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Testing TANGO Registry Services

The test cases described in detail in this Appendix do not cover all of the gates identified in the main document. It merely serves as an approach to test the registry's main features that are easily accessible without internal knowledge. As such we are providing sample test cases for the UA-readiness gates G1, G2, G3, G4, G11, and G15, thereby implicitly also testing the internal gates G7, G8, and G9.

In order to make it easier for the reader to find their way in the test cases, colour codes have been used. For each test case the expected outcome is stated followed by either a green **success** or red **fail** keyword. Furthermore, the respective output of the test case has been marked with a **green** or **red** background to easily see where the result is expected to be found.

This appendix is part of the following three-part report:

1. [Universal Acceptance \(UA\) Roadmap for Domain Name Registry and Registrar Systems.](#)
2. [Appendix A - Registry Testing](#)
3. [Appendix B - Registrar Testing](#)

1 Testing the Control Panel (Web Interface) - G4, G16

The test cases within this section reflect the UA-readiness gates G4 and G16 as visualized in *Figure 1: Domain Registry High-Level System Architecture* in the [main document](#). Testing a registry's web interface will be different for each registry system as there is no common standard and registries are free to offer any kind of features and functionality. Nevertheless, it is likely that standard functionality (create, read, update, delete) will be available. Together with the optional searching/filtering of objects, these will be the test cases we are looking at.

1.1 Contact

1.1.1 Summary

Operation	Outcome	Comment
Create	fail	δοκιμή@テスト.ਪਰਿੱਠਏਫ incorrectly flagged as invalid
Create (adjusted)	success	Used 测试@测试.测试 as email address
Update	success	
Search	partial success	Domain name in email address is not normalized to U-label notation; searching by using the A-label version (测试@xn--0zwm56d.xn--0zwm56d) does not find the contact
View	success	Domain name in email address is not normalized to U-label notation, it is displayed the way it was created

For the Contact test cases only the email address was of concern. Any other data, which may contain the full range of Unicode characters (e.g. internationalized address data), is ignored in the context of Universal Acceptance.

It should be tested that EAI is accepted when storing and updating contacts and that the email address is correctly displayed when viewing the contact. In cases where searching in the contact space is supported, the contact must be found when specifying the email address. Care should be taken that the domain name of the email address is supported in A-label as well as U-label format and both formats are considered as equal when searching by email address. While this list of tests is intended to be a reasonably complete list, there is no guarantee for completeness and there may be other checks depending on the software that is deployed.

Testing the TANGO Registry Services resulted in two problems:

1. The email address <δοκιμή@テスト.பரிட்சை> was not accepted. The cause being a faulty validation of the javax.mail library used to validate email addresses. See Section “Third-Party Library Usage” of the [main document](#) for details.
Starting with Release 1.98.1 of the TANGO registry software the email validation has been adjusted and the above email address is considered valid and accepted.
2. The domain name parts of email addresses are not normalized to U-label notation, instead they are stored and displayed as given. As a consequence, search attempts using A-label notation of an email address do not find contacts originally given in U-label notation and vice versa.

1.1.2 Detailed Test Descriptions

1.1.2.1 Create:

Enter δοκιμή@テスト.பரிட்சை as email address.

Expected outcome:

- Storage is possible: **fail**, email validation in Frontend fails
- Display of contact shows the same values: unable to check

Alter test to use different email address: 测试@测试.测试

Expected outcome:

- Storage is possible: **success**
- Display of contact shows the same values: **success**

1.1.2.2 Update

Change all occurrences of "测试" to "பரிட்சை".

Expected outcome:

- Storage is possible: **success**
- Display of contact shows the same values: **success**

1.1.2.3 Search

Search the contacts by

- Email “测试@测试.测试”

Expected outcome:

- Find the contact: **success**

Search contact by

- Email “测试@xn--0zwm56d.xn--0zwm56d”

Expected outcome:

- Find the contact: **fail**

1.2 Host

1.2.1 Summary

Operation	Outcome	Comment
Create	success	Both A-label and U-label are supported
Update	success	Both A-label and U-label are supported
Search	success	Searching by A-label also finds hosts created using U-labels and vice versa
View	success	Both A-label and U-label domain names are displayed at the same time

It should be tested that hosts are accepted in either A-label or U-label notation. If searching in the host space is supported, the host must be found when specifying the host's domain name. Care should be taken that the domain name of the host is supported in A-label as well as U-label format and both formats are considered as equal when searching by domain name. It is suggested to store the host's domain name in a normalized form.

Testing the TANGO Registry Services showed full support of A-label and U-label. For input, either of the two notations is accepted; for output always both versions are displayed next to each other. When searching for hosts, there are separate input fields to enter the A-label and U-label domain name, for U-label also a wildcard search is supported, A-label only supports a full match.

1.2.2 Detailed Test Descriptions

1.2.2.1 Create

Enter “**परीक्षा.إختبار.آزمایشی**” as host name.

Expected outcome:

- Storage is possible: **success**
- Display of host shows the same domain name: **success**
- Display of A-labels of the host shows as “xn--kgbechtv.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g”: **success**

1.2.2.2 Search

Search hosts by U-label “إختبار.آزمایشی.پरीक्षा” and by A-label “xn--kgbechtv.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g”

Expected outcome:

- Find the corresponding host with U-label search: **success**
- Find the corresponding host with A-label search: **success**

1.2.2.3 Update

Change host with name “إختبار.آزمایشی.پरीक्षा” to “إختبار2.آزمایشی..پरीक्षा”

Expected outcome:

- Storage is possible: **success**
- Display of host shows the same domain name: **success**
- Display of A-labels of the host shows as “xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g”: **success**

1.3 Domain

1.3.1 Summary

Operation	Outcome	Comment
Create	success	Both A-label and U-label are supported
Update	success	Both A-label and U-label are supported
Update (add variants)	success	Both A-label and U-label are supported
Update (add hosts)	success	Hosts in A-label and U-label format are supported
Search	success	Searching by A-label also finds domains created using U-labels and vice versa
View	success	Both A-label and U-label domain names are displayed at the same time
Check	success	Checking by A-label and U-label give the same result
Transfer	success	Both A-label and U-label domain names are supported

It should be tested that domains are accepted in either A-label or U-label notation. In case searching in the domain space is supported, the domain must be found when specifying the domain name. Care should be taken that the domain name is supported in A-label as well as U-label format and both formats are considered as equal when searching by domain name.

Testing the TANGO Registry Services showed full support of A-label and U-label. For input, either of the two notations is accepted; for output always both versions are displayed next to each other. When searching for domains, there are separate input fields to enter the A-label and U-label domain name, for U-label also a wildcard search is supported, A-label only supports a full match.

Variants are supported based on the configured IDN table. A variant label may be added either in A-label or U-label notation as long as it constitutes an allocatable variant according to the IDN table. When checking domains, all existing domains as well as all variants (independent of their allocation status) are considered as blocked.

