IPv6 Deployment Status

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APNIC

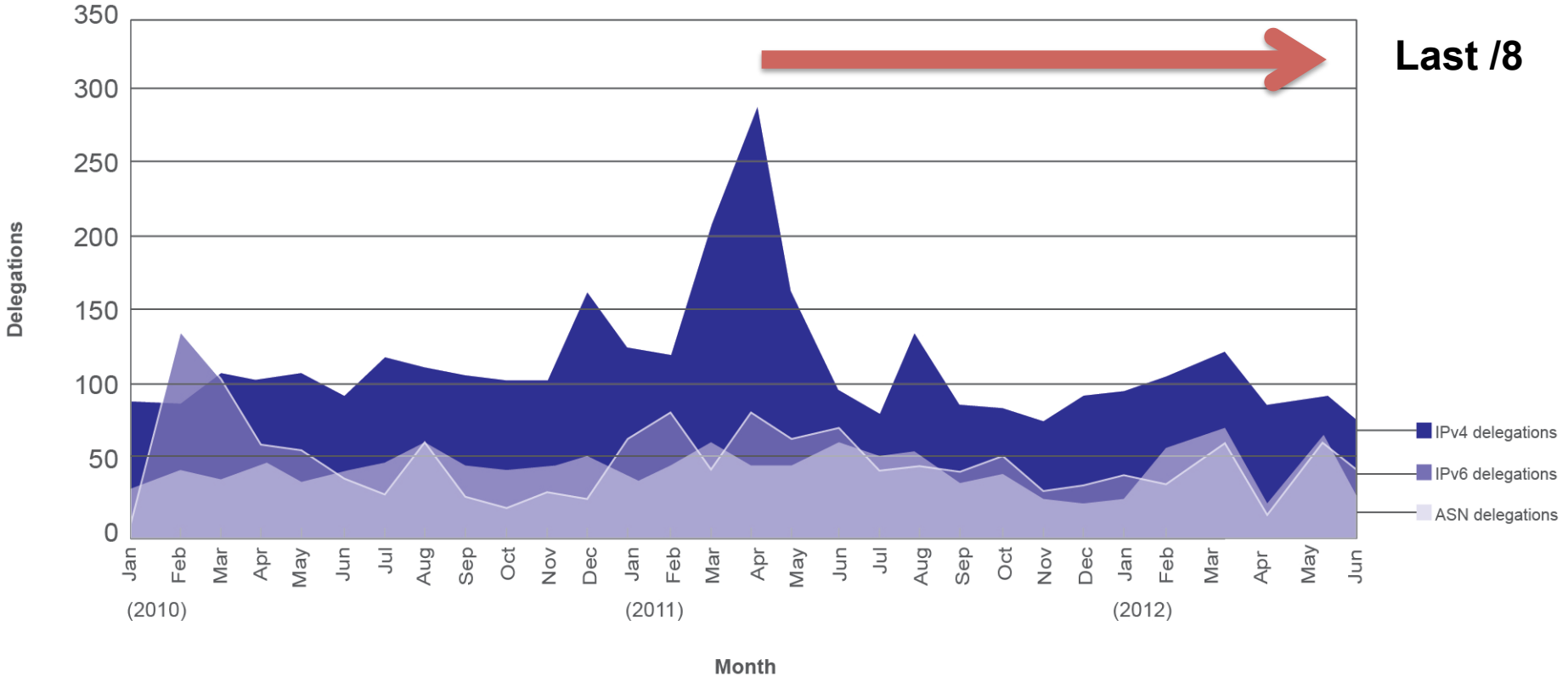
Overview

- IPv4 Exhaustion
- Resource Delegations
- Way forward
- Observation of World IPv6 Launch
- Pacific Participation in World IPv6 Launch
- APNIC Support

