



Engineering Report

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Big changes with Engineering starting at the beginning of 2015

- Lots of requests for development/operations support
- Engineering has grown by 13.5 FTEs in 2015
 - 5 operations
 - 3 developers
 - 1 UX
 - 4 SI
 - 1/2 PM
- We are doing well on hiring people but it is taking some time

Staffing Summary



- **Operations**
 - Ten engineers + two managers (+3 since last meeting)
 - Two slots open
- **Development**
 - Twelve engineers + UX expert + manager (+2 since last meeting)
 - FULL
- **Software Integration**
 - Nine engineers + manager (+1 since last meeting)
 - FULL
- **Project Management**
 - One PM and one PT PM (+1/2 since last meeting)
 - FULL
- **CTO**
 - Moi

Open Positions



- **Looking for two good people**
 - **Systems Administrator**
 - **Security Engineer**

Accomplishments since ARIN 35



- **Transfers**
 - 8.4 (Inter-RIR) is underway
 - 8.2 (Mergers & Acquisitions) released
- **RDAP deployed into production (ACSP 2009.21)**
- **Completed a lot more ACSPs**



Accomplishments - ACSP's

- **Add Links to Whois Query Responses (ACSP 2011.29)**
- **Show abuse contacts in Whois results by default (2014.25)**
- **Change Whois Output for Certain /8 Records (ACSP 2013.4)**
- **Add ASN activity to ARIN-issued report (2014.27)**
- **Add Two-factor Authentication for web accounts (2013.8)**
- **Send email notifications for ticketed request updates (2012.1)**
- **Highlight unpaid invoices in red only when past due (2012.2)**
- **Send initial POC validation messages to all email addresses associated with that POC (2013.27)**
- **Whois-RWS and RDAP now offered over SSL (2014.1, 2014.29)**



Accomplishments Cont...

- **Fixed PGP to be RFC 3156 compliant**
- **Two new public-facing services sites turned up**
 - Seattle
 - San Jose (really Santa Clara)
- **Fault tolerance improvements**
 - Redundancy/failover for internal network
- **Corporate help desk and IT support**
- **ARIN member meeting support**
- **Care and feeding of servers & network**
- **OT&E**



OT&E

(Operational Test & Evaluation)

- **Lots of people test in production**
 - Is not the best place to test
 - Things do get stuck – may impact others
 - Operational Test & Evaluation
- **Goodness of OT&E**
 - Place to test code
 - Place to test process
 - All services now under ote.arin.net except email
 - Need to register to participate
 - <https://www.arin.net/resources/ote.html>

