

Background

The Service Level Expectation (SLE) Design Team (DT) is comprised of 3 gTLD Registry representatives and 3 ccTLD Representatives. The DT has been working productively with ICANN, including IANA staff.

The DT was asked to review the current IANA functions operations and to work with IANA staff to capture the current work flow processes for incorporation in the final SLE document. IANA have recently provided some documentation and DTA expects to continue to work together with IANA to document the root management processes in the coming months.

The DT also reviewed the performance standards established under the IANA contract between NTIA and ICANN, which was considered inadequate for a registry service of such global importance, once the NTIA will no longer be part of the IANA process. The rationale for this is that NTIA's independent stewardship and authorisation role ceases to be relevant. In addition, by having clarity as to process, it can be confirmed that IANA staff may not be the cause of the delay in the execution of the change request, which may be caused by requester or a third party. Further, on other occasions, and due to the wide time window for completing a task under NTIA's SLA, there is an opportunity for — or the perception of — preferential treatment for certain TLD Managers to have a change requests completed in a matter of days, whilst the completion of request for other TLD Managers may take much longer and yet still be within the appropriate SLA time window.

The DT is not proposing any changes to the current work flow process. The DT is recommending that there is a requirement placed on IANA, (either before or as part of the Implementation Phase of the CWG Stewardship Proposal) to measure, record and report additional transaction times for each Root Zone Management process.

Such transparency will provide factual information to assist the CSC, IFRT and the Community to determine and confirm that IANA is continuing to provide non-discriminatory service to the naming community.

Principles

These are a set of guiding principles that will help define the expectation for the monitoring and reporting environment, and guide the definition of the individual criteria used for reporting and assessment of the naming-related portions of the IANA Functions:

1. **Attributable measures.** Unless clearly impractical, individual metrics should be reported attributing time taken to the party responsible. For example, time spent by IANA staff processing a change request should be accounted for distinctly from time spent waiting for customer action during a change request.
2. **Overall metrics.** In addition to the previous principle, overall metrics should be reported to identify general trends associated with end-to-end processing times and processing volumes. The raw performance data should continue to be freely available to third parties to conduct their own independent analysis.
3. **Relevance.** All metrics to be collected should be relevant to the validation of customer service. In addition some are customer critical metrics that are considered important to set specific thresholds for judging breaches in ICANN's ability to provide an appropriate level of service.
4. **Clear definition.** Each metric should be sufficiently defined such that there is a commonly held understanding on what is being measured, and how an automated approach would be implemented to measure against the standard.
5. **Definition of thresholds.** The definition of specific thresholds for performance criteria should be set to ensure minimally acceptable service levels. Thresholds are expected to change over time to drive improvements in service levels. Initial thresholds may be based on analysis of actual data or this may require first the definition of a metric, a period of data collection, and later analysis by IANA customers before defining the threshold.

6. **Review process.** The service level expectations should be reviewed periodically, and adapted based on the revised expectations of IANA's customers and relevant updates to the environment. They should be mutually agreed between the community and the IANA Functions Operator.
7. **Regular reporting.** To the extent practical, metrics should be regularly reported in a near real-time fashion as and when collected.

Capturing the current status-quo for IANA Root Zone Management

Introduction

Service Level Expectations (SLEs) for a domain name registry are typically based on measuring specific transactions sent by a client to the registry. The metric for a transaction is generally of the form of "Transaction A must complete within X period Y percent of the time measured over Z", for example, "a root zone update must complete within 72 hours 95% of the time measured on a monthly basis". The Root Zone Management process currently presents unique challenges in that IANA is not responsible for all phases of processing, therefore the SLEs must be written to accommodate the phases of the process, and to be mindful of the different attribution for these phases.

These SLE metrics are based on the following current assumptions:

- A. For the purposes of the SLE discussion, the current process is simplified to five key stages for all change requests (notification is implicit in each stage):
 1. Confirm the details of the change;
 2. Verify the change complies with documented technical standards and policies and all applicable checks pass;
 3. Obtain authorization/consent to proceed with the change;
 4. Implement the change
 5. Notify the change requester of completion of the change.
- B. Root Zone Management processes for routine change requests are largely automated. This automation includes:
 1. A web based interface for submitting change requests to the IANA Function Operator. The web based interface authenticates the credentials presented by the change requester and facilitates the creation of root zone file and root zone database change requests.
 2. Near-real time confirmation email to the initiator of the change request of its safe receipt by the IANA system. Note, in certain circumstances, the request is initiated by other means such as fax or written letter. In these situations, email may not necessarily be used in communications.
 3. Automated technical checks conducted by the IANA system on the change request. These checks ensure conformance of the technical data with agreed minimum standards, and check for errors in the material submitted.
 4. Seeking consent from the relevant contacts for the domain, through an automated email verification process where approval requests are sent to both, at a minimum, the admin and technical contacts at the Registry for both parties to consent to the update. (Note: Some contacts are slow to respond which creates inefficiency in the validation process. In certain circumstances, third party verification is also required, e.g. Governmental approvals)
 5. The verified change request is transmitted to NTIA for authorization. For changes that impact the root zone file, the change request is also transmitted to the Root Zone Maintainer This is performed via an online interface.

6. Once confirmed, notification is sent by NTIA to IANA, and for changes that impact the root zone file, to the Root Zone Maintainer authorizing the change request for implementation.
 7. Prior to implementation, the Root Zone Maintainer repeats automated technical compliance checks on the request and once verified, implements the change within the root zone file. This file is typically published twice daily.
 8. On publication of updates to the root zone file, Root Zone Maintainer notifies IANA, who verifies the changes match the requested changes, and notifies the Registry.
- C. The processing role currently undertaken by the NTIA will no longer exist in a post-transition environment and those steps will no longer be undertaken. This means that IANA will have responsibility for triggering implementation at the conclusion of processing and communicating directly with the maintainer of the Root Zone.
- D. IANA's online systems operate 24 hours a day, 365 days a year, except for maintenance periods, as befits a service that has customers around the globe.

Monitoring Past Performance:

(We accept that past performance is no indication of future performance but it does capture the status-quo).

The SLE Group conducted historical analysis of IANA performance based on two sources: data published in IANA performance reports, and transaction logs provided by ccTLD registries interacting with the IANA root management function. The data sources were for the period September 2013 to January 2015, which provided approximately 565 total data points – only 27 transactions took longer than 9 days and 13 took longer than 12 days. It should also be highlighted that some/much of the delay is as a result of not responding to IANA to authorize the change request – so the delay is not necessarily within IANA's control. 4 transactions took longer than 1 year (which is not necessarily a problem if the stability of the DNS is assured). A summary of this research is presented: <enter URL>

The ongoing work of DTA to define the final SLE to be included with the proposal submitted to the NTIA will be run in parallel with the ICG process to review the naming community proposal. The objective is to ensure that the naming proposal is not delayed by work to define the SLEs and so to optimize use of the time prior to the final submission of a proposal to the NTIA. Review of the ongoing work can be viewed here: <enter URL>

Escalations

The Design Team endorses the concept of an IANA Customer Standing Committee specifically to monitor SLEs but also to contribute to an escalation path for any future breach of service expectations. The role and remit of the CSC is outside of this DT's remit, so the escalation path described in this document is rudimentary and designed to support Registry operations. We hand over to our CWG colleagues to better describe the recommended escalation path.