

SAC072

SSAC Comment on the Cross Community Working Group on Naming Relating Functions Proposal



A Comment from the ICANN Security and Stability Advisory Committee (SSAC)
24 June 2015



Preface

This is a Comment to the ICANN Board, the ICANN community, and the Internet community more broadly from the ICANN Security and Stability Advisory Committee (SSAC) on the Response to the IANA Stewardship Transition Coordination Group Request for Proposals on the IANA Stewardship Transition from the Cross Community Working Group on Naming Related Functions.

The SSAC focuses on matters relating to the security and integrity of the Internet's naming and address allocation systems. This includes operational matters (e.g., pertaining to the correct and reliable operation of the root zone publication system), administrative matters (e.g., pertaining to address allocation and Internet number assignment), and registration matters (e.g., pertaining to registry and registrar services). SSAC engages in ongoing threat assessment and risk analysis of the Internet naming and address allocation services to assess where the principal threats to stability and security lie, and advises the ICANN community accordingly. The SSAC has no authority to regulate, enforce, or adjudicate. Those functions belong to other parties, and the advice offered here should be evaluated on its merits.

A list of the contributors to this Comment, references to SSAC members' biographies and disclosures of interest, and individual SSAC members' withdrawals and dissents with respect to the findings or recommendations in this Advisory are at the end of this document.



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Executive Summary

On 11 June 2015, the Cross Community Working Group on Naming Related Functions (hereinafter referred to as CWG) produced the Response to the IANA Stewardship Transition Coordination Group Request for Proposals on the IANA Stewardship Transition from the Cross Community Working Group on Naming Related Functions (hereinafter referred to as “The CWG proposal” or “The Proposal”).

Several SSAC members participated in the development of the CWG proposal. As a chartering organization of the CWG, the SSAC is required to review and approve the Proposal. To do that, it conducted an analysis of the CWG proposal and SAC 069: SSAC Advisory on Maintaining the Security and Stability of the IANA Functions Through the Stewardship Transition.

The SSAC finds that the recommendations in SAC 069 are satisfied by the CWG proposal.

The SSAC therefore:

1. Thanks the CWG for its hard work on developing its proposal for consideration by the chartering organizations;
2. Wishes to continue to participate in the dialogue until the CWG work officially concludes;
3. Approves the CWG Proposal (11 June 2015 version)¹, with the following comments:
 - a. SAC069 Recommendation 6 calls for effective arrangements to be made for the reliable and timely performance of all aspects of the Root Zone Management Process post-transition. The SSAC believes that post-transition, it will be important to conduct the study recommended by the Proposal to investigate whether there is a need to increase (and if so, how) the robustness of the operational arrangements for making changes to the root zone content to reduce or eliminate single points of failure.

Draft reply – One of the principles that CWG-Stewardship set for the proposal is to ensure “Security, stability and resiliency: Changes must not undermine the operation of the IANA Functions and should insure accountability and objectivity in the stewardship of the service”. The CWG-Stewardship finds the SSAC’s proposal for this is in line with this principle and is supportive of this recommendation.

- b. SAC069 Recommendation 2 calls on each of the communities to review and (if necessary) enhance its policy development process to ensure that all of the instructions that it provides to the IANA Functions Operator are clear and implementable. The SSAC believes that the

Framework of Interpretation Working Group's Final Report should be adopted and implemented as soon as possible by ICANN.

Draft reply – It is beyond the scope of the CWG-Stewardship to require any modifications to ICANN's policy development process or to recommend accepting the FOIWG recommendations. However, the CWG-Stewardship notes that the FOIWG recommendations were accepted by the ICANN Board at ICANN 53 (see <https://www.icann.org/resources/board-material/resolutions-2015-06-25-en#1.d>).

- c. SAC069 Recommendation 6 calls for effective arrangements to be made for the reliable and timely performance of all aspects of the Root Zone

¹ Available at <https://community.icann.org/x/aJ00Aw>.

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Management Process post-transition. The SSAC seeks the following clarifications regarding the standing committee to evaluate the changes to the Root Zone Management Architecture and Operation: 1) whether the standing committee's recommendations are binding and 2) how they relate to the formal advice issued by the advisory committees, especially if the two are in conflict.

Draft reply –

Question 1 – The proposal uses the following language under paragraph 55 of its proposal “The Board shall grant approval on the recommendation of a standing committee...” The use of ‘shall grant approval’ was not meant to imply the ICANN Board could not reject a recommendation of the standing committee but the CWG-Stewardship acknowledges the confusion that may arise with the wording. A possible edit to address this concern could be to replace ‘shall grant approval on’ with ‘shall consider’.

Question 2 – Although the decision mechanisms of the standing committee for making recommendations to the ICANN Board have not been prescribed by the CWG-Stewardship (it is expected that the standing committee will decide on these upon formation), it is important to note that the proposed composition of the standing committee has representatives from SSAC, RSSAC, ASO, IETF, GNSO RySG, ccNSO, and a representative from the Root Zone Maintainer. Furthermore, since the standing committee makes recommendations to the ICANN Board, the ICANN Board has the ultimate responsibility for making such decisions. As with all decisions, the ICANN Board would consider conflicting advice by an AC before making a decision on any such recommendation.