New Features

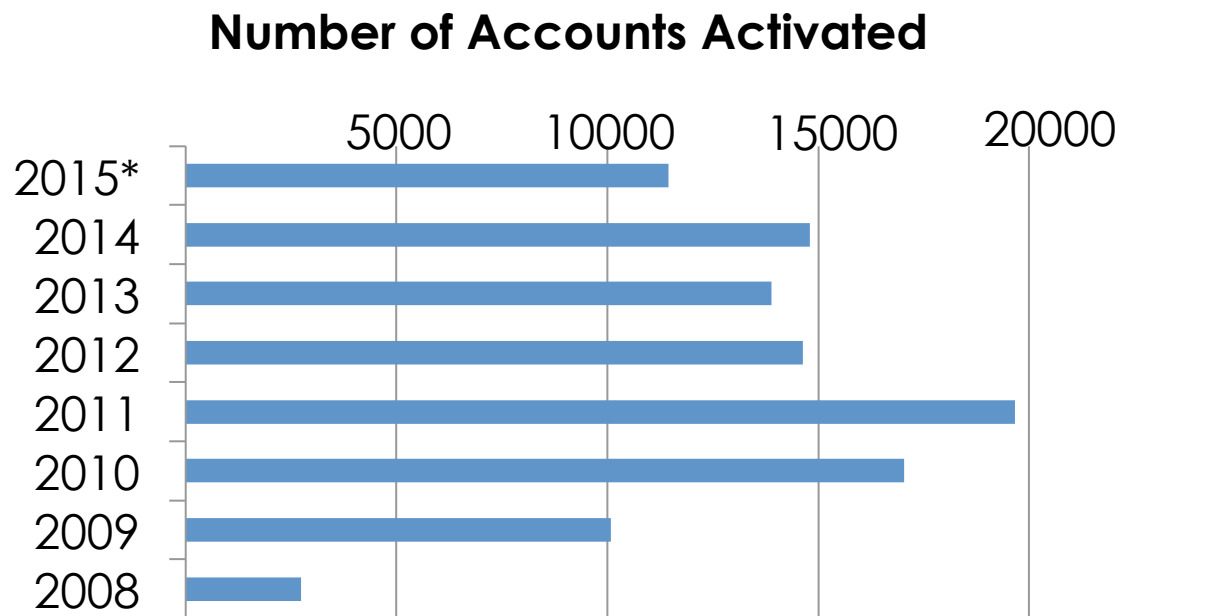


- **Two-Factor Authentication**
 - Two people signed up within 30 minutes of deployment on a Saturday afternoon
 - 53 people are now using it
- **RDAP**
 - More IPv6 than IPv4
 - 121,002 queries over IPv6 since rollout
 - 12,170 queries over IPv4

