



Engineering Report

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Staffing Summary



- **Operations**
 - Twelve engineers + two managers
 - One sysadmin position open
- **Development**
 - Twelve engineers + manager
 - UX Expert
 - User Interface / User Experience Designer
- **Software Integration**
 - Ten engineers + manager
- **Project Management**
 - One project manager and one part-time project manager
- **CTO**

Accomplishments since ARIN 39



- Lots and lots of UI work
- Many improvements for internal customer service
- RPKI 0/0 Trust Anchor change (NRO initiative)
- Transfer logs (another NRO initiative)
- Forced to move to Java 7 due to payment vendor requirements

Accomplishments since ARIN 39



- ACSPs
 - 2017.2: Improved Notification Emails
 - 2017.12: Remove phone number as a required field in ACSP Submission
 - 2016.9: Include date since last response in POC Report
 - 2015.6: Make Transfer Statistics available on FTP
- Policy
 - 2016-9: Streamline Merger and Acquisition Transfers modifications to 8.2 page per approved policy

Operational Achievements

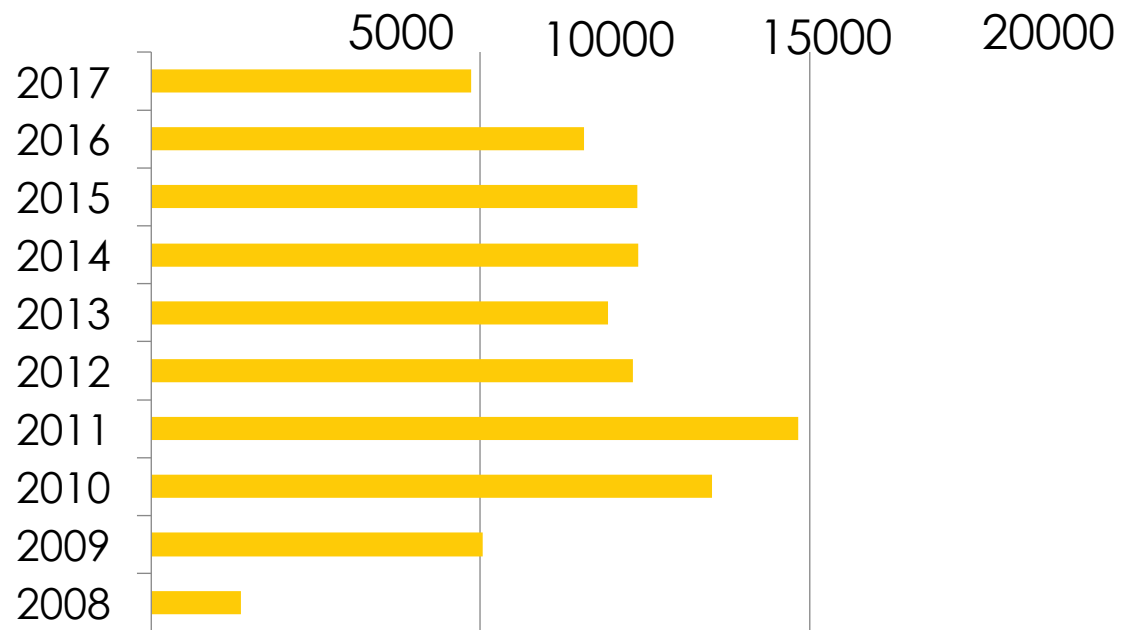
- We have had another security audit by a third-party
 - New network design has shown its promise
 - No exposure until probe physically placed on the trusted network
- Working on a lot of technical debt
 - Three monitoring systems – fold down into one (DONE)
 - Three CM systems – fold down into one (IN PROGRESS)
- Lots and lots of work to do

