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## **Extensible Provisioning Protocol (EPP) Organization Mapping draft-ietf-regext-org-04**

### Abstract

This document describes an Extensible Provisioning Protocol (EPP) mapping for provisioning and management of organization objects stored in a shared central repository. Specified in Extensible Markup Language (XML), this extended mapping is applied to provide additional features required for the provisioning of organizations.

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## [1.](#) Introduction

There are many entities, such as registrars, resellers, DNS service operators, or privacy proxies involved in the domain registration business. These kind of entities have not been formally defined as an object in EPP which will be specified as "organization" in this document.

This document describes an organization object mapping for version 1.0 of the Extensible Provisioning Protocol (EPP) [[RFC5730](#)]. This mapping is specified using the 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](#)].

## [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](#)].

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.

"org-1.0" in is used as an abbreviation for "urn:ietf:params:xml:ns:org-1.0". The XML namespace prefix "org" 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. Object Attributes**

An EPP organization object has attributes and associated values that can be viewed and modified by the sponsoring client or the server. This section describes each attribute type in detail. The formal syntax for the attribute values described here can be found in the "Formal Syntax" section of this document and in the appropriate normative references.

#### **3.1. Organization Identifier**

All EPP organizations are identified by a server-unique identifier. Organization identifiers are character strings with a specific minimum length, a specified maximum length, and a specified format. Organization identifiers use the "clIDType" client identifier syntax described in [\[RFC5730\]](#). Its corresponding element is <org:id>.

#### **3.2. Organization Roles**

The organization roles are used to represent the relationship an organization would have. Its corresponding element is <org:role>.

##### **3.2.1. Role Type**

An organization would support a list of roles. See [Section 7.3](#) for a list of values. Its corresponding element is <org:type>.

##### **3.2.2. Role Status**

A role of an organization object would have its own statuses. Its corresponding element is <org:status>. The values of the role status are defined in [Section 3.5](#).

##### **3.2.3. Role Identifier**

A role MAY have a third party assigned identifier such as the IANA ID for registrars. Its corresponding element is <org:roleid>.

Example of organization role identifier:



```
<org:role>
  <org:type>registrar</org:type>
  <org:status>ok</org:status>
  <org:status>linked</org:status>
  <org:roleid>1362</org:roleid>
</org:role>
```

### **3.3. Contact and Client Identifiers**

All EPP contacts are identified by a server-unique identifier. Contact identifiers are character strings with a specific minimum length, a specified maximum length, and a specified format. Contact identifiers use the "clIDType" client identifier syntax described in [\[RFC5730\]](#).

### **3.4. Organization Status Values**

An organization object MUST always have at least one associated status value. The default value is "ok".

Status values that can be added or removed by a client are prefixed with "client". Corresponding status values that can be added or removed by a server are prefixed with "server". The "hold" and "terminated" status values are server-managed when the organization has no parent identifier [\[Section 3.6\]](#) and otherwise MAY be client-managed based on server policy.

Status Value Descriptions:

- o ok: This is the normal status value for an object that has no pending operations or prohibitions. This value is set and removed by the server as other status values are added or removed.
- o hold: Organization transform commands and new links MUST be rejected.
- o terminated: The organization which has been terminated MUST NOT be linked. Organization transform commands and new links MUST be rejected.
- o linked: The organization object has at least one active association with another object. The "linked" status is not explicitly set by the client. Servers SHOULD provide services to determine existing object associations.
- o clientLinkProhibited, serverLinkProhibited: Requests to add new links to the organization MUST be rejected.





- o `clientUpdateProhibited`, `serverUpdateProhibited`: Requests to update the object (other than to remove this status) MUST be rejected.
- o `clientDeleteProhibited`, `serverDeleteProhibited`: Requests to delete the object MUST be rejected.
- o `pendingCreate`, `pendingUpdate`, `pendingDelete`: A transform command has been processed for the object, but the action has not been completed by the server. Server operators can delay action completion for a variety of reasons, such as to allow for human review or third-party action. A transform command that is processed, but whose requested action is pending, is noted with response code 1001.

"`pendingCreate`", "`ok`", "`hold`", and "`terminated`" are mutually exclusive statuses. Organization MUST have only one of these statuses set.

