

**SLE Working Group Report on Service Level Expectation  
for IANA Root Zone Management  
(Post-Transition)**

8 August 2016 (Agreed by WG members and IANA)

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## Background

The Service Level Expectation (SLE) working group — formerly CWG Design Team A — is comprised of three gTLD Registry representatives and three ccTLD Representatives, and produced a report<sup>1</sup> providing analysis of the existing service levels associated with root zone management, and is providing recommendations associated with service levels in a post-transition environment.

The group conducted an historical analysis based on two factors: an analysis of the current Performance Standards that NTIA has with ICANN, and an analysis of real world transaction activity. The source of this second data set was based on two categories: published IANA performance reports, data (September 2013 to January 2015 with approximately 565 total data points), and transaction logs provided by ccTLD registries interacting with the IANA root management function.

Subsequent to production of this report, the Group has performed further analysis through discussion and collaboration with ICANN staff, in order to identify a framework for performance measurements for root zone management functions in a post-transition environment. These measurements are responsive to the recommendations in the working group's earlier report, and the principles contained within.

## Principles

These are guiding principles agreed by the Design Team that 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.** Where practical, 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 times.** Notwithstanding the previous principle, there is value in overall metrics being reported to identify general trends associated with end-to-end processing times.

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<sup>1</sup> Design Team A findings (June 8), <https://community.icann.org/display/gnsocwgdstwrdsdp/DT-A+Service+Levels+Expectations>

These findings were incorporated into the final submission of the Cross-Community Working Group on Naming-Related Functions (CWG-Stewardship) to the IANA Stewardship Transition Coordination Group (ICG), <https://community.icann.org/pages/viewpage.action?pageId=53779816>

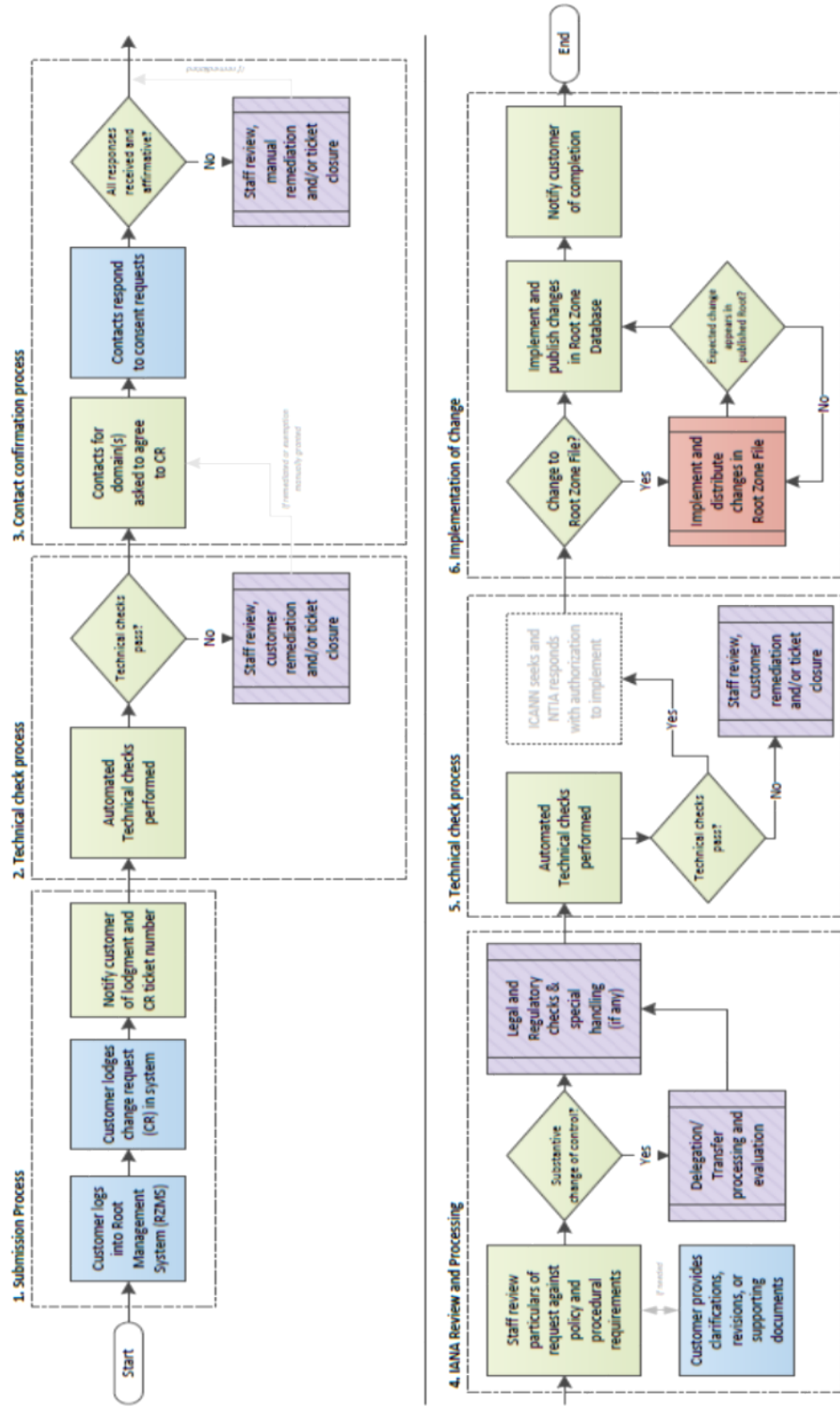
3. **Relevance.** There should be a distinction between metrics that should be collected to support general analysis, versus which are the critical metrics that are considered important to set specific thresholds for judging breaches in ICANN's ability to provide an appropriate level of service.
4. **Clear 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 a performance criteria should be set based on analysis of actual data. This may require first the definition of a metric, a period of data collection, and later analysis by the community before defining the threshold.
6. **Review process.** The service level expectations should be reviewed periodically, and adapted based on the revised expectations of the community and 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.

