

**ANNEX 11**

**PUBLIC TENDER No. MTIC-LP-01-2019**

**REPÚBLICA DE COLOMBIA**

**MINISTERIO DE TECNOLOGÍA DE LA INFORMACIÓN Y LAS TELECOMUNICACIONES**

**OPERATING CONTRACT OF THE COLOMBIAN INTERNET DOMAIN REGISTRY (ccTLD .co)**

**TECHNICAL APPENDIX 2 – SERVICE LEVELS**

Bogotá D.C. November 2019

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# INTRODUCTION

In accordance with the provisions of the Contract, this Appendix contains the Service Levels that will apply upon entering the Contract's Operation Phase.

Additionally, this Appendix contains the verification procedures of these Service Levels as well as the methodology for calculating the Compliance Indicator applicable to determine the amount to be paid to the Registry Operator.

The application of the Service Levels, their verification and the application of the procedures for calculating the Remuneration shall be carried out in accordance with the provisions of the Contract. In any case, should there be any contradiction between the provisions of this Appendix and the other contractual documents, the terms of the Contract shall apply.

The parameters for Service Levels listed below will be measured from the Operation Launching of the Operation Stage, and their first application will be made thirty (30) Calendar Days later.

# DEFINITIONS

(In addition to the definitions contained in Chapter II of the Contract, for the purpose of interpreting this Appendix, the following definitions shall apply).

* + **DNSSEC Proper Resolution.** There is a valid DNSSEC chain of trust from the root trust anchor to a particular domain name, e.g., a TLD, a domain name registered under a TLD, etc.
  + **EPP**. Refers to the Extensible Provisioning Protocol as specified in RFC 5730 and related RFCs.
  + **IP Address.** Refers to IPv4 or IPv6 addresses without making any distinction between the two. When there is need to make a distinction, IPv4 or IPv6 is used.
  + **Probes**. Network hosts used to perform (DNS, EPP, etc.) tests (see below) that are located at various global locations.
  + **RDDS.** Registration Data Directory Services refers to the collective of WHOIS and Web-based WHOIS services.
  + **RTT**. Round-Trip Time or RTT refers to the time measured from the sending of the first bit of the first packet of the sequence of packets needed to make a request until the reception of the last bit of the last packet of the sequence needed to receive the response. If the client does not receive the whole sequence of packets needed to consider the response as received, the request will be considered unanswered.
  + **Service Level Requirements (SLR).** It is the expected value for a certain parameter of a Service Level. As long as the results are equal to or higher than the Service Level Requirements, there shall be no Deductions.

# SERVICE LEVELS

## Service Levels Requirements

|  |  |  |
| --- | --- | --- |
|  | **Parameter** | **SLR (MONTH BASIS)** |
| **DNS** | DNS Service Availability | 0 minutes downtime = 100% availability |
| DNS Domain Server Availability | Between 99% and 100% (as offered) |
| Round-Trip Time (RTT) % of queries processed in <= 500 ms | Between 95% and 99.9% (as offered) |
| DNS update time less <= 60 minutes | Between 95% and 99.9% (as offered) |
| **RDDS - WHOIS** | RDDS Availability | Between 98% and 100% (as offered) |
| Server Round-Trip Time (RTT) % of queries processed in <= 2 ms | Between 95% and 100% (as offered) |
| Round-trip time (RTT) % of changes processed in <= 60 ms | Between 95% and 100% (as offered) |
| **EPP** | EPP Service Availability | Between 98% and 100% (as offered) |
| Server Round-Trip Time (RTT) % of queries processed in <= 2 ms | Between 90% and 100% (as offered) |
| Server Round-Trip Time (RTT) % of changes processed in <= 2 ms | Between 90% and 100% |

