

A city skyline at dusk with a large, stylized 'ARNES' logo in the foreground. The logo is rendered in a blue-to-white gradient with a 3D effect. The background shows various skyscrapers and buildings under a clear blue sky.

# ARNES

## Engineering Report

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# Staffing

- **Operations**
  - 7 operations engineers + 2 managers (AT FULL STRENGTH)
- **Development**
  - 8 programmers + manager (AT FULL STRENGTH)
    - New PM taken from engineering
    - New hire - filled vacancy going to PM
- **Quality Assurance**
  - 4 engineers, 1 contractor + manager (One vacancy)
- **Project Management** – 1 (AT FULL STRENGTH)
- **CTO** – 1 (Working more on weights to be FULL STRENGTH)



# YTD Efforts

- **Focus on ACSPs**
- **Work underway for sharing ticket information**
  - Important for transfers
- **RPKI**
  - Mopping up work
  - Migration from IBM 4764 to IBM 4765 HSMs
- **Migration from Oracle to PostgreSQL complete!**
- **Movement from EMC to NetApp underway**



# YTD Efforts Cont...

- **DNSSEC**
  - Making updates near realtime
  - Hardening of key management
- **Fault Tolerance Improvements**
  - More efficient system backups
  - Moving Production Systems from ARIN HQ to Colo
  - Moving backend services to real hardware when merited
- **Corporate Help Desk and IT Support**
- **ARIN Member Meeting Support**
- **Care and Feeding of Servers & Network**
  - Includes new systems provisioning with Puppet and Foreman
- **OT&E**



# OT&E

- **Operational Test & Evaluation**
  - Place to test code
  - Place to test process
- **Replicated Core services**
  - Reg-RWS (provisioning API)
  - Whois-RWS (directory API)
  - Web Interface
  - RPKI suite



## YTD Efforts Cont...

- **Security Audit by Foreground Security**
- **IETF Participation**
  - SIDR, RPKI GTA, WEIRDS (RDAP)
- **ICANN Participation**
  - SSAC
  - RSSAC
  - Technical Advisory Group



