Engineering Status Report

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Engineering Theme

- 2012 success is being aided by contractors (but not as many)

- An age for new engineers

- Lots of work done, much more to do

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Staffing

- **Operations**
  - 6 People + Manager
  - (one slot open)
- **Development**
  - 5 Developers + Manager
  - 5 Contractors (down 2 since ARINXXVIII)
- **Quality Assurance**
  - 3 QA + Manager
  - 4 Contractors
- **Project Management**
  - 1 (slot open)
- **Management**
 - 1 (me)

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Operations

- **Upgrading end-of-life equipment**

- **Rolled out Anycast**
    - Running now in St Maartin, San Jose, and Ashburn
    - Soon in Toronto

- **Maintaining the various environments we have running (Production/OT&E/Dev/QA/Staging)**

- **Close to running https version of Whois-RWS**
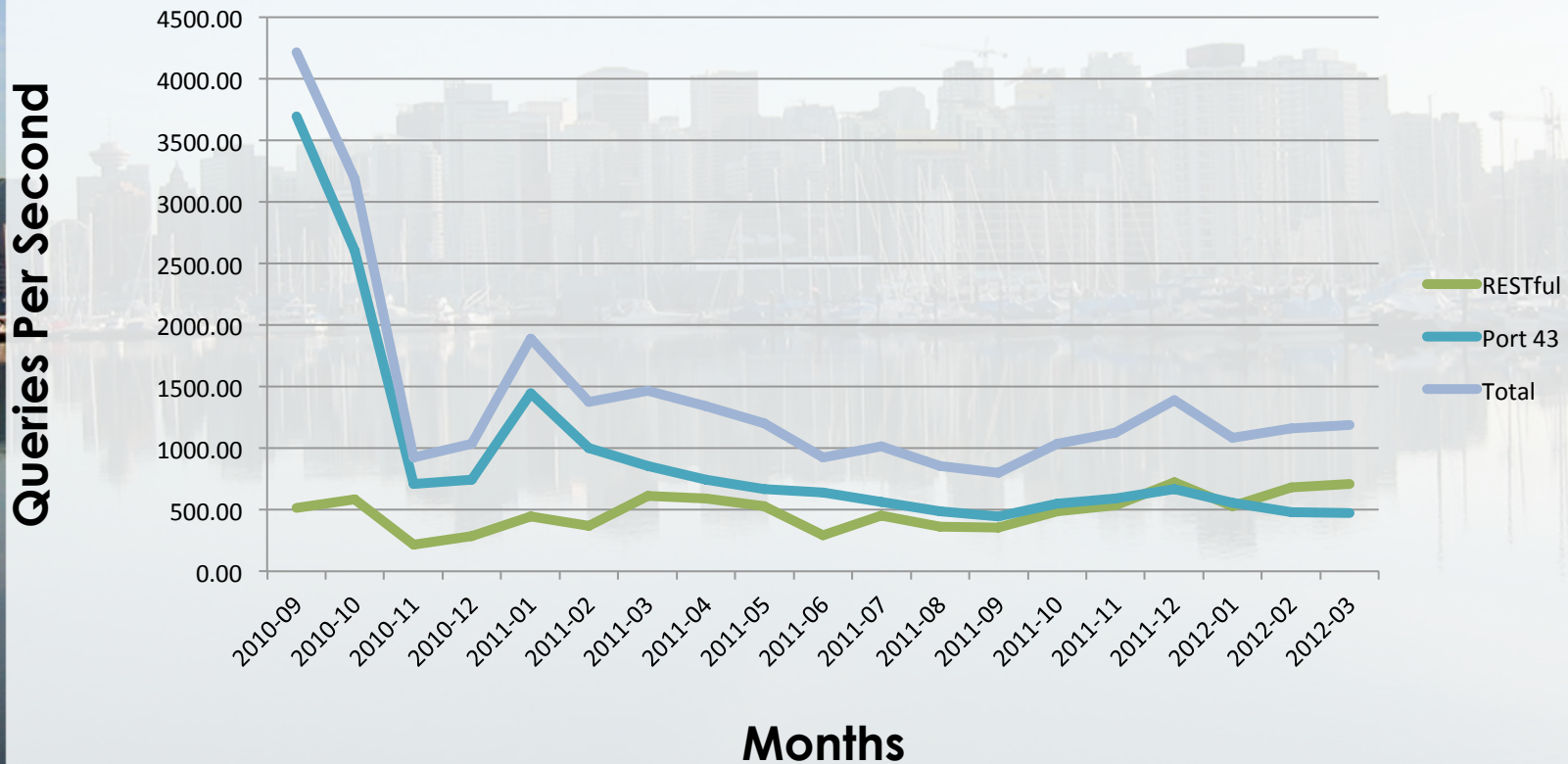
- **IT Support**