ARIN Online Usage



- **104,312 accounts activated since inception through Q3 of 2015**

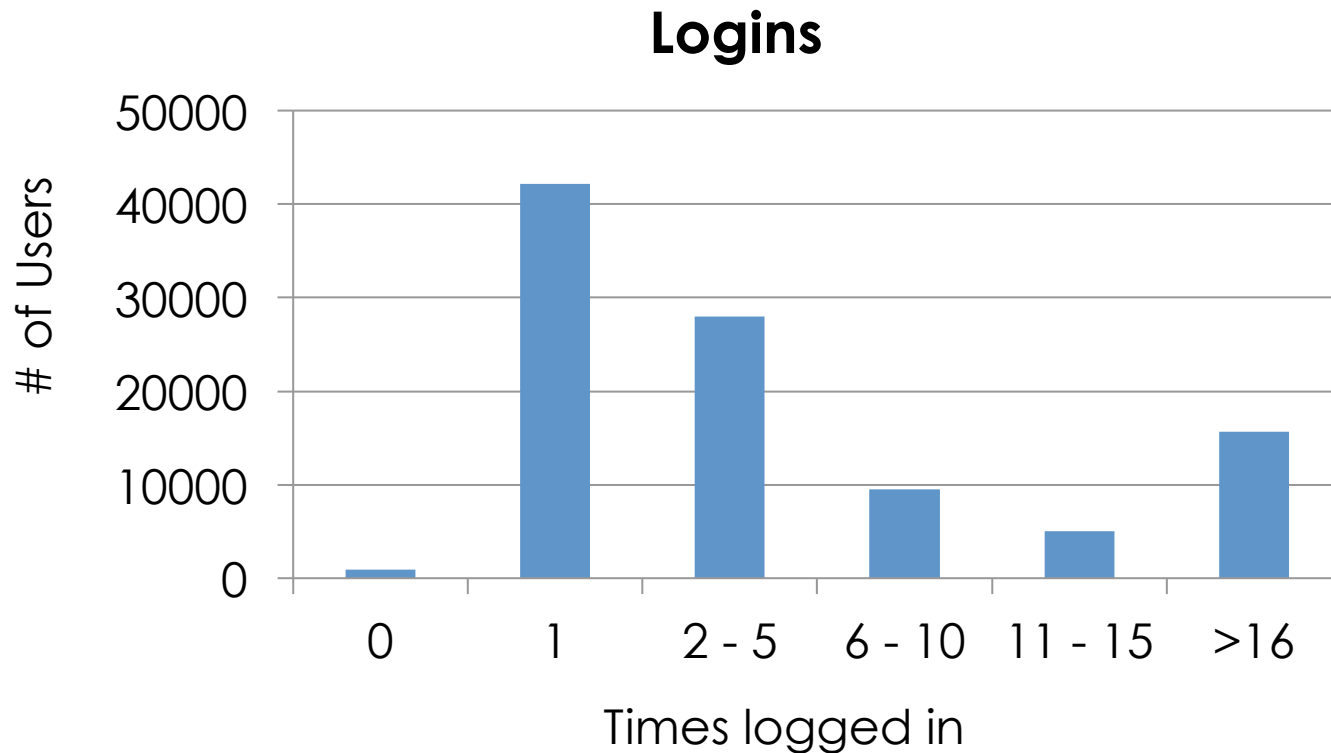


* Through Q3 of 2015