- d. SAC 069 Recommendation 6 calls for effective arrangements to be made for the reliable and timely performance of all aspects of the Root Zone Management Process post-transition, and Recommendation 7 specifically calls on NTIA to clarify the processes and legal framework associated with the role of the Root Zone Maintainer. As current agreements among the Root Zone Management partners include the NTIA, failing to put revised or new agreements in place prior to transition would seriously jeopardize the stability of the Root Zone Management Process.

Draft reply – The CWG-Stewardship supports this position but notes that arrangements with respect to the Root Zone Maintainer are beyond the scope of its charter. The NTIA addressed the transition for the Root Zone Maintainer in its “IANA Functions and Related Root Zone Management Transition Questions and Answers” on 18 March 2014. See <http://www.ntia.doc.gov/other-publication/2014/iana-functions-and-related-root-zone-management-transition-questions-and->

[answ](#) for further details.

4. Understands that the CWG-Stewardship Final Proposal is dependent on the ICANN-level accountability mechanisms being developed by the CCWG-Accountability (Work Stream 1), and that these mechanisms will need to be:
 - a. Adopted by the ICANN Board;
 - b. Accepted by the CWG; and
 - c. Implemented before the transition—or, if not implemented beforehand, subjected to an irrevocable commitment of such implementation to be complete within a reasonable time period after the transition, conforming to best practices and preserving the security and stability of the domain name system.

Draft reply – The CWG-Stewardship has clearly stated that the proposal is conditional of the CCWG-Accountability proposal meeting the requirements set by the CWG-Stewardship and that these needs to be implemented before the transition or made subject to an irrevocable commitment, so the CWG-Stewardship supports this interpretation.

5. Welcomes and will consider the CWG’s invitation to SSAC to participate in the following proposed post-transition IANA structures:
 - a. Standing Committee on Root Zone Management Architecture and Operation
 - b. IANA Functions Review Team
 - c. Customer Standing Committee
 - d. Separation Process Working Group

Draft reply – SSAC has been invited as one of the key communities. Given the charter and expertise of the SSAC it is expected that all participating groups would gain from the knowledge and experience that SSAC would bring. Therefore the CWG-Stewardship hopes the SSAC will accept all these invitations.



1 Introduction

On 11 June 2015, the Cross Community Working Group on Naming Related Functions (hereinafter referred as CWG) produced the Response to the IANA Stewardship Transition Coordination Group Request for Proposals on the IANA Stewardship Transition from the Cross Community Working Group on Naming Related Functions (hereinafter referred to as “The CWG proposal” or “The Proposal”).

Several SSAC members participated in the development of the CWG proposal. As a chartering organization of the CWG, the SSAC is required to review and approve the Proposal. To do that, it conducted a gap analysis of the CWG proposal and SAC 069: SSAC Advisory on Maintaining the Security and Stability of the IANA Functions Through the Stewardship Transition.

The document is organized as follows. Section 2 summarizes the CWG proposal. For each of the recommendations in SAC069, section 3 lists the recommendation, the relevant section of the CWG proposal addressing the recommendation, and the analysis. Section 4 summarizes the findings of the analysis and section 6 concludes with a set of recommendations to the CWG.

2 Background

At a high level, the CWG recommends:

- A new, separate legal entity, Post-Transition IANA (PTI), will be formed as an affiliate of ICANN. The existing IANA functions, administrative staff, and related resources, processes, data, and know-how will be legally transferred to PTI.
- That ICANN should enter into a contract with PTI, granting PTI the rights and obligations to serve as the IANA Functions Operator (IFO) for the naming functions, and setting forth the rights and obligations of ICANN and PTI. This contract will also include service level agreements for the naming functions.
- Changes proposed to the Root Zone environment and relationship with the Root Zone Maintainer.

The CWG-Stewardship proposal is also significantly dependent and expressly conditioned on the implementation of ICANN-level accountability mechanisms by the Cross Community Working Group on Enhancing ICANN Accountability (CCWG-Accountability).

3 SAC069 Recommendations and CWG Proposal Analysis

This section lists each of the recommendations in SAC 069, the CWG draft proposal covering relevant parts of the recommendations, and provides an analysis.



3.1 SAC069 Recommendation 1

3.1.1 SAC069.001

In SAC069, the SSAC recommends:

“The operational communities (protocol parameters, names, and numbers) that have been invited to submit proposals should determine 1) whether or not the requirements and deliverables defined in the IANA Functions Contract should be retained, and if so which ones; 2) whether or not additional external controls are necessary for requirements that should be retained; and 3) if additional external controls are necessary, how and by whom they should be administered.”