"`ok`" status MAY only be combined with "`linked`" status.

"`pendingDelete`" status MUST NOT be combined with either "`clientDeleteProhibited`" or "`serverDeleteProhibited`" status.

The `pendingCreate`, `pendingDelete`, and `pendingUpdate` status values MUST NOT be combined with each other.

### **3.5. Role Status Values**

A role SHOULD have at least one associated status value. Valid values include "`ok`", "`linked`", "`clientLinkProhibited`", and "`serverLinkProhibited`". The default value is "`ok`".

Status Value Descriptions:

- o `ok`: This is the normal status value for an role that has no pending operations or prohibitions. This value is set and removed by the server as other status values are added or removed.
- o `linked`: The role of an organization object has at least one active association with another object. The "`linked`" status is not explicitly set by the client. Servers SHOULD provide services to determine existing object associations.
- o `clientLinkProhibited`, `serverLinkProhibited`: Requests to add new links to the role MUST be rejected.



### **3.6. Parent Identifier**

There can be more than one layer of organizations, such as a reseller. The parent identifier, as defined with the `<org:parentId>` element, represents the parent organization identifier in a child organization.

Take a reseller organization for example, the parent identifier is not defined for the top level reseller, namely the registrar of the registry. An N-tier reseller has a parent reseller and at least one child reseller. A reseller customer has a parent reseller and no child resellers.

Loops SHOULD be prohibited. If organization A has B as parent identifier, organization B must not have organization A as parent identifier.

### **3.7. URL**

The URL represents the organization web home page, as defined with the `<org:url>` element.

### **3.8. Dates and Times**

Date and time attribute values MUST be represented in Universal Coordinated Time (UTC) using the Gregorian calendar. The extended date-time form using upper case "T" and "Z" characters defined in [[W3C.REC-xmlschema-2-20041028](#)] MUST be used to represent date-time values, as XML Schema does not support truncated date-time forms or lower case "t" and "z" characters.

## **4. 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 organization information via EPP.

### **4.1. EPP Query Commands**

EPP provides two commands to retrieve organization information: `<check>` to determine if an organization object can be provisioned within a repository, and `<info>` to retrieve detailed information associated with an organization object. This document does not define a mapping for the EPP `<transfer>` command to retrieve organization-object transfer status information..



#### [4.1.1.1.](#) EPP <check> Command

The EPP <check> command is used to determine if an object can be provisioned within a repository. It provides a hint that allows a client to anticipate the success or failure of provisioning an object using the <create> command, as object-provisioning requirements are ultimately a matter of server policy.

In addition to the standard EPP command elements, the <check> command MUST contain a <org:check> element that identifies the organization namespace. The <org:check> element contains the following child elements:

- o One or more <org:id> elements that contain the server-unique identifier of the organization objects to be queried.

Example <check> 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:    <check>
C:      <org:check
C:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
C:          <org:id>res1523</org:id>
C:          <org:id>re1523</org:id>
C:          <org:id>1523res</org:id>
C:        </org:check>
C:      </check>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When a <check> command has been processed successfully, the EPP <resData> element MUST contain a child <org:chkData> element that identifies the organization namespace. The <org:chkData> element contains one or more <org:cd> elements that contain the following child elements:

- o A <org:id> element that identifies the queried object. This element MUST contain an "avail" attribute whose value indicates object availability (can it be provisioned or not) at the moment the <check> command was completed. A value of "1" or "true" means that the object can be provisioned. A value of "0" or "false" means that the object cannot be provisioned.



- o An OPTIONAL `<org:reason>` element that MAY be provided when an object cannot be provisioned. If present, this element contains server-specific text to help explain why the object cannot be provisioned. This text MUST be represented in the response language previously negotiated with the client; an OPTIONAL `"lang"` attribute MAY be present to identify the language if the negotiated value is something other than the default value of `"en"` (English).

