

World IPv6 Day - What did we learn?

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(Channeled by Vesna Manojlovic)

Netnod Autumn Meeting 2011



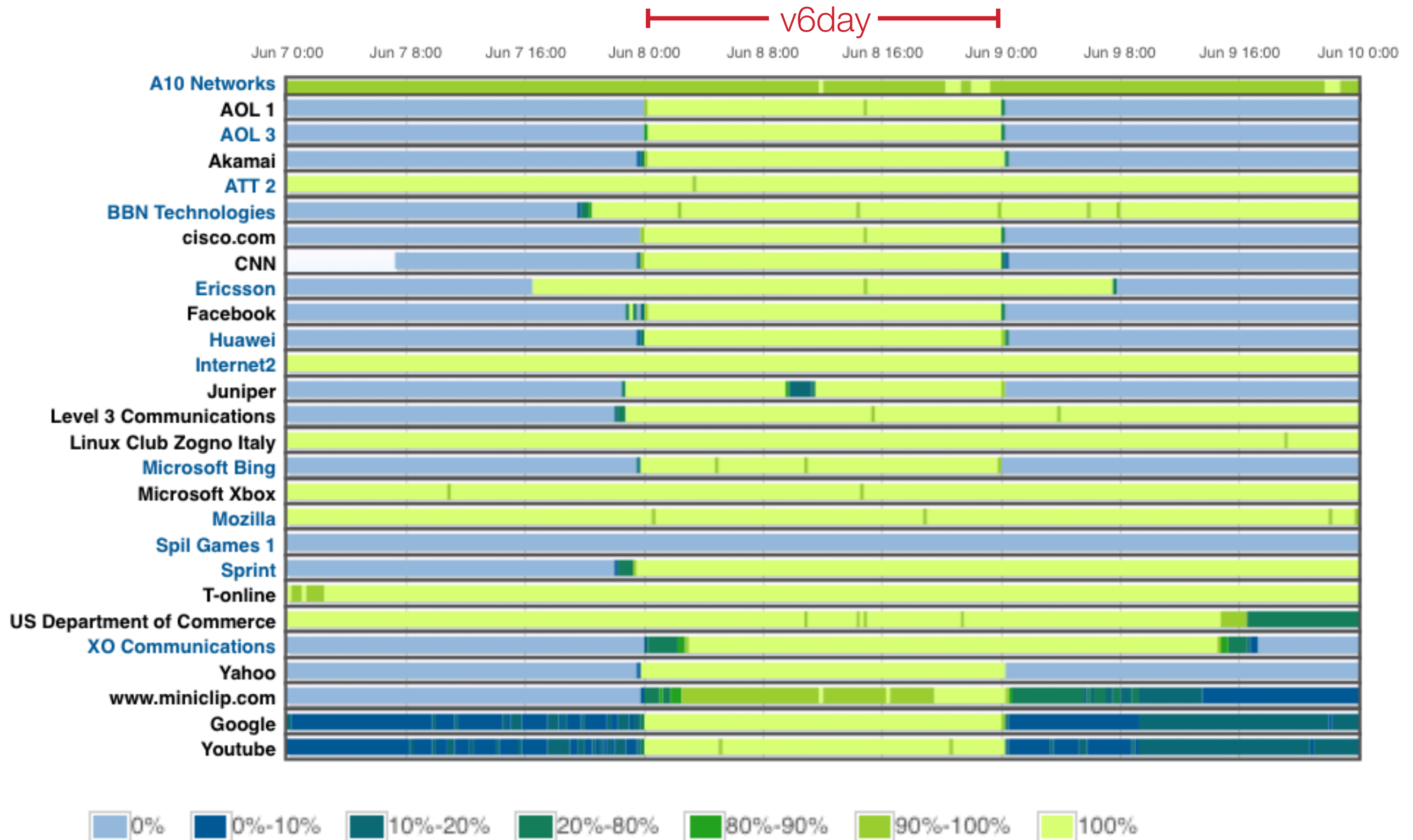
RIPE NCC Measurements - World IPv6 Day

- IPv6 Eyechart and 6to4 (not in this talk)
- Active measurements
 - Sources: 49 vantage points (RIPE TTM, CAIDA Ark, ...)
 - Destinations: 53 participant or already dual-stacked sites
 - From 2011-06-01 to 2011-06-11 we measured
 - DNS: A and/or AAAA records
 - ping(6)/traceroute(6)
 - HTTP over IPv4 and IPv6

