



# WHOIS Accuracy Reporting System

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Accuracy Testing Criteria  
21 September 2015

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# Accuracy Testing Criteria

ICANN has attempted to align the accuracy testing criteria with the contractual obligations of the Registrar Accreditation Agreements (RAAs) and applicable Internet Engineering Task Force (IETF) RFCs. Currently, there are two predominant versions of the RAA in use in the gTLD space, the 2009 version (2009 RAA) and the 2013 version (2013 RAA). Each version of the RAA has requirements for presence, format and operability of specific elements of contact information for the Registrant, the Technical Contact (Tech) and the Administrative Contact (Admin) for each domain name. Each record (i.e., domain name) will be assessed against the criteria of the Registrar's agreement at the time the domain was created. ICANN will account for "grandfathered" records, which are those records (domains) that were created prior to the effective date of the 2013 RAA for that Registrar. For example:

Record Created	05 Feb 2013
Registrar's 2013 RAA Effective Date	01 Jan 2014
Validation criteria to be in testing	2009 RAA Requirements

Record Created	20 Apr 2014
Registrar's 2013 RAA Effective Date	01 Jan 2014
Validation criteria to be in testing	2013 RAA Requirements

Below you will find an overview of syntax and operability accuracy testing criteria for email addresses, telephone numbers and postal addresses. These criteria will be used by the validation vendors supporting the WHOIS ARS project.

## Email Addresses

The syntactical criteria tests for email addresses are organized into stages, stage one will verify the presence of an email address, as required by the applicable RAA, and stage two will involve detailed technical testing of the address syntax. Syntactically correct, verified email addresses do not guarantee email box existence, so while syntactically incorrect email addresses may indicate automatic failures, syntactically correct email addresses will also be subjected to operability testing, explained further below.

### Email Address Syntax: Stage One

In the 2009 RAA, the presence of an Admin and a Tech email address is required. The presence of a Registrant email address is optional. In the 2013 RAA, the Admin, Tech, and Registrant email addresses are each required to be present.

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A "No" response for any of these tests, except for an omitted Registrant email address subject to the 2009 RAA requirements, will be considered a failure for the contact field. A missing Registrant email address subject to the 2009 RAA will be noted, but not counted against the domain/registrant. A "Yes" response will initiate Stage Two testing.

**1. Is there presence of an email address?**

(i.e., field is not blank)

**a. Registrant email address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

**b. Tech email address**

- Yes – Pass
- No – Fail

**c. Admin email address**

- Yes – Pass
- No – Fail

## Email Address Syntax: Stage Two

The Syntactical Tests in Stage Two are performed on all contact fields that attained a "Yes" from Stage One above, including the Registrant email under the 2009 RAA. Although the Registrant email under the 2009 RAA is not required, if it is present in the WHOIS output, it must be valid/accurate.

*If "No" for any of these tests, it will be considered a failure for that contact field. Everything with a "Yes" will be subject to subsequent tests.*

**1. Does the email address only contain permissible characters?**

(i.e., as provided for within the [RFC 5322](#))

**a. Registrant, b. Tech, and c. Admin email addresses**

- Yes – Pass
- No – Fail

**2. Is there presence of an "@" symbol in the email address?**

**a. Registrant, b. Tech, and c. Admin email addresses**

- 
- Yes – Pass
  - No – Fail

**3. Is there presence of a domain component?**

(i.e., the characters following the “@” symbol)

**a. Registrant, b. Tech, and c. Admin email addresses**

- Yes – Pass
- No – Fail

**4. Is the domain component in a TLD, which is resolvable on the Internet?**

(see IANA’s Root Zone Database: <http://www.iana.org/domains/root/db>)

**a. Registrant, b. Tech, and c. Admin email addresses**

- Yes – Pass
- No – Fail

**5. Is the domain component syntactically valid?**

(i.e., the component following the “@” symbol meets requirements)

