SERVICE LEVEL EXPECTATION FOR IANA ROOT ZONE MANAGEMENT POST TRANSITION

DESIGN TEAM REPORT

Background

[Note: this section has not been reviewed.]

The Service Level Expectation (SLE) Design Team group is comprised of three gTLD Registry representatives and three ccTLD Representatives. We have been in contact with ICANN staff and they have been helpful where permitted.

The Design Team was asked review the current IANA root management operations, to record where ICANN is performing well and identify any gaps and issues that it considered in need of further clarification, these carry a "?" notation.

The SLE Group conducted historical analysis based on two factors. The first was an analysis of the current Service Level Agreement that NTIA has with IANA and the second was to undertake analysis of real world transaction activity. The source of this second data set was based on two categories: published IANA performance reports, and transaction logs provided by ccTLD registries interacting with the IANA root management function.

The historical analysis used to determine actual transaction times resulted in the SLE Group analysing data from 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 the Registry not responding to IANA to authorise the change request – so the delay is not necessarily within IANA's control. 4 transactions took longer than 1 year and that is not necessarily a bad thing if the stability of the DNS is assured.

For efficient service delivery of the SLE this document is separated into the current requirement (pre-transition) and also where the SLE could be improved post transition so to identify where more work and information is needed and assist Registry operators be assured of efficient and predictable IANA service this is shown in GREEN

Regarding Escalations: The Design Team endorses the concept of an IANA Customer Group specifically to monitor and also to fulfill escalation path for breach of service expectations. The role and remit of the CSC is outside of DT-A'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.

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.

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.

~~**Capturing the current status quo for IANA Root Zone Management**~~

Assumptions~~Introduction~~

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.

~~A.~~ For the purposes of designing the Service Level Expectations, t~~ SLE metrics are T~~he current process is simplified to~~ five~~ six key stages for all change requests (notification is implicit in each stage):

C.

a. ~~a.~~ Accept change request submissions from customers~~Confirm the details of the change~~;

a.

b. Verify the change ~~complies~~ passes documented technical verification checks~~with documented technical standards;~~

c. Obtain consent from relevant contacts to proceed with the change;

~~b.~~ Verify the change request meets ~~and~~ policy and procedural requirements~~ies and all applicable checks pass~~;

d.

e. Obtain authorization from NTIA to proceed with the change;

~~c. Obtain authorization to proceed with the change;~~

~~d.~~ Implement the change

~~e.~~f. ~~N~~otify the change requester of completion of the change.

~~B.~~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 ~~(IFO).~~ . 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~~/Manual~~ 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)

~~c. Once compliance with documented technical requirements are~~is verified, ~~an email is sent to both the admin and technical contacts at the Registry for both parties to validate the update. (Note: Some contacts are slow to respond which creates inefficiency in the validation process - as well in certain circumstances, third party verification is required, i.e. Governmental)~~

~~4.~~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 ~~(RZM)~~. This is performed ~~via~~ through online ~~APIs – shown in blue shading below (14 to 15 on the flow chart - now removed for post transition)~~interfaces.

~~5.~~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 ~~– shown in blue below (14 to 15 on the flow chart - now removed for post transition)~~.

~~6.~~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

~~7.~~9.IANA updates the Root Zone Database ~~,~~ and notifies the ~~Registry~~requester of completion.

~~C.~~E. The processing role ~~previously~~ currently undertaken by the NTIA will no longer exist~~s~~ in the post-transition environment and those steps ~~are~~ will no longer be undertaken. This means that IANA will ~~have~~ have responsibility for triggering implementation at the conclusion of processing and communicating directly with the RZM.~~-~~

