ARIN Update

NANOG 55

Mark Kosters
Chief Technology Officer, ARIN

2012 Focus

- **IPv4 Depletion & IPv6 Uptake**
  - Developing, adapting, and enhancing processes and procedures
    - IPv4 Depletion Plan
  - Continuing IPv6 outreach
  - IPv4 Transfers
- **Continued development and integration of web-based system (ARIN Online)**
- **RPKI deployment**
- **Continued participation in Internet Governance forums**

Current IPv4 Inventory

4.37 /8 equivalents in the pool of **"available addresses"**

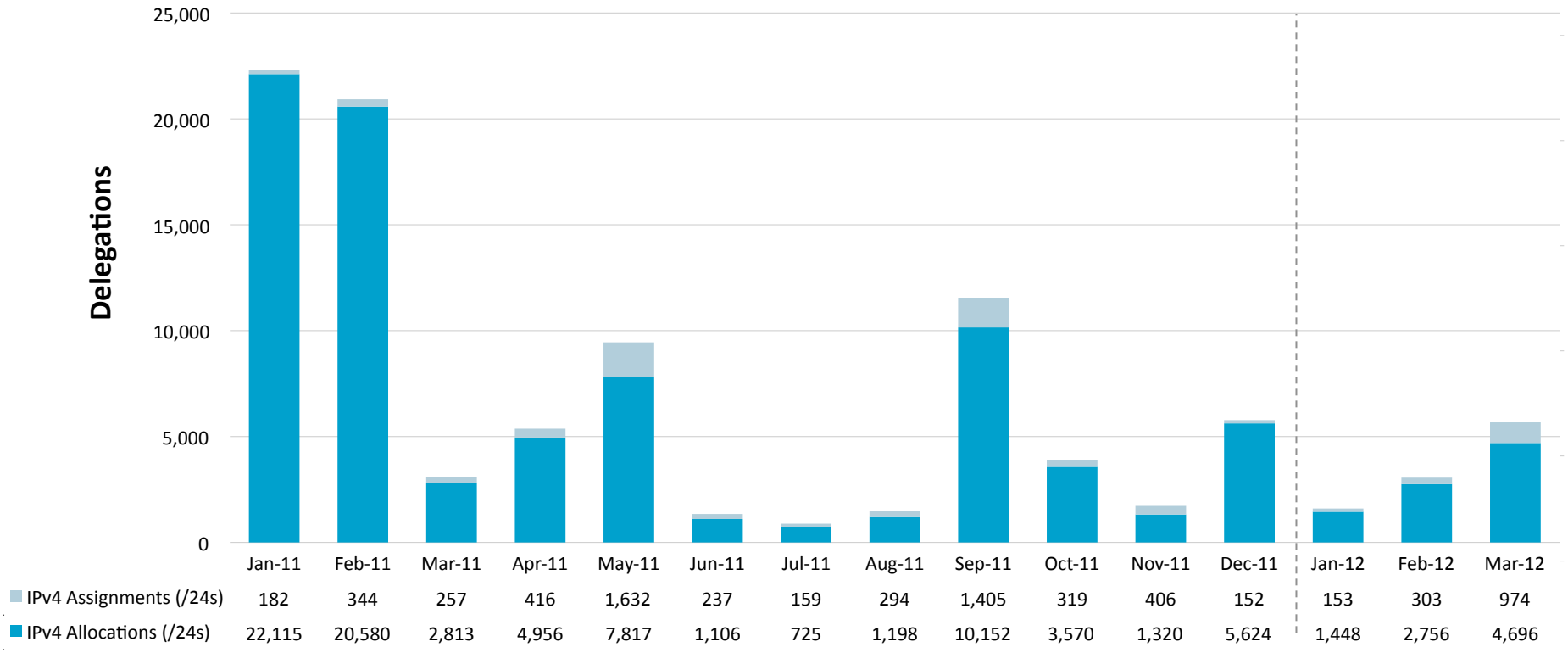
~4.82 /16 equivalents in the "RRH" bucket

(RRH = returned, revoked, held)

1 /10 reserved

– For NRPM 4.10 "Dedicated IPv4 block to facilitate IPv6 Deployment"

2011 & 1st Qtr 2012 IPv4 Address Allocations and Assignments



	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
IPv4 Assignments (/24s)	182	344	257	416	1,632	237	159	294	1,405	319	406	152	153	303	974
IPv4 Allocations (/24s)	22,115	20,580	2,813	4,956	7,817	1,106	725	1,198	10,152	3,570	1,320	5,624	1,448	2,756	4,696

