Federal Communications Commission
Washington, D.C. 20554

FILED/ACCEPTED

JUL 21 2010

Federal Communications Commission
Office of the Secretary

July 21, 2010

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 7, 2010, the FCC held an open meeting to provide an opportunity for a technical discussion of topics related to the announced trial for testing and measurement of fixed broadband performance.[1] Views expressed focused on technical matters and did not necessarily represent the positions of each company or organization. (A full list of the meeting attendees is attached). Discussions focused on an overview of Commission broadband measurement objectives, presentations by participants, and potential issues in measuring consumer broadband performance and possible future directions.

Joel Gurin, Chief of the FCC's Consumer and Governmental Affairs Bureau, began the meeting with an overview of the Commission's objectives for broadband testing and measurement. The Commission hopes to ensure that consumers have access to better information about both the level of broadband service performance they receive as well as what service level they need for the applications and services they use. Gurin emphasized that the Commission is interested in input from different stakeholders on how it can best empower consumers to make smart purchasing decisions.

Representatives of SamKnows presented an overview of the broadband performance testing and measurement methodology that will be employed in the Commission's trials to measure and publish data on actual performance of fixed broadband services.[2] SamKnows responded to specific questions about the trial's hardware "white box" and how it would be integrated into a consumer's broadband modem and router environment. Support and installation concerns were discussed in regard to addressing consumers who would not be able to swap the white box directly with a carrier's integrated modem / router. Participants discussed various technical issues involving the testing methodology of using a 100 Mbyte payload to both condition and test the throughput rate. Alternative software approaches were proposed that could avoid potential technical shortcoming in the testing methodology that might emerge as a consequence of the characteristics of specific protocols. SamKnows described a variety of ways collected data would be validated and how the recruitment of volunteers would be vetted to address the broad variance of real-world consumer behavior and network conditions.

Dan Meredith representing New America Foundation provided an overview of the Planetlab's M-Lab testing methodologies and features provided by the testing environment that will be utilized in the Commission trial.[3] Mr. Meredith described the technical specifications and operational procedures used

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[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 10-988 (rel. June 1, 2010), *available at* http://fjallfoss.fcc.gov/edocs_public/attachmatch/DA-10-988A1.pdf.

[2] The presentation is attached in this filing as Appendix A.

[3] The presentation is attached to this filing as Appendix B.

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to deploy and manage the testing nodes which are composed of three separate computer servers. Participants sought clarification of the management policies for testing nodes, and the software licensing and data reporting requirements for use of M-Lab facilities in the Commission's trial. Mr. Meredith offered clarifications of other technical questions on M-Lab's network connectivity and routing environment.

Representatives of major broadband providers discussed their July 6, 2010 filling to the Commission,[4] wherein they propose how carriers could contribute to the Commission's trial by adding donated measurement nodes at national and regional points of significant intra or inter-network traffic. The servers would be provided as an addition to the existing trial infrastructure and would be intended to add to and not replace the SamKnows trial's data and infrastructure. National testing points were discussed as functional equivalents for SamKnows testing points because they would be placed at tier 1 peering points of national networks that shared the connectivity characteristics of SamKnows servers. Participants discussed the need to establish a specification for the hardware and software characteristics of these servers to ensure that tests would be valid across all servers.

Rural and regional carriers discussed differences in their network topology that would make testing at a national level difficult. One issue discussed was that regional carriers would have to incorporate network elements outside their owned infrastructure to perform national level testing. A proposal to incorporate regional test points and the value this would have for the Commission's goals was discussed, with participants suggesting that the information could be valuable in a variety of policy setting contexts. Carriers responded to questions about why network topology or other operational considerations make it difficult to define "regional" solely on a geographical basis. Participants suggested that regional ISPs could provide descriptions of the regional scope and topology associated with such donated regional measurement nodes to provide context for interpreting results made available from regional testing points. Data provided by donor nodes, either national or regional, would be tagged as such and not aggregated with M-Lab data.

Content providers or other Internet stakeholders were suggested as potential partners that could provide end-to-end performance information that would valuable. The need for technical safeguards to address concerns that carriers would be able to identify and tune performance for clients connecting to testing nodes was raised, and participants discussed that many such concerns would be self-correcting because diverse stakeholders are following the progress of the trial closely and would identify potential abuses.