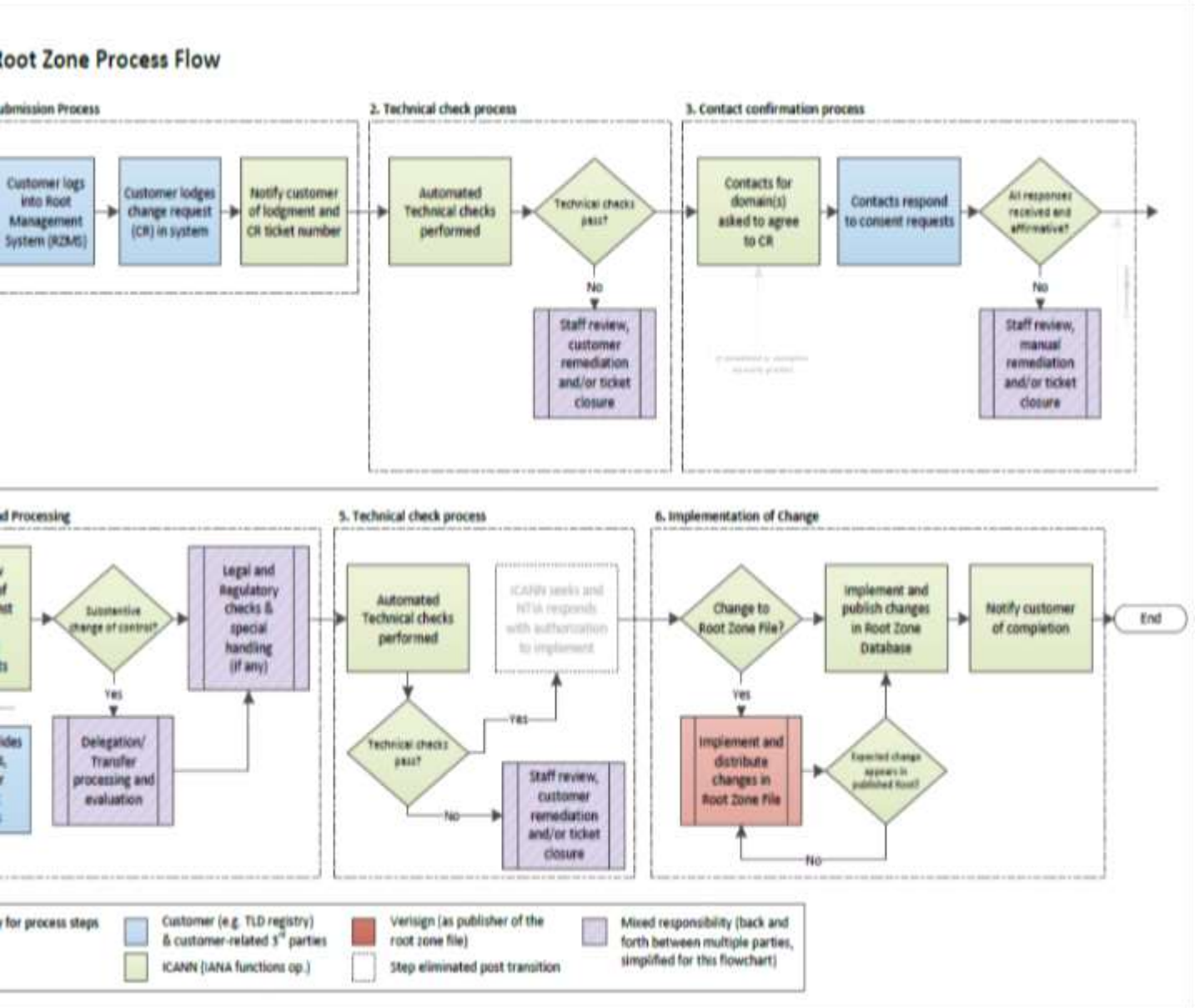
~~D.~~ IANA's online systems operate 24 hours a day, ~~x7~~ 365 days a year, except for maintenance periods, as befits a service that has customers ~~in every time zone~~around the globe.

~~E.~~

~~A change request that fails checks must be resubmitted rather than any changes made to the request by IANA to correct the detected failures. If the requestor is allowed to correct a request then that counts as a new request for SLE compliance purposes.~~

F.

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:


oot Zone Process Flow
ubmission Process
2. Technical check process
3. Contact confirmation process
Customer logs into Root Management System (RZMS)
Customer lodges change request (CR) in system
Notify customer of lodgment and CR ticket number
Automated Technical checks performed
Technical checks pass?
No
Staff review, customer remediation and/or ticket closure
Contacts for domain(s) asked to agree to CR
Contacts respond to consent requests
All responses received and affirmative?
No
Staff review, manual remediation and/or ticket closure
d Processing
Substantive change of control?
Yes
Delegation/ Transfer processing and evaluation
Legal and Regulatory checks & special handling (if any)
5. Technical check process
Automated Technical checks performed
ICANN seeks and NTIA responds with authorization to implement
Technical checks pass?
Yes
No
Staff review, customer remediation and/or ticket closure
6. Implementation of Change
Change to Root Zone File?
Yes
Implement and distribute changes in Root Zone File
Expected change appears in published Root?
No
Implement and publish changes in Root Zone Database
Notify customer of completion
End
for process steps
Customer (e.g. TLD registry) & customer-related 3rd parties
ICANN (IANA functions op.)
Verisign (as publisher of the root zone file)
Step eliminated post transition
Mixed responsibility (back and forth between multiple parties, simplified for this flowchart)

~~The current process is as given in the diagram below:~~

H. 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:

1. **Category I (Routine updates impacting Root Zone File)** — Routine change requests that alter the technical data published in the DNS root zone (i.e. 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. ~~This includes changes to NS records, DS records and glue records.~~

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

3. **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.