**Feb 3, 2011- IANA depletion

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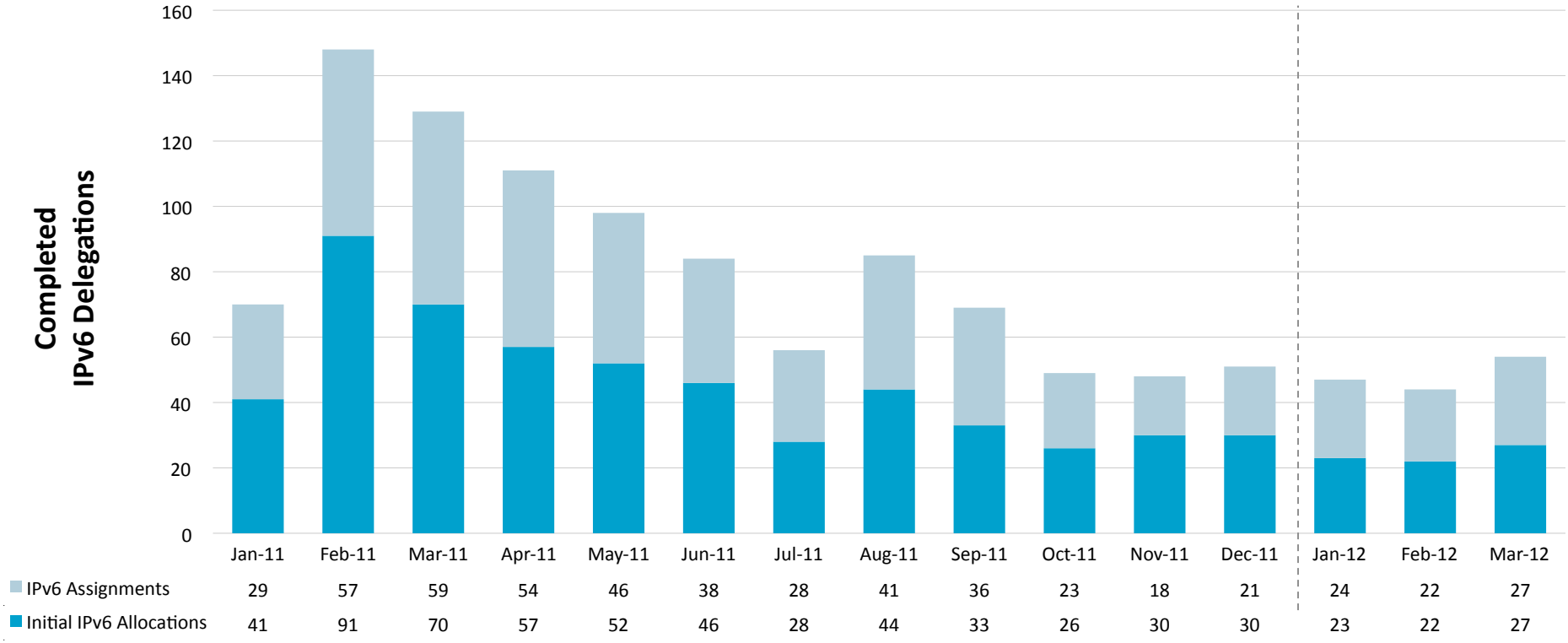
2011 & 1st Qtr 2012 IPv6 Address Allocations and Assignments



**Feb 3, 2011- IANA depletion

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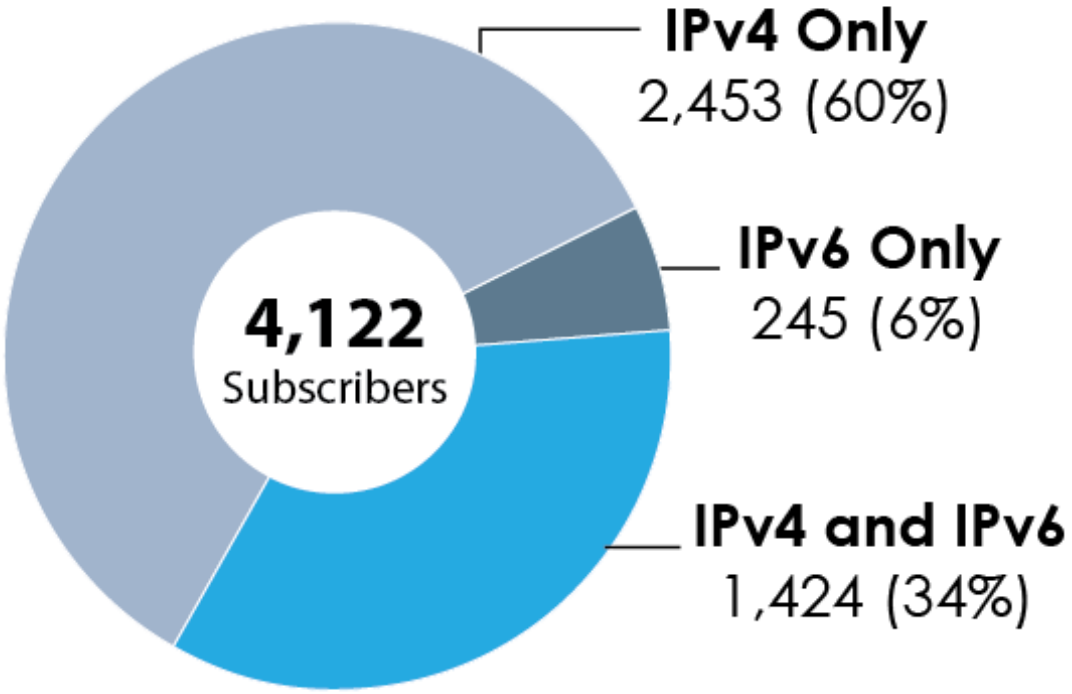
ISP Members with IPv4 and IPv6

