

FILED/ACCEPTED

NOV 22 2011

Federal Communications Commission  
Office of the Secretary

November 17, 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 November 14, 2011, ISP and other representatives met with members of the Commission to discuss issues associated with the Commission's broadband measurement and performance program. A full list of meeting attendees and the presentation materials that were the focus of the meeting are attached to this filing.<sup>1</sup>

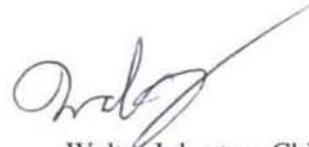
The meeting discussions focused on proposed plans and milestones for a follow-on study and report for data to be gathered beginning March 2012. Alex Salter presented a proposed timeline for major milestones. Joel Gurin, Chief of the Consumer and Governmental Affairs Bureau, proposed the formation of a working group to explore the further development of tools to inform consumers about the speed and other performance requirements of broadband applications commonly used by consumers. Walter Johnston also discussed the proposal for a working group to develop industry standards based on the measurement technologies developed through the Commission's program.

Participants expressed views on the need for discussion of possible changes to the approaches used in the 2011 study to improve the 2012 study effort. Methodological concerns surrounding the impact active testing has on user bandwidth caps and overall network performance were discussed as an area for further review. Participants suggested that the Commission issue a public notice to call attention to the proposal to repeat the study and solicit new stakeholders. How existing efforts by ISPs and others to inform consumers about broadband performance intersect with the Commission's proposed efforts was discussed. ISPs discussed their engagement on ongoing industry standards development and a need to explore the intersections of these efforts with the Commission's long-term goals.

The group discussed meeting in the coming month to formalize participation in the three working groups and discuss the commencement of the Commission's 2012 study efforts.

Sincerely,

*for*   
Joel Gurin, Chief  
Consumer and Governmental Affairs Bureau

  
Walter Johnston, Chief  
Electromagnetic Compatibility Division/OET

<sup>1</sup> The presentation materials are attached to this filing in Appendix A.

## Attendees

<b>Name</b>	<b>Organization</b>
Jim Smith	ATT
Ladonna Hagler	ATT
Tom Anshutz	ATT
Paul Jamieson	Cablevision
Jeb Benedict	Centurylink
Jeff Hubbard	Centurylink
Mary Retka	Centurylink
Mike Buegnhagen	Centurylink
Jim Smith	Charter
Marc Linsner	Cisco
Russ Gyurek	Cisco
David Don	Comcast
Mary McManus	Comcast
Paul Reynolds	Consumer Union
John Jay	Corning
Linda Trickey	Cox
Paul Cain	Cox
Deborah Broderson	FCC
James Miller	FCC
Joel Gurin	FCC
Walter Johnston	FCC
Mike Saperstein	Frontier
Fred Kemmerer	Genband
Patrick Fisher	Hughes
Steven Doiron	Hughes
Chris Hibbs	Insight
David Horne	Intel
Doug Holly	JDSU
Thomas Cohen	Kelley Drye
Jim Partridge	NCTA
Thomas Gideon	New America/M-Lab
Alex Salter	SamKnows
Neil Campell	SamKnows

Sam Crawford	SamKnows
Jason Weil	Timewarner cable
Glenn Reynolds	US Telecom
Chris Martin	Verizon
David Young	Verizon
Donna Rynex	Verizon
Kitty O'Hara	Verizon
Mark Montano	Verizon
Erwin Hudson	Viasat/Wildblue
Frank Schueneman	Windstream
Jennie Chandra	Windstream

# · **Appendix A**

# FCC Broadband Measurement Program - 2012

11/14/2011

# Overview

- Continuation of baseline measurement program
  - Re-polling panelists
  - Evolving consumer advisory services
  - Refocusing Broadband Rural Survey
- ng Measurement Architecture
- Other issues

# Continuation of Baseline Program

- Timeline
  - Start data collection in March 2012
  - Continue through August 2012
- Based on technology, methods and procedures agreed to for 2011 study
- Plan for an initial report to update March 2011 results
- Discuss presentation of April-August data
  - Periodic reports?
  - Website updates

## Phase II Key Dates

NOV  
**30**

Press release to announce launch of Phase II of the project

DEC  
**31**

Revised sample plan, balancing service providers, packages and rural/urban

JAN  
**31**

Recruitment campaign, with ISP support

## Phase II Key Dates



Data collection (control month)



Data collection (reporting month)



Draft report

## Phase II Key Dates

**MAY**

**31**

Release Phase II Report #2

**JUN**

**30**

Revised sample plan, balancing service providers, packages and rural/urban

**JUL**

**31**

Recruitment campaign, with ISP support

## Phase II Key Dates

**AUG**  
**31**

Data collection (control month)