3.1.2 Relevant sections of CWG Proposal

In the CWG proposal, the PTI will enter into a contract with ICANN. The contract will specify the obligations for the IANA functions operators. Section III of the report (para. 115-116) states:

“The issues currently addressed in the NTIA ICANN Functions Contract and related documents will be addressed in the ICANN -PTI IANA functions contract. Furthermore, the CWG-Stewardship expects that a number of existing provisions of the NTIA IANA Functions Contract will be carried over to the PTI Contract in the form of a Statement of Work (SOW), ... An overview of provisions expected to be carried over into the ICANN-PTI IANA functions contract can be found in Annex E as well as Annex S which includes a draft proposed term sheet.”

In addition, the CWG proposal also recommends additional accountability measures to the IANA Functions Operator by:

- Establishing a Customer Standing Committee (CSC) that is responsible for monitoring IFO performance according to contractual requirements and service level expectations, resolving issues directly with the IFO or escalating them if they cannot be resolved.
- Establishing a series of issue resolution mechanisms to ensure that problems are resolved effectively.
- Ensuring ICANN accepts input from multistakeholder community with respect to the annual IANA operations budget.
- Establishing a multistakeholder IANA Function Review (IFR) to conduct periodic and special reviews of PTI. The results of the IFR will not be prescribed or restricted and could include recommendations to initiate a separation process (as described below), which could result in termination or non-renewal of the ICANN-PTI IANA functions contract among other actions.



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The proposed charter (including membership) of the Customer Standing Committee (CSC) can be found in Annex G. In particular, the SSAC *have the option* to appoint a liaison to the CSC. The Statement of Work for IANA Functions Reviews is described in Annex F. The SSAC would need to appoint one representative to the IFR.

3.1.3 Analysis

SAC 069.001	CWG Proposal
The operational communities (protocol parameters, names, and numbers) that have been invited to submit proposals should determine 1) whether or not the requirements and deliverables defined in the IANA Functions Contract should be retained, and if so which ones;	Yes, for the naming related IANA functions, the PTI will enter into a contract with ICANN. The contract will specify the obligations for the IANA Functions Operator. A number of existing provisions of the NTIA IANA Functions Contract will be carried over to the PTI Contract in the form of a Statement of Work (SOW). Annex E and Annex S includes an overview of provisions and a draft term sheet.
2) whether or not additional external controls are necessary for requirements that should be retained; and	Yes, Customer Standing Committee (CSC), Issue Resolution Mechanisms, Multi-stakeholder IANA Functions Review (IFR).
3) if additional external controls are necessary, how and by whom they should be administered.	See Annex G for CSC charter, Annex F for IFR Statement of Work.

The proposal also invites SSAC to appoint representatives to the IANA Functions Review Team (1 member), and the Customer Standing Committee (1 member in a liaison capacity).

Based on this analysis, the SSAC concludes that the CWG proposal met Recommendation 1 in SAC 069.

3.2 SAC069 Recommendation 2

3.2.1 SAC069.002

In SAC069, the SSAC recommends:

“Each of the communities should determine whether or not existing mechanisms outside of the IANA Functions Contract are sufficiently robust to hold the IANA Functions Operator accountable to the affected communities for the proper performance of the IANA Functions after the IANA Functions Contract expires; and if they are not, the communities should determine what additional accountability mechanisms will be needed.



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Each of the communities should review and (if necessary) enhance its policy development process to ensure that all of the instructions that it provides to the IANA Functions Operator are clear and implementable.”

3.2.2 Relevant sections of CWG Proposal

Section III.A.i. CWG proposal (para. 104) states:

“ In order to meet community expectations for the stewardship of the IANA Functions related to naming, the CWG-Stewardship, working on the premise that there is current satisfaction with ICANN’s IANA department performance and that ICANN should remain the IANA Functions Operator, agreed that a satisfactory transition proposal for the names community will require the following elements:

- A contract similar to the current NTIA IANA Functions Contract to perform the IANA names functions post-transition;
- The ability for the multistakeholder community to ensure that ICANN acts according to community requests with respect to IANA names operations;
- Additional insulation, as needed, between operational and policymaking responsibilities and protections for the IFO;
- A mechanism to approve changes to the Root Zone environment (with NTIA no longer providing an approval process);
- The ability to ensure that the IANA Functions are adequately funded by ICANN;
- The ability for the multistakeholder community to require, and if necessary after substantial opportunities for remediation, the selection of a new operator for the IANA Functions as they relate to names.”

The CWG also notes that the proposed legal structure and overall CWG-Stewardship proposal requires ICANN accountability in the following respects: (see para. 106 of The Proposal).