The group discussed future directions, and proposed that a follow-up meeting be held in the next month. 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

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[4] *See Ex Parte* Letter by AT&T, CenturyLink, NCTA, Qwest, Time Warner Cable, & Verizon (July 6, 2010), *available at* http://fjallfoss.fcc.gov/ecfs/document/view?id=7020514880.

Attendees

Name	Organization
Hank Hultquist	ATT
Michael Pfau	ATT
Ken Ko	Adtran
John Benedict	Century Link
Michael Bugenhagen	Century link
Mary McManus	Comcast
Richard Woundy	Comcast
Kevin Mauro	Communications Workers of America
Joel Kelsey	Consumers Union
John Jay	Corning
Brian David	FCC
James Miller	FCC
Julie Saulnier	FCC
Kevin King	FCC
Mark Stone	FCC
Rohit Dixit	FCC
Tom Koutsky	FCC
Walter Johnston	FCC
Nick Feamster	Georgia Tech
Nicholas Weaver	ICSI
Steve Bauer	MIT
William Lehr	MIT
Chris Kohler	Motorola
Jason Friedrich	Motorola
Jim Partridge	NCTA
Steve Morris	NCTA
David Su	NIST
Doug Montgomery	NIST
Alfred Lee	NTIA
Tim Sloan	NTIA
Neil Hunt	Netflix
Dan Meredith	New America Foundation

Rob Topolski	New America Foundation
Michael Weinberg	Public Knowledge
Alex Salter	SamKnows
Richard Shaw	SamKnows
Lynn Stanton	TR Daily
Howard Pfeffer	Time Warner
Terri Natoli	Time Warner Cable
Rich Greenfield	University of Alaska
David Young	Verizon
Donna Epps	Verizon
Mark Montano	Verizon
Gerald Faulhaber	Wharton School, University of Pennsylvania
Frank Schueneman	Windstream

Appendix A

Broadband Testing & Measurement

FCC Workshop
July 7th, 2010

1. A brief background to SamKnows and our work with Ofcom

2. Our methodology and framework

3. Engaging Broadband America

Introducing SamKnows

- Founded 2003 by Sam Crawford
- Monitoring broadband performance since 2007
- 2008: appointed by Ofcom to partner in first government census
- 2010: re-appointed till 2012 after EU public tender
- All stakeholders engaged

Ofcom
OFFICE OF COMMUNICATIONS

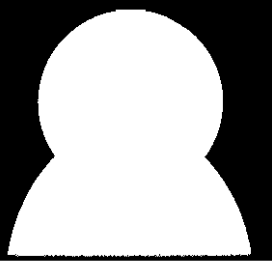
SamKnows Methodology

1. Panel Recruitment
2. Support
3. Data Validation
4. Reporting
5. Technical Framework

FEDERAL COMMUNICATIONS COMMISSION · USA ·

Multi-Channel Recruitment

- FCC Blog / Twitter
- ISP Targeted Emails
- Tech / Consumer Press
- Recruitment Form
- Speedtest



Final Panel Selection
(10,000)