TANGO offers two different variant modes:

1. Variants as attributes: In this mode variants may be added by updating an existing domain. Variants are only properties of another domain. Thereby automatically restricting the variants to only be allocated to the same entity.
2. Variants as objects: In this mode variants are separate first-class domain objects having their own life-cycle. A variant domain name may only be created if assigned to the same

registrar and using the same registrant contact handle. Transferring a domain always transfers the full variant bundle in order to uphold the same entity principle.

1.3.2 Detailed Test Descriptions

1.3.2.1 Create

Enter "tëst.テスト" as domain name (choosing French language tag "fr").

Expected outcome:

- Storage is possible: **success**
- Display of domain shows the same domain name: **success**
- Display of A-label domain name shows as "xn--tst-jma.xn--zckzah": **success**

1.3.2.2 Edit (add variants)

Edit "tëst.テスト", add variants "test.テスト" and "tést.テスト"

Expected outcome:

- Storage is possible: **success**
- Display of domain variant labels show the same values: **success**
- Display of A-labels of domain variant labels show as "test.xn--zckzah" and "xn--tst-bma.xn--zckzah", resp.: **success**

Edit (add hosts)

Enter "ns1.mylabel.பரிட்சை" and "ns1.测试.பரிட்சை" as host labels.

Expected outcome:

- Storage is possible: **success**
- Display of host names show the same values: **success**
- Display of host names A-labels show as "ns1.mylabel.xn--hlcj6aya9esc7a" and "ns1.xn--0zwm56d.xn--hlcj6aya9esc7a", resp.: **success**

1.3.2.3 Search

Search domains by U-label "tëst.テスト" and by A-label "xn--tst-jma.xn--zckzah"

Expected outcome:

- Find the corresponding domain with U-label search: **success**

- Find the corresponding domain with A-label search: **success**

1.3.2.4 Check (existing variant)

Enter "tést.テスト" as domain name.

Expected outcome:

- Check is executed: **success**
- Check result is "not available": **success**

1.3.2.5 Check (not registered variant)

Enter "tèst.テスト" as domain name.

Expected outcome:

- Check is executed: **success**
- Check result is "not available", blocked by variant: **success**

1.3.2.6 Check (unregistered label)

Enter "tost.テスト" as domain name.

Expected outcome:

- Check is executed: **success**
- Check result is "available": **success**

1.3.2.7 Transfer

Transfer the domain "tést.テスト" to another registrar.

Expected outcome:

- Domain transfer is initiated: **success**

1.3.2.8 Search transfer

Search transfer by U-label "tést.テスト" and A-label "xn--tst-jma.xn--zckzah"

Expected outcome:

- Find the corresponding pending transfer with U-label search: **success**
- Find the corresponding pending transfer with A-label search: **success**

2 Testing the EPP Interface - G11

The test cases within this section reflect the UA-readiness gate G11 as visualized in *Figure 1: Domain Registry High-Level System Architecture* in the [main document](#). Testing a registry's EPP interface can largely be done using standard example requests as EPP is clearly defined in RFCs (see RFC5730 [RFC5730]). While there are registries (especially ccTLDs) that do not adhere to the standard, many registries (e.g., all new gTLDs as mandated by ICANN) follow the exact definition.

Still, differences will exist with regards to the supported IDN scripts and languages on the second level. The below examples should therefore be adjusted to use different domain names for the domain-based requests. Contacts and hosts should be supported for arbitrary domain names and email addresses.

2.1 Contact

2.1.1 Summary

Operation	Outcome	Comment
Create	success	Used بازار@أكان.بازار as email address
Info	success	
Update	failure	Used δοκιμή@テスト.பரிட்சை as email address; request is rejected with reason "field value is disallowed by policy"
Update (adjusted)	success	Used 测试@测试.测试 as email address

The formal definition of the EPP examples used in these tests can be found in RFC5733 [RFC5733].

For the Contact test cases only the email address was of concern. Any other data, which may contain the full range of Unicode characters (e.g. internationalized address data), is ignored in the context of Universal Acceptance.

It should be tested that EAI is accepted when storing and updating contacts and that the email address is correctly returned when inquiring the created contact.

Testing the TANGO Registry Services resulted in two problems:

The email address <δοκιμή@テスト.பரிட்சை> was not accepted.

The domain name parts are not normalized to U-label notation, instead they are only normalized to lower-case and otherwise stored and displayed as given, resulting in searches (in the web interface) not finding contacts using the A-label notation when an email address was given in U-label notation.

2.1.2 Detailed Test Descriptions

2.1.2.1 Create

Request:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <create>
      <contact:create
        xmlns:contact="urn:ietf:params:xml:ns:contact-1.0">
        <contact:id>C100033</contact:id>
        <contact:postalInfo type="loc">
          <contact:name>δοκιμή</contact:name>
          <contact:org>δοκιμή</contact:org>
          <contact:addr>
            <contact:street>δοκιμή</contact:street>
            <contact:city>δοκιμή</contact:city>
            <contact:sp>δοκιμή</contact:sp>
            <contact:pc>δοκιμή</contact:pc>
            <contact:cc>US</contact:cc>
          </contact:addr>
        </contact:postalInfo>
        <contact:voice x="1234">+1.7035555555</contact:voice>
        <contact:fax>+1.7035555556</contact:fax>
        <contact:email>بازار@آکان.بازار</contact:email>
        <contact:authInfo>
          <contact:pw>2fooBAR</contact:pw>
        </contact:authInfo>
      </contact:create>
    </create>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1000: success

Response:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <creData xmlns="urn:ietf:params:xml:ns:contact-1.0">
        <id>C100033</id>
        <crDate>2022-04-22T09:18:57.543Z</crDate>
      </creData>
    </resData>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1650619137543-6</svTRID>
    </trID>
  </response>
</epp>
```

2.1.2.2 Info

Request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <info>
      <contact:info xmlns:contact="urn:ietf:params:xml:ns:contact-1.0">
        <contact:id>C100033</contact:id>
      </contact:info>
    </info>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```


Expected result code 1000: **success**

Check that email has the same value as in the create request: **success**

Response:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <infData xmlns="urn:ietf:params:xml:ns:contact-1.0">
        <id>C100033</id>
        <roid>Cppyf3-ICANN</roid>
        <status s="ok"/>
        <postalInfo type="loc">
          <name>δοκιμή</name>
          <org>δοκιμή</org>
          <addr>
            <street>δοκιμή</street>
            <city>δοκιμή</city>
            <sp>δοκιμή</sp>
            <pc>δοκιμή</pc>
            <cc>US</cc>
          </addr>
        </postalInfo>
        <voice x="1234">+1.7035555555</voice>
        <fax>+1.7035555556</fax>
        <email>بازار.أكان@بازار</email>
        <clID>reg-941960</clID>
        <crID>reg-941960</crID>
        <crDate>2022-04-22T09:18:57.543Z</crDate>
        <authInfo>
          <pw>2fooBAR</pw>
        </authInfo>
      </infData>
    </resData>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1651750190448-4062</svTRID>
    </trID>
  </response>
</epp>
```

