Across Field Address Validation Registrar Strawman Proposal

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Introduction

The WHOIS Accuracy Program Specification of the 2013 Registrar Accreditation Agreement requires registrars to validate and verify defined data fields, such as phone number, email and postal address.[1] Included in the validation requirements of the Specification is the Across Field Validation requirement. This is an open requirement for registrars to validate the registrant's postal address fields, and confirm consistency across fields e.g. street exists in city, city exists in state/province, city matches postal code.[2]

The 2013 Registrar Accreditation Agreement requires ICANN to review these requirements in consultation with the Registrar WHOIS Validation Working Group[3] to identify a feasible set of tools that shall enable accredited registrars to complete these validation actions. These actions should contribute to increased accuracy rating of physical address information associated with the registered name holder.[4]

ICANN has identified a set of commercial providers offering global address validation tool-sets.[5] If the Registrar WHOIS Validation Working Group and ICANN are able to mutually agree upon a solution(s) that is technically and commercially feasible all applicable documentation shall be published accordingly.

The objective of the Strawman Proposal is to gather feedback upon review and reach consensus regarding next steps between ICANN and the Registrar WHOIS Validation Working Group. The Registrar WHOIS Validation Working Group and ICANN shall collaborate with the intent to reach a mutual agreement based on acceptable criteria. Upon acceptance, ICANN and Registrar WHOIS Validation Working Group shall proceed with the creation of an approval process of Address Validation Service Provider(s) 'Provider'. If both parties reach consensus and successfully complete these activities, then Registrars shall complete a Provider(s) selection process and implement the address validation tool-set(s) based on the obligation outlined in the WHOIS Accuracy Specification of the 2013 Registrar Accreditation Agreement.

Summary of Staff Research

ICANN engaged and researched various global and/or regional solutions provided by several potential vendors. ICANN also analyzed and reviewed current ccTLDs address validation practices e.g. CNNIC and Nominee. Due diligence and research focused on specific areas such as online registration data submission and collection practices, postal data standards and commercial tool-sets for address validation, verification, correction and geo-coding.

[1] 2013 RAA WHOIS Accuracy Program Specification, Section 1(a)-Section 1(e) for specific validation requirements and Section 1(f) for verification requirement.

[2] 2013 RAA WHOIS Accuracy Program Specification Section 1(e)

[3] 2013 RAA Transition Addendum Section 6

[4] Ability to verify physical addresses that are technically and commercially available by an approved third party.

[5] Identification of commercial providers was based on the suggested criteria outlined in the strawman proposal. The final criteria will be mutually agreed upon between Registrar WHOIS Validation Working Group and ICANN.

Various validation methods were identified, such as real-time, batch, and manual processing solutions. Current Providers serve vertical segments such as government entities, healthcare providers and retail supporting multiple business models.

Service offerings vary from address validation[6], verification[7] and correction.[8] Since the inception of this initiative, address validation services have improved given the expansion of the global data coverage footprint. Certain Providers include postal address data from more than 248 countries and/or territories. These data sets are comprised of more than 175 address formats and support international languages.

Postal data elements vary amongst nations and territories. However, many regions are in the process of standardizing postal address formats.[9] As a result, the accuracy of these data sets shall continue to expand and improve. It is anticipated that these additional initiatives shall then result in greater data accuracy. For example, physical address and postal codes may be supplemented by Postcodes and Geo-coordinates in regions that contain, that contain physical addresses that is not easily identifiable. [10]

Based on ICANN's research, most Providers offer two (2) types of validation service options. The first validation criterion is a numeric score[11] methodology. Under a scenario in which a numeric score is present, a rating of that is less than eighty percent (80%) is considered a false positive. The second validation criterion is based on status codes. A false positive is indicated by a unique status code under this particular scenario.[12]

A 'false positive' error results based on address validation inquiry to a Provider's database.[13] Address validation services (tool-sets) check for address correctness using approximate string matching algorithms. This technique identifies particular elements that attempt to match a pattern (in a relevant postal database. If there is a close match the tool-set may validate the address if the error is syntax based. Human error may result in failure to validate a given address. A real-time address validation service can be triggered as a result of the initial data and a suggested address correction may be prompted and presented to the user.[14] Some tool-sets prompt the user to verify that the address has been correctly provided.