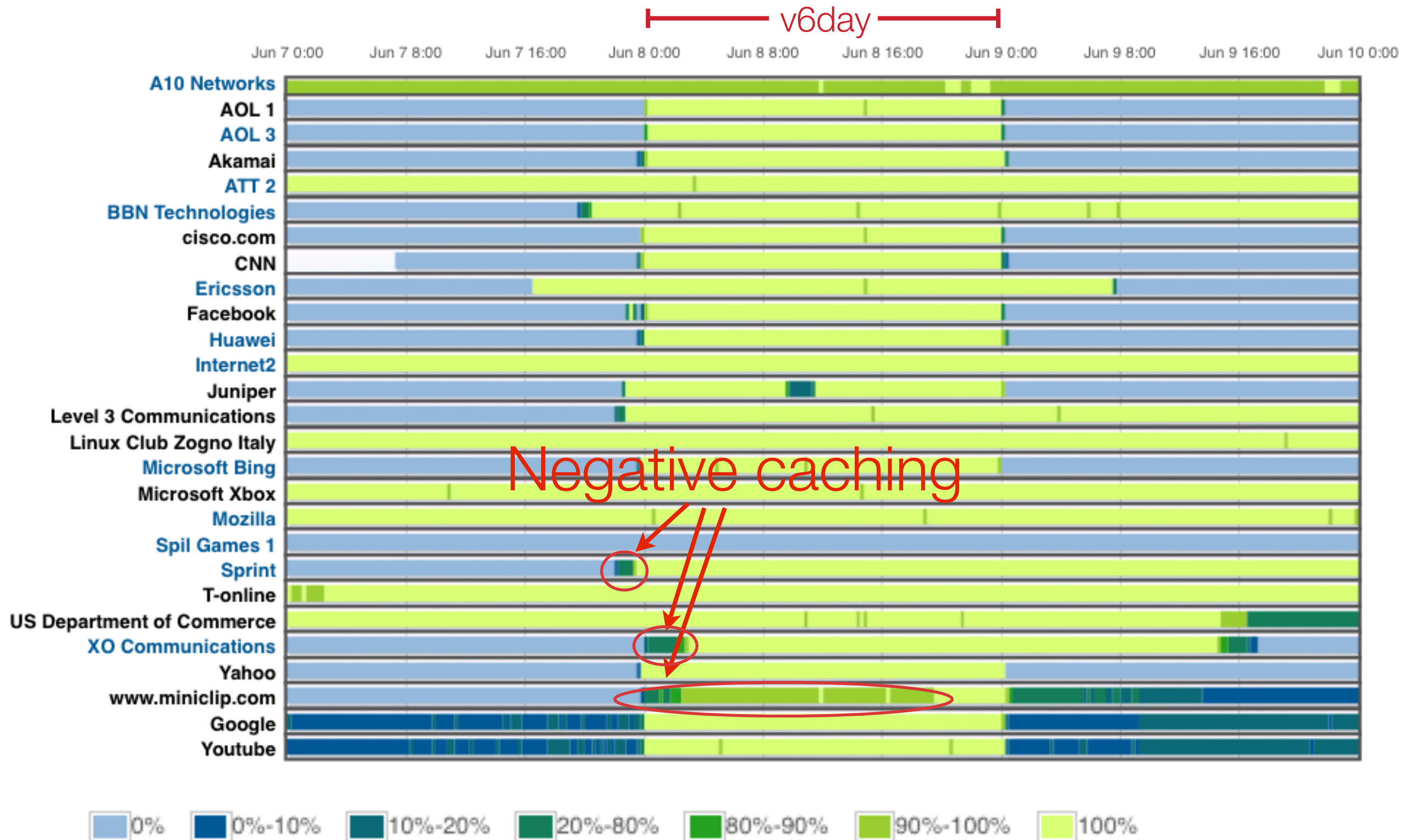
Measurement vantage points



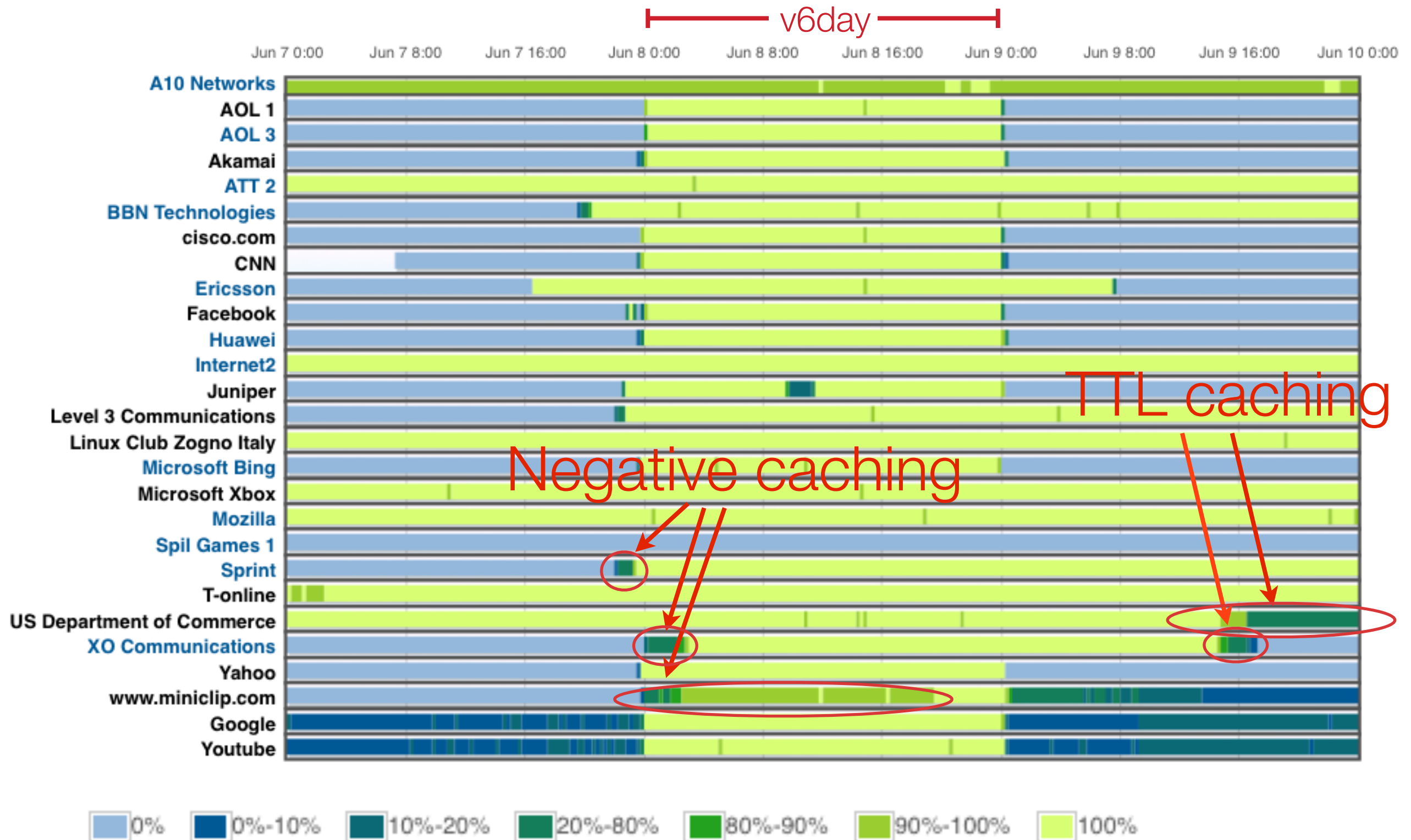
Percentage of vantage points seeing AAAA



Percentage of vantage points seeing AAAA



Percentage of vantage points seeing AAAA



Test and monitor

You don't want this to happen

On IPv4:

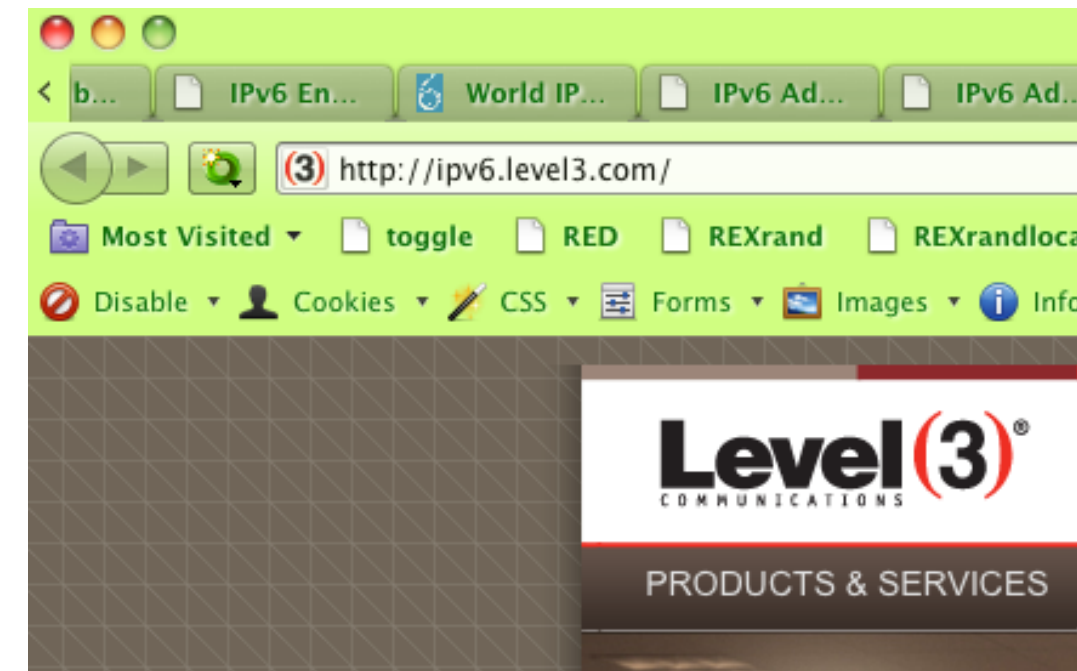


On IPv6:



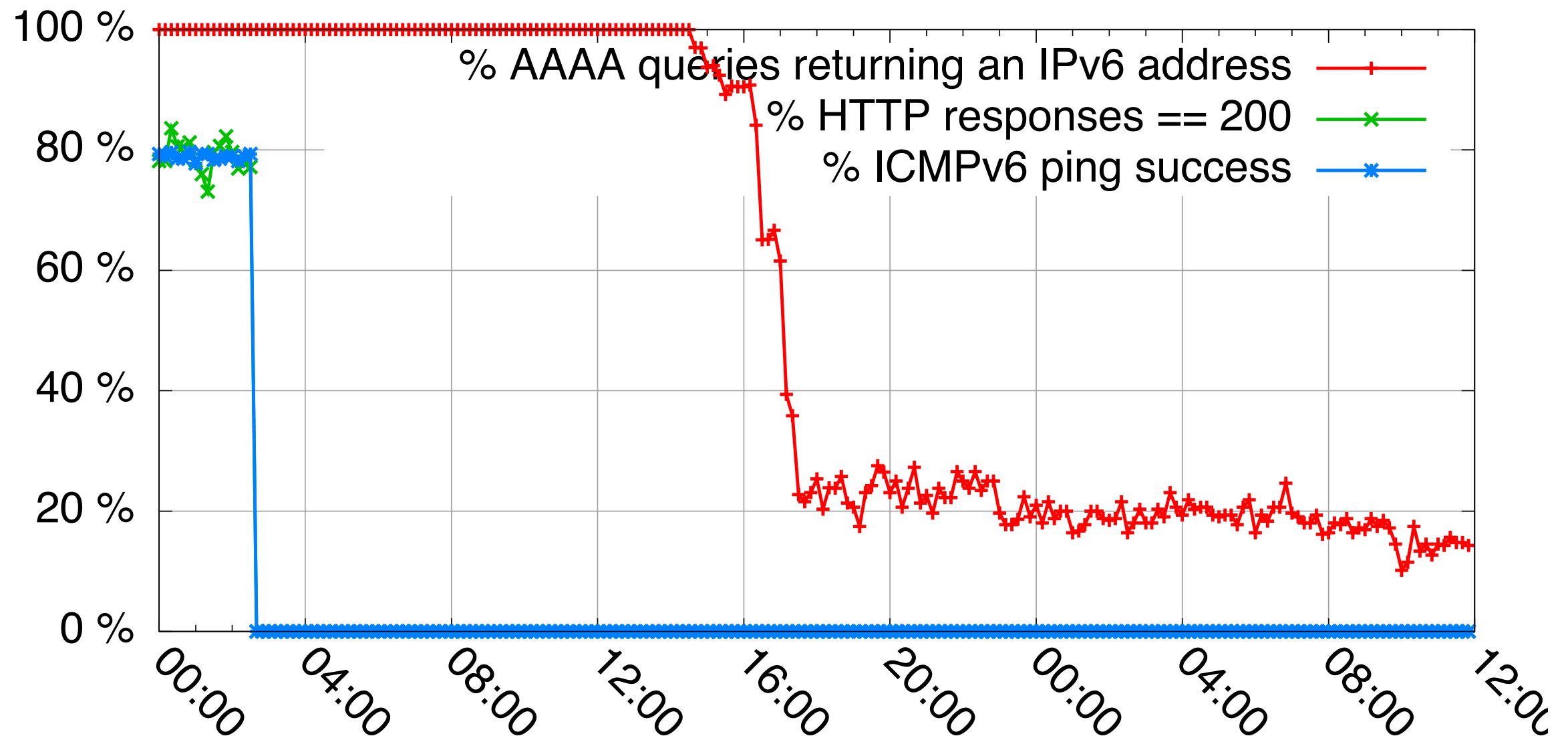
Not Found

HTTP Error 404. The requested resource is not found.



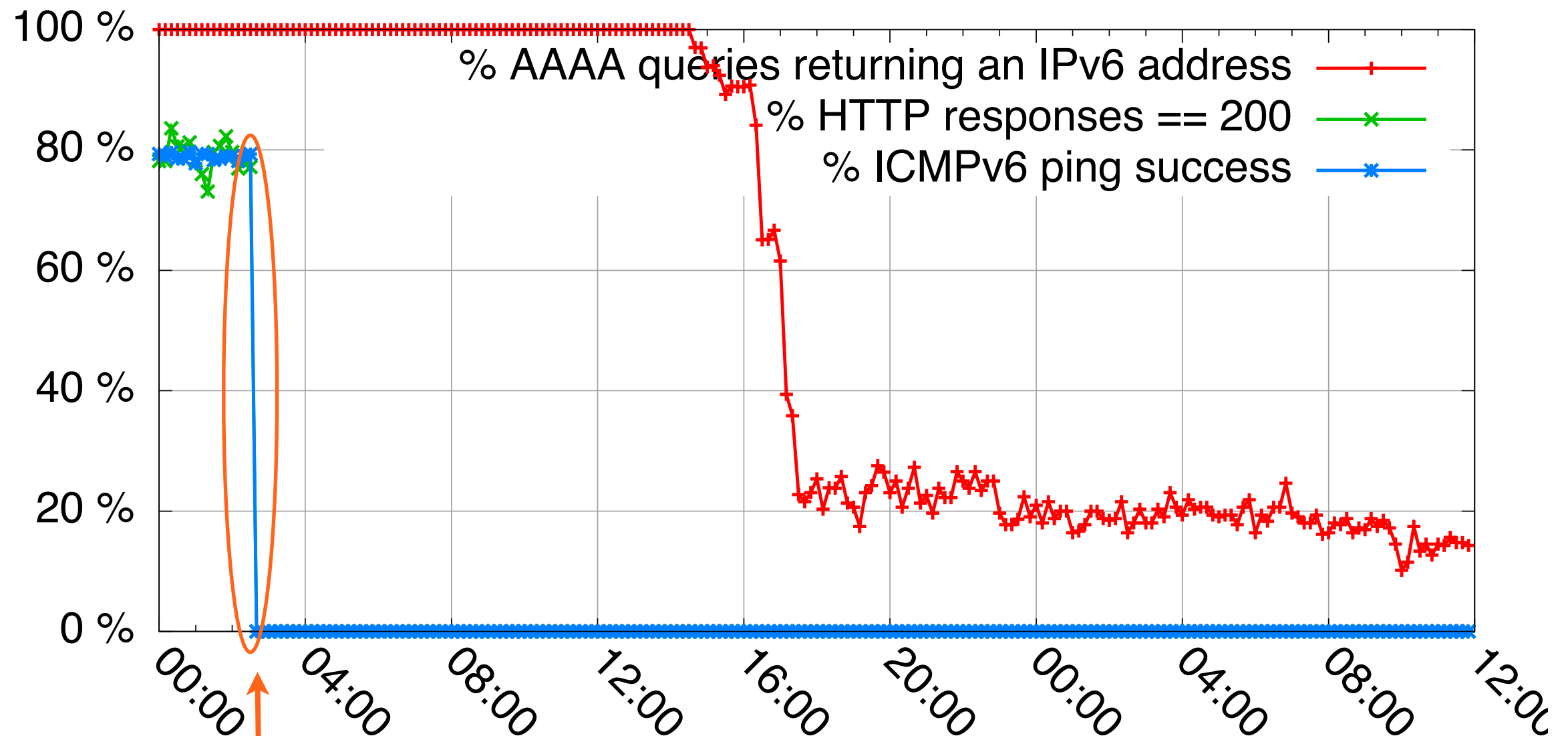
Or this ...