**a. Registrant, b. Tech, and c. Admin email addresses**

- Yes – Pass
- No – Fail

**6. Is there presence of local component?**

(i.e., the characters preceding the “@” symbol)

**a. Registrant, b. Tech, and c. Admin email addresses**

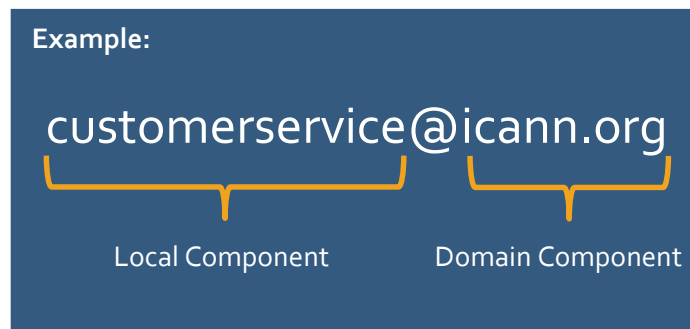
- Yes – Pass
- No – Fail

## 7. Is the local component syntactically valid?

(i.e., the component preceding the "@" symbol meets requirement)

### a. Registrant, b. Tech, and c. Admin email addresses

- Yes – Pass
- No – Fail



## Email Address Operability

The operational criteria tests for email address are a combination of direct (i.e., sending an email) and indirect (i.e., server communication) methods to validate an email address.

*A "No" response for any of these tests, except for an omitted Registrant email address subject to the 2009 RAA requirements, will be considered a failure for the contact field. A missing Registrant email address subject to the 2009 RAA will be noted, but not counted against the domain/registrant.*

### 1. Does the email address' domain have at least one MX record?

#### a. Registrant, b. Tech, and c. Admin email addresses

- Yes – Pass
- No – Fail

### 2. Is a viable connection made to the mail server?

#### a. Registrant, b. Tech, and c. Admin email addresses

- Yes – Pass
- No – Fail

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3. Is there absence of a bounce email within one (1) day after email issuance?

a. Registrant, b. Tech, and c. Admin email addresses

- Yes – Pass
- No – Fail

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## Telephone Numbers

The syntax accuracy tests for telephone numbers are organized into stages: stage one will verify the presence of a telephone number, as required by the applicable RAA, and stage two will involve detailed technical testing of the telephone number syntax. Syntactically correct, verified telephone numbers do not guarantee existence or operability of the phone number, and incorrect syntax does not guarantee the number is not in operation, so all telephone numbers will be subjected to both syntax and operability testing, explained further below.

### Telephone Number Syntax: Stage One

In the 2009 RAA, presence of Admin and Tech telephone numbers is required; presence of a Registrant telephone number is optional. In the 2013 RAA, the Admin, Tech, and Registrant telephone numbers are each required to be present.

*A "No" response for any of these tests, except for an omitted Registrant telephone number subject to the 2009 RAA requirements, will be considered a failure for that contact field. A missing Registrant telephone number subject to the 2009 RAA will be noted, but not counted against the domain/registrant. A "Yes" response will initiate Stage Two testing.*

#### 1. Is there presence of a phone number?

(i.e., field is not blank)

##### a. Registrant phone number

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

##### b. Tech phone number

- Yes – Pass
- No – Fail

##### c. Admin phone number

- Yes – Pass
- No – Fail



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## Telephone Number Syntax: Stage Two

The Syntactical Tests in Stage Two are performed on all contact fields that attained a "Yes" from Stage One above, including the Registrant telephone under the 2009 RAA. Although the Registrant telephone under the 2009 RAA is not required, if it is present in the WHOIS output, it must be valid/accurate.

*If "No" for any of these tests, it will be considered a failure for that contact field. IDENTIFIERS indicate questions that will determine if tests following the identifier are applicable, so negative answers to IDENTIFIERS do not determine pass/fail.*

### 1. Is there presence of a country code?

(i.e., contains a discernable country code based on the first three digits)

#### a. Registrant, b. Tech, and c. Admin phone number

- Yes – Pass
- No – Fail

### 2. Is the country code syntactically valid?

(i.e., meets the requirements as specified in [RFC5733](#), +###.)

