

# REPORT FROM THE RSSAC OCTOBER 2017 WORKSHOP

The Root Server System Advisory Committee (RSSAC) held its fifth workshop from October 10 to 12, 2017, hosted by the University of Maryland and supported by the Internet Corporation For Assigned Names and Numbers (ICANN). The workshop was attended by eleven root server operators and RSSAC liaisons.

The purpose of this workshop was to advance the DNS root service governance framework, defined as a 50,000-foot apolitical mind map in the previous workshop. Prior to the workshop, RSSAC members were divided into seven teams, each responsible for drafting a concept paper on one component of the mind map. At the workshop, these concept papers were presented, debated, and refined. What follows is a brief discussion on each of these components, and a high-level summary of the outcomes of the workshop during these three days of effort.

## Stakeholders of the DNS Root Service

In identifying the stakeholders of the root server system and their motivations, the RSSAC considered four questions:

- Who are the stakeholders?
- Why does RSSAC believe they are the stakeholders?
- What are the roles of the stakeholders? (What should they do?)
- What does accountability mean to the stakeholders?

In this context, the RSSAC considered a “stakeholder” to be “a person, group, or organization that has an interest or concern in an organization,” and to which that organization is by definition “accountable.”

In the view of RSSAC, the primary stakeholders of the DNS root service are the Internet Architecture Board (IAB) / Internet Engineering Task Force (IETF), the ICANN community in the form of several of its constituencies, and the set of existing root server operators.

Additionally, the RSSAC also considers the following entities as valued contributors: IANA, which maintains the zone file the root server operators distribute; TLD registries, whose zones are resolved by the root server system; the Internet technical community, who have an interest in the correct and consistent operation of the DNS root; and finally the Internet user community, which is the ultimate consumer of all Internet services. While these are not “governance” bodies per se, when opinions are being sought regarding the DNS root service, their opinions should be solicited. Some of these bodies are also represented in the ICANN community.

## **Root Server Operations Group**

The root server operators have traditionally operated independently as separate organizations.<sup>1</sup> They collaborate as needed to ensure the root server system as a whole operates according to expectations.<sup>2</sup> This collection of organizations that operate the address points of the root server system are responsible for the day-to-day operations and do not directly participate in Internet governance functions like ICANN. Instead, they appoint delegates to RSSAC, where those functions take place. It has been (and should remain in the future) thus beyond the scope of ICANN, the RSSAC and Internet governance bodies to define how individual operators operate their service, as long as the service expectations are met (RSSAC001).

At the workshop, the RSSAC explored ways in which the root server operators will need to collaborate with the other mind map components: root server association; performance monitoring and accountability; designation and removal; strategic, architectural and policy; stakeholders; and finance. It was concluded that although the root server operators already have established mechanisms for external engagement, the root server operators will need additional interaction with the creation of new functional bodies.

## **Root Server Association**

Historically root server operators have operated independently. This independent nature makes it difficult for the root server operators to be transparent in their operations, as there is no collective channel through which the root server operators can receive requests for change regarding policy, operations, or reporting. Nor is there a good collective channel through which they can publish information for accountability and transparency purposes.

In order to enhance accountability and create a platform for further engagement with the larger Internet community,<sup>3</sup> at the workshop the RSSAC advised the root server operators to explore the possibility of forming a Root Server Association (RSA) as an entity to fill this gap. The RSA would establish a formal structure where the root server operators are represented, and it would give them an official platform from which they could address root server operator-related issues in an accountable and transparent manner. Such an association could be a vehicle for its members to further interact with and effectively implement policies for root server operation as requested by the ICANN and Internet communities. Discussion centered around a model which allows the RSA to fulfill all secretariat and public-facing functions to support the root server operators.

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

<sup>2</sup> See RFC7720: DNS Root Name Service Protocol and Deployment Requirements. Available at <https://tools.ietf.org/html/rfc7720>

<sup>3</sup> The RSSAC carefully notes that the phrase “the Internet community” should be interpreted as broadly as possible in this document, especially so that it encompasses the Internet Engineering Task Force (IETF) and the Internet Architecture Board (IAB).

## **Strategic, Architectural and Policy Function**

The purpose of the Strategic, Architectural and Policy Function is to offer guidance on strategic and architectural issues concerning the DNS root service. The function will propose best practices on root server operations that ensures the availability, performance, scalability and security of the DNS root service. It will also make recommendations to the ICANN community and Board and other Internet community stakeholders on policy matters affecting the DNS root service.

At the workshop, the purpose and scope of this function was discussed and refined. Its work is developed into three streams: strategic, architectural, and policy. The RSSAC also considered several options on the composition of this function.

## **Designation and Removal Function**

As described in “RSSAC023: History of the Root Server System,” the number of root server operators has not changed since 1997. Up to that point, Dr. Jon Postel, as the administrator of IANA, had been the one to designate root server operators. Following his death in 1998, the number of operators has not changed, although a handful of identities have changed hands since then. Although the intervening years have seen stability in the root server operators, there have been numerous changes relating to Internet governance. ICANN came into existence in 1998, and, with some oversight from the U.S. Department of Commerce for many years, operated the IANA function. In 2016 the Department of Commerce ended its oversight of IANA. Thus, with these changes in governance, but without the need to add or remove operators over the past 20 years, it is not entirely clear where the authority for making such changes now resides.

At the workshop, the RSSAC discussed its perspective on a new, yet-to-be-created function for designating and removing root server operators. It is rapidly coalescing on the underpinning concepts and features to recommend the creation of a well-scoped group within ICANN that is created on-demand when the need arises to designate or remove a root server operator. The Designation and Removal Function will work closely with the Performance Monitoring and Accountability Function when designating and removing root server operators.

## **Performance Monitoring and Accountability Function**

This function, originally called “Audit and Accountability Function,” is to provide credible, accurate information to the root server system and the community on how well the root server system is meeting its commitments to the community. It is part of the accountability of the root server operators and root server system to the stakeholders, in both ongoing review of current operators and assessment of potential future operators.

At the workshop, the RSSAC discussed what activities are to be audited or monitored, on what timescales (continuously, periodically, or as triggered by events), and what process attributes will make the results of the performance monitoring function credible and trustworthy to stakeholders. For example, involving external auditors with audits against objective, externally defined standards and practices. The RSSAC also identified five categories for further development of specific metrics to monitor; technical, financial (if receiving funds), continuity and risk, planning and commitment, and finally, ethos.

## **Financial Function**

As the Internet has expanded to become a global economic and resource platform for the world community, the DNS root service has also grown in scope and scale. Thus far, the service has been delivered by 12 operators who self-finance their individual operations. Delivery of the service has essentially become an imperative mandate for the operators, mostly unfunded by the stakeholders of the service. The provenance of this model has its roots in the organic growth of the Internet. It has worked well since the creation of the root server system because of the integrity, ethics, and global citizenship of the operators.

At the workshop, the RSSAC discussed the sustainability of such a funding model. It reached a preliminary conclusion that the current model (as described above) may not be sustainable in the long run for some root operators. The inflection point for evolving the model has arrived. The group agreed that funding for some operators may be desirable and should not be opposed. This funding might also be influenced by the specificity of service expectations.

## **Conclusion**

The RSSAC had a productive workshop. The content generated during this workshop will form the basis for future RSSAC advice to the ICANN community.

The RSSAC would like to express its gratitude to ICANN for supporting its October 2017 Workshop, to the University of Maryland for hosting it, and to all individuals involved for their tireless efforts in making it a success.