## Assumptions

- A. Service Level Expectations (SLEs) for a registry are normally based on specific transactions sent by a client to the registry. The metric for that 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”.
- B. For metrics which are considered key reporting requirements, but for which this type of measurement is not considered viable (e.g. due to infrequency of the type of request), provisions are made for an exception-based reporting model. When there is an exception in such a category, there is an obligation to report on the incident.
- C. For the purposes of designing the Service Level Expectations, the current process is simplified to six key stages for all change requests (notification is implicit in each stage):
  - a. Accept change request submissions from customers;
  - b. Verify the change passes documented technical verification checks;
  - c. Obtain consent from relevant contacts to proceed with the change;
  - d. Verify the change request meets policy and procedural requirements;
  - e. Obtain authorization from NTIA to proceed with the change;
  - f. Implement the change and notify the change requester of completion of the change.
- D. 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 through online interfaces.
  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
  9. IANA updates the Root Zone Database and notifies the requester of completion.
- E. The processing role currently undertaken by the NTIA will no longer exist in the 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 RZM.
- F. 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.
- G. In order to review the phases of processing, the following simplified process flow has been produced. The process flow should not be considered a substitute for the complete process flow utilized for managing the Root Zone, however it does illustrate the key phases of processing relevant for the evaluation of service level expectations:

# Simplified Root Zone Process Flow



**Responsible party for process steps**

- Customer (e.g. TLD registry) & customer-related 3<sup>rd</sup> parties
- ICANN (IANA functions op.)
- Mixed responsibility (back and forth between multiple parties, simplified for this flowchart)
- Version (as publisher of the root zone file)
- Step eliminated post transition

- H. The sum of the measurements produced from the various measured sub-processes as they pertain to IANA processing must represent 100% of the time under IANA's control during processing, in order to accurately assess IANA performance.
- I. Absent extraordinary circumstances, IANA will operate in an open and transparent manner while respecting customer confidentiality.
- J. In addition, it will respond to requests in a fair and non-discriminatory manner unless a requested change is deemed to be an emergency..
- K. IANA will document process deviations that result an SLE not being measured when it would normally be expected to do so. At a minimum, the reasons for process deviations should be available to the customer impacted.

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## Service Level Expectations

### Services definitions

While there are many different ways change requests can be categorized, the key areas of distinction between different processing types for the purposes of metrics are as follows:

**Category I (Routine updates impacting Root Zone File)** — Routine change requests that alter the technical data published in the DNS root zone (e.g. changes to NS records, DS records and glue records) . For these changes the process requires IANA, both pre- and post-transition, to engage third parties to implement, publish and distribute changes in the root zone file.

**Category II (Routine updates not impacting Root Zone File)** — Routine change requests that do not alter the DNS root zone file (e.g. contact data and metadata). These changes do not engage third parties as part of implementation, and therefore will have a materially different processing timeframe.

**Category III (Creating or Transferring a gTLD)** — Requests to create (“delegate”) or transfer (“redelegate” or “assign”) a generic top-level domain. These changes require additional processing by IANA to ensure policy and contractual requirements are met associated with a change of control for the TLD. While the key processing is performed elsewhere within ICANN, the IANA processing is significant and therefore distinguishes this type of request from a routine change request.

**Category IV (Creating or Transferring a ccTLD)** — Requests to create or transfer a country-code top-level domain. These changes require additional processing by IANA to ensure policy requirements are met. This processing is performed by IANA staff, and includes performing additional analysis on the change request, producing a report, and having that report reviewed externally (including verification that all existing registration data has been successfully transferred from the old to new Registry operator). This processing is significant, and is normally substantially longer than a routine change request, and therefore should be distinguished.

**Category V (Other change requests)** — Other non-routine change requests. IANA is required to process change requests that may have special handling requirements, or require additional documentary evidence or additional clarifications from the customer or third parties, that do not afford them the ability to automate. These scenarios include, but are not necessarily limited to:



- i. Customers that require requests to be handled outside the online self-service platform, such as those lodging change requests through the exchange of postal mail;
- ii. Customers that have placed special handling instructions on file with IANA, or have otherwise asked for special handling for a request that deviates from the normal process, that must be executed manually by IANA staff;
- iii. Unique legal or regulatory encumbrances that must be satisfied that require additional processing;
- iv. Removing a TLD from service (e.g. retirement or revocation);
- v. Changes that relate to the operation of the root zone itself, including changing the Root Key Signing Key, altering the set of authoritative name servers for the root zone (e.g. the “root servers”), and changes to the “root hints” file.

