Proposed Memorandum of Understanding (MOU) / Letter of Intent (LOI)

6 OCTOBER 2020

Preamble

This document is produced by RSSAC as a thought exercise for what an agreement might look like after the root server system governance working group (GWG) and subsequent efforts complete their work.

The RSSAC expects to continue its dialog with the GWG, the ICANN Community, the ICANN Board, and the Internet Architecture Board (IAB).

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Approved by the RSSAC on 6 October 2020

Known Challenges

This section lists several known challenges in drafting the MOU/LOI.

1. In drafting the MOU, the RSSAC identifies the following roles that ICANN plays:
    - ICANN provides oversight and policy development for the system of unique identifiers of the global Internet, including the DNS. ICANN's affiliate, Public Technical Identifiers (PTI), is responsible for the operational aspects of coordinating the global Internet's unique identifiers, hereto referred to as IANA.
    - In its role for coordinating root zone management, ICANN entered into agreement with Verisign,[1] contracting Verisign to continue to perform the root zone maintainer functions.

    These two roles ICANN play are critical for the proper operation of the root server system. At this point, the RSSAC does not know which entity is signing the MOU with the root server operators, and if that entity is not ICANN, what is the relationship between the entity with ICANN, so that it can ensure ICANN to perform these functions satisfactorily with legal enforceability. This is of critical importance.
2. If the entity signing the MoU is not ICANN, the RSSAC enumerated several potential options:
    - Option 1: Setting additional responsibility to Contract Co. : "Contract Co. shall ensure that ICANN's responsibility is maintained and executed by ICANN."
    - Option 2: ICANN's responsibility is described as a prerequisite to this agreement in the Mutual Understanding section (like Whereas clause).
    - Option 3: This agreement is made trilateral among Contract Co, RSO, and ICANN.
    - Option 4: The service is dependent on certain considerations, including those offered by ICANN via subcontracts to the IANA and the RZM. This note describes what the RSOs can offer within the context of an appropriate exchange of LOIs.

    The RSSAC recommends the GWG conduct a detailed legal analysis on these and potentially other options, to determine the best option.
3. During the course of RSSAC's discussions, it becomes increasingly clear that, for current operators, one size would *not* fit all. That is, not all RSOs are likely to be able to sign a contract. The RSSAC considered three vehicles of agreements, and brings these considerations to the GWG:
    - *Option 1: Letter of Intent:* which specifies the root server operator's responsibility without requiring services from other parties in return. This option works because

[1] https://www.icann.org/en/stewardship-implementation/root-zone-maintainer-agreement-rzma

some root server operators would be unable to sign a contract in any case. They provide the root service as a public service for the benefit of the Internet.
    - *Option 2: A Memorandum of Understanding,* which specifies the services and commitments of the root server operator as well as the Contract Co, but short of a contract with enforceability mechanisms.
    - *Option 3: Contract:* Some operators are able to sign the contract, commit to service levels, and offer additional services. These contracts would likely to be individually negotiated between the root server operator and Contract Co, so likely multiple contracts.

4. Whether funding would be made available? The RSSAC recommends:
    - Funding will be made available for operators willing to sign a contract with Contract Co.
    - Given that there likely are some operators receiving funding, and some are not. In the RSSAC's opinion, when a root server operator no longer receives funding, it should continue to be able to provide service, but default to MoU type of agreement.
    - If an RSO is receiving funding, the RSSAC suggests payment for this service to be paid at least quarterly, and that the amounts of payments and the terms of the contract be individually negotiated by the Root Server Operator and Contract Co.
5. Additional questions for the GWG:
    - What is the process to take these suggestions into the final agreement? How does the community expect root server operators to participate in that process, individually or collectively?
    - In the case of inability to come to an agreement, who is the arbiter? On what legal basis? In what jurisdiction?

This Memorandum of Understanding (MOU) is entered into as of _____ by and between Contract Co. (hereinafter referred to as "Contract Co."); and _____ hereinafter referred to as "Root Server Operator".

1. Definitions

Contract Co.:

IANA Functions Operator ("IANA") is responsible for coordinating the Internet's unique identifiers: Domain Names, Number Resources and Protocol Parameters. The Domain Names function includes the responsibility to manage the DNS Root Zone. At the time of this agreement, it is operated by ICANN via its affiliate Public Technical Identifiers (PTI).

Public Technical Identifiers (PTI) is responsible for the operation of the IANA functions.

Root Zone Administrator (RZA): The root zone administrator manages the data contained within the root zone, which involves assigning the operators of top-level domains, such as .uk and .com, and maintaining their technical and administrative details.

Root Zone Maintainer (RZM): the organization/entity responsible for accepting service data from the root zone administrator, formatting it into zone file format, cryptographically signing it using the Zone Signing Key (ZSK) for the root zone, and putting it into the root zone distribution system. It is currently operated by Versign via a service agreement with ICANN.[2]

Root Server Operator (RSO): An organization responsible for managing the root service on IP addresses specified in the root zone and the root hints file.