ARIN Online Usage



130,505 accounts activated since inception through Q3 of 2017

Number of Accounts Activated

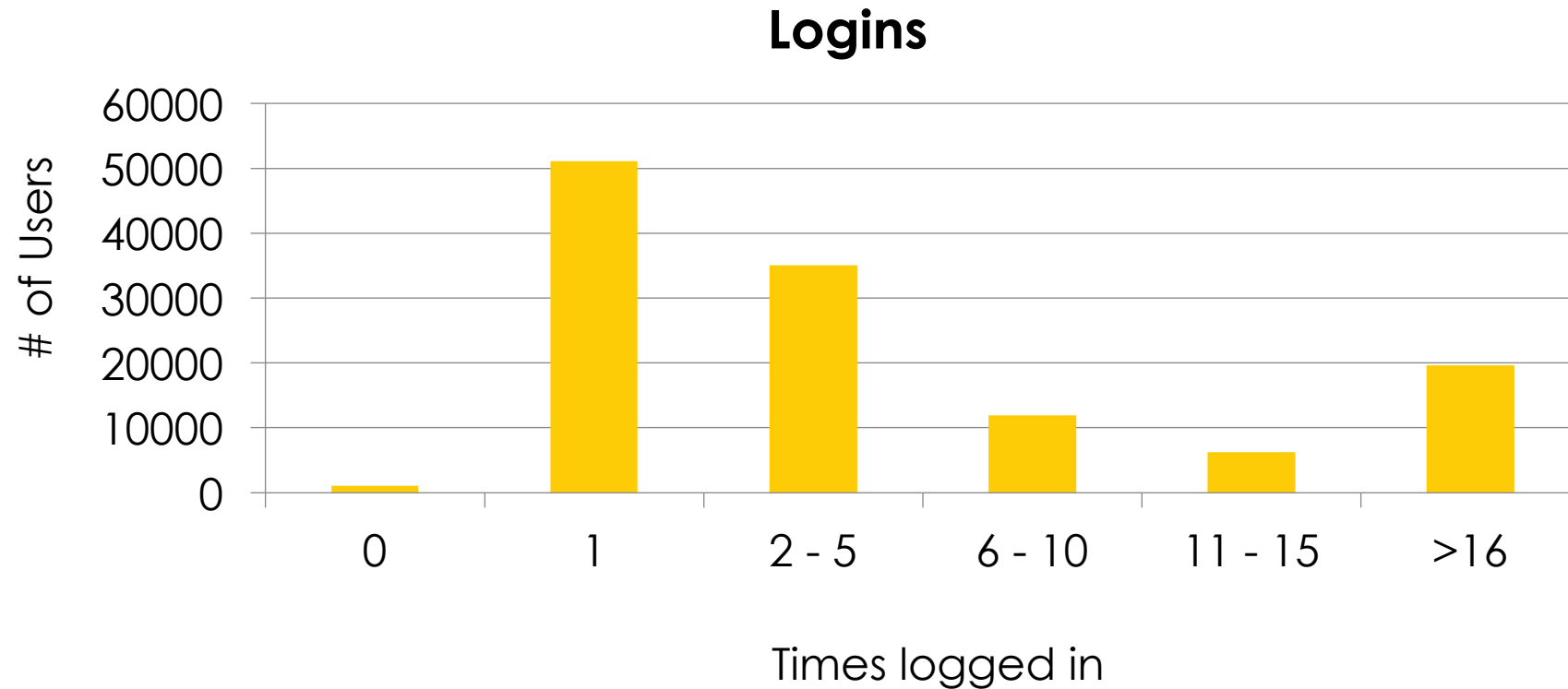


* Through Q3 of 2017