- **RPKI rollout**

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
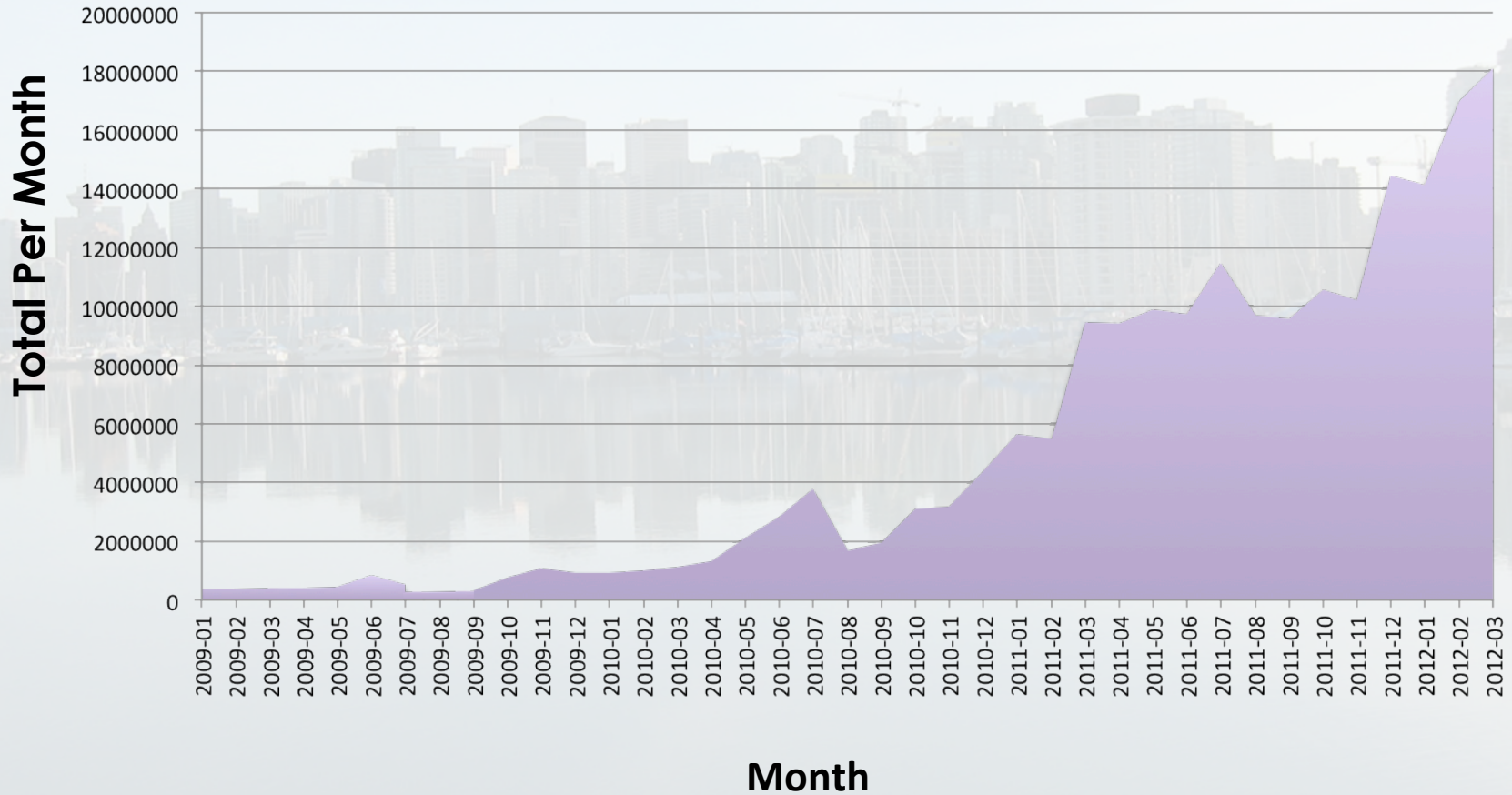   - 1.2 Billion Port 43 queries

