       Internationalized Domain Name Mapping Extension for the Extensible
                      Provisioning Protocol (EPP)
                        draft-obispo-epp-idn-00

Abstract

   This document describes an Extensible Provisioning Protocol (EPP)
   extension mapping for the provisioning of Internationalized Domain
   Names (IDN) stored in a shared central repository. This mapping
   extends the EPP domain name mapping to provide additional features
   required to implement registrations of domain names in characters
   sets other than ASCII.

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1. Introduction

   The EPP protocol provides a complete description of EPP command and
   response structures. A thorough understanding of the base protocol
   specification is necessary to understand the mapping described in is
   document.

   This document is written in consideration with the Guidelines for
   Extending the Extensible Provisioning Protocol as defined in
   [RFC3735].

   To comply with the Guidelines for the Implementation of
   Internationalized Domain Names [1], it is required to associate each
   label to be registered with a single script, as defined by the code
   division of the Unicode code chart. This requirement imposes a
   challenge for registries using the EPP protocol, since there is no
   such field currently in the domain name mapping to allow for this
   information to be exchanged.

   This extension adds one additional data element to the EPP Domain
   Name mapping, to allow for association of a domain name to a language
   tag. However, this extension itself can be extended to incorporate
   more, as required by registry policy.

2. Conventions Used in This Document

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL","SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
   document are to be interpreted as described in [RFC2119].

   XML is case sensitive. Unless stated otherwise, XML specifications
   and examples provided in this document MUST be interpreted in the
   character case representation presented in order to develop a
   conforming specification.

   "idn-1.0" is used as an abbreviation for
   "urn:ietf:params:xml:ns:idn-1.0". The XML namespace prefix "idn" is
   used, but implementations MUST NOT depend on it and instead employ a
   proper namespace-aware XML parser and serializer to interpret and
   output the XML documents.

3. EPP Command Mapping

   A detailed description of the EPP syntax and semantics can be found
   in [RFC5730].

3.1. EPP Query Commands

   This extension does not add any elements to the EPP <check>, <poll>,
   or <transfer> commands or responses.

3.1.1. EPP <info> Command

   This extension does not add any elements to the EPP <info> command.

   On the <info> response, the extension MUST contain the <idn:language>
   element if the extension was requested during the session <login>
   command.

   Example <info> command:


```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:   <command>
C:     <info>
C:       <domain:info
C:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:         <domain:name hosts="all">example.com</domain:name>
C:         <domain:authInfo>
C:           <domain:pw>2fooBAR</domain:pw>
C:         </domain:authInfo>
C:       </domain:info>
C:     </info>
C:     <clTRID>ABC-12345</clTRID>
C:   </command>
C: </epp>
```


   Example <info> response for an authorized client:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:       xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>example.com</domain:name>
S:        <domain:roid>EXAMPLE1-REP</domain:roid>
S:        <domain:status s="ok"/>
S:        <domain:registrant>jd1234</domain:registrant>
S:        <domain:contact type="admin">sh8013</domain:contact>
S:        <domain:contact type="tech">sh8013</domain:contact>
S:        <domain:ns>
S:          <domain:hostObj>ns1.example.com</domain:hostObj>
S:          <domain:hostObj>ns1.example.net</domain:hostObj>
S:        </domain:ns>
S:        <domain:host>ns1.example.com</domain:host>
S:        <domain:host>ns2.example.com</domain:host>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>1999-04-03T22:00:00.0Z</domain:crDate>
S:        <domain:upID>ClientX</domain:upID>
S:        <domain:upDate>1999-12-03T09:00:00.0Z</domain:upDate>
S:        <domain:exDate>2005-04-03T22:00:00.0Z</domain:exDate>
S:        <domain:trDate>2000-04-08T09:00:00.0Z</domain:trDate>
S:        <domain:authInfo>
S:          <domain:pw>2fooBAR</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <idn:language xmlns:idn="urn:ietf:params:xml:ns:idn-1.0">en
S:      </idn:language>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.2. EPP Transform Commands

   This extension does not add any elements to the EPP <delete>,
   <renew>, or <transfer> commands or responses.

3.2.1. EPP <create> Command

   This extension defines additional elements for the EPP <create>
   command.

   The command MUST contain an <extension> element, which MUST contain a
   child <idn:language> element.

   Example <create> command:


```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C: <command>
C:   <create>
C:     <domain:create
C:       xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:       <domain:name>example.com</domain:name>
C:       <domain:period unit="y">2</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>jd1234</domain:registrant>
C:       <domain:contact type="admin">sh8013</domain:contact>
C:       <domain:contact type="tech">sh8013</domain:contact>
C:       <domain:authInfo>
C:         <domain:pw>2fooBAR</domain:pw>
C:       </domain:authInfo>
C:     </domain:create>
C:   </create>
C:   <extension>
C:   <idn:language xmlns:idn="urn:ietf:params:xml:ns:idn-1.0">en
C:   </idn:language>
C:   </extension>
C:   <clTRID>123456</clTRID>
C: </command>
C:</epp>
```

3.3. Formal Syntax

   An EPP object mapping is specified in XML Schema notation. The
   formal syntax presented here is a complete schema representation of
   the object mapping suitable for automated validation of EPP XML
   instances.

```
<?xml version="1.0" encoding="UTF-8"?>
<schema targetNamespace="urn:ietf:params:xml:ns:domain-1.0"
        xmlns:idn="urn:ietf:params:xml:ns:domain-1.0"
        xmlns="http://www.w3.org/2001/XMLSchema"
        elementFormDefault="qualified">
  <annotation>
    <documentation>
      Extensible Provisioning Protocol v1.0 domain name extension
      schema for IDN Language Tag.
    </documentation>
  </annotation>
  <!-- Child elements found in EPP commands.-->
  <element name="language" type="language"/>
  <!-- End of schema. -->
</schema>
```

4. Security Considerations

   The mapping extensions described in this document do not provide any
   security services beyond those described by EPP [RFC5730] the EPP
   domain name mapping [RFC5731], and protocol layers used by EPP. The
   security considerations described in these other specifications apply
   to this specification as well.

5. References

5.1. Normative References

   [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
              Requirement Levels", BCP 14, RFC 2119, March 1997.

   [RFC5730] Hollenbeck, S., "Extensible Provisioning Protocol (EPP)",
              STD 69, RFC 5730, August 2009.

5.2. Informational References

   [RFC3735] Hollenbeck, S., "Guidelines for Extending the Extensible
              Provisioning Protocol (EPP)", RFC 3735, March 2004.

   [RFC5731] Hollenbeck, S., "Extensible Provisioning Protocol (EPP)
              Domain Name Mapping", STD 69, RFC 5731, August 2009.

URIs

   [1] <http://www.icann.org/en/topics/idn/idn-guidelines-26apr07.pdf>

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