## DNS

* + DNS Service Availability. Refers to the ability of the group of listed-as-authoritative name servers of a particular domain name (e.g., a TLD), to answer DNS queries from DNS probes. For the service to be considered available at a particular moment, at least, two of the delegated name servers registered in the DNS must have successful results from “DNS tests” to each of their public-DNS registered “IP addresses” to which the name server resolves. If 51% or more of the DNS testing probes see the service as unavailable during a given time, the DNS service will be considered unavailable.
  + DNS Domain Server Availability. Refers to the ability of a public-DNS registered “IP address” of a particular name server listed as authoritative for a domain name, to answer DNS queries from an Internet user. All the public DNS-registered “IP address” of all name servers of the domain name being monitored shall be tested individually. If 51% or more of the DNS testing probes get undefined/unanswered results from “DNS tests” to a name server “IP address” during a given time, the name server “IP address” will be considered unavailable.
  + **RTT of Processed Queries**. Refers to the RTT of the sequence of packets from the start of the TCP connection to its end, including the reception of the DNS response for only one DNS query.
  + **Update Time** Refers to the time measured from the reception of an EPP confirmation to a transform command on a domain name, until the name servers of the parent domain name answer “DNS queries” with data consistent with the change made. This only applies for changes to DNS information.
  + **DNS** **test**. Means one non-recursive DNS query sent to a particular “IP address” (via UDP or TCP). If DNSSEC is offered in the queried DNS zone, for a query to be considered answered, the signatures must be positively verified against a corresponding DS record published in the parent zone or, if the parent is not signed, against a statically configured Trust Anchor. The answer to the query must contain the corresponding information from the Registry System, otherwise the query will be considered unanswered. A query with a “DNS resolution RTT” 5 times higher than the corresponding SLR, will be considered unanswered. The possible results to a DNS test are: a number in milliseconds corresponding to the “DNS resolution RTT” or, undefined/unanswered.
  + **Measuring DNS parameters.** Every minute, every DNS probe will make an UDP or TCP “DNS test” to each of the public-DNS registered “IP addresses” of the name servers of the domain name being monitored. If a “DNS test” result is undefined/unanswered, the tested IP will be considered unavailable from that probe until it is time to make a new test.
  + **Collating the results from DNS probes.** The minimum number of active testing probes to consider a measurement valid is 20 at any given measurement period, otherwise the measurements will be discarded and will be considered inconclusive; during this situation no fault will be flagged against the SLRs.
  + **Placement of DNS probes.** Probes for measuring DNS parameters shall be placed as near as possible to the DNS resolvers on the networks with the most users across the different geographic regions; care shall be taken not to deploy probes behind high propagation-delay links, such as satellite links. The mechanism for conducting these surveys will be through a third party who will be paid by the Registry Operator, within a list submitted and approved by MinTIC.

## RDDS

* + **RDDS Availability**. Refers to the ability of all the RDDS services for the TLD, to respond to queries from an Internet user with appropriate data from the relevant Registry System. If 51% or more of the RDDS testing probes see any of the RDDS services as unavailable during a given time, the RDDS will be considered unavailable.

**Note**: For the transition period between the WHOIS and RDAP, which must take place before the end of the third year of operation, the Parties shall agree on the applicable Service Level, as part of the migration plan between WHOIS and RDAP.

* + **WHOIS query RTT**. Refers to the RTT of the sequence of packets from the start of the TCP connection to its end, including the reception of the WHOIS response. If the RTT is 5-times or more the corresponding SLR, the RTT will be considered undefined and, therefore, the service will be deemed unavailable for this probe, and a new test will be required.
  + **Web-based-WHOIS query RTT.** Refers to the RTT of the sequence of packets from the start of the TCP connection to its end, including the reception of the HTTP response for only one HTTP request. If the Registry Operator implements a multiple-step process to get to the information, only the last step shall be measured. If the RTT is 5-times or more the corresponding SLR, the RTT will be considered undefined and, therefore, the service will be deemed unavailable for this probe, and a new test will be required.
  + **RDDS query RTT.** Refers to the collective of “WHOIS query RTT” and “Web-based- WHOIS query RTT”.
  + **RDDS processed changes RTT** Refers to the time measured from the reception of an EPP confirmation to a transform command on a domain name, host or contact, up until the servers of the RDDS services reflect the changes made.
  + **RDDS test**. Means one query sent to a particular “**IP address**” of one of the servers of one of the RDDS services. Queries shall be about existing objects in the Registry System and the responses must contain the corresponding information otherwise the query will be considered unanswered. Queries with an RTT 5 times higher than the corresponding SLR will be considered as unanswered. The possible results to an RDDS test are: a number in milliseconds corresponding to the RTT or undefined/unanswered.
  + **Measuring RDDS parameters**. Every 30 minutes, RDDS probes will select one IP address from all the public-DNS registered “IP addresses” of the servers for each RDDS service of the TLD being monitored, and make an “RDDS test” to each one. If an “RDDS test” result is undefined/unanswered, the corresponding RDDS service will be considered as unavailable from that probe until it is time to make a new test.
  + **Collating the results from RDDS probes**. The minimum number of active testing probes to consider a measurement valid is 10 at any given measurement period; otherwise, the measurements will be discarded and will be considered inconclusive; during this situation no fault will be flagged against the SLRs.
  + **Placement of RDDS probes.** Probes for measuring RDDS parameters shall be placed inside the networks with the most users across the different geographic regions; care shall be taken not to deploy probes behind high propagation-delay links, such as satellite links. Probes shall be installed and carried out by the Registry Operator or a third party delegated by the Registry Operator. MinTIC shall be able to validate the data and measurement mechanisms.

