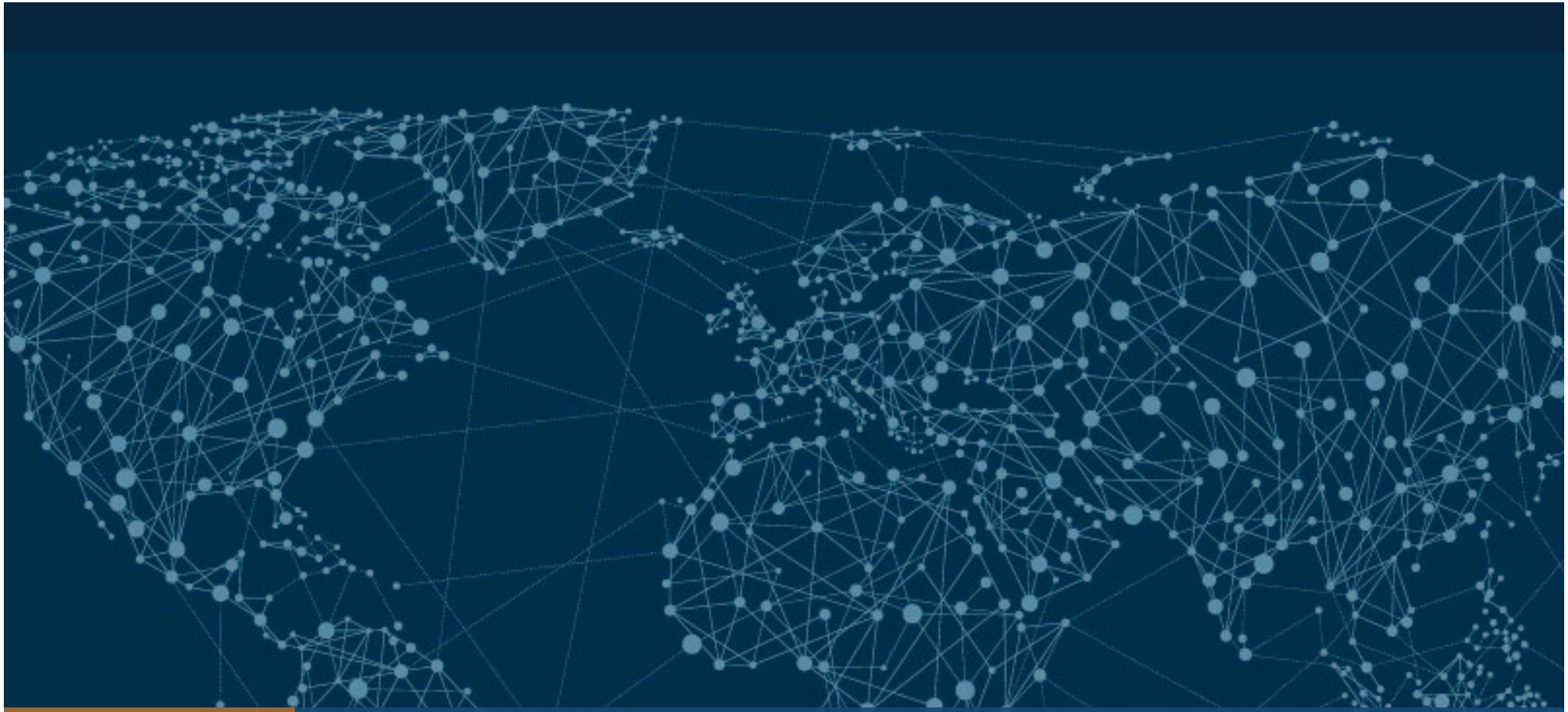


RSSAC Activities Update

Lars Johan Liman and Tripti Sinha
RSSAC Chair | ICANN-54 | October 2015

Agenda

1. Overview
2. RSSAC002 Implementation Status Update
3. RSSAC003: RSSAC Report on Root Zone TTLs
4. RSSAC Statement on ICG IANA Stewardship Proposal
5. NEW WORK: Technical Analysis of the Naming Scheme Used for Individual Root Servers
6. Community Interaction

RSSAC Overview

Lars Liman

What is RSSAC?

- The role of the Root Server System Advisory Committee ("RSSAC") is to advise the ICANN community and Board on matters relating to the operation, administration, security, and integrity of the Internet's Root Server System.

- (This is a very narrow scope!)

