



# RSSAC Activities Update

Brad Verd and Tripti Sinha

RSSAC Co-Chairs | ICANN57 | November 2016

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# **RSSAC Overview**

Brad Verd

RSSAC Co-Chair

# What is RSSAC?

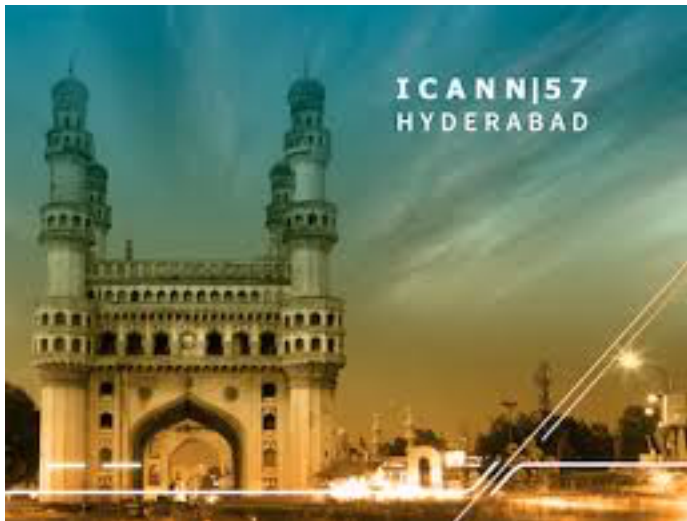
- The role of the Root Server System Advisory Committee (“RSSAC”) is to advise the ICANN community and Board on matters relating to the operation, administration, security, and integrity of the Internet’s Root Server System.
- (This is a very narrow scope!)

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

# Caucus

- Members
  - 77 Technical Experts
  - Public statements of interest
  - Public credit for individual work
- Purpose
  - Pool of experts
    - 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
- To apply, email [rssac-membership@icann.org](mailto:rssac-membership@icann.org)

## Caucus Meeting at ICANN57



Sunday, 6 November  
15:15 – 16:45  
Hall 1

# RSSAC Administration Update

- Numbering of RSSAC Publications
  - Every RSSAC publication now has a number
  - View publications by date or document type
    - advisories, comments, procedures, reports
  - New URL at:  
<https://www.icann.org/groups/rssac/documents>



## RSSAC Publications | By Date

The RSSAC may publish advisories, reports, and statements within its mandate of advising the ICANN community and Board as well as documents related to its own administration and work.

**By Date | By Document Type and Date | By Number and Version**

Number	Name	Date
<a href="#">RSSAC022</a>	Response to the GNSO Policy Development Process (PDP) Working Group on the new Generic Top Level Domains (gTLDs) Subsequent Procedures	06 October 2016
<a href="#">RSSAC021</a>	RSSAC Statement Concerning The Impact of the Unavailability of a Single Root Server	08 September 2016
<a href="#">RSSAC000v2</a>	RSSAC Operational Procedures	30 June 2016
<a href="#">RSSAC020</a>	RSSAC Statement on Client Side Reliability of Root DNS Data	28 June 2016
<a href="#">RSSAC019</a>	RSSAC Workshop 2 Report	26 June 2016
<a href="#">RSSAC002v3</a>	Advisory on Measurements of the Root Server System	06 June 2016
<a href="#">RSSAC018</a>	RSSAC Statement on the Transmission of the ICG and CCWG-Accountability Proposals	10 March 2016

# RSSAC Administration Update

- Post Transition RSSAC Composition
  - Root Zone Administrator liaison has been retired
  - IANA Functions Operator liaison will now come from PTI, as yet to be identified
  - Two outward liaisons created
    - Customer Standing Committee: Lars Liman
    - Root Zone Evolution Review Committee: Brad Verd
- Kaveh Ranjbar has been elected as the RSSAC liaison to ICANN Board



## **Recent RSSAC Publications**

Lars-Johan Liman, Wes Hardaker, Suzanne Woolf, Tripti Sinha, Brad Verd

# RSSAC Publications since ICANN56

- RSSAC020: Statement on Client Side Reliability of Root DNS Data
- RSSAC021: Statement Concerning the Impact of the Unavailability of a Single Root Server
- RSSAC022: Response to GNSO Policy Development Process Working Group on the new gTLD Subsequent Procedures
- RSSAC023: History of Root Server System
- RSSAC024: Key Technical Elements of Potential Root Operators

# RSSAC Statement on Client Reliability of Root Data

Published on 28 June 2016

- Reiterates that the operators of the root servers are committed to serving the IANA global root DNS namespace
- All root servers provide DNS answers containing complete and unmodified DNS data signed with DNSSEC
- The same cryptographically verifiable data is provided worldwide from all instances of these root servers to allow clients to detect tampering and ensure the integrity of the data

# Statement on Unavailability of a Single Root Server

- Published on 8 September 2016
- The loss of a single root server would not cause immediate stability issues for the root server system and the Internet that depends upon it.
  - High redundancy of the root server system guarantees availability and resiliency of the delivery service.
  - Caching (based on advertised TTL values) reduces the query load to root servers and limits the effects of an outage
- Root server system has experienced several real, large scale attacks. None of these attacks resulted in any end-user visible error conditions.