4. **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. This processing is significant, and is normally substantially longer than a routine change request, and therefore should be distinguished.

5. **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 (i.e. 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 (i.e. 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.~~.~~

I. The applicable processing phases against which metrics for change requests should be reported and assessed can be mapped these categories as follows~~generic breakdown of processes into stages is given in the table below~~:

Step	Process				
	Cat I Routine changes to Root Zone File Data (NS, DS and glue records)	Cat II Routine changes to Root Zone Database (Contact details and metadata)	Cat III Delegation or Transfer of a Generic Top-Level Domain	Cat IV Delegation or Transfer of a Country-Code Top-Level Domain	Cat V Other non-routine change requests to Root Zone File or Root Zone Database
Submission					
Time for ~~automated email~~ticket confirmation to be sent to ~~authorization contacts~~requester following receipt of change request via automated submission interface	●~~X~~	●~~X~~	●~~X~~	●~~X~~	◐
Time for lodgement of change request into RZMS by ICANN staff on behalf of request sent by email[1]	●	●	◐	◐	◐
Technical Check~~s (1)~~					
Time to return results for technical checks following ~~obtaining required consent from contacts~~submission of request via automated submission interface	●~~X~~	◐~~X~~	◐~~X~~	◐~~X~~	◐
Time to return results for ~~manual~~ subsequent performance of~~remediation of~~ technical check~~s~~ (e.g. for those retested	●	◐	◐	◐	◐

[1]

due to earlier failed tests, or supplemental tech checks performed later in processing ~~that failed the automated technical check~~)					
Contact Confirmation					
Time for authorization contacts to be ~~notified~~ asked to approve change request after completing previous process phase~~.~~	●~~X~~	●~~X~~	◐~~X~~	◐~~X~~	◐
~~Time for response to be affirmed by IANA~~					
~~Time to return results for manual remediation of affirmation check (for those that failed the affirmation check)~~					
IANA Review and Processing					
Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation	●~~X~~	●~~X~~	●~~X~~	●~~X~~	●
Time for third-party review of request (i.e. by ICANN Board of Directors)				●~~X~~	
~~**Technical Check (2)**~~					
~~Time to return results for technical checks following obtaining required consent from contacts via automated submission interface~~	~~X~~	~~X~~	~~X~~	~~X~~	
~~Time to return results for manual remediation of technical check (for those that failed the automated technical check)~~					

Implementation of Changes					
Time for root zone changes to be published following completion of validations and reviews by IANA Functions Operator	●X		◐X	◐X	◐
Time to notify requester of change completion following publication of requested changes	●X	●X	●X	●X	●

Legend: ● applies in all instances, ◐ applies in some instances

SERVICE LEVEL EXPECTATION

Services definitions

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

Access	Type of Reporting	Metrics or Data Points	New/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[2]	Reporting of incidents	Existing
		Root cause analysis	Existing
		Remediation steps	Existing
	Accuracy	Calculation based upon number of Incidents Reports vs. total volume	Existing
	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	

[2] 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
		lifecycle	Existing
		The final status of each concluded request	Existing
Private (Requesting TLDs Only)	Status tracker (current and historical[3])	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.
- **Period**. The period over which SLE compliance is measured.

[3] It is understood historical records for requests lodged prior to the online management system will not be displayed.

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
Overall Request Processing Volumes and Timelines			
A1	**Total Time** — 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	**Volume** — number of requests performed, divided across high-level partitioning of request types	Existing (as monthly report)	Publish in dashboard
A3	**Final outcome** — number/percentage of requests that are implemented, versus that are closed due to deficiencies, withdrawn by customer, etc.	New	Publish in dashboard
A4	**Time per actor —** average time taken for IANA processing, Root Zone Maintainer processing, waiting on customer response, waiting on ICANN Board (for delegations/redelegations), and other such parties.	New	Publish in dashboard
~~B1~~	~~**Time from submission to customer action required** — average time between submissions of a change request via RZMS to when customer is asked to provide contact confirmations on a request.~~	~~New~~	~~Publish in dashboard~~
B1~~2~~	**Time to perform technical checks** ~~**(1)**~~ — Time to return results for technical checks following submission of request via automated submission interface~~Time to return results for technical checks following obtaining required consent from contacts via automated submission interface.~~	New	Publish in dashboard