[6] Address validation is the process of checking a mailing address against an authoritative database

[7] In this instance Address Verification refers to verification of the physical address after it has been validated. It does not refer to verification that an individual registrant lives at that address. This also differs from credit card address verification info: http://www.emsecommerce.net/avs_cvv2_response_codes.htm

[8] Address Correction (aka Address Element Correction (AEC)) refers to the automated correction or adding of missing address elements

[9] Ireland's "Eircodes" were launched in April 2014 to provide premises without non-unique addresses as identifier. South Korea's "Road Name Address" system was launched in July 2011 to move from a land lot based system to a system based on street names. India's Postal Index Number (PIN) code was launched in 1972 and is mapped to a delivery post office. The Indian postal database does not at this time support house number matching but it does support address point (used by GIS systems) and Points of Interest (POI) matching. The USPS in 2005-2006 began offering free access to LACS (Locatable Address Conversion System Link) that links addresses that have been converted due to USPS changes or for 911 emergency systems.

[10] USPS, Postcodes and Geocodes – changing the address system?, 2012

[11] Informatica's Mailability Scores. **5** Completely confident **4** Almost certain **3** Should be fine **2** Fair chance **1** Risky **0** Undeliverable.

[12] Informatica's code examples: **N2** Validation error. Validation did not take place because the required reference database is not available. **N1** Validation error. Validation did not take place because the country is not recognized or not supported. **R5** Country recognized from province data.

[13] The tool-set offers threshold address settings based on the context of a given Provider's database. When a higher match threshold setting is applied, it equates to less false positive results and greater false negatives; on the contrary when a lower threshold is applied, the opposite is holds true.

[14] In April 2016 Informatica surveyed U.S. and international marketing and sales influencers the results indicated that accuracy of data collected vastly improved as a result of an address validation solution implementation., Contact Data Verification Strategies for Marketing and Sales. 2016

Minimal impact to registrar operations and an acceptable user experience shall be considerations when both parties engage in defining acceptable Provider criteria. This Strawman Proposal includes two (2) ICANN recommendations that address false positive workflow management by the Registrar WHOIS Validation Working Group.

Based on the research, ICANN has concluded that Informatics offers the largest geographic footprint with over two thousand (2000) resellers in two hundred (200) countries and more than two hundred and forty-eight (248) postal addressing systems supported currently. Other providers were included in the research efforts. See Annex 3.

Based on ICANN's research efforts, the following chart outlines a set of recommended elements that shall be taken into consideration to determine if a solution(s) is technically and commercially feasible amongst the Registrar WHOIS Validation Working Group and ICANN.

PROPOSED CRITERIA	
Services availability	Address validation/verification & correction capability
Scoring methods	Status code or numeric scoring
Support non-ASCII characters	Preferably ≥ 5 writing systems
Technical implementation	API/web services: SOAP, XML, JSON, REST Bulk submission: CSV, XML & manual submission
Service Level Agreements	Commercially Reasonable
Response time	Handles > 100 validations per second
Global footprint	240+ countries/territories

Strawman Proposal

1. WHOIS Accuracy Specification

Registrar shall implement and comply with the following requirements set forth in this 2013 Registrar WHOIS Accuracy Specification, as well as any commercially practical updates to this Specification that are developed by ICANN and the Registrar Stakeholder Group during the Term of the Registrar Accreditation Agreement. Per the WHOIS Accuracy Specification, it states the following:

'Registrar shall implement and comply with the requirements set forth in this Specification, as well as any commercially practical updates to this Specification that are developed by ICANN and the Registrar Stakeholder Group during the Term of the Registrar Accreditation Agreement.