Comparing DNS, ping and HTTP IPv6 measurements
to www.commerce.gov from 2011-06-09 0:00 UTC to 2011-06-10 12:00 UTC



Or this ...

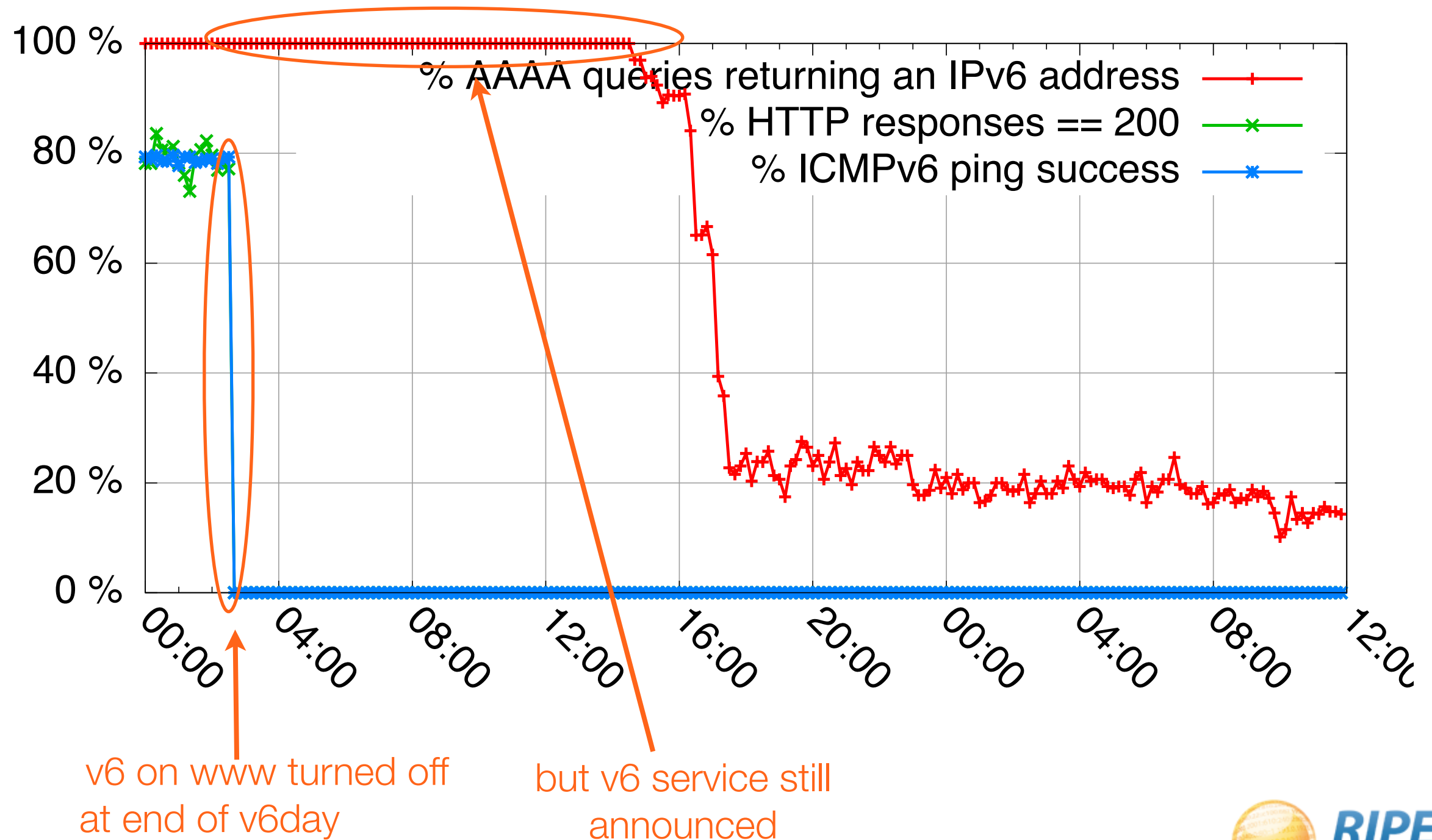
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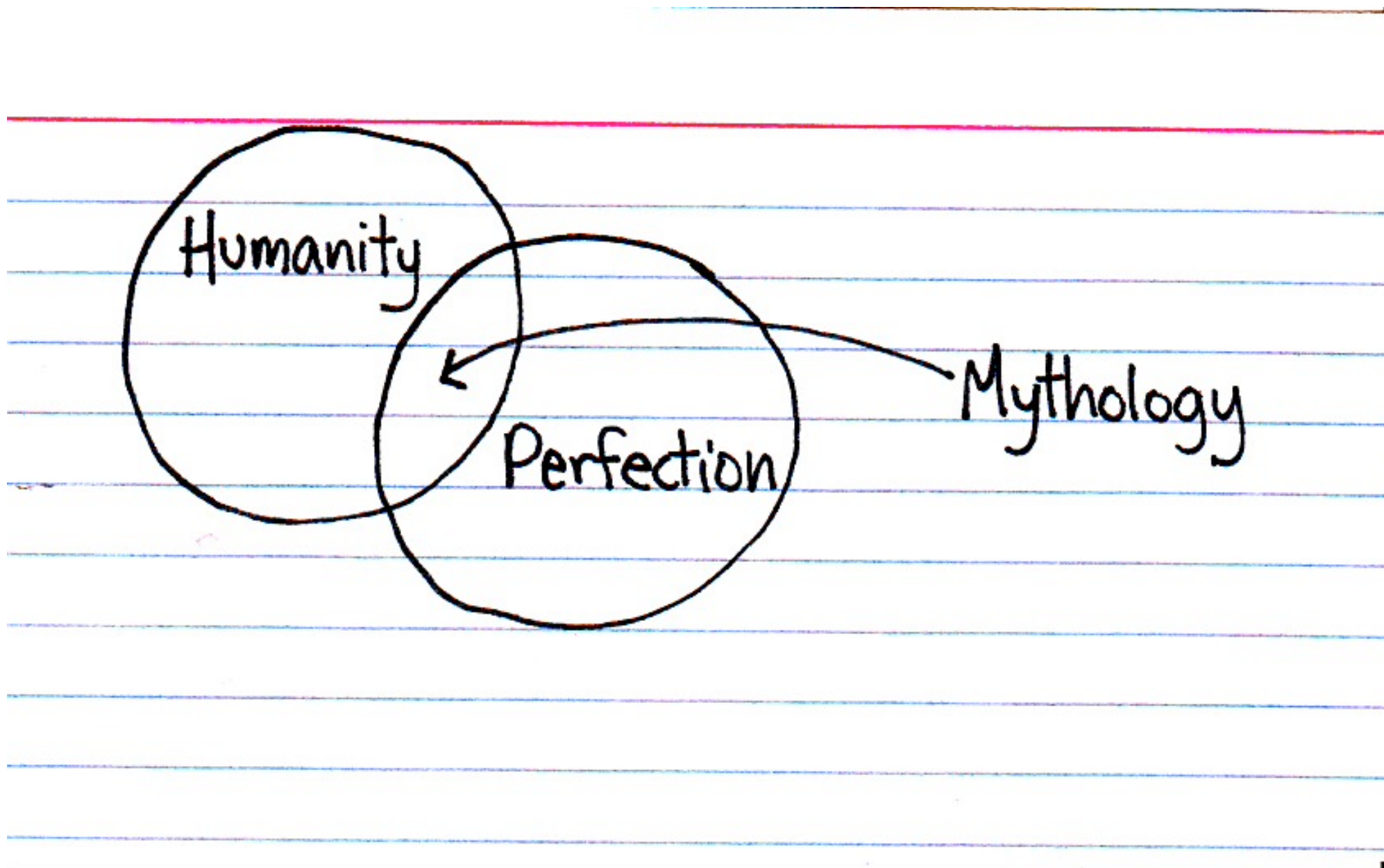
v6 on www turned off
at end of v6day

