



# **Review of the Root Server System Advisory Committee (RSSAC)**

**Draft final Report  
of the RSSAC Review Working Group**

**26<sup>th</sup> April 2010**



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## 0. Executive Summary

With the present report the RSSAC Review Working Group submits its draft conclusions on the review process of the Root Server System Advisory Committee of ICANN (RSSAC)<sup>1</sup> to public comment.

### What are the purposes of RSSAC?

RSSAC is currently an **advisory body of the Board of ICANN**<sup>2</sup> which provides **operational advice** on a number of issues, such as:

- Operation of the root name servers of the DNS;
- Requirements of root name servers (host hardware capacities, operating systems, software versions, network connectivity, physical environment);
- Security aspects of the root name server system;
- Number, location and distribution of the root name servers.

### How well is RSSAC serving those purposes?

The WG shares the view expressed by independent reviewers that those purposes are **not being served in an optimal way**. There are four main reasons for this:

- **Communication** between ICANN and the RSSAC is scarce; independent reviewers noticed a 'lack of regular communication and agreement over the expectations between the RSSAC and the Board'. Given these circumstances the further remark issued by the reviewers does not come as a surprise: 'RSSAC is largely reactive and issues-based, rather than providing advice proactively to the Board of ICANN'. One additional aspect of this scarce communication lies within the insufficient documentation of RSSAC committee and meeting processes, noticed by reviewers.
- **Lack of knowledge**. RSSAC does not have a sufficient level of knowledge of ICANN, and ICANN does not have a sufficient level of knowledge of RSSAC. There are two main reasons for this problem, namely:
  - RSSAC does not meet at ICANN meetings. While there are reasons for this choice (RSSAC needs to meet at IETF meetings, where Root Operators interact with the large technical internet community), this has not only caused a lowering of visibility of RSSAC in ICANN and of ICANN in RSSAC, but also a very limited interaction between RSSAC and the other SO/ACs.
  - The absence of a coordinated point of contact between ICANN and the Root Operators. On the one hand, contacts are delegated to the operational level (through IANA and the 'L' Root Operator), and on the other hand, ICANN did not entrust any senior management staff with the duty to represent the whole Organization at the RSSAC.
- **Outdated mandate**. The mandate of RSSAC, as spelled out in the Bylaws, is obsolete and requires revisions: for example, the issues related to location, number and

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<sup>1</sup> *The review process of RSSAC –steered by a specific review Working Group reporting to the Board of ICANN through the Structural Improvements Committee - included an external review performed by an independent selected contractor, and a series of interactions of the WG with interested members of the community. In order to formulate its draft final conclusions the WG considered the evidence gathered by reviewers, their recommendations, and the feedback sought and received from community.*

<sup>2</sup> *As defined by Article XI, Section 2/3 of the [Bylaws](#)*

distribution of servers are considered as outdated following the introduction of Anycast servers to the root server system.

- **Lack of shared understanding** of Root Operators' responsibilities, RSSAC role, and ICANN mission. For instance, reviewers' remark that RSSAC has never provided the ICANN Board with advice on operational matters such as operating systems for root servers, and this because Root Operators consider that this Bylaws' requirement lies with them, not with ICANN's.

#### What measures to increase RSSAC effectiveness?

To increase the effectiveness of RSSAC, reviewers propose two types of measures:

- **Structural changes** to its mandate and reporting. Two main changes are proposed in this respect:
  - The re-launch of the RSSAC as a strategy group run jointly by ICANN and the Root Operators which responds not only to the Board of ICANN, but also to the ICANN community, the Root Server Operators and the whole Internet community.
  - The re-definition of the RSSAC mandate, with a more strategic focus (it shall provide 'unbiased strategic advice') and a different spelling out of the discrete activities delegated to RSSAC.
- **Operational changes**, such as: the establishment of a process for the Chair appointment, the location of RSSAC meetings and others.

#### Conclusions of the Working Group

The Working Group considers that **structural changes to the RSSAC cannot be imposed without full cooperation from Root Servers**. During its work the Working Group sought feedback from Root Operators, asking them to react to independent reviewers' proposals with a set of remarks. Unfortunately Root Operators did not express themselves with consensus of opinions on such a coherent set of proposals.

The Working Group decided therefore to close its mandate by:

- Recommending that the Board of ICANN **not implement any structural changes to RSSAC**, in the **absence of the Root Operators' consent**.
- Asking the Board of ICANN via the Structural Improvements Committee to **invite Root Operators to consider the structural changes suggested by external reviewers** and to **formulate** to the Board of ICANN, a **coherent set of proposals** for addressing the recommendations of reviewers, in order to initiate a dialogue with ICANN on the implementation of measures that could be accepted by both parties.
- Commenting and **concluding on the operational measures** suggested by independent reviewers.
- Recommending that ICANN identify a member of the senior management team with the duty to represent the whole Organization in communications with RSSAC, particularly with regard to the operational implementation of ICANN policies in the areas of new TLDs (new gTLDs, ccTLDs, and IDN TLDs), and the continued roll-out of DNSSEC and IPv6.