These types of changes should be categorized distinctly from those requests for which there is a clear regularly conducted process that adheres to the typical processing path and may be removed from the SLE pool.

The applicable processing phases against which metrics for change requests should be reported and assessed can be mapped these categories as follows:

| Step  | Process   |   |  |  |   |
|---|---|---|--|--|---|
|   | Cat I<br>Routine updates impacting Root Zone File (NS, DS and glue records) | Cat II<br>Routine updates not impacting Root Zone File (Contact details and metadata) | Cat III<br>Creating or Transferring a gTLD | Cat IV<br>Creating or Transferring a ccTLD | Cat V<br>Other change requests (e.g. non-routine change requests) |
| <b>Submission</b>   |   |   |  |  |   |
| Time for ticket confirmation to be sent to requester following receipt of change request via automated submission interface | ●   | ●   | ●  | ●  | ◐   |
| Time for lodgment of change request into RZMS by ICANN staff on behalf of request sent by email                             | ●   | ●   | ◐  | ◐  | ◐   |
| <b>Technical Checks</b>   |   |   |  |  |   |
| Time to return results for technical checks following submission of request via automated submission interface              | ●   | ◐   | ◐  | ◐  | ◐   |
| Time to return results for subsequent performance of technical checks during retesting                                      | ●   | ◐   | ◐  | ◐  | ◐   |

|  |   |   |   |   |   |
|--|---|---|---|---|---|
| due to earlier failed tests  |   |   |   |   |   |
| <b>Contact Confirmation</b>  |   |   |   |   |   |
| Time for authorization contacts to be asked to approve change request after completing previous process phase        | ● | ● | ◐ | ◐ | ◐ |
| Time for response to be affirmed by IANA <sup>2</sup>  | ● | ● | ◐ | ◐ | ◐ |
| <b>IANA Review and Processing</b>  |   |   |   |   |   |
| Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation | ● | ● | ● | ● | ● |
| Time for third-party review of request (e.g.by ICANN Board of Directors or other independent verification parties)   |   |   |   | ● |   |

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<sup>2</sup> The time the automation system takes from when the last required confirmation is received, until the business process logic progresses the request to the next logic state.

| Supplemental Technical Checks   |   |   |   |   |   |
|---|---|---|---|---|---|
| Time to return results for performance of technical checks during Supplemental Technical Check phase                  | ● | ◐ | ◐ | ◐ | ◐ |
| Implementation of Changes   |   |   |   |   |   |
| Time for root zone changes to be published following completion of validations and reviews by IANA Functions Operator | ● |   | ◐ | ◐ | ◐ |
| Time to notify requester of change completion following publication of requested changes                              | ● | ● | ● | ● | ● |

Legend: ● applies in all instances, ◐ applies in some instances (e.g. not all changes of that type involve changes to the root zone or require technical checks, therefore the applicability of processing steps is determined by the specifics of the change)

| Service Area                | Service   |
|-----------------------------|---|
| Root Zone Management System | An online interactive web service for credentialed customers to submit change requests to their root zone database entries, review historical and pending change requests, and perform other related actions. This system also provides related maintenance functions such as customer credential recovery. |

|                         |  |
|-------------------------|--|
| IANA Website            | Publication of materials associated with root zone management, including a representation of the Root Zone Database, related root zone process documentation and reports, and links to the Root Zone File. |
| General Enquiry Service | Response to ad-hoc queries from the public on questions pertaining to Root Zone Management.  |

## Reporting mechanisms

IANA is required to provide the following reporting mechanisms. The availability of the reporting mechanisms are documented below.

| Access | Type of Reporting             | Metrics or Data Points                                  | New/Existing |
|--------|-------------------------------|---|--------------|
| Public | Real-time Dashboard           | Process Volumes   | Existing     |
|        |                               | Current SLE Metrics                                     | Existing     |
|        |                               | Visual Performance Indicators (e.g. Green, Yellow, Red) | New          |
|        | SLE Report                    | Performance against metrics                             | Existing     |
|        |                               | Notification of breaches                                | Existing     |
|        |                               | Explanations of any breaches                            | Existing     |
|        | Incident Reports <sup>3</sup> | Reporting of incidents                                  | Existing     |
|        |                               | Root cause analysis                                     | Existing     |
|        |                               | Remediation steps                                       | Existing     |
|        | Accuracy                      | Calculation based upon                                  | Existing     |

<sup>3</sup> There may be confidentiality requirements pertaining to the level of disclosure of incidents. A protocol should be established with the CSC regarding the level of disclosure that is appropriate for incidents, mindful of preserving confidentiality of individual customer transactions and security considerations for the root management system.