- **ICANN Budget and IANA Budget.** The ability for the community to approve or veto the ICANN budget after it has been approved by the ICANN Board but before it comes into effect. The community may reject the ICANN Budget based on perceived inconsistency with the purpose, mission and role set forth in ICANN’s Articles and Bylaws, the global public interest, the needs of ICANN stakeholders, financial stability or other matters of concern to the community. The CWG-Stewardship recommends that the IFO’s comprehensive costs should be transparent and ICANN’s operating plans and budget should include itemization of all IANA operations costs to the project level and below as needed. An itemization of IANA costs would include “Direct Costs for the IANA department”, “Direct Costs for Shared resources” and “Support functions allocation”. Furthermore, these costs should be itemized into more specific costs

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- related to each specific function to the project level and below as needed. PTI should also have a yearly budget that is reviewed and approved by the ICANN community on an annual basis. PTI should submit a budget to ICANN at least nine months in advance of the fiscal year to ensure the stability of the IANA services. It is the view of the CWG-Stewardship that the IANA budget should be approved by the ICANN Board in a much earlier timeframe than the overall ICANN budget. The CWG (or a successor implementation group) will need to develop a proposed process for the IANA-specific budget review, which may become a component of the overall budget review.
- **Community Empowerment Mechanisms.** The empowerment of the multistakeholder community to have the following rights with respect to the ICANN Board, the exercise of which should be ensured by the related creation of a stakeholder community / member group:
 - The ability to appoint and remove members of the ICANN Board and to recall the entire ICANN Board;
 - The ability to exercise oversight with respect to key ICANN Board decisions (including with respect to the ICANN Board’s oversight of the IANA functions) by reviewing and approving (i) ICANN Board decisions with respect to recommendations resulting from an IFR or Special IFR and (ii) the ICANN budget; and
 - The ability to approve amendments to ICANN’s “fundamental bylaws,” as described below.
 - **IFR.** The creation of an IFR which is empowered to conduct periodic and special reviews of the IANA functions (see Annex F). IFRs and Special IFRs will be incorporated into the Affirmation of Commitments mandated reviews set forth in the ICANN Bylaws.
 - **CSC.** The creation of a CSC which is empowered to monitor the performance of the IANA functions and escalate non-remediated issues to the ccNSO and GNSO. The ccNSO and GNSO should be empowered to address matters escalated by the CSC.
 - **Separation Process.** The empowerment of the Special IFR to determine that a separation process is necessary and, if so, to recommend that a Separation Cross-Community Working Group (SCWG) be established to review the identified issues and make recommendations. See Annex L for more detailed information as to approval requirements with respect to the formation of a SCWG and approval of SCWG recommendations.
 - **Appeal mechanism.** An appeal mechanism, for example in the form of an Independent Review Panel, for issues relating to the IANA functions. For example, direct customers with non-remediated issues or matters referred by ccNSO or GNSO after escalation by the CSC will have access to an Independent Review Panel. The appeal mechanism will not cover issues relating to ccTLD delegation and re-delegation, which mechanism is to be developed by the ccTLD community post-transition.

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- **Fundamental bylaws.** All of the foregoing mechanisms are to be provided for in the ICANN bylaws as “fundamental bylaws.” A “fundamental bylaw” may only be amended with the prior approval of the community and may require a higher approval threshold than typical bylaw amendments (for example, a supermajority vote).

3.2.3 Analysis

SAC 069.002	CWG Proposal
<p>Each of the communities should determine whether or not existing mechanisms outside of the IANA Functions Contract are sufficiently robust to hold the IANA Functions Operator accountable to the affected communities for the proper performance of the IANA Functions after the IANA Functions Contract expires; and if they are not, the communities should determine what additional accountability mechanisms will be needed.</p>	<p>Additional Mechanisms (besides the ICANN-PTI contract) are:</p> <ul style="list-style-type: none"> ○ The ability for the multistakeholder community to ensure that ICANN acts according to community requests with respect to IANA names operations; ○ Additional insulation, as needed, between operational and policymaking responsibilities and protections for the IFO; ○ A mechanism to approve changes to the Root Zone environment (with NTIA no longer providing oversight); ○ The ability to ensure that the IANA Functions are adequately funded by ICANN; ○ The ability for the multistakeholder community to require, and if necessary after substantial opportunities for remediation, the selection of a new operator for the IANA Functions as they relate to names.
<p>Each of the communities should review and (if necessary) enhance its policy development process to ensure that all of the instructions that it provides to the IANA Functions Operator are clear and implementable.</p>	<p>The Framework of Interpretation Working Group (FOIWG) was a joint effort between the ccNSO and the Governmental Advisory Committee (GAC) that also involved representatives from a number of ICANN communities to interpret RFC1591 in light of the Internet of today. In its final report it made a number of recommendations that clarify the application of RFC1591 within the current context. The ccNSO formally endorsed the FOIWG’s Final Report in February 2015 and</p>

	transmitted it to the ICANN Board of Directors. It is currently pending review and adoption by the ICANN Board.
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Based on this analysis, the SSAC concludes that the CWG proposal met SAC069 Recommendation 2. The SSAC stresses that it is important for the Framework of Interpretation Working Group’s Final Report to be adopted and implemented as soon as possible by ICANN.