## 1. Background

As part of its program of Organizational Reviews, ICANN has undertaken a review of the Root Server System Advisory Committee ([RSSAC](#)), whose role<sup>3</sup> is to advise the ICANN Board ‘*about the operation of the root name servers of the domain name system. The RSSAC shall consider and provide advice on the operational requirements of root name servers, including host hardware capacities, operating systems and name server software versions, network connectivity and physical environment. The RSSAC shall examine and advise on the security aspects of the root name server system. Further, the RSSAC shall review the number, location, and distribution of root name servers considering the total system performance, robustness, and reliability.*’

Organizational Reviews are part of ICANN’s program of continuous improvement and are intended to ensure an in-depth examination of the role and operation of key structures of ICANN, with support from external, independent professional consultants.

As specified in Article IV, Section 4 of ICANN’s [Bylaws](#), the “goal of the review, to be undertaken pursuant to such criteria and standards as the Board shall direct, shall be to determine (i) whether that organization has a continuing purpose in the ICANN structure, and (ii) if so, whether any change in structure or operations is desirable to improve its effectiveness.”

Supervision of the Organizational Review processes is performed by the Structural Improvements Committee (hereinafter SIC), which is a standing Committee of the Board. The SIC is authorized to set up specific Working Groups (hereinafter, WG) for each of the Reviews.

With support from ICANN staff, the Review WGs have two main tasks:

- To ensure that the selected external reviewers carry out their task in full autonomy and independence of judgment, basing their conclusions and recommendations on evidence and in observance of the selected methodologies and workplan;
- After delivery of the reviewers’ report, to formulate a report to the Board through the Structural Improvements Committee on measures to be adopted as to increase effectiveness of the key structure under review.

### **Chronology**

In June 2008 the Board of ICANN approved the composition of a specific RSSAC Review WG, which includes the following individuals: Harald Alvestrand (Chair), Steve Crocker and Bruce Tonkin. The WG was supported by Marco Lorenzoni, ICANN Director for Organizational Reviews.

Following an open selection procedure, the Board of ICANN appointed Westlake Consulting Limited in October 2008 so as to undertake the independent, external review of the Root Server System Advisory Committee (RSSAC).

In February 2009 the independent reviewers delivered their [draft report](#), which was presented for discussion at the ICANN Meeting in Mexico City in March 2009. The [final](#)

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<sup>3</sup> See previous footnote2

[version of independent reviewers' report](#) was released the following month and then posted for [public comments](#).

The independent reviewers' report was then presented at the March 2009 RSSAC meeting in San Francisco, in order to obtain feedback from the RSSAC community.

Following discussion with community, at the San Francisco meeting the WG offered to Root Operators the possibility to formulate a coherent set of comments on the report of external reviewers, for WG consideration. This was considered as an essential part of the review process, as the WG believes that no structural changes to RSSAC could be implemented if not negotiated and agreed by both ICANN and the Root Operators.

Some Root Operators volunteered to establish an informal Design Team with the intent to consider reviewers' report and issue recommendations to the WG. The WG Chair was invited to participate. An informal presentation of the Design Team's current state of thinking to the WG was organized during the Seoul ICANN meeting in October 2009. However, the Design Team did not reach consensus with the Root Operators community on the preliminary ideas that were informally presented in Seoul, and no paper expressing the views of Root Operators on possible actions leading to a reform of RSSAC was produced in the following year.

### ***Structure of the Present Report***

The present report contains three sections, namely:

- Section 0 – The Executive Summary of the report.
- Section 1 – The present Section, containing background information
- Section 2 – This section presents the conclusions of the WG on each of the Recommendations formulated by reviewers. It is organized along the lines of the recommendations issued by the independent reviewers, so as to facilitate reading and reference.

### ***Public Comments***

The present draft report will be published for public comment, and the relevant comments formulated by interested members of the community will be addressed in the final version of the WG report.

## 2. WG conclusions on Independent Reviewers' Recommendations

The [Reviewers' Final Report](#) contains 8 recommendations numbered from 1 to 8; recommendations from 1 to 3 are of a structural nature (they envisage radical changes to the present structure and mandate of RSSAC), while the residual ones are of an operational nature.