Active Usage of ARIN Online

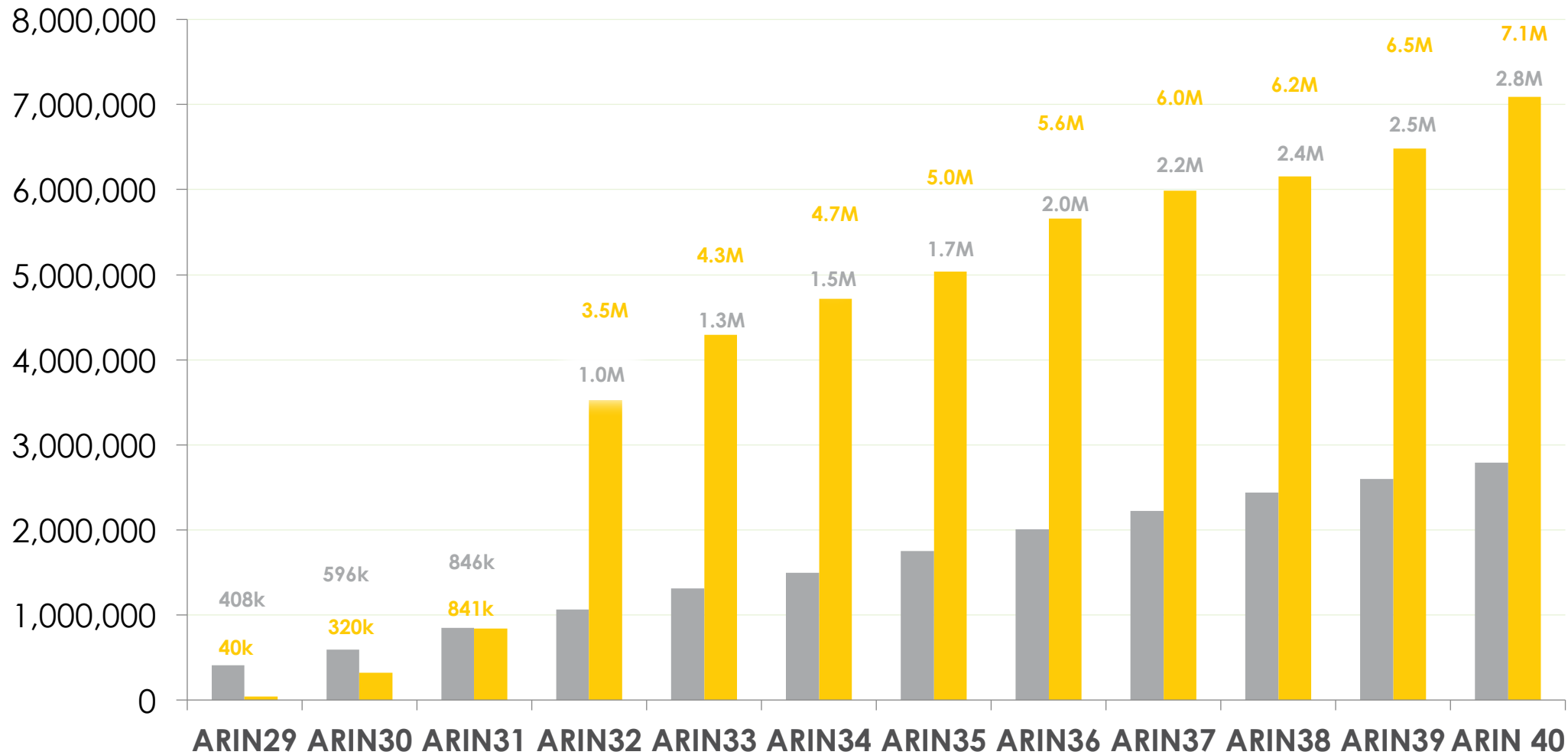


Logins from inception through Q3 of 2017



Reg-RWS Transactions

(cumulative – *restful*/templates)