RSSAC organization

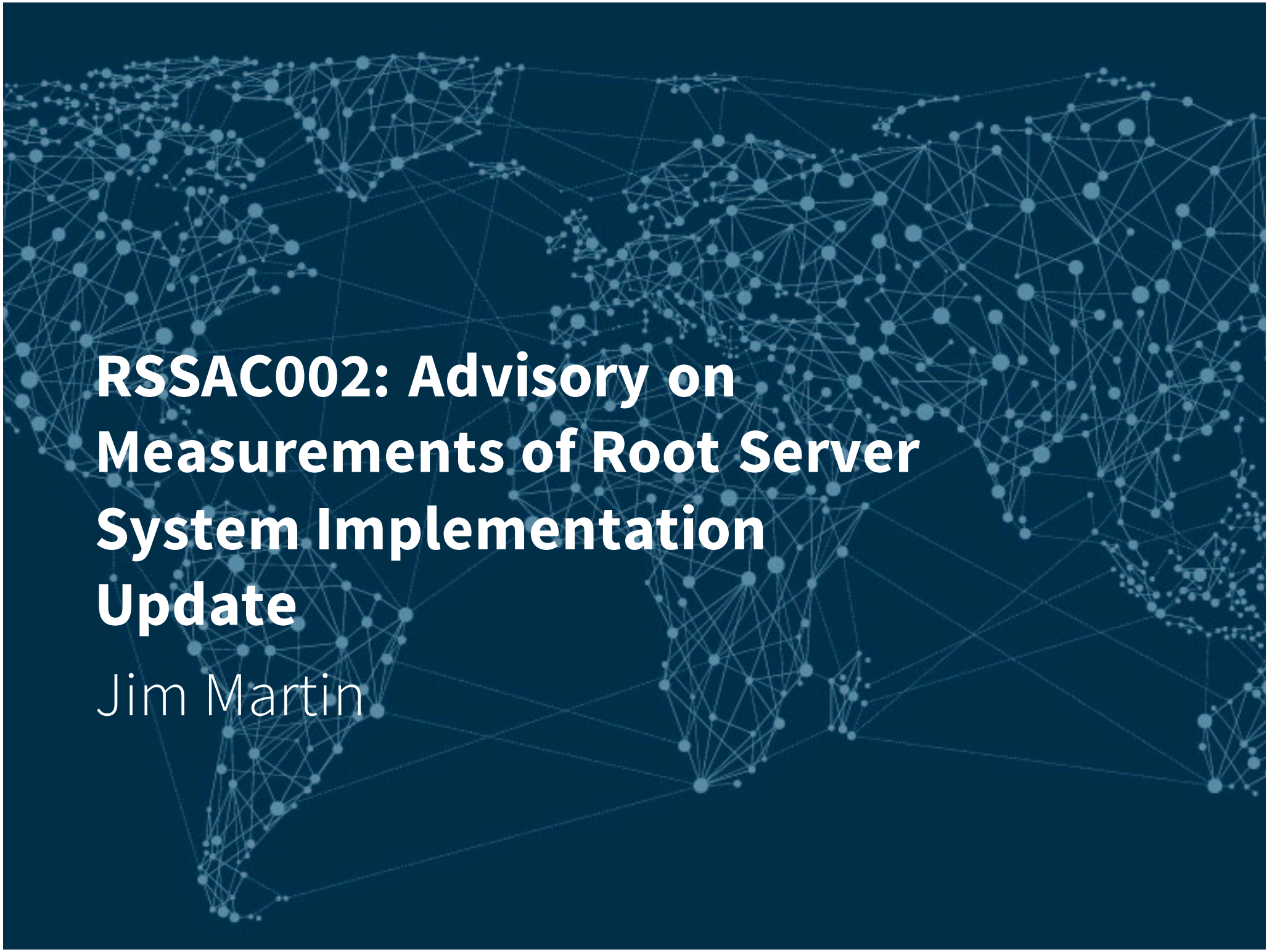
- RSSAC
  - Appointed representatives from the 12 root server operators
  - Alternates to these
  - Liaisons
- RSSAC Caucus
  - Body of volunteer subject matter experts
  - Appointed by RSSAC

Caucus

- Purpose
  - Pool of experts who produce documents
    - Expertise, critical mass, broad spectrum
  - Transparency of who does the work
    - Who, what expertise, which other hats
  - Framework for getting work done
    - Results, leaders, deadlines
- Members
  - 67 Technical Experts (42% not from Root Server Operators)
  - Public statements of interest
  - Public credit for individual work
  - To apply, email rssac-membership@icann.org.