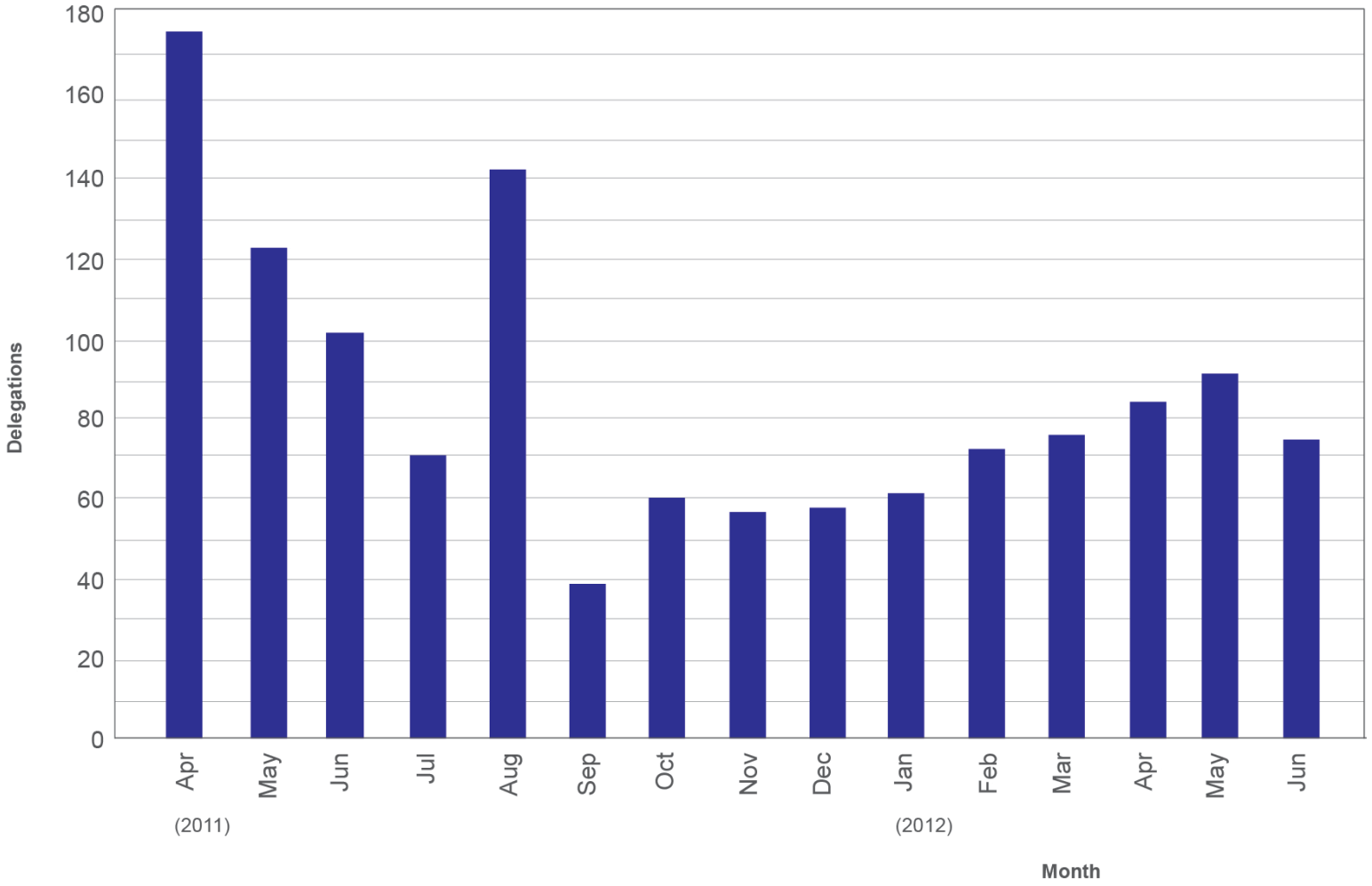
IPv4 Exhaustion

- APNIC reached its final /8 IPv4 block on 15 April 2011
- Now delegating from the final /8 (103/8)
  - Maximum of a /22 per account holder
- IPv4 transfers
  - Pre-approvals
    - Implementation of prop-096
    - Recipient of transferred resources may apply for preapproval by demonstrating need before finding a source
- APNIC secretariat contacted by a few IPv4 brokers
  - Maintains neutrality and ensuring policy compliance
  - Considers pre-approvals and qualified broker listing service

