

IDN EPP Extension
for the .koeln TLD

Knipp Medien und Kommunikation GmbH

1. Schema Definition (Formal Syntax)

```

<?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">

  <annotation>
    <documentation>
      Extensible Provisioning Protocol v1.0
      domain name extension schema for internationalised domain names
      processing for the .tld registry.
    </documentation>
  </annotation>

  <!-- 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>
      <choice>
        <element name="lang" type="language"/>
        <element name="script" type="idn:scriptType"/>
      </choice>
    </sequence>
  </complexType>

  <!-- child elements of the <create> command -->
  <complexType name="createType">
    <sequence>
      <choice>
        <element name="lang" type="language"/>
        <element name="script" type="idn:scriptType"/>
      </choice>
      <element name="variants" type="idn:variantListType"/>
    </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"/>
    </sequence>
  </complexType>

  <!-- child response elements -->

  <element name="infData" type="idn:respDataType"/>

  <!-- response elements -->
  <complexType name="respDataType">
    <sequence>
      <choice>
        <element name="lang" type="language"/>
        <element name="script" type="idn:scriptType"/>
      </choice>
    </sequence>
  </complexType>

```

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

<!-- common types -->

<!-- a script code according to ISO 15924 -->
<simpleType name="scriptType">
  <restriction base="token">
    <minLength value="3"/>
    <maxLength value="4"/>
  </restriction>
</simpleType>

<!-- a list of variants of a domain name -->
<complexType name="variantListType">
  <sequence>
    <element name="nameVariant" type="eppcom:labelType"
      minOccurs="0" maxOccurs="10"/>
  </sequence>
</complexType>

</schema>
```

2. Examples

In the following examples, "C:" represents lines sent by an EPP client and "S:" represents lines returned by the NetCologne GmbH EPP server.

2.1. EPP <check> Command

2.1.1. Example <check> command with language tag:

```
C:<?xml version="1.0" encoding="UTF-8"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C: <command>
C:   <check>
C:     <domain:check xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:       <domain:name>example.koeln</domain:name>
C:     </domain:check>
C:   </check>
C:   <extension>
C:     <idn:check xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0">
C:       <idn:lang>zh</idn:lang>
C:     </idn:check>
C:   </extension>
C:   <clTRID>0168899153_1332496264546</clTRID>
C: </command>
C:</epp>
```

2.1.2. Example <check> command with script tag:

```
C:<?xml version="1.0" encoding="UTF-8"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C: <command>
C:   <check>
C:     <domain:check xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:       <domain:name>example.koeln</domain:name>
C:     </domain:check>
C:   </check>
C:   <extension>
C:     <idn:check xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0">
C:       <idn:script>Latn</idn:script>
C:     </idn:check>
C:   </extension>
C:   <clTRID>0168899153_1332496264546</clTRID>
C: </command>
C:</epp>
```

2.2. EPP <info> Command

2.2.1. Example <info> response with language tag and empty list of variants:

```
S:<?xml version='1.0' encoding='UTF-8'?>
S:<epp xmlns='urn:ietf:params:xml:ns:epp-1.0'
S:  xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
S:  xsi:schemaLocation='urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd'>
S: <response>
S: <result code='1000'>
S:   <msg lang='en-US'>Command completed successfully</msg>
S: </result>
S: <resData>
S:   <domain:infData xmlns:domain='urn:ietf:params:xml:ns:domain-1.0'
S:     xsi:schemaLocation='urn:ietf:params:xml:ns:domain-1.0
S:     domain-1.0.xsd'>
S:     <domain:name>example.koeln</domain:name>
S:     <domain:roid>D123456789</domain:roid>
S:     <domain:status s='active' />
S:     <domain:registrar>abc123</domain:registrar>
S:     <domain:contact type='admin'>def456</domain:contact>
S:     <domain:contacttype='tech'>ghi789</domain:contact>
S:     <domain:ns>
S:       <domain:hostObj>ns1.example.net</domain:hostObj>
S:       <domain:hostObj>ns2.example.net</domain:hostObj>
S:     </domain:ns>
S:     <domain:clID>registrar</domain:clID>
S:     <domain:crID>registrar</domain:crID>
S:     <domain:crDate>2010-09-08T07:06:05.0Z</domain:crDate>
S:     <domain:exDate>2012-09-08T23:59:59.0Z</domain:exDate>
S:     <domain:authInfo>
S:       <domain:pw>secret</domain:pw>
S:     </domain:authInfo>
S:   </domain:infData>
S: </resData>
S: <extension>
S:   <idn:infData xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
S:     xsi:schemaLocation="http://xmlns.tango-rs.net/epp/idn-1.0
S:     idn-1.0.xsd">
S:     <idn:lang>zh</idn:lang>
S:     <idn:variants/>
S:   </idn:infData>
S: </extension>
S: <trID>
S:   <svTRID>ZYX-99958</svTRID>
S: </trID>
S: </response>
S:</epp>
```

2.2.2. Example <info> response with script tag and empty list of variants:

```
S:<?xml version='1.0' encoding='UTF-8'?>
S:<epp xmlns='urn:ietf:params:xml:ns:epp-1.0'
S:  xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
S:  xsi:schemaLocation='urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd'>
S: <response>
S: <result code='1000'>
```

```

S:      <msg lang='en-US'>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData xmlns:domain='urn:ietf:params:xml:ns:domain-1.0'
S:        xsi:schemaLocation='urn:ietf:params:xml:ns:domain-1.0
S:          domain-1.0.xsd'>
S:        <domain:name>example.koeln</domain:name>
S:        <domain:roid>D123456789-COM</domain:roid>
S:        <domain:status s='active' />
S:        <domain:registrar>abc123</domain:registrar>
S:        <domain:contact type='admin'>def456</domain:contact>
S:        <domain:contacttype='tech'>ghi789</domain:contact>
S:        <domain:ns>
S:          <domain:hostObj>ns1.example.net</domain:hostObj>
S:          <domain:hostObj>ns2.example.net</domain:hostObj>
S:        </domain:ns>
S:        <domain:clID>registrar</domain:clID>
S:        <domain:crID>registrar</domain:crID>
S:        <domain:crDate>2010-09-08T07:06:05.0Z</domain:crDate>
S:        <domain:exDate>2012-09-08T23:59:59.0Z</domain:exDate>
S:        <domain:authInfo>
S:          <domain:pw>secret</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <idn:infData xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
S:        xsi:schemaLocation="http://xmlns.tango-rs.net/epp/idn-1.0
S:          idn-1.0.xsd">
S:        <idn:script>Latn</idn:script>
S:        <idn:variants/>
S:      </idn:infData>
S:    </extension>
S:    <trID>
S:      <svTRID>ZYX-99958</svTRID>
S:    </trID>
S:  </response>
S:</epp>

```

2.2.3. Example <info> response with language tag and domain name variants:

```

S:<?xml version='1.0' encoding='UTF-8'?>
S:<epp xmlns='urn:ietf:params:xml:ns:epp-1.0'
S:  xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
S:  xsi:schemaLocation='urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd'>
S:  <response>
S:    <result code='1000'>
S:      <msg lang='en-US'>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData xmlns:domain='urn:ietf:params:xml:ns:domain-1.0'
S:        xsi:schemaLocation='urn:ietf:params:xml:ns:domain-1.0
S:          domain-1.0.xsd'>
S:        <domain:name>example.koeln</domain:name>
S:        <domain:roid>D123456789-COM</domain:roid>
S:        <domain:status s='active' />
S:        <domain:registrar>abc123</domain:registrar>
S:        <domain:contact type='admin'>def456</domain:contact>
S:        <domain:contacttype='tech'>ghi789</domain:contact>
S:        <domain:ns>
S:          <domain:hostObj>ns1.example.net</domain:hostObj>
S:          <domain:hostObj>ns2.example.net</domain:hostObj>
S:        </domain:ns>

```

```
S: <domain:clID>registrar</domain:clID>
S: <domain:crID>registrar</domain:crID>
S: <domain:crDate>2010-09-08T07:06:05.0Z</domain:crDate>
S: <domain:exDate>2012-09-08T23:59:59.0Z</domain:exDate>
S: <domain:authInfo>
S: <domain:pw>secret</domain:pw>
S: </domain:authInfo>
S: </domain:infData>
S: </resData>
S: <extension>
S: <idn:infData xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
S: xsi:schemaLocation="http://xmlns.tango-rs.net/epp/idn-1.0
S: idn-1.0.xsd">
S: <idn:lang>de</idn:lang>
S: <idn:variants>
S: <idn:nameVariant>dummy.koeln</idn:nameVariant>
S: <idn:nameVariant>wrong.koeln</idn:nameVariant>
S: </idn:variants>
S: </idn:infData>
S: </extension>
S: <trID>
S: <svTRID>ZYX-99958</svTRID>
S: </trID>
S: </response>
S: </epp>
```

2.3. EPP <create> Command

2.3.1. Example <create> command with language tag and empty list of variants:

```
C: <?xml version="1.0" encoding="UTF-8"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C: xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C: xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
C: <command>
C: <create>
C: <domain:create xmlns:domain="urn:ietf:params:xml:ns:domain-1.0"
C: xsi:schemaLocation="urn:ietf:params:xml:ns:domain-1.0
C: domain-1.0.xsd">
C: <domain:name>example.koeln</domain:name>
C: <domain:period unit="y">1</domain:period>
C: <domain:ns>
C: <domain:hostObj>ns1.example.net</domain:hostObj>
C: <domain:hostObj>ns2.example.net</domain:hostObj>
C: </domain:ns>
C: <domain:registrar>abc123</domain:registrar>
C: <domain:contact type="admin">def456</domain:contact>
C: <domain:contact type="tech">ghi789</domain:contact>
C: <domain:authInfo>
C: <domain:pw>secret42</domain:pw>
C: </domain:authInfo>
C: </domain:create>
C: </create>
C: <extension>
C: <idn:create xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
C: xsi:schemaLocation="http://xmlns.tango-rs.net/epp/idn-1.0
C: idn-1.0.xsd">
C: <idn:lang>zh</idn:lang>
```