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Whois-RWS Statistics
Queries on Port 43
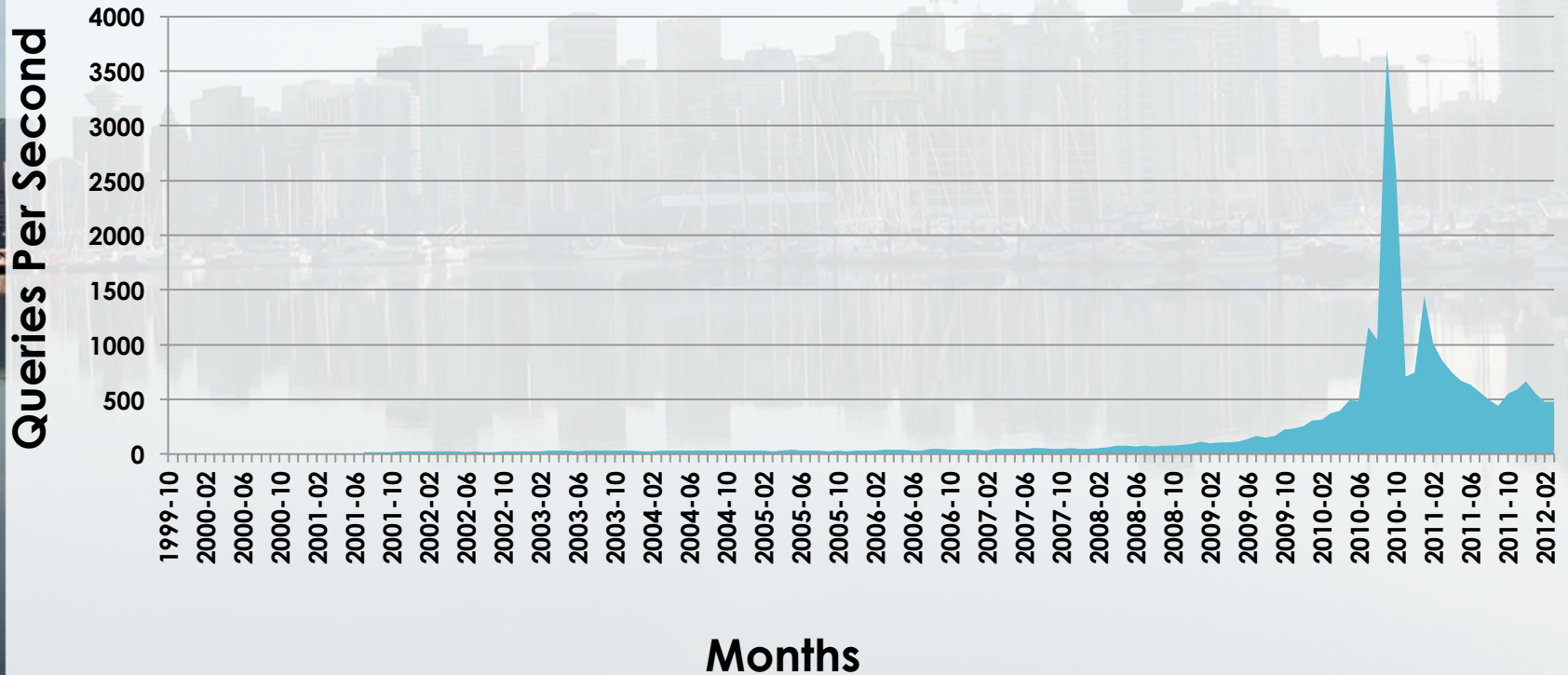
Whois-RWS Statistics Queries