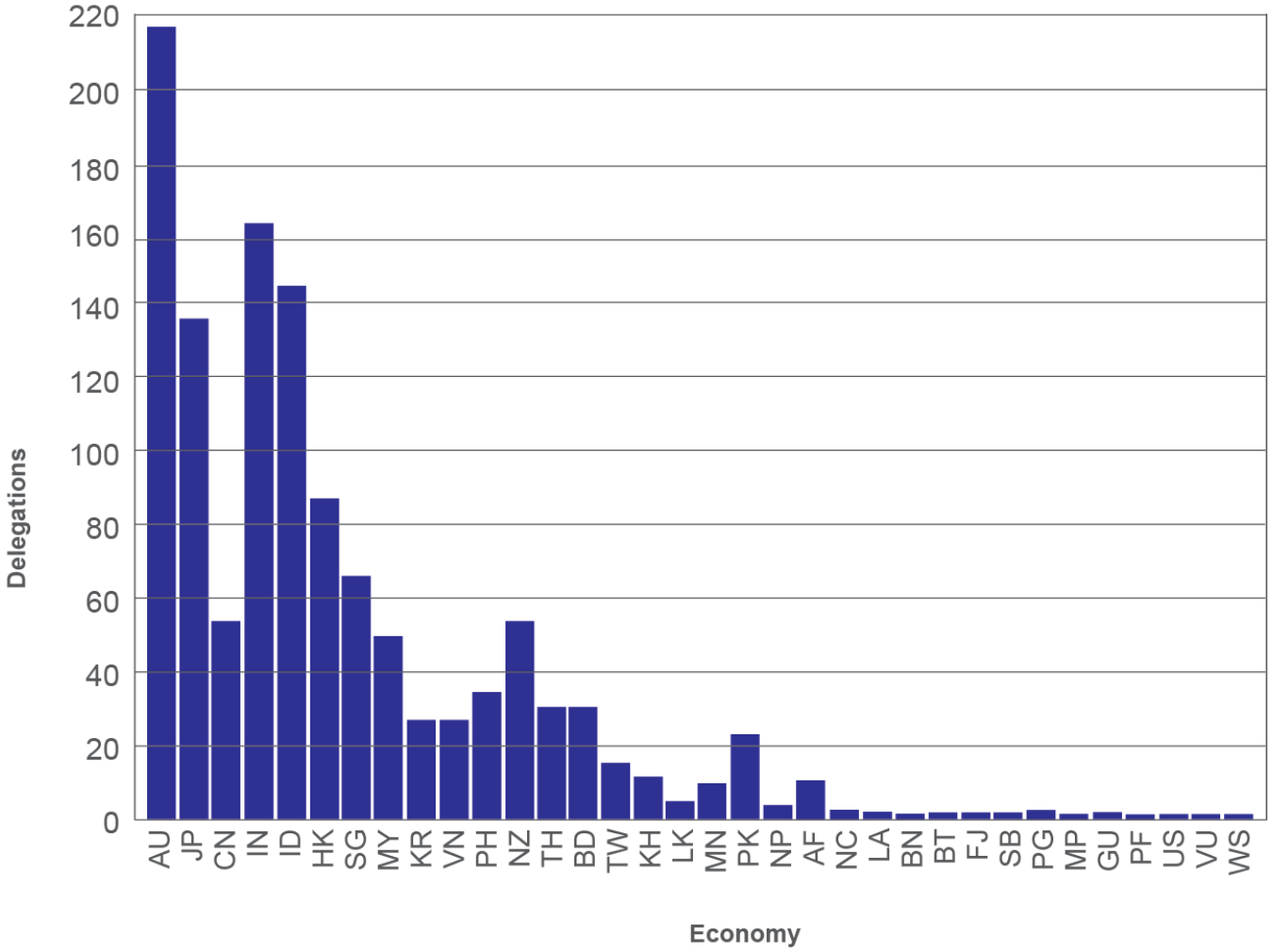
Resource Delegations



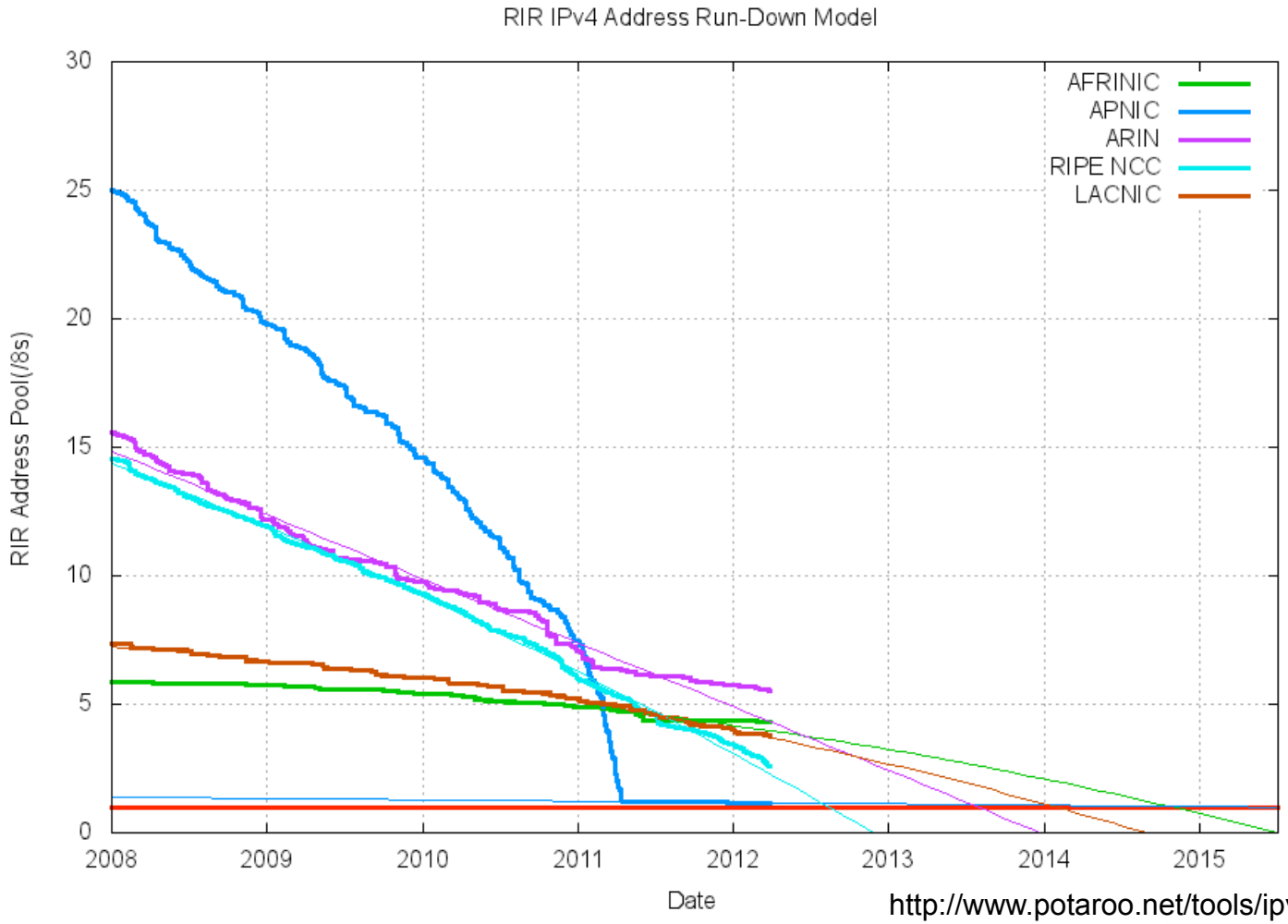
Final /8 Delegations



Final /8 Delegations by Economy

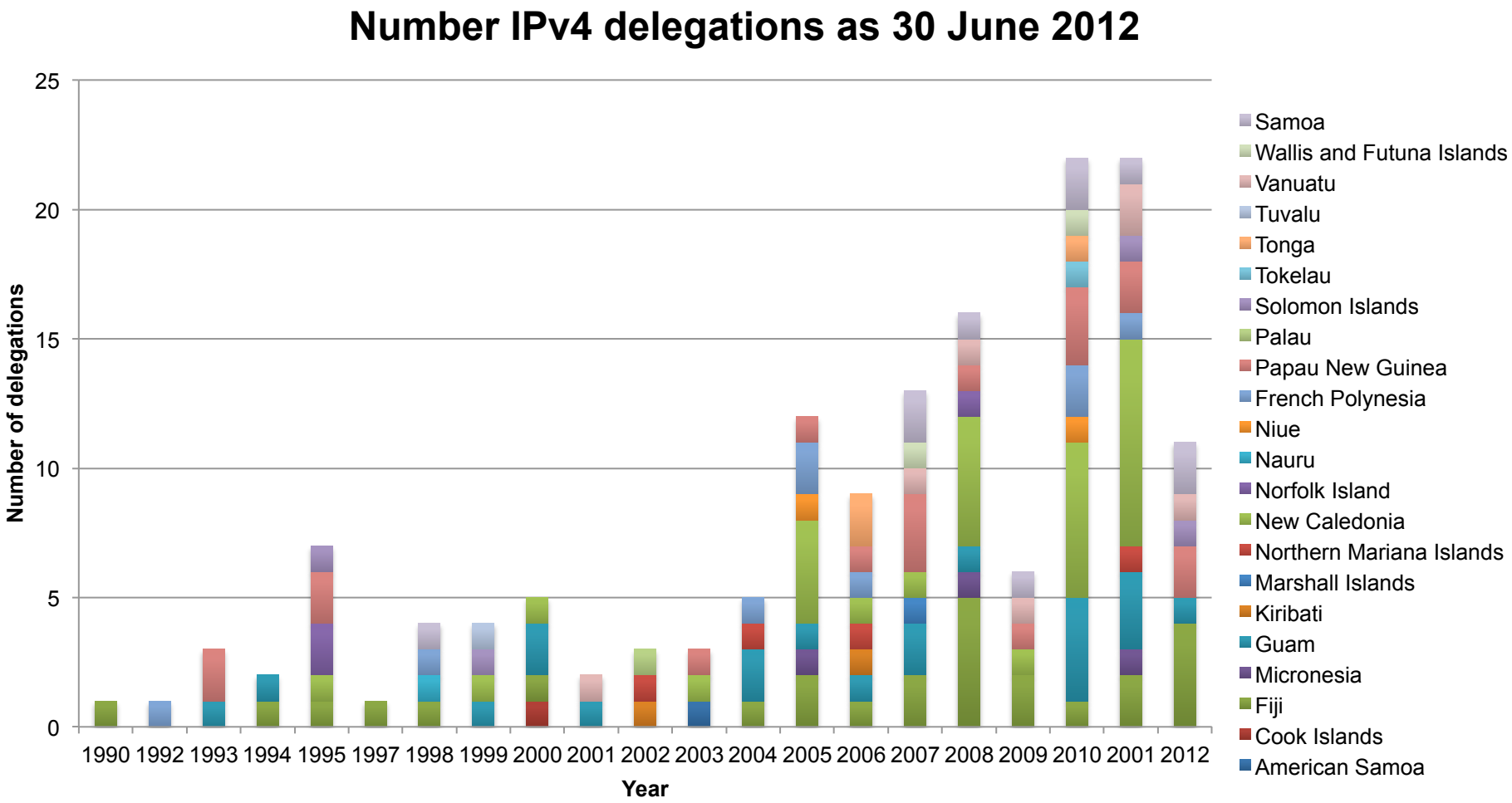


IPv4 Address Exhaustion 2012

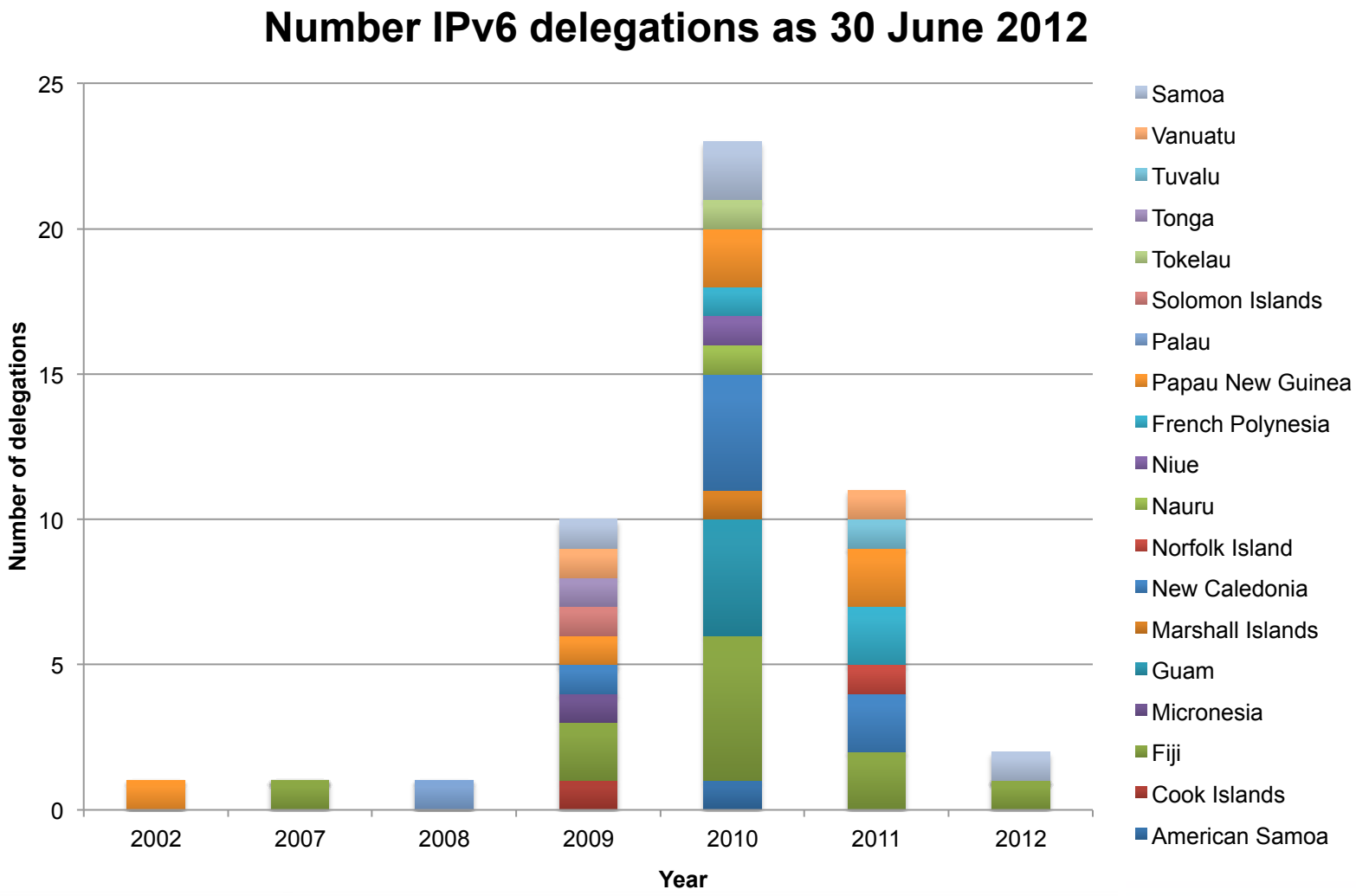


http://www.potaroo.net/tools/ipv4/plotend.png

Total IPv4 Delegations within Pacific



Total IPv6 Delegations within Pacific



Way Forward

- IPv6 deployment among Internet stakeholders such as governments, services providers, content providers, system integrators etc.
  - Need to develop realistic plans to
    - Manage IPv4 address shortage
    - Deploy IPv6 in their access networks
  - Scalability of selected transition technologies is key
  - Next few years will be critical time for IPv6

Observation of World IPv6 Launch

- Participants
  - About 3,000 content providers including major content providers
