IPv6 Transition:
Future in your hands, act now!

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SGNOG

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Overview

- World IPv6 Day and its outcome
- Long term IPv6 measurements
- Way forward

Setting the scene

- Adding IPv6 to your website may have risks
  - In principle, it should be a simple thing to do.
  - Will your clients still be able to ‘see’ you?
  - What % of clients will experience issues?
- Finding out in advance what to expect is useful
  - A way to measure end-user behavior
  - Without affecting your own website investment
- Measuring failure is hard!
  - Website logs only measure successful connections

Adding IPv6 to your website
Any risks?

- Windows hosts experience problems with dual-stack (IPv4, IPv6) DNS records
  - May refuse to connect to the IPv4 address
- Some hosts cannot process IPv6 DNS properly
  - Not supported in all DHCP backed configurations
- ‘Partial IPv6’ problems
  - Locally IPv6 enabled, no IPv6 route to global Internet
- Loss of eyeballs = Loss of revenue?
  - When your core business presents via the web, what risks to loss of web access are you willing to take?

APNIC's web measurement system (labs.apnic.net)

- Built on google 'analytics' method
  - Javascript, highly portable
  - Asynchronous, runs in the background
    - after page render already complete
  - Uses DNS wildcards, uncacheable
- Data integrated into google analytics reports
  - Graphs of 'events' to monitor IPv4, IPv6 and dual-stack
- Configurable by website manager
  - Sample or every connection, extra tests etc
- Basic test set is dual-stack, IPv4, IPv6
  - Dual stack enabled DNS behind all fetches

labs.apnic.net
Measurement outcome

- At least 25% of the world's host computers are ready to run IPv6 native mode right now
  - The only lack an IPv6 route into the global Internet
    - Using an older home router,
    - Or more commonly, ISP does not provide native IPv6

labs.apnic.net
Measurement outcome

- Dual-stack brokenness:
  - Is decreasing
    - Older host software systems are upgrade with regular vendor updates
  - In the worst case fewer than 3 in 10,000 clients will experience any problem with fetching from a dual-stack website
- More details will be discussed at APNIC32 IPv6 Transition Plenary (30/08/2011)
  - http://meetings.apnic.net/32/program/ipv6

APNIC32
IPv6 Transition Plenary: 30/08/2011

IPv6 Transition Plenary

Lessons from the IPv6 test flight

When: Tuesday, 30 August 2011

Where: Grand ballroom

Time: 09:00 - 17:30 (UTC +9)