#### a. Registrant, b. Tech, and c. Admin phone number

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

### 3. Does the phone number contain at least the minimum allowed digits based on the country code?

#### a. Registrant, b. Tech, and c. Admin phone number

- Yes – Pass
- No – Fail

### 4. Does the phone number contain at most the maximum allowed digits based on the country code?

#### a. Registrant, b. Tech, and c. Admin phone number

- Yes – Pass
- No – Fail

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**5. Does the phone number contain an appropriate amount of digits based on the country code?**  
(e.g., the number contains 7 digits when only 6 or 8 digits are acceptable based on a country code)

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Pass
- No – Fail

**6. Does the phone number only contain permissible numbers and formatting characters?**

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Pass
- No – Fail

**7. IDENTIFIER – Is there presence of an extension?**

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Proceed to additional extension validation
- No – Move to next field

**8. Does the extension only contain permissible numbers and formatting characters?**

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Pass
- No – Fail

**9. Is the extension syntactically valid?**

(i.e., “x” to attribute the telephone extension: [RFC5733](#))

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

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## Telephone Number Operability

As previously mentioned, all telephone numbers will be subjected to both syntax and operability testing. Telephone number operability testing involves a series of tests to determine if the connection exists and is working. The operability test is performed by attempting to place a call to the number listed in the WHOIS record.

*A "No" response for any of these tests, except for an omitted Registrant telephone number subject to the 2009 RAA requirements, will be considered a failure for the contact field. A missing Registrant telephone number subject to the 2009 RAA will be noted, but not counted against the domain/registrant. A "Yes" response will initiate Stage Two testing.*

**1. Does the phone number connect (i.e., provide a ring tone, busy signal, or an answer)**

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Pass
- No – Fail

**2. Is there absence of a disconnected message?**

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Pass
- No – Fail

**3. Is there absence of an invalid number error?**

**a. Registrant, b. Tech, and c. Admin phone number**

- Yes – Pass
- No – Fail

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## Postal Addresses

The syntax accuracy tests for postal addresses are organized into stages: stage one will verify the presence of a postal address, and stage two will involve detailed technical testing of the postal address syntax. Syntactically correct postal addresses do not guarantee operability of the postal address, and reversely, syntactically incorrect postal addresses do not guarantee inoperability. All postal addresses will thus be subjected to both syntax and operability testing, explained further below.

### Postal Address Syntax: Stage One

In the 2009 RAA and 2013 RAA, presence of a Registrant, Admin and a Tech postal address is required.

*A "No" response for any of these tests, will be considered a failure for that contact field. A "Yes" response will initiate Stage Two testing.*

**1. Is there presence of a postal address?**

(i.e., field is not blank)

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes - Pass
- No – Fail

### Postal Address Syntax: Stage Two

The Syntactical Tests in the Stage Two are performed on all contact fields that attained a "Yes" from the Stage One above.

*If "No" for any of these tests, it will be considered a failure for that contact field. IDENTIFIERS indicate questions that will determine if tests following the identifier are applicable, so negative answers to IDENTIFIERS do not determine pass/fail.*

**1. Is there presence of a country?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

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**2. Is the country identifiable?**

(i.e., full country name or an [ISO 3166-1 abbreviation](#))

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**3. Is the country provided in the Country field?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

**4. Is the country syntactically valid?**

(i.e., meets [ISO 3166-1: Alpha 2-code](#) format)

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

**5. IDENTIFIER – Does the country use a postal code system?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Proceed to additional postal code validation
- No – Appropriately left blank, move to next field (i.e., Test g)

**6. Is there presence of a postal code?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**7. Is the postal code in the Postal Code field?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

**8. Is the Postal Code syntactically valid based on the country?**

(i.e., format of postal code meets length, alpha/numeric formats of country)