DNSSEC



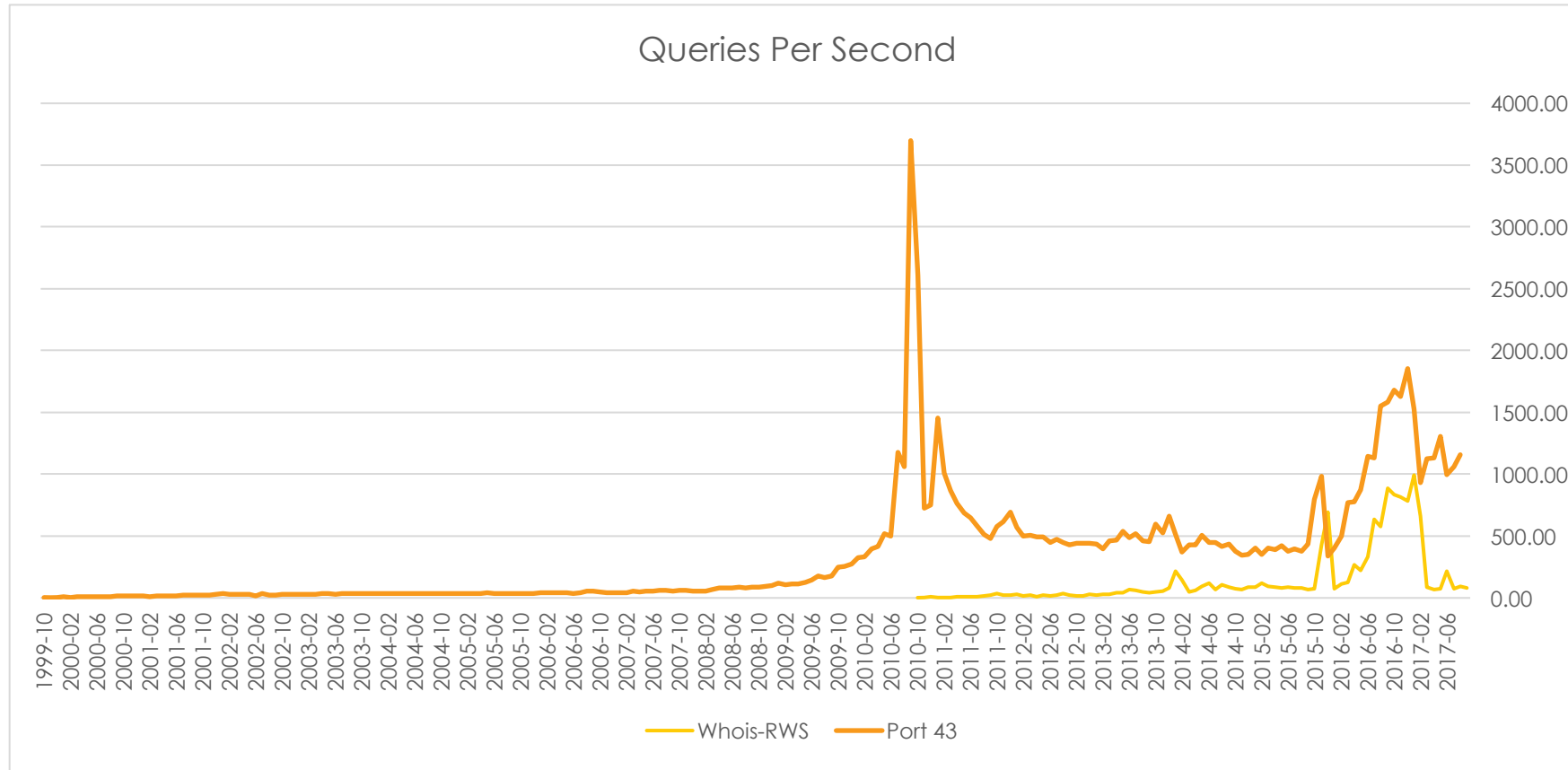
	ARIN 40
Number of Orgs with DNSSEC	148 (+7)
Total Number of Delegations	622,155
DNSSEC Secured Zones	861 (+190)
Percentage Secured	0.13 %