Total of 4,122 ISP Subscriber Members



*as of 31 March 2012

New Number Policy

ARIN-2011-9 (Global Proposal): **Global Policy for post exhaustion IPv4 allocation mechanisms by the IANA**

- Adopted by ICANN Board
- RIRs may return address space to IANA
- IANA may allocate address space back to the RIRs

Draft Policies Moving Forward

- **ARIN-2011-1: ARIN Inter-RIR Transfers**
  - Allows transfers to/from the ARIN region
  - The two RIRs must have compatible transfer policy; transfer based on need
    - AC recommended adoption
- **ARIN-2012-1: Clarifying requirements for IPv4 transfers**
  - Adds criteria for 8.3 Specified Transfers and inter-RIR transfers
  - Cannot have gotten space from ARIN in previous 12 months or get additional space for 12 months after transfer
    - AC recommended adoption
- **ARIN-2012-3 ASN transfers**
  - Adds ASNs to specified transfers
    - AC recommended adoption

Proposals

- **Under Discussion**
  - ARIN-2012-2: IPv6 Subsequent Allocations Utilization Requirement
    - Allows ISPs to request more IPv6 address space as they increase their number of sites
- **6 new proposals**
  - ARIN-prop-171 Section 8.4 Modifications: ASN and legacy resources
  - ARIN-prop-170 Transfer of Number Resources in case of Bankruptcy
  - ARIN-prop-169 Cleanup IPv6 section 6.5.7
  - ARIN-prop-168 Promote 4byte ASN Usage
  - ARIN-prop-167 Removal of Renumbering Requirement for Small Multihomers
  - ARIN-prop-166 Clarify /29 Assignment Identification Requirement

Text available at:
https://www.arin.net/policy/proposals/

Public Facing Development Efforts

- **Cost Reductions**
  - Transitioning from Oracle to PostgreSQL
  - Moving from Redhat JBoss to JBoss Community Edition
- **ARIN Online**
  - Billing integration initiated
- **Implemented WhoWas Service**
  - Subject to Terms of Service
- **IPv4 Runout Tasks**

A Couple of Quick Points

- **RPKI**
- **Whois-RWS**

Definitions for RPKI

- **Hosted**
  - Managed by RIR
  - Keys held by RIR
  - Generates Repository for all Hosted Internet Resource Holders and ARIN
- **Delegated**
  - Managed by ISP
  - Keys held by ISP
  - Only hold information for Resources of that ISP and perhaps Downstreams
  - Uses Up/Down to notify changes made to resources

RPKI Status

- Working on Hosted Solution
  - Anticipate 2012 deployment
- Move to a programmable HSM has added an extra year of development to satisfy ARIN Board requirements
- Once Hosted Solution is deployed, we will work on a delegated solution
- Participating with the other RIRs on a single global trust anchor with ICANN
- Participating with the other RIRs on a RPKI transfer process that mirrors an emerging global transfer policy

Can You Play with RPKI Today?

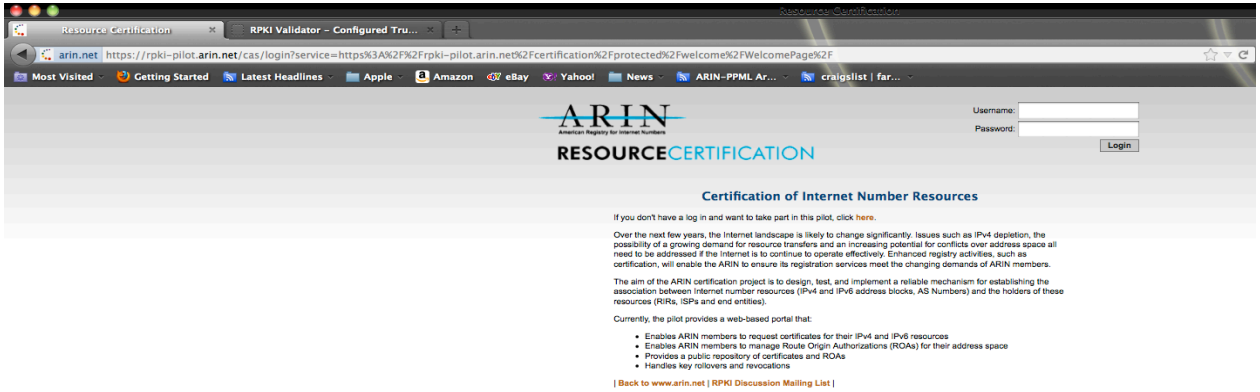
- **Yes! You can Provision your ROAs within ARIN's Region**
- **Steps to make RPKI work**
  - Register with ARIN's Pilot https://rpki-pilot.arin.net
  - Create ROAs
  - Pull down a validator
  - Compare the results with the routes you receive
  - Look at the results

