# Supporting End User Interests Through Open Dialog and Participation: IPv4-IPv6 Activity Update

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# IPv6: "*When*", not "*if*"

- IPv6 is happening
- It will not happen in isolation
  - IPv4 will be with us for a while to come
- At a certain level, we already have "run out" of IPv4, because there are IP addressing needs that cannot be met with available IPv4 allocations
- Technical community is focusing on how
  - It is imperative that they be informed by real world requirements: *yours*

# Recent IPv6 Public Events

- Several events so far this year, highlighting aspects of v6 operability to the various operational and technical standards making bodies for purposes of both education and documentation
- NOG IPv6 events
  - NANOG 42 (February, 2008)
  - APRICOT 2008 (February, 2008)
  - LACNIC 2008 (May, 2008)
  - MeNOG
- IETF events
  - IETF 71 IPv4 outage (March, 2008)
- RIR IPv6 events
  - ARIN IPv6 event (April, 2008)
  - RIPE IPv4 outage (May, 2008)

# Variations in Public Events

- The IETF 71 event was unique in that it provided no IPv6 to IPv4 connectivity during the event, so only v6 endpoints were reachable
  - Focus is on engineering for a globally addressed network
- Other events used NAT-PT to get the v6 endpoints in the outage in touch with v4 only destinations
  - More like what you might expect in network deployments in the near term

# Some notable learnings

- IPv6 DNS glue records
  - Not all registrars (registries?) are ready to accept AAAA records as glue. To be reachable you need to have at least one NS in a domain for which it is possible to store IPv6 addresses (AAAA records) in the TLD registry, so you may need to be creative in finding your secondaries.
  - Details available here: http://www.sixxs.net/faq/dns/?faq=ipv6glue
- NAT-PT implementations are finicky (sometimes worked smoothly, sometimes not)
- Some applications don't work through NAT-PT (yet)
- Difficulties with mail and jabber servers were noted (and some fixed)
- IPv6 routing (backbone) is still patchy
  - some nodes treating it as an experiment
  - we need to recognize we're beyond experimental here

# Nevertheless -- progress!

- Very visible web destination went live on IPv6 (March 12, 2008)
  - http://ipv6.google.com
  - Search only so far, other apps coming
  - Folks have figured out how to hack gmail, etc., for v6 operation
  - Much more information can be found here:
    - http://googleblog.blogspot.com/2008/05/looking-towards-ipv6.html
    - http://www.ripe.net/ripe/meetings/ripe-56/presentations/Colitti-IPv6_at_Google.pdf
- Stated rationale
  - IPv4 addresses are running out
  - Mobile devices and appliances talk to each other (lots of new devices coming)
  - NAT is a partial fix, not a solution
  - Early adoption is crucial for long term success
  - Need to be ready when customers want it
- This is rationale that is applicable for many services
  - let's see them come on-line on IPv6!