## EPP

* + **EPP** **Service Availability**. Refers to the ability of the TLD EPP servers as a group, to respond to commands from the Registry accredited Registrars, who already have credentials to the servers. The response shall include appropriate data from the Registry System. An EPP command with “EPP command RTT” 5 times higher than the corresponding SLR will be considered as unanswered. If 51% or more of the EPP testing probes see the EPP service as unavailable during a given time, the EPP service will be considered unavailable.
  + **EPP session-command RTT.** Refers to the RTT of the sequence of packets that includes the sending of a session command plus the reception of the EPP response for only one EPP session command. For the login command it will include packets needed for starting the TCP session. For the logout command it will include packets needed for closing the TCP session. EPP session commands are those described in section 2.9.1 of EPP RFC 5730. If the RTT is 5 times or more the corresponding SLR, the RTT will be considered undefined. If an “EPP test” result is undefined/unanswered, the corresponding EPP service will be considered as unavailable from that probe until it is time to make a new test.
  + **EPP query-command RTT.** Refers to the RTT of the sequence of packets that includes the sending of a query command plus the reception of the EPP response for only one EPP query command. It does not include packets needed for the start or close of either the EPP or the TCP session. EPP query commands are those described in section 2.9.2 of EPP RFC 5730. If the RTT is 5-times or more the corresponding SLR, the RTT will be considered undefined.
  + **EPP transform-command RTT.** Refers to the RTT of the sequence of packets that includes the sending of a transform command plus the reception of the EPP response for only one EPP transform command. It does not include packets needed for the start or close of either the EPP or the TCP session. EPP transform commands are those described in section 2.9.3 of EPP RFC 5730. If the RTT is 5-times or more the corresponding SLR, the RTT will be considered undefined.
  + **EPP command RTT.** Refers to “EPP session-command RTT”, “EPP query-command RTT” or “EPP transform-command RTT”.
  + **EPP test**. Means one EPP command sent to a particular “IP address” for one of the EPP servers. Query and transform commands, with the exception of “create”, shall be about existing objects in the Registry System. The response shall include appropriate data from the Registry System. The possible results to an EPP test are: a number in milliseconds corresponding to the “EPP command RTT” or undefined/unanswered.
  + **Measuring EPP parameters**. Every 5 minutes, EPP probes will select one “IP address” of the EPP servers of the TLD being monitored and make an “EPP test”; every time they should alternate between the 3 different types of commands and between the commands inside each category If an “EPP test” result is undefined/unanswered, the EPP service will be considered as unavailable from that probe until it is time to make a new test.
  + **Collating the results from EPP probes**. The minimum number of active testing probes to consider a measurement valid is 5 at any given measurement period; otherwise the measurements will be discarded and will be considered inconclusive; during this situation no fault will be flagged against the Service level.
  + **Placement of EPP Probes.** Probes for measuring EPP parameters shall be placed inside or close to Registrars points of access to the Internet across the different geographic regions; care shall be taken not to deploy probes behind high propagation-delay links, such as satellite links. Probes shall be installed in consultation with and with the approval of the Registry Operator.

# COMPLIANCE INDEX CALCULATION

The Compliance Index will be calculated as the weighted sum of the Service Levels that have exceeded the SLR in accordance with the measurements carried out in the corresponding Month. For the purposes of this calculation, each Service Level will have a weighted value equivalent to that indicated in Table 1, so that, in the event that the ten parameters by which the Service Levels are measured reach the SLR foreseen for each of them, the Compliance Index will be equal to 100%.