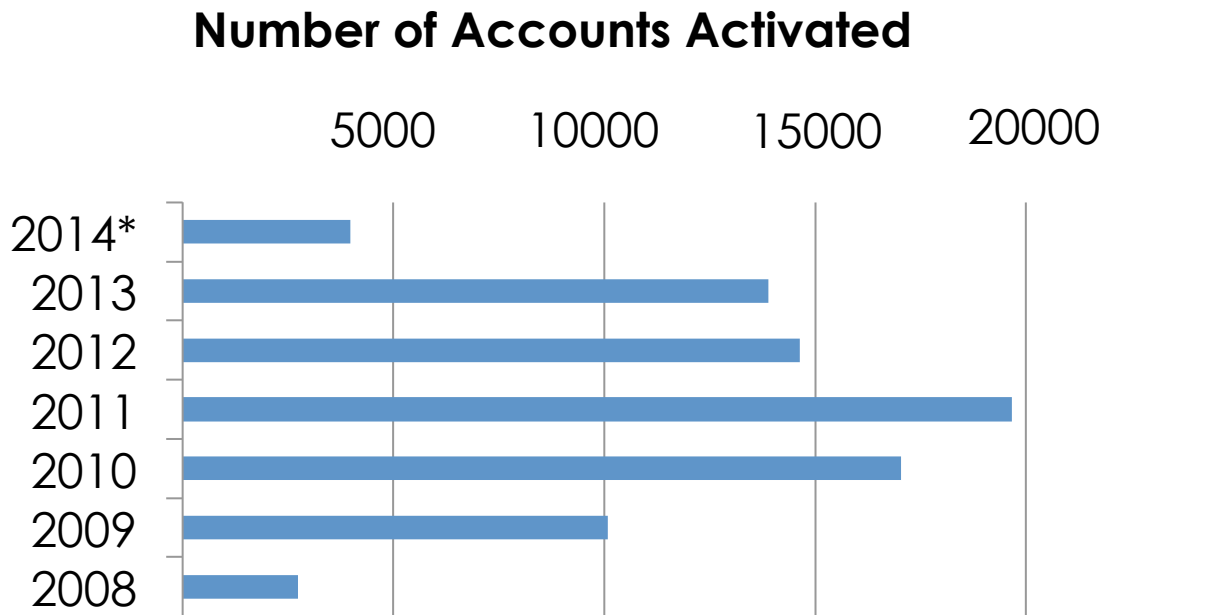
# YTD Efforts PostgreSQL

- **We had a successful conversion**
- **Validation of 100% of all data from Oracle to PostgreSQL**
  - Hope to make the tool publically available for other parties
  - Data integrity was paramount
- **Noted in the PostgreSQL community**
  - High Availability (HA) talk at **PGConf NYC 2014**
  - Exercised HA in the first week with a hardware failure on the production DB node – no issues
- **Did have one failure**
  - Installed rsyslog for centralized logging
  - Ran into a buffering problem that occurred after a long run
  - Resulted in short PostgreSQL outages on 2/15 and 2/25