| Access                         | Type of Reporting  | Metrics or Data Points   | New/Existing |
|--------------------------------|--|--|--------------|
|                                |  | number of Incidents Reports vs. total volume                               |              |
|                                | Request database (data is of sufficient detail to verify the metric calculations use for the SLE report) | Every request made (that is accepted as a genuine request)                 | Existing     |
|                                |  | Timestamps of key points in the request lifecycle                          | Existing     |
|                                |  | The final status of each concluded request                                 | Existing     |
| Private (Requesting TLDs Only) | Status tracker (current and historical <sup>4</sup> )  | Every request made for the TLD   | Existing     |
|                                |  | The current status   | Existing     |
|                                |  | Timestamps of key events   | Existing     |
|                                |  | What action, if any, the TLD is required to do to move it to the next step | Existing     |

## Field Definitions

The fields in the following tables are as follows:

- **Process.** The business process that IANA is requested to perform.
- **Metric.** The individual metric that will be measured as part of the completion of the business process.
- **Target.** The specified target for each individual change request.
- **Type.** Whether the target specified is a minimum target (compliance must be less than the target) or a maximum target (compliance must not be more than the target).
- **Breach.** The percentage limit of change requests within the specified period that fail to meet the metric, which if reached is deemed a breach in the SLE.

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<sup>4</sup> It is understood historical records for requests lodged prior to the online management system will not be displayed.

- **Period.** The period over which SLE compliance is measured.

## Informational Measurement and Reporting

These elements reflect activity areas that should be instrumented by the IANA Functions Operator, and disclosed in reporting, either in real-time or in other reports, to inform the community on important parameters relating to the naming-related functions. Real-time reporting will be done via publishing in a publically accessible dashboard and non-real time reporting will be published monthly via incident reports.

| ID  | Metric   | New/Existing                 | Mechanism            |
|---|--|------------------------------|----------------------|
| <i>Overall Request Processing Volumes and Timelines</i> |  |                              |                      |
| A1  | <b>Total Time</b> — average end-to-end processing time from submission to completion of change requests, divided across high-level partitioning of request types (such as contact data changes, nameserver changes, delegations/redelegations and root server changes) | Existing (as monthly report) | Publish in dashboard |
| A2  | <b>Volume</b> — number of requests performed, divided across high-level partitioning of request types  | Existing (as monthly report) | Publish in dashboard |
| A3  | <b>Final outcome</b> — number/percentage of requests that are implemented, versus that are closed due to deficiencies, withdrawn by customer, etc.   | New                          | Publish in dashboard |
| A4  | <b>Time per actor</b> — average time taken for IANA processing, Root Zone Maintainer processing, waiting on customer response, waiting on ICANN Board or other independent verification parties (for delegations/redelegations).                                       | New                          | Publish in dashboard |
| B1  | <b>Time to perform technical checks</b> — Time to return results for technical checks following submission of request via automated submission interface   | New                          | Publish in dashboard |
| B2  | <b>Time from submission to customer action required</b> — average time for authorization contacts to be asked to approve change request after completing previous process phase  | New                          | Public in dashboard  |
| B3  | <b>Time to complete all other IANA processing</b> — Time to complete all other validations and reviews by IANA and release request for implementation.   | New                          | Publish in dashboard |
| B4  | <b>Time for third-party review</b> — Time for third-party reviews of requests ( e.g. by ICANN Board of Directors or other  | New                          | Publish in           |

| ID   | Metric   | New/Existing                 | Mechanism                |
|--|--|------------------------------|--------------------------|
|  | independent verification parties)  |                              | dashboard                |
| B5   | <b>Time for root-zone publication</b> — Time for root zone changes to be published following completion of validations and reviews by IANA.                              | Existing <sup>5</sup>        | Publish in dashboard     |
| B6   | <b>Time for final notification</b> — Time to notify requester of change completion following publication of requested changes.   | New                          | Publish in dashboard     |
| <i>Accuracy</i>  |  |                              |                          |
| C1   | <b>Incorrectly implemented requests</b> — Incidents where data published (e.g. in the root zone) differs from that requested and processed through the process.          | Existing (as monthly report) | Produce incident reports |
| <i>Online Services Availability and Enquiry Processing</i> |  |                              |                          |
| D1   | <b>RZMS availability for customers</b> — percentage availability of the RZMS to allow customers to perform self-service operations via the web interface.                | New                          | Publish in dashboard     |
| D2   | <b>Website availability</b> — percentage availability of IANA website for consulting documentations and other posted materials.  | New                          | Publish in dashboard     |
| D3   | <b>Directory service availability</b> — percentage availability of WHOIS server and other registration data publication services   | New                          | Publish in dashboard     |
| D4   | <b>Credential recovery</b> — timeliness of elements of credential recovery process   | New                          | Publish in dashboard     |
| D5   | <b>Performance metrics availability</b> — availability of accurate, timely reporting to these standards via dashboard and other mechanisms.                              | New                          | Publish in dashboard     |
| D6   | <b>Time to process enquiries</b> — time to process general enquiries pertaining to root zone management, but not pertaining to interactions in a change request context. | New                          | Publish in dashboard     |

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<sup>5</sup> Currently this is reported from the time a request is authorized by NTIA, to the time a request is signaled as completed by the Root Zone Maintainer to ICANN via EPP. This would be altered to be the time the request is transmitted by ICANN to the Root Zone Maintainer; to the time a change is visible via the authoritative root servers.