Or this ...

Comparing DNS, ping and HTTP IPv6 measurements
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Test and monitor - lessons learned



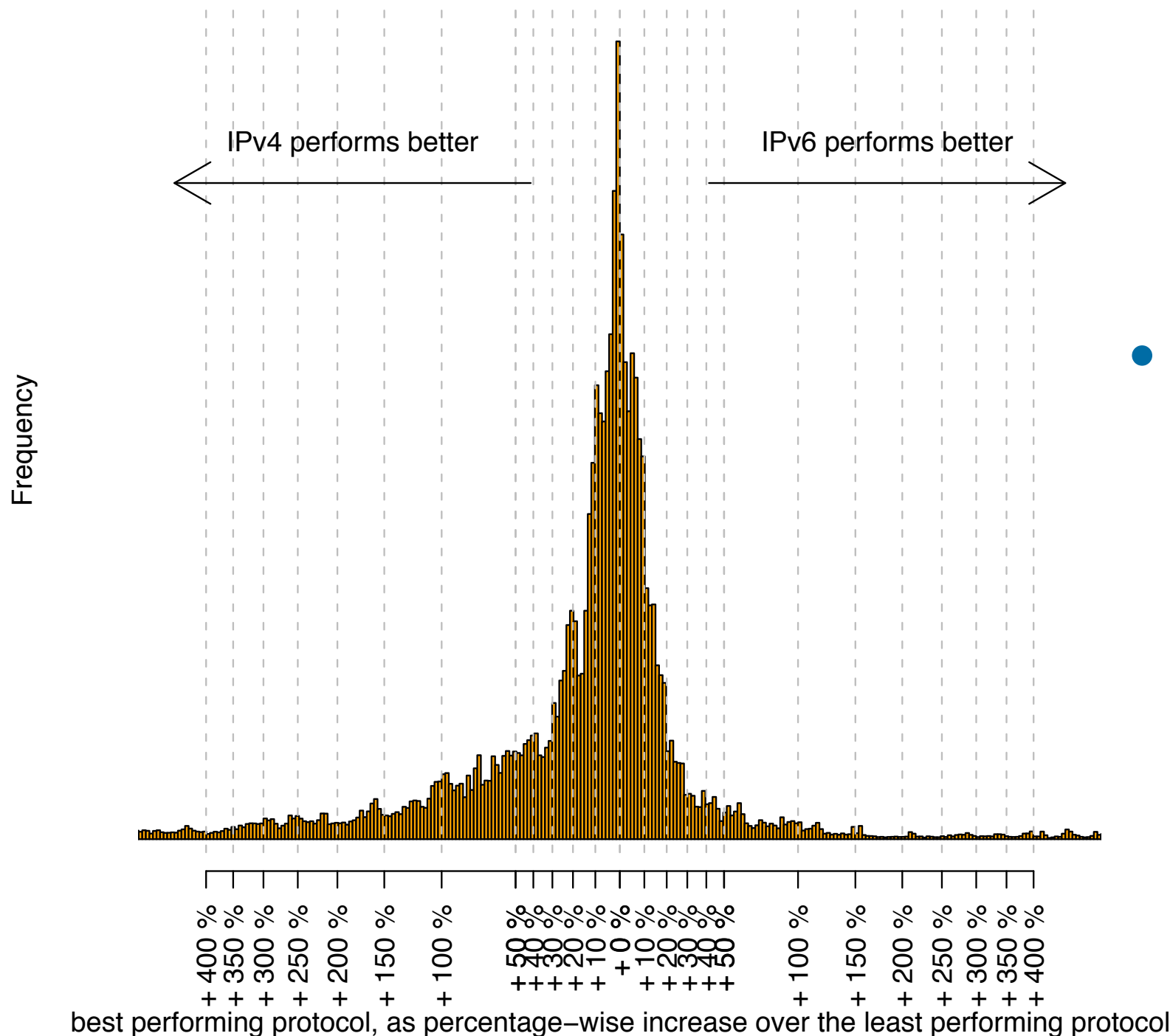
Test and monitor - lessons learned

- Test when deploying something
 - The more real-life, the less likely you !@#\$\$-ed up
- Monitor your infrastructure
- People2people reachability
 - Avoidable situations like Level3 and Dept. Commerce
 - Contact info up to date in RIR databases (whois)
 - Monitor the web (NANOG, *NOG, Twitter, ...)

