Statement on ICANN's Root Name Service Strategy and Implementation
16 December 2020

On October 27, 2020, the ICANN Organization published a public comment proceeding on Recommendations for ICANN's Root Name Service Strategy and Implementation.[1] This public comment proceeding asks for feedback on OCTO-016: ICANN's Root Name Service Strategy and Implementation.[2]

The RSSAC welcomes this public comment proceeding and recognises ICANN's operational remit, scope and independence over IMRS operation. Root Server Operator independence is one of the key features of the Root Server System and RSSAC has stated the importance of this feature as one of key values and strength points of the whole system. Keeping that in mind, there are areas in the publication that RSSAC finds refer to a scope larger than just IMRS operations. In that light, the RSSAC would like to comment on the following three specific topics:

1. A conflation of the ICANN organization's roles of both serving as a Root Server Operator (RSO), and as the body responsible for facilitating coordination of the RSS.
2. Repeated statements made by the ICANN organization implying the poor performance of the Root Server System (RSS).
3. Hyperlocal

Conflation of Roles

ICANN conflates its roles and scope of influence in OCTO-016 between serving as the operator of the IMRS and acting as the body that, "Facilitates the coordination of the operation and evolution of the DNS root name server system."[3]

This conflation of roles can be seen as early as the title. Beginning with the title it is unclear whether or not the strategy covers one role, the other, or both. The executive summary begins with, "describes [..] plans for the ICANN Managed Root Server (IMRS)", and then the second bullet reads "Protecting [..] the root server system." Most of the document makes references to IMRS, but there are both large and small references to the RSS throughout, such as citing ICANN bylaws in footnote 2. RSSAC requests that all analysis and references to the RSS as a whole be removed as this document's scope seems to be solely about the IMRS and not about the RSS. Any statements concerning risks to the RSS's ability to handle attacks should be backed by references to data proving those assertions.

The document seems to alternate between both of ICANN's roles throughout. As an RSO, ICANN plays a key role in the success of the RSS as a service. ICANN's role of facilitating coordination of the RSS is equally as important. RSSAC believes OCTO-016 should ideally only

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[1] See Recommendations for ICANN's Root Name Service Strategy and Implementation, https://www.icann.org/public-comments/root-name-service-implementation-2020-10-27-en

[2] See OCTO-016: ICANN's Root Name Service Strategy and Implementation, https://www.icann.org/en/system/files/files/octo-016-26oct20-en.pdf

[3] See ICANN Bylaws, Section 1.1 (ii), https://www.icann.org/resources/pages/governance/bylaws-en

be referencing ICANN's role as the operator of the IMRS, and walking a very clear line between it, and ICANN's other role. When ICANN references the RSS, they should describe how their implementation facilitates services and safeguards within the IMRS, thereby increasing the security and stability of the RSS. However, OCTO-016 speaks authoritatively about the RSS and how ICANN's strategy is that of the RSS, when what the RSSAC believes they are trying to speak towards is the strategy of the IMRS.

While subtle, this level of clarity is and has been expected from any RSO, and should be required of one that wears multiple hats with respect to the RSS. RSSAC believes that extra care needs to be taken when describing the IMRS as it relates to the RSS. Primarily to ensure community members outside the daily operations of the RSS do not misinterpret the language used in OCTO-016. The RSSAC notes that in a recent discussion with the Critical Internet Resources (CIR) Forum in Tsinghua China, the RSSAC Chair was asked to respond to a number of statements, one of which was that "ICANN controls all the 13 root server letters." This is a common misperception that RSSAC is frequently asked to address and debunk. It would help if ICANN was clear and correct in its statements as to minimize any misinterpretation.

The RSSAC reaffirms its comments on RSO independence as stated in RSSAC037 and RSSAC042. With those principles in mind, the RSSAC would like to see a clearer delineation of ICANN's two roles and recommends that ICANN refine and update the document to clearly identify in separate sections the two very different roles for which ICANN is responsible.

1. A strategy for their approach and implementation of the IMRS, and
2. In close collaboration with RSSAC, develop a strategy for the RSS.