ARIN's RPKI Pilot

- **Available since June 2009**
  - ARIN-branded version of RIPE NCC software
  - NOT integrated into ARIN Online
  - Data will NOT transfer to Production
- **55+ organizations participating**
- **Allows you to Experiment NOW**
  - Create ROA's
  - Use a Validator and other tools to match your data from the Pilot with emerging RPKI repositories from the various RIRs and others
- **ARIN's Pilot Trust Anchor Locator (TAL) is now easily found**
  - https://www.arin.net/resources/rpki.html

RPKI Pilot

- Request your account
  - https://rpki-pilot.arin.net

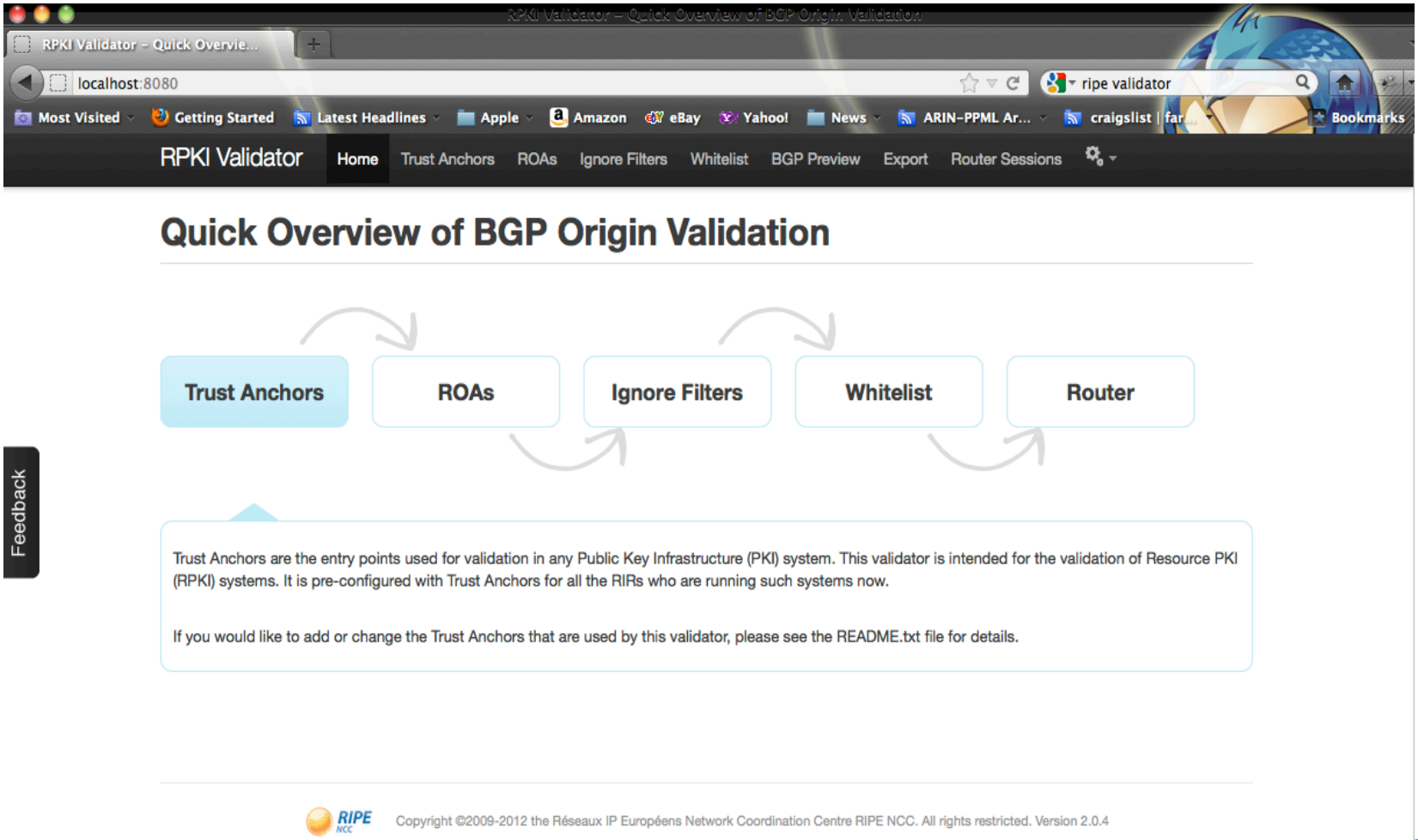


- Receive an user id, password via email
- Play with a snapshot of your resources through the pilot