Recent RSSAC publications

- Reports
  - RSSAC001: Service Expectations of Root Servers [20 November 2014] (approved by RSSAC, held in publication in tandem with a complementary RFC RFC2870bis by IAB)
  - RSSAC002: Advisory on Measurements of the Root Server System [20 November 2014]
  - RSSAC003: Report on Root Zone TTLs [16 September 2015]
- Statements
  - RSSAC Comment on ICG Proposal [4 September 2015]
  - RSSAC Comment on CCWG Work Stream 1 Report [5 June 2015]
  - IAB Liaison to RSSAC [12 February 2015]
  - RSSAC statement on the Increase of the DNSSEC Signature Validity Period of the DNS Root Zone [17 December 2014]



RSSAC002: Advisory on Measurements of Root Server System Implementation Update

Jim Martin

RSSAC002: Advisory on Measurements of Root Server System

- Identifies and recommends an initial set of measurement parameters for establishing a baseline and trends for the root server system
- Implementation of the advisory will form an early warning system that will assist in detecting and mitigating any effects associated with growing size of the DNS root zone

RSSAC002 Proposed Measurements

- Latency in publishing available data
- The size of the overall root zone
- The number of queries
- The query and response size distribution
- The RCODE distribution
- The number of sources seen

RSSAC002 Recommendations

1. Each root server operator implement the measurements in the advisory.

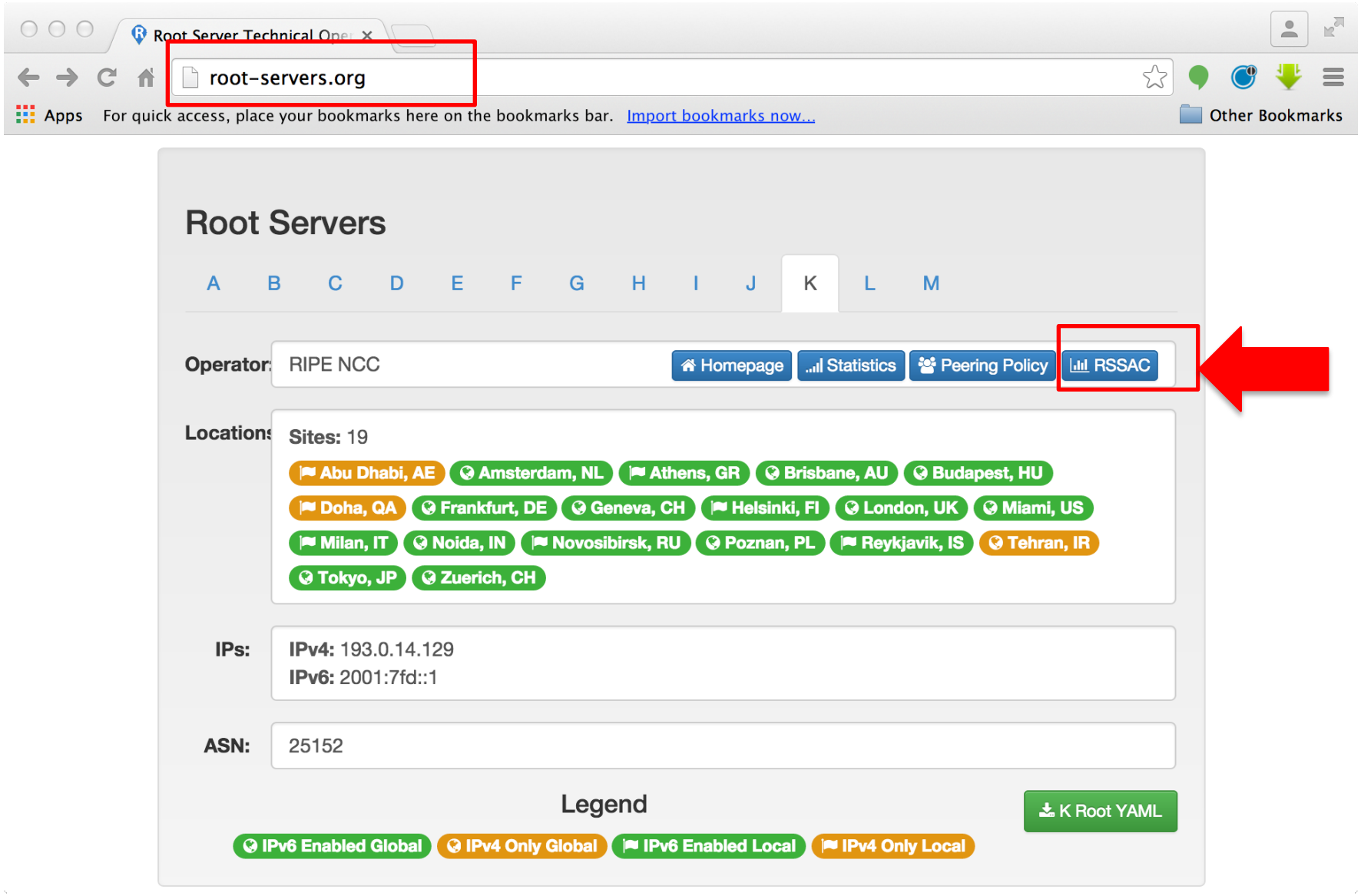
2. RSSAC should monitor the progress of the implementation of these measurements.