Finally, the SSAC notes that the CWG-Stewardship Final Proposal is dependent on the ICANN-level accountability mechanisms being developed by the CCWG-Accountability (Work Stream 1), and that these mechanisms will need to be:

- a. Adopted by the ICANN Board;
- b. Accepted by the CWG; and
- c. Implemented before the transition—or, if not implemented beforehand, subjected to an irrevocable commitment of such implementation to be complete within a reasonable time period after the transition, conforming to best practices and preserving the security and stability of the domain name system.

3.3 SAC069 Recommendation 3

3.3.1 SAC069.003

In SAC069, the SSAC recommends:

“ICANN should investigate and clarify the process for handling the possibility of governmental sanctions and restrictions (e.g. protocol for obtaining OFAC licenses where US sanctions might interfere with the ability to execute proper instructions to IANA) following the stewardship transition.”

3.3.2 Relevant Sections of CWG Proposal

Section III.A.iv.c. (para. 165) of the CWG proposal states:

“The handling of requests for statutory waivers or licenses relating to its IFO’s legal obligations in its legal domicile (e.g., from the U.S. Department of the Treasury’s Office of Foreign Assets Control (OFAC) is a generally-applicable legal obligation regardless of who is serving as the IANA Functions Operator. ICANN already has a process in place for seeking any necessary licenses, and will continue to work with contacts at relevant authorities to identify ways to streamline those requests. A statutory waiver of OFAC requirements may be possible if a new statute authorizes the transition. Such a statutory waiver could provide that the President of the United States may not use trade sanctions with respect to the IANA Functions Operator. For licenses or waivers that relate to the IANA Function,

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ICANN must commit that any licenses or waivers it seeks will also be sought for the IANA Functions Operator and for the Root Zone Maintainer as well, so that a single request for any applicable entity is required.”

3.3.3. Analysis

The statutory waiver would permanently resolve this issue. In the absence of a statutory waiver, ICANN should commit to seek any necessary waivers for both the IANA Functions Operator and the Root Zone Maintainer. The SSAC concludes that Recommendation 3 was adequately addressed.

3.4 SAC069 Recommendation 4

3.4.1 SAC069.004

In SAC069, the SSAC recommends:

“As part of the transition process, each of the affected communities should consider the extent to which the importance of transparency and freedom from improper influence in the performance of the IANA Functions might require additional mechanisms or other safeguards.”

The rationale given by SSAC for Recommendation 4 is that while ICANN policy development processes have often been subjected to political and economic pressure, it can be said today that no direct pressure has evidently been applied to the IANA Functions Operator. The fact that the IANA Functions have been performed within the context of a U.S. Government contract, and that NTIA has actively overseen that contract, may have been at least partly responsible for shielding the IANA Functions Operator from interference by otherwise *influential state and non-state interests*.

3.4.2 Relevant sections of CWG Proposal

Section III.A.iii of the CWG proposal addressed the issue of transparency with respect to the change requests to the root zone.

“To the extent allowed by external agreements and as necessitated by security and privacy issues, the IANA Functions Operator should operate in a transparent manner. Reports on the IANA Functions Operator operations should not be withheld unless there are explicit and defensible needs for confidentiality.”

3.4.3 Analysis



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The SSAC finds the CWG proposal did not go into detail on how to address Recommendation 4. It finds that the following would contribute to the transparency and freedom from improper influence:

- In the CWG proposal, the Post-Transition IANA is a wholly owned affiliate of ICANN. This avoids pressure on IANA solely, as those pressures are on ICANN as well.
- One of the key pressures on IANA is regarding the delegation and redelegation of ccTLDs. The Framework of Interpretation Working Group (FOIWG) was a joint effort between the ccNSO and the Governmental Advisory Committee (GAC) that also involved representatives from a number of ICANN communities to interpret RFC1591 in light of the Internet of today. In its final report it made a number of recommendations that clarify the application of RFC1591 within the current context. The ccNSO formally endorsed the FOIWG's Final Report in February 2015 and transmitted it to the ICANN Board of Directors. It is currently pending review and adoption by the ICANN Board.
- The Openness commitment by which IANA operates would allow the community to detect interference by otherwise influential state and non-state interests early on.
- The CCWG is developing independent review mechanisms for ICANN. Those mechanisms must be able to highlight any contentious issues quickly and publicly.
- Finally, although the US Government will no longer be a party to the contract for the IANA Functions, the Affirmation of Commitments remains in place and still allows the US Government to play an important role in promoting and protecting the multi-stakeholder decision making model.

Based on these, the SSAC concludes that Recommendation 4 was adequately addressed.

3.5 SAC069 Recommendation 5

3.5.1 SAC069.005

In SAC069, the SSAC recommends:

“Noting the stability and efficiency of existing structures, processes, and mechanisms for the management of the root zone, the SSAC recommends that any proposal to replace NTIA's final authorization of root zone changes with an alternative be at least as reliable, resilient, and efficient as the current process.”