Whois-RWS – IPv6

Development/QA

- **Improvements to existing systems**
- **ARIN Online releases since ARIN XXVIII**
  - Invoice reminders now in ARIN Online
  - Implementation of Policy 2011.3
    - Huge implications on DNS zone generation
    - No longer creating delegations at a /20 boundary
  - WhoWas
  - Moving to newer JAVA concepts
  - Various Whois-RWS improvements and ACSP requests
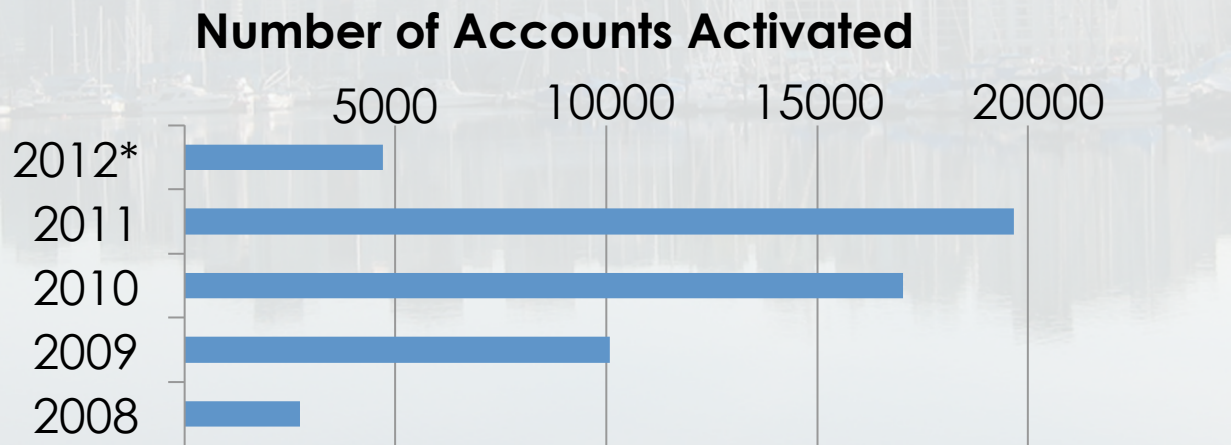
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Current Tasks

- **Moving from Red Hat JBoss to JBoss AS7**
  - Cost reduction measure
  - Lots of improvements to internal frameworks
- **Home-stretch for Hosted RPKI**
  - Working on loose ends and documentation
  - Embedding the CPS URL in certificates currently break two of the three existing validators

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Upcoming Tasks for 2012

- **Deploy hosted RPKI**
- **Implement delegated RPKI (up/down)**
- **Moving from Oracle to open source database**
  – Cost reduction measure
- **Moving off Red Hat OS**
  – Cost reduction again
- **IPv4 runout changes**
- **Integrated payments**

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How is ARIN Online used?

- 54,196 accounts activated by Q1 of 2012 since inception

Number of Accounts Activated

* Through Q1 of 2012

Active Usage of ARIN Online

Logins

Bar chart showing # of Users (y-axis, 0 to 25000) versus Times Logged In (x-axis). Categories: 0 ≈ 2000, 1 ≈ 23000, 2-5 ≈ 16000, 6-10 ≈ 5500, 11-15 ≈ 2500, >16 ≈ 5000.
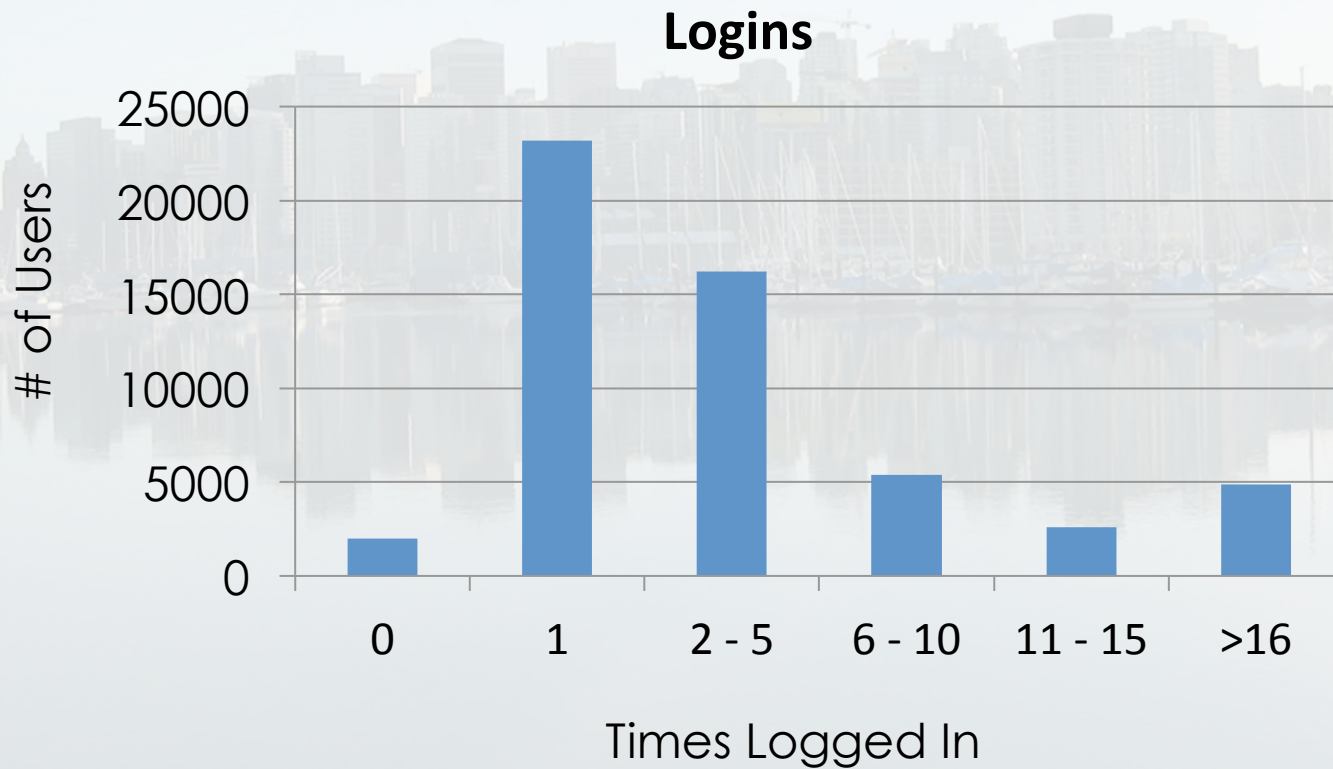
Management of POCs