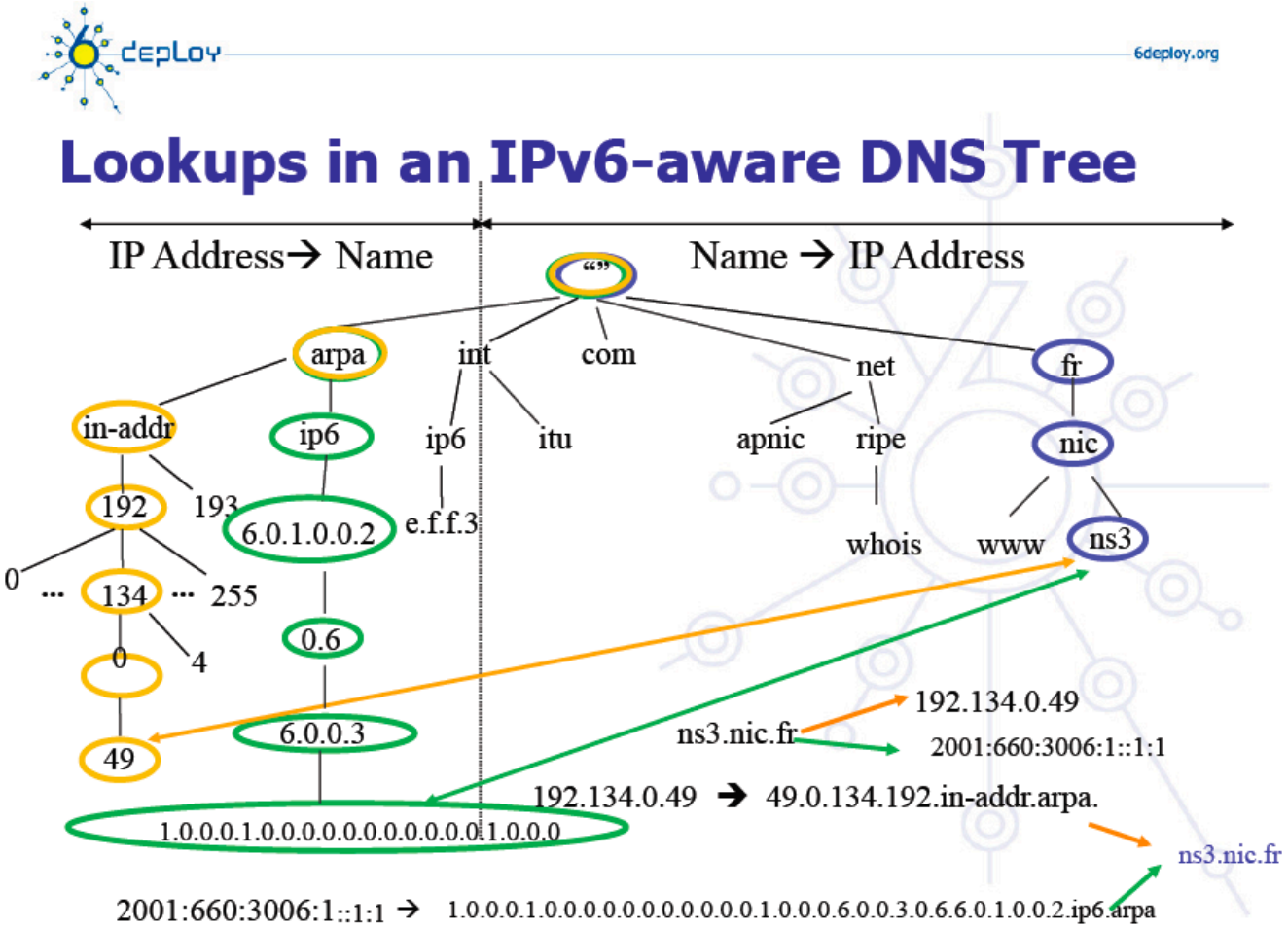
The APNIC pool reached the Final /8 block of IPv4 addresses in April. The Internet's continued rapid expansion in the Asia Pacific should be an indicator for IPv6 deployment, but where do we actually stand in this large-scale transition?

Conference Key Info

Venue:
Paradise Hotel,
Busan, South Korea

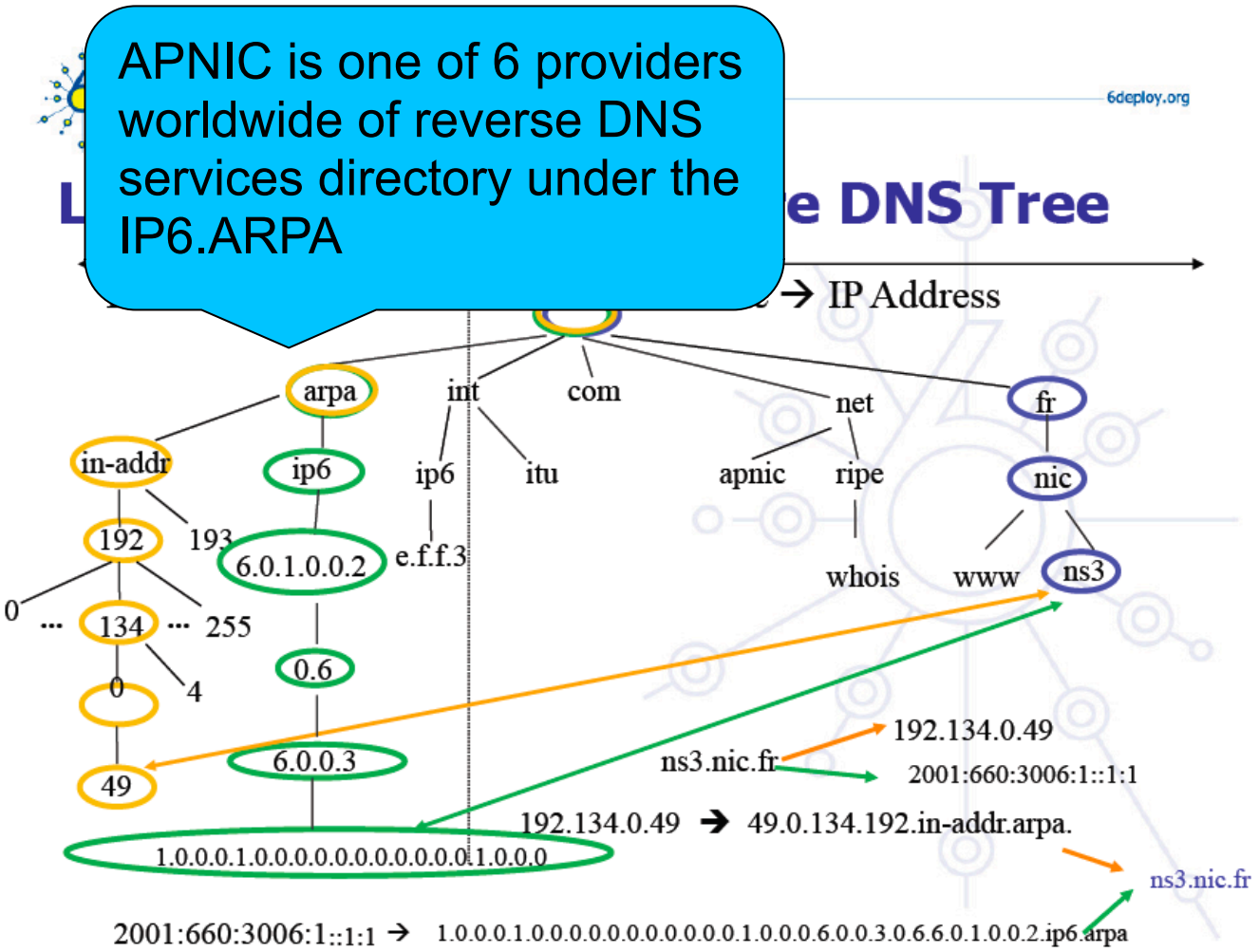
Dates:

Regional and global impact



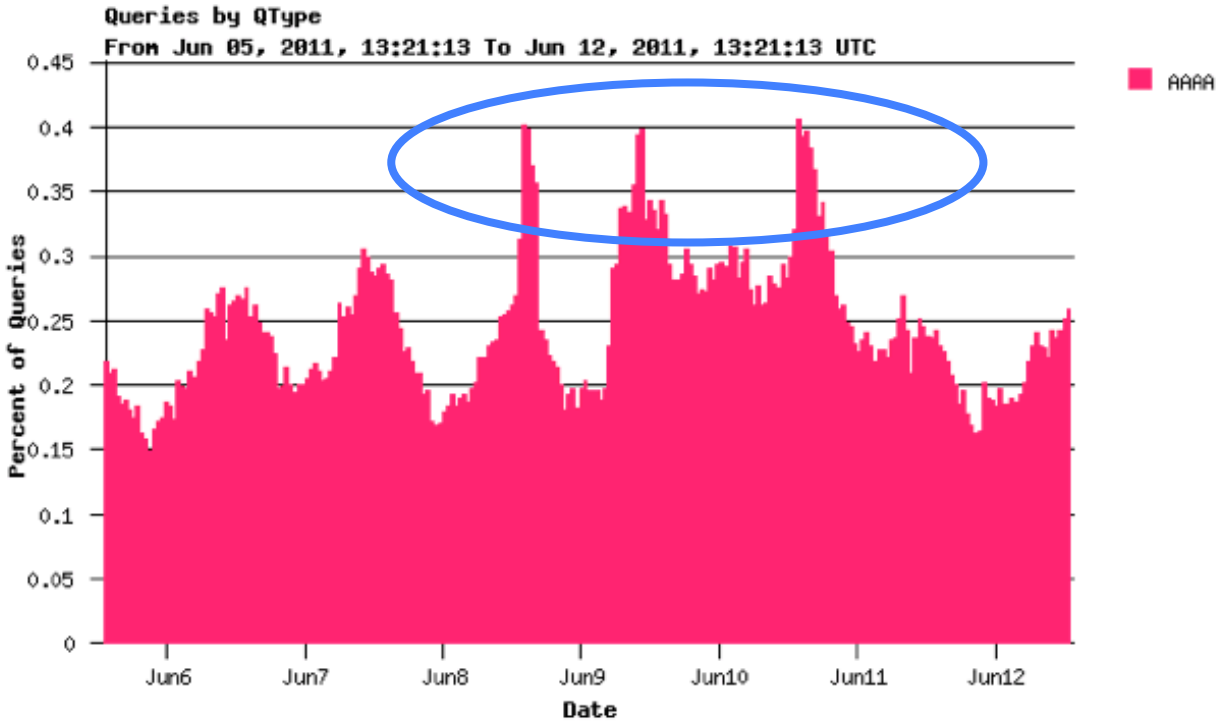
http://www.6deploy.eu/workshops2/20110629_skopje_macedonia/16.IPv6%20DNS%20-%20Skopje%20-%2020110628.pdf