2.1.2.3 Update

Request:

```
<?xml version="1.0" encoding="UTF-8"?><epp
xmlns="urn:ietf:params:xml:ns:epp-1.0">
<command>
  <update>
    <contact:update xmlns:contact="urn:ietf:params:xml:ns:contact-1.0">
      <contact:id>C100033</contact:id>
      <contact:chg>
        <contact:email>δοκιμή@テスト.ပါဝါငံေ</contact:email>
      </contact:chg>
    </contact:update>
  </update>
  <clTRID>ABC-12345</clTRID>
</command>
</epp>
```

Expected result code 1000: fail

Response:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="2306">
      <msg>Parameter value policy error</msg>
      <extValue>
        <value>
          <contact:email xmlns:contact="urn:ietf:params:xml:ns:contact-
1.0">δοκιμή@テスト.ပါဝါငံေ
          </contact:email>
        </value>
        <reason>field value is disallowed by policy</reason>
      </extValue>
    </result>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1651750771689-4065</svTRID>
    </trID>
  </response>
</epp>
```

2.1.2.4 Update (adjusted)

Alter test to use different email address: 测试@测试.测试

Request:

```
<?xml version="1.0" encoding="UTF-8"?><epp
xmlns="urn:ietf:params:xml:ns:epp-1.0">
<command>
  <update>
    <contact:update xmlns:contact="urn:ietf:params:xml:ns:contact-1.0">
      <contact:id>C100033</contact:id>
      <contact:chg>
        <contact:email>测试@测试.测试</contact:email>
      </contact:chg>
    </contact:update>
  </update>
  <clTRID>ABC-12345</clTRID>
</command>
</epp>
```

Expected result code 1000: success

Response:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1651751124705-4068</svTRID>
    </trID>
  </response>
</epp>
```

2.2 Host

2.2.1 Summary

Operation	Outcome	Comment
Create (U-label)	success	Submitting the host name in U-label format was rejected with the expected 2004 error code and the reason "domain name must not contain IDN U-labels"
Create (A-label)	success	Submitting the IDN host name in A-label notation: xn--kgbechtv.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g
Info	success	The returned host is in A-label notation
Update	success	Changed the host name to: xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g

The formal definition of the EPP examples used in these tests can be found in RFC5732 [RFC5732].

It should be tested that hosts are only accepted as A-labels, and U-labels are not allowed according to RFC1123 [RFC1123], which is mandated in Section 2.1 of RFC5732.

Testing the TANGO Registry Services showed full support of arbitrary A-labels and the correct rejection of U-labels.

2.2.2 Detailed Test Descriptions

This test is first checking whether U-labels are rejected during domain creation. According to RFC1123 [RFC1123], which is mandated in Section 2.1 of RFC5732, U-labels are not allowed in EPP. The expected result of such a domain create command should be a "Parameter value range error" with the error code 2004. In a second test the IDN is submitted via A-label notation and a successful creation is expected.

2.2.2.1 Create (U-label)

Request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <create>
      <host:create xmlns:host="urn:ietf:params:xml:ns:host-1.0">
        <host:name>آزمایشی.إختبار.परीक्षा</host:name>
      </host:create>
    </create>
  </command>
</epp>
```

Expected error result code 2004: success

Result:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="2004">
      <msg>Parameter value range error</msg>
      <extValue>
        <value>
          <host:name xmlns:host="urn:ietf:params:xml:ns:host-
1.0">آزمایشی.إختبار.परीक्षा</host:name>
        </value>
        <reason>domain name must not contain IDN U-labels</reason>
      </extValue>
    </result>
    <trID>
      <svTRID>1651751826714-4073</svTRID>
    </trID>
  </response>
</epp>
```

2.2.2.2 Create (A-label)

Request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <create>
      <host:create xmlns:host="urn:ietf:params:xml:ns:host-1.0">
        <host:name>xn--kgbechtv.xn--hgbk6aj7f53bba.xn--
11b5bs3a9aj6g</host:name>
        </host:create>
      </create>
    </command>
  </epp>
```

Expected result code 1000: success

Result:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <creData xmlns="urn:ietf:params:xml:ns:host-1.0">
        <name>xn--kgbechtv.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g</name>
        <crDate>2022-05-27T11:15:31.488Z</crDate>
      </creData>
    </resData>
    <trID>
      <svTRID>1653650131488-5368</svTRID>
    </trID>
  </response>
</epp>
```

2.2.2.3 Info

Request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <info>
      <host:info xmlns:host="urn:ietf:params:xml:ns:host-1.0">
        <host:name>xn--kgbechtv.xn--hgbk6aj7f53bba.xn--
11b5bs3a9aj6g</host:name>
      </host:info>
    </info>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1000: success

Result:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <infData xmlns="urn:ietf:params:xml:ns:host-1.0">
        <name>xn--kgbechtv.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g</name>
        <roid>Hlyea6-ICANN</roid>
        <status s="ok"/>
        <clID>reg-941960</clID>
        <crID>reg-941960</crID>
        <crDate>2022-05-27T11:15:31.488Z</crDate>
      </infData>
    </resData>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1653650296909-5369</svTRID>
    </trID>
  </response>
</epp>
```

2.2.2.4 Update

Request:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <update>
      <host:update xmlns:host="urn:ietf:params:xml:ns:host-1.0">
        <host:name>xn--kgbechtv.xn--hgbk6aj7f53bba.xn--
11b5bs3a9aj6g</host:name>
        <host:chg>
          <host:name>xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--
11b5bs3a9aj6g</host:name>
        </host:chg>
      </host:update>
    </update>
  </command>
</epp>
```