3. Measurements outlined in the advisory should be revisited in two years to accommodate changes in DNS technologies.

RSSAC002 Implementation Status (As of ICANN 54)

Root Letter	Current Status	Expected Completion
A	Publishing	Done
B	Collecting	Q4 2015
C	Collecting	Done
D	Collecting	Q4 2015
E	Collecting	Q4 2015
F	Collecting	Q4 2015
G	Collecting	Q4 2015
H	Publishing	Done
I	Collecting	Q4 2015
J	Publishing	Done
K	Publishing	Done
L	Publishing	Done
M	Collecting	Q4 2015

Where to find the statistics (root-servers.org)



DNS-OARC is also collecting and consolidating the RSSAC002 data (https://www.dns-oarc.net/node/348)

RSSAC002 Metrics

Metrics are stored in per-day, per metric YAML formatted files.

Available metrics

'load-time'
'zone-size'
'rcode-volume'
'traffic-sizes'
'traffic-volume'
'unique-sources'

```
service: j.root-servers.net
start-period: '2013-08-26T00:00:00Z'
end-period: '2013-08-26T23:59:59Z'
metric: traffic-volume
  dns-udp-queries-received-ipv4: 31272
  dns-udp-queries-received-ipv6: 11211
  dns-tcp-queries-received-ipv4: 12
  dns-tcp-queries-received-ipv6: 2
  dns-udp-responses-sent-ipv4: 131079
  dns-udp-responses-sent-ipv6: 16833
  dns-tcp-responses-sent-ipv4: 94
  dns-tcp-responses-sent-ipv6: 7
```

Updating RSSAC002

RSSAC has reopened the document for minor revision based on implementation experience

1. YAML Indentation
2. TCP Response Size
3. Zone Size Metric

RSSAC 003: RSSAC Report on Root Zone TTLs

Duane Wessels

Overview

Time to Live Values: A parameter that specifies the amount of time data may be stored in a cache as part of a DNS query response.

RSSAC consider the extent to which:

- the current root zone TTLs are appropriate for today's Internet environment
- the impacts that TTL changes would have on the wider DNS
- the 2014 change to increase ZSK signature validity to 10 days sufficiently addresses the issues of interactions between the SOA refresh timer and serving stale data

