Statement of Work and Scope for Best Practices for the
Distribution of Anycast Instances of the Root Name Service

10 October 2016

Work Assignment

The RSSAC wishes to investigate best practices to optimize the distribution of root server instances in order to maximize root service resiliency, and to reduce the Round-Trip Time (RTT) between recursive servers and root servers. It requests Kaveh Ranjbar to lead a Caucus work party to produce a report, with adherence to RSSAC Caucus procedures.

Scope

The work party will be asked to consider a number of issues related to the distribution of anycast instances of the root name service, including:

- 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?"[1]
- 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?

Deliverable
The *final draft* of the "RSSACXXX: Best Practices for the Distribution of Anycast Instances of the Root Name Service", numbered Draft-RSSAC-XXX.

Date of Delivery
Final draft submitted to the RSSAC no later than **July 1st, 2017**. Submission prior to the deadline is welcome.

Guidelines
The RSSAC requests Kaveh Ranjbar to report progress on this work to RSSAC as appropriate. In the event that the deadline will not be realized, Kaveh Ranjbar should inform RSSAC immediately and provide details of the work that cannot be completed by the deadline.

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[1] This was the question raised by RSSAC in its second workshop. See Workshop report at: https://www.icann.org/en/system/files/files/rssac-workshop-22jun16-en.pdf

RSSAC support staff will assist the working party deliberation of the work, including setting up a mailing list for the work party, arranging and supporting regular teleconference calls, taking notes of meetings, drafting background materials of the work, and serving as editors for documents if needed.

Background
It is crucial that the Root Server System be as resilient as possible in the face of increasing Internet traffic volumes and a rise in the number and scale of Denial Of Service attacks. Decreasing the round trip time (RTT) between recursive DNS servers and DNS root servers is also important for providing a good experience for Internet users.

Operators of root servers wanting to improve their service must identify areas (whether geographical or topological) where exposure to excessively high traffic volumes is a risk and/or where RTT is too high.[2] They also need to assess whether deploying a new anycast instance, changing peering arrangements, or changing routing policy will have the desired effect. This work party will investigate best practices for making these assessments, while also considering whether more cooperation between the Root Server Operators might achieve a more resilient system than operators optimizing their networks independently.

References

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[2] It is worth noting that solutions that involve locally mirroring a root (RFC7706) need to be considered or referenced by the work party.

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