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Extensible Provisioning Protocol (EPP) Domain Name Mapping Extension for Strict Bundling Registration

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Abstract

This document describes an extension of Extensible Provisioning Protocol (EPP) domain name mapping for the provisioning and management of strict bundling registration of domain names. Specified in XML, this mapping extends the EPP domain name mapping to provide additional features required for the provisioning of bundled domain names.

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1. Introduction

Bundled domain names are those which share the same TLD but whose second level labels are variants, or those which have identical second level labels for which certain parameters are shared in different TLDs. For an example, Public Interest Registry has requested to implement bundling of second level domains for .NGO and .ONG. So we have two kinds of bundled domain names. The first one is in the form of "V-label.TLD" in which the second level label (V-label) is a variant sharing the same TLD; Second one is in the form of "LABEL.V-tld" in which the second level label(LABEL) remains the same but ending with a different TLD (V-tld).

Bundled domain names normally share some attributes. Policy-wise bundling can be implemented in three ways. The first one is strict bundling, which requires all bundled names to share many same attributes. When creating, updating, or transferring of any of the bundled domain names, all bundled domain names will be created, updated or transferred atomically. The second one is partial bundling, which requires the bundled domain names to be registered by the same registrant. The third one is relaxed bundling, which has no specific requirements on the domain registration. This document mainly addresses the strict bundling names registration.

For the name variants, some registries adopt the policy that variant IDNs which are identified as equivalent are allocated or delegated to the same registrant. For example, most registries offering Chinese Domain Name (CDN) adopt a registration policy whereby a registrant can apply for an original CDN in any forms: Simplified Chinese (SC) form, Traditional Chinese (TC) form, or other variant forms, then the corresponding variant CDN in SC form and that in TC form will also be delegated to the same registrant. All variant names in the same TLD share a common set of attributes.

The basic Extensible Provisioning Protocol (EPP) domain name mapping [RFC5731] provides the facility for single domain name registration. It does not specify how to register the strict bundled names which share many of the attributes.

In order to meet the above requirements of strict bundled name registration, this document describes an extension of the EPP domain name mapping [RFC5731] for the provisioning and management of bundled names. This document is specified using Extensible Markup Language (XML) 1.0 as described in [W3C.REC-xml-20040204] and XML Schema

notation as described in [W3C.REC-xmlschema-1-20041028] and [W3C.REC-xmlschema-2-20041028].

The EPP core protocol specification [RFC5730] provides a complete description of EPP command and response structures. A thorough understanding of the base protocol specification is necessary to understand the extension mapping described in this document.

This document uses many IDN concepts, so a thorough understanding of the IDNs for Application (IDNA, described in [RFC5890], [RFC5891], and [RFC5892]) and the variant approach discussed in [RFC4290] is assumed.

2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119][RFC8174] when, and only when, they appear in all capitals, as shown here.

uLabel in this document is used to express the U-label of an internationalized domain name as a series of characters where non-ASCII characters will be represented in the format of U+XXXX where XXXX is a UNICODE point. U-Label is defined in [RFC5890].

The XML namespace prefix "b-dn" is used for the namespace "urn:ietf:params:xml:ns:epp:b-dn", but implementations MUST NOT rely on it and instead employ a proper namespace-aware XML parser and serializer to interpret and output the XML documents.

In examples, "C:" represents lines sent by a protocol client and "S:" represents lines returned by a protocol server. Indentation and white space in examples are provided only to illustrate element relationships and are not a required feature of this specification.

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

3. Definitions

The following definitions are used in this document:

- Registered Domain Name (RDN), represents the valid domain name that users submitted for the initial registration.

- Bundled Domain Name (BDN), represents the bundled domain name produced according to the bundled domain name registration policy.

4. Overview

Domain registries have traditionally adopted a registration model whereby metadata relating to a domain name, such as its expiration date and sponsoring registrar, are stored as properties of the domain object. The domain object is then considered an atomic unit of registration, on which operations such as update, renewal and deletion may be performed.

Bundled names brought about the need for multiple domain names to be registered and managed as a single package. In this model, the registry typically accepts a domain registration request (i.e. EPP domain <create> command) containing the domain name to be registered. This domain name is referred to as the RDN in this document. As part of the processing of the registration request, the registry generates a set of bundled names that are related to the RDN, either programmatically or with the guidance of registration policies, and places them in the registration package together with the RDN.