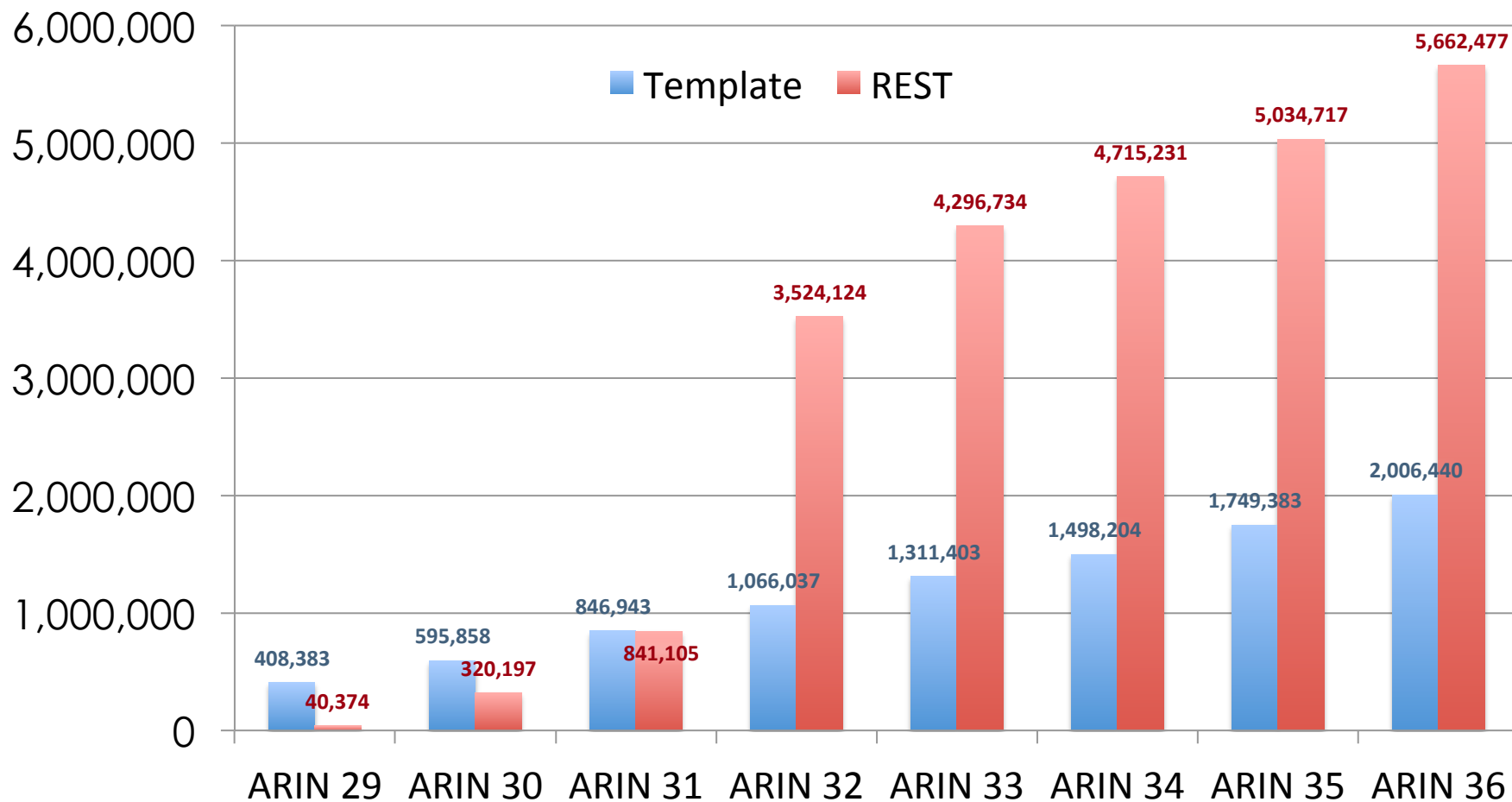
Active Usage of ARIN Online



- Logins from inception through Q3 of 2015
- One user logged in 1,205,887 times!



Reg-RWS Transactions (cumulative)