Expected result code 1000: success

Result:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <trID>
      <svTRID>1653650808085-5372</svTRID>
    </trID>
  </response>
</epp>
```


2.3 Domain

2.3.1 Summary

Operation	Outcome	Comment
Create (U-label)	success	Submitting the domain name in U-label format was rejected with a 2004 error code and the reason "domain name must not contain IDN U-labels"
Create (A-label)	success	Submitting the IDN domain name in A-label notation: xn--fst-jma.xn--zckzah
Info	success	The returned domain is in A-label notation
Update (setting variants)	success	Submitting variants in A-label notation
Check (variant)	success	Checking a non-existing domain, which is a variant of an existing domain reports the domain as blocked
Check (non-variant)	success	Checking a non-existing domain, which is not a variant of an existing domain reports the domain as available
Transfer	success	Starting a transfer using the A-label notation

The formal definition of the EPP examples used in these tests can be found in RFC5731 [RFC5731].

It should be tested that domains are only accepted as A-labels, and U-labels are not allowed according to RFC1123 [RFC1123], which is mandated in Section 2.1 of RFC5731.

The support of variants and IDN script/language values is supported via a proprietary EPP extension (see Section "IDN EPP Extension for Variants" for details).

Testing the TANGO Registry Services showed full support of arbitrary A-labels and the correct rejection of U-labels.

2.3.2 Detailed Test Descriptions

2.3.2.1 Create (U-label)

Request:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <create>
      <domain:create xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name>fëst.テスト</domain:name>
        <domain:period unit="y">1</domain:period>
        <domain:registrant>REG-CEUOBXDWZJF2</domain:registrant>
        <domain:contact type="admin">REG-CEUOBXDWZJF2</domain:contact>
        <domain:contact type="tech">REG-CEUOBXDWZJF2</domain:contact>
        <domain:contact type="billing">REG-
CEUOBXDWZJF2</domain:contact>
        <domain:authInfo>
          <domain:pw>abcdefghijkl</domain:pw>
        </domain:authInfo>
      </domain:create>
    </create>
    <extension>
      <idn:create xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0">
        <idn:lang>fr</idn:lang>
        <idn:variants/>
      </idn:create>
    </extension>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 2004: success

Result:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="2004">
      <msg>Parameter value range error</msg>
      <extValue>
        <value>
          <domain:name xmlns:domain="urn:ietf:params:xml:ns:domain-
1.0">fëst.テスト</domain:name>
        </value>
        <reason>domain name must not contain IDN U-labels</reason>
      </extValue>
    </result>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1654166805783-7250</svTRID>
    </trID>
  </response>
</epp>
```

2.3.2.2 Create (A-label)

Request:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <create>
      <domain:create xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name>xn--fst-jma.xn--zckzah</domain:name>
        <domain:period unit="y">1</domain:period>
        <domain:registrar>REG-CEUOBXDWZJF2</domain:registrar>
        <domain:contact type="admin">REG-CEUOBXDWZJF2</domain:contact>
        <domain:contact type="tech">REG-CEUOBXDWZJF2</domain:contact>
        <domain:contact type="billing">REG-
CEUOBXDWZJF2</domain:contact>
        <domain:authInfo>
          <domain:pw>abcdefghijklmnop</domain:pw>
        </domain:authInfo>
      </domain:create>
    </create>
    <extension>
      <idn:create xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0">
        <idn:lang>fr</idn:lang>
        <idn:variants/>
      </idn:create>
    </extension>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1000: success

Result:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <creData xmlns="urn:ietf:params:xml:ns:domain-1.0">
        <name>xn--fst-jma.xn--zckzah</name>
        <crDate>2022-05-27T11:38:27.822Z</crDate>
        <exDate>2023-05-27T11:38:27.822Z</exDate>
      </creData>
    </resData>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1653651507822-5377</svTRID>
    </trID>
  </response>
</epp>
```

2.3.2.3 Info

Request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <info>
      <domain:info xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name hosts="all">xn--fst-jma.xn--zckzah</domain:name>
      </domain:info>
    </info>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1000: success

Result:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <infData xmlns="urn:ietf:params:xml:ns:domain-1.0">
        <name>xn--fst-jma.xn--zckzah</name>
        <roid>Djxwv5-ICANN</roid>
        <status s="inactive"/>
        <registrant>REG-CEUOBXDWZJF2</registrant>
        <contact type="billing">REG-CEUOBXDWZJF2</contact>
        <contact type="admin">REG-CEUOBXDWZJF2</contact>
        <contact type="tech">REG-CEUOBXDWZJF2</contact>
        <clID>reg-941960</clID>
        <crID>reg-941960</crID>
        <crDate>2022-05-27T11:38:27.822Z</crDate>
        <exDate>2023-05-27T11:38:27.822Z</exDate>
        <authInfo>
          <pw>abcdefghijkl</pw>
        </authInfo>
      </infData>
    </resData>
    <extension>
      <infData xmlns="http://xmlns.tango-rs.net/epp/idn-1.0">
        <lang>fr</lang>
      </infData>
    </extension>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1653652051920-5381</svTRID>
    </trID>
  </response>
</epp>
```

2.3.2.4 Update (setting variants)

Request:

```
<?xml version="1.0" encoding="ISO-8859-1" standalone="no" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <update>
      <domain:update xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name>xn--fst-jma.xn--zckzah</domain:name>
      </domain:update>
    </update>
    <extension>
      <update xmlns="http://xmlns.tango-rs.net/epp/idn-1.0">
        <add>
          <nameVariant>fest.xn--zckzah</nameVariant>
          <nameVariant>xn--fst-bma.xn--zckzah</nameVariant>
        </add>
      </update>
    </extension>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1000: success

Result:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1653652644723-5385</svTRID>
    </trID>
  </response>
</epp>
```

2.3.2.5 Check (variant)

Request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <check>
      <domain:check xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name>xn--fst-bma.xn--zckzah</domain:name>
      </domain:check>
    </check>
    <extension>
      <check xmlns="http://xmlns.tango-rs.net/epp/idn-1.0">
        <lang>fr</lang>
      </check>
    </extension>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1000: success

Expected availability "false": success

Result:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <chkData xmlns="urn:ietf:params:xml:ns:domain-1.0">
        <cd>
          <name avail="false">xn--fst-bma.xn--zckzah</name>
          <reason>Blocked by variant</reason>
        </cd>
      </chkData>
    </resData>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1653652995911-5390</svTRID>
    </trID>
  </response>
</epp>
```


2.3.2.6 Check (non-variant)

Request:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <check>
      <domain:check xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name>xn--rst-bma.xn--zckzah</domain:name>
      </domain:check>
    </check>
    <extension>
      <check xmlns="http://xmlns.tango-rs.net/epp/idn-1.0">
        <lang>fr</lang>
      </check>
    </extension>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1000: success

Expected availability "true": success

Result:

```
<?xml version="1.0" encoding="UTF-8"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1000">
      <msg>Command completed successfully</msg>
    </result>
    <resData>
      <chkData xmlns="urn:ietf:params:xml:ns:domain-1.0">
        <cd>
          <name avail="true">xn--rst-bma.xn--zckzah</name>
        </cd>
      </chkData>
    </resData>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1653653153741-5392</svTRID>
    </trID>
  </response>
</epp>
```

2.3.2.7 Transfer

Request:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <transfer op="request">
      <domain:transfer xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
        <domain:name>xn--rst-bma.xn--zckzah</domain:name>
        <domain:period unit="y">2</domain:period>
        <domain:authInfo>
          <domain:pw>abcdefg</domain:pw>
        </domain:authInfo>
      </domain:transfer>
    </transfer>
    <clTRID>ABC-12345</clTRID>
  </command>
</epp>
```

Expected result code 1001: success

Result:

```
<?xml version="1.0" encoding="UTF-8" ?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <response>
    <result code="1001">
      <msg>Command completed successfully; action pending</msg>
    </result>
    <resData>
      <trnData xmlns="urn:ietf:params:xml:ns:domain-1.0">
        <name>xn--rst-bma.xn--zckzah</name>
        <trStatus>pending</trStatus>
        <reID>reg-941960</reID>
        <reDate>2022-05-27T12:19:59.468Z</reDate>
        <acID>reg-498798</acID>
        <acDate>2022-06-01T12:19:59.468Z</acDate>
        <exDate>2025-05-27T12:09:51.164Z</exDate>
      </trnData>
    </resData>
    <trID>
      <clTRID>ABC-12345</clTRID>
      <svTRID>1653653999468-5397</svTRID>
    </trID>
  </response>
</epp>
```