3.5.2 Relevant sections of CWG Proposal



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In para. 148 of the Proposal, the CWG recommends that the Root Zone Management Process Administrator role currently performed by NTIA be **discontinued** post transition. As a result of this discontinuation the CWG recommends (para. 149 - 158):

Recommendations related to the elimination of NTIA Authorization of changes to the Root Zone content and the associated WHOIS database

Currently, changes to the Root Zone File, as well as changes to the Root Zone WHOIS Database, are transmitted to the NTIA for authorization. Such changes cannot be enacted without explicit positive authorization from the NTIA. Post-transition, no authorization for Root Zone change requests will be needed.

1. Changes will be required to the IFO and Root Zone Maintainer software to remove this requirement. In the very short term, if making the software changes cannot be completed before the transition and/or to avoid multiple coincident changes, the existing software could be used and IANA staff could authorize the changes (effectively fulfilling the current role of the NTIA at this point in the process).
2. Currently there is a Cooperative Agreement between the NTIA and the Root Zone Maintainer. The NTIA has said that there will be a parallel but separate transition to disengage the NTIA from the Root Zone Maintainer. The exact form of this transition is not currently known, nor what, if anything, will replace the current Cooperative Agreement and the parties involved in providing the services currently covered under the Cooperative Agreement.
 - a. If that transition is not completed prior to the IANA Stewardship Transition, the Cooperative Agreement will likely have to be amended by the NTIA to allow Verisign, acting as the Root Zone Maintainer, to implement changes to the Root Zone requested by the IFO without requiring approval from NTIA.
 - b. If the Root Zone Maintainer transition is completed prior to, or in conjunction with, the IANA Stewardship Transition, the new arrangements must provide a clear and effective mechanism to ensure that PTI can have its change requests for the Root Zone implemented in a timely manner by the Root Zone Maintainer (possibly via an agreement between the Root Zone Maintainer and the IFO).

It should be determined whether or not additional checks/balances/verifications are required post transition. The CWG-Stewardship recommends that a formal study be undertaken post transition to investigate whether there is a need to increase (and if so, how) the robustness of the operational arrangements for making changes to the Root Zone content to reduce or eliminate single points of failure. This study should include a risk analysis and cost/benefit analysis factoring in the



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history and possibility of such problems. Any new procedures/processes should be designed to minimize:

- a. The potential for accidental or malicious changes or omissions by the IFO or Root Zone Maintainer.
- b. The potential for out-of-policy changes by the IFO. The term “policy” is used in its most general sense, representing formal Policy adopted by ICANN as well as established standards, practices, and processes.
- c. The potential for accidental or malicious errors in the communications path from the IFO to the Root Zone Maintainer.
- d. The potential for accidental outages or malicious actions related to the telecommunications infrastructure serving the IFO and the Root Zone Maintainer. Such outages or actions could be related to the infrastructure shared with ICANN.
- e. Any changes to procedures or processes should be based on a cost/benefit and risk analysis factoring in the history and possibility of such problems. The review should involve all parties that may be affected or impacted by any changes to be implemented.

Changes to the Root Zone Management Architecture and Operation

Per the NTIA IANA Functions Contract, NTIA approval was required for the implementation of all changes to the Root Zone environment such as DNSSEC as well as many classes of changes to IANA Functions Operator processes (including what may be published). The NTIA has contributed and opened avenues to resources (such as those from NIST – the National Institute of Standards and Technologies, a part of the U.S. Department of Commerce in efforts surrounding DNSSEC). Moreover as the Root Zone Administrator, they have been the entity to ultimately approve the changes going forward.

Post-Transition, the CWG-Stewardship recommends that a replacement of this approval function be put in place for significant architectural and operational changes. Although it is clear that the DNS-related technical and operational communities have both the technology skills and appropriate incentives to make prudent and cautious changes, the critical nature of the Root Zone makes it necessary to formalize approval of major architectural and operational changes.

1. Formal approval to proceed with a change shall be granted by the ICANN Board.
2. The Board shall grant approval on the recommendation of a standing committee with a proposed membership of: an ICANN Board member (possibly as Chair), a senior IANA Functions Operator administrator or delegate, and Chairs or delegates of the SSAC, RSSAC, ASO and IETF, a



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representative of the GNSO RySG, a representative of the ccNSO and a representative of the Root Zone Maintainer. The standing committee will select its chair. The RySG and ccNSO representatives will ensure appropriate communications with the CSC.

3. The standing committee will not necessarily be the group that considers the details of the issue under consideration, but it will be responsible for ensuring that those involved in the decision include all relevant bodies and have access to necessary expertise.
4. Issues may be brought to the standing committee's attention by any of its members, by PTI staff, or by the CSC.
5. For architectural changes that impose potential risk to the security, stability, or resiliency of the Root system (as identified by at least one standing committee member and agreed by a simple majority of members), there should be public consultation through the standard ICANN public comment process.
6. To the extent allowed based on the need for security and contractually required confidentiality, the proceedings of the standing committee should be open and transparent.
7. Since it is not possible to formally define "significant", all parties should err on the side of prudence and raise issues for the consideration of the standing committee when there is any question of it being required. The standing committee may decide that it does not need to consider the issue.
8. The standing committee should coordinate with the NTIA at the time of transition to transfer relevant information about any ongoing major architectural and operational changes so that any such ongoing activities are not delayed or lost due to the transition.

