IPv6 at TWC

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Where We Are

Time Warner Cable IPv6 Deployment
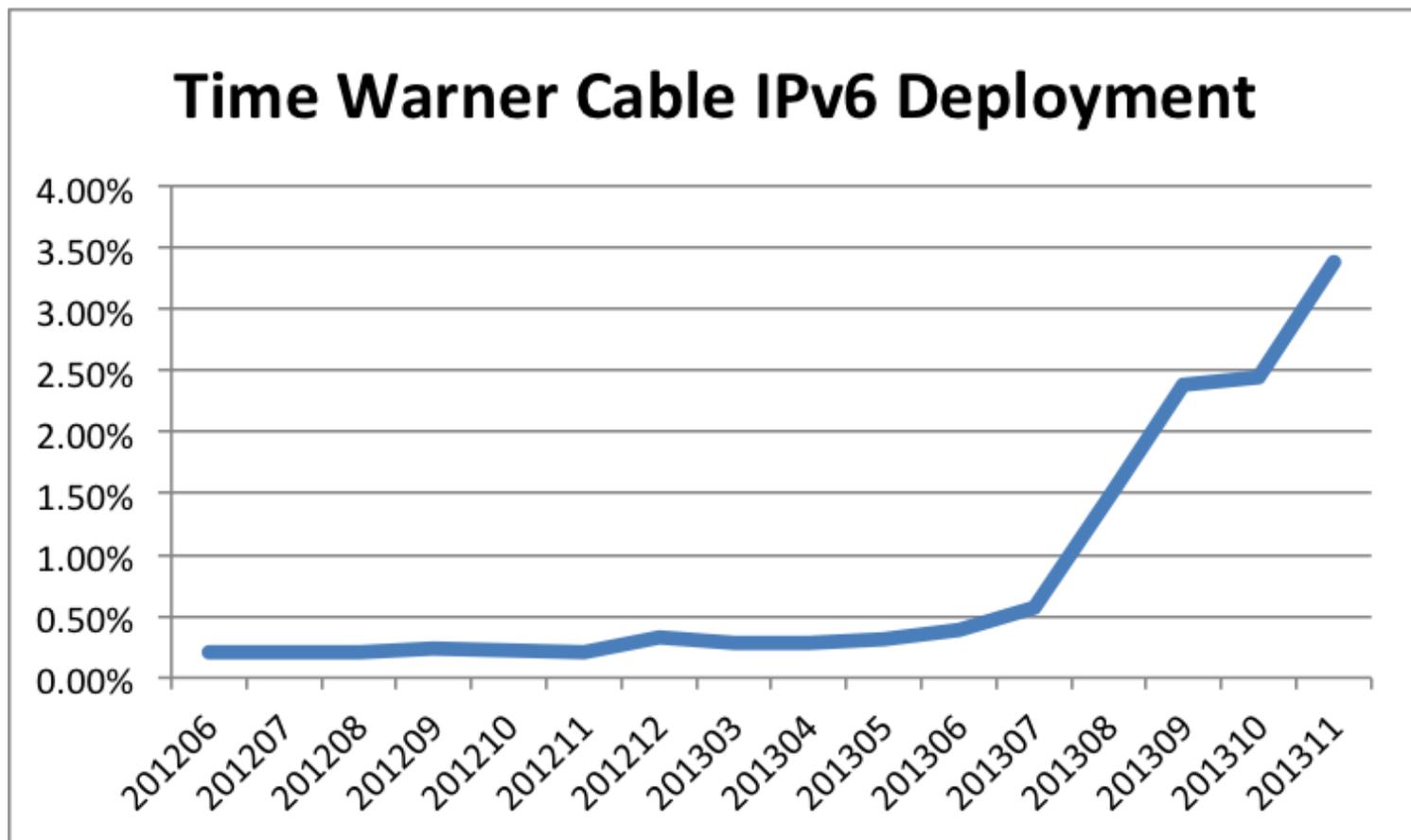

- 3.37% of subscribers are actively using IPv6 per World IPv6 Launch measurements
  - average of measurements from Google, Facebook, Yahoo! and Akamai
- Actually closer to 10% of 11 million subscribers per our internal data
  - increasing daily

Where We Are

Network operator measurements, 14th November 2013 ([notes](#))

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Participating Network	ASN(s)	IPv6 deployment
Comcast	7015, 7016, 7725, 7922, 11025, 13367, 13385, 20214, 21508, 22258, 33287, 33489, 33490, 33491, 33650, 33651, 33652, 33653, 33654, 33655, 33656, 33657, 33659, 33660, 33661, 33662, 33664, 33665, 33666, 33667, 33668, 36733	16.38%
ATT	6389, 7018, 7132	13.41%
KDDI	2516	9.40%
Free	12322	30.68%
Verizon Wireless	6167, 22394	38.47%
Deutsche Telekom AG	3320	11.14%
RCS & RDS	8708	22.98%
Time Warner Cable	7843, 10796, 11351, 11426, 11427, 12271, 20001	3.37%
Telefonica del Peru	6147	4.86%
Liberty Global	5089, 6830, 20825, 29562	2.24%

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http://measurements.worldipv6launch.org

Where We Are

- IPv6 traffic volume (internal measurements) is about 1% of total
  - 10% of users generating 1% of traffic → When you turn on IPv6, at least 10% of your traffic is IPv6
  - IPv6 support in next-gen gaming consoles should dramatically increase usage ratio
    - Netflix
    - YouTube

How did we get here?

- Communication
  - Don't break IPv4, but focus on making IPv6 first-class service
  - IPv4 is for customers – stop wasting it on internal services and infrastructure
- Training
  - Call center level 1: Don't Worry
  - Call center level 2-3: IA_NA, IA_PD, ping6, traceroute6
  - Remedial IPv4
- Killer App that forces pervasive IPv6 support
  - Not enough IPv4 addresses to roll out "big important new product X"
- Web site
  - Tell customers what they can do to be prepared

Lessons Learned

- Don't let "perfect" be the enemy of "good enough" for your address plan
  - You'll change it no matter how long you spend getting it "right"
- Don't let a setback in one area delay parallel activity
  - "Well, if that part is delayed, I don't have to worry about my part yet, right?"
  - WRONG! Each area will encounter their own setbacks
- Coordinate roll-out to reduce network touches, impact

    For example:
  - Upgrading code on a CMTS reloads it and all attached Cable Modems
  - Unless all of those CMs have an IPv6-capable version of code ready, a second reload will be required

Measure Performance

	Hub1		Hub2		Hub3		Hub4	
	IPv4	IPv6	IPv4	IPv6	IPv4	IPv6	IPv4	IPv6
apple.com	14	13	54	23	9	9	5	8
facebook.com	9	10	52	60	13	14	19	21
google.com	15	19	82	59	9	14	1	5
netflix.com	16	15	83	78	10	10	3	3
wikipedia.org	15	14	27	26	9	9	2	1
yahoo.com	38	76	57	58	35	63	28	60
youtube.com	15	17	74	59	9	19	1	13

- Measure performance to top websites
- Compare IPv4/IPv6, highlight poor performers
- Troubleshoot

Where are we going

- Enabling IPv6 on edge (CMTS)
- Enabling IPv6 on Cable Modem (CM)
  - More modems
  - Recommendations to customers for IPv6-capable Retail gateways, modems
- More Products
  - Business Services
    - DOCSIS: Dynamic first, then static
  - Voice
  - Video
  - Intelligent home
- Vendor contractual requirement – MUST NOT require IPv4
  - Equipment AND external communications (website, mail, etc.)
- IPv4 is for customers
  - everything that can do IPv6 must