2.4 IDN EPP Extension for Variants

```
<?xml version="1.0" encoding="UTF-8"?>

<schema targetNamespace="http://xmlns.tango-rs.net/epp/idn-1.0"
  xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
  xmlns:eppcom="urn:ietf:params:xml:ns:eppcom-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">

  <annotation>
    <documentation>
      Extensible Provisioning Protocol v1.0
      domain name extension schema for internationalized domain names
      processing.
    </documentation>
  </annotation>

  <import namespace="urn:ietf:params:xml:ns:eppcom-1.0"
    schemaLocation="eppcom-1.0.xsd"/>

  <!-- child elements found in EPP commands -->

  <element name="check" type="idn:checkType"/>
  <element name="create" type="idn:createType"/>
  <element name="update" type="idn:updateType"/>

  <!-- child elements of the <check> command -->

  <complexType name="checkType">
    <sequence>
      <group ref="idn:idnTagGroup"/>
    </sequence>
  </complexType>
```

```

<!-- child elements of the <create> command -->

<complexType name="createType">
  <sequence>
    <group ref="idn:idnTagGroup" minOccurs="0"/>
    <element name="variants" type="idn:variantListType"
minOccurs="0"/>
  </sequence>
</complexType>

```

```

<!-- child elements of the <update> command -->

```

```

<complexType name="updateType">
  <sequence>
    <element name="add" type="idn:variantListType" minOccurs="0"/>
    <element name="rem" type="idn:variantListType" minOccurs="0"/>
    <element name="chg" minOccurs="0">
      <complexType>
        <sequence>
          <group ref="idn:idnTagGroup" minOccurs="0"/>
        </sequence>
      </complexType>
    </element>
  </sequence>
</complexType>

```

```

<!-- child response elements -->

```

```

<element name="creData" type="idn:bundleDataType"/>
<element name="updData" type="idn:bundleDataType"/>
<element name="trnData" type="idn:bundleDataType"/>
<element name="infData" type="idn:respDataType"/>

```

```

<!-- response elements -->

```

```

<complexType name="respDataType">
  <sequence>
    <group ref="idn:idnTagGroup"/>
    <element name="variants" type="idn:variantListType"
minOccurs="0"/>
  </sequence>
</complexType>

```

```
<!-- bundle information -->
```

```
<complexType name="bundleDataType">  
  <sequence>  
    <element name="variants" type="idn:variantListType"/>  
  </sequence>  
</complexType>
```

```
<!-- common types -->
```

```
<!-- type that allows an empty string only -->
```

```
<simpleType name="emptyTokenType">  
  <restriction base="token">  
    <length value="0"/>  
  </restriction>  
</simpleType>
```

```
<!-- a script code according to ISO 15924, additionally allowing an  
empty string -->
```

```
<simpleType name="scriptType">  
  <union memberTypes="idn:emptyTokenType">  
    <simpleType>  
      <restriction base="token">  
        <minLength value="3"/>  
        <maxLength value="4"/>  
      </restriction>  
    </simpleType>  
  </union>  
</simpleType>
```

```
<!-- a language code according to RFC 5646, additionally allowing an  
empty string -->
```

```
<simpleType name="languageType">  
  <union memberTypes="idn:emptyTokenType language">  
  </union>  
</simpleType>
```

```
<!-- elements that represent either a language or a script -->
```

```
<group name="idnTagGroup">  
  <choice>  
    <element name="lang" type="idn:languageType"/>  
    <element name="script" type="idn:scriptType"/>  
  </choice>  
</group>
```

```
<!-- a list of variants of a domain name -->
```

```
<complexType name="variantListType">  
  <sequence>  
    <element name="nameVariant" type="eppcom:labelType"  
      minOccurs="0" maxOccurs="unbounded"/>  
  </sequence>  
</complexType>  
</schema>
```

3 Testing the Authoritative DNS Server - G1

The test cases within this section reflect the UA-readiness gate G1 as visualized in *Figure 1: Domain Registry High-Level System Architecture* in the [main document](#). For this test case a domain needs to be created (including hosts, to ensure it will be added to the TLD zone).

3.1 DNS Query

For this test we will be using the domain `fëst.テスト` as created in the EPP Domain test case. Its A-label notation is `xn--fst-jma.xn--zckzah`. To test the DNS server the open source tool “dig” is used.

3.1.1 Detailed Test Description

Query the domain name’s NS records from the TLD’s authoritative name server `ns1.sandbox.irondns.net`:

```
dig @ns1.sandbox.irondns.net xn--fst-jma.xn--zckzah ns
```

Expected outcome:

- Status: NOERROR: **success**
- List of domain’s hosts: **success**

Result:

```
; <<>> DiG 9.4.1-P1 <<>> @ns1.sandbox.irondns.net xn--fst-jma.xn--zckzah ns
; (1 server found)
;; global options: printcmd
;; Got answer:
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 1369
;; flags: qr rd; QUERY: 1, ANSWER: 0, AUTHORITY: 2, ADDITIONAL: 0
;; WARNING: recursion requested but not available

;; QUESTION SECTION:
;xn--fst-jma.xn--zckzah.          IN      NS

;; AUTHORITY SECTION:
xn--fst-jma.xn--zckzah. 86400  IN      NS      ns2.irondns.net.
xn--fst-jma.xn--zckzah. 86400  IN      NS      ns1.irondns.net.

;; Query time: 30 msec
;; SERVER: 195.253.54.18#53(195.253.54.18)
;; WHEN: Fri Jun 24 09:38:54 2022
;; MSG SIZE rcvd: 87
```

4 Testing the Port 43 Whois Interface - G2

The test cases within this section reflect the UA-readiness gate G2 as visualized in *Figure 1: Domain Registry High-Level System Architecture* in the [main document](#). For these test cases a domain, a contact, and a host need to be created.