The CWG-Stewardship further recommends that for changes internal to the IANA Functions Operator and for those related to reports and communications, no external approval shall be needed. Such decision should be made, where appropriate, in consultation with the community, or the standing committee.

The CWG-Stewardship recommends that post-transition IFO budgets must support the operator's capability to investigate, develop and deploy Root Zone enhancements required to keep the Root Zone and its management evolving.

Principles

1. Transparency: To the extent allowed by external agreements and as necessitated by security and privacy issues, the IFO should operate in a transparent manner. Reports on the IFO operations should not be withheld unless there are explicit and defensible needs for confidentiality.



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2. Control of Root Zone Management: Currently, updating the Root Zone requires the active participation of three parties: the IFO, the Root Zone Maintainer and the NTIA. The IFO receives change requests from various sources, validates them, and sends them to the Root Zone Maintainer who, once they are authorized by the NTIA, updates the Root Zone File, DNSSEC signs it and distributes it to the Root operators.

Post transition there will only be the IFO and the Root Zone Maintainer. The CWG-Stewardship is not recommending any change in the functions performed by these two roles at this time. The CWG-Stewardship is recommending that should there be proposals to make changes in the roles associated with Root Zone modification, that such proposals should be subject to wide community consultation.

Future changes to the Root Zone Management process must be made with due consideration to the IANA Functions Operator's and Root Zone Maintainer's abilities to process change requests expeditiously.

3.5.3 Analysis

The rationale for SAC069 Recommendation 5 is that from a technical and operational perspective, either eliminating the NTIA authorization step entirely or replacing it with an equally efficient process performed by another entity may suffice to preserve the current stability of root zone change request processing. The SSAC notes that a viable alternative to an explicit "final authorization" step for each change request might be a regular independent audit to demonstrate that due process has been followed (similar to IETF).

However, the SSAC considers it is important to note that root zone changes may have a timeliness requirement much tighter than that normally seen for IETF or RIR transactions, and that inaccurate or tardy execution of root zone changes may have significant operational impact. Any new processes for audit or oversight must take this into account in determining what transparency and accountability requirements should be imposed with respect to the performance of the IANA Functions.

The CWG stewardship proposal met SSAC Recommendation 5 in the following way by:

- Eliminating NTIA's approval for routine changes
- Formalizing approval of major architectural and operational changes through wider consultation.
- Commissioning a study to determine whether or not additional checks/balances/verifications are required post transition.

Post-transition, it will be important to conduct the study recommended by the Proposal to investigate whether there is a need to increase (and if so, how) the robustness of the

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operational arrangements for making changes to the root zone content to reduce or eliminate single points of failure.

Regarding the standing committee to evaluate the changes to the Root Zone Management Architecture and Operation, the SSAC seeks the following clarifications: 1) whether the standing committee's recommendations are binding, 2) how they relate to the formal advice issued by the advisory committees, especially if the two are in conflict.

3.6 SSAC Recommendation 6 & 7

3.6.1 SAC069.006 and SAC069.007

In SAC069, the SSAC recommends:

“Effective arrangements should be made for the reliable and timely performance of all aspects of the root zone management process post-transition, including inter-organization coordination if the post-transition RZM process involves more than one root zone management partner.

ICANN and the communities responsible for protocol parameters, numbers, and names should consult with NTIA to clarify the processes and legal framework associated with the role of the Root Zone Maintainer after transition.”

3.6.2 Relevant sections of CWG Proposal

Section III.A.iii of the Proposal on Root Zone Environment and Root Zone Maintainer states:

Currently there is a Cooperative Agreement between the NTIA and the Root Zone Maintainer. The NTIA has said that there will be a parallel but separate transition to disengage the NTIA from the Root Zone Maintainer. The exact form of this transition is not currently known, nor what, if anything, will replace the current Cooperative Agreement and the parties involved in providing the services currently covered under the Cooperative Agreement.

- a. If that transition is not completed prior to the IANA Stewardship Transition, the Cooperative Agreement will likely have to be amended by the NTIA to allow Verisign, acting as the Root Zone Maintainer, to implement changes to the Root Zone requested by the IFO without requiring approval from NTIA.
- b. If the Root Zone Maintainer transition is completed prior to, or in conjunction with, the IANA Stewardship Transition, the new arrangements must provide a clear and effective mechanism to ensure that PTI can have its change requests for the Root Zone implemented in a timely manner by the Root Zone Maintainer (possibly via an agreement between the Root Zone Maintainer and the IFO).