Regional and global impact

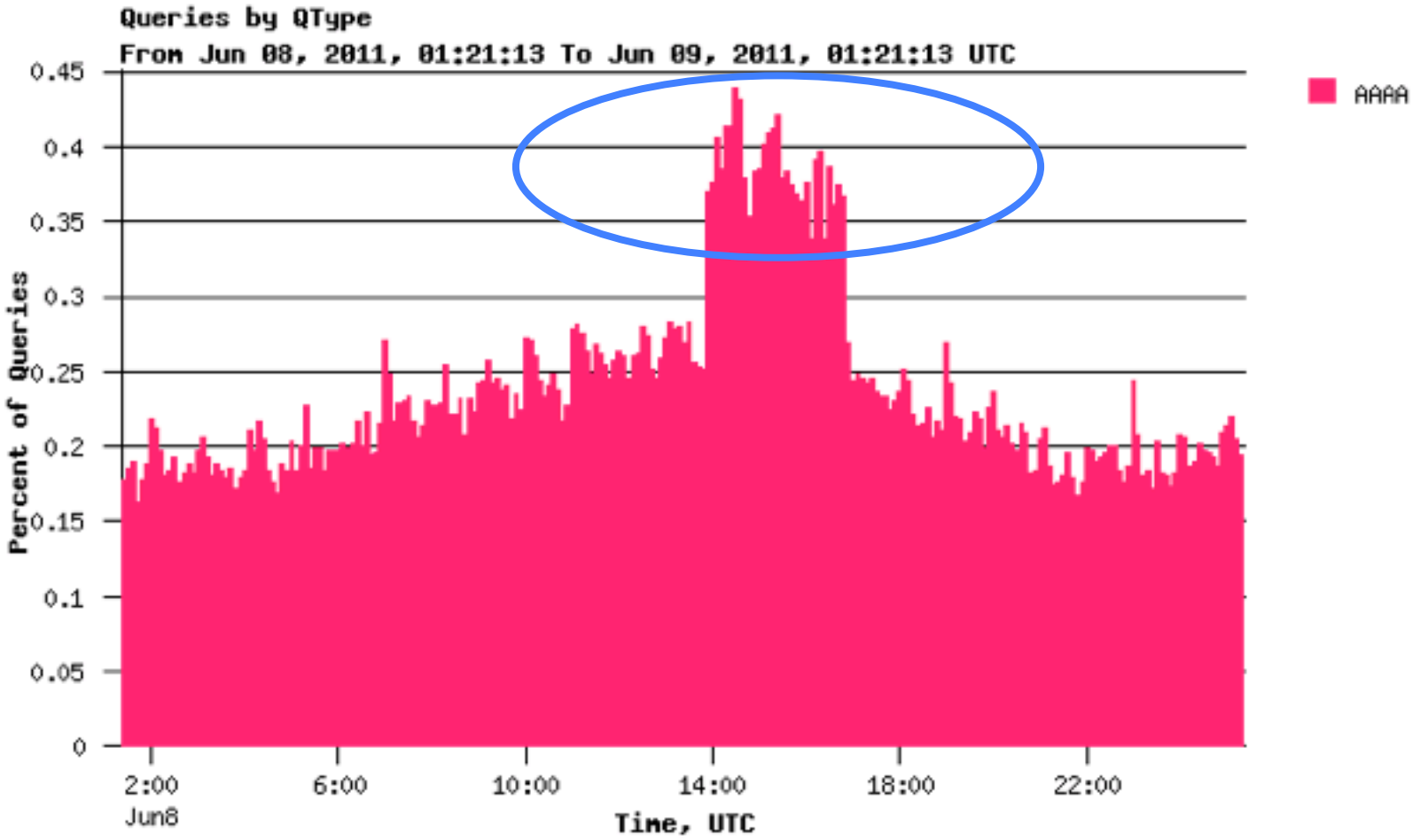


Regional and global impact

- Queries in DNS doubled: data from the days around June 8, and on June 8 itself.



