xfinity™

Global Peering Forum

Overview of Comcast's IPv6 Trials

http://www.comcast6.net

Monday, April 14, 2010

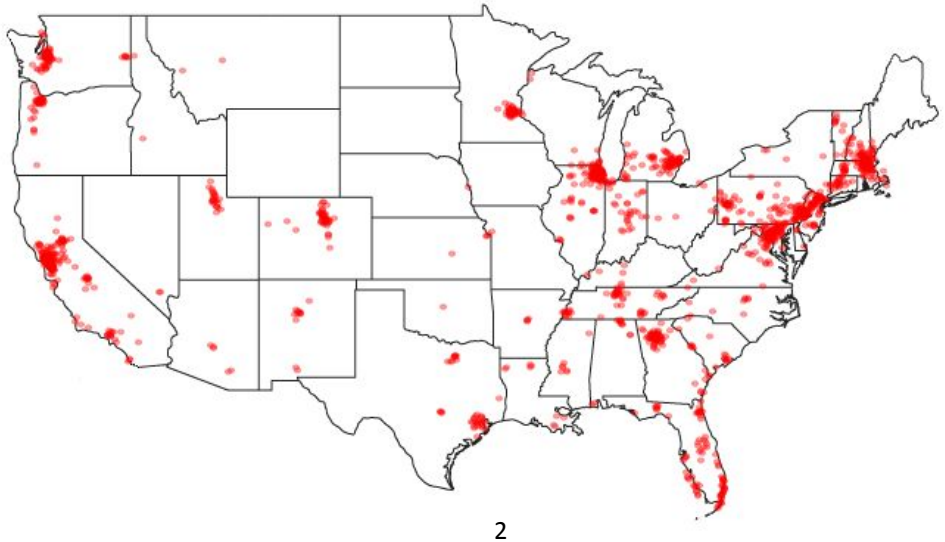
Comcast

NATIONAL ENGINEERING & TECHNICAL OPERATIONS

Details On IPv6 Trials

- Announced on January 27, 2010
  - Launched Comcast IPv6 Information Center, http://www.comcast6.net
  - IPv6 version of our web portal available, http://ipv6.comcast.net
- We expect to conduct 4 trials in 2010
  - 6RD
  - Native Dual Stack (residential and commercial / DOCSIS & fiber)
  - Dual-Stack Lite
- We've had >5,400 volunteers from around the country.
- Some of these are new customers, switching to Comcast due to IPv6.

Volunteers from around the U.S.



xfinity

Scope of Comcast's IPv6 Trials

- Main business & technical driver - Be Prepared!!

- Test IPv6 support in key systems:
  - Cable Modem Termination Systems (CMTSs)
  - Customer Premise Equipment

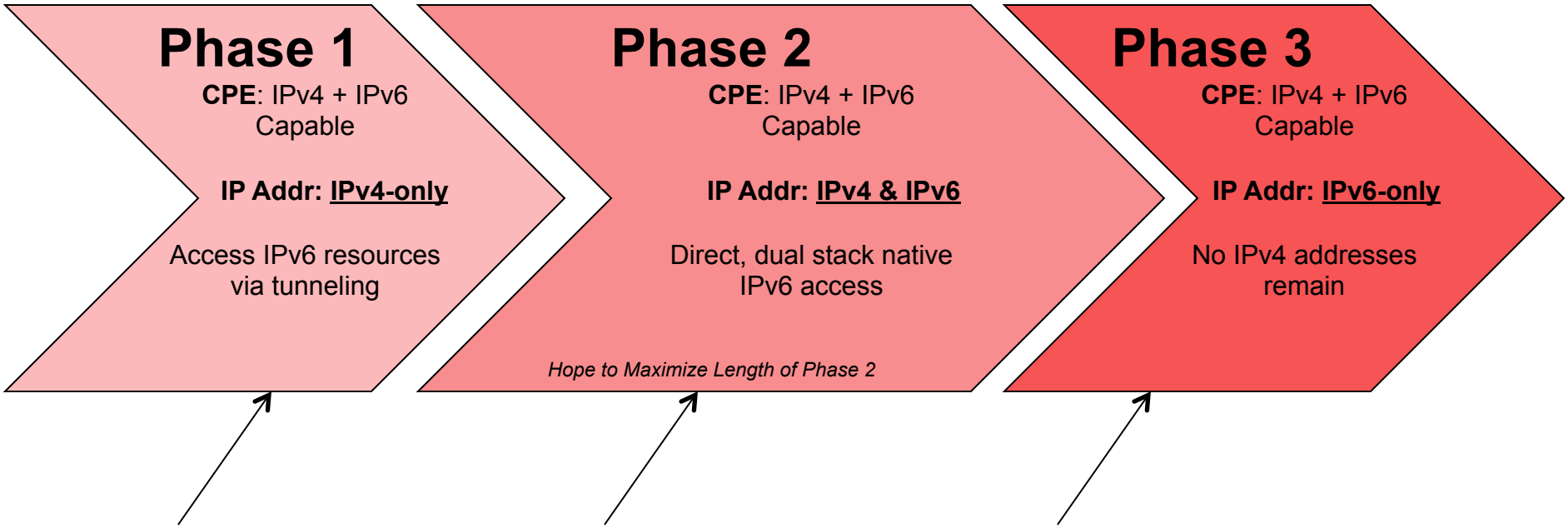
- Answer how and when will we deploy IPv6 addresses and/or capabilities to subscribers?

