related to the Commission's trial for testing and measurement of fixed broadband performance.¹ ISP, consumer advocate, academic, and press interests attended, and a full list of the meeting attendees is attached.

Views expressed focused on technical matters and did not necessarily represent the positions of each company or organization. Discussions focused on presentations by academics of MIT and Georgia Tech on issues related to the testing and measurement methodologies of the Commission's trial.

Steven Bauer delivered a brief report of MIT's Advanced Network Architecture Group, Computer Science and Artificial Intelligence Lab review of the SamKnows broadband study.² Mr. Bauer described the various objectives of MIT's review of the program and identified various areas that the program will benefit consumer, industry, and academic related work to improve broadband performance.

Nick Feamster presented the methodology and interim results of the Grenouille testing program conducted in France, and the potential to use the program to independently validate the results of the Commission's SamKnows testing trial.³ Mr. Feamster commented on the incongruity found in the study between advertised and delivered rates and factors that were identified as affecting users' actual broadband performance.

The group discussed future directions, and proposed that a follow-up meeting be held to update participants on the progress of the trial. At that time, participants plan to share thoughts on the emergence of new topics and progress of the Commission's SamKnows testing trial.

Sincerely,

Joel Gurin, Chief
Consumer and Governmental Affairs Bureau

Walter Johnston, Chief
Electromagnetic Compatibility Division/OET

¹ See *Consumer Information and Disclosure: Public Notice CG Docket No. 09-158, CC Docket No. 98-170, WC Docket No. 04-36*, Public Notice, DA 10-670 (rel. April 20, 2010), available at http://sjallfoss.fcc.gov/edocs_public/attachmatch/DA-10-670A1_Red.pdf

² The presentation is attached in this filing as Attachment A.

³ The presentation is attached to this filing as Attachment D.

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List A B C D E

Attendees

Name	Organization
Jim Smith	ATT
Ken Ko	Adtran
Eric Klinker	BitTorrent Inc.
Russ Gyurek	Cisco
David Don	Comcast
Jason Livingood	Comcast
Mary McManus	Comcast
Richard Woundy	Comcast
Gillian Heitai	Comscore
John Jay	Corning
Brian David	FCC
James Miller	FCC
John Horrigan	FCC
Kevin King	FCC
Rebecca Hirsch	FCC
Rohit Dixit	FCC
Walter Johnston	FCC
Nick Feamster	Georgia Tech
Dave Horne	Intel
Steven Bauer	MIT
Steven Bauer	MIT
Chris Kohler	Motorola
Jim Partridge	NCTA
Steve Morris	NCTA
David Su	NIST
Dan Meredith	New America Foundation
Michael Weinberg	Public Knowledge
Bryan Scarpelli	FIA
Lynn Stanton	TRDaily
Chris Stegrim	Time Warner Cable
Daniel Stoller	Time Warner Cable
Terri Natoli	Time Warner Cable

David Young	Verizon
Donna Epps	Verizon
Donna Rynex	Verizon
Mark Montano	Verizon
Mary Crespy	Verizon

Attachment A

A brief report on our in-progress review of the FCC/Samknows broadband study

Steven Bauer, David Clark, Bill Lehr

**Advanced Network Architecture Group
Computer Science and Artificial Intelligence Lab
MIT**

July 28, 2010

General thoughts

- FCC/Samknows study is a great experiment.
- We are very excited about carefully designed measurements of broadband networks.
- We are particularly glad to see the active engagement of wide range of stakeholders.

Our short term objectives

- Understand each test at a very detailed level
e.g. able to replicate each test
- Offer constructive comments to improve the measurements
 - How the test is structured in detail
- Offer constructive comments to improve the reporting of results
 - How the test is described so readers take away the right message

Our medium term objectives

- Experiment with the Samknows tests
 - Fully exploring each test
 - Taking packet traces
- Produce a report that summarizes our findings for an academic and policy audience

Our long term objectives

- Utilize the Samknows test results in research publications
- Help usher in the next era of broadband which will involve continuing evolution of both technology and policy
 - What we measure now matters a great deal

Questions...

- Will we be able to answer the *why* questions about the resulting measurements?
- Can we identify the parts of the system that are affecting performance?
- Does each test produce results that have the right take away message for the general public, reporters, etc?
- What tests are missing?