During a working session at the Nairobi ICANN meeting in March 2010, the WG acknowledged the absence of the expected Root Operators' comments on the external reviewers' report. The WG unanimously considers that:

- There are sufficient reasons suggesting that the overall structure and mandate of the RSSAC should be reconsidered. Based on the evidence collected during their review, the independent reviewers envisage some structural changes to RSSAC, its mandate and its reporting line. However, the WG is well aware that no structural changes can be addressed unless formulated in collaboration with Root Operators, which have not expressed themselves with consensus of opinion yet. The Working Group decided therefore to close its mandate by:
  - Recommending the Board of ICANN not to implement any structural changes to RSSAC, in the absence of Root Operators' consent.
  - Asking the Board of ICANN via the Structural Improvements Committee to invite Root Operators to consider the structural changes suggested by external reviewers and to formulate to the Board of ICANN, a coherent set of proposals for addressing the recommendations of reviewers, in order to initiate a dialogue with ICANN on the implementation of measures that could be accepted by both parties. This coherent set of proposal needs to be endorsed by all Root Operators.
- Recommendations of an operational nature can be addressed by ICANN even in absence of a preliminary agreement from Root Operators; this report presents the draft conclusion of the WG in this sense.

The present Section presents a short summary of each recommendation issued by reviewers, and – per each of them – a comment presenting the conclusions of the WG.

Readers are recommended to read the [Reviewers' Final Report](#) as a background to this report.

<b>Reviewers' Recommendations</b>	<ol style="list-style-type: none"><li>1. Relaunch RSSAC as a strategy group, run jointly by ICANN and the Root Server Operators.</li><li>2. Amend the Bylaws' so as to set out RSSAC's new purpose, namely: <i>The role of the Root Server System Advisory Committee ("RSSAC") shall be to provide a source of unbiased strategic advice to ICANN, the Root Server Operators and the Internet Community about the best way ahead for the Root Server System. The role will include the following functions:</i><ul style="list-style-type: none"><li>• <i>To analyze, assess and monitor, at a strategic level,</i></li></ul></li></ol>
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	<p><i>proposed changes to the root server system in order to provide timely advice to the Root Server Operators and ICANN on the implications, desirability and risks of such changes;</i></p> <ul style="list-style-type: none"> <li>• <i>To provide reassurance and transparency to the Internet Community that these tasks are under control and that they can have confidence in the reliability and robustness of the root server system;</i></li> <li>• <i>To identify strategic risks to the root server system, and to ensure that planning is in place to address failures of critical systems, including – but not limited to – the demise or critical breakdown of one or more Root Server Operators, or ICANN or IANA;</i></li> <li>• <i>To ensure the performance of the root server system is monitored in the light of anticipated or actual changes to the system or in global Internet usage;</i></li> <li>• <i>To provide a means of liaison between the Root Server Operators, ICANN and the Internet Community.</i></li> </ul> <p>3. The ‘new’ RSSAC to be composed of 9 members:</p> <ul style="list-style-type: none"> <li>• 4 Root Server Operators appointed by the operators;</li> <li>• 1 appointed by IANA; and</li> <li>• 4 appointed by the Board/NomCom of ICANN.</li> </ul> <p>Members must have a strong technical understanding of the Root Server System.</p>
<b>WG’s Conclusion</b>	<p>These recommendations suggest structural changes to RSSAC and its mandate, and cannot be addressed in the absence of a full collaboration with Root Operators.</p>

<b>Reviewers’ Recommendation</b>	<p>4. RSSAC to appoint its Chair from among the members for two years and with a limit of three consecutive two-year terms.</p>
<b>WG’s Conclusion</b>	<p>ICANN Bylaws stipulate that the initial Chair of the RSSAC is to be elected by the ICANN Board, and that subsequent Chairs shall be elected by the RSSAC, based on procedures to be adopted by RSSAC members.</p> <p>In reality -as noted by reviewers- the second part of this Bylaws provision was never implemented, and the same initial Board-nominated RSSAC Chair is still in function since 1999. This reviewers’ recommendation puts into practice the provision of ICANN Bylaws, and as such is endorsed by the WG.</p> <p>Suggested length of tenure and maximum number of terms for the future RSSAC Chair are based on standard practices, and RSSAC is invited to consider them when setting its own operating procedures.</p>