ID	Metric	New/Existing	Mechanism
B2	**Time from submission to customer action required** — average time for authorization contacts to be asked to approve change request after completing previous process phase	New	Public in dashboard
B3	**Time to complete all other ~~validations~~ IANA processing —** Time to complete all other validations and reviews by IANA and release request for implementation.	New	Publish in dashboard
B4	**Time for third-party review** — Time for third-party reviews of requests (i.e. by ICANN Board of Directors)	New	Publish in dashboard
B5	**Time for root-zone publication** — Time for root zone changes to be published following completion of validations and reviews by IANA.	Existing[4]	Publish in dashboard
B6	**Time for final notification** — Time to notify requester of change completion following publication of requested changes.	New	Publish in dashboard
Accuracy			
C1	**Incorrectly implemented requests —** Incidents where data published (i.e. in the root zone) differs from that requested and processed through the process.	Existing (as monthly report)	Produce incident reports
Online Services Availability and Enquiry Processing			
D1	**RZMS availability for ~~API interaction~~customers —** percentage availability of the RZMS to allow customers to perform self-service operations via the web interface.	New	Publish in dashboard
D2	**Website availability** — percentage availability of IANA website for consulting	New	Publish in

[4] 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.

ID	Metric	New/Existing	Mechanism
	documentations and other posted materials.		dashboard
D3	**Directory service availability** — percentage availability of WHOIS server and other registration data publication services	New	Publish in dashboard
D4	**Credential recovery** — timeliness of elements of credential recovery process	New	Publish in dashboard
D5	**Performance metrics availability** — availability of accurate, timely reporting to these standards via dashboard and other mechanisms.	New	Publish in dashboard
D6	**Time to process enquiries** — time to process general enquiries pertaining to root zone management, but not pertaining to interactions in a change request context.	New	Publish in dashboard

Service Level Expectations

These 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.

PROCESS PERFORMANCE

Category (Process)		Measurement Metric	Threshold	Type	Breach	Period
Category I - Routine updates impacting Root Zone File (i.e. NS,		*Cumulative IANA Processing Time for Routine Changes*				

DS, glue record changes)	**Submission**				
	Time for automated email to be sent to authorization contacts following receipt of change request via automated submission interface				
	Technical Check (1)				
	Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				
	Time to return results for manual remediation of technical check (for those that failed the automated technical check) - *If manual remediation is required.*				
	Contact Confirmation				
	Time for authorization contacts to be notified to approve change request.				
	Time for response to be affirmed by IANA				
	Time to return results for manual remediation of affirmation check (for those that failed the affirmation check) - *If manual remediation is required.*				
	IANA Review and Processing				
	Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation				
	Technical Check (2)				

		Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				
		Time to return results for manual remediation of technical check (for those that failed the automated technical check) - *If manual remediation is required.*				
		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				
Category II - Routine updates not impacting the Root Zone File (i.e. Whois)		Cumulative IANA Processing Time for Routine updates not impacting the Root Zone File				
	Submission					
		Time for automated email to be sent to authorization contacts following receipt of change request via automated submission interface				
	Technical Check (1)					
		Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				

		Time to return results for manual remediation of technical check (for those that failed the automated technical check) - *If manual remediation is required.*				
	Contact Confirmation					
		Time for authorization contacts to be notified to approve change request.				
		Time for response to be affirmed by IANA				
		Time to return results for manual remediation of affirmation check (for those that failed the affirmation check) - *If manual remediation is required.*				
	IANA Review and Processing					
		Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation				
	Technical Check (2)					
		Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				
		Time to return results for manual remediation of technical check (for those that failed the automated technical check) - *If manual remediation is required.*				
	Implementation of Changes					

		Time to notify requester of change completion following publication of requested changes				
Category III - Delegation or Transfer of a gTLD		Cumulative IANA Processing Time for Delegation or Transfer of a Generic Top Level Domain				
	Submission					
		Time for automated email to be sent to authorization contacts following receipt of change request via automated submission interface				
	Technical Check (1)					
		Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				
	Contact Confirmation					
		Time for authorization contacts to be notified to approve change request.				
		Time for response to be affirmed by IANA				
		Time to return results for manual remediation of affirmation check (for those that failed the affirmation check) - *If manual remediation is required.*				
		IANA Review and Processing				

		Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation				
		Time for third-party review of request (i.e. by ICANN Board of Directors)				
		Technical Check (2)				
		Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				
		Time to return results for manual remediation of technical check (for those that failed the automated technical check) – *If manual remediation is required.*				
		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				
Category IV - Delegation or Transfer of a Country-Code Top-Level Domain		Cumulative IANA Processing Time for the Delegation or Transfer of a Country-Code Top-Level Domain				
		Submission				