These following elements reflect measures against which specific thresholds should be set, with an expectation that the IANA Functions Operator will normally perform within the threshold, and the inability to meet the threshold will be identified, result in follow-up with the Customer Standing Committee to identify the cause. Regular unexplained inability to meet the thresholds may result in remedial action. The thresholds will be modified over time as part of periodic reviews of the service level expectation.

A subset of the following measures relate to measurement of non-routine changes where it is not applicable to set a specific threshold for performance. It is expected for measurements of non-routine process steps these will only be reported with no applicable service level expectation.

## Process Performance

Total IANA transaction time for emergency changes should be completed within a target of 12 hours until reviewed by the CSC with IANA as and when data is available.

| Process Category   | Metric  | Threshold             | Type       | Breach | Period       |
|--|---|-----------------------|------------|--------|--------------|
| <b>Category I —<br/>Routine updates<br/>impacting Root<br/>Zone File (NS, DS<br/>and glue records)</b> | <b>Submission</b>   |                       |            |        |              |
|  | Time for ticket confirmation to be sent to requester following receipt of change request via automated submission interface | $\leq 60 \text{ sec}$ | <i>Max</i> | 95%    | <i>Month</i> |
|  | Time for lodgment of change request into RZMS by ICANN staff on behalf of request sent by email                             | $\leq 3 \text{ days}$ | <i>Max</i> | 95%    | <i>Month</i> |
|  | <b>Technical Checks</b>   |                       |            |        |              |
|  | Time to return results for technical checks following submission of request via automated submission interface              | $\leq 50 \text{ min}$ | <i>Max</i> | 95%    | <i>Month</i> |
|  | Time to return results for subsequent performance of technical checks during  | $\leq 3 \text{ min}$  | <i>Max</i> | 95%    | <i>Month</i> |

| Process Category                         | Metric  | Threshold             | Type       | Breach | Period       |
|--|---|-----------------------|------------|--------|--------------|
|  | retesting due to earlier failed tests   |                       |            |        |              |
| <b>Contact Confirmation</b>              |   |                       |            |        |              |
|  | Time for authorization contacts to be asked to approve change request after completing previous process phase         | $\leq 60 \text{ sec}$ | <i>Max</i> | 95%    | <i>Month</i> |
|  | Time for response to be affirmed by IANA  | $\leq 60 \text{ sec}$ | <i>Max</i> | 95%    | <i>Month</i> |
| <b>IANA Review and Processing</b>        |   |                       |            |        |              |
|  | Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation  | $\leq 5 \text{ days}$ | <i>Max</i> | 90%    | <i>Month</i> |
| <b>Supplemental Technical Checks</b>     |   |                       |            |        |              |
|  | Time to return results for performance of technical checks during Supplemental Technical Check phase                  | $\leq 60 \text{ sec}$ | <i>Max</i> | 95%    | <i>Month</i> |
| <b>Implementation of Changes</b>         |   |                       |            |        |              |
|  | Time for root zone changes to be published following completion of validations and reviews by IANA Functions Operator | $\leq 72 \text{ hrs}$ | <i>Max</i> | 99%    | <i>Month</i> |
|  | Time to notify requester of change completion following publication of requested changes                              | $\leq 60 \text{ sec}$ | <i>Max</i> | 95%    | <i>Month</i> |
| <b>Category II —<br/>Routine updates</b> | <b>Submission</b>   |                       |            |        |              |
|  | Time for ticket   | $\leq 60 \text{ sec}$ | <i>Max</i> | 95%    | <i>Month</i> |

| Process Category   | Metric   | Threshold   | Type                      | Breach                    | Period                    |
|--|--|---|---------------------------|---------------------------|---------------------------|
| <b>not impacting<br/>Root Zone File<br/>(Contact details<br/>and metadata)</b> | confirmation to be sent to requester following receipt of change request via automated submission interface        |   |                           |                           |                           |
|  | Time for lodgment of change request into RZMS by ICANN staff on behalf of request sent by email                    | $\leq 3 \text{ days}$                             | <i>Max</i>                | <i>95%</i>                | <i>Month</i>              |
|  | <b>Technical Checks</b>  |   |                           |                           |                           |
|  | Time to return results for technical checks following submission of request via automated submission interface     | <i>No<br/>Technical<br/>Checks<br/>Undertaken</i> | <i>Not<br/>Applicable</i> | <i>Not<br/>Applicable</i> | <i>Not<br/>Applicable</i> |
|  | Time to return results for subsequent performance of technical checks during retesting due to earlier failed tests | <i>No<br/>Technical<br/>Checks<br/>Undertaken</i> | <i>Not<br/>Applicable</i> | <i>Not<br/>Applicable</i> | <i>Not<br/>Applicable</i> |
|  | <b>Contact Confirmation</b>  |   |                           |                           |                           |
|  | Time for authorization contacts to be asked to approve change request after completing previous process phase      | $\leq 60 \text{ sec}$                             | <i>Max</i>                | <i>95%</i>                | <i>Month</i>              |
|  | Time for response to be affirmed by IANA   | $\leq 60 \text{ sec}$                             | <i>Max</i>                | <i>95%</i>                | <i>Month</i>              |
|  | <b>IANA Review and Processing</b>  |   |                           |                           |                           |
|  | Time to complete all other validations and reviews by IANA Functions Operator and release request for              | $\leq 5 \text{ days}$                             | <i>Max</i>                | <i>90%</i>                | <i>Month</i>              |