Since April, 2011

Create   **Modify**

451

8933   ■ ARIN
                 Online

              ■ Templates   9014

44547   ■ REST

Includes POCs created via SWiPs

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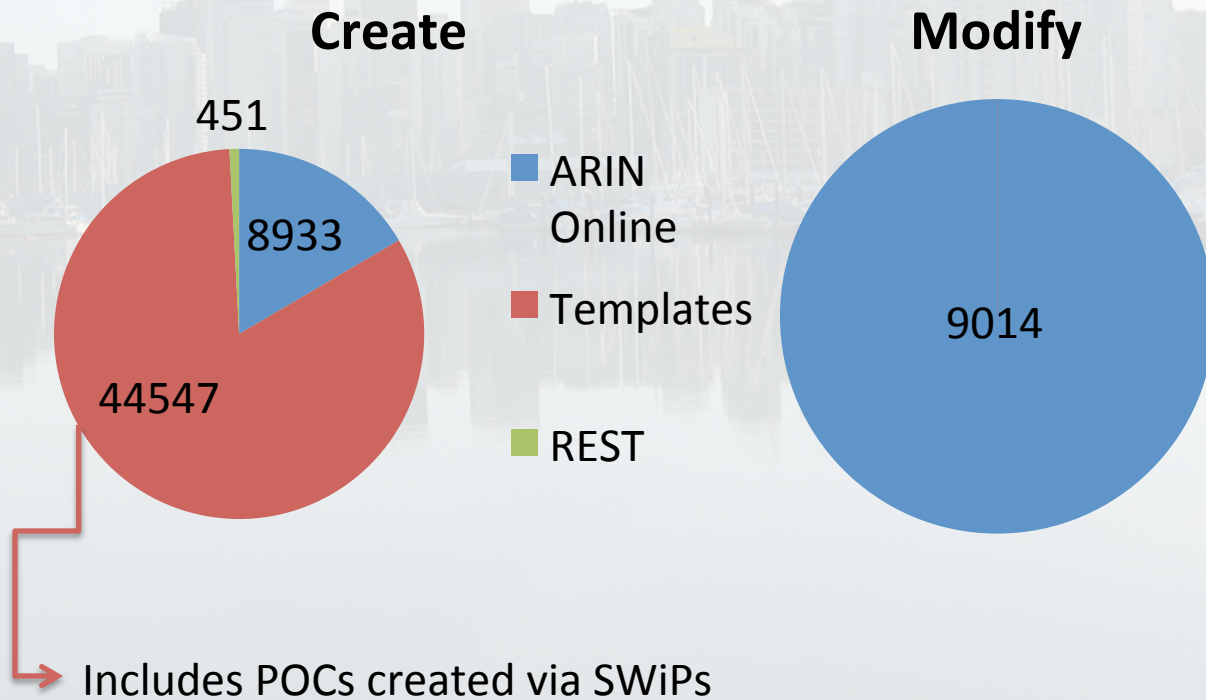
Management of Orgs