4.1 Contact

4.1.1 Detailed Test Description

Query an existing contact via its handle:

```
whois -h whois-fel.ote.icann.tango.dtm.knipp.de contact REG-CEUOBXDWZJF2
```

Expected outcome:

- Email address is correctly returned: **success**

Result:

Registry Contact ID: Czyyc2-ICANN

Contact Name: பரிட்சை

Contact Organization: பரிட்சை

Contact Street: பரிட்சை

Contact Street: ИСПЫТАНИЕ

Contact Street: ஸ்டூட

Contact City: பரிட்சை

Contact State/Province: பரிட்சை

Contact Postal Code: பரிட்சை

Contact Country: AF

Contact Phone:

Contact Phone Ext:

Contact Fax:

Contact Fax Ext:

Contact Email: 测试@测试.测试

>>> Last update of Whois database: 2022-06-24T09:29:10.331Z <<<

4.2 Host

4.2.1 Detailed Test Description

Query an existing host via its domain name:

```
whois -h whois-fe1.ote.icann.tango.dtm.knipp.de host xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g
```

Expected outcome:

- Host is found: **success**
- Host's U-label is correctly returned: **success**

Result:

```
Server Name: xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g
Registrar: ICANN Test
Registrar WHOIS Server:
Registrar URL:
Internationalized Server Name: .परीक्षा.अزمایشی2إختبار
>>> Last update of Whois database: 2022-06-24T09:33:10.531Z <<<
```

4.3 Domain

4.3.1 Detailed Test Description

Query an existing domain via its domain name:

```
whois -h whois-fe1.ote.icann.tango.dtm.knipp.de xn--fst-jma.xn--zckzah
```

Expected outcome:

- Domain is found: **success**
- Domain's U-label is correctly returned: **success**
- Contact email addresses are correctly returned: **success**

Result:

```
Domain Name: xn--fst-jma.xn--zckzah
Internationalized Domain Name: fëst.テスト
Registry Domain ID: Djxwv5-ICANN
Registrar WHOIS Server:
Registrar URL:
```

Updated Date: 2022-06-24T07:19:48.511Z
Creation Date: 2022-05-27T11:38:27.822Z
Registry Expiry Date: 2023-05-27T11:38:27.822Z
Registrar Registration Expiration Date:
Registrar: ICANN Test
Registrar IANA ID: 9998
Registrar Abuse Contact Email:
Registrar Abuse Contact Phone:
Reseller:
Domain Status: ok <https://icann.org/epp#ok>
Registry Registrant ID: Czyyc2-ICANN

Registrant Name: பரிட்சை

Registrant Organization: பரிட்சை

Registrant Street: பரிட்சை

Registrant Street: ИСПЫТАНИЕ

Registrant Street: ஸ்பஸு

Registrant City: பரிட்சை

Registrant State/Province: பரிட்சை

Registrant Postal Code: பரிட்சை

Registrant Country: AF

Registrant Phone:

Registrant Phone Ext:

Registrant Fax:

Registrant Fax Ext:

Registrant Email: 测试@测试.测试

Registry Admin ID: Czyyc2-ICANN

Admin Name: பரிட்சை

Admin Organization: பரிட்சை

Admin Street: பரிட்சை

Admin Street: ИСПЫТАНИЕ

Admin Street: ஸ்பஸு

Admin City: பரிட்சை

Admin State/Province: பரிட்சை

Admin Postal Code: பரிட்சை

Admin Country: AF

Admin Phone:

Admin Phone Ext:

Admin Fax:

Admin Fax Ext:

Admin Email: 测试@测试.测试

5 Testing the RDAP Interface - G3

The test cases within this section reflect the UA-readiness gate G3 as visualized in *Figure 1: Domain Registry High-Level System Architecture* in the [main document](#). For these test cases a domain, a contact, and a host need to be created.

5.1 Contact

5.1.1 Detailed Test Description

Query an existing contact via its handle:

```
https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap/entity/REG-CEUOBXDWZJF2
```

Expected outcome:

- Email address is correctly returned: **success**

Result:

```
{
  "rdapConformance": [
    "rdap_level_0", "icann_rdap_response_profile_0",
    "icann_rdap_technical_implementation_guide_0"
  ],
  "notices": [
    {
      "title": "Terms of Service",
      "description": [ "cut" ],
      "links": [
        {
          "href": "https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap-
tas"
        }
      ]
    }
  ],
  "objectClassName": "entity",
  "handle": "REG-CEUOBXDWZJF2",
  "events": [
    {
      "eventAction": "last update of RDAP database",
      "eventDate": "2022-06-24T09:47:11.107Z"
    }, {
```

```

    "eventAction": "registration",
    "eventActor": "reg-941960",
    "eventDate": "2022-04-07T07:12:11.709Z"
  }, {
    "eventAction": "last changed",
    "eventActor": "reg-941960",
    "eventDate": "2022-04-07T07:19:54.695Z"
  }
],
"links": [
  {
    "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/REG-CEUOBXDWZJF2",
    "rel": "self",
    "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/REG-CEUOBXDWZJF2",
    "type": "application/rdap+json"
  }
],
"vcardArray": [
  "vcard", [
    [ "version", { }, "text", "4.0" ], [ "fn", { }, "text", "பரிட்சை" ],
    [
      "adr", { }, "text",
      [ "", "", [ "பரிட்சை", "испытание", "УСЛУ" ], "பரிட்சை", "பரிட்சை",
"பரிட்சை", "" ]
    ], [ "email", { }, "text", "测试@测试.测试" ], [ "org", { }, "text",
"பரிட்சை" ],
    [ "cc", { }, "text", "AF" ]
  ]
]
}

```

5.2 Host

5.2.1 Detailed Test Description

Query an existing host via its domain name in A-label and U-label notation:

```
https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g
```

```
https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/آزمایشی2|ختبار . .परीक्षा
```

Expected outcome:

- Host is found: **success**
- Host's A-label is correctly returned: **success**
- Host's U-label is correctly returned: **success**
- Both queries return the same data: **success**

Result:

```
{
  "rdapConformance": [
    "rdap_level_0", "icann_rdap_response_profile_0",
    "icann_rdap_technical_implementation_guide_0"
  ],
  "notices": [
    {
      "title": "Terms of Service",
      "description": [ "cut" ],
      "links": [
        {
          "href": "https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap-
tas"
        }
      ]
    }
  ],
  "objectClassName": "nameserver",
  "handle": "Hlyea6-ICANN",
  "events": [
    {
      "eventAction": "last update of RDAP database",
      "eventDate": "2022-06-24T09:49:11.180Z"
    }, {
```

```

    "eventAction": "registration",
    "eventActor": "reg-941960",
    "eventDate": "2022-05-27T11:15:31.488Z"
  }, {
    "eventAction": "last changed",
    "eventActor": "reg-941960",
    "eventDate": "2022-05-27T11:26:48.85Z"
  }
],
"links": [
  {
    "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/xn--2-umcgdjxy.xn--
hgbk6aj7f53bba.xn--11b5bs3a9aj6g",
    "rel": "self",
    "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/xn--2-umcgdjxy.xn--
hgbk6aj7f53bba.xn--11b5bs3a9aj6g",
    "type": "application/rdap+json"
  }
],
"ldhName": "xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g",
"unicodeName": " .परीक्षा .अزمایشی2اختبار"
}

```

5.3 Domain

5.3.1 Detailed Test Description

Query an existing domain via its domain name in A-label and U-label notation:

```
https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap/domain/xn--fst-jma.xn--zckzah
```

```
https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap/domain/fëst.テスト
```

Expected outcome:

- Domain is found: **success**
- Domain's A-label is correctly returned: **success**
- Domain's U-label is correctly returned: **success**
- Both queries return the same data: **success**
- Contact email address is correctly returned: **success**

Result:

```
{
  "rdapConformance": [
    "rdap_level_0", "icann_rdap_response_profile_0",
    "icann_rdap_technical_implementation_guide_0"
  ],
  "notices": [
    {
      "title": "Status Codes",
      "description": [
        "For more information on domain status codes, please visit
https://icann.org/epp"
      ],
      "links": [
        {
          "href": "https://icann.org/epp"
        }
      ]
    }, {
      "title": "RDDS Inaccuracy Complaint Form",
      "description": [ "URL of the ICANN RDDS Inaccuracy Complaint
Form: https://icann.org/wicf" ],
      "links": [
        {
```

```

        "href": "https://icann.org/wicf"
    }
]
}, {
    "title": "Terms of Service",
    "description": [ "cut" ],
    "links": [
        {
            "href": "https://whois-fel.ote.icann.tango.dtm.knipp.de/rdap-
tas"
        }
    ]
}
],
"objectClassName": "domain",
"handle": "Djxwv5-ICANN",
"status": [ "active" ],
"events": [
    {
        "eventAction": "last update of RDAP database",
        "eventDate": "2022-06-24T09:57:11.730Z"
    }, {
        "eventAction": "registration",
        "eventActor": "reg-941960",
        "eventDate": "2022-05-27T11:38:27.822Z"
    }, {
        "eventAction": "last changed",
        "eventDate": "2022-06-24T07:19:48.511Z"
    }, {
        "eventAction": "expiration",
        "eventDate": "2023-05-27T11:38:27.822Z"
    }
],
"links": [
    {
        "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/domain/xn--fst-jma.xn--zckzah",
        "rel": "self",
        "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/domain/xn--fst-jma.xn--zckzah",
        "type": "application/rdap+json"
    }
],
"ldhName": "xn--fst-jma.xn--zckzah",
"unicodeName": "fëst.テスト",

```



```

"variants": [
  {
    "relation": [ "registered" ],
    "variantNames": [
      {
        "ldhName": "fest.xn--zckzah",
        "unicodeName": "fest.テスト"
      }, {
        "ldhName": "xn--fst-bma.xn--zckzah",
        "unicodeName": "fést.テスト"
      }
    ],
    "idnTable": "fr"
  }
],
"entities": [
  {
    "objectClassName": "entity",
    "handle": "REG-CEUOBXDWZJF2",
    "events": [
      {
        "eventAction": "registration",
        "eventActor": "reg-941960",
        "eventDate": "2022-04-07T07:12:11.709Z"
      }, {
        "eventAction": "last changed",
        "eventActor": "reg-941960",
        "eventDate": "2022-04-07T07:19:54.695Z"
      }
    ],
    "links": [
      {
        "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/REG-CEUOBXDWZJF2",
        "rel": "self",
        "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/REG-CEUOBXDWZJF2",
        "type": "application/rdap+json"
      }
    ],
    "roles": [ "registrant" ],
    "vcardArray": [
      "vcard", [

```

```

    [ "version", { }, "text", "4.0" ], [ "fn", { }, "text",
"பரிட்சை" ], [
    "adr", { }, "text",
    [ "", "", [ "பரிட்சை", "ИСПЫТАНИЕ", "УДУУ" ], "பரிட்சை",
"பரிட்சை", "பரிட்சை", "" ]
    ], [ "email", { }, "text", "测试@测试.测试" ], [ "org", { },
"text", "பரிட்சை" ],
    [ "cc", { }, "text", "AF" ]
  ]
]
}, {
  "objectClassName": "entity",
  "handle": "REG-CEUOBXDWZJF2",
  "events": [
    {
      "eventAction": "registration",
      "eventActor": "reg-941960",
      "eventDate": "2022-04-07T07:12:11.709Z"
    }, {
      "eventAction": "last changed",
      "eventActor": "reg-941960",
      "eventDate": "2022-04-07T07:19:54.695Z"
    }
  ],
  "links": [
    {
      "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/REG-CEUOBXDWZJF2",
      "rel": "self",
      "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/REG-CEUOBXDWZJF2",
      "type": "application/rdap+json"
    }
  ],
  "roles": [ "technical", "billing", "administrative" ],
  "vcardArray": [
    "vcard", [
      [ "version", { }, "text", "4.0" ], [ "fn", { }, "text",
"பரிட்சை" ], [
        "adr", { }, "text",
        [ "", "", [ "பரிட்சை", "ИСПЫТАНИЕ", "УДУУ" ], "பரிட்சை",
"பரிட்சை", "பரிட்சை", "" ]
      ], [ "email", { }, "text", "测试@测试.测试" ], [ "org", { },
"text", "பரிட்சை" ],

```

```

        [ "cc", { }, "text", "AF" ]
    ]
}
}, {
    "objectClassName": "entity",
    "handle": "9998",
    "publicIds": [
        {
            "type": "IANA Registrar ID",
            "identifier": "9998"
        }
    ],
    "links": [
        {
            "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/9998",
            "rel": "self",
            "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/entity/9998",
            "type": "application/rdap+json"
        }
    ],
    "roles": [ "registrar" ],
    "entities": [
        {
            "objectClassName": "entity",
            "handle": "not applicable",
            "roles": [ "abuse" ],
            "vcardArray": [
                "vcard", [
                    [ "version", { }, "text", "4.0" ], [ "fn", { }, "text",
"Abuse Contact" ],
                    [ "adr", { }, "text", [ "", "", "", "", "", "", "" ] ]
                ]
            ]
        }, {
            "objectClassName": "entity",
            "roles": [ "administrative" ],
            "vcardArray": [
                "vcard", [
                    [ "version", { }, "text", "4.0" ], [ "fn", { }, "text",
"ICANN Test" ],
                    [ "adr", { }, "text", [ "", "", "", "", "", "", "" ] ]
                ]
            ]
        }
    ]
}
]

```

```

    }, {
      "objectClassName": "entity",
      "roles": [ "technical" ],
      "vcardArray": [
        "vcard", [
          [ "version", { }, "text", "4.0" ], [ "fn", { }, "text",
"ICANN Test" ],
          [ "adr", { }, "text", [ "", "", "", "", "", "", "" ] ]
        ]
      ]
    },
    "vcardArray": [
      "vcard", [
        [ "version", { }, "text", "4.0" ], [ "fn", { }, "text",
"ICANN Test" ],
        [ "adr", { }, "text", [ "", "", "", "", "", "", "" ] ]
      ]
    ]
  },
  "secureDNS": {
    "delegationSigned": false
  },
  "lang": "fr",
  "nameservers": [
    {
      "objectClassName": "nameserver",
      "handle": "Hasjs7-ICANN",
      "events": [
        {
          "eventAction": "registration",
          "eventActor": "reg-941960",
          "eventDate": "2022-06-24T07:19:48.511Z"
        }
      ]
    },
    "links": [
      {
        "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/ns2.irondns.net",
        "rel": "self",
        "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/ns2.irondns.net",
        "type": "application/rdap+json"
      }
    ]
  }
}

