

**Statement on Recommendations  
for an Early Warning System for Root Zone Scaling  
25 November 2020**

On October 5 2020, the ICANN Organization published a public comment proceeding on Recommendations for Early Warning for Root Zone Scaling.<sup>1</sup> This public comment proceeding asks for feedback on OCTO-15: Recommendations for Early Warning for Root Zone Scaling.<sup>2</sup> The RSSAC welcomes this public comment proceeding, and considers OCTO-15 to be well written. However, the RSSAC has several comments, as discussed below.

Throughout the document, we wish to change references of Root Server Operators (RSOs) to the Root Server System (RSS), as we believe the concerns should be focused on the scalability of the system as a whole. For example, in paragraph 3 of the introduction, we recommend changing the last sentence to state that the “speed and additions of changes to the root zone may have adverse effects on the RSS.” Similarly, the first bullet in the first paragraph of the introduction might read “A risk that zone growth may outpace the capabilities of the RSS.”

In section 4.1, we agree with the assessment that there are no known, 3rd-party measurements that specifically detect scaling issues. The measurements outlined in RSSAC002 describe overall query rate and latency in publishing data by root server instances.<sup>3</sup> While these are factors in root zone scaling, they do not result in a direct indicator or prediction of scaling problems (maximum query capacity of the RSS and resource limits affecting zone publishing rates cannot be shared publicly due to security considerations). As one effort to detect overloaded root zone infrastructure, RSSAC047 describes measurements that indicate the overall health of the RSS as well as the minimum performance of individual RSOs.<sup>4</sup> Although these may eventually be useful in detecting problems after they're present, they won't serve as an early warning system, and as of today there is no system actively reporting them either. The RSSAC Caucus is in the early stages of brainstorming what a failure of the RSS might look like and investigating ways to detect such a failure. If the exploration is successful, RSSAC could issue advice in this area. Such advice would help establish an early warning framework.

Scaling issues with respect to the rate of change are likely implementation-specific and difficult to predict within each RSO's infrastructure. Exposing measurements that disclose too much information about an RSO's implementation is a security risk. We would recommend, in short, that no significant change be made to the root zone that cannot be backed out on short notice,

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<sup>1</sup> See Recommendations for Early Warning for Root Zone Scaling,  
<https://www.icann.org/public-comments/recommendations-early-warning-root-scaling-2020-10-05-en>

<sup>2</sup> See OCTO-15: Recommendations for Early Warning for Root Zone Scaling,  
<https://www.icann.org/en/system/files/files/octo-015-01oct20-en.pdf>

<sup>3</sup> See RSSAC002v4: RSSAC Advisory on Measurements of the Root Server System (version 4),  
<https://www.icann.org/en/system/files/files/rssac-002-measurements-root-12mar20-en.pdf>

<sup>4</sup> See RSSAC047: RSSAC Advisory on Metrics for the DNS Root Servers and the Root Server System,  
<https://www.icann.org/en/system/files/files/rssac-047-12mar20-en.pdf>

and that changes be made at a rational rate with the added ability to suspend the rollout if needed, as RSSAC has previously advised in RSSAC022.<sup>5</sup>

Finally, the RSSAC reiterated its advice in RSSAC031,<sup>6</sup> specifically:

- The root zone is stable in part because only a very restricted set of DNS record types are allowed and changes to that set are carefully considered. In the past, decisions to add IPv6 address records (AAAA) and DNSSEC types (e.g., DS, NSEC) were deliberated at length. This conservatism is appropriate, given that trouble free access to the root zone is one of the very few things that is critical for all Internet users, and should be honored in future new gTLD rounds.
- While there are many DNS zones larger than the root zone, the root zone is uniquely a shared resource upon which all Internet users rely. For this reason, the RSSAC believes it will continue to be important to limit the rate of addition of new gTLDs, and preserve the current restrictions on update rates for the root zone, unless the RSSAC has a chance to review specific proposed changes to these restrictions in advance.

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<sup>5</sup> See RSSAC22: Response to the GNSO Policy Development Process (PDP) Working Group on the new Generic Top Level Domains (gTLDs) Subsequent Procedures, <https://www.icann.org/en/system/files/files/rssac-022-response-newgtld-06oct16-en.pdf>

<sup>6</sup> See RSSAC031: Response to the GNSO Policy Development Process (PDP) Working Group on the new Generic Top Level Domains (gTLDs) Subsequent Procedures, <https://www.icann.org/en/system/files/files/rssac-031-02feb18-en.pdf>