Multi-Channel Support

Email

Live Data

Factsheets &
Whitepapers

Reporting

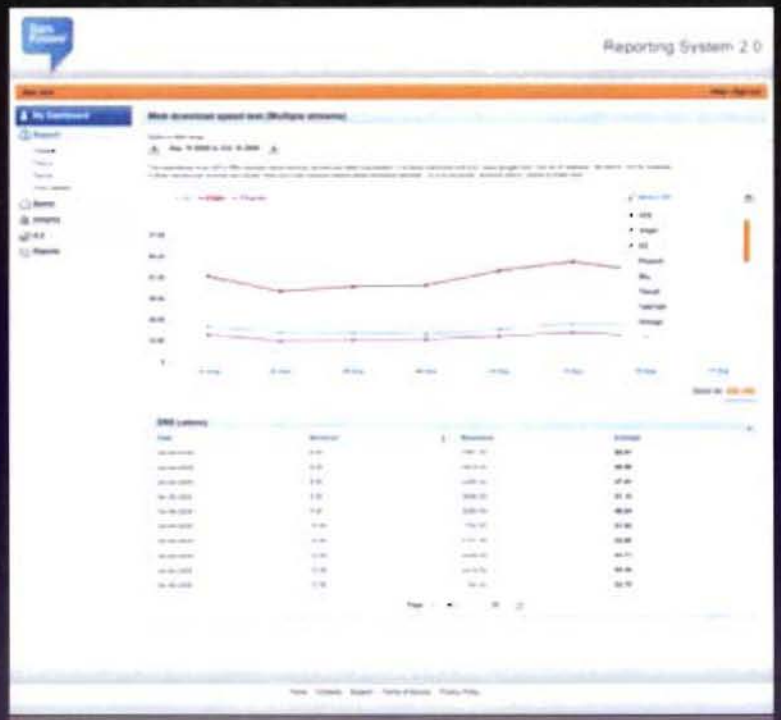
testmyisp.com

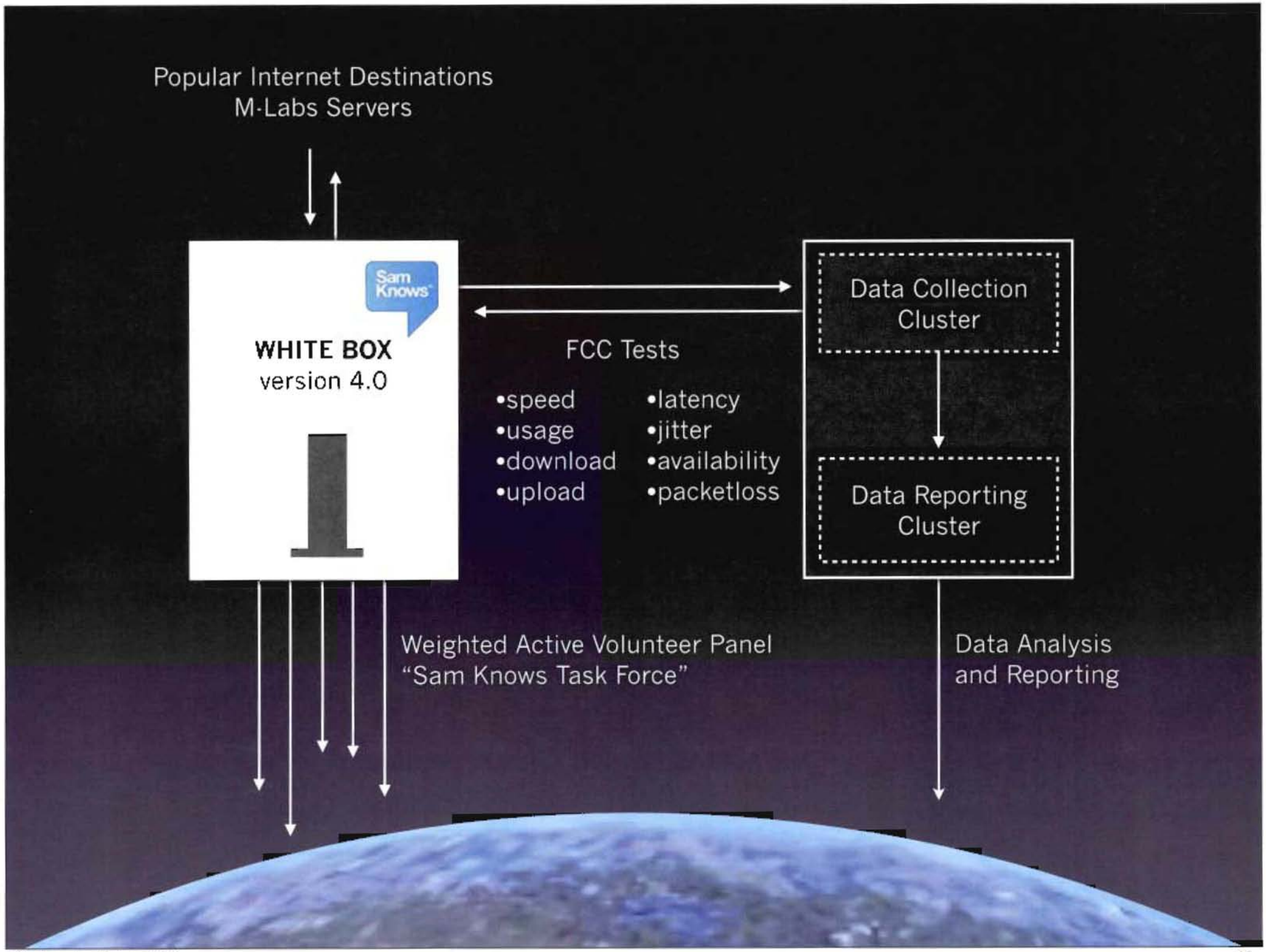
Third Party Stats Analysis: Hansa CGR

- Leading American telecoms analysts
- Best of breed, field proven methodology
- Extensive sector experience
- Deep local knowledge

Next Generation Reporting

- Live online data (1hr delay)
- Enterprise grade security
- <u>New in Version 2</u>
  - Custom views for stakeholders (ISPs, academics, consumers, etc)
  - Published APIs




Popular Internet Destinations
M-Labs Servers
Sam Knows
WHITE BOX
version 4.0
FCC Tests
•speed
•usage
•download
•upload
•latency
•jitter
•availability
•packetloss
Data Collection Cluster
Data Reporting Cluster
Weighted Active Volunteer Panel
"Sam Knows Task Force"
Data Analysis
and Reporting