Global view

Performance of src/dst pairs on 2011-06-08

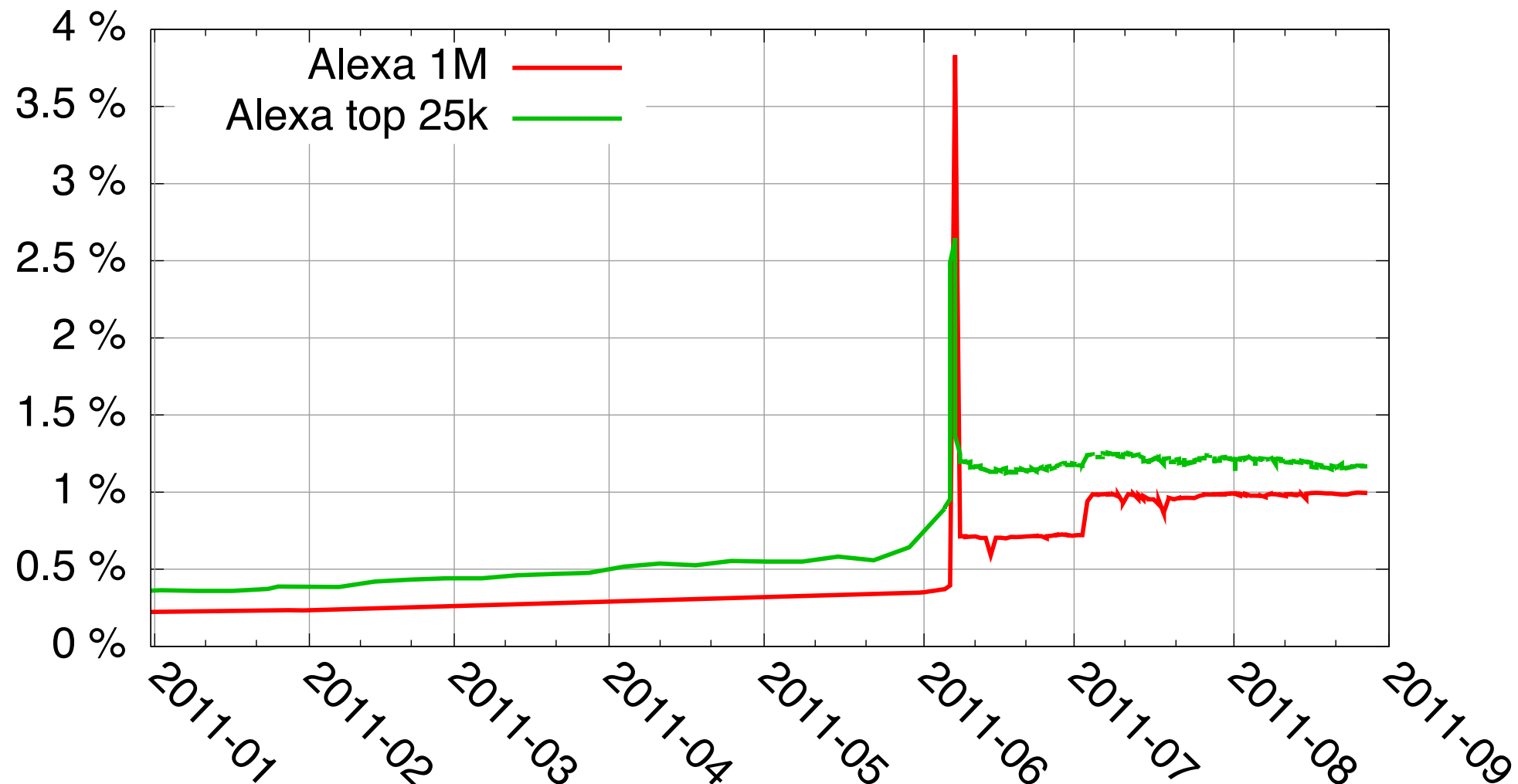
Distribution of IPv4/IPv6 relative performance



- Bell-shaped
 - centered around 0
 - with fatter IPv4-side
 - (62% / 38%)
- Dual-stack = two chances for best performance!
 - Real-time apps could exploit this (voice, gaming)