- What applications and processes need to adapt?
  - Internal applications (network monitoring, etc.)
  - Processes may include customer care troubleshooting scripts, installation verification steps, etc.
  - Training materials may need to be updated

- Explore other areas, such as :
  - Flesh out details for our 2011 plans
  - Investigate potential for any new revenue opportunities relating to IPv6

Scope of Comcast's IPv6 Trials

• Explore a solution / contingency plan for what we see as the three phases of IPv6 adoption:



Trial #1: 6RD
-IPv6 Tunneling over IPv4

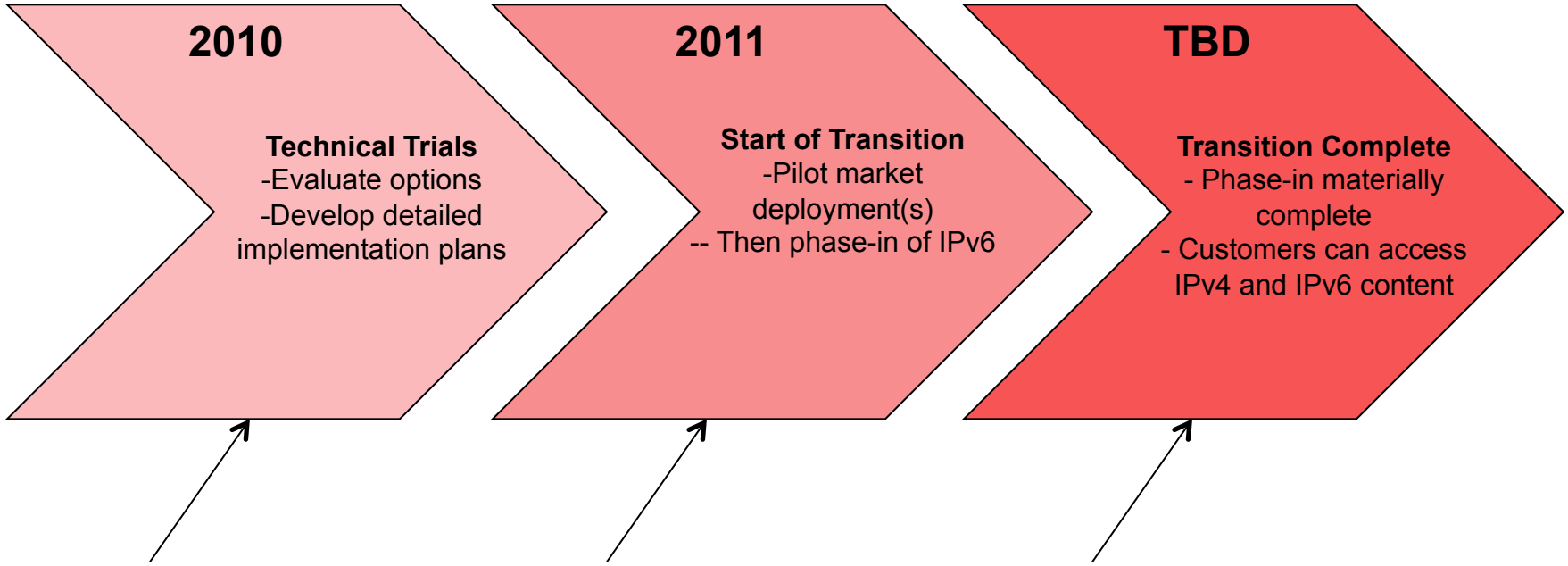
Trial #2 and #4: Native Dual-Stack
-Native IPv4 & IPv6
-Residential Trial (#2)
-Commercial Trial (#4)

Trial #3: Dual-Stack Lite
-IPv4 Tunneling over IPv6

xfinity

Phases of Comcast's IPv6 Implementation

- Based on what we know now (tentative)



-What, when, how?
-Update relevant processes, documentation, training.
-Some web apps go dual-stack.

-Support v4 and v6 in parallel
- Balance of web apps become dual-stack.

-Complete native dual-stack implementation.
-Prepare for IPv4 exhaustion, when only IPv6 addresses will be available – date unknown *(Phase 3 on previous slide)*

xfinity

What is Native IPv6-Enabled Today?