Within fifteen (15) days of (1) the registration of a Registered Name sponsored by Registrar, (2) the transfer of the sponsorship of a Registered Name to Registrar, or (3) any change in the Registered Name Holder with respect to any Registered Name sponsored by Registrar, Registrar will, with respect to both Whois information and the corresponding customer account holder contact information related to such Registered Name:

a. *Validate the presence of data for all fields required under Subsection 3.3.1 of the Agreement in a proper format for the applicable country or territory.*
b. *Validate that all email addresses are in the proper format according to RFC 5322 (or its successors).*
c. *Validate that telephone numbers are in the proper format according to the ITU-T E.164 notation for international telephone numbers (or its equivalents or successors).*
d. *Validate that postal addresses are in a proper format for the applicable country or territory as defined in UPU Postal addressing format templates, the S42 address templates (as they may be updated) or other standard formats.*
e. *Validate that all postal address fields are consistent across fields (for example: street exists in city, city exists in state/province, city matches postal code) where such information is technically and commercially feasible for the applicable country or territory.*

In either case, if Registrar does not receive an affirmative response from the Registered Name Holder, Registrar shall either verify the applicable contact information manually or suspend the registration, until such time as Registrar has verified the applicable contact information. If Registrar does not receive an affirmative response from the Account Holder, Registrar shall verify the applicable contact information manually, but is not required to suspend any registration.

2. Proposed Approach

ICANN shall work in conjunction with the Registrar WHOIS Validation Working Group to complete the following activities:

- ICANN Staff shall work in conjunction with the Registrar WHOIS Validation Working Group to define service criteria that is mutually considered technically and commercially feasible for the applicable country or territory;
- Upon mutual acceptance of the defined service criteria, ICANN and the Registrar WHOIS Validation Working Group shall mutually establish and agree to a provider application review and approval process;
- The Registrar WHOIS Validation Working Group and ICANN shall review and approve Provider applications based on the mutually agreed-upon criteria;
- Registrars' shall contract directly with an approved provider(s);
- Registrars' shall implement the approved Provider service and ensure continued compliance within the Data Retention Policy.

As a point of reference, similar approaches have worked well for the community include the Data Escrow Programs for registry operators and registrars, the UDRP Program and the URS Program.[15] ICANN addresses the following attributes as it pertains to (a) proposed false positive handling mechanism, (b) proposed data retention requirement, (c) basic provider approval criteria and (d) proposed timeline for deliverables and implementation. These proposals shall be reviewed by the Registrar WHOIS Validation Working Group.

[15] These programs are examples of multi-provider solutions currently supported by ICANN. Each selection process will be a collaborative exercise between the Registrar WHOIS Validation Working Group and ICANN.

3. Proposed: False Positive Handling Mechanism

A false positive error in address validation occurs when the system indicates that an address is not valid based on a match against an authoritative postal database. The system establishes a threshold of how exact the provided address is to the authoritative postal database.

Incomplete addresses and human input errors make false positive inevitable. As a result, it is critical to determine (a) how to handle a false positive when it occurs, (b) how to minimize the impact to the registrar's business operations and (c) how to minimize unnecessary service interruptions to the Registered Name Holder.

From ICANN's research, Provider generally provide either one of two types of validation feedback. The first is numeric score based and the other is status code based. In the numeric score-based scenario, an overall score of below 80 percent (80%) is normally considered as a false positive. In the status code based scenario, a false positive is usually clearly represented by a certain status code. ICANN proposes a false positive handling mechanism that would apply when a registrar receives a notice that an address may be inaccurate (either through status code, numeric score or error code). ICANN proposes two possible approaches to handle false positives for the Working Group's consideration that are in accordance with the

3.1. Option 1

Upon receipt of a failed validation or false positive notification, the registrar shall introduce a cure attempt process that mirrors the current action associated with a WHOIS inaccuracy notification. The false positive notification may trigger the following registrar action:

- Immediately notify the Registered Name Holder that the address has failed validation via a secure communication mechanism;
    - Registered Name Holder shall confirm or correct the address;
    - If the Registered Name Holder does not respond within fifteen (15) calendar days, then the registrar shall verify the applicable contact information manually; or suspend the registration until such time as the registrar has successfully completed the verification action.
- If the Registered Name Holder responds within fifteen (15) calendar days confirming the original address along with supporting documentation, no further action is required.
- If the Registered Name Holder responds within fifteen (15) calendar days with new or revised address information, the following step shall occur: Registrar to validate the new or revised address provided.