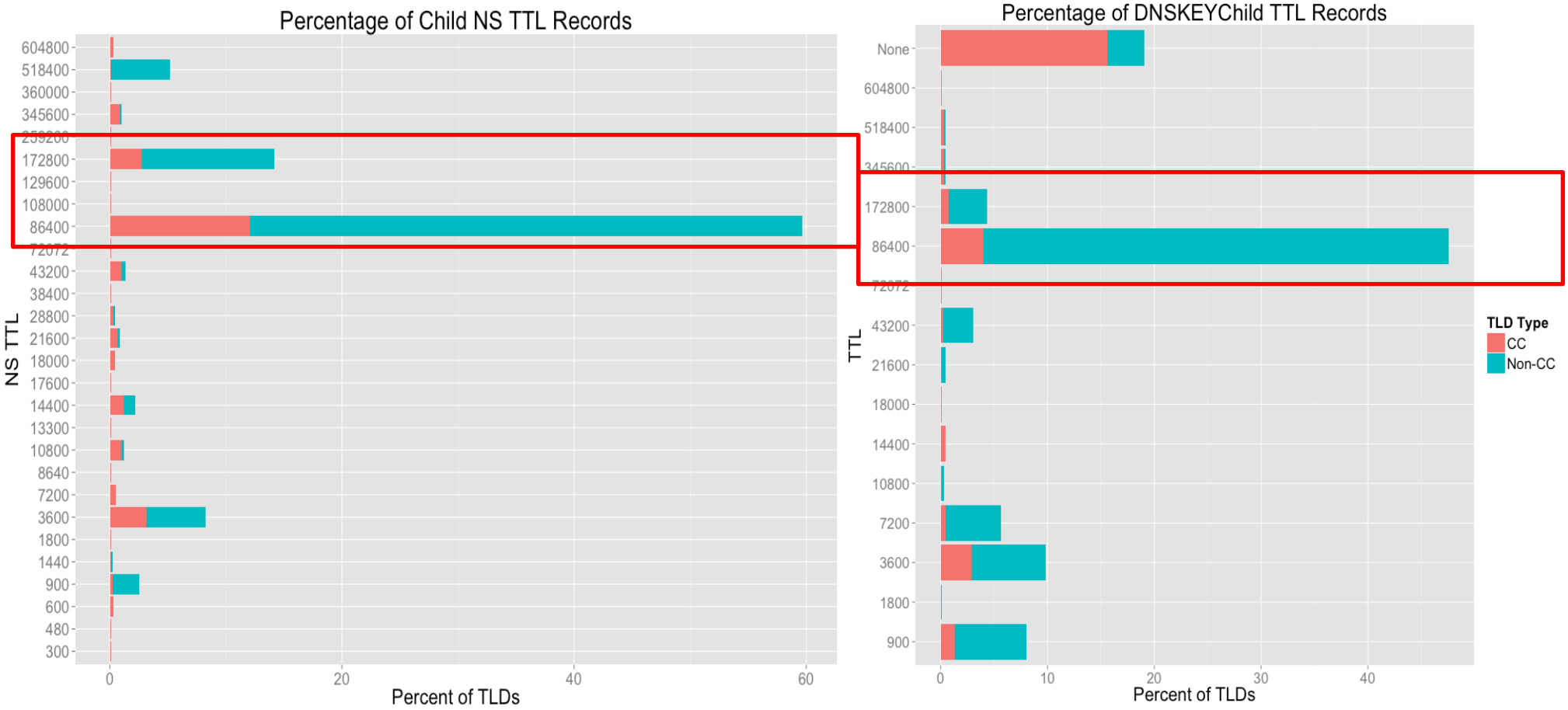
Current Root Zone TTLs

Resource Record	Type	TTL
Root SOA	authoritative	1 day
Root DNSKEY*	**authoritative**	**2 days**
Root NS	authoritative	6 days
Root Glue (A, AAAA)	glue	6 days
Root NSEC*	**authoritative**	**1 day**
TLD NS	delegation	2 days
TLD Glue (A, AAAA)	glue	2 days
TLD DS*	**authoritative**	**1 day**

Since 1991, TTLs in the root zone were 6 days for authoritative data, 2 days for delegations, and 2 days for glue.

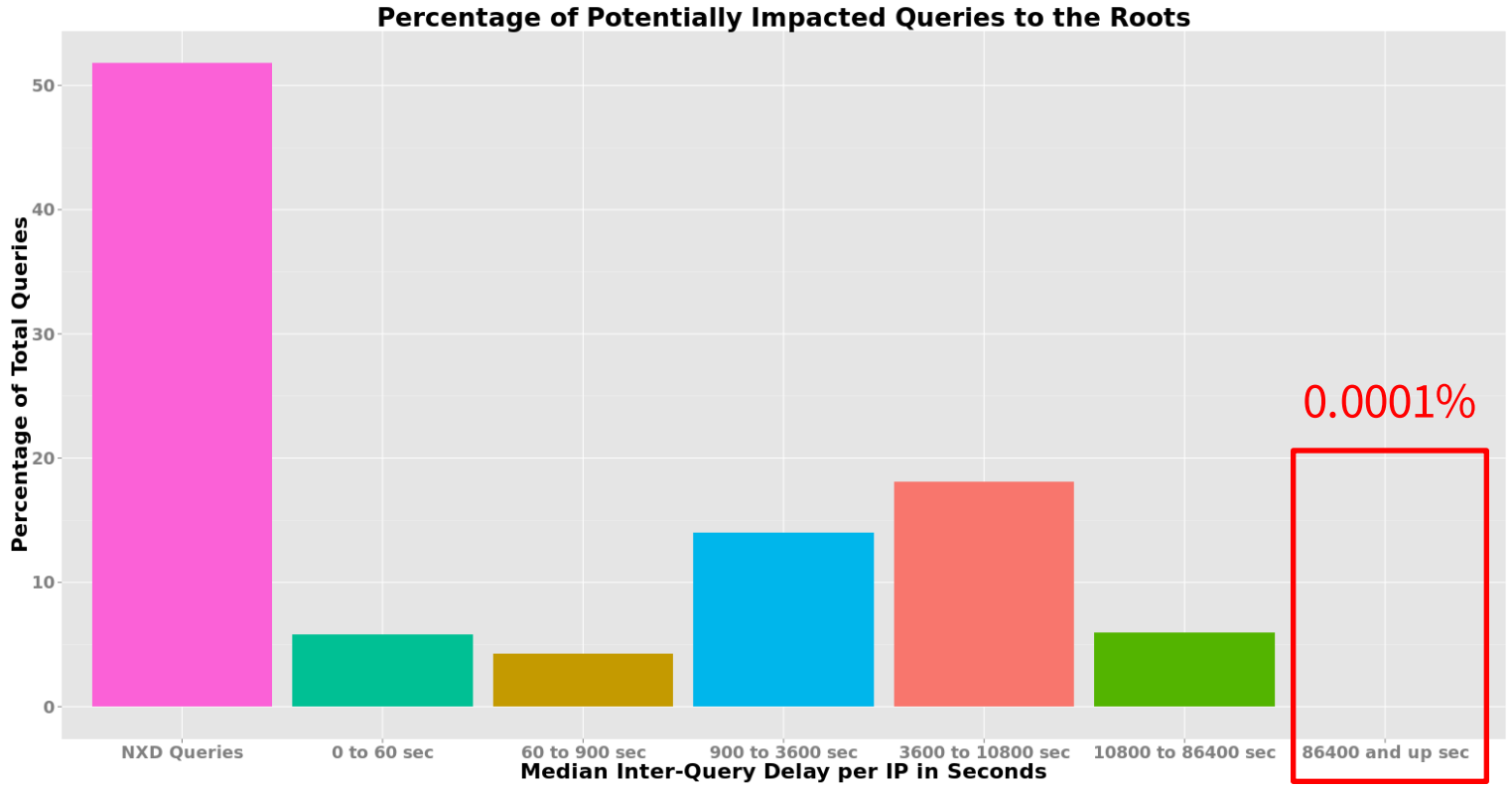
Findings

1. The root zone delegation TTLs are still appropriate for today's environment



Findings

2. Root zone TTLs values could be reduced to 1 day without any significant impact on the amount of traffic to root servers.