In accordance with the foregoing, the value of the Compliance Index for each Month will be that resulting from the application of the following formula:

Where,

|  |  |
| --- | --- |
| *ICi* | Compliance Index for Month *i* |
|  | Normalized Value of the Service Level n during month i |
|  | Service Level Weight *n* |
| n | Is any of the Service Levels listed in numeral xx |
| i | This corresponds to the Month for which the calculation is made |

The Normalized Value of Service Level *n* in month *i* is calculated as follows:

Where,

|  |  |
| --- | --- |
|  | Normalized Value of Service Level *n* during month *i* |
|  | Measured Value of Service Level *n* in month *i* |
|  | Offered Value of Service Level *n* |
| n | Any of the Service Levels listed in numeral 3 |
| i | Month for which the calculation is made |

The Weight for Service Level *n* is listed in the table below:

Table 1 – Service Level Weighted Value

|  |  |  |
| --- | --- | --- |
| **Service Level n** | **I. DNS Service** |  |
| 1 | DNS Service Availability | 20% |
| 2 | DNS Domain Server Availability | 12% |
| 3 | DNS update time less <= 60 minutes | 12% |
| 4 | Round-Trip Time (RTT) % of queries processed in <= 500 ms | 4% |
|  |  |  |
|  | **II. RDDS/Whois Service** |  |
| 5 | RDD/Whois Service Availability | 12% |
| 6 | Server Round-Trip Time (RTT) % of queries processed in <= 2 ms | 4% |
| 7 | Round-trip time (RTT) % of changes processed in <= 60 ms | 4% |
|  |  |  |
|  | **III. EPP Service** |  |
| 8 | EPP Service Availability | 20% |
| 9 | Server Round-Trip Time (RTT) % of queries processed in <= 2 ms | 8% |
| 10 | Server Round-Trip Time (RTT) % of changes processed in <= 2 ms | 4% |

# EMERGENCY THRESHOLDS

The following matrix presents the emergency thresholds that, if reached by any of the services mentioned above will cause the Emergency Transition of the Register for the TLD.

|  |  |
| --- | --- |
| **Critical Function** | **Emergency Threshold** |
| DNS Service | 4-hour total downtime / week |
| DNSSEC Proper resolution | 4-hour total downtime / week |
| EPP | 24 hour total downtime / week |
| RDDS | 24 hour total downtime / week |

## Emergency Escalation

Escalation is strictly for purposes of notifying and investigating possible or potential issues in relation to monitored services. The initiation of any escalation and the subsequent cooperative investigations do not in themselves imply that a monitored service has failed its performance requirements.

Escalations shall be carried out between MinTIC and the Registry Operator, Registrars and Registry Operators, provided there are emergency operations departments prepared to handle emergency requests. Registry Operators and EBERO must provide said emergency operations departments.

Current contacts and escalation procedures must be maintained between MINTIC/EBERO and the Registry Operator, and published to Registrars, where relevant to their role in escalations, prior to any processing of an Emergency Escalation by all related parties, and must be kept current at all times.

* + Emergency Scaling initiated by MINTIC

Upon reaching the Emergency Thresholds described above, MinTIC will notify the Registry Operator that it has exceeded an Emergency Threshold and, if so provided by MinTIC, will notify the beginning of the Emergency Transition. The foregoing without prejudice to continue with the permanent measurement of the Service level not met.

An Emergency Escalation consists of the following minimum elements: electronic (i.e., email or SMS) and/or voice contact notification to the Registry Operator’s emergency operations department with detailed information concerning the issue being escalated, including evidence of monitoring failures, cooperative trouble-shooting of the monitoring failure between MINTIC staff, or the designated entity, and the Registry Operator, and the commitment to begin the process of rectifying issues with either the monitoring service or the service being monitoring.

* + Notifications of Outages and Maintenance

In the event that a Registry Operator schedules a maintenance, he will notify MinTIC, at least, twenty-four (24) hours ahead of that maintenance. MinTIC shall take note of planned maintenance times, and suspend Emergency Escalation services for the monitored services during the expected maintenance outage period.

If Registry Operator declares an outage of Registry Services, it will notify MinTIC about such an eventuality.