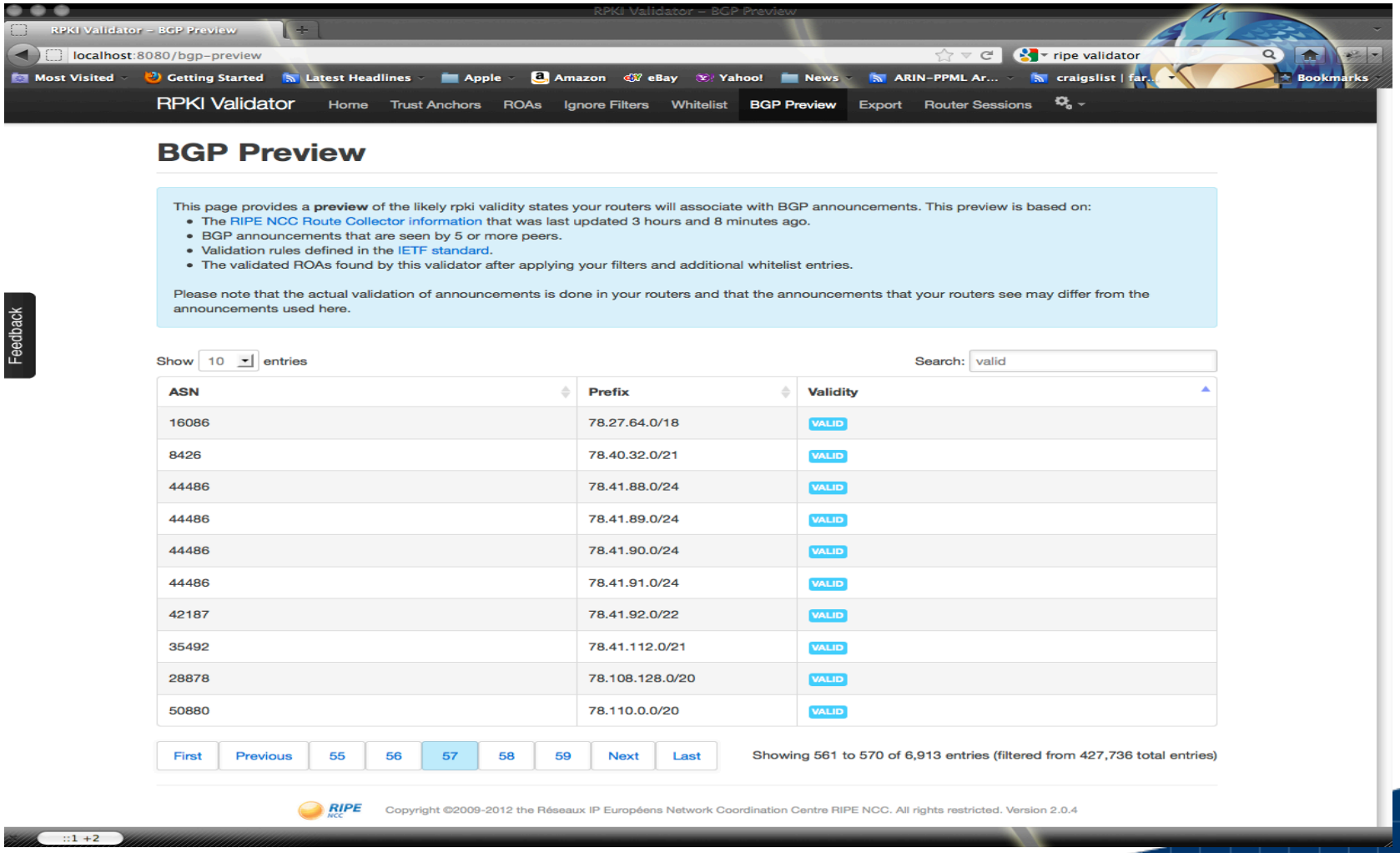
RIPE's Validator

- Integrates all the RIR's and Routing Data (from RIPE's RIS database)
- Find validator at top of page at:
  - http://www.ripe.net/lir-services/resource-management/certification/tools-and-resources
  - Go through a preview…