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:      <org:chkData
S:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
S:        <org:cd>
S:          <org:id avail="1">res1523</org:id>
S:        </org:cd>
S:        <org:cd>
S:          <org:id avail="0">re1523</org:id>
S:          <org:reason>In use</org:reason>
S:        </org:cd>
S:        <org:cd>
S:          <org:id avail="1">1523res</org:id>
S:        </org:cd>
S:      </org:chkData>
S:    </resData>
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 `<check>` command cannot be processed for any reason.

#### **4.1.2. EPP `<info>` Command**

The EPP `<info>` command is used to retrieve information associated with an organization object. In addition to the standard EPP command elements, the `<info>` command MUST contain a `<org:info>` element that





identifies the organization namespace. The <org:info> element contains the following child elements:

- o A <org:id> element that contains the server-unique identifier of the organization object to be queried.

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:      <org:info
C:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
C:          <org:id>res1523</org:id>
C:        </org:info>
C:      </info>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When an <info> command has been processed successfully, the EPP <resData> element MUST contain a child <org:infData> element that identifies the organization namespace. The <org:infData> element contains the following child elements:

- o A <org:id> element that contains the server-unique identifier of the organization object, as defined in [Section 3.1](#).
- o A <org:roid> element that contains the Repository Object Identifier assigned to the organization object when the object was created.
- o One or more <org:role> elements that contains the role type, role statuses and optional role id of the organization.
  - \* A <org:type> element that contains the type of the organization, as defined in [Section 3.2](#).
  - \* Zero or more <org:status> elements that contains the role type. The values of the role status are defined in [Section 3.5](#).
  - \* An OPTIONAL <org:roleid> element that contains a third party assigned identifier, such as IANA ID for registrars, as defined in [Section 3.2.3](#).



- o Zero or more <org:status> elements that contains the operational status of the organization, as defined in [Section 3.4](#).
- o An OPTIONAL <org:parentId> element that contains the identifier of the parent object, as defined in [Section 3.6](#).
- o Zero to two <org:postalInfo> elements that contain postal-address information. Two elements are provided so that address information can be provided in both internationalized and localized forms; a "type" attribute is used to identify the two forms. If an internationalized form (type="int") is provided, element content MUST be represented in a subset of UTF-8 that can be represented in the 7-bit US-ASCII character set. If a localized form (type="loc") is provided, element content MAY be represented in unrestricted UTF-8. The <org:postalInfo> element contains the following child elements:
  - \* A <org:name> element that contains the name of the organization.
  - \* A <org:addr> element that contains address information associated with the organization. A <org:addr> element contains the following child elements:
    - + One, two, or three OPTIONAL <org:street> elements that contain the organization's street address.
    - + A <org:city> element that contains the organization's city.
    - + An OPTIONAL <org:sp> element that contains the organization's state or province.
    - + An OPTIONAL <org:pc> element that contains the organization's postal code.
    - + A <org:cc> element that contains the organization's country code.
- o An OPTIONAL <org:voice> element that contains the organization's voice telephone number.
- o An OPTIONAL <org:fax> element that contains the organization's facsimile telephone number.
- o An OPTIONAL <org:email> element that contains the organization's email address.



- o An OPTIONAL <org:url> element that contains the URL to the website of the organization.
- o Zero or more OPTIONAL <org:contact> elements that contain identifiers for the contact objects to be associated with the organization object. Contact object identifiers MUST be known to the server before the contact object can be associated with the organization object. The required "type" is used to represent contact types. The type values include "admin", "tech", "billing", "abuse", and "custom". The OPTIONAL "typeName" attribute is used to define the name of a "custom" type.
- o An OPTIONAL <org:clID> element that contains the organization identifier of the sponsoring client. There is no <org:clID> element if the organization is managed by the registry.
- o A <org:crID> element that contains the identifier of the client that created the organization object.
- o A <org:crDate> element that contains the date and time of organization object creation.
- o A <org:upID> element that contains the identifier of the client that last updated the organization object. This element MUST NOT be present if the organization has never been modified.
- o A <org:upDate> element that contains the date and time of the most recent organization object modification. This element MUST NOT be present if the organization object has never been modified.