| Process Category  | Metric  | Threshold                             | Type                  | Breach                | Period                |
|---|---|---------------------------------------|-----------------------|-----------------------|-----------------------|
|   | implementation  |                                       |                       |                       |                       |
|   | <b>Supplemental Technical Checks</b>  |                                       |                       |                       |                       |
|   | Time to return results for performance of technical checks during Supplemental Technical Check phase                        | <i>No Technical Checks Undertaken</i> | <i>Not Applicable</i> | <i>Not Applicable</i> | <i>Not Applicable</i> |
|   | <b>Implementation of Changes</b>  |                                       |                       |                       |                       |
|   | Time for root zone changes to be published following completion of validations and reviews by IANA Functions Operator       | <i>No Technical Checks Undertaken</i> | <i>Not Applicable</i> | <i>Not Applicable</i> | <i>Not Applicable</i> |
|   | Time to notify requester of change completion following publication of requested changes                                    | $\leq 60 \text{ sec}$                 | <i>Max</i>            | 95%                   | <i>Month</i>          |
| <b>Category III —<br/>Creating or<br/>Transferring a<br/>gTLD</b> | <b>Submission</b>   |                                       |                       |                       |                       |
|   | Time for ticket confirmation to be sent to requester following receipt of change request via automated submission interface | $\leq 60 \text{ sec}$                 | <i>Max</i>            | 95%                   | <i>Month</i>          |
|   | Time for lodgment of change request into RZMS by ICANN staff on behalf of request sent by email                             | $\leq 3 \text{ days}$                 | <i>Max</i>            | 95%                   | <i>Month</i>          |
|   | <b>Technical Checks</b>   |                                       |                       |                       |                       |
|   | Time to return results for technical checks following submission of request via automated submission interface              | $\leq 50 \text{ min}$                 | <i>Max</i>            | 95%                   | <i>Month</i>          |

| Process Category                     | Metric  | Threshold              | Type       | Breach | Period       |
|--------------------------------------|---|------------------------|------------|--------|--------------|
|                                      | Time to return results for subsequent performance of technical checks during retesting due to earlier failed tests    | $\leq 3 \text{ min}$   | <i>Max</i> | 95%    | <i>Month</i> |
| <b>Contact Confirmation</b>          |   |                        |            |        |              |
|                                      | Time for authorization contacts to be asked to approve change request after completing previous process phase         | $\leq 60 \text{ sec}$  | <i>Max</i> | 95%    | <i>Month</i> |
|                                      | Time for response to be affirmed by IANA  | $\leq 60 \text{ sec}$  | <i>Max</i> | 95%    | <i>Month</i> |
| <b>IANA Review and Processing</b>    |   |                        |            |        |              |
|                                      | Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation  | $\leq 10 \text{ days}$ | <i>Max</i> | 90%    | <i>Month</i> |
| <b>Supplemental Technical Checks</b> |   |                        |            |        |              |
|                                      | Time to return results for performance of technical checks during Supplemental Technical Check phase                  | $\leq 5 \text{ min}$   | <i>Max</i> | 95%    | <i>Month</i> |
| <b>Implementation of Changes</b>     |   |                        |            |        |              |
|                                      | Time for root zone changes to be published following completion of validations and reviews by IANA Functions Operator | $\leq 72 \text{ hrs}$  | <i>Max</i> | 99%    | <i>Month</i> |
|                                      | Time to notify requester of change completion   | $\leq 60 \text{ sec}$  | <i>Max</i> | 95%    | <i>Month</i> |

| Process Category  | Metric  | Threshold              | Type       | Breach | Period       |
|---|---|------------------------|------------|--------|--------------|
|   | following publication of requested changes  |                        |            |        |              |
| <b>Category IV —<br/>Creating or<br/>Transferring a<br/>ccTLD</b> | <b>Submission</b>   |                        |            |        |              |
|   | Time for ticket confirmation to be sent to requester following receipt of change request via automated submission interface | $\leq 60 \text{ sec}$  | <i>Max</i> | 95%    | <i>Month</i> |
|   | Time for lodgment of change request into RZMS by ICANN staff on behalf of request sent by email                             | $\leq 3 \text{ days}$  | <i>Max</i> | 95%    | <i>Month</i> |
|   | <b>Technical Checks</b>   |                        |            |        |              |
|   | Time to return results for technical checks following submission of request via automated submission interface              | $\leq 50 \text{ min}$  | <i>Max</i> | 95%    | <i>Month</i> |
|   | Time to return results for subsequent performance of technical checks during retesting due to earlier failed tests          | $\leq 3 \text{ min}$   | <i>Max</i> | 95%    | <i>Month</i> |
|   | <b>Contact Confirmation</b>   |                        |            |        |              |
|   | Time for authorization contacts to be asked to approve change request after completing previous process phase               | $\leq 60 \text{ sec}$  | <i>Max</i> | 95%    | <i>Month</i> |
|   | Time for response to be affirmed by IANA  | $\leq 60 \text{ sec}$  | <i>Max</i> | 95%    | <i>Month</i> |
|   | <b>IANA Review and Processing</b>   |                        |            |        |              |
|   | Time to complete all  | $\leq 60 \text{ days}$ | <i>Max</i> | 100%   | <i>Month</i> |