Since April, 2011

Create

5585
259
46757

ARIN Online Templates

REST

Includes Orgs created via SWiPs

Modify

9
2
11653
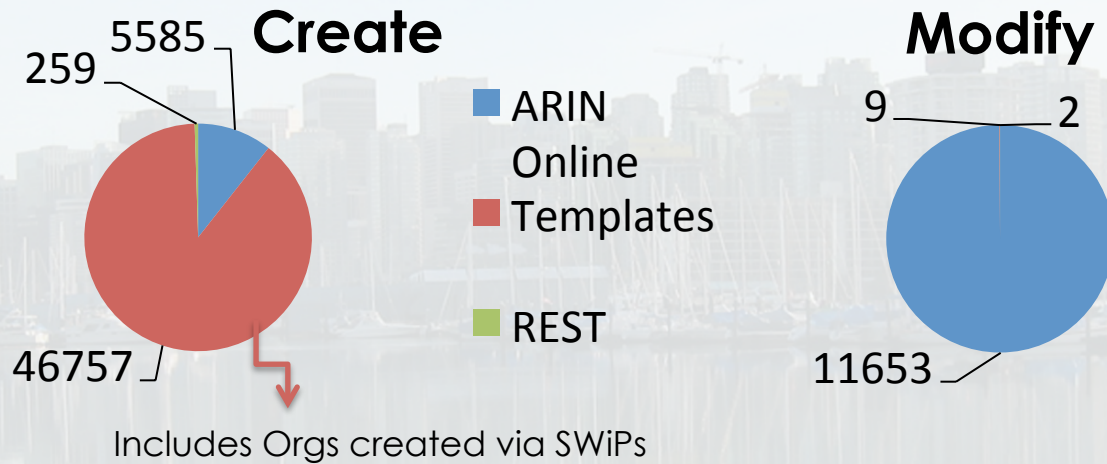
Org Deletes

ARIN Online	208
Templates	12

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Net Record Management

Since April, 2011

Requests

Modify

20

2844

Similar to
Org Modify

- 335 — v6 ISP
- 394 — v6 End User
- 781 — v4 ISP
- 507 — v4 End User
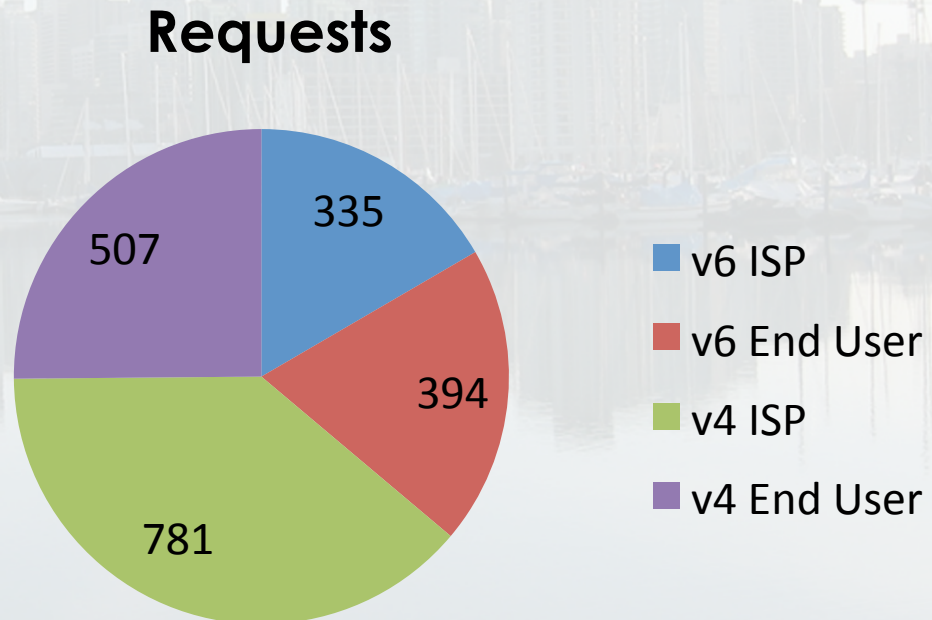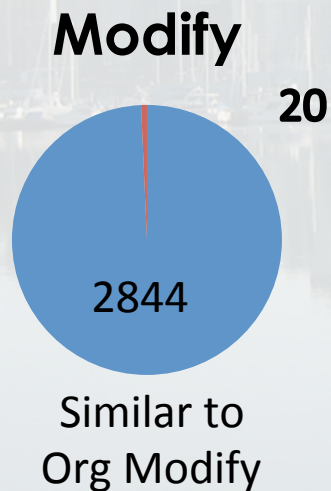
All requests made via ARIN Online