DNSSEC



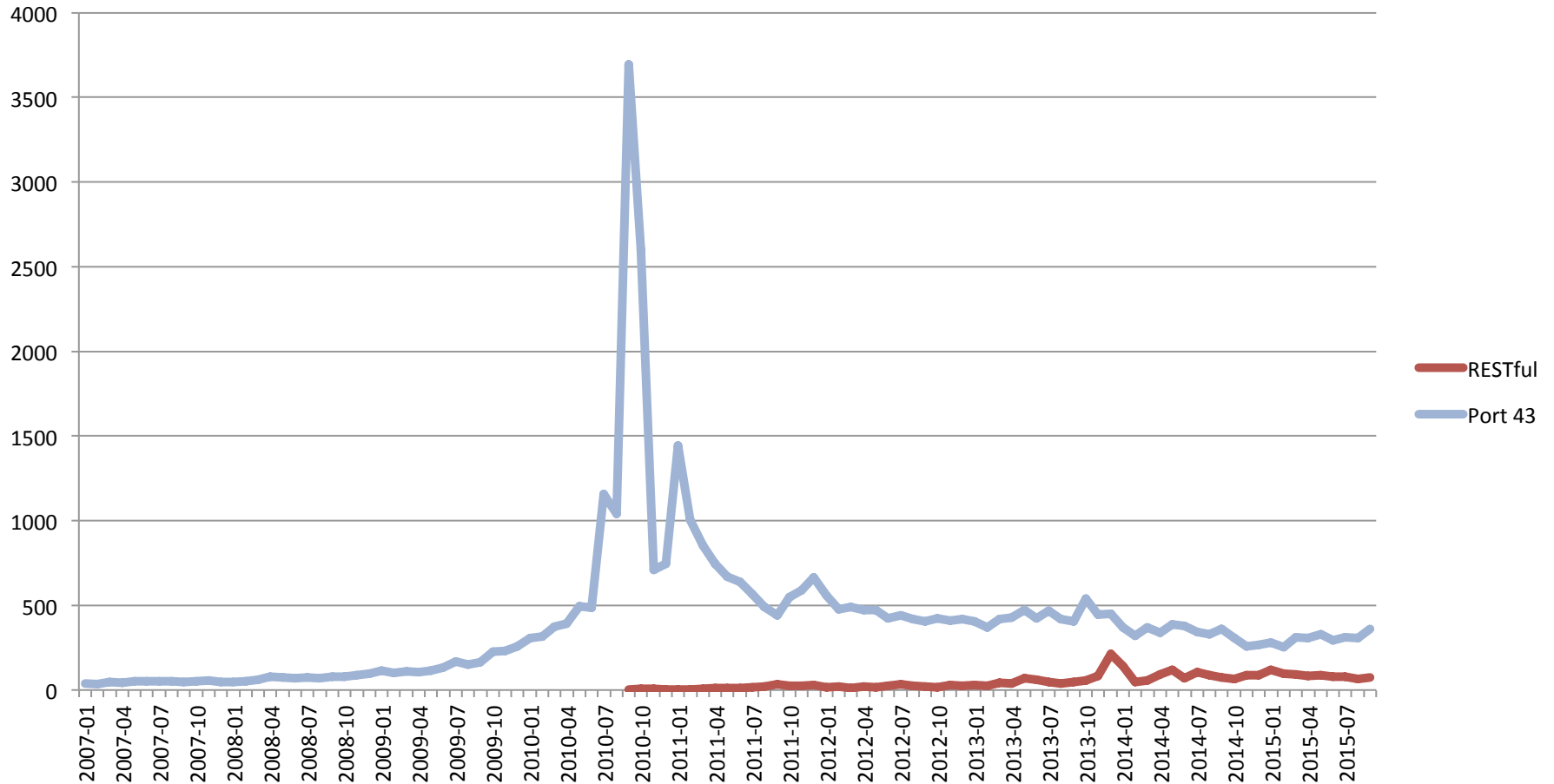
ARIN 36	
Number of Orgs with DNSSEC	123
Total Number of Delegations	583,442
DNSSEC Secured Zones	586
Percentage Secured	0.1 %