Long term effects - Content

Percentage of web sites in Alexa 1M that can be reached over IPv6

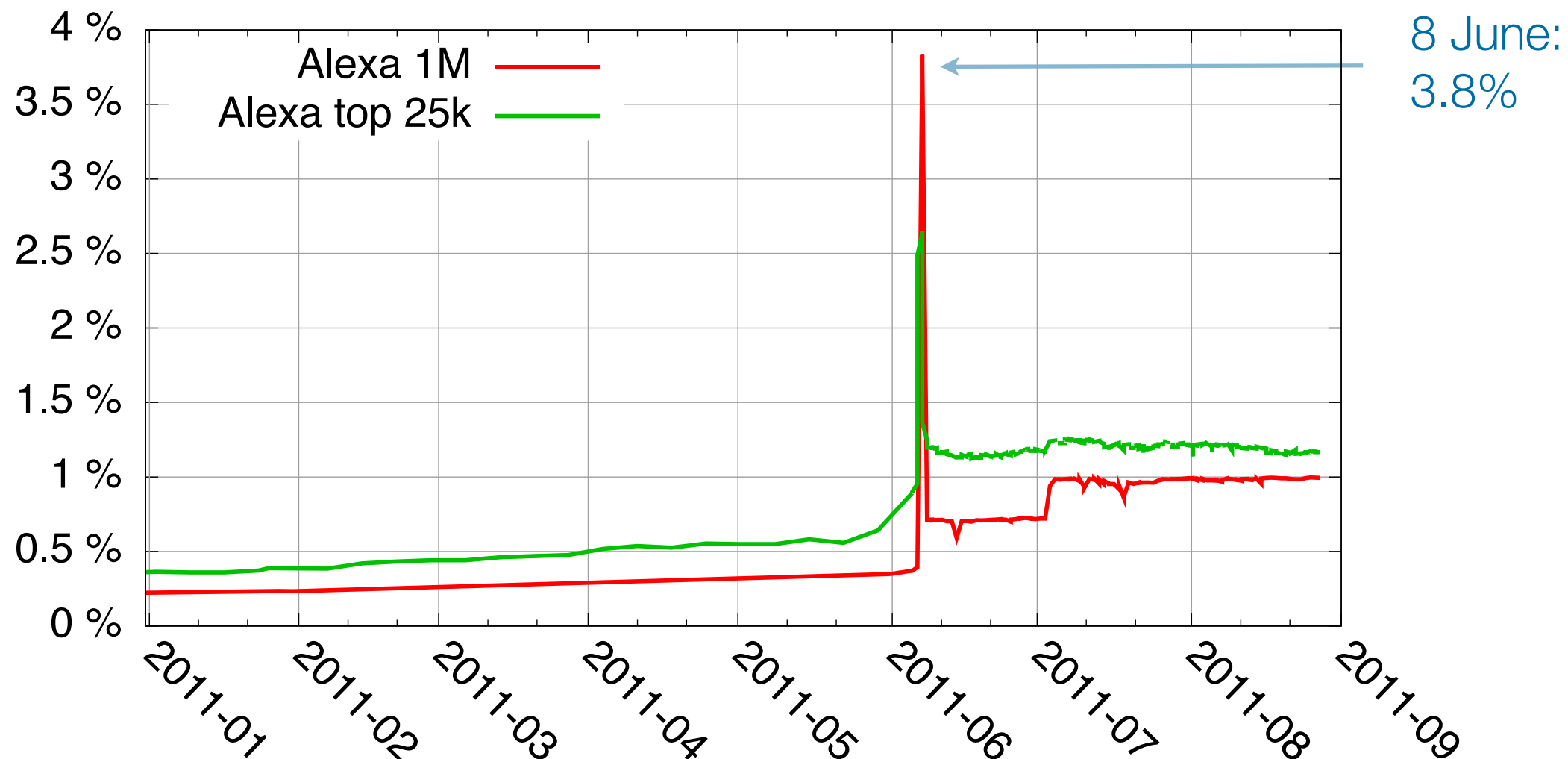


Raw data: Dan Wing

(<http://banjo.employees.org/~dwing/aaaa-stats.html>)

Long term effects - Content

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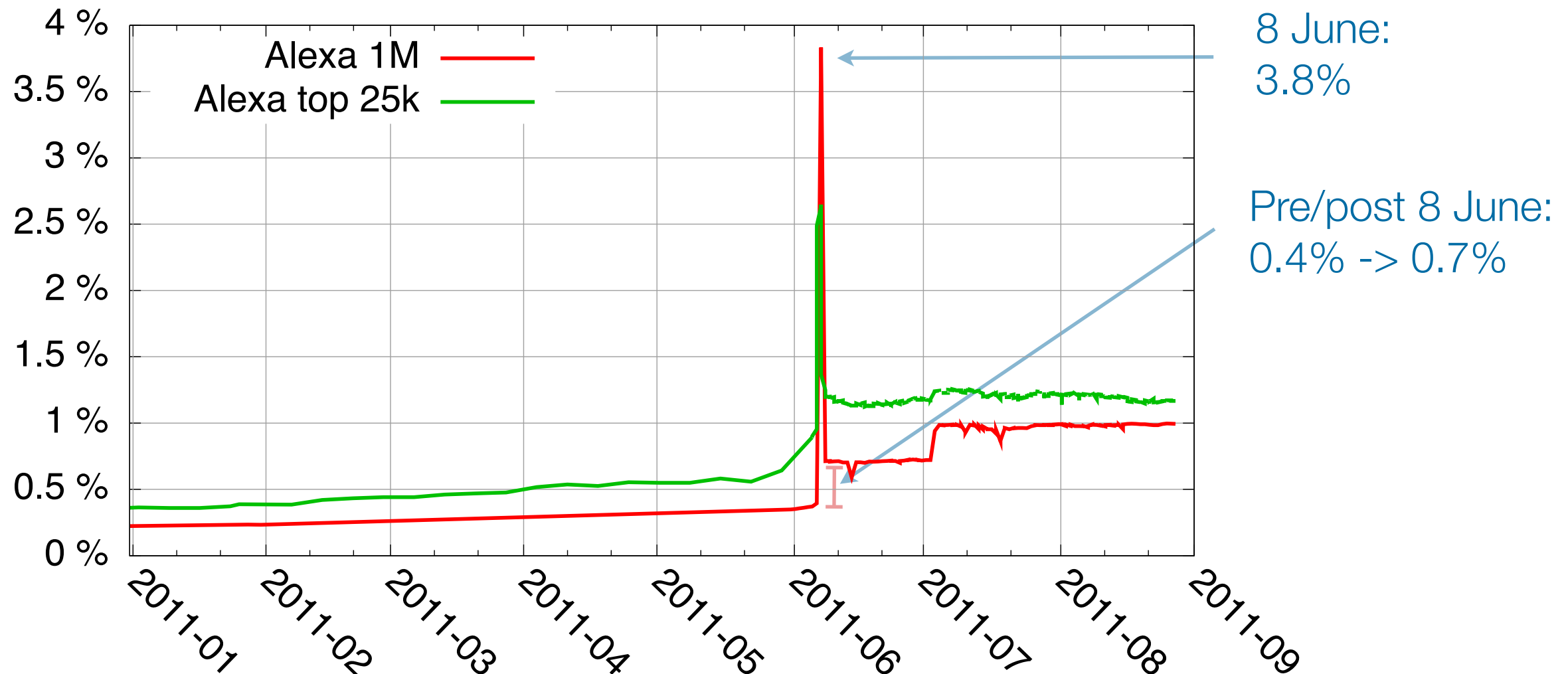