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Reg-RWS (RESTful Provisioning)

Since April, 2011

Templates
REST

Transactions

0   100000   200000   300000   400000   500000   600000   700000

6000
5000
4000
3000
2000
1000
0

April May June July August September October November December January February March

— POC Create
— Org Create
— Customer Create
— v6 Simple Create
— v6 Simple Remove
— v4 Simple Create

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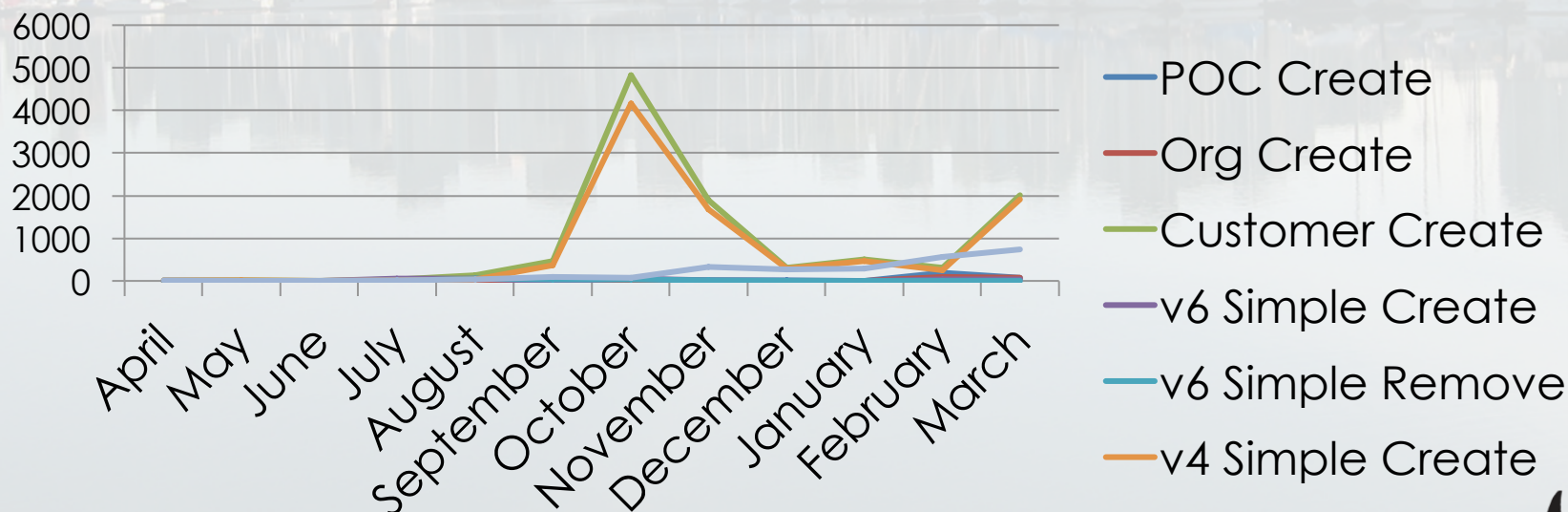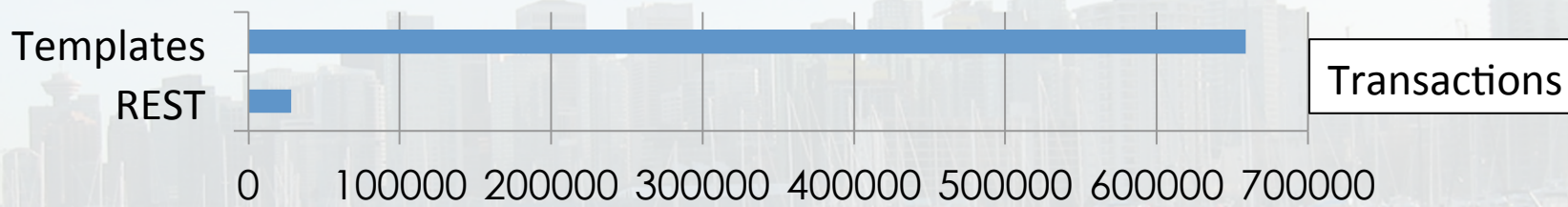
Evolution/Development of Services