RPKI Usage



	ARIN XXX	ARIN XXXI	ARIN XXXII	ARIN33	ARIN34	ARIN 35	ARIN 36
RPAs Signed	27	72	130	162	208	289	358
Certified Orgs		47	68	108	153	187	220
ROAs	19	60	106	162	239	308	338
Covered Resources	30	82	147	258	332	430	482
Up/Down Delegated			0	0	0	1	2

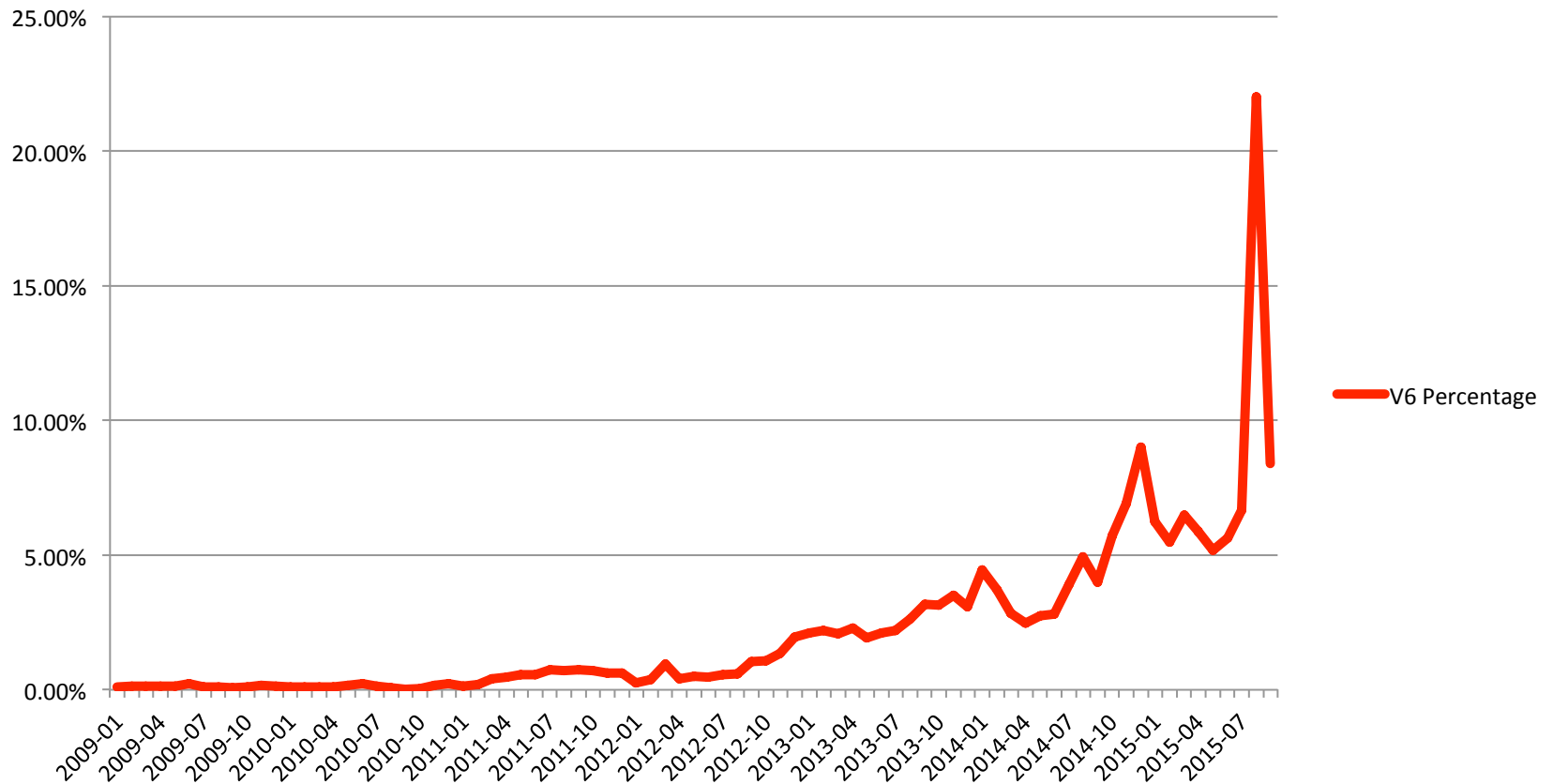
Whois Queries Per Second



Whois via IPv6



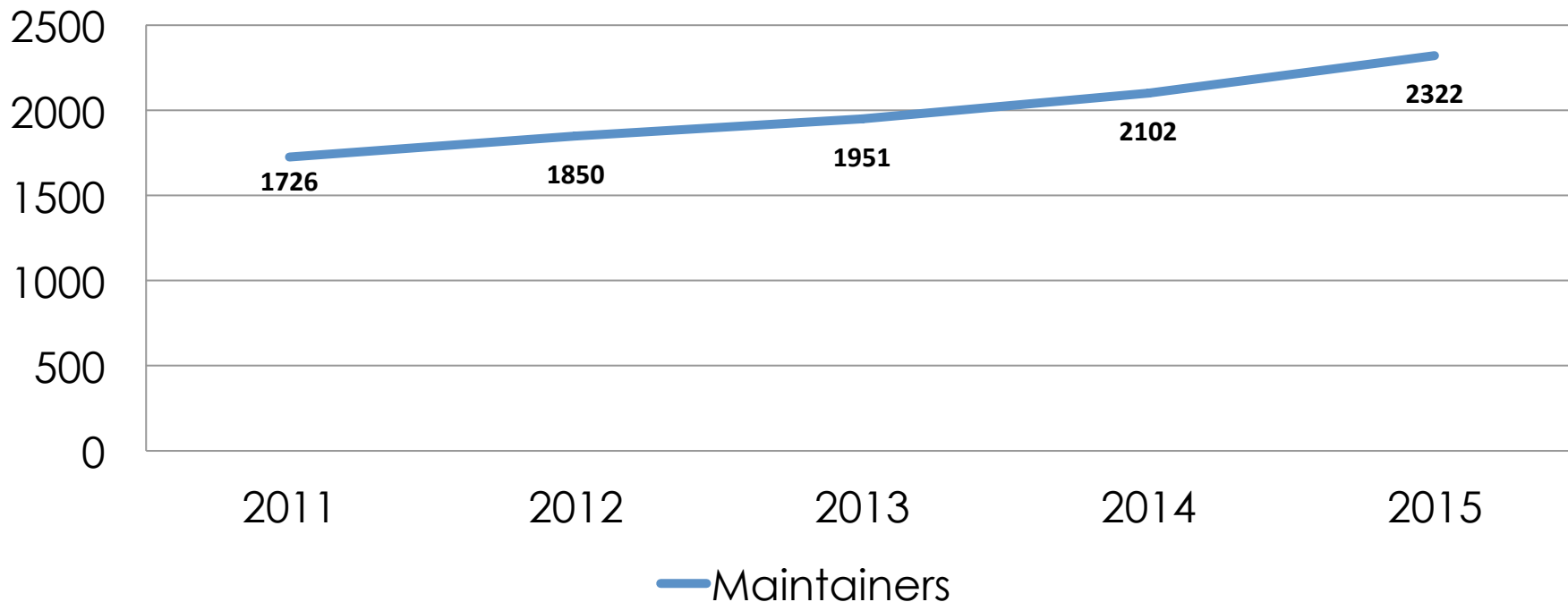
Percentage of traffic over IPv6



IRR Maintainers