3.2. Option 2

When a registrar receives a false positive notification, the registrar shall:

- Immediately notify the Registered Name Holder of the failed validation status
    - Registered Name Holder is required to verify or correct the address;
    - If after fifteen (15) days, the Registered Name Holder has failed to respond;
        - Registrar shall either verify the applicable contact information manually; or

        - Suspend the registration until such time as the registrar has verified the applicable contact information.
- If the Registered Name Holder responded within fifteen (15) days and confirms the original address is correct, no further action is required.
- If the Registered Name Holder responded within fifteen (15) days, confirming that the original information is incorrect and has since updated it;
    - Registrar shall re-validate the new address;
    - Registrar shall communicate with the Registered Name Holder until such time information is does not result in a false positive.
- If the Registered Name Holder fails to respond after fifteen (15) days;
    - Registrar shall impose a renewal lock and/or transfer lock via EPP on the domain name until a response is properly received;
    - The lock shall remain and the Registered Name Holder shall not support the domain name renewal.
- If the Registered Name Holder responds within fifteen (15) days and confirms the original address is correct, the Registrar may whitelist the address;
    - The Registrar shall not be required to validate the address again until other sources indicate there is an inaccuracy e.g. undeliverable mail, WHOIS inaccuracy notice, etc.

4. Proposed: Address Validation Data Retention by Registrars

The Registration Data [16] associated with the Registered Name Holder and Account Holder, shall be stored and maintained by the Registrar for the following address validation records:

- Date and time of each submission
- Submission Method
    - e.g. bulk, interactive, manual
- Validation results
    - e.g. status code, numeric score, or error code
- Action taken on false positives
    - Communication with the Registered Name Holder
        - Email, phone call, SMS, IM
    - Re-validation of updated data
    - Date and time, submission method and validation result
    - Suspension or cancellation of the registration for non-responsive Registered Name Holder or Account Holder.

5. Proposed: Address Validation Service Provider Approval Criteria

As proposed, upon mutual agreement between the Registrar WHOIS Validation Working Group and ICANN, ICANN shall establish and support a Provider approval program to receive and review applications. Provider

[16] 2013 RAA Retention of Registered Name Holder and Registration Data. Sections 3.4.2.2 and 3.4.2.3

diversification shall support Registrars' needs and obligations. The final selection criteria shall be mutually agreed upon by the Registrar WHOIS Validation Working Group and ICANN.

5.1. Proposed: Address Validation Service Provider Selection criteria:

Preferably, a selected Provider(s) shall meet the following qualifications:

- address validation and correction capability;
- whitelisting features for validating correct addresses;
- Scoring methods: status code, numeric scoring or other indicators;
- Capability of supporting non-ASCII characters, preferably ≥ 5 writing systems;
- Supports multiple technical implementation:
  - API/web services: soap, XML, JSON, REST
  - Bulk submission: CSV, XML file
  - Manual submission
- Response time handling of > 100 validations per second;
- Global presence and supports address standards in multiple areas, preferably 240+ countries/territories;
- Cost for validation: commercially reasonable.

5.2. Proposed: Address Validation Service Provider Application Components

Provider(s) application(s) shall include the minimum components:

- Company name, applicable brands and contact details;
- Description of available service(s) including type of validation/verification performed;
- Quality and sources of comparison data;
- Scoring methodology, including methodology for false positives, if applicable;
- Handling of non-ASCII characters in addresses or supplied data;
- Robustness / redundancy / geographic diversity of hardware / connectivity;
- Supporting countries and/or regions associated with address validation services, along with the level of precision of validation available and/or margin of error metrics;
- Frequency of postal addressing data updates;
- Description or example of technical implementation of the service;
- Time required for validation;
- Suggested business approach(es) of validation requirement workflow management;
- Known Provider(s) limitations relevant to the new registrar obligations;
- Favorable pricing for defined services;
- Capability to offer customizable solutions for the diverse universe of accredited Registrars;
- Whitelisting features for valid addresses.