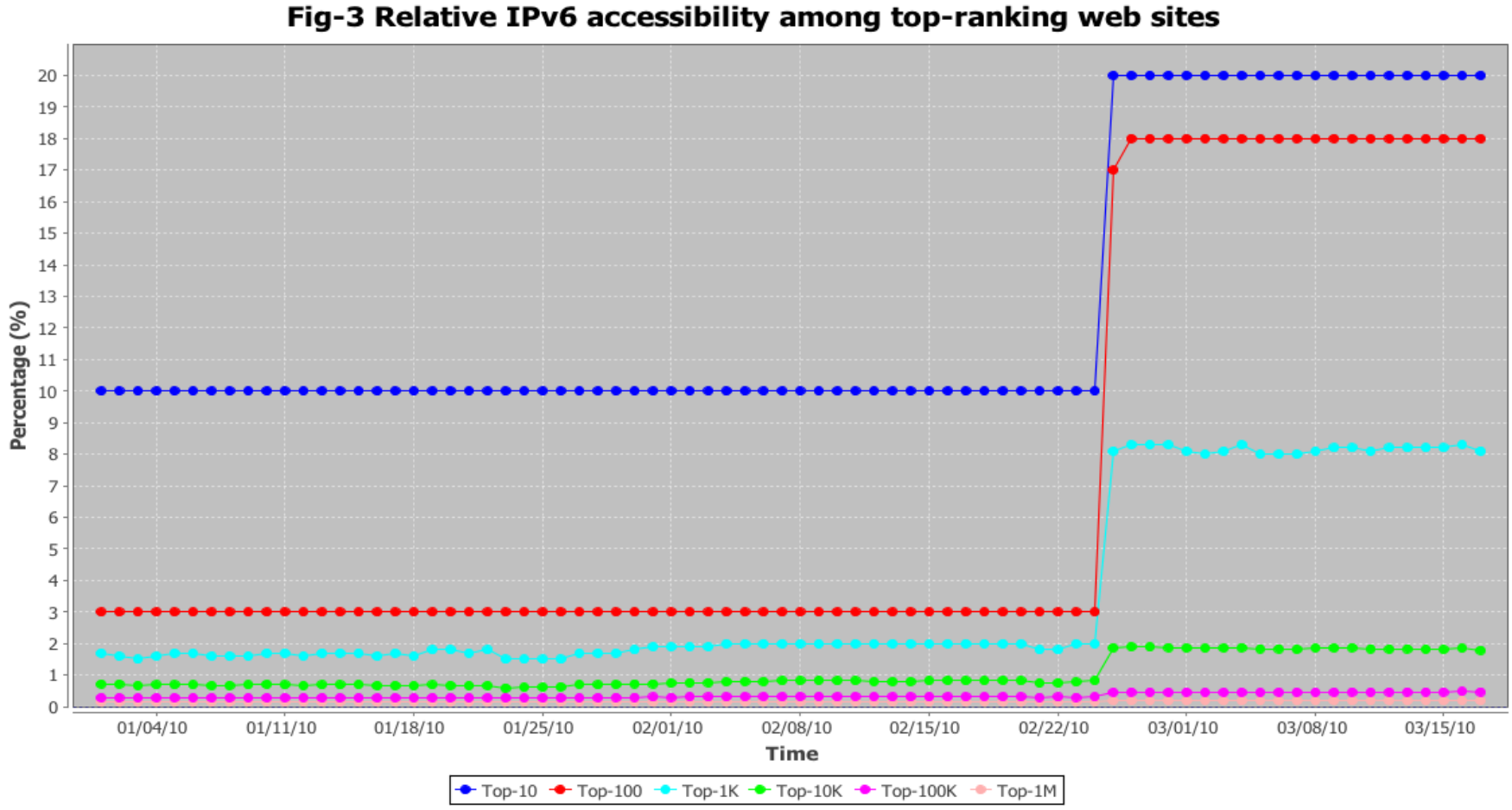
- Backbone
- Peering points
- Converged regional area networks (CRANs)
- DNS servers (authoritative & resolvers)
- DHCP (to be able to issue IPv4 and IPv6 to CPE)
- Provisioning and related back office systems

Next items to natively IPv6 enable:

- Cable Modem Termination Systems (CMTSs)
  - Two vendors with GA code in 2010
  - Last vendor ready in 2011
- Customer Premise Equipment
- Customer Home Gateway Devices
  - Often customer-owned
  - Ergo, interest in HomeGate
    http://trac.tools.ietf.org/area/tsv/trac/wiki/HOMEGATE