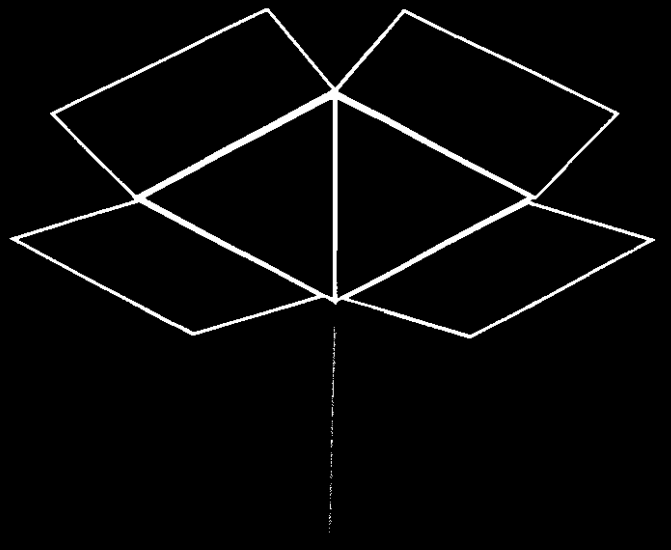
Improving on Past Projects

	Ofcom	FCC
1. Panel recruitment	Relied on media	10,000 through multi-channel strategy
2. Support	Online only. Passive.	Multi-Channel. Active.
3. Data validation	In-house analysis	Third party analysis
4. Reporting	Live online data	New custom stakeholder views and APIs
5. Technical framework	White Box version 3.1	White Box version 4.0

Test Methodology

1. Higher Levels of Control

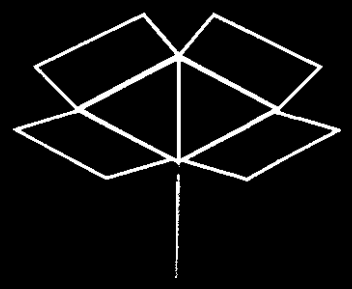
2. Configurable Test Frequency



3. Enterprise Grade Test Servers

4. Open Methodology

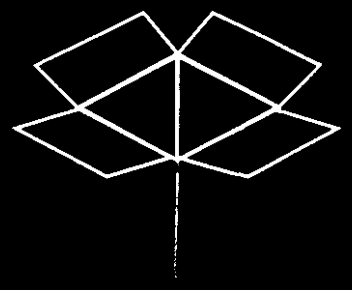
Test Methodology



1. Higher Levels of Control

- SamKnows controls both ends of the test, client and server
- The White Box eliminates home network 'noise'
- Ability to configure and test custom settings