**SEP**  
**30**

Data collection (reporting month)

**OCT**  
**31**

Draft and release Phase II Report #3

# Consumer Advisory Services

- Support development of information and tools to assist consumer's broadband service decisions
  - Performance
  - Application requirements
  - Household size
  - Price
- Possible partnering opportunities
  - FCC collects/standardizes data
    - Performance
    - Price
  - Consumer focused organizations present data, develop decision support tools
    - Agreements on performance metrics: e.g.
      - HD video implies what?
      - Difference between 1 adult user vs. 2 adult users and 2 teenagers?
- Ongoing process to ensure data remains current

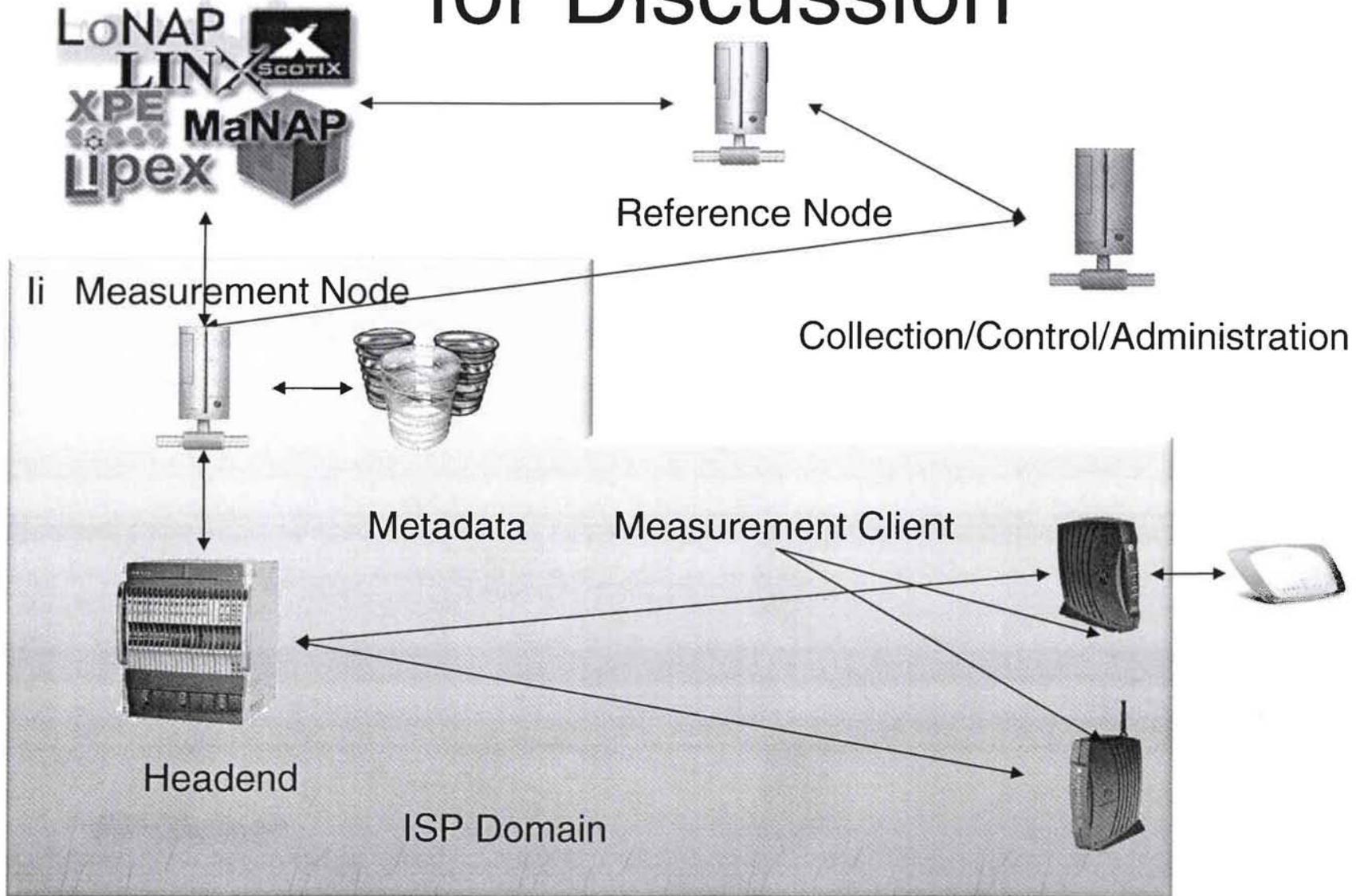
## Towards New Data Visualisations

- Existing reporting engine supports:
  - Web dashboard
  - Smartphone App
  - Email report card
  - Raw export
- Cross-stakeholder working party to explore:
  - New formats and media
  - Live visualisation tools
  - Decision-ready data
  - New audiences