RPKI Usage

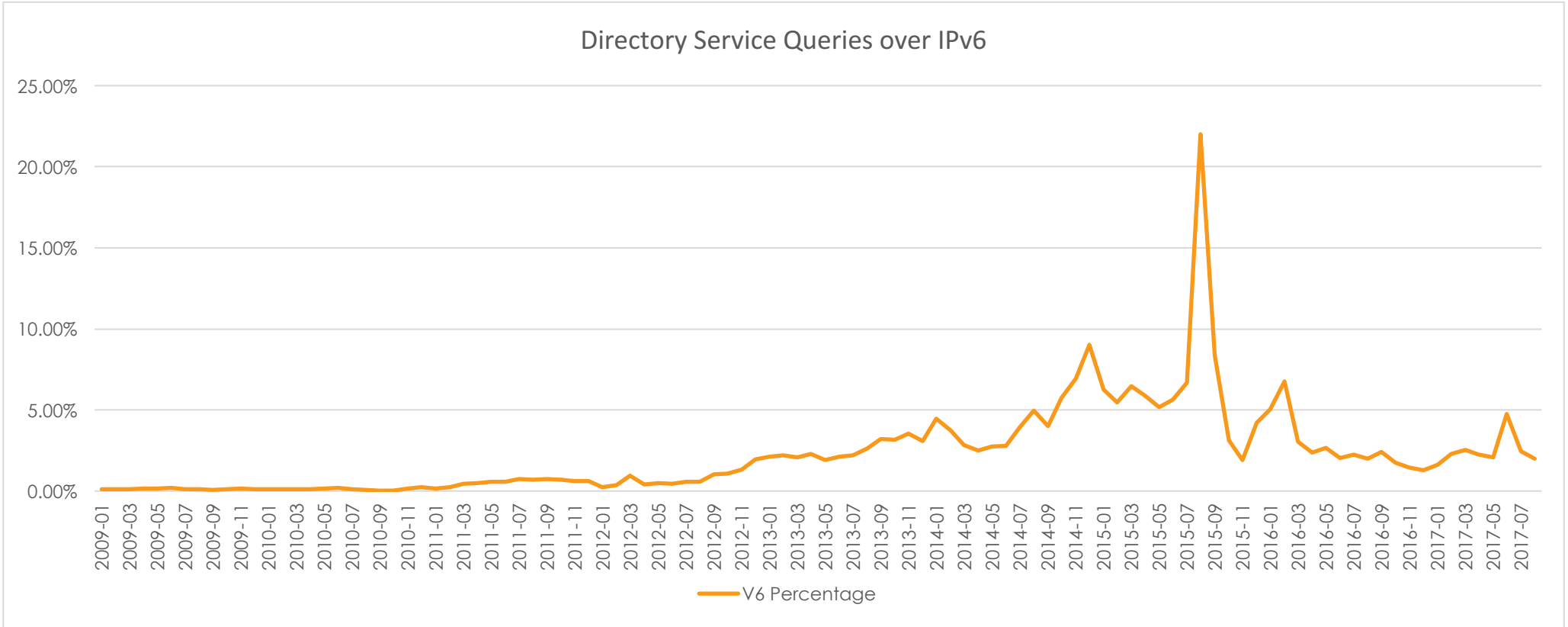


	Oct 2012	Apr 2013	Oct 2013	Apr 2014	Oct 2014	Apr 2015	Oct 2015	Apr 2016	Oct 2016	Apr 2017	Oct 2017
Certified Orgs		47	68	108	153	187	220	250	268	292	328
ROAs	19	60	106	162	239	308	338	370	414	470	538
Covered Resources	30	82	147	258	332	430	482	528	577	640	741
Up/Down Delegated			0	0	0	1	2	1	2	2	2

