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Extensible Provisioning Protocol (EPP) Domain Name Mapping Extension for  
Chinese Domain Names  
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Abstract

This document describes an extension of Extensible Provisioning Protocol (EPP) domain name mapping for the provisioning and management of Chinese Domain Names (CDNs), especially for variant CDNs. Specified in XML, this extended mapping is applied to provide additional features required by CDNs Registration.

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## **1. Introduction**

Many Chinese characters in common use have variants in Simplified Chinese (SC) form, Traditional Chinese (TC) form or other variant forms. For example, the Chinese character "U+5B81" has 5 variants: "U+5B81" (SC form), "U+5BE7" (TC form), "U+21A34" , "U+5BDC" and "U+5BCD" (other variant forms). For Chinese users, the variants of a Chinese character in SC form, TC form and other variant forms are regarded as the same.

So most of Chinese Domain Names (CDNs) have different variant forms (SC form, TC form, and other variant forms) which are also regarded as the same by Chinese users. According to a statistical result of CNNIC, 78.6% of registered CDNs have variant forms by the end of May 2011. The registration policy of CDNs is that a registrant can apply an original CDN in any forms (SC form, 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 the other forms for the CDN are reserved and forbidden to be applied by other registrants. Moreover, any reserved variant CDN can be validated by the same registrant later.

In order to meet above requirements of the CDNs registration, this document describes an extension of the Extensible Provisioning Protocol (EPP) domain name mapping [[RFC5731](#)] for the provisioning and management of CDNs, especially for variant CDNs. This document is specified using the 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 of mapping described in this document.

This document uses lots of the concepts of the Internationalized Domain Names (IDNs) and unique features of CDN, so a thorough understanding of the IDNs for Application (IDNA, described in [[RFC5890](#)], [[RFC5891](#)], and [[RFC5892](#)]) and a thorough understanding of variant approach discussed in [[RFC4290](#)] and specifically for documents written in Chinese, Japanese, or Korean (CJK documents), in the so-called "JET Guidelines" [[RFC3743](#)] is required to understand the unique features of CDN described in this document.

## **2. Terminology**

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](#)].

"cdn-1.0" in this document is used as an abbreviation for `urn:ietf:params:xml:ns:cdn-1.0`.

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:

- o Chinese Domain Name (CDN), represents the domain's label made up by Chinese characters which may be SC or TC, or other variants (the label may contain ASCII characters).
- o Simplified Chinese Domain Name (SCDN), represents the domain's label only made up by simplified Chinese characters (the label may contain ASCII characters).
- o Traditional Chinese Characters Domain Name (TCDN), represents the domain's label only made up by traditional Chinese characters (the label may contain ASCII characters).
- o Original Chinese Domain Name (OCDN) represents the CDN that users submit for registration by the first time.
- o Variant Chinese Domain Name (VCDN) represents the domain's label made up by Chinese characters which may be SC or TC, or other variants (the label may contain ASCII characters, but may not only contain simplified Chinese characters or traditional Chinese characters).

### **4. Object Attributes**

This extension defines following additional elements to the EPP domain name mapping [[RFC5731](#)]. All of these additional elements can be got from `<domain:info>` command.



#### **[4.1.](#) OCDN Punycode Domain Name**

The OCDN Punycode domain name is a domain name in Punycode [[RFC3492](#)] which is converted from the corresponding OCDN. In this document, its corresponding element is `<cdn:OCDNPunycode>`.

#### **[4.2.](#) SCDN and SCDN Punycode Domain Name**

The corresponding element of SCDN is `<cdn:SCDN>`.

The SCDN Punycode domain name is a domain name in Punycode [[RFC3492](#)] which is converted from the corresponding SCDN. In this document, its corresponding element is `<cdn:SCDNPunycode>`.

#### **[4.3.](#) TCDN and TCDN Punycode Domain Name**

The corresponding element of TCDN is `<cdn:TCDN>`.

The TCDN Punycode domain name is a domain name in Punycode [[RFC3492](#)] which is converted from the corresponding TCDN. In this document, its corresponding element is `<cdn:TCDNPunycode>`.

#### **[4.4.](#) VCDN and VCDN Punycode Domain Name**

The corresponding element of VCDN is `<cdn:VCDN>`.

The VCDN Punycode domain name is a domain name in Punycode [[RFC3492](#)] which is converted from the corresponding VCDN. In this document, its corresponding element is `<cdn:VCDNPunycode>`.