The “perfect” broadband provider

What measurement results would we see if the broadband provider was never the performance bottleneck?

- Run the Samknows tests from sites like MIT
- Run the Samknows tests from the M-labs boxes

Other data

- What other data should we be collecting in parallel with the Samknows measurements?
 - Statistics on content of popular websites utilized in the web browsing tests e.g. file sizes, resources, hosts involved, etc (?)
 - Traceroutes (?)
 - BGP feeds (?)
 - More (?)

Continuing evolution of broadband benchmarks

- As a community, we aren't going to be done anytime soon devising and improving broadband benchmarks
- There remains plenty of room for experimentation, new measurements, and competing studies
- Samknows is open to evolving and improving their measurements over time... lets take advantage of this!

Attachment B

Studying Access Network Performance

Srikanth Sundaresan,
Walter de Donato, Nick Feamster
Georgia Tech
Renata Teixeira
LIP6

Overview

- Started study using 12 months of data from the Grenouille project in France (~ 10k DSL users from different ISPs across the country)



- Continuing study with a US-based deployment
 - Understand measurements better
 - Independently validate SamKnows approach



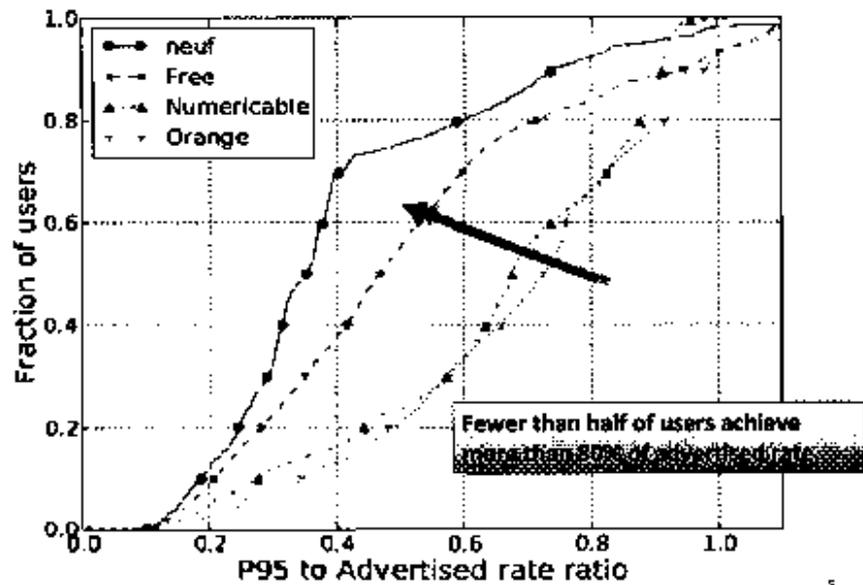
Collection Platform: Grenouille

- Volunteer group in France
- Client installed in home machines
 - Nearly 20,000 unique members across all major cities, ISPs in France
- Data from 2001 until now
 - **We use 2009 data**

Does Speed Match Promised Rates?

- **Answer: No.**
- **What factors affect performance that users achieve?**
 - Latency (round-trip time)
 - Geographical location
 - Service provider
 - Service plan
 - Network access point

95th Percentile Performance Does Not Match Adv. Rates



Download Performance Depends on Rate

ISP	Service rate	P95/Adv (std)	Median/Adv (std)
Free	2048Kbps	0.91 (0.16)	0.77 (0.22)
Free	28Mbps	0.39 (0.15)	0.30 (0.14)
Orange	512Kbps	0.92 (0.12)	0.76 (0.21)
Orange	18Mbps	0.58 (0.20)	0.45 (0.18)

- Low-end plans perform well.
- High-end plans don't meet advertised rates.

Challenges with the Data

- Measurements only when line is idle
- Measurements could reflect interference or performance problems in the home (from clients, not from the router)
- **Solution:** deploy at home routers to better understand variability.

Next Steps: US Deployment

- NOX Box deployment that collects both active and passive measurements
- Will begin with small deployment to better understand variability in the Grenouille data
- Will replicate some of the SamKnows tests

