



World IPv6 Day

How to hold hands and jump in!

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What was World IPv6 Day?



- A twenty four hour event on 8 June 2011 (00h00 - 23h59 UTC)
- Facebook, Google, Yahoo! and more than 1,000 other web sites enabled IPv6 access to their “front door”
- Goals:
 - Motivation for everyone to prepare services for IPv6 (hardware, software, services, content)
 - Understand outstanding issues for a successful transition
- The first global, real-world “test-flight” of IPv6 and the largest ever
- Response was massive with 1000s of organisations taking part



How did this come about?

- ISOC IPv6 Round Table series
 - Started September 2008
- Building relationships and common goals
- Great idea popped out
 - *which captured the imagination of big web site operators*
- Timing:
 - IPv4 run out
 - Big brands being public
 - Work in progress



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Why did we do it?

- Break the chicken-and-egg problem of IPv6 deployment
 - Large scale example of real content
- Target necessary bug fixes
 - Small percentage of users
 - Significant numbers for large content providers
- Provide a target date
- Spur organizations to create a plan for IPv6 adoption
 - Keeping up with Google, Facebook, and Yahoo! is important
- Create customer demand for vendors, CDNs, ISPs
- Reignite the spirit of Internet collaboration
 - The Internet industry came together for the long term health of the Internet



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Who turned up IPv6 on June 8?

www.google.com

www.facebook.com

www.youtube.com

www.yahoo.com

www.blogspot.com

www.bing.com (#21)

www.microsoft.com (#25)

www.bbc.co.uk (#38)

www.cnn.com (#48)

www.aol.com (#55)

www.netregistry.com.au

www.ktsaustralia.com.au

www.sententia.com.au

www.techanalysis.com.au

www.alexanderproductions.com.au

www.monash.edu.au

www.qut.edu.au



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Hosting companies added thousands of domains, addressing the long tail of websites

www.host.md (@4500 - permanent)

www.task.com.br (@7000 – left on)

www.df.eu (@700,000)

www.strato.de (@4,000,000 – left on)

... others with 1000s and 10000s of thousands



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Sampling of USG sites

Veterans Affairs (www.va.gov)

Commerce (www.commerce.gov)

Census (www.census.gov)

FAA (www.faa.gov)

Treasury (www.treasury.gov)

Education (www.ed.gov)

State (www.state.gov)

Defense (www.defense.gov)

Energy (www.energy.gov)

...



Of note in Australia

www.bom.gov.net

www.megaconference.org



Documenting Success

- Large site operators were across this important aspect
- Documented through an IPv6 reachability dashboard
 - See <http://www.worldipv6day.org/participants-dashboard/>
- Longer term goal is permanently turning up IPv6
 - Some did thanks to World IPv6 Day
 - Some will later
 - Some need more time
- Roughly 2/3rds of the participating sites who contacted us remained on
- Traffic increased and remained higher
- RIPE Labs measured impact on IPv6 traffic
 - See: <http://labs.ripe.net/Members/emileaben/measuring-world-ipv6-day-long-term-effects>



Samples of measurements

Dual stacked websites (dual stack = accessible over both IPv4 and IPv6)

 RIPE NCC	 ISOC	 Heise	 VG Netz	 Registro	 NIX	 Hurricane Electric	 APNIC
 LACNIC	 AtnNIC	 FreeBSD	 Python lang	 PTS	 xkcd	 IETF	 TUNIX
 Campava	 World IPv6 Day DK	 Arnes	 Gigatux				

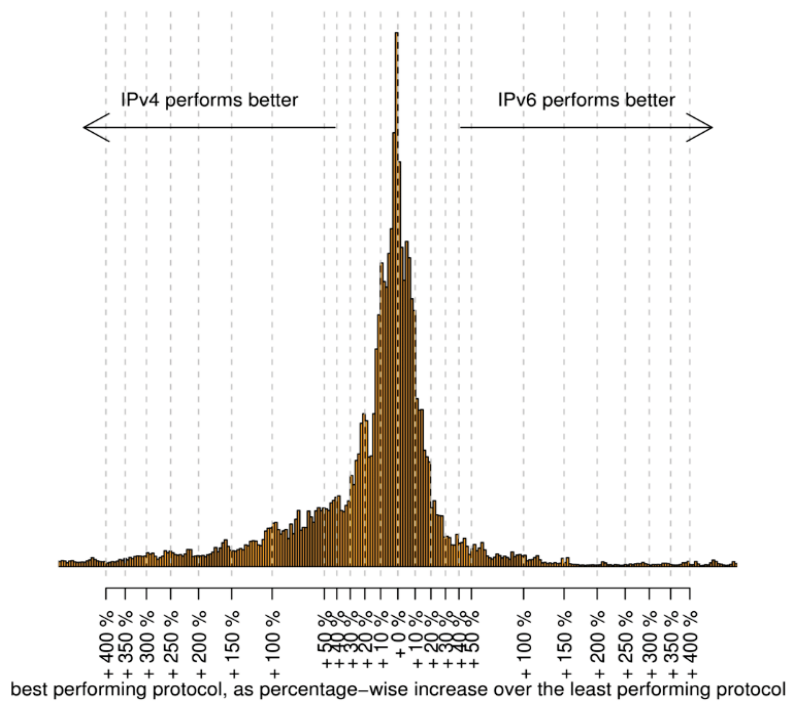
World IPv6 day participants (will be dual-stacked in 14 days)