```
C:      <idn:variants/>
C:      </idn:create>
C:      </extension>
C:      <c1TRID>abc-00042</c1TRID>
C:      </command>
C: </epp>
```

2.3.2. Example <create> command with script tag and empty list of variants:

```
C:<?xml version="1.0" encoding="UTF-8"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
C: <command>
C:   <create>
C:     <domain:create xmlns:domain="urn:ietf:params:xml:ns:domain-1.0"
C:       xsi:schemaLocation="urn:ietf:params:xml:ns:domain-1.0
C:         domain-1.0.xsd">
C:       <domain:name>example.koeln</domain:name>
C:       <domain:period unit="y">1</domain:period>
C:       <domain:ns>
C:         <domain:hostObj>ns1.example.net</domain:hostObj>
C:         <domain:hostObj>ns2.example.net</domain:hostObj>
C:       </domain:ns>
C:       <domain:registrant>abc123</domain:registrant>
C:       <domain:contact type="admin">def456</domain:contact>
C:       <domain:contact type="tech">ghi789</domain:contact>
C:       <domain:authInfo>
C:         <domain:pw>secret42</domain:pw>
C:       </domain:authInfo>
C:     </domain:create>
C:   </create>
C:   <extension>
C:     <idn:create xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
C:       xsi:schemaLocation="http://xmlns.tango-rs.net/epp/idn-1.0
C:         idn-1.0.xsd">
C:       <idn:script>Latn</idn:script>
C:       <idn:variants/>
C:     </idn:create>
C:   </extension>
C: <c1TRID>abc-00042</c1TRID>
C: </command>
C:</epp>
```

2.3.3. Example <create> command with language tag and domain name variants:

```
C:<?xml version="1.0" encoding="UTF-8"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:  xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
C: <command>
C:   <create>
C:     <domain:create xmlns:domain="urn:ietf:params:xml:ns:domain-1.0"
C:       xsi:schemaLocation="urn:ietf:params:xml:ns:domain-1.0
C:         domain-1.0.xsd">
C:       <domain:name>example.koeln</domain:name>
C:       <domain:period unit="y">1</domain:period>
```



```
C:      <domain:ns>
C:      <domain:hostObj>ns1.example.net</domain:hostObj>
C:      <domain:hostObj>ns2.example.net</domain:hostObj>
C:      </domain:ns>
C:      <domain:registrant>abc123</domain:registrant>
C:      <domain:contact type="admin">def456</domain:contact>
C:      <domain:contact type="tech">ghi789</domain:contact>
C:      <domain:authInfo>
C:      <domain:pw>secret42</domain:pw>
C:      </domain:authInfo>
C:      </domain:create>
C:    </create>
C:  <extension>
C:    <idn:create xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
C:      xsi:schemaLocation="http://xmlns.tango-rs.net/epp/idn-1.0
C:      idn-1.0.xsd">
C:      <idn:lang>de</idn:lang>
C:      <idn:variants>
C:      <idn:nameVariant>dummy.koeln</idn:nameVariant>
C:      <idn:nameVariant>wrong.koeln</idn:nameVariant>
C:      </idn:variants>
C:    </idn:create>
C:  </extension>
C:  <clTRID>abc-00042</clTRID>
C: </command>
C: </epp>
```

2.4. EPP <update> Command

2.4.1. Example <update> command adding and removing domain name variants:

```
C: <?xml version="1.0" encoding="UTF-8"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0"
C:   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
C:   xsi:schemaLocation="urn:ietf:params:xml:ns:epp-1.0 epp-1.0.xsd">
C:   <command>
C:     <update>
C:       <domain:update xmlns:domain="urn:ietf:params:xml:ns:domain-1.0"
C:         xsi:schemaLocation="urn:ietf:params:xml:ns:domain-1.0
C:         domain-1.0.xsd">
C:         <domain:name>example.koeln</domain:name>
C:         <domain:chg/>
C:       </domain:update>
C:     </update>
C:   <extension>
C:     <idn:update xmlns:idn="http://xmlns.tango-rs.net/epp/idn-1.0"
C:       xsi:schemaLocation="http://xmlns.tango-rs.net/epp/idn-1.0
C:       idn-1.0.xsd">
C:       <idn:add>
C:       <idn:nameVariant>silly.koeln</idn:nameVariant>
C:       <idn:nameVariant>right.koeln</idn:nameVariant>
C:     </idn:add>
C:     <idn:rem>
C:     <idn:nameVariant>dummy.koeln</idn:nameVariant>
C:     <idn:nameVariant>wrong.koeln</idn:nameVariant>
C:     </idn:rem>
C:   </idn:update>
C: </extension>
```

```
C: <c1TRID>abc-00042</c1TRID>  
C: </command>  
C:</epp>
```