Findings

3. Increasing root zone TTLs should only be done with careful consideration of DNSSEC-related implications.

   - Some theoretical DNSSEC-related problems have been identified
     - In practice, no real-world problems have been observed
     - Operational practices of root server operators make actual problems very unlikely

Findings

4. Root zone TTLs appear to not matter to most clients

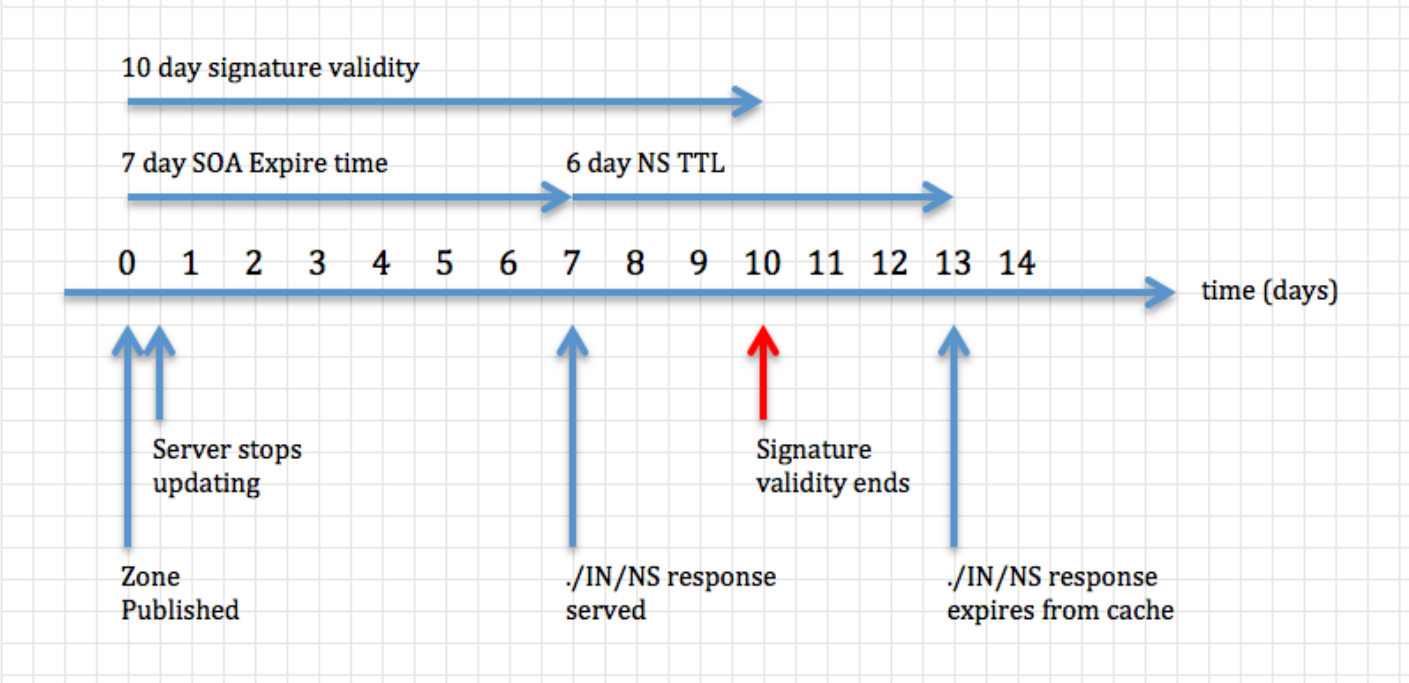
   - Time intervals between queries under the same TLD are highly skewed toward small values.
   - Most root server clients appear to send same-TLD queries at rates far higher than would be predicted by strict caching based on root zone TTLs.
   - Of the top 20 TLDs, more than 50% of clients send same-TLD queries more than once per hour.

Findings

5. Few reasons exist today to consider changes to root zone TTLs
   - As a general principle of *conservatism*, changes to the root zone are to be made slowly, and deliberately. Delegations (TLDs) are added well in advance of queries from end users. Root name servers themselves are renumbered infrequently and with great care and planning.