 Google	 Yahoo	 Facebook	 YouTube	 MS Bing	 MS Xbox	 AOL	 Mapquest
 Cisco	 Juniper	 Huawei	 US Dep Commerce				

Source: RIPE NCC



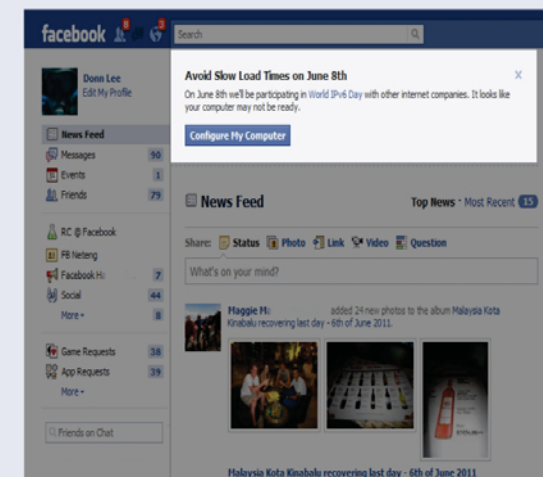
Distribution of IPv4/IPv6 relative performance



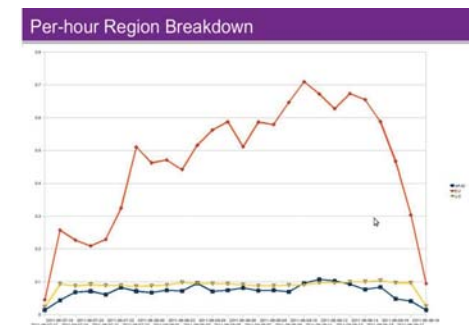
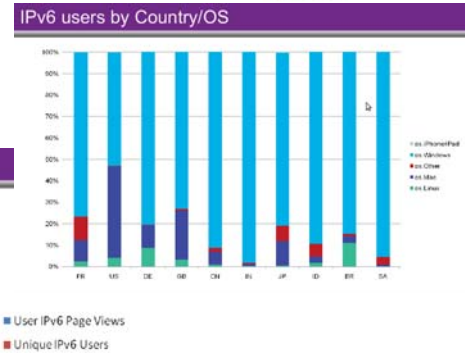
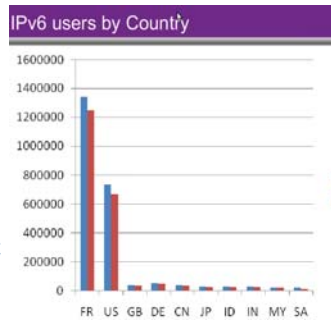
facebook's experience

- IPv6 capable users: 0.20%
 - IPv6 native: 0.16%
 - 6 to 4: 0.04%
 - Teredo: near zero
- DS brokenness ~0.02% of users
 - Down from 0.03% pre-WIPv6D
- Via non intrusive browser testing
- In 24hr period >1m IPv6 visitors

Message to broken users



- Comprehensive user education
 - Beaconing system
 - Help page in 38 languages
 - IPv6 test tool
 - Alert on home page
- Modified a lot of code
 - Abuse, geo, ad- targeting etc
- Over 2.2m users over IPv6
- Over 1m visits to IPv6 help pages
- Ratio of users:
 - Peak: 0.229%
 - Avg: 0.168%



Broad Observations

- No large scale breakage
- For 24hrs some people (web site operators and some end users?) could ignore things
- dDOS fears did not pan out
- Difficult for some in the financial sector to join
- Low numbers of visitors
- Work remains to be done
 - *“Some equipment that claimed to support IPv6 either did not work correctly or did not work at all.”*



What's needed?

Site Operators

- More websites and services need to enable IPv6 permanently
- Really large websites are still somewhat inhibited by phantom IPv6 connectivity

Access

- There are still very few access networks with reliable IPv6 connectivity. It is up to large ISPs to change this.

Industry

- Industry wide collaboration is still needed to enable quality IPv6 deployment throughout the Internet



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What I'd like to know:

What was the impact on commercial priorities in your organization?

Can you describe observable customer pull?



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Thank you!

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