# Broadband Rural Survey

- Challenge of survey ~ 1000 to ~2000 ISPs covering 14% of US population
- Decision to focus on case study approach
  - Pick representative companies based on technology type and ‘rural character’
  - Case study approach trades statistical extensibility for insight into representative scenarios
- Seeking suggestions/contacts to identify and gain support of proxy ISPs

# Measurement Architecture for Discussion



# Network Elements

- Measurement Node
  - Registers with CCA server
  - ISP measurement server
    - Connected to Tier 1, 2 Peering Point
    - Runs standardized software for testing
    - Controlled by external central server
    - Controlled by Collection/Control Server
- Measurement Client
  - Clients autonomously register with network
    - Unit identification information
  - Normally tests against measurement node
  - Optionally tests against reference node
  - Runs standard software for defined testing
  - Implemented in potential different configurations
    - ISP supplied modem
    - ISP supplied modem/router
    - Customer supplied modem
    - Customer supplied router

# Network Elements

- Reference Node
  - Measurement node external to ISP network
  - Provides reference check on measurements
- Collection/Control/Administration server
  - Implements survey strategy
  - Selects measurement clients for testing
  - Sets client schedule
  - Collects Data
  - Provides reports
  - Provides real time data to ISPs and others
  - Provides security/authentication functions for users

# Network Elements

- Metadata Node
  - Contains data on network elements
  - Units available for testing
    - Provisioned rate
    - Location information
    - Technology identifier
  - Rate context
    - Rate caps
    - Burst capability
  - Data provided by business process systems of ISP

# ng Architecture

- Key differences from 2011
  - Ownership of elements
    - Eliminates 3<sup>rd</sup> issues in past effort
  - Metadata
    - Necessary to develop list of survey units and provide supporting information
  - Standardization
    - Architecture
    - Interfaces
    - Data structures

# **SOME ISSUES REGARDING ARCHITECTURE**

# Measurement Client

- Measurement Suite
  - Critique by : ISPs, IETF, academia?
  - Standards approach
    - Which group?
    - Adaptable to evolution?

# Metadata

- What data is required?
  - Unit identification data
  - Context data: provisioned rate, technology, service package or service class data
    - E.g. Does service share IP bandwidth with non-Internet services, is service offered/engineered as distinct service or service class, might service be marked as special service: emergency or prioritized?
- Potential to reduce other data collection efforts?

# CCA Node

- Security issues
- Privacy
- Policy
  - How are tests scheduled/run
  - How are tests used
  - How could/should ISPs schedule tests

# Reference Node

- Purpose
  - Integrity Check?
- Economics
- Numbers

# Going Forward

- Focus on 3 key workgroups
  - Baseline program
    - SamKnows effort driven by timelines
  - Consumer services
    - Led by consumer groups
    - Focus on profile of consumer data/tools/industry data required to support consumer needs
  - Architecture group
    - Driven by technology vendors/ISPs
    - Draw from existing work to define architecture and functional requirements
    - Examine standards needs/opportunities

# Other Issues

- FCC website
  - Will expand to link to similar broadband measurement activities
    - Academia
    - Internet2
    - Other regulator jurisdictions
- Revised Code of Conduct
- Errata
  - Recently discovered one node in trial was rate limited
    - Minor impact on results due to
      - Small impact below 30 Mb/s
      - One node of 9
    - Will be posting notice on website
    - Results can be filtered