Example <info> response for "Example Registrar Inc." organization object with registrar identifier "1362":

```
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:      <org:infData
S:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
S:        <org:id>registrar1362</org:id>
S:        <org:roid>registrar1362-REP</org:roid>
S:        <org:role>
S:          <org:type>registrar</org:type>
S:        <org:status>ok</org:status>
```



```
S:      <org:status>linked</org:status>
S:      <org:roleid>1362</org:roleid>
S:      </org:role>
S:      <org:status>ok</org:status>
S:      <org:postalInfo type="int">
S:        <org:name>Example Registrar Inc.</org:name>
S:        <org:addr>
S:          <org:street>123 Example Dr.</org:street>
S:          <org:street>Suite 100</org:street>
S:          <org:city>Dulles</org:city>
S:          <org:sp>VA</org:sp>
S:          <org:pc>20166-6503</org:pc>
S:          <org:cc>US</org:cc>
S:        </org:addr>
S:      </org:postalInfo>
S:      <org:voice x="1234">+1.7035555555</org:voice>
S:      <org:fax>+1.7035555556</org:fax>
S:      <org:email>contact@organization.example</org:email>
S:      <org:url>http://organization.example</org:url>
S:      <org:contact type="admin">sh8013</org:contact>
S:      <org:contact type="billing">sh8013</org:contact>
S:      <org:contact type="custom"
S:        typeName="legal">sh8013</org:contact>
S:      <org:crID>ClientX</org:crID>
S:      <org:crDate>1999-04-03T22:00:00.0Z</org:crDate>
S:      <org:upID>ClientX</org:upID>
S:      <org:upDate>1999-12-03T09:00:00.0Z</org:upDate>
S:    </org:infData>
S:  </resData>
S:  <trID>
S:    <clTRID>ABC-12345</clTRID>
S:    <svTRID>54322-XYZ</svTRID>
S:  </trID>
S: </response>
S: </epp>
```