### **[5.](#) 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 CDNs via EPP.

#### **[5.1.](#) 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.



### **5.1.1. 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](#)]. When a domain name has not been registered, but the domain which the user submitted for check is in the VCDN list of a registered domain name, <check> response must contain explanation in the reason field to tell the user that this domain name is a VCDN of a registered domain name, and can be validated by the registrant by <update> command.

### **5.1.2. 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 <cdn:infData> element that identifies the extension namespace if the domain object has data associated with this extension and based on server policy. The <cdn:infData> element contains the following child elements:

- o An OPTIONAL <cdn:OCDNPunycodes> element that contains the Punycodes of the OCDN.
- o An OPTIONAL <cdn:SCDN> element that contains the SCDN.
- o An OPTIONAL <cdn:SCDNPunycodes> element that contains the Punycodes of the SCDN.
- o An OPTIONAL <cdn:TCDN> element that contains the TCDN.
- o An OPTIONAL <cdn:TCDNPunycodes> element that contains the Punycodes of the TCDN.
- o An OPTIONAL <cdn:VCDNList> element that contains the following child elements:
  - \* An OPTIONAL <cdn:VCDN> element that contains the VCDN.
  - \* An OPTIONAL <cdn:VCDNPunycodes> element that contains the Punycodes of the VCDN.

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>
S:          "U+5B9E"U+4f8b"."U+4E2D"U+56FD"</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</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</domain:crDate>
S:        <domain:exDate>2012-04-03T22:00:00.0Z</domain:exDate>
S:        <domain:authInfo>
S:          <domain:pw>2fooBAR</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <cdn:infData
S:        xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0">
S:        <cdn:OCDNPunycode>
S:          xn--fsq270a.xn--fiqs8s</cdn:OCDNPunycode>
S:        <cdn:SCDN>
S:          "U+5B9E"U+4f8b"."U+4E2D"U+56FD"</cdn:SCDN>
S:        <cdn:SCDNPunycode>
S:          xn--fsq270a.xn--fiqs8s</cdn:SCDNPunycode>
S:        <cdn:TCDN>
S:          "U+5BE6"U+4f8b"."U+4E2D"U+570B"</cdn:TCDN>
S:        <cdn:TCDNPunycode>
S:          xn--fsq41a.xn--fiqz9s</cdn:TCDNPunycode>
S:        <cdn:VCDNList>
S:          <cdn:VCDN>
S:            "U+5B9F"U+4f8b"."U+4E2D"U+570B"</cdn:VCDN>
S:          <cdn:VCDNPunycode>
S:            xn--fsq470a.xn--fiqz9s</cdn:VCDNPunycode>
S:          </cdn:VCDNList>
S:        </cdn: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.

### **5.1.3. EPP <transfer> Query Command**

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

When a <transfer> command has been processed successfully, the EPP <trnData> element MUST contain child elements as described in the EPP domain mapping [\[RFC5731\]](#). In addition, the EPP <extension> element SHOULD contain a child <cdn:trnData> element that identifies the extension namespace if the domain object has data associated with this extension and based on server policy. The <cdn:trnData> element contains the following child elements:

- o An OPTIONAL <cdn:SCDN> element that contains the SCDN.
- o An OPTIONAL <cdn:TCDN> element that contains the TCDN.
- o An OPTIONAL <cdn:VCDNList> element that contains the following child element:
  - \* An OPTIONAL <cdn:VCDN> element that contains the VCDN.



Example <transfer> 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:trnData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>
S:          xn--fsq270a.xn--fiqs8s</domain:name>
S:        <domain:trStatus>pending</domain:trStatus>
S:        <domain:reID>ClientX</domain:reID>
S:        <domain:reDate>2010-06-06T22:00:00.0Z</domain:reDate>
S:        <domain:acID>ClientY</domain:acID>
S:        <domain:acDate>2011-06-11T22:00:00.0Z</domain:acDate>
S:        <domain:exDate>2012-09-08T22:00:00.0Z</domain:exDate>
S:      </domain:trnData>
S:    </resData>
S:    <extension>
S:      <cdn:trnData
S:        xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0">
S:        <cdn:SCDN>
S:          "U+5B9E""U+4f8b"."U+4E2D""U+56FD"</cdn:SCDN>
S:        <cdn:TCDN>
S:          "U+5BE6""U+4f8b"."U+4E2D""U+570B"</cdn:TCDN>
S:        <cdn:VCDNList>
S:          <cdn:VCDN>
S:            "U+5B9F""U+4f8b"."U+4E2D""U+570B"</cdn:VCDN>
S:          </cdn:VCDNList>
S:        </cdn:trnData>
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 a <transfer> command cannot be processed for any reason.