The bundled names share many properties, such as expiration date and sponsoring registrar, by sharing the same domain object. So when users update any property of a domain object within a bundle package, that property of all other domain objects in the bundle package will be updated at the same time.

5. Requirement for Bundling Registration of Names

The bundled names whether they are in the form of "V-label.TLD" or in the form of "LABEL.V-tld" should share some parameter or attributes associated with domain names. Typically, bundled names will share the following parameters or attributes:

- Registrar Ownership
- Registration and Expiry Dates
- Registrant, Admin, Billing, and Technical Contacts
- Name Server Association
- Domain Status
- Applicable grace periods (Add Grace Period, Renewal Grace Period, Auto-Renewal Grace Period, Transfer Grace Period, and Redemption Grace Period)

Because the domain names are bundled and share the same parameters or attributes, the EPP command should do some processing for these requirements:

- When performing a domain check, either BDN or RDN can be queried for the EPP command, and will return the same response.

- When performing a domain info, either BDN or RDN can be queried, the same response will include both BDN and RDN information with the same attributes.
- When performing a domain Create, either of the bundle names will be accepted. If the domain name is available, both BDN and RDN will be registered.
- When performing a domain Delete, either BDN or RDN will be accepted. If the domain name is registered, both BDN and RDN will be deleted.
- When performing a domain renew, either BDN or RDN will be accepted. Upon a successful domain renewal, both BDN and RDN will have their expiry date extended by the requested term. Upon a successful domain renewal, both BDN and RDN will conform to the same renew grace period.
- When performing a domain transfer, either BDN or RDN will be accepted. Upon successful completion of a domain transfer request, both BDN and RDN will enter a pendingTransfer status. Upon approval of the transfer request, both BDN and RDN will be owned and managed by the same new registrant.
- When performing a domain update, either BDN or RDN will be accepted. Any modifications to contact associations, name server associations, domain status values and authorization information will be applied to both BDN and RDN.

6. Object Attributes

This extension defines following additional elements to the EPP domain name mapping [RFC5731]. All of these additional elements are returned from <domain:info> command.

6.1. RDN

The RDN is an ASCII name or an IDN with the A-label [RFC5890] form. In this document, its corresponding element is <b-dn:rdn>. An optional attribute "uLabel" associated with <b-dn:rdn> is used to represent the U-label [RFC5890] form.

For example: <b-dn:rdn uLabel="U+5B9E U+4F8B.example"> xn--fsq270a.example</b-dn:rdn>

6.2. BDN

The BDN is an ASCII name or an IDN with the A-label [RFC5890] form which is converted from the corresponding BDN. In this document, its corresponding element is <b-dn:bdn>. An optional attribute "uLabel" associated with <b-dn:bdn> is used to represent the U-label [RFC5890] form.

For example: <b-dn:bdn uLabel="U+5BE6 U+4F8B.example"> xn--fsqz41a.example</b-dn:bdn>

7. EPP Command Mapping

A detailed description of the EPP syntax and semantics can be found in the EPP core protocol specification [RFC5730]. The command mappings described here are specifically for use in provisioning and managing bundled names via EPP.

7.1. EPP Query Commands

EPP provides three commands to retrieve domain information: <check> to determine if a domain object can be provisioned within a repository, <info> to retrieve detailed information associated with a domain object, and <transfer> to retrieve domain-object transfer status information.