Example <info> response for "Example Reseller Inc." organization object of reseller type managed by registrar identifier "1362":





```
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:      <org:infData
S:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
S:        <org:id>reseller1523</org:id>
S:        <org:roid>reseller1523-REP</org:roid>
S:        <org:role>
S:          <org:type>reseller</org:type>
S:          <org:status>ok</org:status>
S:          <org:status>linked</org:status>
S:        </org:role>
S:        <org:status>ok</org:status>
S:        <org:parentId>registrar1362</org:parentId>
S:        <org:postalInfo type="int">
S:          <org:name>Example Reseller Inc.</org:name>
S:          <org:addr>
S:            <org:street>123 Example Dr.</org:street>
S:            <org:street>Suite 100</org:street>
S:            <org:city>Dulles</org:city>
S:            <org:sp>VA</org:sp>
S:            <org:pc>20166-6503</org:pc>
S:            <org:cc>US</org:cc>
S:          </org:addr>
S:        </org:postalInfo>
S:        <org:fax>+1.7035555556</org:fax>
S:        <org:url>http://organization.example</org:url>
S:        <org:contact type="admin">sh8013</org:contact>
S:        <org:clID>1362</org:crID>
S:        <org:crID>ClientX</org:crID>
S:        <org:crDate>1999-04-03T22:00:00.0Z</org:crDate>
S:        <org:upID>ClientX</org:upID>
S:        <org:upDate>1999-12-03T09:00:00.0Z</org:upDate>
S:      </org:infData>
S:    </resData>
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 <info> command cannot be processed for any reason.



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

The transfer semantics does not apply to organization object. No EPP <transfer> command is defined in this document.

#### **4.2. EPP Transform Commands**

This document provides three commands to transform organization object information: <create> to create an instance of an organization object, <delete> to delete an instance of an organization object, and <update> to change information associated with an organization object. This document does not define a mapping for the EPP <transfer> and <renew> command.

Transform commands are typically processed and completed in real time. Server operators MAY receive and process transform commands but defer completing the requested action if human or third-party review is required before the requested action can be completed. In such situations, the server MUST return a 1001 response code to the client to note that the command has been received and processed but that the requested action is pending. The server MUST also manage the status of the object that is the subject of the command to reflect the initiation and completion of the requested action. Once the action has been completed, the client MUST be notified using a service message that the action has been completed and that the status of the object has changed. Other notification methods MAY be used in addition to the required service message.

Server operators SHOULD confirm that a client is authorized to perform a transform command on a given object. Any attempt to transform an object by an unauthorized client MUST be rejected, and the server MUST return a 2201 response code to the client to note that the client lacks privileges to execute the requested command.

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

The EPP <create> command provides a transform operation that allows a client to create an organization object. In addition to the standard EPP command elements, the <create> command MUST contain a <org:create> element that identifies the organization namespace. The <org:create> element contains the following child elements:

- o A <org:id> element that contains the desired server-unique identifier for the organization to be created, as defined in [Section 3.1](#).
- o One or more <org:role> elements that contains the role type, role statuses and optional role id of the organization.



- \* A <org:type> element that contains the type of the organization, as defined in [Section 3.2](#).
- \* Zero or more <org:status> elements that contains the role type. The values of the role status are defined in [Section 3.5](#).
- \* An OPTIONAL <org:roleid> element that contains a third party assigned identifier, such as IANA ID for registrars, as defined in [Section 3.2.3](#).
- o Zero or more <org:status> element that contains the operational status of the organization, as defined in [Section 3.4](#).
- o An OPTIONAL <org:parentId> element that contains the identifier of the parent object, as defined in [Section 3.6](#).
- o Zero to two <org:postalInfo> elements that contain postal-address information. Two elements are provided so that address information can be provided in both internationalized and localized forms; a "type" attribute is used to identify the two forms. If an internationalized form (type="int") is provided, element content MUST be represented in a subset of UTF-8 that can be represented in the 7-bit US-ASCII character set. If a localized form (type="loc") is provided, element content MAY be represented in unrestricted UTF-8. The <org:postalInfo> element contains the following child elements:
  - \* A <org:name> element that contains the name of the organization.
  - \* A <org:addr> element that contains address information associated with the organization. A <org:addr> element contains the following child elements:
    - + One, two, or three OPTIONAL <org:street> elements that contain the organization's street address.
