Registry System Testing (#2)

Test Specification Review

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Agenda

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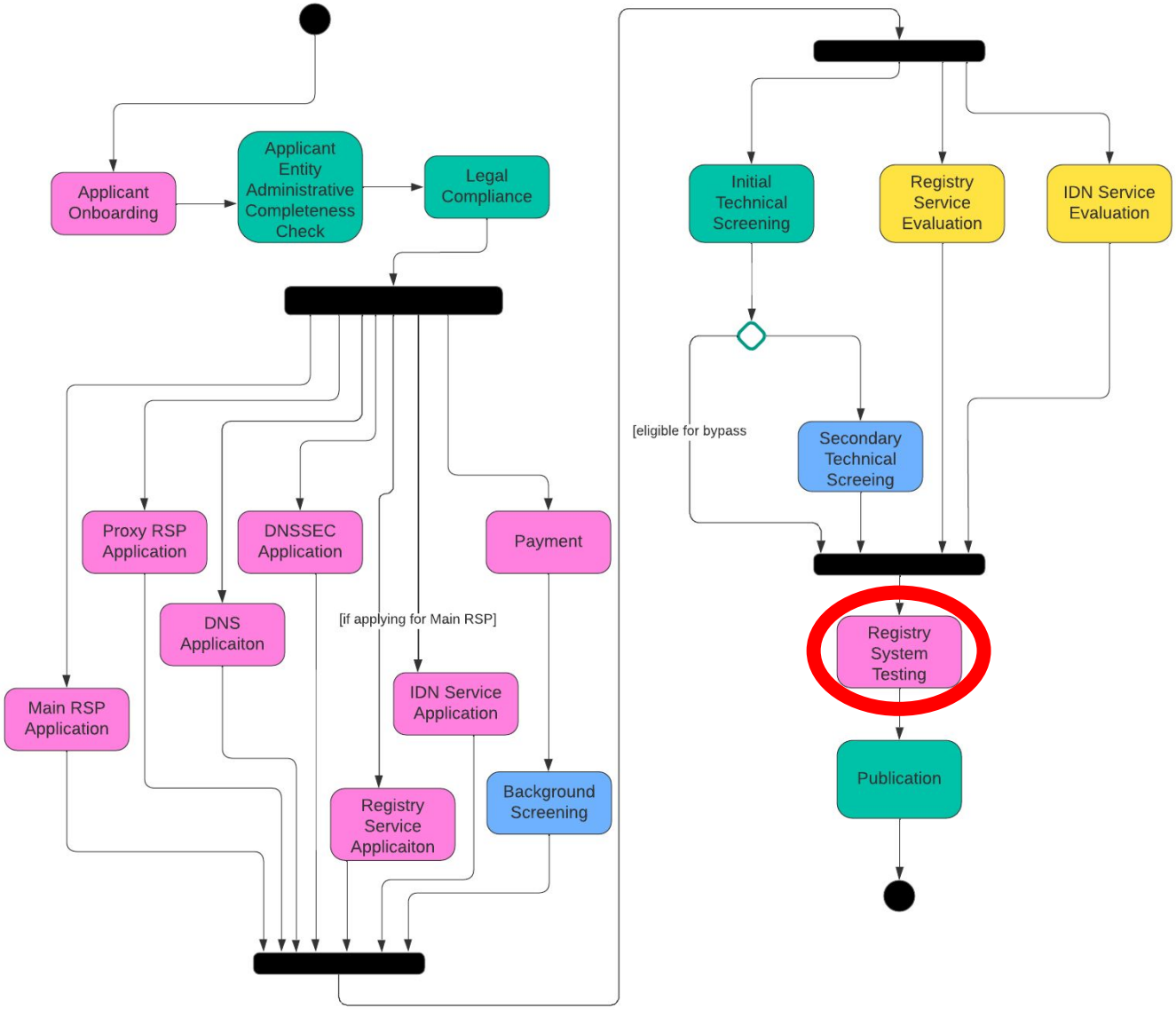
Overview - Why are we doing this?

From the Final Report on the New gTLD Subsequent Procedures Policy Development Process:

- **Recommendation 39.1:**
  - *ICANN must develop a set of Registry System tests designed to demonstrate the technical capabilities of the registry operator.*
- **Recommendation 39.4:**
  - *Registry System Testing (RST) must be efficient.*

Overview - RSP and RST v2.0



Meeting Objective

We would like your feedback on the **RST Test Specifications**:

- There are hundreds of individual test cases, each of which may have dozens of possible outcomes (error codes)
- Each test case is tagged with its maturity level:
  - **Alpha** - very rough outline, much more work needed.
  - **Beta** - complete but likely to require further changes.
  - **Gamma** - finalized and ready for review.
- Only 5% of the test cases are still Alpha; we believe most are now ready for detailed review.
- The RST-API is not on the agenda for this meeting, but your feedback is still welcome

Test Suites

- **Main RSP Evaluation:**
  - RDAP
  - EPP
  - RDE
  - RPMs
- **DNS RSP Evaluation:**
  - DNS
- **DNSSEC RSP Evaluation:**
  - DNSSEC
  - DNSSEC Operations
- **SRS Gateway RSP Evaluation:**
  - SRS Gateway

Changes to release cycle

- Weekly release cycle: test specs and API spec are updated every Wednesday.
- Each includes a change log summarizing the changes since the last release.
- Build artifacts have been removed from the Git repositories
  - Download the weekly release from icann.github.io
  - Build from source.