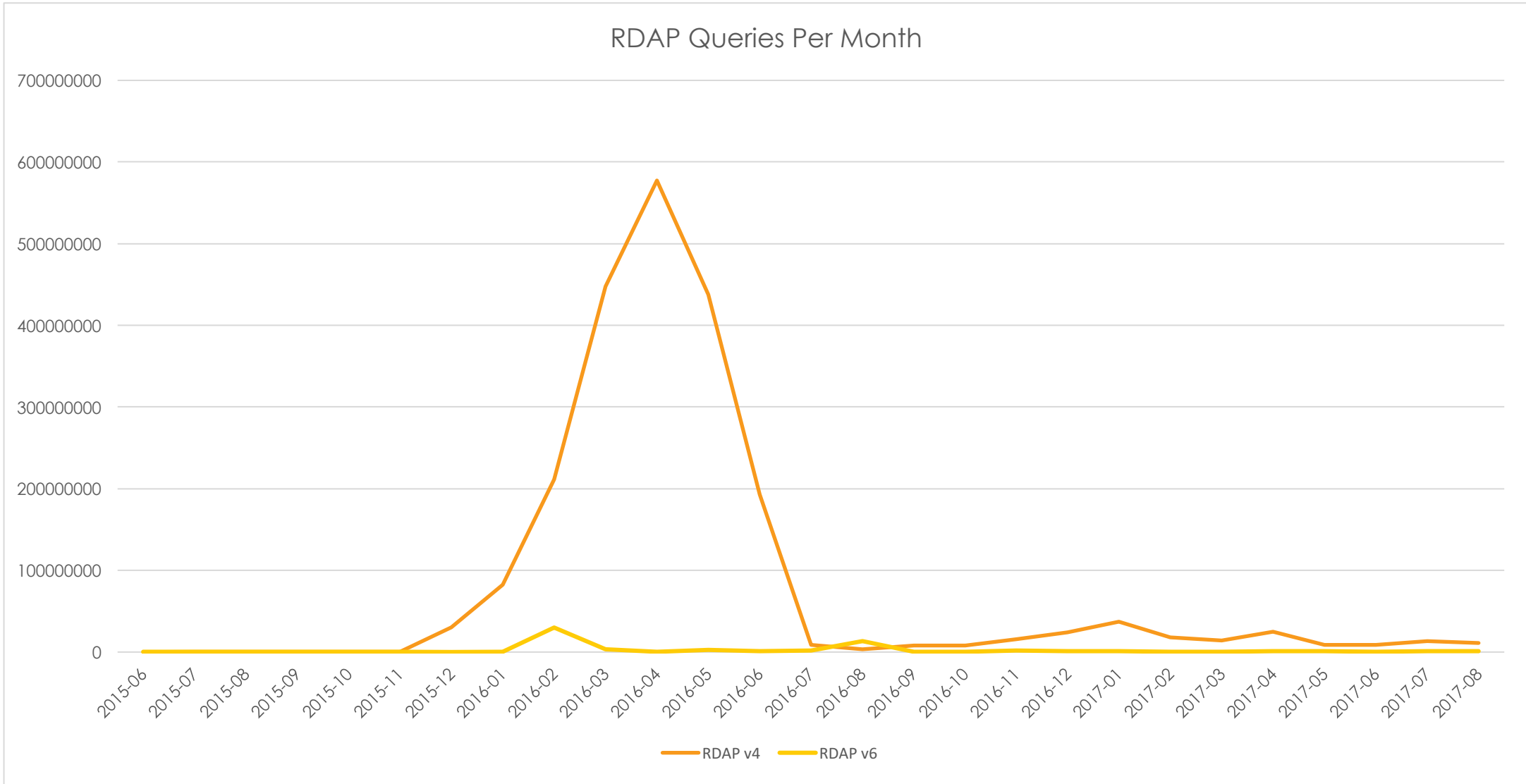
Whois/Whois-RWS Queries Per Second



Whois/Whois-RWS/RDAP Queries over IPv6



RDAP



Whois/Whois-RWS/RDAP Challenges

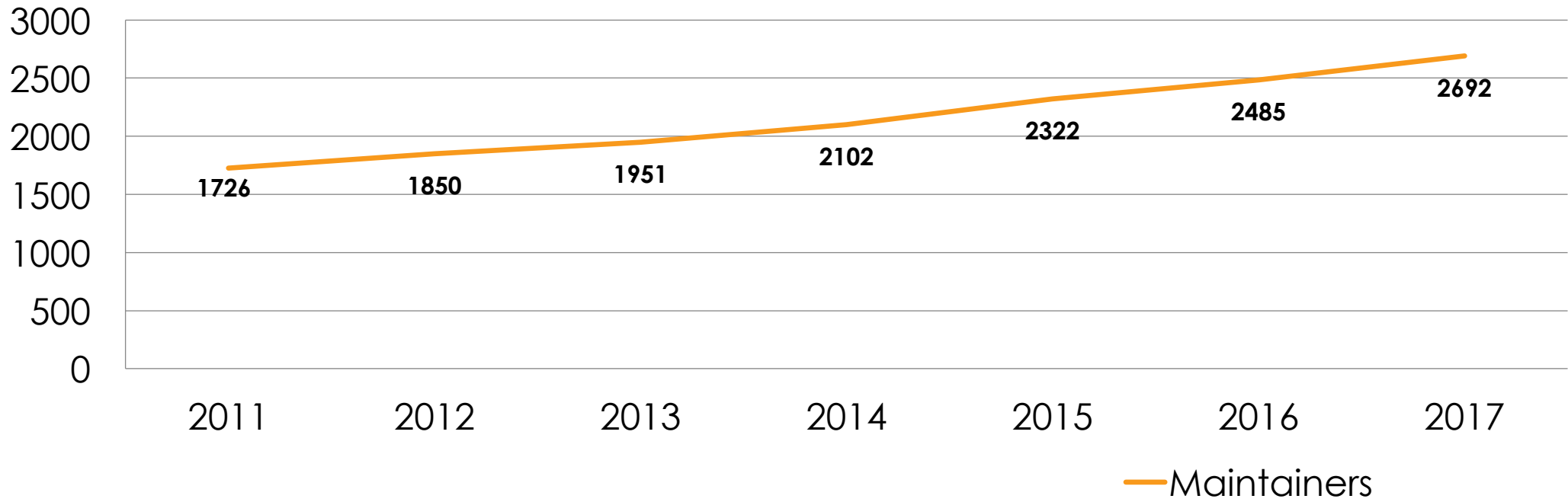


- Whois abuse is still occurring but at a *much* slower rate
 - Moments where large queries come in and then go away
 - Many “offenders” work below the line
 - Interesting query patterns
 - Many scrape the data but at a rate that does not hurt us
- This is a repeat from last meeting - What is reasonable for whois?
 - Do we police the queries?
 - Do we allow bulk access?
 - If so, what should the AUP be?
 - If not, rate limit at what levels or do we build out more machines
 - Guard against scraping database via directory services – at what level?