| Process Category   | Metric   | Threshold                                       | Type                            | Breach                          | Period                          |
|--|--|---|---------------------------------|---------------------------------|---------------------------------|
|  | other validations and reviews by IANA Functions Operator and release request for implementation  |   |                                 |                                 |                                 |
|  | Time for third-party review of request (e.g. by ICANN Board of Directors or other independent verification parties)  | <i>(Where Applicable) ≤ 60 days<sup>6</sup></i> | <i>Intentionally left blank</i> | <i>Intentionally left blank</i> | <i>Intentionally left blank</i> |
| <b>Supplemental Technical Checks</b>   |  |   |                                 |                                 |                                 |
|  | Time to return results for performance of technical checks during Supplemental Technical Check phase   | <i>≤ 5min</i>                                   | <i>Max</i>                      | <i>95%</i>                      | <i>Month</i>                    |
| <b>Implementation of Changes</b>   |  |   |                                 |                                 |                                 |
|  | Time for root zone changes to be published following completion of validations and reviews by IANA Functions Operator  | <i>≤ 72 hrs</i>                                 | <i>Max</i>                      | <i>99%</i>                      | <i>Month</i>                    |
|  | Time to notify requester of change completion following publication of requested changes   | <i>≤ 60 sec</i>                                 | <i>Max</i>                      | <i>95%</i>                      | <i>Month</i>                    |
| <b>Category V — Other change requests (e.g. non-routine change requests)</b> | <b>Description:</b><br>Other non-routine change requests. IANA is required to process change requests that may have special handling requirements, or require additional documentary evidence or additional clarifications from the customer or third parties, that do not afford them the ability to automate. These scenarios include, but are not necessarily limited to: |   |                                 |                                 |                                 |

<sup>6</sup> Subject to Review

| Process Category        | Metric  | Threshold             | Type       | Breach | Period       |
|-------------------------|---|-----------------------|------------|--------|--------------|
|                         | <p>i. Customers that require requests to be handled outside the online self-service platform, such as those lodging change requests through the exchange of postal mail;</p> <p>ii. Customers that have placed special handling instructions on file with IANA, or have otherwise asked for special handling for a request that deviates from the normal process, that must be executed manually by IANA staff;</p> <p>iii. Unique legal or regulatory encumbrances that must be satisfied that require additional processing;</p> <p>iv. Removing a TLD from service (e.g. retirement or revocation);</p> <p>v. Changes that relate to the operation of the root zone itself, including changing the Root Key Signing Key, altering the set of authoritative name servers for the root zone (e.g. the “root servers”), and changes to the “root hints” file.</p> <p>These types of changes should be categorized distinctly from those requests for which there is a clear regularly conducted process that adheres to the typical processing path and may be removed from the SLE pool.</p> |                       |            |        |              |
| <b>Submission</b>       |   |                       |            |        |              |
|                         | Time for ticket confirmation to be sent to requester following receipt of change request via automated submission interface   | $\leq 60 \text{ sec}$ | <i>Max</i> | 95%    | <i>Month</i> |
|                         | Time for lodgment of change request into RZMS by ICANN staff on behalf of request sent by email   | $\leq 3 \text{ days}$ | <i>Max</i> | 95%    | <i>Month</i> |
| <b>Technical Checks</b> |   |                       |            |        |              |
|                         | Time to return results for technical checks following submission of request via automated submission interface  | $\leq 50 \text{ min}$ | <i>Max</i> | 95%    | <i>Month</i> |
|                         | Time to return results for subsequent performance of  | $\leq 3 \text{ min}$  | <i>Max</i> | 95%    | <i>Month</i> |



| Process Category                     | Metric  | Threshold                        | Type                  | Breach                | Period                |
|--------------------------------------|---|----------------------------------|-----------------------|-----------------------|-----------------------|
|                                      | technical checks during retesting due to earlier failed tests   |                                  |                       |                       |                       |
| <b>Contact Confirmation</b>          |   |                                  |                       |                       |                       |
|                                      | Time for authorization contacts to be asked to approve change request after completing previous process phase         | $\leq 60 \text{ sec}$            | <i>Max</i>            | 95%                   | <i>Month</i>          |
|                                      | Time for response to be affirmed by IANA  | $\leq 60 \text{ sec}$            | <i>Max</i>            | 95%                   | <i>Month</i>          |
| <b>IANA Review and Processing</b>    |   |                                  |                       |                       |                       |
|                                      | Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation  | <i>No Validations Undertaken</i> | <i>Not Applicable</i> | <i>Not Applicable</i> | <i>Not Applicable</i> |
| <b>Supplemental Technical Checks</b> |   |                                  |                       |                       |                       |
|                                      | Time to return results for performance of technical checks during Supplemental Technical Check phase                  | $\leq 5 \text{ min}$             | <i>Max</i>            | 95%                   | <i>Month</i>          |
| <b>Implementation of Changes</b>     |   |                                  |                       |                       |                       |
|                                      | Time for root zone changes to be published following completion of validations and reviews by IANA Functions Operator | $\leq 72 \text{ hrs}$            | <i>Max</i>            | 99%                   | <i>Month</i>          |
|                                      | Time to notify requester of change completion following publication of requested changes                              | $\leq 60 \text{ sec}$            | <i>Max</i>            | 95%                   | <i>Month</i>          |