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**9. IDENTIFIER – Does the country require states/provinces in its addressing system?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Proceed to additional State/Provide validation
- No – Appropriately left blank, move to next field (i.e., Test 13)

**10. Is there presence of a state/province?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**11. Is the state/province in the State/Province field?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

**12. Is the State/Province syntactically valid?**

(i.e., full name or abbreviation depending on country addressing system)

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

**13. Is there presence of a city?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**14. Is the city in the City field?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

**15. Is there presence of a street?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**16. Is the street in the Street field?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail: 2013 RAA || Pass: 2009 RAA

## Postal Address Operability

As mentioned above, all postal addresses will be subjected to both syntax and operability testing. Operability testing is mostly automated through the use of a tool employed by the Universal Postal Union (UPU), ICANN’s postal address validation vendor. No mail will be sent as part of the testing.

The tool uses available country reference data to determine whether an address, based on the given components as provided in the WHOIS record, might be deliverable. The tool returns a “deliverability” code specifying how likely deliverable (if at all) an address is. Any address that receives a “likely deliverable” code is considered a “Pass” for Operability. Any address without a country is considered a “Fail” for Operability, as a country is required to check against the appropriate reference data. If the tool may return a “not likely deliverable” or “no reference data for given country” code, the UPU has developed rules for complementary manual tests to further assess the deliverability of an address. Any address that is neither verified by the tool nor the manual tests will be considered a “Fail” for Operability.

*Note: There is no difference between 2009 and 2013 RAA verification requirements. All records will be given the same tests.*

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## Postal Address Operability: Automated Stage

The UPU attempts to verify the deliverability of the address automatically via the tool.

*A "Yes" for Stage One will be considered a "Pass" for Operability (i.e., deliverable). A "No" for Stage One will trigger either a "Fail" or a follow-on testing scenario.*

### 1. Is the tool able to automatically verify deliverability?

(i.e., returns a "deliverable" code)

#### a. Registrant, b. Tech, and c. Admin postal address

- Yes – Pass
- No – Fail: No country present in address
- No – Possible Fail (A): Tool has no reference data for given country; Proceed to Manual Stage (A)
- No – Possible Fail (B): Ambiguity or incomplete data; Proceed to Manual Stage (B)

## Postal Address Operability: Manual Stage (A)

The Operability Test in Manual Stage (A) is performed on all contact fields that attained a "Possible Fail (A)" from the Automated Stage above. Here the UPU conducts manual testing of the given address using its own complementary data on the given country to determine if the address is likely to be deliverable.

*A "Yes" response for Manual Stage (A) will be considered a "Pass" for Operability (i.e., deliverable). A "No" for Manual Stage (A) will be considered "Indeterminate" for Operability (i.e., unable to verify automatically or manually the address deliverability)*

### 1. Based on UPU's manual check of the address, is the address likely deliverable?

#### a. Registrant, b. Tech, and c. Admin postal address

- Yes – Pass
- No – Indeterminate

## Postal Address Operability: Manual Stage (B)

The Operability Test in Manual Stage (B) is performed on all contact fields that attained a "Possible Fail (B)" from the Automated Stage above. Here the UPU checks the available reference data for the given address components to determine if the address is likely to be deliverable. Two components state/province (if applicable) and city, are essential to the UPU's ability to complete this test; in the absence of these two components, an address will not be considered deliverable.



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A "Yes" response to all three criteria for Manual Stage (B) will be considered a "Pass" for Operability (i.e., deliverable). A "No" response to at least one will be considered a "Fail" for Operability (i.e., not deliverable).

**1. Is there presence of a city in the given address?**

(i.e., field is not blank)

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**2. If Postal Address Syntax Identifier Test #9 = yes, is there presence of a state/province in the given address?**

(i.e., field is not blank)

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

**3. Based on UPU's manual check of the given address components, is the address likely to be deliverable?**

**a. Registrant, b. Tech, and c. Admin postal address**

- Yes – Pass
- No – Fail

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 More information: [whois.icann.org](https://whois.icann.org)



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