    - Google, Facebook, Yahoo, Wikipedia and Bing
  - About 80 service providers
    - AT&T, Comcast, Verizon Wireless, Free, RCS & RDS, KDDI, etc.
    - A major goal of the Launch for operators was 1% of traffic
      - However, many exceeded the goal largely
      - Free 17.35%, RCS & RDS 16.65%, KDDI, 10.93%, Verizon Wireless 7.36% etc.
    - Many academic networks service providers achieved more than 25% IPv6 traffic
    - Positive indication: if the access network and content are ready, end users can either use IPv4 or IPv6 transparently
  - IPv6 transition is in the hands of network operators

Pacific Participation in World IPv6 Launch Day

- Blue Sky Communications experience
  - Network is dual stack
    - Working to upgrade all systems to IPv6
    - Older infrastructure doesn't support
    - IPv6 support within backbone network
  - Services that are IPv6 enabled
    - Main website
      - www.bluesky.as
    - DNS primary and secondary servers
      - also serve up the AAAA records for their v6 sites
  - Peering with
    - TWT (AS 4323)
      - Advertise prefixes to the internet
    - Transit IPv6 for CSL (AS 38227) to TWT and onwards to internet

Pacific Participation in World IPv6 Launch Day

- Blue Sky Communications experience (continued)
  - Services provided to customers
    - Internet services IPv6 enabled is Wifi hotspots
    - Yet to rollout services on Canopy broadband network and corporate LAN
    - Process of upgrading network management system to support IPv6
  - Customers assignments
    - Current connections are using autoconf with a /64
    - each host is using a EUI-64 address
  - Difficulties experienced with implementing an IPv6 network
    - Older multilayer switches