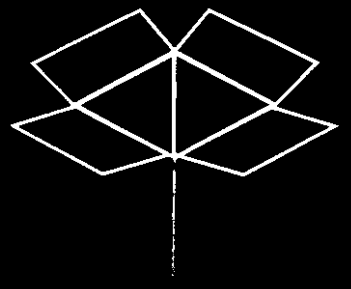
Test Methodology



2. Configurable Test Frequency

- Variable payload
- 24x7 test profile
- Peak, off-peak, weekend and week comparisons

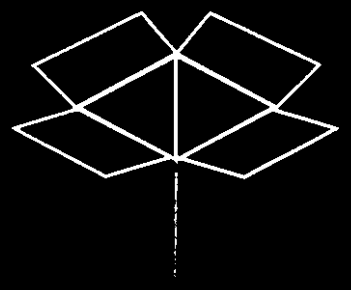
Test Methodology



3. Enterprise Grade Test Servers

- Standard specification, dedicated resources
- Measured RTT
- Specified location

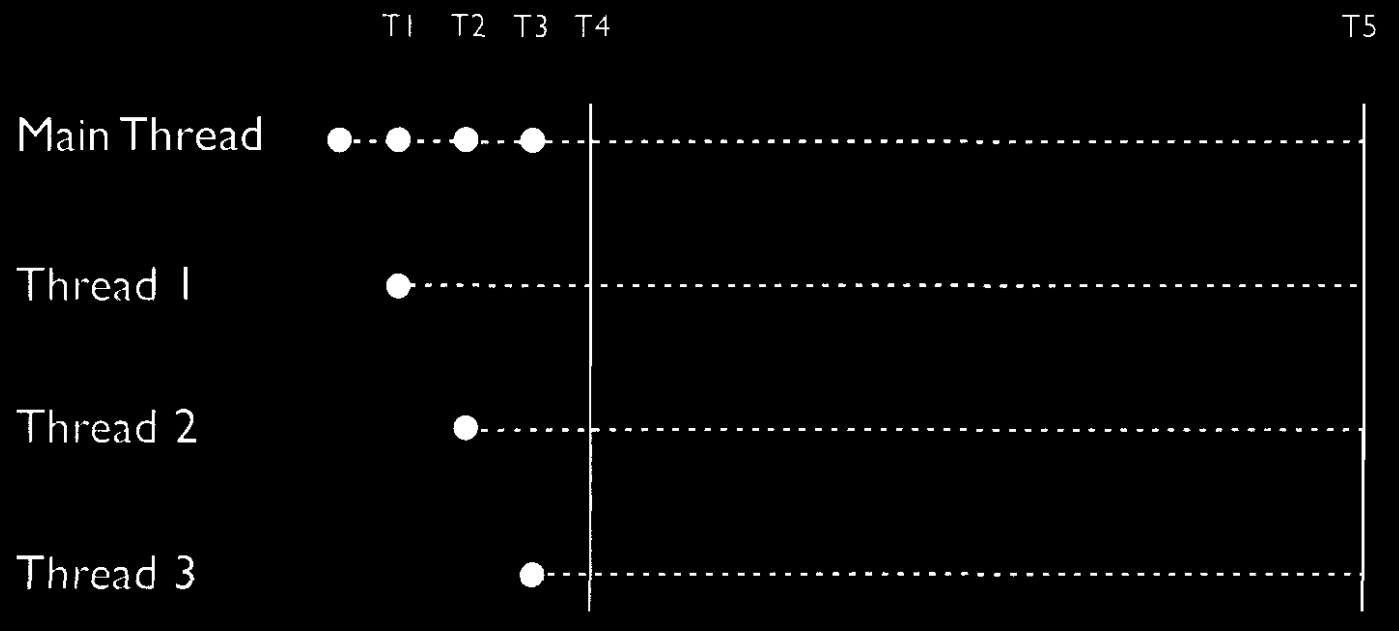
Test Methodology



4. Open Methodology

- Multiple thread, TCP streams, configurable
- Variable receive window
- Accounting for latency

Multi Threaded Speed Test



Engaging Broadband America

- Consumer
- Product/Service Providers
- ISPs
- Government
- Media
- Academics
- All stakeholders aligned