## Accuracy

| Metric  | Measurement     | Threshold   | Type       | Breach          |
|---|-----------------|-------------|------------|-----------------|
| Root zone file data published in the root zone matches that provided in the change request  | <i>Accuracy</i> | <i>100%</i> | <i>Min</i> | <i>&lt;100%</i> |
| Root zone database is correctly updated in accordance with change requests (does not include impact of normalization and other processing standardization - which in any event shall never detrimentally impact the update) | <i>Accuracy</i> | <i>100%</i> | <i>Min</i> | <i>&lt;100%</i> |

## Online Services Availability and Enquiry Processing

| Metric   | Threshold             | Type       | Breach          | Period       |
|--|-----------------------|------------|-----------------|--------------|
| <b>RZMS availability</b> — availability of an online interactive web service for credentialed customers to submit change requests to their root zone database entries. | $\geq 99.0\%$         | <i>Min</i> | <i>&lt;99%</i>  | <i>Month</i> |
| <b>Website availability</b> — availability of root zone management related documentation (e.g. on <a href="http://www.iana.org">http://www.iana.org</a> )              | $\geq 99.0\%$         | <i>Min</i> | <i>&lt;99%</i>  | <i>Month</i> |
| <b>Directory service availability</b> — availability of the authoritative database of TLDs   | $\geq 99.0\%$         | <i>Min</i> | <i>&lt;99%</i>  | <i>Month</i> |
| <b>Credential recovery</b> — time to dispatch confirmation email of forgotten username or password   | $\leq 60 \text{ sec}$ | <i>Max</i> | <i>95%</i>      | <i>Month</i> |
| <b>Credential change</b> — time to implement new password within the system  | $\leq 5 \text{ min}$  | <i>Max</i> | <i>95%</i>      | <i>Month</i> |
| <b>Dashboard update frequency</b> — average time to update the dashboard to ensure up-to-date reporting  | $\leq 30 \text{ min}$ | <i>Max</i> | <i>100%</i>     | <i>Month</i> |
| <b>Dashboard accuracy</b> — the data presented on the dashboard is accurate  | <i>100%</i>           | <i>Min</i> | <i>&lt;100%</i> | <i>Month</i> |
| <b>Dashboard availability</b> — availability of the dashboard online   | $\geq 99.0\%$         | <i>Min</i> | <i>&lt;99%</i>  | <i>Month</i> |
| <b>SLE report production</b> — time to produce reports following the conclusion of the reporting period  | <i>Monthly</i>        |            |                 |              |

|   |                                    |            |                    |              |
|---|------------------------------------|------------|--------------------|--------------|
| <b>SLE report availability</b> — availability of the SLE reports and associated data online   | <i>&lt;10 days after month end</i> | <i>max</i> | <i>&gt;10 days</i> | <i>Month</i> |
| <b>SLE report publication</b> — schedule of reporting periods   | <i>Monthly</i>                     |            |                    |              |
| <b>Time to send acknowledge of enquiry</b> — time taken to send initial acknowledgement of receipt of a general enquiry pertaining to root zone management (but not pertaining to interactions in a change request context) | <i>≤60 sec</i>                     | <i>Max</i> | <i>95%</i>         | <i>Month</i> |
| <b>Time to send initial response to enquiry</b> — time taken for staff to respond to enquiry, either in part or in whole.   | <i>≤5 days</i>                     | <i>Max</i> | <i>90%</i>         | <i>Month</i> |

## Next steps

This document is intended to provide parameters for the post-transition measurement environment for the IANA root zone management functions. Following the approval and agreement of this document, it is expected that the necessary arrangements will be made to obtain permission to adopt these measures, and develop the required process and system changes to put them into operation.

Following a period of successful data collection using these new metrics, the community should reconvene to review the data collected to be used the help formulate the actual service level expectations (e.g. the key metrics against which thresholds will be set, and against IANA will be required to adhere to in a post-transition environment). This process would be conducted in-line with the earlier agreed principles.

**Timelines:** The Working Group formed the view that at the date of transition there must be a fully implemented set of Service Level Expectations in full operation. At no time should IANA operate without either; the NTIA Service Level Agreement or the community based Service Level Expectations, as prescribed above, being in place. ICANN/IANA commits to work with the community to develop and implement the scope of work to fulfill this requirement.

**Post transition:** The CSC should ensure that IANA's best performance practices and benchmarking are in line with Registry requirement and Service Level standards in comparable industries.