      - Switches make up the majority of the network between our NOC and the customer's last mile
      - Made rollout difficult
      - Upgrade in phases

Pacific Participation in World IPv6 Launch Day

- Blue Sky Communications experience (continued)
  - Difficulties experienced with implementing an IPv6 network
    - IPv6 not supported within network management system
      - Includes packet shapers and cache engines
    - Significant cost to upgrade
    - Main service to be upgraded is broadband over cable
      - Using DOCSIS 2.0 (no IPv6 support)
      - Upgrade to DOCSIS 3.0
      - Upgrade of CMTS equipment
    - 3G data over mobile
      - Handset support for IPv6
      - Only the very high end smartphones support v6 over 3G

Pacific Participation in World IPv6 Launch Day

- Blue Sky Communications experience (continued)
  - Difficulties experienced with implementing an IPv6 network
    - Equipment/software replaced for compatibility with Ipv6 network
      - Equipment not replaced stictly for IPv6
      - Required IPv6 support on new purchases
      - Servers with Linux (supports IPv6) worked well
  - Experience faced during World IPv6 Launch
    - Positive
      - Made upper management more aware about IPv6 implementation
      - More support for implementation

APNIC Can Provide Support

APNIC is here to support real and tangible IPv6 deployment

- Outreach and training programs are available
  - Practical and useful skill training, advice, and information services
- IPv6 workshops for network engineers with hands-on IPv6 configuration experience
- Review on pro and cons of various IPv6 transition methods
- Feel free to contact us

Thanks

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