Regional and global impact

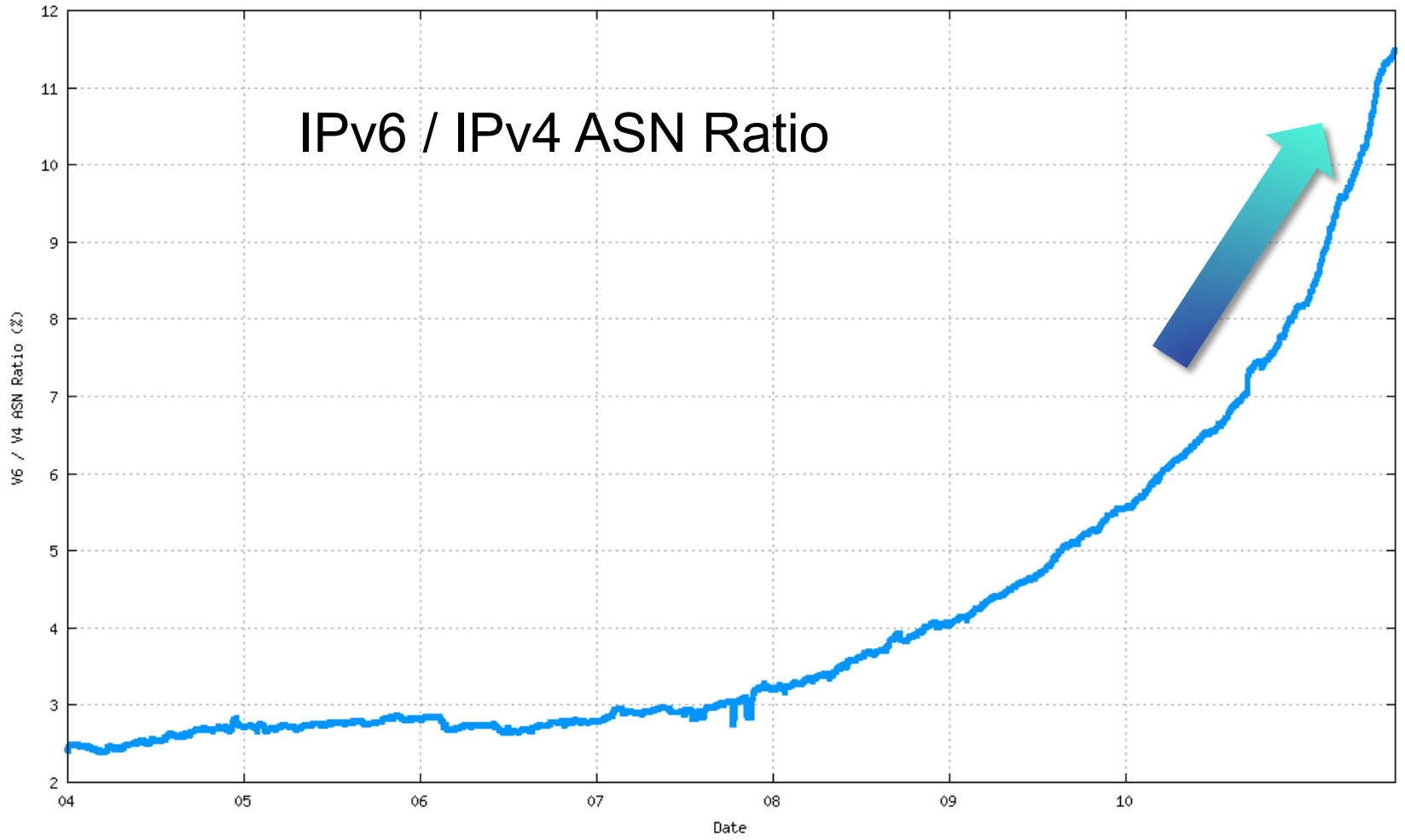


http://bgp.potaroo.net/stats/nro/v6/fig8.png

Way forward

- World IPv6 Day was not about absolute volume
  - No one expected it to suddenly bring 10% of the Internet traffic in IPv6
  - World IPv6 Day managed not to break the Internet
  - Doubled visibility IPv6 activities
- Time has come to move on making it a permanent change
  - Working on doubling the doubling = exponential growth of IPv6 traffic

Ongoing measurement



http://bgp.potaroo.net/stats/nro/v6/fig6.png as of July 2011

Message to network operators

- The 25% figure indicates the financial viability for several providers to invest in replacing home router equipment
  - "We encourage replacement strategies to leverage this capability, From now, all upgraded home user equipment must be IPv6-enabled" by Paul Wilson

http://www.apnic.net/publications/news/2011/ipv6-results

IPv6:
A prerequisite to the sustainable long-term development of a ubiquitous and open Internet

Thank you!

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