Findings

6. Two theoretical problems related to the interaction between the SOA Expire value and the root zone's signature periods exist, and the report suggests several approaches for mitigation



Recommendations

- The Root Zone Management partners to increase the signature validity periods for signatures generated by both the KSK and the ZSK
  - This issue is *not urgent* and should be addressed within a reasonable amount of time following an update of the necessary procedures documents and software testing.

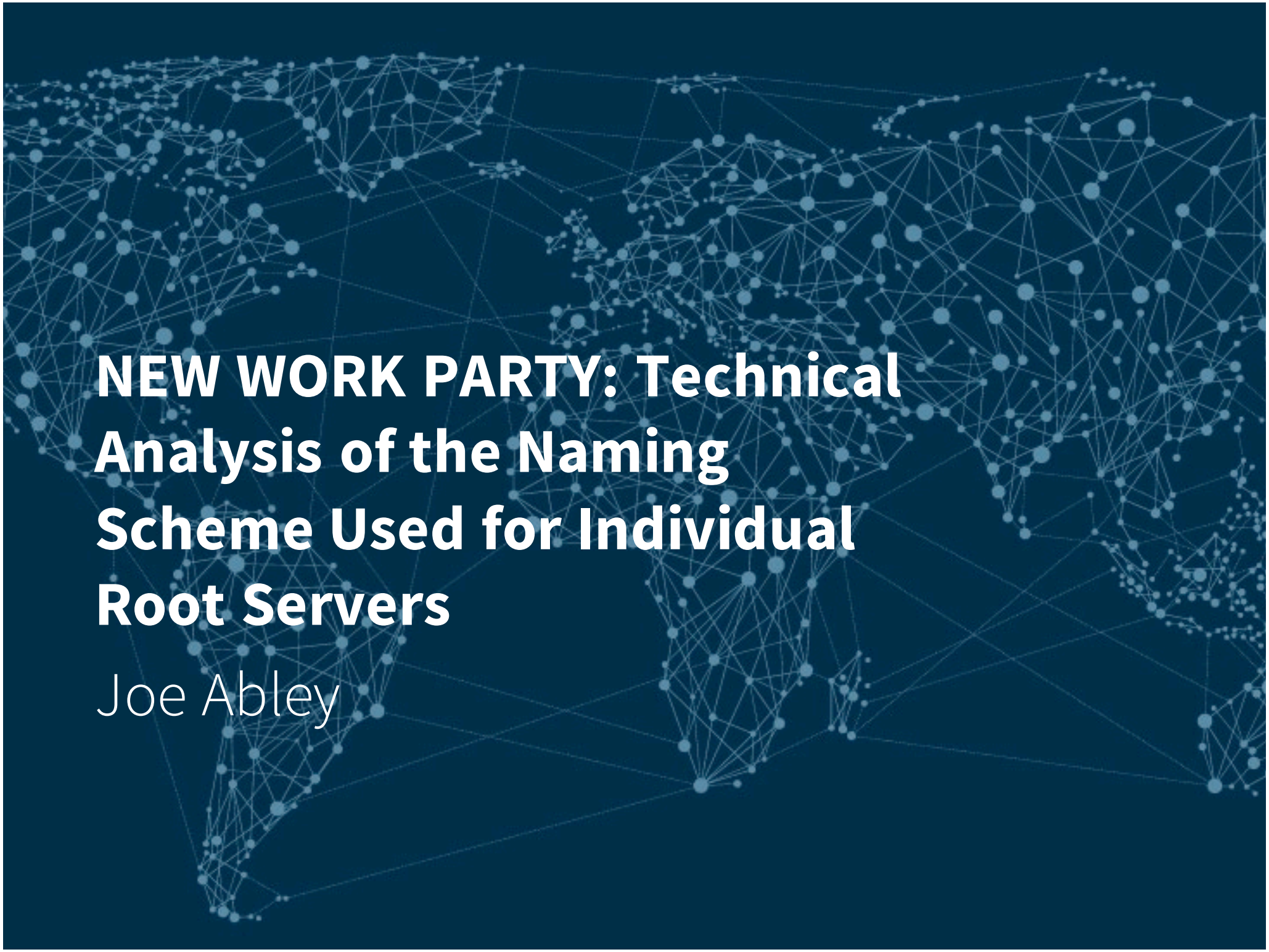
- No changes to Root Zone TTLs should be made at this time

RSSAC Comment on the Proposal to Transition the Stewardship of IANA Functions from the U.S. NTIA to the Global Multistakeholder Community

Suzanne Woolf

Overview

- The RSSAC has reviewed the ICG plan and observed the ICANN community process that has led to it
- RSSAC supports the Proposal
- From its operational perspective, RSSAC believes that plan is workable and that it will be a positive step to replace US government oversight of the IANA functions with community oversight



NEW WORK PARTY: Technical Analysis of the Naming Scheme Used for Individual Root Servers