# ARIN Online Usage

- **81,984 accounts activated since inception through Q1 of 2014**



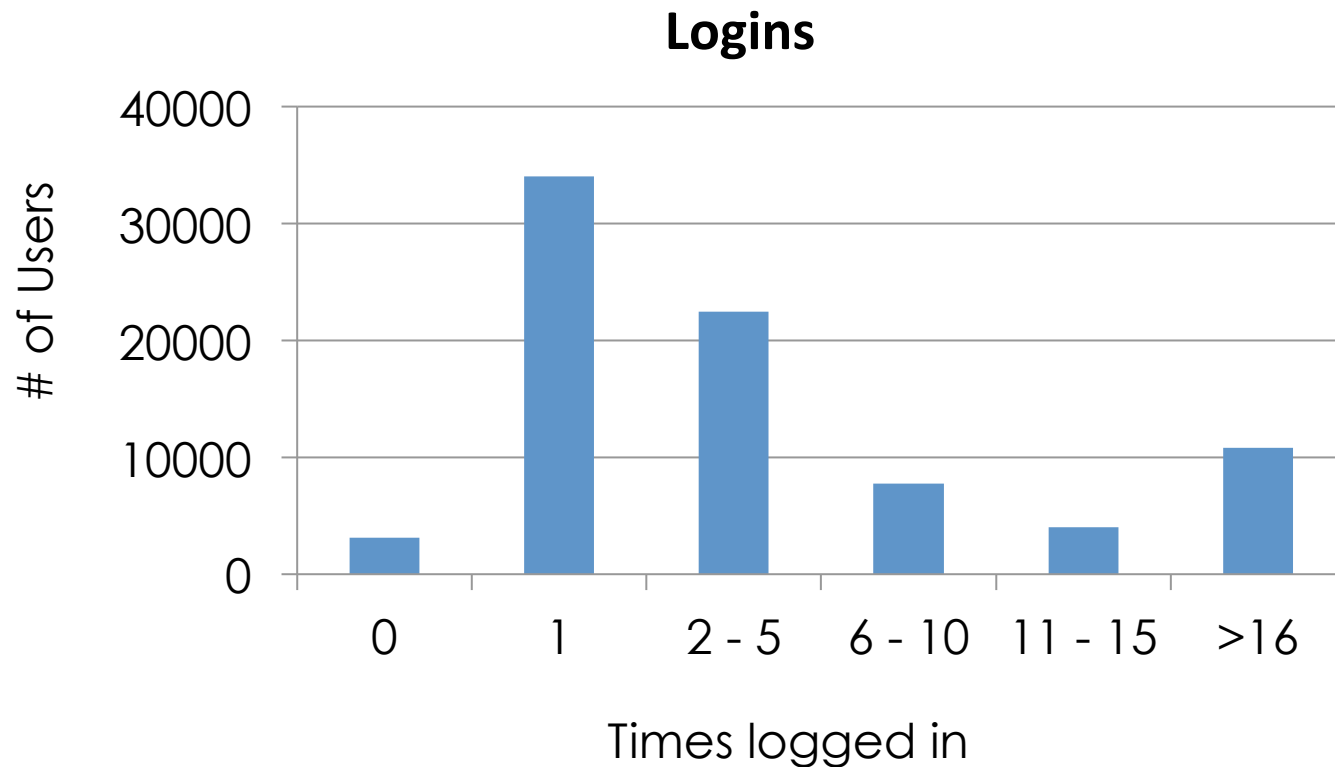
\* Through Q1 of 2014





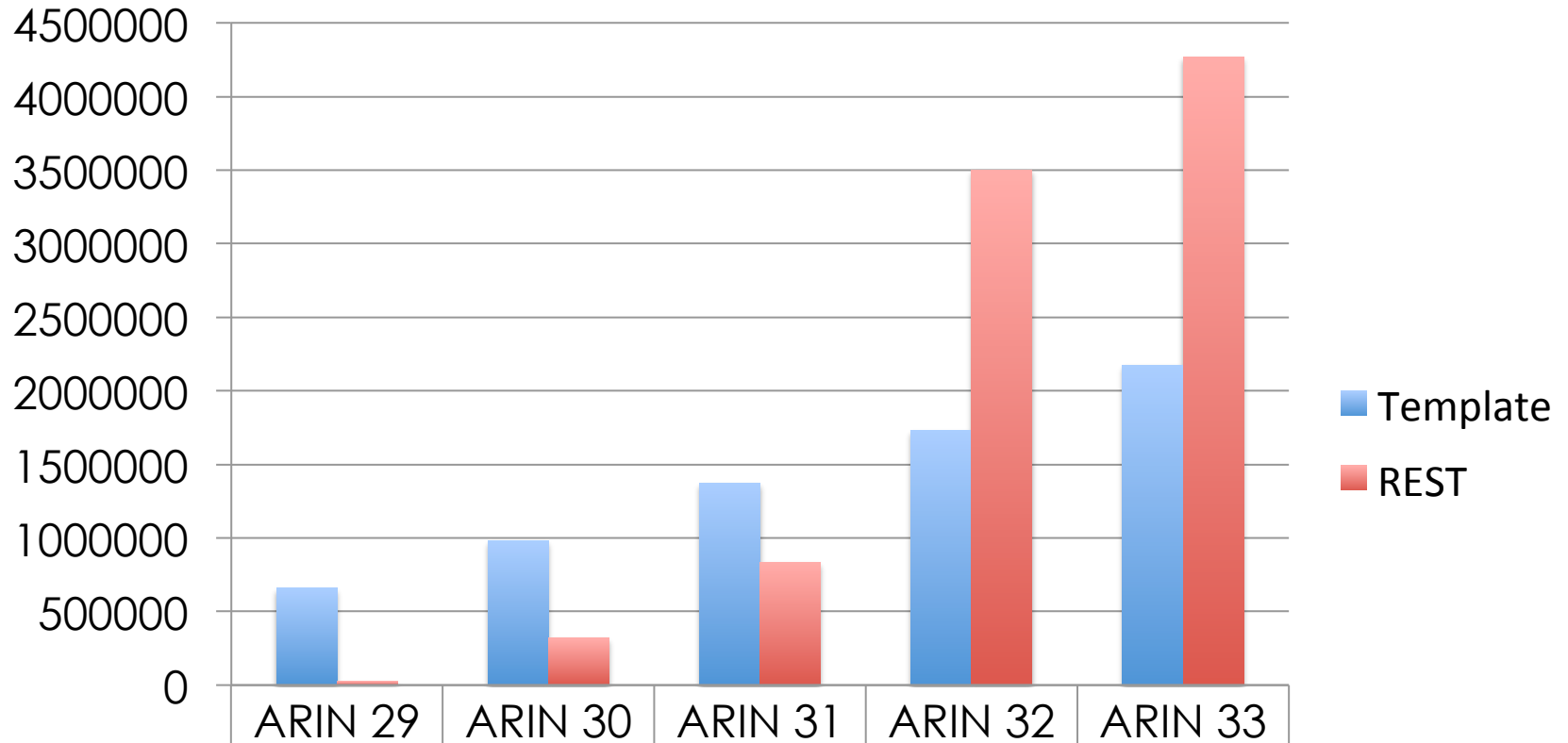
# Active Usage of ARIN Online

- Logins from inception through Q1 of 2014





# Reg-RWS Transactions



Template	658853	980068	1373933	1730163	2175889
REST	28373	319865	835914	3500958	4270946