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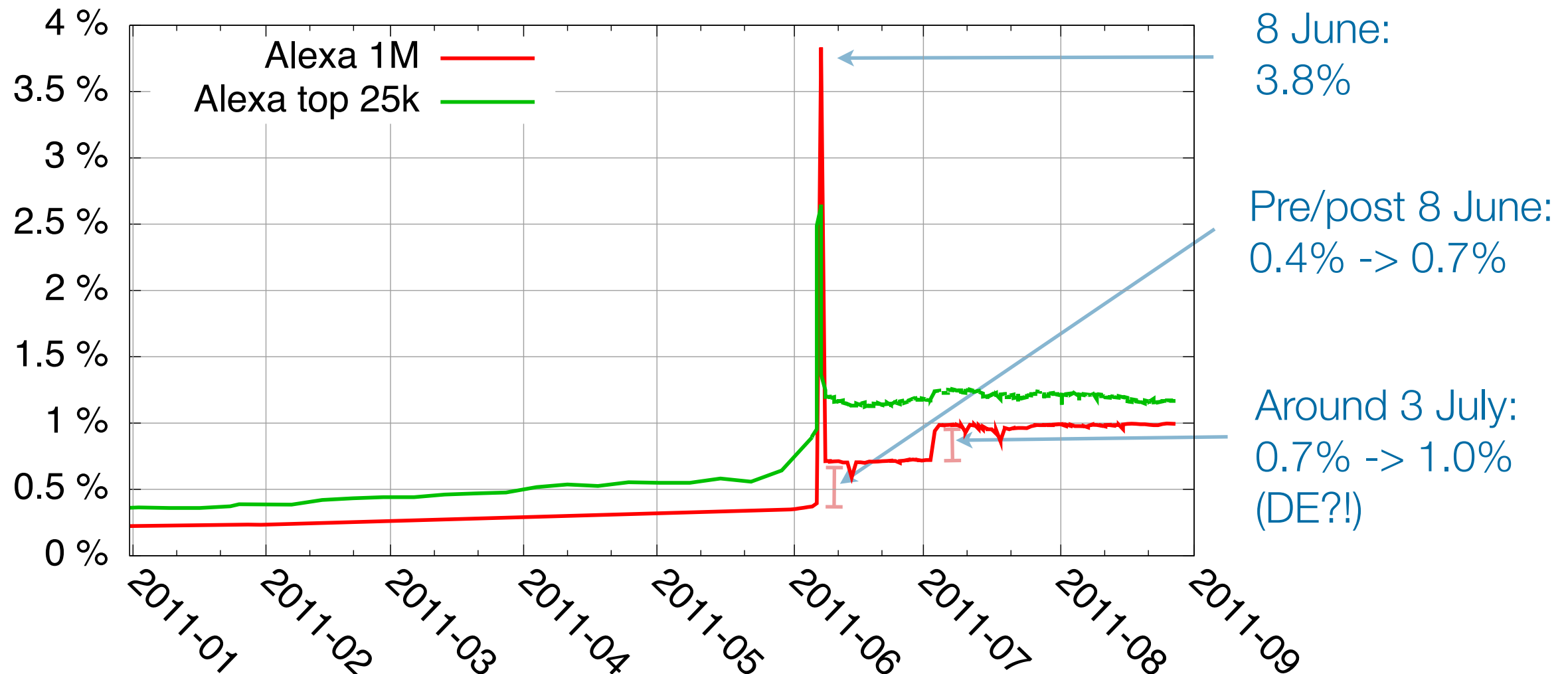


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Long term effects - Content

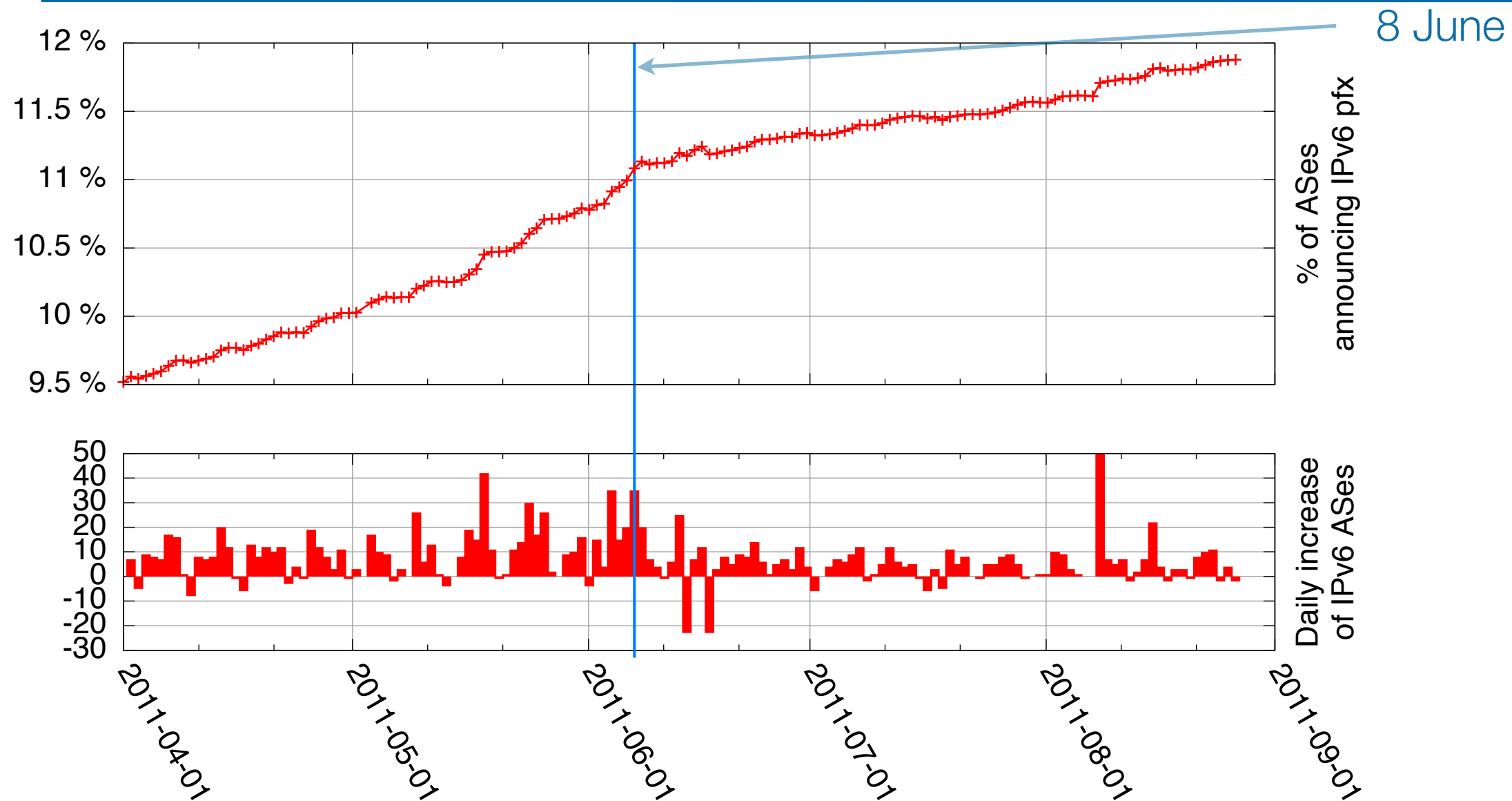
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Long term effects - IPv6 ASes



- Higher growth before v6d: Deployments pushed earlier?
- Lower growth after v6d: Summer-vacation?
- <http://v6asns.ripe.net>

Conclusions - what we learned

- IPv6/dual-stack works just fine, but make sure that
 - It is properly tested and monitored (like IPv4)
 - Your network can reach all others (like IPv4)
- Dual-stack = Two chances for best performance
- Days like this ‘work’
 - Raise awareness
 - Give people a target to work towards
 - We’re ready for a next IPv6(day|week|month|year| ∞)

More information

- Web interface to the measurements
 - <http://v6day.ripe.net/>
- Analysis on RIPE Labs
 - <http://labs.ripe.net/ipv6day>
- Raw data availability
 - <http://labs.ripe.net/datarepository/data-sets/ripe-ncc-active-measurements-of-world-ipv6-day-dataset>
- Questions?
 - RIPE63! & emile.aben@ripe.net