7.1.1. EPP <check> Command

This extension does not add any element to the EPP <check> command or <check> response described in the EPP domain name mapping [RFC5731]. However, when either RDN or BDN is sent for check, response SHOULD contain both RDN and BDN information, which may also give some explanation in the reason field to tell the user that the associated domain name is a produced name according to some bundle domain name policy.

```
Example <check> response:
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:chkData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:          <domain:cd>
S:           <domain:name avail="1">
S:            xn--fsq270a.example</domain:name>
S:          </domain:cd>
S:          <domain:cd>
S:            <domain:name avail="1">
S:              xn--fsqz41a.example
S:            </domain:name>
S:            <domain:reason>This associated domain name is
S:              a produced name based on bundle name policy.
S:            </domain:reason>
S:          </domain:cd>
S:      </domain:chkData>
S:    </resData>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

7.1.2. EPP <info> Command

This extension does not add any element to the EPP <info> command described in the EPP domain mapping [RFC5731]. However, additional elements are defined for the <info> response.

When an <info> command has been processed successfully, the EPP <resData> element MUST contain child elements as described in the EPP domain mapping [RFC5731]. In addition, the EPP <extension> element SHOULD contain a child <b-dn:infData> element that identifies the extension namespace if the domain object has data associated with this extension and based on its registration policy. The <b-dn:infData> element contains the <b-dn:bundle> which has the following child elements:

- An <b-dn:rdn> element that contains the RDN, along with the attribute described below.

- An OPTIONAL <b-dn:bdn> element that contains the BDN, along with the attribute described below.

The above elements contain the following attribute:

- An optional "uLabel" attribute represents the U-label of the element.

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>xn--fsq270a.example</domain:name>
S:        <domain:roid>58812678-domain</domain:roid>
S:        <domain:status s="ok"/>
S:        <domain:registrant>123</domain:registrant>
S:        <domain:contact type="admin">123</domain:contact>
S:        <domain:contact type="tech">123</domain:contact>
S:        <domain:ns>
S:          <domain:hostObj>ns1.example.cn
S:          </domain:hostObj>
S:        </domain:ns>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2011-04-03T22:00:00.0Z
S:        </domain:crDate>
S:        <domain:exDate>2012-04-03T22:00:00.0Z
S:        </domain:exDate>
S:        <domain:authInfo>
S:          <domain:pw>2fooBAR</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <b-dn:infData
S:        xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn">
S:        <b-dn:bundle>
S:          <b-dn:rdn uLabel="U+5B9E U+4F8B.example">
S:            xn--fsq270a.example
S:          </b-dn:rdn>
S:          <b-dn:bdn uLabel="U+5BE6 U+4F8B.example">
```

```
S:            xn--fsqz41a.example
S:          </b-dn:bdn>
S:        </b-dn:bundle>
S:      </b-dn:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

<info> Response for the unauthorized client has not been changed,see [RFC5731] for detail.

An EPP error response MUST be returned if an <info> command cannot be processed for any reason.

7.1.3. EPP <transfer> Query Command

This extension does not add any element to the EPP <transfer> command or <transfer> response described in the EPP domain mapping [RFC5731].

7.2. EPP Transform Commands

EPP provides five commands to transform domain objects: <create> to create an instance of a domain object, <delete> to delete an instance of a domain object, <renew> to extend the validity period of a domain object, <transfer> to manage domain object sponsorship changes, and <update> to change information associated with a domain object.

When theses commands have been processed successfully, the EPP <resData> element MUST contain child elements as described in the EPP domain mapping [RFC5731]. This EPP <extension> element SHOULD contain the <b-dn:bundle> which has the following child elements:

- An <b-dn:rdn> element that contains the RDN, along with the attribute described below.

- An OPTIONAL <b-dn:bdn> element that contains the BDN, along with the attribute described below.

The above elements contain the following attribute:

- An optional "uLabel" attribute represents the U-label of the element.

7.2.1. EPP <create> Command

This extension defines additional elements to extend the EPP <create> command described in the EPP domain name mapping [RFC5731] for bundled names registration.

In addition to the EPP command elements described in the EPP domain mapping [RFC5731], the <create> command SHALL contain an <extension> element. The <extension> element SHOULD contain a child <b-dn:create> element that identifies the bundle namespace, and a child <b-dn:rdn> element that identifies the U-Label form of the registered domain name with the uLabel attribute.

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>xn--fsq270a.example</domain:name>
C:        <domain:period unit="y">2</domain:period>
C:        <domain:registrant>123</domain:registrant>
C:        <domain:contact type="admin">123</domain:contact>
C:        <domain:contact type="tech">123</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <b-dn:create
C:        xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn">
C:        <b-dn:rdn uLabel="U+5B9E U+4F8B.example">
C:          xn--fsq270a.example
C:        </b-dn:rdn>
C:      </b-dn:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When an <create> command has been processed successfully, the EPP <creData> element MUST contain child elements as described in the EPP domain mapping [RFC5731]. In addition, the EPP <extension> element SHOULD contain a child <b-dn:creData> element that identifies the extension namespace if the domain object has data associated with

this extension and based on its registration policy. The <b-dn:creData> element contains the <b-dn:bundle> element.

Example <create> response:

```
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:creData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>xn--fsq270a.example</domain:name>
S:        <domain:crDate>1999-04-03T22:00:00.0Z</domain:crDate>
S:        <domain:exDate>2001-04-03T22:00:00.0Z</domain:exDate>
S:      </domain:creData>
S:    </resData>
S:    <extension>
S:      <b-dn:creData
S:        xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn">
S:        <b-dn:bundle>
S:          <b-dn:rdn uLabel="U+5B9E U+4F8B.example">
S:            xn--fsq270a.example
S:          </b-dn:rdn>
S:          <b-dn:bdn uLabel="U+5BE6 U+4F8B.example" >
S:            xn--fsqz41a.example
S:          </b-dn:bdn>
S:        </b-dn:bundle>
S:      </b-dn:creData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

An EPP error response MUST be returned if an <create> command cannot be processed for any reason.

7.2.2. EPP <delete> Command

This extension does not add any element to the EPP <delete> command described in the EPP domain mapping [RFC5731]. However, additional elements are defined for the <delete> response.

When a <delete> command has been processed successfully, the EPP <delData> element MUST contain child elements as described in the EPP domain mapping [RFC5731]. In addition, the EPP <extension> element SHOULD contain a child <b-dn:delData> element that identifies the extension namespace if the domain object has data associated with this extension and based on its registration policy. The <b-dn:delData> element SHOULD contain the <b-dn:bundle> element.

Example <delete> response:

```
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:    <extension>
S:      <b-dn:delData
S:        xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn">
S:        <b-dn:bundle>
S:          <b-dn:rdn uLabel="U+5B9E U+4F8B.example">
S:            xn--fsq270a.example
S:          </b-dn:rdn>
S:          <b-dn:bdn uLabel="U+5BE6 U+4F8B.example">
S:            xn--fsqz41a.example
S:          </b-dn:bdn>
S:        </b-dn:bundle>
S:      </b-dn:delData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

An EPP error response MUST be returned if a <delete> command cannot be processed for any reason.

7.2.3. EPP <renew> Command

This extension does not add any element to the EPP <renew> command described in the EPP domain name mapping [RFC5731]. However, when either RDN or BDN is sent for renew, response SHOULD contain both RDN and BDN information. When the command has been processed successfully, the EPP <extension> element SHOULD be contained in the response if the domain object has data associated with bundled names.

This EPP <extension> element SHOULD contain the <b-dn:renData> which contains <b-dn:bundle> element.

Example <renew> response:

```
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:renData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>xn--fsq270a.example</domain:name>
S:        <domain:exDate>2012-04-03T22:00:00.0Z</domain:exDate>
S:      </domain:renData>
S:    </resData>
S:    <extension>
S:      <b-dn:renData
S:        xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn">
S:        <b-dn:bundle>
S:          <b-dn:rdn uLabel="U+5B9E U+4F8B.example">
S:            xn--fsq270a.example
S:          </b-dn:rdn>
S:          <b-dn:bdn uLabel="U+5BE6 U+4F8B.example" >
S:            xn--fsqz41a.example
S:          </b-dn:bdn>
S:        </b-dn:bundle>
S:      </b-dn:renData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

7.2.4. EPP <transfer> Command

This extension does not add any element to the EPP <transfer> command described in the EPP domain name mapping [RFC5731]. However, additional elements are defined for the <transfer> response in the EPP object mapping. When the command has been processed successfully, the EPP <extension> element SHOULD be contained in the response if the domain object has data associated with bundled names. This EPP <extension> element SHOULD contain the <b-dn:trnData> which contains <b-dn:bundle> element.