# Reports Via REST

- Requests from inception through Q1 of 2014

	Via REST
Associations	176
Reassignments	25,219
WhoWas	253,135

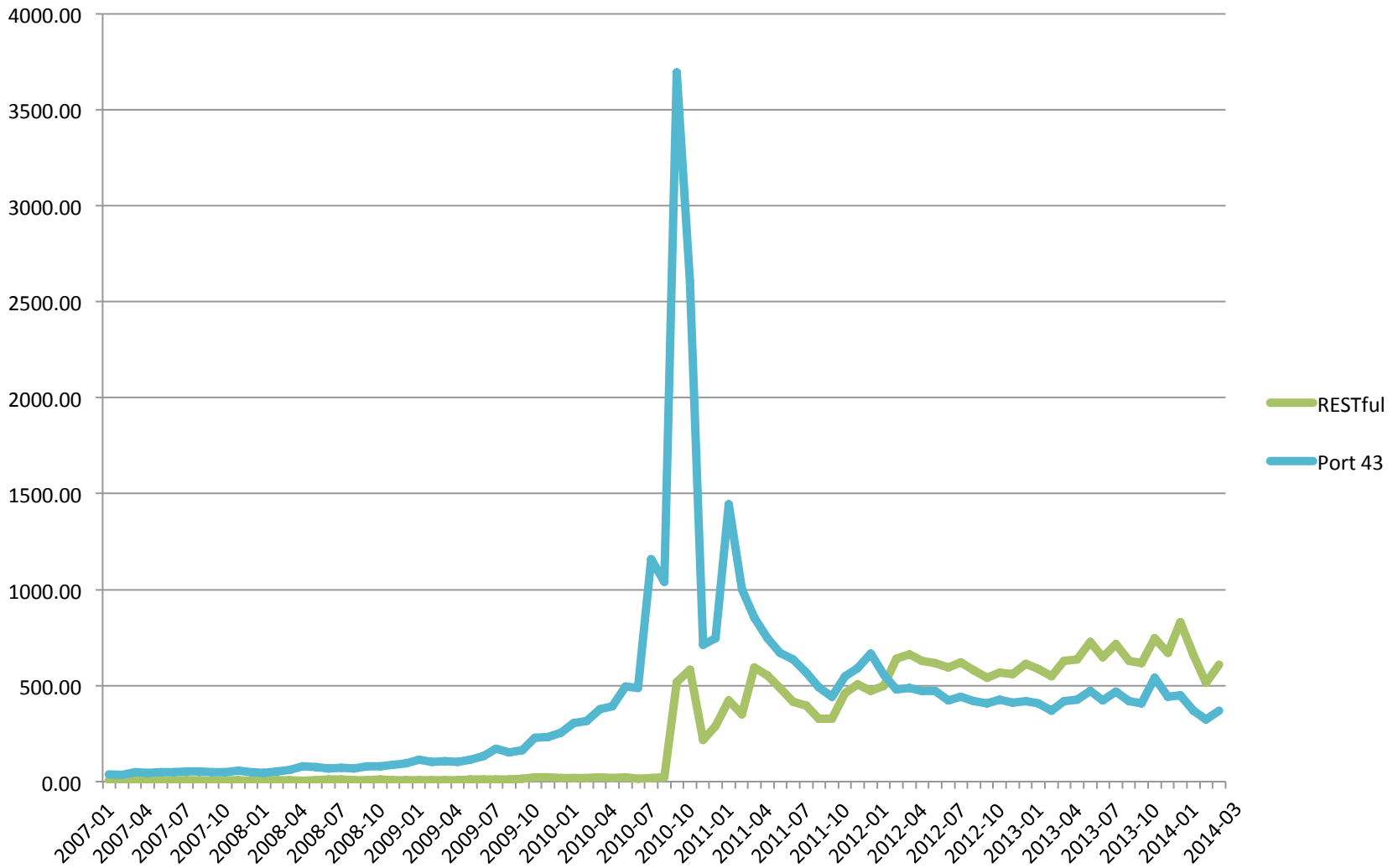


# RPKI Usage

	ARIN XXX	ARIN XXXI	ARIN XXXII	ARIN33
RPAs Signed	27	72	130	162
Certified Orgs		47	68	108
ROAs	19	60	106	162
Covered Resources	30	82	147	258
Web Delegated		0	0	0
Up/Down Delegated			0	0