## Performance Measurement

* + **No interference.** Registry Operator shall not interfere with measurement Probes, including any form of preferential treatment of the requests for the monitored services. Registry Operator shall respond to the measurement tests described in this Specification as it would do with any other request from Internet users (for DNS and RDDS) or registrars (for EPP).
  + **Testing Registrar.** The Registry Operator agrees that MinTIC may use a third-party as testing operator for the purpose of measuring Service Levels. Registry Operator agrees to not provide any differentiated treatment for the testing registrar other than no billing of the transactions. The Testing Registrar shall not be used for registering domain names (or other registry objects) for itself or others, except for the purposes of verifying contractual compliance with the conditions described in this Agreement. Registry Operator will identify these transactions using Register ID 9997.

# OTHER TECHNICAL OBLIGATIONS

The control and reporting obligations of the Registry Operator during the Operation Phase are described below. Failure to comply with these obligations shall give rise to the Fine provided for in Section 10.2(i) of the Contract.

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Requirement** | **Measurement** |
| 1 | Accounts Administration | Review of measures for compliance with guidelines identified as best practices by ICANN. | Monthly |
| 2 | Accounts Administration | Survey of Registrar satisfaction with the Registry Operator. | Annually, or, at least, as agreed between the parties. |
| 3 | Accounts Administration | Comprehensive documentation for business processes and systems. | Reviewed and updated monthly |
| 4 | Compliance | Provide audited financial statements of the most recent fiscal year. | Annually, within 90 days of the close of the calendar year. |
| 5 | Compliance | Provide an annual audit report from a specialized firm on internal controls such as sensitive data protection, financial management and security, such as: SSAE16 Type 2 or ISAE 3402 Type 2, which covers registration operations. | Annually, within 90 days of the close of the calendar year. |
| 6 | Compliance | Processing warrants | Unless otherwise stated, no later than 48 hours, with confirmation to the Public Interest Registry immediately upon completing the action. |
| 7 | Compliance | An established intrusion detection system (IDS) should be used to provide continuous monitoring throughout the organization's network or systems to detect malicious activity or policy violations. Any detected activity or breach should be collected centrally through a Security Information and Events Management System (SIEM) and notification of security events should be immediately reported to the Public Interest Registry. | 24x7 continuous monitoring and intrusion detection: provide notification of all security events to the Public Interest Registry within 24 hours of discovery. |

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Requirement** | **Measurement** |
| 8 | Registry Operator Support | Registry Operator technical support through a registration system that allows Supervisor access /report. | Call center available 24x7  Automatic e-mail response to the initial consultation ticket.  Email response from technical support within 30 minutes of query  Chat response within 30 seconds  Call average response speed within 30 seconds  Call drop-out rate below 1%. |
| 9 | Registry Operator Support | Technical support for ticket resolution, by means of a registration system that allows Supervisor access /report. | **Support Level 1 -** Standard Inputs: two hours response time and resolved in 48 hours, a daily update must be sent to  the Registry and Public Interest Registry on the status. If it is not resolved and closed, follow the escalation route  **Support level 2:** Critical tickets: one hour supplier response and resolved within 24 hours, the update on the status must be sent to the Registry and the Public Interest Registry. If it is not resolved and closed, follow the escalation route  Ticket status reviewed and updated twice daily  Daily support ticket report at 0500 UTC**.** |

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Area** | **Requirement** | **Measurement** |
| 10 | System | Relationship with the Registrar and technical support systems. | At least 99.9% of the time available. |
| 11 | System | Deferred revenue system platform | At least 99.9% of the time available. |
| 12 | System | Deferred revenue system data storage frequency | Daily |
| 13 | System | Web-based billing and reporting platform | At least 99.9% of the time available. |
| 14 | System | Website uptime | Availability of 99.9%, except agreed maintenance windows. |

The Registry Operator shall keep sufficient technical and operational records to demonstrate compliance with the Service Levels for at least one (1) year.

The Registry Operator shall perform the preventive maintenance of the different services in the schedules and dates of statistically less traffic for each service. Planned outage must be advised by notifying the MinTIC and Registrars no less than three (3) Business Days in advance. In the case of an extended planned outage, such Notification must be submitted with a minimum of 28 Days.

Notwithstanding the foregoing, there are no provisions for planned outages or similar periods of slow or unavailable service. Any downtime, either due to maintenance or due to system failures, will simply be recorded as downtime and will be taken into account for Service Level purposes.