RSS Performance
The draft strategy document portrays the ability of the RSS to withstand attacks in a negative light and without statements backed by facts. The RSSAC believes it is important when discussing the RSS to not ignore the level of success that has been achieved in growing capacity, techniques, skills, and levels of cooperation in withstanding attacks to date. One could argue the RSS was the first cloud service on the Internet, is probably the longest running service on the Internet, and has never had a complete global outage. It continues to be provided by a self-funded and self-policed group of volunteer RSO's that, as described in RSSAC037, believe that the RSS needs to evolve to support the growing needs of the Internet.

The RSS is changing and will continue to evolve and adapt to meet the needs of the Internet. The adoption of the governance model will greatly aid this process. The characterization of RSS complacency is unwarranted and unsubstantiated given the record of the service that has resulted from the current model.

While the RSS is exposed to some significant risks, those same risks are not unique to the RSS. Attacks continue to increase, and the level of difficulty needed to deploy these attacks to any service on the Internet continues to decrease. OCTO-016 notes that attackers' costs decrease over time, but neglects the fact that operators also benefit significantly from reduced bandwidth costs and increased processing power over time.

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Highlighting those risks is important in any strategy document, but care should be taken so that community members have a complete and accurate picture of the ecosystem and how prepared it is for these potential risks.

In section 2.2, OCTO-016 makes a reference to "increas[ing] the availability of the service." We assume this refers to availability in the same sense as described in RSSAC047, in which the RSSAC has set an availability threshold for the RSS of 99.999%. If this assumption is correct, it would be useful to know what increased level of availability ICANN Org thinks is appropriate.

Hyperlocal
Anycast as a technology effective at mitigating DDoS attacks has been a successfully proven technique of the RSOs for years. It continues to be an effective way to distribute the service and localize any attacks that may occur, thereby limiting the impact of any potential attack. The implication that the existing RSO's will not be able to "keep pace" is not unique to the RSS, and unfairly characterizes each RSO as complacent. Most RSOs have demonstrated a consistent record of improvement and expansion to anticipate demand, including forecasted attack levels.

Hyperlocal, as discussed in section 4.1.2, has nothing to do with IMRS and like most, if not all, of ICANN's documents concerning hyperlocal the section says nothing about any disadvantages or new challenges introduced by a hyperlocal root. Here are two to consider:

- OCTO-016 does not acknowledge loss of visibility in statistics due to hyperlocal deployment (e.g., DITL and the proposed enhanced monitoring in OCTO-016).
- OCTO-016 does not acknowledge the fact that the Internet has a poor track record of keeping massively distributed root zone information up to date. For example, many resolvers continue to use old IP addresses no longer present in up-to-date root hints files, and an inability of resolvers to learn a new DNSSEC trust anchor delayed the first DNSSEC KSK rollover.

Hyperlocal has its advantages, but as with any technology it is not risk free. The RSSAC believes the essential question for ICANN to address is:

Should ICANN promote a highly decentralized and unmanaged root resolution ecosystem with little to no visibility and zero accountability, or continue to evolve the existing decentralized yet managed root resolution system, with known and trusted operators, via a deliberative process of technical evolution that addresses changes?

RSSAC would like to have a conversation with ICANN Org about tools and safeguards that should be included with a decentralized and unmanaged root resolution system at the scale in which it is being proposed.

Conclusion

OCTO-016 appears at times to propose plans for filling the functional void by the lack of a current governance structure now being worked on by the Governance Working Group (GWG). Many of the proposed plans duplicate some of the expectations of the functional bodies already proposed in RSSAC037. As such, it may help to insert some context in this regard. As an example, which of these proposed efforts will no longer be necessary or can be taken over by bodies like RSSAC037's Performance Monitoring and Measurement Function (PMMF)? Specifically, which portions of this document is ICANN proposing for long term solutions vs stop gap solutions until the future governance model is created?

The RSSAC also recommends updating OCTO-016 to clearly separate the focus into two sections: one being for elements specific to the goals of ICANN's facilitating coordination of the whole system (e.g., including sections like 3.2 and 4.2), and a separate section discussing the IMRS (e.g., including sections like 3.1 and 4.1.1). This explicit separation will create a more comprehensive and understandable framework.