		Time for automated email to be sent to authorization contacts following receipt of change request via automated submission interface				
		Technical Check (1)				
		Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				
		Contact Confirmation				
		Time for authorization contacts to be notified to approve change request.				
		Time for response to be affirmed by IANA				
		Time to return results for manual remediation of affirmation check (for those that failed the affirmation check) - *If manual remediation is required.*				
		IANA Review and Processing				
		Time to complete all other validations and reviews by IANA Functions Operator and release request for implementation				
		Time for third-party review of request (i.e. by ICANN Board of Directors) - *If external review is required.*				

	Technical Check (2)				
	Time to return results for technical checks following obtaining required consent from contacts via automated submission interface				
	Time to return results for manual remediation of technical check (for those that failed the automated technical check) - *If manual remediation is required.*				
	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				
Category V - Other non-routine change requests to Root Zone File or Root Zone Database	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. Examples of these scenarios include, but are not necessarily limited to: 1. 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; 2. 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; 3. Unique legal or regulatory encumbrances that must be satisfied that require additional processing;				

	4. Removing a TLD from service (i.e. retirement or revocation); 5. 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 (i.e. the "root servers"), and changes to the "root hints" file. In such circumstances, IANA may exclude them from the SLE measurement process. If that is done, than IANA must manually document the request and the reason for deviation in the Incident Report.	

ACCURACY

Metric	Measurement	Threshold	Type	Breach
Root zone file data published in the root zone matches that provided in the change request	Accuracy	100%	Min	<100%
Root zone database is correctly updated in accordance with change requests (does not include impact of normalization and other processing)	Accuracy	100%	Min	<100%

ONLINE SERVICES AVAILABILITY AND ENQUIRY PROCESSING (Note the following two tables need to be combined)

Metric	Threshold	Type	Breach	Period
RZMS availability — availability of an online interactive web service for credentialed customers to submit change requests to their root zone database entries.				
Website availability — availability of root zone management related documentation (i.e. on http://www.iana.org)				
Directory service availability — availability of the authoritative				

database of TLDs				
Credential recovery — time to dispatch confirmation email of forgotten username or password	5 min	Max	95%	Month
Credential change — time to implement new password within the system	5 min	Max	95%	Month
Dashboard update frequency — average time to update the dashboard to ensure up-to-date reporting	30 mins	max	100%	Month
Dashboard accuracy — the data presented on the dashboard is accurate	100%	min	<100%	Month
Dashboard availability — availability of the dashboard online	99%[1]	min	<99%	Month
SLE report production — time to produce reports following the conclusion of the reporting period	*Monthly*			
SLE report availability — availability of the SLE reports and associated data online	*<10 days after month end*	*max*	*>10 days*	*Month*
SLE report publication — schedule of reporting periods	*Monthly*			
Time to send acknowledge of enquiry — 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)				
Time to send initial response to enquiry — time taken for staff to respond to enquiry, either in part or in whole.				

Process	Metric	Target	Type	Breach	Period
Dashboard	Update frequency	*30 mins*	*max*	*>2 hours*	*Month*
	Correctness	*100%*	*min*	*<100%*	*Month*

Process	Metric	Target	Type	Breach	Period
	Availability	*99%*[1]	*min*	*<99%*	*Month*
SLE reports	Production frequency	*Monthly*			-
	Published on web site	*<10 days after month end*	*max*	*>10 days*	*Month*
	Notification of publication (delivery to contracted parties)	*<2 hours after publish*	*max*	*>2 hours*	*Month*
	Availability	*99%*[1]	*min*	*<99%*	*Month*
Request database	Update frequency	*Daily*			-
	Correctness	*100%*	*min*	*<100%*	*Month*
	Availability	*99%*[1]	*min*	*<99%*	*Month*
Status tracker	Update frequency	*30 mins*	*max*	*>30 mins*	*Month*
	Correctness	*100%*	*min*	*<100%*	*Month*
	Availability	*99%*[1]	*min*	*<99%*	*Month*
Ad-hoc requests	Acknowledgement of receipt	*1 hour*	*max*	*<100%*	*Month*
	Initial response to Urgent priority requests	*2 hours*	*max*	*<90%*	*Month*
	Full response to Urgent priority requests	*12 hours*	*max*	*<90%*	*Month*
	Initial response to High priority requests	*8 hours*	*max*	*<95%*	*Month*
	Full response to High priority requests	*48 hours*	*max*	*<95%*	*Month*
	Initial response to Normal priority requests	*5 days*	*max*	*<95%*	*Month*
	Full response to Normal priority requests	*15 days*	*max*	*<95%*	*Month*