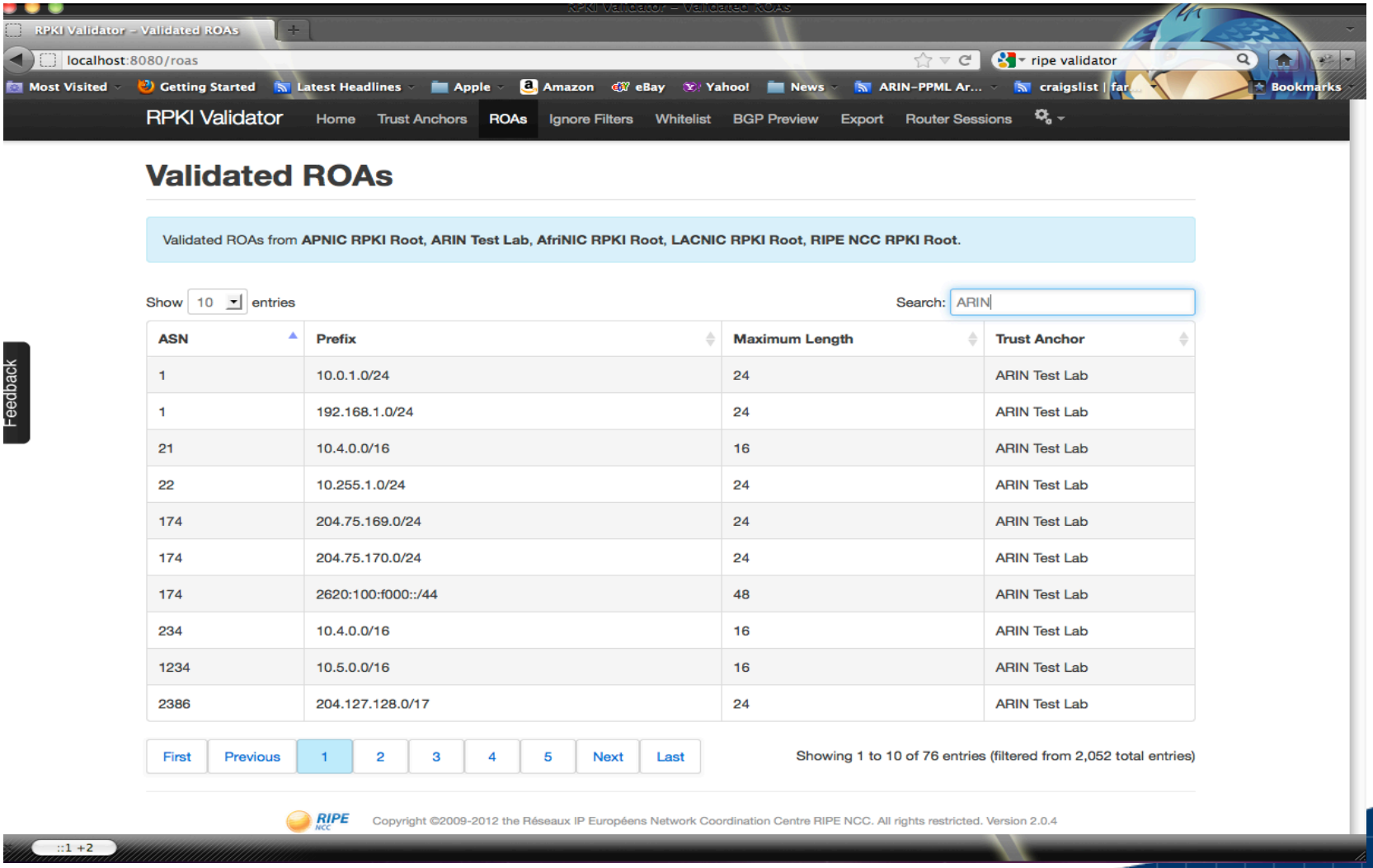
RIPE's Validator



RIPE's Validator



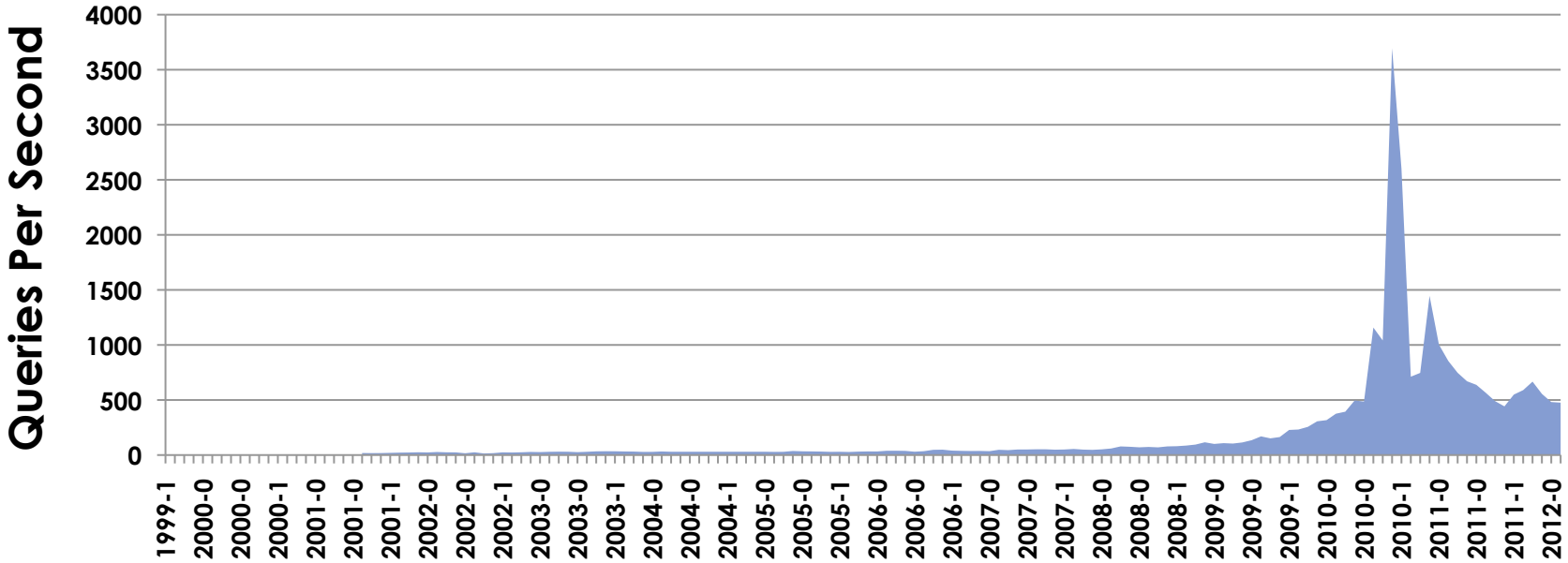
RIPE's Validator



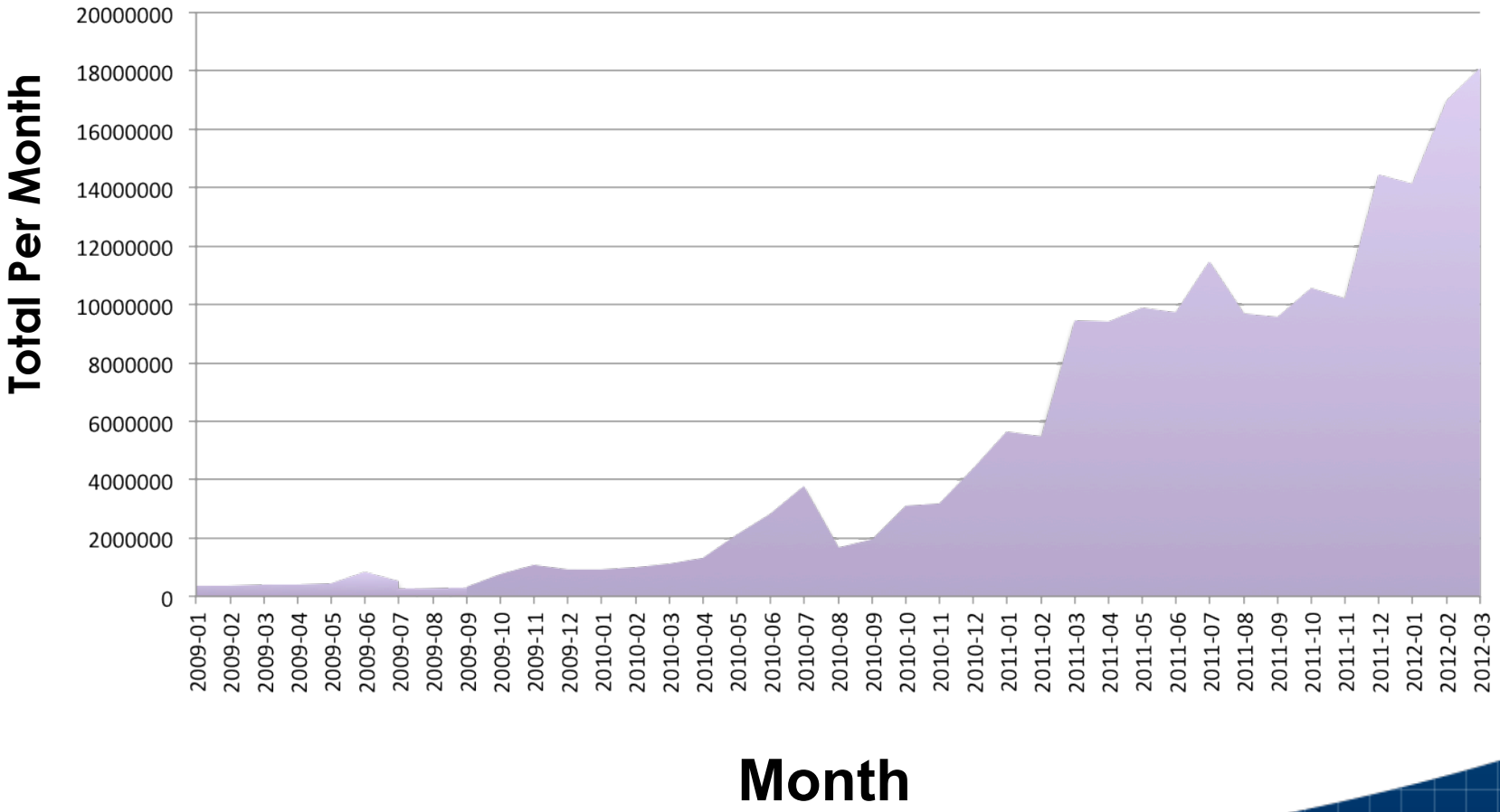
Whois-RWS Traffic Loads

- **Have had a pretty good run**
  - Multiple highs in 2010 and 2011
- **Today**
  - Running "normally" now at 475 queries per second
  - RESTful calls have overtaken port 43 calls
    - 1.8 Billion RESTful calls for March
    - 1.2 Billion Port 43 queries