- **Briefly look at three services**
  - How introduced
  - Participation
  - Feedback
- **WhoWas**
- **RPKI**
- **Whois -> Whois-RWS**

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WhoWas Requests

- **Demo Period**
  - 9 inquiries
  - 1 actually used the system
- **Production**
  - 45 authorized users
  - 125 requests
  - Most active user: 66 requests

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RPKI Pilot

- **Pilot period**
  - Operational since 7/2009
  - 63 users
  - 76 ROAs in the pilot
- **Instructions on how to use**
  - https://www.arin.net/resources/rpki.html
  - Includes the TAL!
- **Services are hooked into the pilot**
  - RIPE validator

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RPKI Progress on Production Services

- **Huge challenge developing against IBM HSM has been overcome**
    - Working with a secured embedded device
    - The attached host is a RPKI generator
    - The HSM is a RPKI validator
- **Estimated to have first part in production in 2012**
    - Will require RSA or LRSA to participate
- **Protocol is mature – kind of**
    - Validators do not allow for extension that we require (certificate policies extension)
    - Rsync may not be the best protocol to retrieve data from repositories

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RPKI Challenges

- Delegated is up next
- Distribution protocol changes (Rsync verses http or ?)
- Publication Protocol
- ERX and Inter-RIR transfers
- Merging with the Global Trust Anchor
- Simultaneous Operation of RIR Trust Anchor and Global Trust Anchor

Whois circa 2007

- **Whois was at the end of life**
  - Extremely expensive to run and maintain
  - No real-time updates
- **Need a replacement**
- **Need to add CIDR query support**
- **Need a way to handle change**

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Whois-RWS

- **Andy came up with a RESTful interface**
- **Added real-time updates**
- **Added way to evolve features via REST**
- **Other RIRs are following along**

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Whois-RWS Today

- A working Group is chartered for both names and numbers (WEIRDS)

- Security and other committees within ICANN is pushing for a replacement to WHOIS - SSAC, Whois review team, Internationalized Whois WG, etc.

- ICANN sees this work as a way to move away from Whois

Retrospective

- **ARIN has matured and come a long way since fall of 2007**
  - Lots of core stuff ignored for too long
  - Example database was Oracle 8 on Solaris 8
    - Solaris 8 released in 2000
    - Oracle 8 end of life was 2004/6
  - Software deployments were impossibly hard
  - No real interactive website

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ARIN Today

- **Almost complete rewrite**
- **Additional functionality**
  - Reg-RWS
  - Whois-RWS
  - DNSSEC
  - Security (API-Keys)
- **IRR feature set**
  - Now at par with other IRR's for functionality (using templates)

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Where this puts us

- **With the core completed…**
  - Items modified, documented, tested, and deployed with confidence
  - Bolt on things faster (WhoWas took 3 months)

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Schedule Challenges

- **Planned Functionality for 2011**
  - Hosted RPKI
  - Delegated RPKI
  - Managing unmet IPv4 requests
  - Payment integration
  - SWIP Easy
  - Migration off of Red Hat and Oracle

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Schedule Challenges

- **Unplanned Functionality**
  - Extended stats for NRO
  - DNSSEC improvements
  - Streamlined Transfer Service
  - CMSD membership/voter functionality
  - Integration of IRR within ARIN Online
  - Lame delegation reporting
  - Additional OT&E services
  - Alternative RPKI-like services
  - Retrievable meeting registration data

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Schedule Challenges

- **Community Needs/Policy**
  - Ways to better vet/implement community needs
  - Need to hear from you
- **Technical and Operational Debt**
  - Many existing internal processes are inefficient and labor intensive
  - Software changes
- **Thought Leadership**
  - Whois-RWS
  - RPKI
  - Research

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Comments?

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