Joe Abley

NEW Caucus Work: Root Servers Naming Scheme Work Party

On 9 July 2015, the RSSAC chartered a work party to produce **"History and Technical Analysis of the Naming Scheme Used for Individual Root Servers"** with the following scope to:

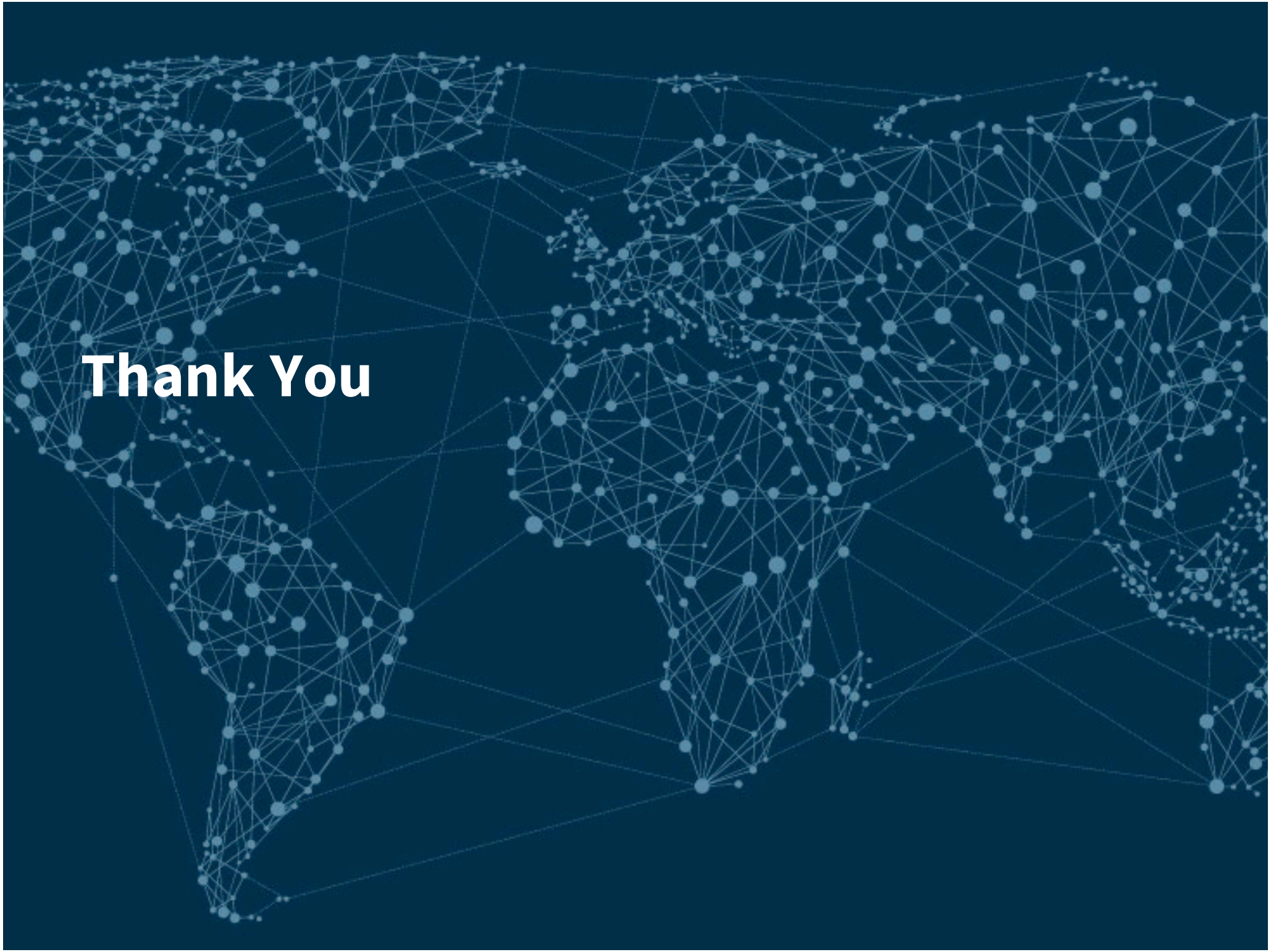
1. Document the technical history of the names assigned to individual root servers;
2. Consider changes to the current naming scheme, in particular whether the names assigned to individual root servers should be moved into the root zone from the root-servers.net zone;
3. Consider the impact on the priming response of including DNSSEC signatures over root server address records;
4. Perform a risk analysis; and
5. Make a recommendation to root server operators, root zone management partners, and ICANN on whether changes should be made, and what those changes should be.

Community Interaction

Lars Johan Liman

Questions to the Community

- Are you able to find the available information about the RSSAC and its work?
- How can we improve on it?
- Are you aware of the various ways to interact with the RSSAC?
- Q & A


Thank You