Interesting Data

- There will be much more data to share once our IPv6 trials begin
- Until then, info from our IPv6 monitor at http://ipv6monitor.comcast.net/
  - Increase below due partly to content owners adding Comcast DNS servers to their authoritative server whitelist (so we get AAAA and A records)

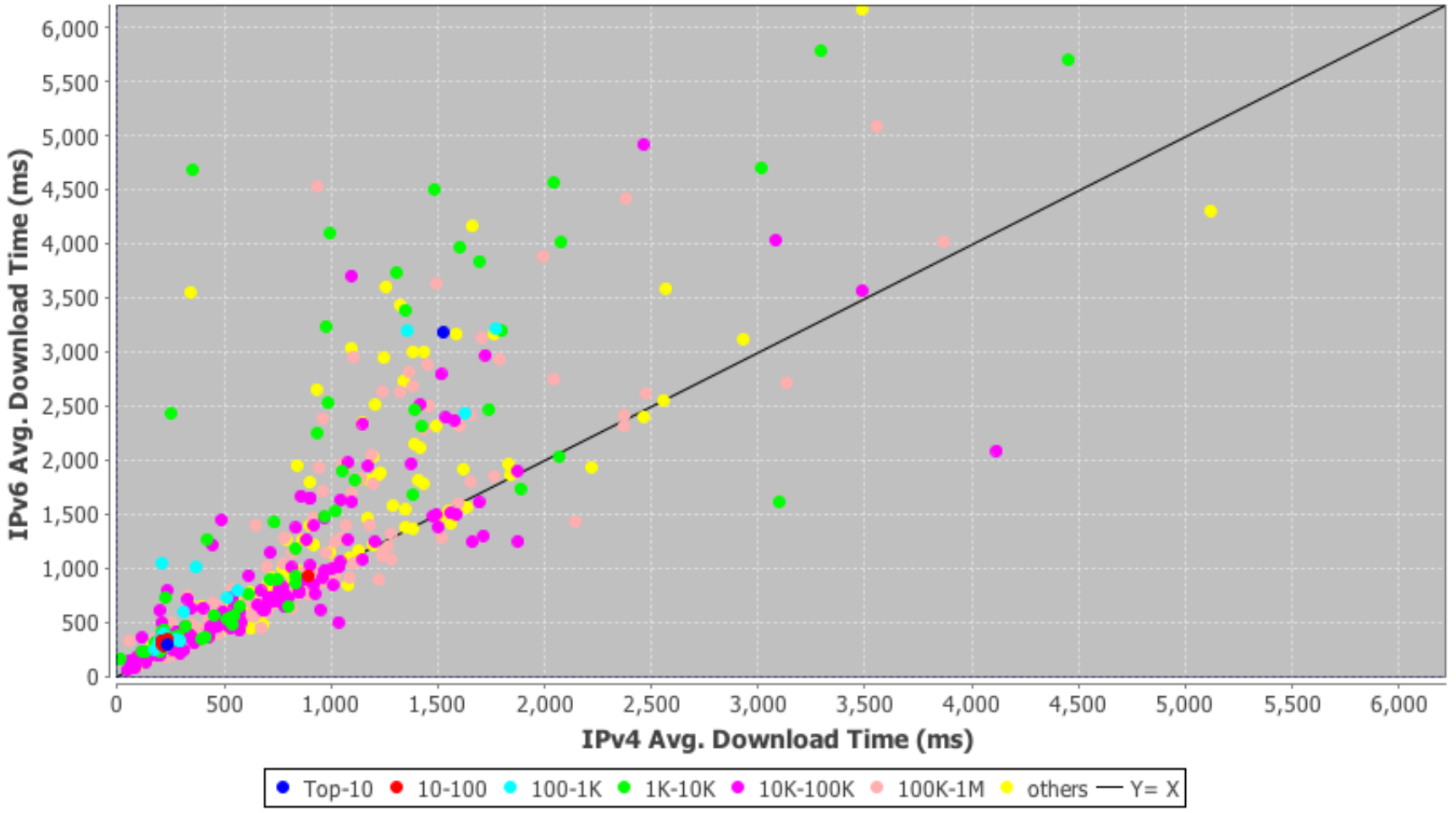


xfinity

Interesting Data

- Recent comparative download times between IPv4 and IPv6 shown below (again, from http://ipv6monitor.comcast.net/)
  - Above the line means sites are slower over IPv6, below means faster

Fig-4: IPv4 vs. IPv6 Download Time



xfinity

Interesting Data

- In last 30 days, volume of 6to4 traffic up 400%
- Of our largest IP interconnect partners, 75% are IPv6-enabled
  - Increasing rapidly
    - All new connections provisioned for both v4 and v6
    - Efforts to add v6 to existing partners in full swing

xfinity™

Thank You!

More information at:

http://www.comcast6.net

Comcast

NATIONAL ENGINEERING & TECHNICAL OPERATIONS