    - + A <org:city> element that contains the organization's city.
    - + An OPTIONAL <org:sp> element that contains the organization's state or province.
    - + An OPTIONAL <org:pc> element that contains the organization's postal code.
    - + A <org:cc> element that contains the organization's country code.



- o An OPTIONAL <org:voice> element that contains the organization's voice telephone number.
- o An OPTIONAL <org:fax> element that contains the organization's facsimile telephone number.
- o An OPTIONAL <org:email> element that contains the organization's email address.
- o An OPTIONAL <org:url> element that contains the URL to the website of the organization.
- o Zero or more OPTIONAL <org:contact> elements that contain identifiers for the contact objects associated with the organization object.

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:      <org:create
C:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
C:        <org:id>res1523</org:id>
C:        <org:role>
C:          <org:type>reseller</org:type>
C:        </org:role>
C:        <org:parentId>1523res</org:parentId>
C:        <org:postalInfo type="int">
C:          <org:name>Example Organization Inc.</org:name>
C:          <org:addr>
C:            <org:street>123 Example Dr.</org:street>
C:            <org:street>Suite 100</org:street>
C:            <org:city>Dulles</org:city>
C:            <org:sp>VA</org:sp>
C:            <org:pc>20166-6503</org:pc>
C:            <org:cc>US</org:cc>
C:          </org:addr>
C:        </org:postalInfo>
C:        <org:voice x="1234">+1.7035555555</org:voice>
C:        <org:fax>+1.7035555556</org:fax>
C:        <org:email>contact@organization.example</org:email>
C:        <org:url>http://organization.example</org:url>
C:        <org:contact type="admin">sh8013</org:contact>
C:        <org:contact type="billing">sh8013</org:contact>
C:      </org:create>
C:    </create>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When a <create> command has been processed successfully, the EPP <resData> element MUST contain a child <org:creData> element that identifies the organization namespace. The <org:creData> element contains the following child elements:

- o A <org:id> element that contains the server-unique identifier for the created organization, as defined in [Section 3.1](#).
- o A <org:crDate> element that contains the date and time of organization-object creation.

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:      <org:creData
S:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
S:        <org:id>res1523</org:id>
S:        <org:crDate>1999-04-03T22:00:00.0Z</org:crDate>
S:      </org:creData>
S:    </resData>
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 <create> command cannot be processed for any reason.

#### **4.2.2. EPP <delete> Command**

The EPP <delete> command provides a transform operation that allows a client to delete an organization object. In addition to the standard EPP command elements, the <delete> command MUST contain a <org:delete> element that identifies the organization namespace. The <org:delete> element MUST contain the following child element:

- o A <org:id> element that contains the server-unique identifier of the organization object to be deleted, as defined in [Section 3.1](#).

An organization object MUST NOT be deleted if it is associated with other known objects. An associated organization MUST NOT be deleted until associations with other known objects have been broken. A server MUST notify clients that object relationships exist by sending a 2305 error response code when a <delete> command is attempted and fails due to existing object relationships.

Example <delete> 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:    <delete>
C:      <org:delete
C:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
C:          <org:id>res1523</org:id>
C:        </org:delete>
C:      </delete>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When a <delete> command has been processed successfully, a server MUST respond with an EPP response with no <resData> 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:    <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.

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

Renewal semantics do not apply to organization objects, so there is no mapping defined for the EPP <renew> command.

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

Transfer semantics do not apply to organization objects, so there is no mapping defined for the EPP <transfer> command.



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

The EPP <update> command provides a transform operation that allows a client to modify the attributes of an organization object. In addition to the standard EPP command elements, the <update> command MUST contain a <org:update> element that identifies the organization namespace. The <org:update> element contains the following child elements:

- o A <org:id> element that contains the server-unique identifier of the organization object to be updated, as defined in [Section 3.1](#).
- o An OPTIONAL <org:add> element that contains attribute values to be added to the object.
- o An OPTIONAL <org:rem> element that contains attribute values to be removed from the object.
- o An OPTIONAL <org:chg> element that contains attribute values to be changed.

At least one <org:add>, <org:rem> or <org:chg> element MUST be provided if the command is not being extended. All of these elements MAY be omitted if an <update> extension is present. The OPTIONAL <org:add> and <org:rem> elements contain the following child element:

- o Zero or more <org:contact> elements that contain the identifiers for contact objects to be associated with or removed from the organization object. Contact object identifiers MUST be known to the server before the contact object can be associated with the organization object.
- o Zero or more <org:role> elements that contains the role type, role statuses and optional role id of the organization.
  - \* A <org:type> element that contains the type of the organization, as defined in [Section 3.2](#).
  - \* Zero or more <org:status> elements that contains the role type. The values of the role status are defined in [Section 3.5](#).
  - \* An OPTIONAL <org:roleid> element that contains a third party assigned identifier, such as IANA ID for registrars, as defined in [Section 3.2.3](#).
- o Zero or more <org:status> element that contains the operational status of the organization.





A OPTIONAL <org:chg> element contains the following child elements, where at least one child element MUST be present:

- o An OPTIONAL <org:parentId> element that contains the identifier of the parent object.
- o Zero to two <org:postalInfo> elements that contain postal-address information. Two elements are provided so that address information can be provided in both internationalized and localized forms; a "type" attribute is used to identify the two forms. If an internationalized form (type="int") is provided, element content MUST be represented in a subset of UTF-8 that can be represented in the 7-bit US-ASCII character set. If a localized form (type="loc") is provided, element content MAY be represented in unrestricted UTF-8. The change of the postal info is defined as a replacement of that postal info element with the contents of the sub-elements included in the update command. An empty <org:postalInfo> element is supported to allow a type of postal info to be removed. The <org:postalInfo> element contains the following child elements:
  - \* A <org:name> element that contains the name of the organization.
  - \* A <org:addr> element that contains address information associated with the organization. A <org:addr> element contains the following child elements:
    - + One, two, or three OPTIONAL <org:street> elements that contain the organization's street address.
    - + A <org:city> element that contains the organization's city.
    - + An OPTIONAL <org:sp> element that contains the organization's state or province.
    - + An OPTIONAL <org:pc> element that contains the organization's postal code.
    - + A <org:cc> element that contains the organization's country code.
- o An OPTIONAL <org:voice> element that contains the organization's voice telephone number.
- o An OPTIONAL <org:fax> element that contains the organization's facsimile telephone number.



- o An OPTIONAL <org:email> element that contains the organization's email address.
- o An OPTIONAL <org:url> element that contains the URL to the website of the organization.

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:      <org:update
C:        xmlns:org="urn:ietf:params:xml:ns:org-1.0">
C:        <org:id>res1523</org:id>
C:        <org:add>
C:          <org:contact type="tech">sh8013</org:contact>
C:          <org:role>
C:            <org:type>privacyproxy</org:type>
C:            <org:status>clientLinkProhibited</org:status>
C:          </org:role>
C:          <org:status>clientLinkProhibited</org:status>
C:        </org:add>
C:        <org:rem>
C:          <org:contact type="billing">sh8014</org:contact>
C:          <org:role>
C:            <org:type>reseller</org:type>
C:            <org:status>clientDeleteProhibited</org:status>
C:          </org:role>
C:        </org:rem>
C:        <org:chg>
C:          <org:postalInfo type="int">
C:            <org:addr>
C:              <org:street>124 Example Dr.</org:street>
C:              <org:street>Suite 200</org:street>
C:              <org:city>Dulles</org:city>
C:              <org:sp>VA</org:sp>
C:              <org:pc>20166-6503</org:pc>
C:              <org:cc>US</org:cc>
C:            </org:addr>
C:          </org:postalInfo>
C:          <org:voice>+1.7034444444</org:voice>
C:          <org:fax/>
C:        </org:chg>
C:      </org:update>
C:    </update>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

When an <update> command has been processed successfully, a server MUST respond with an EPP response with no <resData> 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:    <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 an <update> command cannot be processed for any reason.

## 5. 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. 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:org-1.0"
  xmlns:org="urn:ietf:params:xml:ns:org-1.0"
  xmlns:epp="urn:ietf:params:xml:ns:epp-1.0"
  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:ietf:params:xml:ns:eppcom-1.0"/>
```

```
<import namespace="urn:ietf:params:xml:ns:epp-1.0"/>
```

```
<annotation>
```

```
  <documentation>
```

```
    Extensible Provisioning Protocol v1.0
```

```
    organization provisioning schema.
```

```
  </documentation>
```

```
</annotation>
```





```
<!--
Child elements found in EPP commands.
-->
<element name="create" type="org:createType"/>
<element name="delete" type="org:sIDType"/>
<element name="update" type="org:updateType"/>
<element name="check" type="org:mIDType"/>
<element name="info" type="org:infoType"/>

<!--
Utility types.
-->