## 5.2. 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.

#### **5.2.1. EPP <create> Command**

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

In addition to the EPP command elements described in the EPP domain mapping [[RFC5731](#)], the <create> command SHOULD contain an <extension> element. The <extension> element SHOULD contain a child <cdn:create> element that identifies the CDN namespace and the location of the CDN schema. The <cdn:create> element contains an OPTIONAL <cdn:VCDNList> element which contains the following child element:

- o An OPTIONAL <cdn:VCDN> element is used to indicate is used to indicate a reserved VCDN which the user wants to validate.



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>
C:          "U+5B9E"U+4f8b"."U+4E2D"U+56FD"</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:      <cdn:create
C:        xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0">
C:        <cdn:VCDNList>
C:          <cdn:VCDN>
C:            "U+5B9F"U+4f8b"."U+4E2D"U+570B"</cdn:VCDN>
C:          </cdn:VCDNList>
C:        </cdn:create>
C:      </extension:
C:        <clTRID>ABC-12345</clTRID>
C:    </command>
C:</epp>
```

When an extended <create> command has been processed successfully, the EPP response is as described in the EPP domain mapping [[RFC5731](#)].

### **[5.2.2.](#) 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 <cdn:delData> element that identifies the extension namespace if the domain object has data associated with this extension and based on server policy. The <cdn:delData> element contains the following child elements:



- o An OPTIONAL <cdn:SCDN> element that contains the SCDN.
- o An OPTIONAL <cdn:TCDN> element that contains the TCDN.
- o An OPTIONAL <cdn:VCDNList> element that contains the following child element:
  - \* An OPTIONAL <cdn:VCDN> element that contains the VCDN.

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:     <cdn:delData
S:       xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0">
S:       <cdn:SCDN>
S:         "U+5B9E"U+4f8b"."U+4E2D"U+56FD"</domain:name>
S:       <cdn:TCDN>
S:         "U+5BE6"U+4f8b"."U+4E2D"U+570B"</domain:name>
S:       <cdn:VCDNList>
S:         <cdn:VCDN>
S:           "U+5B9F"U+4f8b"."U+4E2D"U+570B"</cdn:VCDN>
S:         </cdn:VCDNList>
S:       </cdn: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.

### **5.2.3. EPP <renew> Command**

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

When a <renew> command has been processed successfully, the EPP



<renData> element MUST contain child elements as described in the EPP domain mapping [[RFC5731](#)]. In addition, the EPP <extension> element SHOULD contain a child <cdn:renData> element that identifies the extension namespace if the domain object has data associated with this extension and based on server policy. The <cdn:renData> element contains the following child elements:

- o An OPTIONAL <cdn:SCDN> element that contains the SCDN.
- o An OPTIONAL <cdn:TCDN> element that contains the TCDN.
- o An OPTIONAL <cdn:VCDNList> element that contains the following child element:
  - \* An OPTIONAL <cdn:VCDN> element that contains the VCDN.



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>example.com</domain:name>
S:        <domain:exDate>2012-04-03T22:00:00.0Z</domain:exDate>
S:      </domain:renData>
S:    </resData>
S:    <extension>
S:      <cdn:renData
S:        xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0">
S:        <cdn:SCDN>
S:          "U+5B9E"U+4f8b"."U+4E2D"U+56FD"</cdn:SCDN>
S:        <cdn:TCDN>
S:          "U+5BE6"U+4f8b"."U+4E2D"U+570B"</cdn:TCDN>
S:        <cdn:VCDNList>
S:          <cdn:VCDN>
S:            "U+5B9F"U+4f8b"."U+4E2D"U+570B"</cdn:VCDN>
S:          </cdn:VCDNList>
S:        </cdn:renData>
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 a <renew> command cannot be processed for any reason.

#### **5.2.4. EPP <transfer> Command**

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

When a <transfer> command has been processed successfully, the EPP <trnData> element MUST contain child elements as described in the EPP domain mapping [[RFC5731](#)]. In addition, the EPP <extension> element SHOULD contain a child <cdn:trnData> element that identifies the