Example <transfer> response:

```
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="1001">
S:      <msg>Command completed successfully; action pending</msg>
S:    </result>
S:    <resData>
S:      <domain:trnData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>xn--fsq270a.example</domain:name>
S:        <domain:trStatus>pending</domain:trStatus>
S:        <domain:reID>ClientX</domain:reID>
S:        <domain:reDate>2011-04-03T22:00:00.0Z</domain:reDate>
S:        <domain:acID>ClientY</domain:acID>
S:        <domain:acDate>2011-04-08T22:00:00.0Z</domain:acDate>
S:        <domain:exDate>2012-04-03T22:00:00.0Z</domain:exDate>
S:      </domain:trnData>
S:    </resData>
S:    <extension>
S:      <b-dn:trnData
S:        xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn">
S:        <b-dn:bundle>
S:          <b-dn:rdn uLabel="U+5B9E U+4F8B.example">
S:            xn--fsq270a.example
S:          </b-dn:rdn>
S:          <b-dn:bdn uLabel="U+5BE6 U+4F8B.example">
S:            xn--fsqz41a.example
S:          </b-dn:bdn>
S:        </b-dn:bundle>
S:      </b-dn:trnData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

7.2.5. EPP <update> Command

This extension does not add any element to the EPP <update> command described in the EPP domain name mapping [RFC5731]. However, additional elements are defined for the <update> response in the EPP object mapping. When the command has been processed successfully, the EPP <extension> element SHOULD be contained in the response if the domain object has data associated with bundled names. This EPP

<extension> element SHOULD contain the <b-dn:upData> which contains <b-dn:bundle> element.

Example <update> response:

```
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:    <extension>
S:      <b-dn:upData
S:        xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn">
S:        <b-dn:bundle>
S:          <b-dn:rdn uLabel="U+5B9E U+4F8B.example" >
S:            xn--fsq270a.example
S:          </b-dn:rdn>
S:          <b-dn:bdn uLabel="U+5BE6 U+4F8B.example">
S:            xn--fsqz41a.example
S:          </b-dn:bdn>
S:        </b-dn:bundle>
S:      </b-dn:upData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

8. Formal Syntax

An EPP object name mapping extension for bundled names 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. The BEGIN and END tags are not part of the schema; they are used to note the beginning and ending of the schema for URI registration purposes.

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

<schema targetNamespace="urn:ietf:params:xml:ns:epp:b-dn"
  xmlns:b-dn="urn:ietf:params:xml:ns:epp:b-dn"
  xmlns:eppcom="urn:ietf:params:xml:ns:eppcom-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified">
```

```
  <!--
    Import common element types.
  -->
  <import namespace="urn:iana:xml:ns:eppcom-1.0"
    schemaLocation="eppcom-1.0.xsd"/>

  <annotation>
    <documentation>
      Extensible Provisioning Protocol v1.0
      Bundle Domain Extension Schema v1.0
    </documentation>
  </annotation>

  <!--
    Child elements found in EPP commands.
  -->
  <element name="create" type="b-dn:createDataType"/>

  <!--
    Child elements of the <b-dn:create> command.
    All elements must be present at time of creation
  -->
  <complexType name="createDataType">
    <sequence>
      <element name="rdn" type="b-dn:rdnType"
        minOccurs="0"/>
    </sequence>
  </complexType>

  <!--
    Child response elements in <b-dn:infData>, <b-dn:delData>,
    <b-dn:creData>, <b-dn:renData>, <b-dn:trnData> and <b-dn:upData>.
  -->
  <element name="infData" type="b-dn:bundleDataType"/>
  <element name="delData" type="b-dn:bundleDataType"/>
  <element name="creData" type="b-dn:bundleDataType"/>
  <element name="renData" type="b-dn:bundleDataType"/>
  <element name="trnData" type="b-dn:bundleDataType"/>
  <element name="upData" type="b-dn:bundleDataType"/>

  <complexType name="bundleDataType">
    <sequence>
      <element name="bundle" type="b-dn:bundleType" />
    </sequence>
  </complexType>

  <complexType name="bundleType">
    <sequence>
```

```
      <element name="rdn" type="b-dn:rdnType" />
      <element name="bdn" type="b-dn:rdnType"
        minOccurs="0" maxOccurs="unbounded" />
    </sequence>
  </complexType>

  <complexType name="rdnType">
    <simpleContent>
      <extension base="eppcom:labelType">
        <attribute name="uLabel" type="eppcom:labelType"/>
      </extension>
    </simpleContent>
  </complexType>