Test Suite Review: DNS and DNSSEC

- DNS and DNSSEC Test Suites are based on test specifications from Zonemaster
  - Zonemaster version: 2023.1.4
  - Zonemaster::Engine version: 4.7.3
  - More info: https://github.com/zonemaster/zonemaster
- Test subjects must provide a list of nameservers and their IP address(es) and DS record(s).
- Test subjects will be provided with one or more TLDs to be used for testing, and which must be configured on their infrastructure.
- Tests will be run from multiple vantage points:
  - Likely to be nodes in the SLAM network.
  - Responses must match.
- Zonemaster is not run “out of the box”:
  - Some test cases will not be run.
  - Some results have had their severity levels changed.
  - We publish a Zonemaster profile to facilitate self-testing.
    - https://icann.github.io/rst-test-specs/rst.json

Test Suite Review: DNS and DNSSEC (ctd)

- Additional DNS test case: IDNA2008 compliance check:

  The names that appear in the MNAME and RNAME fields of the TLD SOA record, and in the apex NS records, MUST be comprised solely of (a) ASCII-only labels or (b) IDN labels that conform to the requirements of IDNA2008.

- Additional DNSSEC test cases:
  - Permitted signing algorithms.
  - Permitted DS record hash algorithms.
  - RFC 9726 conformance (NSEC3 iterations)
    - zero iterations and empty salt

Test Suite Review: DNSSEC Operations

- This test suite will be implemented in-house
- Based on the “First-time RSP testing” test currently in use
- Tests the subject’s ability to carry out the following operational procedures:
  - ZSK rollover (if applicable)
  - KSK/CSK rollover
  - Algorithm rollover
- Test subjects must provide one or more DNS zones that will be used for testing, that must be configured on their infrastructure
- Test zones must have at least 10,000 delegations, no NSEC3 opt-out
- ICANN will perform SOA queries and XFRs over a period of 48 hours
- The applicable operation MUST be performed within this period with no interruption to the chain-of-trust

Test Suite Review: RDAP

- This test suite will use the RDAP Conformance Tool
- Additional test cases will be added to the tool:
  - TLS version conformance check (TLSv1.2 MUST be supported, TLSv1.1 and earlier versions MUST NOT be supported)
  - Service port consistency check (all service ports provide identical responses)
- More information: https://github.com/icann/rdap-conformance-tool

Test Suite Review: EPP

- This test suite will be implemented in-house
- The EPP test suite will test conformity with the following RFCs:
  - RFC 5730 (base protocol) & RFC 5731 (domain mapping)
  - RFCs 5732 and 5733 (host and contact objects, if applicable)
  - RFC 3915 (Grace Periods)
    - This extension is now REQUIRED to pass RST
  - RFC 5910 (DNSSEC v1.1)
  - RFC 9325 (TLS recommendations)
  - RFC 9154 (Secure AuthInfo, if implemented)
- The server will also be tested to confirm that CRUD operations function properly and the proper business logic is implemented.
- NB: RFC 8334 (Launch extension) conformity is tested in the “Minimum RPMs” suite.

Test Suite Review: EPP (ctd)

- One key change since PDT 1.0 is that test subjects will not be required to create objects in advance: the test runner will create objects as-needed.
- It will also clean up after itself and delete things when the test is completed
- The test sequence can be broken down into several phases:
  - Protocol conformance (IP reachability, TLS handshake, server <greeting> validation)
  - Authentication (<login>)
  - Query command (<check>) test
  - Transform commands:
    - <create>, <update> and <renew> tests
    - Access control (using alternate credentials)
    - <transfer> tests (both approved and rejected)
    - <delete> and RGP restore tests
    - Host rename test (if applicable)
    - <info> commands are used to confirm changes to objects are reflected in the database

Test Suite Review: Minimum RPMs

- This suite tests the EPP server's implementation of RFC 8334 (Launch extension) and integration with the Trademark Clearinghouse.
  - This extension is now REQUIRED to pass RST
- Test subjects will need to onboard with the TMCH prior to testing
- Test cases:
  - Claims <check> command test
  - Sunrise <create> command test
  - Trademark claims <create> command test

How to provide feedback

- In the first instance, raise an issue on GitHub:
  - https://github.com/icann/rst-test-specs/issues/new
  - Even better, send us a pull request!
- Alternatively, post an email to the gtld-tech mailing list:
  - https://mm.icann.org/mailman/listinfo/gtld-tech

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Thank You and Questions

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