IRR Maintainers

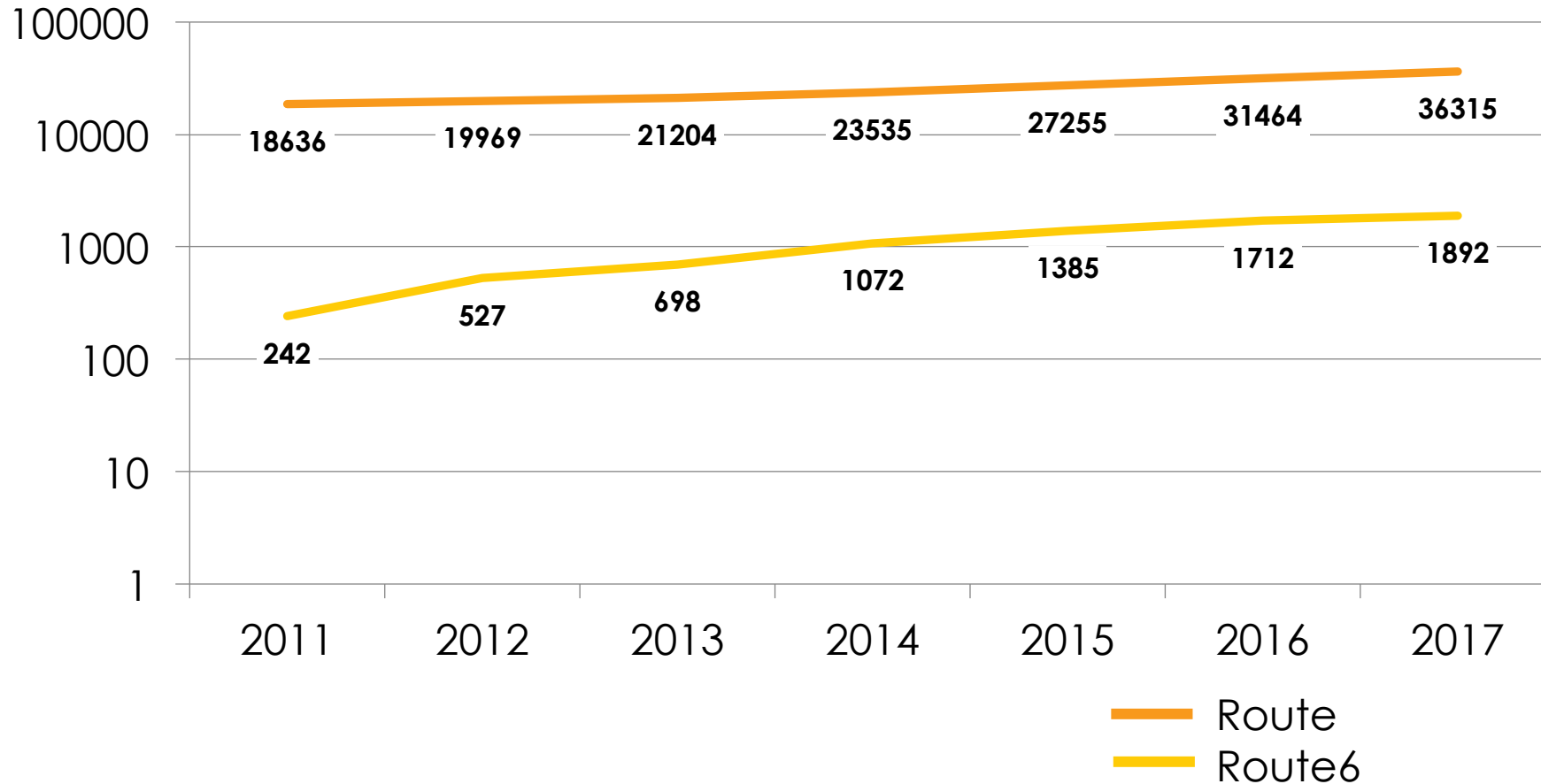


Maintainers



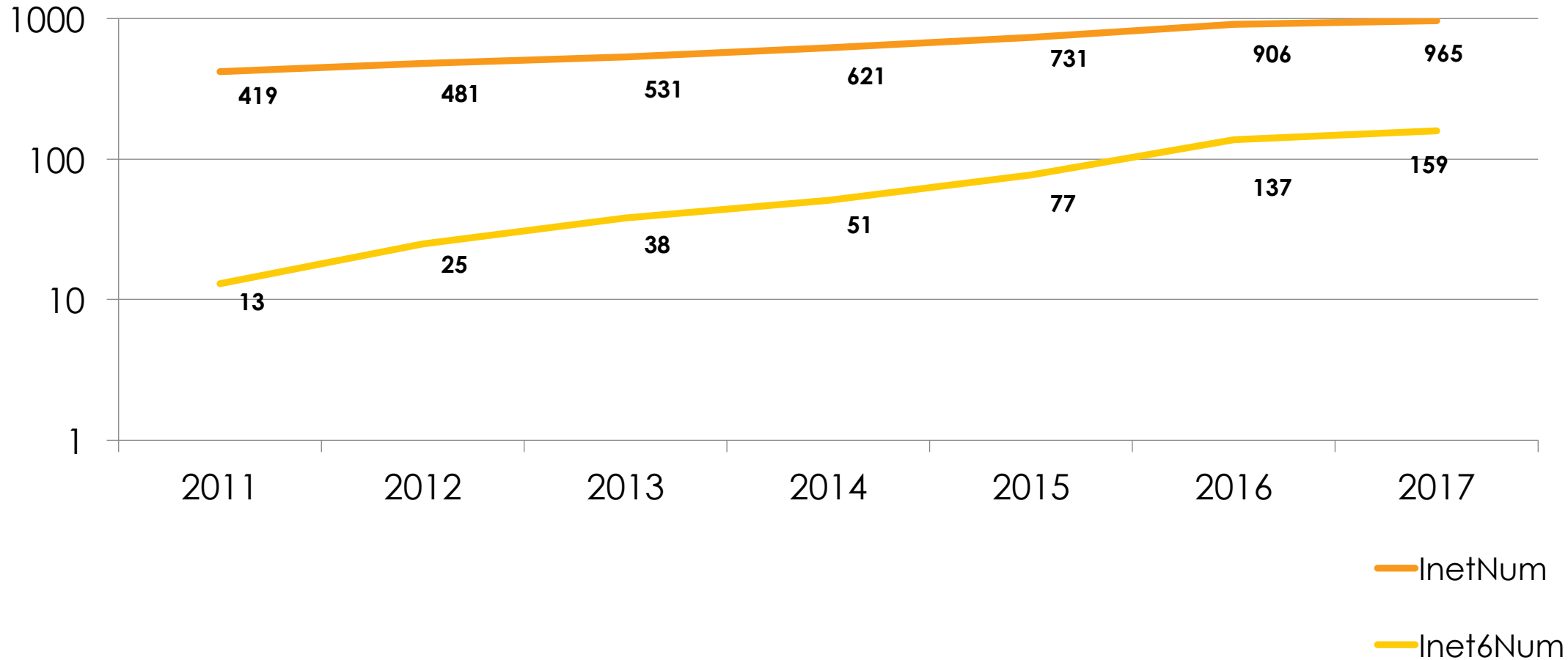
2017 Data through Q3

IRR Route / Route6



2017 data through Q3

IRR InetNum / Inet6Num



2017 data through Q3

IRR object breakout by Organization



Number of Organizations	Number of Objects
4	1001-2000
48	100-1000
2	90-99
5	80-89
6	70-79
16	60-69
10	50-59
459	10-49
617	5-9
1179	1-4

What we are working on through 2018 Q2

- CNK23 POC Restoration
- Automated installation of software coupled with work on fully redundant services (like Reg-RWS)
- Integration of OAuth into RDAP
 - Allow for authenticated users to receive unlimited query responses (ACSP 2012.20)
 - Use also in ARIN Online to remove timeout issue (ACSP 2013.29)
- UX engineering
 - User Accessibility/Responsive Website (ACSP 2016.2 and 2011.21)
 - NANOG, ARIN, and various ARIN on the Roads for user test drives

What we are working on through 2018 Q2

- IRR work will start up in Q2 of 2018
- Accounting system upgrade using a RESTful API to interface with ARIN Online
- Technical backlog
 - Moving from Java7 to Java8 for application servers
 - Moving to a stateless application service
 - Automated build systems using Ansible
 - Folding two (was three) puppet iterations into Ansible
 - Replacing end of life boxes

Coordination work with the other RIRs



- Transfer logs – was released at the end of Q2 for many RIR's
 - Logs transfer movement explicitly
 - Good addition to the extended statistics report (that shows an RIR's assignments, allocations, and inventory)
 - Example
 - <http://www.arin.net/pub/stats/arin/delegated-arin-extended-latest>
- Trust Anchor Alignment for RPKI using 0/0
 - Before Q3, the 5 RIRs described the trust anchor in 3 different ways
 - When finished, there will be alignment with the RIRs
 - ARIN, RIPE, and AFRINIC done
 - Facilitates "make before break" for transfers
 - Proposal to be documented in the IETF (but not accepted in the working group)



Comments?