3.6.3 Analysis

The SSAC notes that as the current agreements among the Root Zone Management partners include the NTIA, failing to put revised or new agreements in place prior to transition would seriously jeopardize the stability of the Root Zone Management Process.

The CWG proposal made it clear that additional arrangements must be made with the Root Zone Maintainer, either between NTIA and Verisign to update the Cooperative Agreement, or establishing an agreement between the Root Zone Maintainer and the IANA Functions Operator. Thus, the SSAC concludes that SAC 069 Recommendation 6 was adequately addressed.

It is unclear whether such consultations have yet been conducted, and if so, what NTIA's response has been. Given that the CWG proposal has already thought about this and proposed options (update the Cooperative Agreement, or new agreement between Root Zone Maintainer and IANA Functions Operator) and that the Proposal is essential for the transition to happen, the SSAC concludes that Recommendation 7 has been over taken by events.

4. Findings

Finding 1: The CWG proposal was able to meet and/or address all of the recommendations in SAC 069.

The rationale for this finding is provided in sections 3.1.3, 3.2.3, 3.3.3, 3.4.3, 3.5.3, and 3.6.3.

5. Recommendations

Given the above analysis, The SSAC:

1. Thanks the CWG for its hard work on developing its proposal for consideration by the chartering organizations;
2. Wishes to continue to participate in the dialogue until the CWG work officially concludes;
3. Approves the CWG Proposal (11 June 2015 version), with the following comments:
 - a. SAC069 Recommendation 6 calls for effective arrangements to be made for the reliable and timely performance of all aspects of the Root Zone Management Process post-transition. The SSAC believes that post-transition, it will be important to conduct the study recommended by the Proposal to investigate whether there is a need to increase (and if so, how) the robustness



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of the operational arrangements for making changes to the root zone content to reduce or eliminate single points of failure.

- b. SAC069 Recommendation 2 calls on each of the communities to review and (if necessary) enhance its policy development process to ensure that all of the instructions that it provides to the IANA Functions Operator are clear and implementable. The SSAC believes that the Framework of Interpretation Working Group's Final Report should be adopted and implemented as soon as possible by ICANN.
 - c. SAC069 Recommendation 6 calls for effective arrangements to be made for the reliable and timely performance of all aspects of the Root Zone Management Process post-transition. The SSAC seeks the following clarifications regarding the standing committee to evaluate the changes to the Root Zone Management Architecture and Operation: 1) whether the standing committee's recommendations are binding and 2) how they relate to the formal advice issued by the advisory committees, especially if the two are in conflict.
 - d. SAC 069 Recommendation 6 calls for effective arrangements to be made for the reliable and timely performance of all aspects of the Root Zone Management Process post-transition, and Recommendation 7 specifically calls on NTIA to clarify the processes and legal framework associated with the role of the Root Zone Maintainer. As current agreements among the Root Zone Management partners include the NTIA, failing to put revised or new agreements in place prior to transition would seriously jeopardize the stability of the Root Zone Management Process.
4. Understands that the CWG-Stewardship Final Proposal is dependent on the ICANN-level accountability mechanisms being developed by the CCWG-Accountability (Work Stream 1), and that these mechanisms will need to be:
 - a. adopted by the ICANN Board;
 - b. accepted by the CWG; and
 - c. implemented before the transition—or, if not implemented beforehand, subjected to an irrevocable commitment of such implementation to be complete within a reasonable time period after the transition, conforming to best practices and preserving the security and stability of the domain name system.
 5. Welcomes and will consider the CWG's invitation to SSAC to participate in the following proposed post-transition IANA structures:
 - a. Standing Committee on Root Zone Management Architecture and Operation
 - b. IANA Functions Review Team



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- c. Customer Standing Committee
- d. Separation Process Working Group



6. Acknowledgments, Disclosures of Interest, Dissents, and Withdrawals

In the interest of transparency, these sections provide the reader with information about four aspects of the SSAC process. The Acknowledgments section lists the SSAC members, outside experts, and ICANN staff who contributed directly to this particular document. The Disclosures of Interest section points to the biographies of all SSAC members, which disclose any interests that might represent a conflict—real, apparent, or potential—with a member’s participation in the preparation of this Report. The Dissents section provides a place for individual members to describe any disagreement that they may have with the content of this document or the process for preparing it. The Withdrawals section identifies individual members who have recused themselves from discussion of the topic with which this Report is concerned. Except for members listed in the Dissents and Withdrawals sections, this document has the consensus approval of all of the members of SSAC.

6.1 Acknowledgments

The committee wishes to thank the following SSAC members and external experts for their time, contributions, and review in producing this Advisory.

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6.2 Disclosures of Interest

SSAC member biographical information and Disclosures of Interest are available at: <https://www.icann.org/resources/pages/ssac-biographies-2015-06-15-en>.

6.3 Dissents

There were no dissents.



6.4 Withdrawals

There were no withdrawals.