extension namespace if the domain object has data associated with this extension and based on server policy. The <cdn:trnData> element contains the following child elements:

- o An OPTIONAL <cdn:SCDN> element that contains the SCDN.
- o An OPTIONAL <cdn:TCDN> element that contains the TCDN.
- o An OPTIONAL <cdn:VCDNList> element that contains the following child element:
  - \* An OPTIONAL <cdn:VCDN> element that contains the VCDN.

Example <transfer> 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:trnData
S:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>
S:          "U+5B9E""U+4f8b"."U+4E2D""U+56FD"</domain:name>
S:        <domain:trStatus>pending</domain:trStatus>
S:        <domain:reID>ClientX</domain:reID>
S:        <domain:reDate>2010-06-06T22:00:00.0Z</domain:reDate>
S:        <domain:acID>ClientY</domain:acID>
S:        <domain:acDate>2011-06-11T22:00:00.0Z</domain:acDate>
S:        <domain:exDate>2012-09-08T22:00:00.0Z</domain:exDate>
S:      </domain:trnData>
S:    </resData>
S:    <extension>
S:      <cdn:trnData
S:        xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0">
S:        <cdn:SCDN>
S:          "U+5B9E""U+4f8b"."U+4E2D""U+56FD"</cdn:SCDN>
S:        <cdn:TCDN>
S:          "U+5BE6""U+4f8b"."U+4E2D""U+570B"</cdn:TCDN>
S:        <cdn:VCDNList>
S:          <cdn:VCDN>
S:            "U+5B9F""U+4f8b"."U+4E2D""U+570B"</cdn:VCDN>
S:          </cdn:VCDNList>
S:        </cdn:trnData>
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 a <transfer> command cannot be processed for any reason.

#### **5.2.5. EPP <update> Command**

This extension defines additional elements for the EPP <update> command described in the EPP domain mapping [[RFC5731](#)]. No additional



elements are defined for the EPP <update> response.

The EPP <update> command provides a transform operation that allows a client to modify the attributes of a domain object. In addition to the EPP command elements described in the EPP domain mapping [[RFC5731](#)], the command SHOULD contain an <extension> element, and the <extension> element MUST contain a child <cdn:update> element that identifies the extension namespace if the client wants to update the domain object with data defined in this extension. The <cdn:update> element contains a <cdn:add> element to add VCDN associate with the OCDN, a <cdn:rem> element to remove VCDN associate with the OCDN. At least one <cdn:add> or <cdn:rem> MUST be provided. The <cdn:update> element contains the following child elements:

- o An OPTIONAL <cdn:rem> element that contains one or more <cdn:VCDN> elements.
- o An OPTIONAL <cdn:add> element that contains one or more <cdn:VCDN> elements.



Example <update> 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:    <update>
C:      <domain:update
C:        xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:        <domain:name>"U+5B9E""U+4f8b"."U+4E2D""U+56FD"</domain:name>
C:        <domain:add>
C:          <domain:ns>
C:            <domain:hostObj>ns2.example.cn</domain:hostObj>
C:          </domain:ns>
C:          <domain:contact type="tech">234</domain:contact>
C:          <domain:status s="clientHold"
C:            lang="en">Payment overdue.</domain:status>
C:        </domain:add>
C:        <domain:rem>
C:          <domain:ns>
C:            <domain:hostObj>ns1.example.cn</domain:hostObj>
C:          </domain:ns>
C:          <domain:contact type="tech">123</domain:contact>
C:          <domain:status s="clientUpdateProhibited"/>
C:        </domain:rem>
C:        <domain:chg>
C:          <domain:registrant>234</domain:registrant>
C:          <domain:authInfo>
C:            <domain:pw>2BARfoo</domain:pw>
C:          </domain:authInfo>
C:        </domain:chg>
C:      </domain:update>
C:    </update>
C:    <extension>
C:      <cdn:update
C:        xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0">
C:        <cdn:add>
C:          <cdn:VCDN>
C:            "U+5B9F""U+4f8b"."U+4E2D""U+56FD"</cdn:VCDN>
C:          </cdn:add>
C:        <cdn:rem>
C:          <cdn:VCDN>
C:            "U+5B9F""U+4f8b"."U+4E2D""U+570B"</cdn:VCDN>
C:          </cdn:rem>
C:        </cdn:update>
C:      </extension>
C:    <c1TRID>ABC-12345</c1TRID>
C:  </command>
C:</epp>
```



When an extended <update> command has been processed successfully, the EPP response is as described in the EPP domain name mapping [[RFC5731](#)].