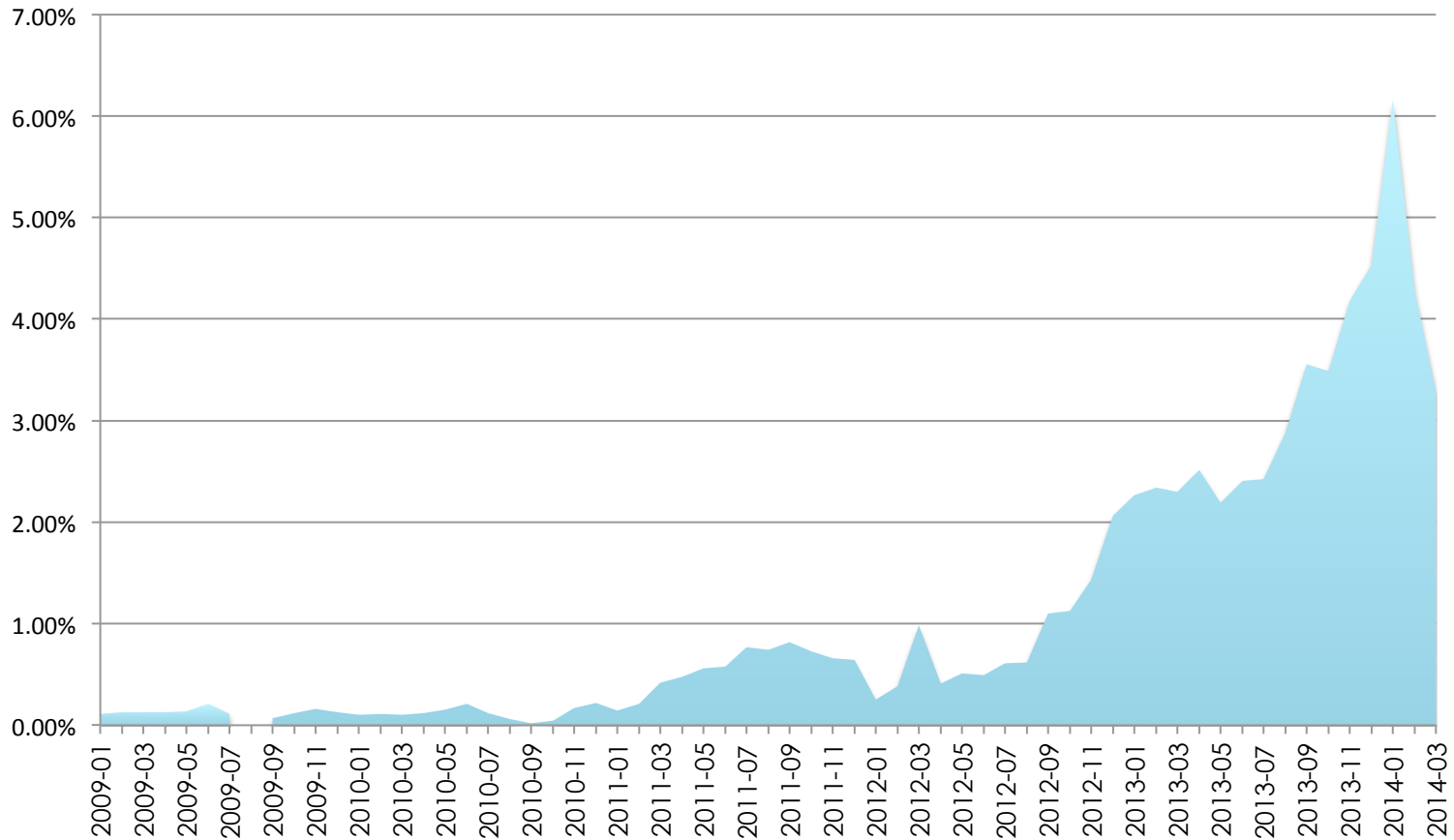


# Whois Queries Per Second



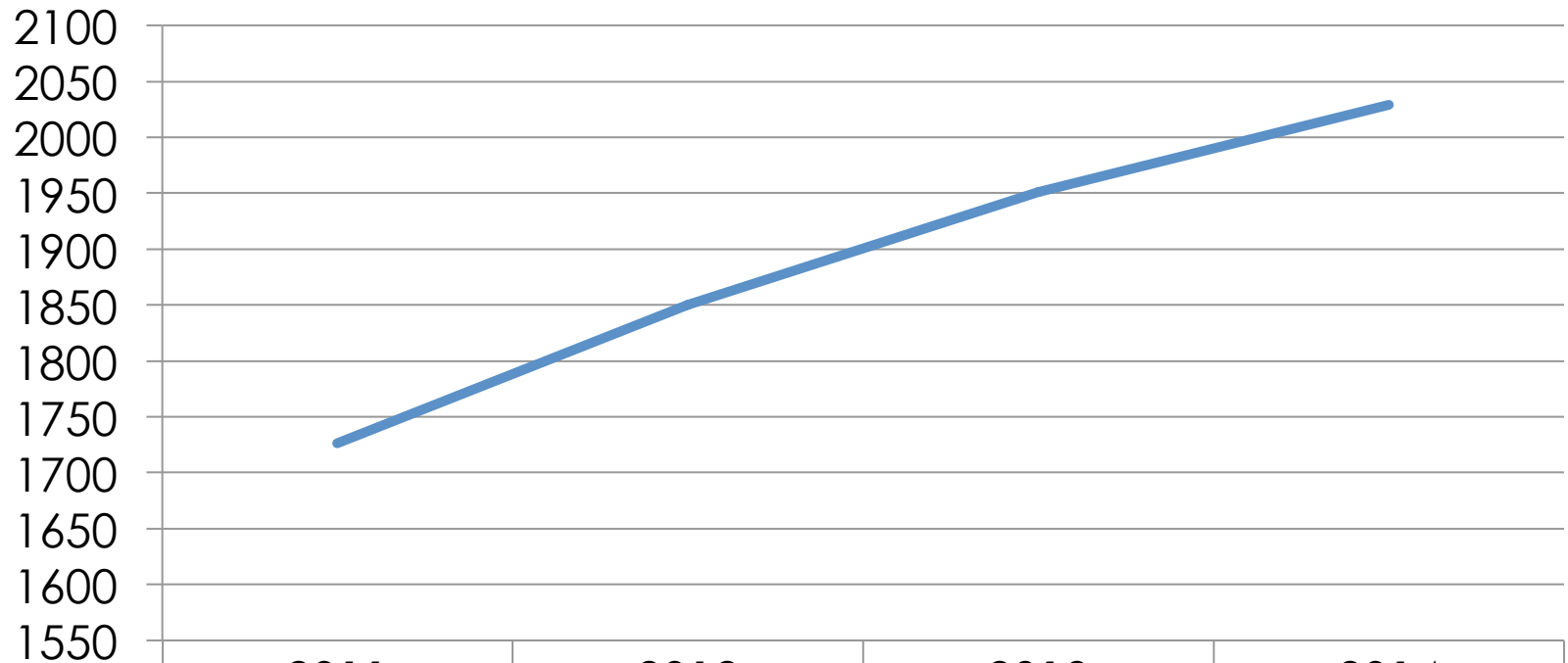
# Whois via IPv6

## Percentage of traffic over IPv6





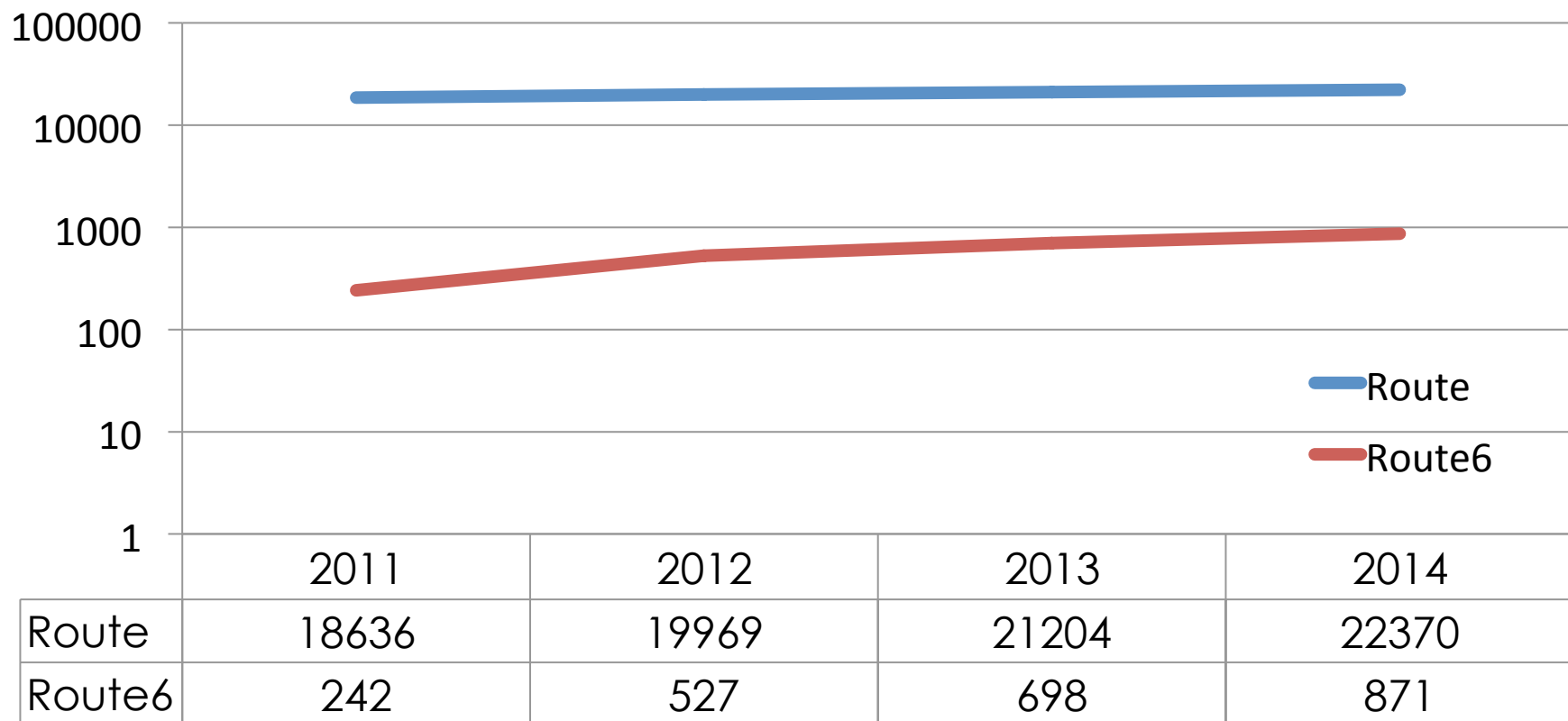
# IRR Maintainers



	2011	2012	2013	2014
Maintainers	1726	1850	1951	2029



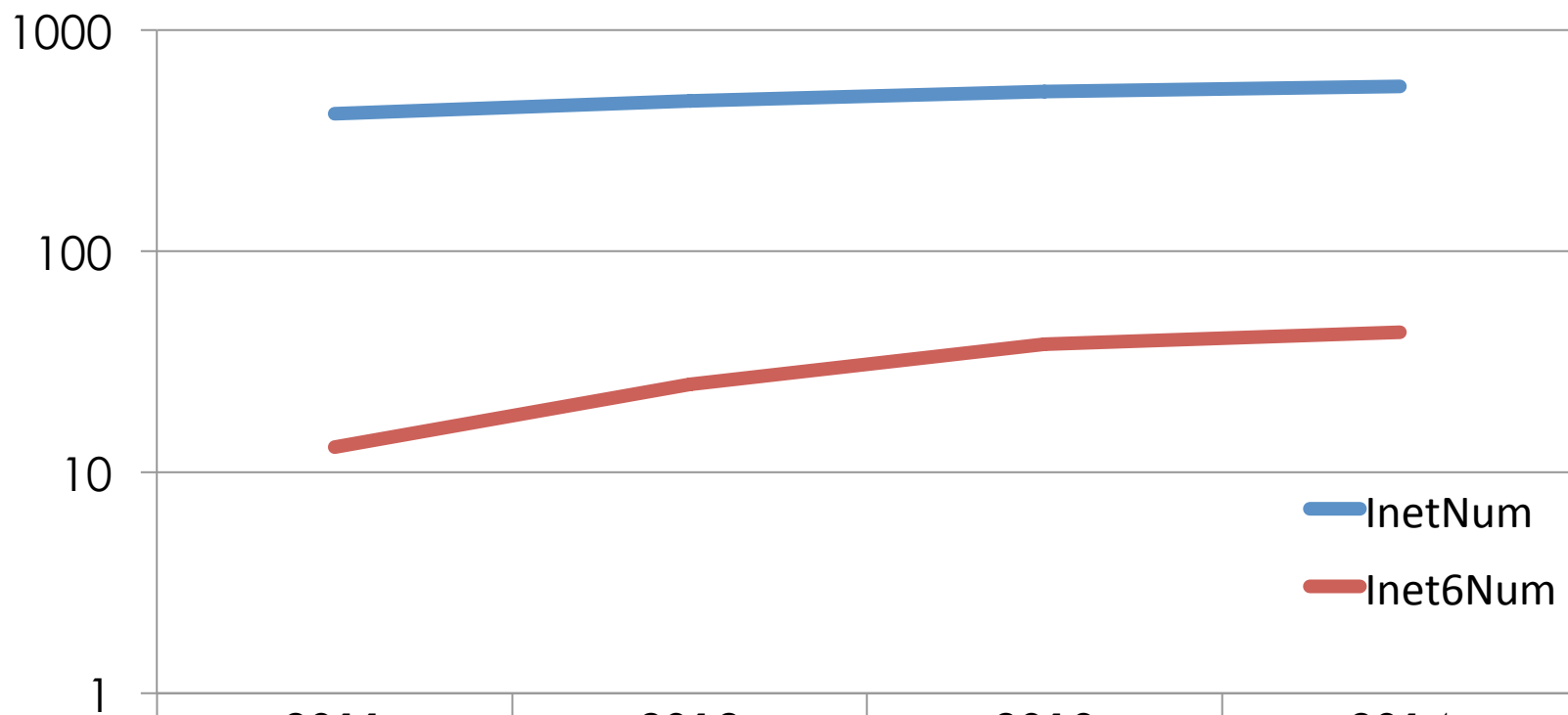
# IRR Route / Route6







# IRR InetNum / Inet6Num



	2011	2012	2013	2014
InetNum	419	481	531	556
Inet6Num	13	25	38	43



# Interops

- **RPKI**