Root Server Identifier (RSI): The DNS name associated with a root server operator that appears in the root zone and root hints file. For example, c.root-servers.net is the root server identifier associated with the root server managed by Cogent at the time this document was published.

Best efforts: Taking, in good faith, all reasonable steps to achieve the objective, carrying the process to its logical conclusion and leaving no stone unturned. "Best efforts" includes doing everything known to be usual, necessary and proper for ensuring the success of the endeavour.

2. Mutual Understandings

2.1. The parties want to demonstrate their commitment to further enhancing the stability, security and interoperability of the Internet's Domain Name System

[2] https://www.icann.org/en/stewardship-implementation/root-zone-maintainer-agreement-rzma

(DNS) from a global perspective and for the benefit of the global Internet community in an evolutionary manner on the basis of a peer relationship.

2.2. The operation of the DNS root name server designated as '___.root-servers.net' in the DNS root zone and elsewhere has been operated by 'Root Server Operator'.

2.3. Root Server Operator's functions as the operator of an authoritative root name server regarding the stability and interoperability of the DNS are to:

2.3.1. Obtain in a timely way, and make available the IANA Root Zone for query resolution via an authoritative DNS name server.

2.3.2. Maintain adequate hardware, software, network and other resources to ensure secure and stable DNS interoperability with the global Internet;

2.3.3. Provide assistance and advice to Contract Co. as needed to carry out the respective functions of the Root Server Operator and IANA.

2.4. ICANN provides oversight and policy development for the system of unique identifiers of the global Internet, including the DNS. ICANN's affiliate, Public Technical Identifiers (PTI), is responsible for the operational aspects of coordinating the global Internet's unique identifiers, hereto referred to as IANA. IANA's functions as the manager of the DNS root zone database are to:

2.4.1. Manage and update the root zone database according to appropriate processes and procedures;

2.4.2. Make the root zone available to the root zone maintainer in a timely, secure and accurate manner for publication.

2.4.3. Coordinate with Root Server Operator and other root server operators as needed for the parties to be able to perform their respective functions.

2.5. In its role for coordinating root zone management, ICANN has entered into agreement with Verisign,[3] contracting Verisign to continue to perform the root zone maintainer functions, which with respect to root server related activities, are to:

2.5.1. edit, generate and sign the Root Zone File;

2.5.2. publish the Root Zone File and root-servers.net zone file to a Root Zone File Distribution Server;

2.5.3. promptly notify the Root Server Operator of the availability of new versions of the Root Zone File and root-servers.net zone file.

2.5.4. promptly respond to requests from Root Server Operator to transfer the Root Zone File and root-servers.net zone file from a Verisign Root Zone File Distribution Server.

[3] https://www.icann.org/en/stewardship-implementation/root-zone-maintainer-agreement-rzma

2.6. <editor note: Add Contract co.'s role here>

3. Services

3.1. **Service Provided by Contract Co.:** <Add Contract Co.'s service here>

3.2. **Service Provided by Root Server Operator:** The Root Server Operator shall

3.2.1. Provide name service for the root zone and "root-servers.net" zone: operate and maintain its designated root server identities as an authoritative name server for the IANA Root Zone and the "root-servers.net" zone, without alteration, in a stable and secure manner, adequate to resolve names within the root zone and the "root-servers.net" zone by users throughout the Internet;

3.2.2. Comply with relevant standards including standards-track or best current practice RFCs maintained by the Internet Engineering Task Force and work on development of new standards and RFCs, subject to and within the limits of relevant law and public policy.

4. Services Levels

4.1. Service Level Expectations for Contract Co.

<add expectations for Contract Co.>

4.2. Service Level Expectations For Root Server Operator

The Root Server Operator agrees to the service level expectations defined in RSSAC047v1[4] as outlined in the table below, and its future revisions.

Metrics	Name(s)	Threshold(s)
RSI Availability	IPv4 UDP Availability IPv4 TCP Availability IPv6 UDP Availability IPv6 TCP Availability	96% 96% 96% 96%
RSI Response Latency	IPv4 UDP Response Latency IPv4 TCP Response Latency IPv6 UDP Response Latency IPv6 TCP Response Latency	250 milliseconds 500 milliseconds 250 milliseconds 500 milliseconds
RSI Correctness	Correctness	100%

[4] See https://www.icann.org/en/system/files/files/rssac-047-12mar20-en.pdf.

