

RSSAC028 Implementation study

Looking into resolver behaviour
for different naming schemes for the root servers

17 February 2023 @ DNS-OARC 40

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Why this lightning talk

- November 2021, ICANN posted a Request for Proposal: RSSAC028 Implementation
<https://www.icann.org/en/announcements/details/request-for-proposal-rssac028-implementation-1-11-2021-en>
– a follow up study to the RSSAC028 study –
- consortium of members from NLnet Labs and SIDN labs
- Show that we're doing this, and what we're doing

What is RSSAC028:

Technical Analysis of the Naming Scheme Used For Individual Root Servers

- a report to the Internet Corporation for Assigned Names and Numbers (ICANN) Board of Directors and the Internet community more broadly, from the ICANN Root Server System Advisory Committee (RSSAC)
 - with support from the RSSAC Caucus –

<https://www.icann.org/en/system/files/files/rssac-028-03aug17-en.pdf>

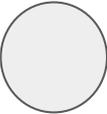
RSSAC028 - Why?

- ongoing threat assessment and risk analysis of the root server system
- recommending any necessary audit activity to assess the current status of root servers and the root zone

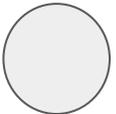
RSSAC028 - risk analysis of six naming schemes

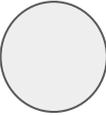
- Where the names reside in the DNS hierarchy
- Who administers the zone in which the names reside
- How different naming schemes affect DNSSEC validation of priming responses
- The size of priming responses

What naming schemes?

5.1. Current : [a-m] → root-servers → net → 

5.2. Current + DNSSEC

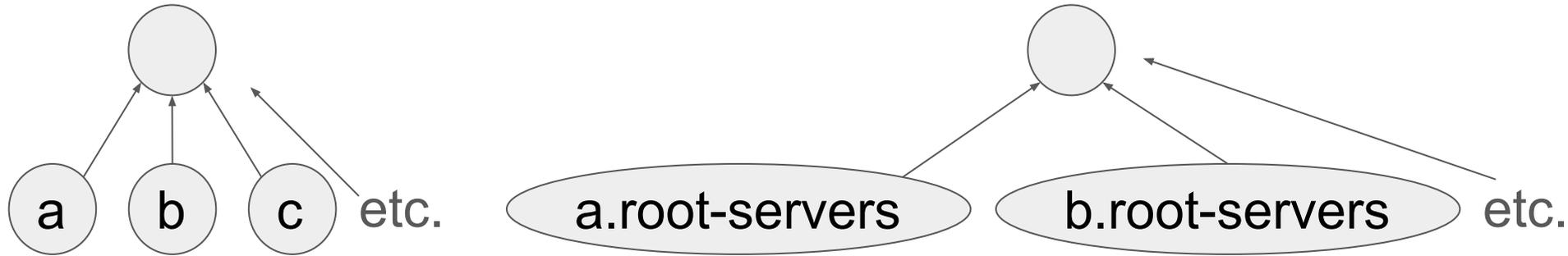
5.3. In-zone NS Names : [a-m] → 

or [a-m].root-servers → 

What naming schemes?



5.5. Names Delegated to Each Operator



5.6. Single Shared Label for All Operators



7. Recommendations

- 7.1. No changes should be made until more studies have been conducted.
- 7.2. Conduct studies to understand the behavior of resolvers
 - acceptable response size
 - reduced set of glue records
 - validating priming queries
 - the impact of search lists

RSSAC028 Implementation Request for Proposal

3. Scope of Work

3.1. Survey of RSO Authoritative Server Software

3.2. Software Testbed

Reuse and extend <https://github.com/icann/resolver-testbed>

3.3. Perform main analysis of RSSAC028 7.2

Our consortium



Moritz



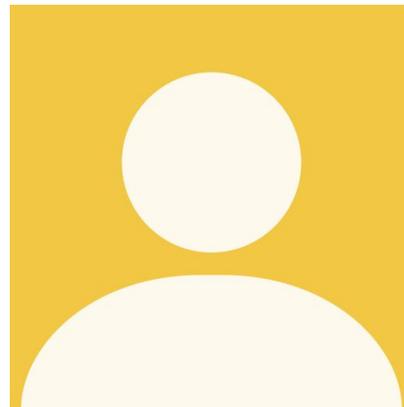
Jelte



Marco



Willem



Yorgos



Benno



Current status

3.1 ✓ Survey of RSO Authoritative Server Software

3.2 ✓ Reuse and extend the Software Testbed

a. Automatic deployment with Vagrant & Ansible

b. Public repo: <https://github.com/NLnetLabs/resolver-testbed>

c. Private repo with root-servers simulation at SIDN's gitlab

3.3  Perform main analysis of RSSAC028 7.2

a. In progress...