## 6. Formal Syntax

An EPP object name mapping extension for CDN 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:cdn-1.0"
  xmlns:cdn="urn:ietf:params:xml:ns:cdn-1.0"
  xmlns:epp="urn:iana:xml:ns:epp-1.0"
  xmlns:eppcom="urn:iana: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"/>
  <import namespace="urn:iana:xml:ns:epp-1.0"
    schemaLocation="epp-1.0.xsd"/>

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

  <!--
  Child elements found in EPP commands.
  -->
  <element name="create" type="cdn:trnDataType"/>
  <element name="update" type="cdn:updateType"/>

  <!--
  Child elements of the <cdn:update> command
  All elements must be present at time of creation
```



```
-->
<complexType name="updateType">
  <sequence>
    <element name="chg" type="cdn:chgType" minOccurs="0" />
    <element name="add" type="cdn:addRemType" minOccurs="0" />
    <element name="rem" type="cdn:addRemType" minOccurs="0" />
  </sequence>
</complexType>

<complexType name="chgType">
  <sequence>
    <element name="SCDN" type="eppcom:labelType" minOccurs="0" />
    <element name="TCDN" type="eppcom:labelType" minOccurs="0" />
  </sequence>
</complexType>

<complexType name="addRemType">
  <sequence>
    <element name="VCDN" type="eppcom:labelType"
      maxOccurs="unbounded" />
  </sequence>
</complexType>

<!--
Child elements found in EPP commands.
-->
<element name="infData" type="cdn:infDataType"/>
<element name="creData" type="cdn:creDataType"/>
<element name="delData" type="cdn:trnDataType"/>
<element name="renData" type="cdn:trnDataType"/>
<element name="trnData" type="cdn:trnDataType"/>

<!--
Child elements of the <cdn:infData> command
All elements must be present at time of creation
-->
<complexType name="infDataType">
  <all>
    <element name="OCDNPunycodes" type="eppcom:labelType"
      minOccurs="0" />
    <element name="SCDN" type="eppcom:labelType" minOccurs="0" />
    <element name="SCDNPunycodes" type="eppcom:labelType"
      minOccurs="0" />
    <element name="TCDN" type="eppcom:labelType" minOccurs="0" />
    <element name="TCDNPunycodes" type="eppcom:labelType"
      minOccurs="0" />
    <element name="VCDNList" type="cdn:mVariantNameType"
      minOccurs="0" />
  </all>
</complexType>
```



```
</all>
</complexType>

<complexType name="mVariantNameType">
  <sequence>
    <element name="VCDN" type="eppcom:labelType"
      maxOccurs="unbounded" />
    <element name="VCDNPunycode" type="eppcom:labelType"
      maxOccurs="unbounded" />
  </sequence>
</complexType>

<!--
<transfer> response elements.
All elements must be present at time of poll query
-->
<complexType name="trnDataType">
  <sequence>
    <element name="SCDN" type="eppcom:labelType" minOccurs="0" />
    <element name="TCDN" type="eppcom:labelType" minOccurs="0" />
    <element name="VCDNList" type="cdn:VCDNListType"
      minOccurs="0" />
  </sequence>
</complexType>

<complexType name="VCDNListType">
  <sequence>
    <element name="VCDN" type="eppcom:labelType"
      maxOccurs="unbounded" />
  </sequence>
</complexType>

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

## 7. 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.

## **8. 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 assign the following two URI.

Registration request for the CDN namespace:

- o URI: urn:ietf:params:xml:ns:cdn-1.0
- o Registrant Contact: See the "Author's Address" section of this document.
- o XML: None. Namespace URI does not represent an XML specification.

Registration request for the CDN XML schema:

- o URI: urn:ietf:params:xml:schema:cdn-1.0
- o Registrant Contact: See the "Author's Address" section of this document.
- o XML: See the "Formal Syntax" section of this document.

## **9. Security considerations**

The object mapping extension described in this document does not provide any other security services or introduce any additional considerations beyond those described by [[RFC5730](#)] or those caused by the protocol layers used by EPP.

## **10. Acknowledgements**

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