- Up/Down now available – first use will probably be between the RIR's
- Will begin interop using Up/Down for ERX space when APNIC is ready

- **RDAP (IETF WEIRDS)**

- Participated in public interop with APNIC, RIPE NCC, LACNIC, Afilias, VeriSign, CNNIC at IETF 89
- ARIN has open source software at <http://projects.arin.net>
- Public testbed at <http://rdappilot.arin.net/restfulwhois/rdap>
- Other RIRs are following suit



# RDAP

- **Started at ARIN**
- **Other RIR's found it interesting**
- **ICANN immensely interested**
  - Solves internationalized character problem
  - Structured data (no complicated parsing needed to get what you need)
  - Navigation (no need to remember all these whois sites)
  - Ability to run over a validated channel (https)
  - Ability to provide access control (allows for partitioning of data and more privacy controls)



# One of our Focuses

- **We are a small engineering shop**
  - Lots of demands
  - Attempting to provide exceptional service
- **Creating API's to core services**
  - Allows YOU to create tools
  - Allows YOU to follow your timeline
- **projects.arin.net** (ACSP completed years ago)
  - If you find your tool is cool
  - Way to allow others to come find and use it



# What we are working on

- Finish up more ACSPs
- DNSSEC on forward zones ([arin.net/arin.com](http://arin.net/arin.com))
- Making DNS changes near real-time
- Moving the RDAP pilot into production
- Further automation on transfers
- Moving core production from ARIN HQ to colo
- Moving SAN from EMC to NetApp



# Comments?