  <!--
    End of schema.
  -->
  </schema>

  END
```

9. Internationalization Considerations

EPP is represented in XML, which provides native support for encoding information using the Unicode character set and its more compact representations including UTF-8. Conformant XML processors recognize both UTF-8 and UTF-16. Though XML includes provisions to identify and use other character encodings through use of an "encoding" attribute in an <?xml?> declaration, use of UTF-8 is RECOMMENDED.

As an extension of the EPP domain name mapping, the elements, element content described in this document MUST inherit the internationalization conventions used to represent higher-layer domain and core protocol structures present in an XML instance that includes this extension.

10. IANA Considerations

This document uses URNs to describe XML namespaces and XML schemas conforming to a registry mechanism described in [RFC3688]. IANA is requested to assignment the following two URIs.

Registration request for the IDN namespace:

- URI: urn:ietf:params:xml:ns:epp:b-dn

- Registrant Contact: See the "Author's Address" section of this document.

- XML: None. Namespace URI does not represent an XML specification.

Registration request for the IDN XML schema:

- URI: urn:ietf:params:xml:schema:epp:b-dn
- Registrant Contact: See the "Author's Address" section of this document.
- XML: See the "Formal Syntax" section of this document.

The EPP extension described in this document should be registered by IANA in the "Extensions for the Extensible Provisioning Protocol (EPP)" registry described in [RFC7451]. The details of the registration are as follows:

- Name of Extension: "Domain Name Mapping Extension for Strict Bundling Registration"
- Document status: Informational
- Reference: This document
- Registrant Name and Email Address: IESG, iesg@ietf.org
- Top-Level Domains (TLDs): Any
- IPR Disclosure: https://datatracker.ietf.org/ipr/
- Status: Active
- Notes: None

11. Security Considerations

Some registries and registrars have more than 15 years of the bundled registration of domain names (especially Chinese domain names). They have not found any significant security issues. One principle that the registry and registrar should let the registrants know is that bundled registered domain names will be created, transferred, updated, and deleted together as a group. The registrants for bundled domain names should remember this principle when doing some operations to these domain names. [RFC5730] also introduces some security consideration.

This document does not take a position regarding whether or not the bundled domain names share a DS/DNSKEY key. The DNS administrator can choose whether DS/DNSKEY information can be shared or not. If a

DS/DNSKEY key is shared then the bundled domain names share fate if there is a key compromise.

12. Implementation Status

Note to RFC Editor: Please remove this section before publication.

- The Chinese Domain Name Consortium(CDNC) including CNNIC, TWNIC, HKIRC, MONIC, SGNIC and more have followed the principles defined in this document for many years.

- CNNIC and TELEINFO have implemented this extension in their EPP based Chinese domain name registration system.

- Public Interest Registry, has requested to implement technical bundling of second level domains for .NGO and .ONG. This means that by registering and purchasing a domain in the .ngo TLD, for an example, the NGO registrant is also registering and purchasing the corresponding name in the .ong TLD (and vice-versa for registrations in .ong).

- Patrick Mevzek has released a new version of Net::DRI, an EPP client (Perl library, free software) implementing this extension.

13. Acknowledgements

The authors especially thank the authors of [RFC5730] and [RFC5731] and the following ones of CNNIC: Weiping Yang, Chao Qi.

Useful comments were made by John Klensin, Scott Hollenbeck, Patrick Mevzek and Edward Lewis.

14. Change History

RFC Editor: Please remove this section.

14.1. draft-ietf-regext-bundle-registration: Version 00

- accepted as WG document.

14.2. draft-ietf-regext-bundle-registration: Version 01

- make this document to focus on the restrict bundled domain name registration.

14.3. draft-ietf-regext-bundle-registration: Version 02

- Update the section of implementation status.

14.4. draft-ietf-regext-bundle-registration: Version 03

- This document is changed to informational category.
- Refine the text.

14.5. draft-ietf-regext-bundle-registration: Version 04

- Update the implementation section.
- Refine the text.

14.6. draft-ietf-regext-bundle-registration: Version 05

- Scope the XML namespaces to include 'epp'.

14.7. draft-ietf-regext-bundle-registration: Version 06

- add some examples for the transfer, update and renew command
- add some text to security consideration

14.8. draft-ietf-regext-bundle-registration: Version 07

- Update IANA consideration section based on Scott's comments
- Update security consideration based on Chair and Patrick Mevzek's comments

14.9. draft-ietf-regext-bundle-registration: Version 08

- Refine some texts.

14.10. draft-ietf-regext-bundle-registration: Version 09

- Refine the texts.

14.11. draft-ietf-regext-bundle-registration: Version 10

- Update the texts based on IETF LC.

15. References

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