RSI Publication Latency	Publication Latency	65 minutes

4.3. [Service Level Agreements - This would be in place of 2.2 for those who signs contract]

Metrics	**Name(s)**	**Threshold(s)**
RSI Availability	IPv4 UDP Availability IPv4 TCP Availability IPv6 UDP Availability IPv6 TCP Availability	TBD TBD TBD TBD
RSI Response Latency	IPv4 UDP Response Latency IPv4 TCP Response Latency IPv6 UDP Response Latency IPv6 TCP Response Latency	TBD TBD TBD TBD
RSI Correctness	Correctness	100%
RSI Publication Latency	Publication Latency	TBD

5. Commitments

5.1. **Commitments of Contract Co.:**

5.1.1. <add commitments for Contract Co.>

5.2. Commitments of Root Server Operator: Root Server Operator shall use its best efforts to:

5.2.1. **Operating Principles:** abide by the principles articulated in RSSAC037 section 3, in particular:

5.2.1.1. Root Server Operator is committed to serving the IANA Root Zone. Root Server Operator provides DNS response over IPv4 and IPv6 containing complete and unmodified DNS data, including DNS Security Extensions (DNSSEC) data.

5.2.1.2. Root Server Operator will operate its DNS service with high moral and ethical standards. Root Server Operator is committed to sending and responding to traffic without filtering, to serving the IANA Root Zone, and to avoiding conflicts of interest and reciprocal agreements.

5.2.1.3. Root Server Operator will be as transparent as is reasonable without compromising their operational security.

5.2.1.4. Root Server Operator will collaborate openly with other operators, participate in group meetings and activities, engage at the IETF in the technical standardization process, and respond to stakeholder questions in a timely manner.

5.2.1.5. Root Server Operator will have autonomy and independence in architecting and operating their service, while also adhering to standards and service expectations.

5.2.1.6. Root Server Operator is neutral to the politics of geographic regions and nation states when delivering the DNS root service. Root Server Operator's focus is on provisioning a reliable technical service which knows no political boundaries and maintains an unbiased position to the politics of any nation state. Root Server Operator will offer DNS service without bias, on the same terms, to users everywhere.

5.2.2. **Participation and Collaboration:** participate in discussions and deliberations of RSSAC and subsequent evolutionary bodies (e.g., SAPF).

5.2.3. **Service Expectations:** meet the set of service expectations as defined in RSSAC documents and RFC 7720 and their subsequent revisions.

5.2.4. **RSSAC Advice**: comply with and implement published RSSAC advice.

5.2.5. **Accuracy and Completeness of Information:** notify Contract Co, through Contract Co.'s designated point of contact of any change to the administrative and /or technical contact details about Root Server Operator in IANA's database no later than seven days after the change becomes effective.

5.2.6. **Point of Contact:** provide IANA with a 24 hour-per-day, 365 day-per-year telephone contact telephone number to enable IANA to make Root Server Operator aware of any related technical or operational issues.

5.2.7. **Statistics:** share RSSAC002 operational statistics on nondiscriminatory terms.

6. Term

For proper operational planning, and in order to maintain the stability and interoperability of the DNS, the RSSAC recommends:

6.1. The initial term of this MOU / LOI shall be for at least sixty (60) months, beginning on the effective date.

6.2. The MOU/LOI is in perpetuity unless the terminating conditions stated in Section 8 are triggered.

6.3. Automatic renewal under the current MOU/LOI.

6.4. Root Server Operator have the option to renegotiate new terms twelve months prior the expiration.

7. Remediation

The RSSAC recommends:

7.1. In case of nonconformity to the terms in an MOU/LOI, the nonconforming party shall be afforded a reasonable period of time after receiving notice of the nonconformity.

7.1.1. The remediation period starts when the RSO is notified of the nonconformity.

7.1.2. The remediation period for falling below MOU/LOI performance should be 30 calendar days, assuming the PMMF is monitoring the system near real time.

7.1.3. The remediation period for catastrophic technical shutdown should be 14 calendar days.

7.1.4. The remediation period for rogue behavior should be 48 hours.

7.2. Extensions may be granted based on mutual agreements between Contract Co. and the Root Server Operator.

7.3. The Root Server Operator is deemed to fail the remediation process if the RSO cannot restore the service during the time specified above or unable to reach the extension with Contract Co.

8. Termination

The RSSAC recommends the Root Server Operator be removed from the root source files (root zone, root-servers.net zone, root hints file) if and when:

8.1. At any time during the agreement, the Root Server Operator voluntarily resigns to provide root service, provided that the Operator give Contract Co. 120 days of notice of its intent to terminate the service, or

8.2. The Root Server Operator failed to meet the performance requirements specified by the MOU/LOI. In addition, the Root Server Operator fails the remediation process; or

8.3. The Root Server Operator goes rogue (e.g., by serving incorrect root zone), and fails the remediation process; or

8.4. The Root Server Operator suffers a catastrophic technical shutdown, and fails the remediation process.

The RSSAC suggests a detailed remediation process needs to be developed.