```

```

    ],
    "ldhName": "ns2.irondns.net",
    "unicodeName": "ns2.irondns.net"
  }, {
    "objectClassName": "nameserver",
    "handle": "Hyezv8-ICANN",
    "events": [
      {
        "eventAction": "registration",
        "eventActor": "reg-941960",
        "eventDate": "2022-06-24T07:19:48.511Z"
      }
    ],
    "links": [
      {
        "value": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/ns1.irondns.net",
        "rel": "self",
        "href": "https://whois-
fel.ote.icann.tango.dtm.knipp.de/rdap/nameserver/ns1.irondns.net",
        "type": "application/rdap+json"
      }
    ],
    "ldhName": "ns1.irondns.net",
    "unicodeName": "ns1.irondns.net"
  }
]
}

```

6 Testing the Escrow Export - G15

The test case within this section reflects the UA-readiness gate G15 as visualized in *Figure 1: Domain Registry High-Level System Architecture* in the [main document](#). For this test case domains, contacts and hosts must have been created before the Escrow's reference date.

6.1 Escrow

6.1.1 Detailed Test Description

After the respective objects have been created, the Escrow export needs to be triggered. The generated escrow file needs to contain all objects with their correct names.

Expected outcome:

- Domain (A-label and U-label) is contained: **success**
- Host (A-label) is contained: **success**
- Contact is contained with correct email address: **success**

Result (redacted to only show the tested objects):

```
<?xml version='1.0' encoding='UTF-8'?>
<rde:deposit xmlns:rde="urn:ietf:params:xml:ns:rde-1.0" type="FULL"
id="1"
  xmlns:rdeHeader="urn:ietf:params:xml:ns:rdeHeader-1.0"
  xmlns:rdeDom="urn:ietf:params:xml:ns:rdeDomain-1.0"
  xmlns:rdeContact="urn:ietf:params:xml:ns:rdeContact-1.0"
  xmlns:rdeHost="urn:ietf:params:xml:ns:rdeHost-1.0"
  xmlns:rdeRegistrar="urn:ietf:params:xml:ns:rdeRegistrar-1.0"
  xmlns:rdeIDN="urn:ietf:params:xml:ns:rdeIDN-1.0"
  xmlns:rdeNNDN="urn:ietf:params:xml:ns:rdeNNDN-1.0"
  xmlns:rdeEppParams="urn:ietf:params:xml:ns:rdeEppParams-1.0"
  xmlns:rdePolicy="urn:ietf:params:xml:ns:rdePolicy-1.0"
  xmlns:domain="urn:ietf:params:xml:ns:domain-1.0"
  xmlns:contact="urn:ietf:params:xml:ns:contact-1.0"
  xmlns:secDNS="urn:ietf:params:xml:ns:secDNS-1.1"
  xmlns:epp="urn:ietf:params:xml:ns:epp-1.0">
  <rde:watermark>2022-06-23T22:00:00.0Z</rde:watermark>
  <rde:contents>
<rdeDom:domain>
  <rdeDom:name>xn--fst-jma.xn--zckzah</rdeDom:name>
  <rdeDom:roid>Djxwv5-ICANN</rdeDom:roid>
  <rdeDom:uName>fëst.テスト</rdeDom:uName>
  <rdeDom:idnTableId>fr</rdeDom:idnTableId>
```

```

<rdeDom:status s="ok"/>
<rdeDom:registrant>REG-CEUOBXDWZJF2</rdeDom:registrant>
<rdeDom:contact type="admin">REG-CEUOBXDWZJF2</rdeDom:contact>
<rdeDom:contact type="tech">REG-CEUOBXDWZJF2</rdeDom:contact>
<rdeDom:contact type="billing">REG-CEUOBXDWZJF2</rdeDom:contact>
<rdeDom:clID>reg-941960</rdeDom:clID>
<rdeDom:crRr>reg-941960</rdeDom:crRr>
<rdeDom:crDate>2022-05-27T11:38:27.822Z</rdeDom:crDate>
<rdeDom:exDate>2023-05-27T11:38:27.822Z</rdeDom:exDate>
<rdeDom:upRr>reg-941960</rdeDom:upRr>
<rdeDom:upDate>2022-05-27T11:57:24.723Z</rdeDom:upDate>
</rdeDom:domain>

<rdeHost:host>
<rdeHost:name>xn--2-umcgdjxy.xn--hgbk6aj7f53bba.xn--11b5bs3a9aj6g
</rdeHost:name>
<rdeHost:roid>Hlyea6-ICANN</rdeHost:roid>
<rdeHost:status s="ok"/>
<rdeHost:clID>reg-941960</rdeHost:clID>
<rdeHost:crRr>reg-941960</rdeHost:crRr>
<rdeHost:crDate>2022-05-27T11:15:31.488Z</rdeHost:crDate>
<rdeHost:upRr>reg-941960</rdeHost:upRr>
<rdeHost:upDate>2022-05-27T11:26:48.85Z</rdeHost:upDate>
</rdeHost:host>

<rdeContact:contact>
<rdeContact:id>REG-CEUOBXDWZJF2</rdeContact:id>
<rdeContact:roid>Czyyc2-ICANN</rdeContact:roid>
<rdeContact:status s="ok"/>
<rdeContact:postalInfo type="loc">
  <contact:name>பரிட்சை</contact:name>
  <contact:org>பரிட்சை</contact:org>
  <contact:addr>
    <contact:street>பரிட்சை</contact:street>
    <contact:street>испытание</contact:street>
    <contact:street>ஸஸஸ</contact:street>
    <contact:city>பரிட்சை</contact:city>
    <contact:sp>பரிட்சை</contact:sp>
    <contact:pc>பரிட்சை</contact:pc>
    <contact:cc>AF</contact:cc>
  </contact:addr>
</rdeContact:postalInfo>
<rdeContact:email>测试@测试.测试</rdeContact:email>
<rdeContact:clID>reg-941960</rdeContact:clID>
<rdeContact:crRr>reg-941960</rdeContact:crRr>

```

```
<rdeContact:crDate>2022-04-07T07:12:11.709Z</rdeContact:crDate>  
<rdeContact:upRr>reg-941960</rdeContact:upRr>  
<rdeContact:upDate>2022-04-07T07:19:54.695Z</rdeContact:upDate>  
</rdeContact:contact>  
</rde:contents>  
</rde:deposit>
```


Bibliography

- [RFC1123] <https://datatracker.ietf.org/doc/html/rfc1123>
- [RFC5730] <https://datatracker.ietf.org/doc/html/rfc5730>
- [RFC5731] <https://datatracker.ietf.org/doc/html/rfc5731>
- [RFC5732] <https://datatracker.ietf.org/doc/html/rfc5732>
- [RFC5733] <https://datatracker.ietf.org/doc/html/rfc5733>