5.3. Proposed: Across Field Validation Review

- 14 November 2016 to 14 January 2017 Strawman review period
  - ICANN shall distribute the Strawman Proposal to the Registrar WHOIS Validation Working Group via the Registrar WHOIS Validation Working Group mailing list;
  - Registrar WHOIS Validation Working Group members shall review and submit comments and recommendations via the mailing list;

- ICANN shall incorporate the Registrar WHOIS Validation Working Group's comments and recommendations following receipt;
- ICANN and Registrar WHOIS Validation Working Group will work in conjunction to reach an agreement on defined service(s) and provider criteria;
- ICANN shall distribute a Doodle poll to arrange bi-weekly progress meetings with the Registrar WHOIS Validation Working Group.

- 1 March 2017 Defined service and provider criteria is mutually agreed upon by ICANN and Registrar WHOIS Validation Working Group.

5.4. Proposed: Across Field Validation Milestones

As proposed, when in mutual agreement with the Registrar WHOIS Validation Working Group, ICANN shall implement a timeline that will be mutually agreed upon by both parties. to receive and review applications from Provider(s) that shall enable registrars the ability to select a Provider(s) and then implement the policy.

- Finalize and approve service criteria and application form period
  - Upon receipt of final version, ICANN shall distribute the Provider approval criteria, to Registrar WHOIS Validation Working Group mailing list;
  - ICANN shall begin drafting the Provider approval application form;
  - ICANN shall incorporate the Registrar WHOIS Validation Working Group's input, upon receipt, into the criteria (if applicable) and application;
  - ICANN shall continue bi-weekly progress update meetings with the Registrar WHOIS Validation Working Group;
  - The first interim draft of the Provider criteria and application form shall be completed by a mutually agreed upon date;
  - The second interim draft of the Provider criteria and application form shall be completed by a mutually agreed upon date;
  - Comment period on Provider criteria and application form opens on a mutually agreed upon date;
  - Comment period on Provider criteria and application form closes on a mutually agreed upon date;
  - Staff completes summary report on comments within thirty (30) calendar days of end of the comment period;
  - ICANN shall complete the final draft of the Provider criteria and application form and submit to the Registrar WHOIS Validation Working Group for final approval by a set date;

- ICANN shall conduct outreach activities to Providers based on defined criteria to bring awareness to application acceptance period;
- ICANN shall also encourage registrars to also reach out to Providers to complete and submit application.

- Provider Application Review Period
  - ICANN shall review Provider completed application(s) in the order in which they are received;
  - ICANN reserves the right to prioritize applications based on exigent circumstances, e.g. local laws, specific registrar needs.
- ICANN shall publish an initial list of approved Provider on the public webpage
  - Monthly updates shall also be provided distributed to the RegistrarAnnouncements@ICANN.org email list;
  - Registrar may begin contracting with their preferred approved Provider;
- Registrars shall complete execution of Provider(s) approved contract(s);
- Registrars shall implement the Across Field Validation requirements and commence the address validation process.

5.5. Across Field Validation Implementation Alternatives:

- If a Registrar has an alternative method(s) for address validation addresses that is not incorporated into this Strawman proposal, an alternative plan may be submitted for review by ICANN and the Registrar WHOIS Validation Working Group.
- If a Registrar has successfully completed the validation process through an alternatively approved mechanism, the registrar must document that method in response to a compliance inquiry.
  - Proposed example shall include: Registered Name Holder is associated with a .UK domain name, and the exact same physical address was validated based on the current .UK data accuracy program prior to registration of gTLD domain names.