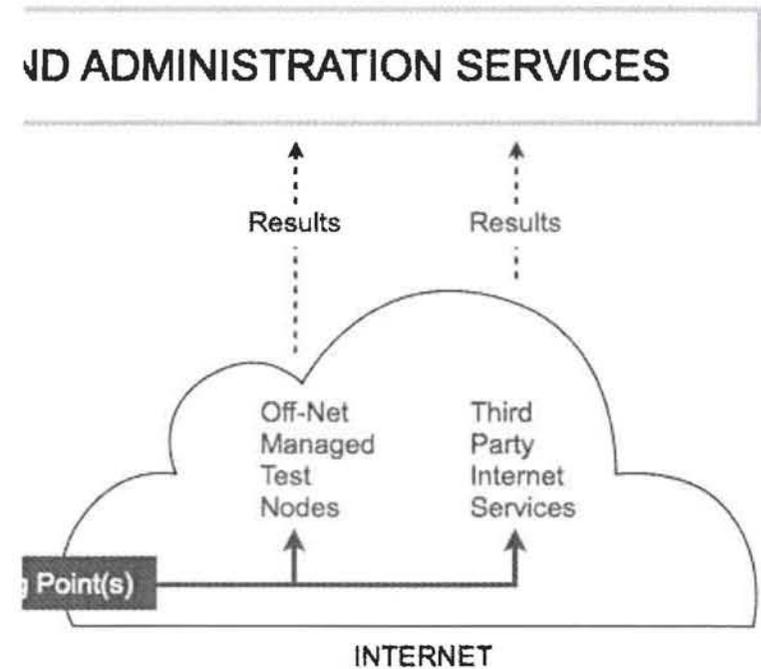
# Revised Code of Conduct



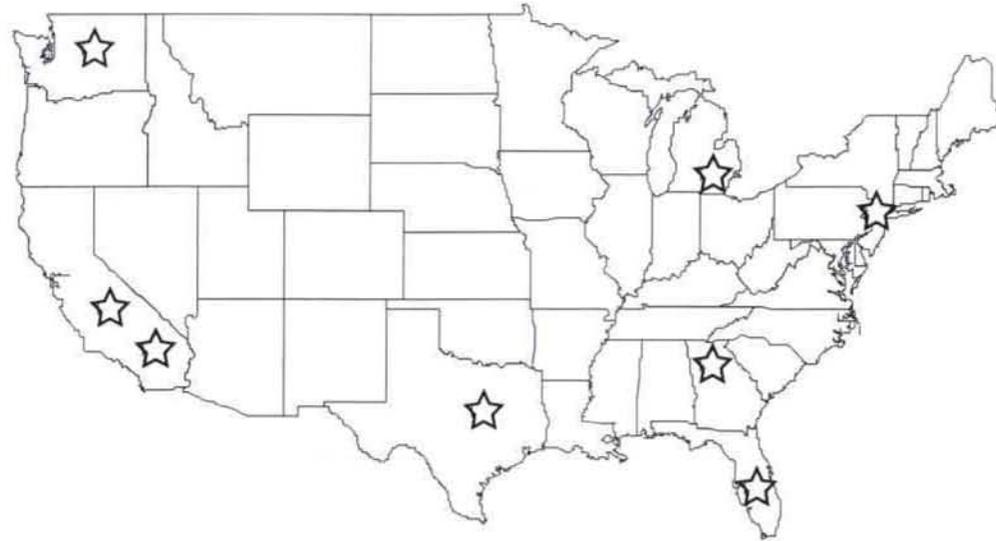
- Democratic
- Inclusive (all stakeholders)
- Supportive (of the project)
- Agreement to:
  - Act in good faith
  - Be transparent
  - Provide open data
  - Standardise methodology

## Incident Report

- Off-net infrastructure comprises 27 servers in 9 sites across 8 distinct US locations
- All but one site (three servers) operated by Google
- Performance monitored against ISP on-net servers by SamKnows



# Incident Report



Site	Code	Servers	Managed By
Seattle	SEA 01	3	Google
Mountain View	NUQ 01	3	Google
Los Angeles	LAX 01	3	Google
Dallas	DFW 01	3	Google
Chicago	ORD 01	3	Google
New York	LGA 01	3	Google
New York	LGA 02	3	Voxel
Atlanta	ATL 01	3	Google
Miami	MIA 01	3	Google

## Incident Report

- Secondary New York site not operated by Google mis-configured since December 2010
- Failure undetected by comparison with on-net servers
- Only users in top packages affected
- ISP positions and overall picture unaffected
- Root cause of mis-configuration still pending investigation
- New SamKnows detection protocol active since November 2011

# Incident Report

<b>Actual Download / Advertised Download Speed. 7pm-11pm Mon-Fri</b>	<b>BEFORE</b> Original picture, including 'rogue' data from misconfigured secondary La Guardia test node site.	<b>AFTER</b> New picture with 'rogue' data excluded. ISP order and performance picture remain unchanged.
Verizon (Fiber)	114%	116%
Comcast	101%	102%
Charter	96%	97%
Cox	94%	96%
Time Warner Cable	91%	91%
Insight	88%	91%
CenturyLink	87%	87%
Verizon (DSL)	86%	85%
Windstream	85%	85%
AT&T	81%	81%
Frontier	80%	80%
Qwest	78%	78%
Mediacom	76%	76%
Cablevision	54%	47%

# IPv6

- Technology Advisory Council identified IPv6 as critical issue
  - One suggestion was to use Collaborative to discuss proposals for benchmarking
  - ISPs participating represent 86% of nation