# Response to GNSO PDP on new gTLDs

Published on 6 October 2016

- If future plans for more top level domains are consistent with the past expansion program, the RSSAC does not foresee any technical issues.
- Recommends root zone management partners and root server operators to implement coordination procedures so that root server operators can notify ICANN in the event of stress on the root name service.

# History of Root Server System

In collaboration with root server operators, the RSSAC has produced a report to inform the community on the current root server system, and its history from beginnings to present day. The report:

1. contains a chronological history of the root server system from its origin to its current structure, divided into historical periods.
2. contains a description the current operators, and their histories in operating the root service, provided by each operator organization.



# Key Technical Elements

As an outcome of the RSSAC Workshop 2, held in May 2016, the RSSAC produced “**Key Technical Elements of Potential Root Operators**”

- Lists important technical elements for potential new root operators that would be a critical part of any potential root server operator designation process.
- Uses RSSAC001 and RFC 7720 as starting points, expands on them
- Multiple types of elements; Design, Experience & Networking, Diversity, Documentation, Data & Measurement



# **Reports from RSSAC Workshops 2 and 3**

Tripti Sinha

RSSAC Co-Chair

# RSSAC Workshop 2

11-12 May 2016, in Reston Virginia, USA

- Focused on three themes: Architecture, Evolution and Reinventing RSSAC
- Three statements were further developed at the workshop
  - RSSAC Statement on Client Reliability of Root DNS Data (published on 28 June 2016)
  - RSSAC Statement Concerning the Impact of the Unavailability of a Single Root Server (published on 8 September)
  - Key Technical Elements of Potential Root Operators (published on 4 November 2016)
- RSSAC agreed to be the “front door” to the global DNS root service, and to the root server operators

# RSSAC Workshop 3

11-13 October 2016 at University of Maryland

- Developed a 50,000 foot mindmap consisting of topics ranging from empowerment, finance, designation/removal, audit/accountability, technical elements to root server association
- Other topics include a lexicon, RSSAC and Root Server System Transparency

## Workshop outcomes:

- Created work party to refine lexicon
- Document entities that the root server system empowers, identify mechanisms and gaps in how we interact with those who are empowered
- Determined that a designation/remove function is necessary
- Determined the need for an accountability function
- Reached consensus to revise and strengthen “RSSAC001: Service Expectations of Root Servers”
- Documented current transparency efforts and identified communities to seek further input



# **Updates on Current RSSAC Work**

Brad Verd and Kaveh Ranjbar

# Current Work: Root Server Naming Scheme

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

- Document the technical history of the names assigned to individual root servers;
- 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;
- Consider the impact on the priming response of including DNSSEC signatures over root server address records;
- Perform a risk analysis; and
- 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.

# Current Work: Distribution of Anycast Instances

On 6 October 2016, the RSSAC established a Caucus work party to produce “**Best Practices for the Distribution of Anycast Instances of the Root Name Service**” with the following research questions:

- Given the state of current internet technology, what is the maximum latency a relying party should experience when transacting with the DNS root service as opposed to with a single “root server?”
- Will adding more instances in more topologically diverse locations make the system more resilient to Denial Of Service (DOS) attacks?
- If root operators were to coordinate their deployments of anycast instances, what considerations should be contemplated?
- Are there any regional or global technological risks (or benefits) if only a subset of operators (versus all or the majority of root operators) deploy anycast instances?



A world map where the continents are defined by a complex network of white nodes and connecting lines, set against a dark blue background. The nodes vary in size and are densely packed in some areas, creating a digital or network-like appearance of the globe.

# **Community Interaction**

Wes Hardaker

# Transparency Actions Thus Far

## RSSAC

- Establishment of a Caucus
- Publishing minutes & workshop reports
- Public RSSAC & Caucus Calendar
- RSSAC Public Meetings
- Meetings with other ICANN community groups
- Tutorials
- Liaison relationships
- Our operational procedures: RSSAC-000

## RSOs

- Publishing Minutes
- RSSAC-002 statistics
- Participating in RSSAC
- Public web page
  - [www.root-servers.org](http://www.root-servers.org)
- Individual web pages
- Public letters with IANA
- Collaborative reports on major events
- RSSAC can respond to technical RSS questions

# Transparency Feedback

- Were you aware of these transparency items?
- What is missing from these lists?
- How can we further improve our transparency?

**Questions/Comments?** Email: [ask-rssac@icann.org](mailto:ask-rssac@icann.org)

# Further Information

For more information about the **RSSAC**, see the RSSAC webpage:  
<https://rssac.icann.org/>

For more information about **RSSAC Publications**, see the RSSAC Publications webpage:  
<https://www.icann.org/groups/rssac/documents>

For more information about the **RSSAC Caucus**, see the RSSAC Caucus webpage:  
<https://www.icann.org/groups/rssac-caucus>

**To join the RSSAC Caucus**, please email:  
[rssac-membership@icann.org](mailto:rssac-membership@icann.org)

A world map where the continents are defined by a complex network of white dots and thin white lines. The dots vary in size, and the lines connect them to form a web-like structure that outlines the major landmasses. The background is a solid, dark blue color.

**Thank You**