<b>Reviewers’ Recommendation</b>	<p>5. On inward and outward Liaisons:</p> <ul style="list-style-type: none"> <li>• To keep the current Liaison from the RSSAC to the Board;</li> <li>• To establish both an inward and an outward Liaison</li> </ul>
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	<p>to/from SSAC;</p> <ul style="list-style-type: none"> <li>• To establish an inward Liaison from IETF/IAB so as to obtain additional technical input;</li> <li>• To dismiss the current outward Liaison to the NomCom because of the new suggested structure of RSSAC.</li> </ul>
<b>WG's Conclusion</b>	<p>The WG agrees with the rationale behind reviewers' proposals aimed at strengthening the relations between RSSAC, SSAC and IETF via the introduction of inward and outward Liaisons, and remarks that:</p> <ul style="list-style-type: none"> <li>• An inward Liaison from SSAC to RSSAC is regularly appointed, and this process shall be maintained;</li> <li>• An outward RSSAC Liaison to SSAC used to be appointed, but the position is currently vacant; the WG recommends to fill this vacancy, in coordination with SSAC;</li> <li>• It is indubitably worth discussing/analyzing the recommendation in favor of the establishment of an inward Liaison from IETF/IAB, in dialogue with the IETF/IAB.</li> </ul> <p>The WG agrees furthermore with the recommendation to keep the current RSSAC Liaison to the Board.                  It does not address the recommendation to dismiss the present Liaison to the NomCom, as reviewers presented it as a consequence of their envisaged restructuring of RSSAC, which is not discussed in the present report. This recommendation should be analyzed when discussing the overall structure and function of the RSSAC.</p>

<b>Reviewers' Recommendation</b>	<p>6. RSSAC meetings:</p> <ul style="list-style-type: none"> <li>• RSSAC to meet at each ICANN meeting with provision for it to hold additional meetings in between;</li> <li>• Sessions to be public unless a majority of the members believe it appropriate to have a closed session for part of a meeting;</li> <li>• All Root Server Operators and members of the Board to be invited and to have speaking rights at the discretion of the Chair;</li> <li>• Other attendees may be granted speaking rights at the discretion of the Chair;</li> <li>• If RSSAC went into closed session under exceptional circumstances and at the discretion of the Chair, the Root Server Operators, ICANN Board, appointed Liaisons and technical staff would be invited to join.</li> </ul>
<b>WG's Conclusion</b>	<p>The WG agrees with reviewers that the conducting of RSSAC meetings at IETF meetings and the low participation of RSSAC members in ICANN meetings is one of the reasons why several ICANN community members have poor knowledge of RSSAC</p>

operations. However, it is aware that there are operational reasons which suggest the running of RSSAC meetings in parallel with IETF meetings.

On balance of these remarks, and in view of ensuring a higher level of visibility of RSSAC work to the ICANN communities, it recommends that RSSAC should consider organizing at least one of its yearly meetings in parallel with an ICANN meeting.

The WG agrees with all the residual measures suggested in this recommendation, aimed at achieving a greater transparency of the work of RSSAC.

<b>Reviewers' Recommendation</b>	<p>7. ICANN to nominate two members of staff to support the RSSAC:</p> <ul style="list-style-type: none"><li>• One technical fellow to perform research and drafting of reports; this support, initially, would be part-time, with perspective of growing demand. Role to be separated from L-root operations;</li><li>• One administrative, part-time support for tasks such as meeting support, logistics, website maintenance, support to Chair between meetings etc.</li></ul>
<b>WG's Conclusion</b>	<p>The WG considers that this recommendation is well-motivated, and recommends that –should RSSAC request in this sense, ICANN would deliver the required two part-time resources so as to support RSSAC works. The role of this supporting staff should be separated from the managing of the 'L' Root and the IANA function.</p> <p>From a broader perspective, the WG considers that the very coordination of the relation between ICANN and the Root Server Operators deserves further analysis.</p> <p>In general, one remarks that Root Server Operators are committed to serving the data provided to them by IANA, but otherwise they consider themselves to be independent from, and only partially related to ICANN.</p> <p>ICANN currently has two structural relationships with RSSAC: one via IANA, and another one via the 'L' Root Server operation. Due to their specific focus and fields of activity, none of these operational relations however represents ICANN as a whole, to the Root Server Operators.</p> <p>The RSSAC review WG recommends that ICANN identify a member of the senior management team with the duty to represent the whole Organization in communications with RSSAC, particularly with regard to the operational implementation of ICANN policies in the areas of new TLDs (new gTLDs, ccTLDs, and IDN TLDs), and the continued roll-out of DNSSEC and IPv6. This senior contact would then coordinate</p>

ICANN interaction with RSSAC, either by direct involvement or through others, including but not necessarily limited to the 'L' Root Operator and the IANA staff.

<b>Reviewers' Recommendation</b>	8. Fund travel and accommodation for RSSAC members to and from ICANN meetings and other relevant technical meetings.
<b>WG's Conclusion</b>	The WG recommends that ICANN funds travel and accommodation for RSSAC members to participate in ICANN meetings, whenever a RSSAC meeting is organized during an ICANN meeting.