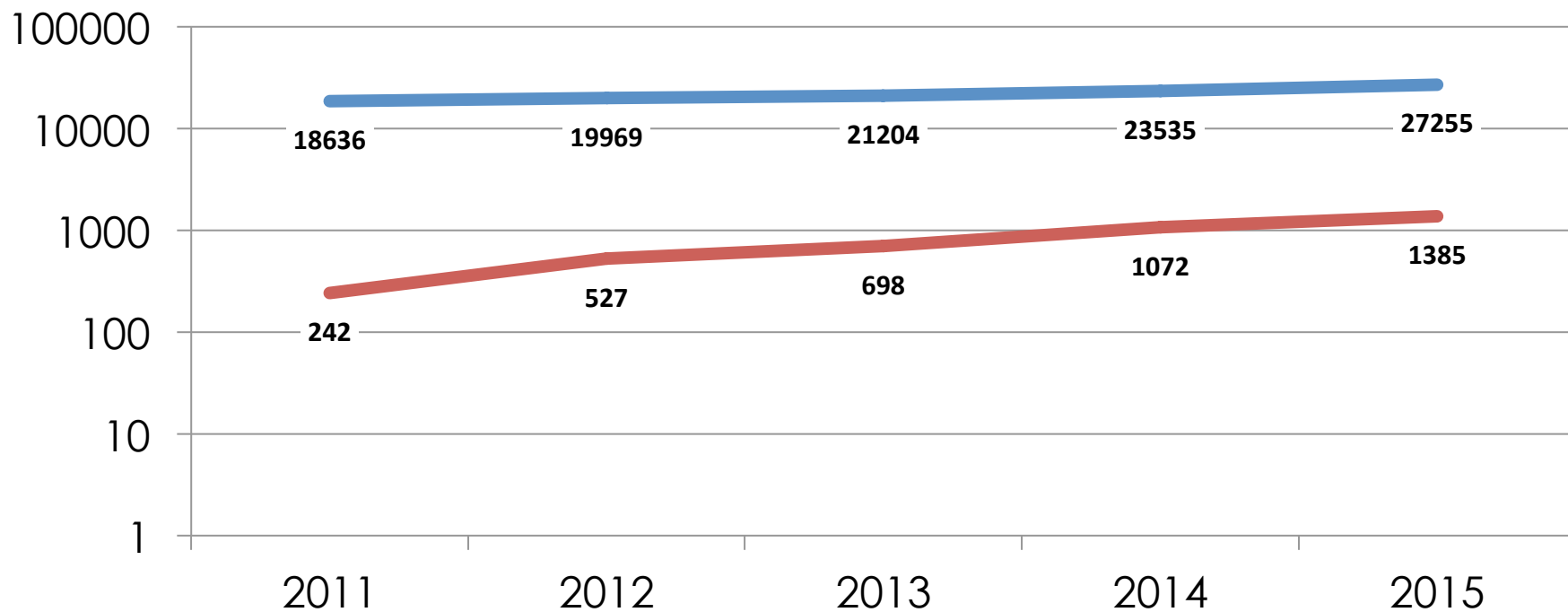


Maintainers



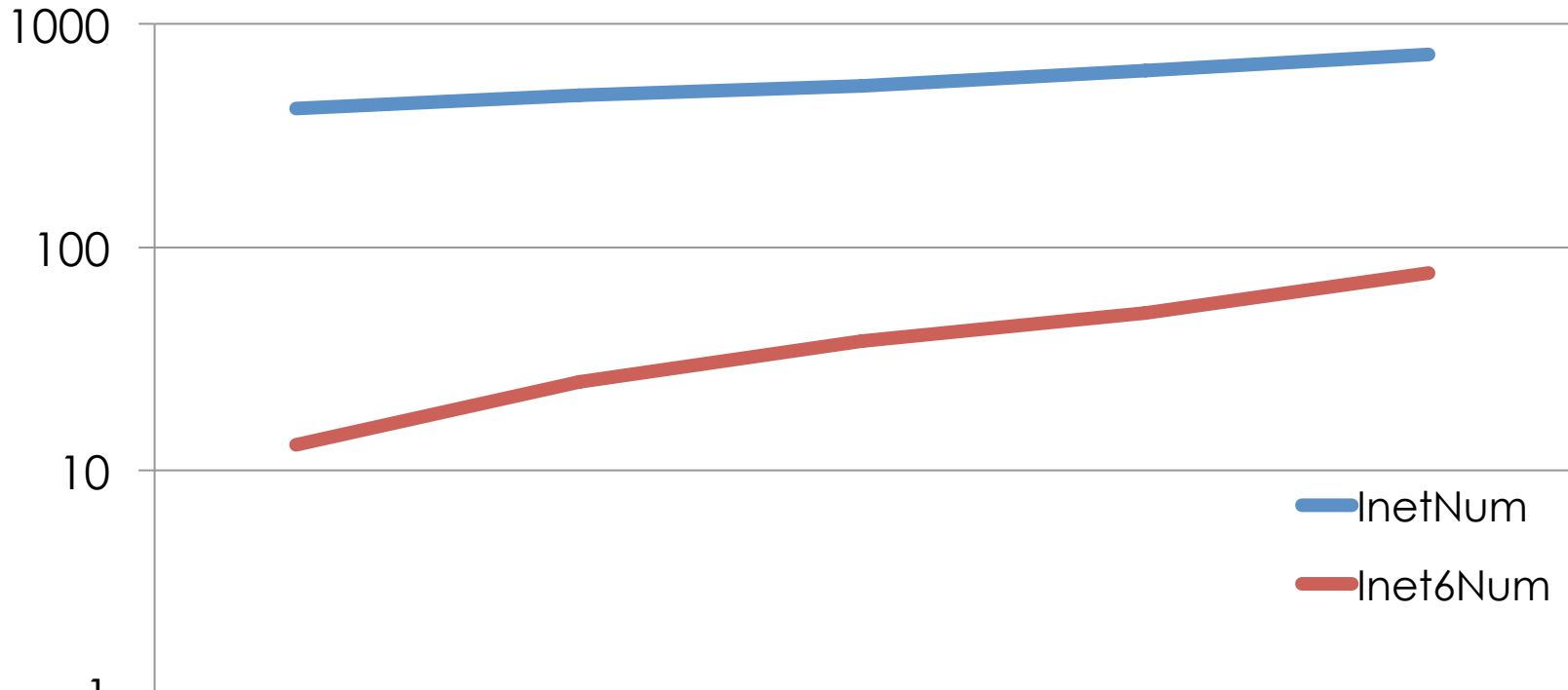
2015 Data through Q3

IRR Route / Route 6



2015 data through Q3

IRR InetNum / Inet6Num



	2011	2012	2013	2014	2015
InetNum	419	481	531	621	731
Inet6Num	13	25	38	51	77

2015 data through Q3

IRR object breakout by Organization



Number of Organizations	Number of Objects
34	100-1000
5	90-99
6	80-89
1	70-79
16	60-69
14	50-59
362	10-49
522	5-9



What we are working on through 2016 Q1

- **Complete automation on transfers**
- **Rollout “SWIP Easy” – a web-based tool to send in reassignment information**
- **Work on various ACSPs**
- **Work on fully redundant services (like Reg-RWS) to allow for rolling deployments**
- **Security audit**
- **Technical backlog**
 - **Moving from Java6 to Java8**
 - Essentially done on directory service side
 - Starting ARIN Online next year



Comments?