Whois-RWS Statistics
Queries on Port 43



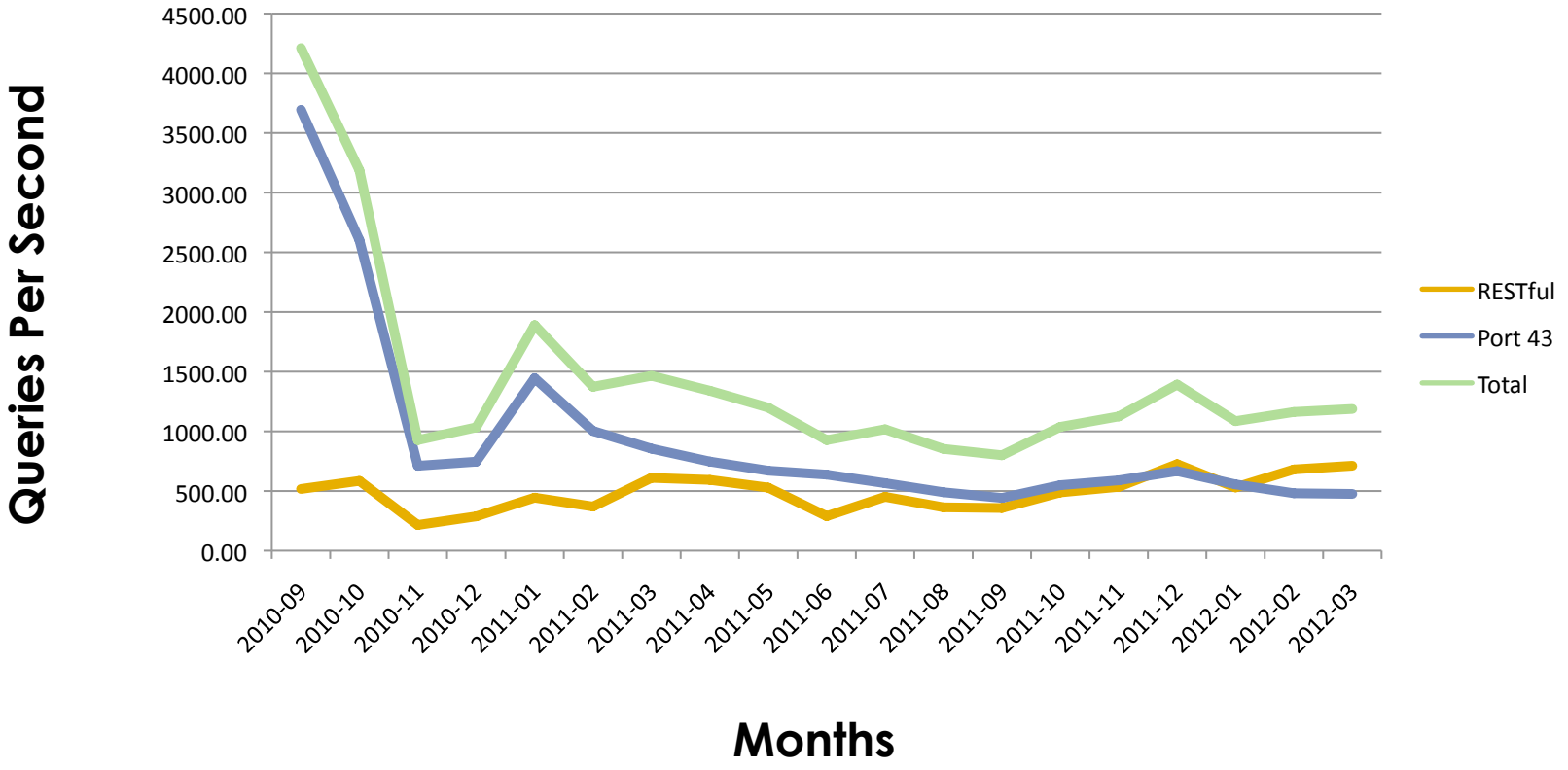
Whois-RWS – IPv6



Now this is Interesting

- WHOIS protocol (tcp port 43) used for directory lookups
  - Firmly Established for NIC-like providers
  - Clients everywhere
- Introduced a new RESTful directory service in Sept 2010
- RESTful calls have overtaken port 43 calls
    - 1.8 Billion RESTful calls for March
    - 1.2 Billion Port 43 queries

Whois-RWS Statistics
Queries



Upcoming ARIN Meetings

Spring 2013 – *in progress*

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