

RSSAC Statement on Identification of Root Server Operators 13 May 2020

As described in RSSAC023 (History of the Root Server System),¹ the organizations operating root servers and the way in which they are identified have evolved over time. As capacity demands grew, new operators and new root servers were added. In 1995, to accommodate further growth, a consistent nomenclature was adopted, which remains in use today. For example, Verisign currently operates a.root-servers.net, which has the IPv4 address 198.41.0.4 and IPv6 address 2001:503:ba3e::2:30.

An outcome of the 1995-era growth is that it became common to refer to root server operators (RSOs) with “letters” (i.e., the leftmost label in the host name) and more commonly as abbreviated identifiers (e.g., C-root, F-root). However, the use of letters as metonyms for operators over the years has led to misconceptions within the global community in how root servers are architected, and contributed to a lack of clarity around the organizations responsible for providing the service.

One such misconception is that increasing the number of root server identifiers (RSIs) is the best way to scale the root server system (RSS). While that was true many years ago, the reality today is that the use of anycast technology has significantly changed service architectures, and the growth of the RSS is no longer correlated with having more RSIs.

Another misconception, commonly held by well-meaning organizations in which anycast instances are hosted, is that it is important to “collect” (i.e., host) a “letter” from as many RSOs as possible. In general, the RSOs prefer to spread instances around geographically and topologically, rather than place multiple instances from different RSIs in the same location.

Thirdly, the RSS and the ways that RSIs appear in the DNS will continue to evolve. In 2017, the RSSAC Caucus studied the naming scheme for the root server labels in the root zone and considered the consequence of making changes.² The investigations were inconclusive. However, maintaining a hold on the current labels presumes to keep the status quo in the face of future technical review and recommendations. Future changes may also reduce the number of identifiers without impacting the number of anycast instances deployed.

To prevent any misunderstanding that a fixed relationship exists between RSIs and RSOs:

The RSSAC advises that letters (e.g., A, B) and abbreviated identifiers (e.g., A-root, B-root) no longer be used to identify operators because they no longer have the same relevance in growing RSS capacity, architecture decisions, or ensuring the appropriate focus and attribution to the operators.

¹ See RSSAC023: History of the Root Server System, <https://www.icann.org/en/system/files/files/rssac-023-04nov16-en.pdf>

² See RSSAC028: Technical Analysis of the Naming Scheme Used For Individual Root Servers, <https://www.icann.org/en/system/files/files/rssac-028-03aug17-en.pdf>

The best way to identify an RSO is to use the organization's name. For technical discussions, the full label (e.g., a.root-servers.net), and if necessary the associated IPv4 and IPv6 addresses, can be used to maintain clarity.

The RSSAC recommends the above changes be made to presentations and websites maintained or produced by individual root server operators, root-servers.org, the RSSAC and its Caucus, and the community.

IANA maintains an up-to-date list of operators, the identifiers they operate and the associated IP addresses.³ For historical information on root server operators, please refer to the RSSAC's History of the Root Server System publication.⁴

³ See Root Servers, <https://www.iana.org/domains/root/servers>

⁴ See RSSAC023: History of the Root Server System, <https://www.icann.org/en/system/files/files/rssac-023-04nov16-en.pdf>