<simpleType name="statusType">
  <restriction base="token">
    <enumeration value="ok"/>
    <enumeration value="hold"/>
    <enumeration value="terminated"/>
    <enumeration value="clientDeleteProhibited"/>
    <enumeration value="clientUpdateProhibited"/>
    <enumeration value="clientLinkProhibited"/>
    <enumeration value="linked"/>
    <enumeration value="pendingCreate"/>
    <enumeration value="pendingUpdate"/>
    <enumeration value="pendingDelete"/>
    <enumeration value="serverDeleteProhibited"/>
    <enumeration value="serverUpdateProhibited"/>
    <enumeration value="serverLinkProhibited"/>
  </restriction>
</simpleType>

<simpleType name="roleStatusType">
  <restriction base="token">
    <enumeration value="ok"/>
    <enumeration value="clientLinkProhibited"/>
    <enumeration value="linked"/>
    <enumeration value="serverLinkProhibited"/>
  </restriction>
</simpleType>

<complexType name="roleType">
  <sequence>
    <element name="type" type="token"/>
    <element name="status" type="org:roleStatusType"
      minOccurs="0" maxOccurs="3"/>
    <element name="roleid" type="token" minOccurs="0"/>
  </sequence>
</complexType>
```



```
<complexType name="postalInfoType">
  <sequence>
    <element name="name"
      type="org:postalLineType"/>
    <element name="addr"
      type="org:addrType"/>
  </sequence>
  <attribute name="type"
    type="org:postalInfoEnumType"
    use="required"/>
</complexType>

<complexType name="contactType">
  <simpleContent>
    <extension base="eppcom:clIDType">
      <attribute name="type" type="org:contactAttrType"
        use="required"/>
      <attribute name="typeName" type="token"/>
    </extension>
  </simpleContent>
</complexType>

<simpleType name="contactAttrType">
  <restriction base="token">
    <enumeration value="admin"/>
    <enumeration value="billing"/>
    <enumeration value="tech"/>
    <enumeration value="abuse"/>
    <enumeration value="custom"/>
  </restriction>
</simpleType>

<complexType name="e164Type">
  <simpleContent>
    <extension base="org:e164StringType">
      <attribute name="x" type="token" />
    </extension>
  </simpleContent>
</complexType>

<simpleType name="e164StringType">
  <restriction base="token">
    <pattern value="(\+[0-9]{1,3}\.[0-9]{1,14})?" />
    <maxLength value="17" />
  </restriction>
</simpleType>

<simpleType name="postalLineType">
```



```
<restriction base="normalizedString">
  <minLength value="1" />
  <maxLength value="255" />
</restriction>
</simpleType>

<simpleType name="optPostalLineType">
  <restriction base="normalizedString">
    <maxLength value="255" />
  </restriction>
</simpleType>

<simpleType name="pcType">
  <restriction base="token">
    <maxLength value="16" />
  </restriction>
</simpleType>

<simpleType name="ccType">
  <restriction base="token">
    <length value="2" />
  </restriction>
</simpleType>

<complexType name="addrType">
  <sequence>
    <element name="street" type="org:optPostalLineType"
      minOccurs="0" maxOccurs="3" />
    <element name="city" type="org:postalLineType" />
    <element name="sp" type="org:optPostalLineType"
      minOccurs="0" />
    <element name="pc" type="org:pcType"
      minOccurs="0" />
    <element name="cc" type="org:ccType" />
  </sequence>
</complexType>

<simpleType name="postalInfoEnumType">
  <restriction base="token">
    <enumeration value="loc" />
    <enumeration value="int" />
  </restriction>
</simpleType>

<!--
Child element of commands that require only an identifier.
-->
<complexType name="sIDType">
```



```
<sequence>
  <element name="id" type="eppcom:clIDType"/>
</sequence>
</complexType>

<!--
Child element of commands that accept multiple identifiers.
-->
<complexType name="mIDType">
  <sequence>
    <element name="id"
      type="eppcom:clIDType" maxOccurs="unbounded"/>
  </sequence>
</complexType>

<!--
Child elements of the <info> commands.
-->
<complexType name="infoType">
  <sequence>
    <element name="id"
      type="eppcom:clIDType"/>
  </sequence>
</complexType>

<!--
Child elements of the <create> command.
-->
<complexType name="createType">
  <sequence>
    <element name="id"
      type="eppcom:clIDType"/>
    <element name="role"
      type="org:roleType" maxOccurs="unbounded"/>
    <element name="status"
      type="org:statusType" minOccurs="0" maxOccurs="4"/>
    <element name="parentId"
      type="eppcom:clIDType" minOccurs="0"/>
    <element name="postalInfo"
      type="org:postalInfoType" minOccurs="0" maxOccurs="2"/>
    <element name="voice"
      type="org:e164Type" minOccurs="0"/>
    <element name="fax"
      type="org:e164Type" minOccurs="0"/>
    <element name="email"
      type="eppcom:minTokenType" minOccurs="0"/>
    <element name="url"
      type="anyURI" minOccurs="0"/>
```





```
        <element name="contact"
          type="org:contactType"
          minOccurs="0" maxOccurs="unbounded"/>
      </sequence>
    </complexType>

<!--
Child elements of the <update> command.
-->
    <complexType name="updateType">
      <sequence>
        <element name="id"
          type="eppcom:clIDType"/>
        <element name="add"
          type="org:addRemType" minOccurs="0"/>
        <element name="rem"
          type="org:addRemType" minOccurs="0"/>
        <element name="chg"
          type="org:chgType" minOccurs="0"/>
      </sequence>
    </complexType>

<!--
Data elements that can be added or removed.
-->
    <complexType name="addRemType">
      <sequence>
        <element name="contact"
          type="org:contactType" minOccurs="0" maxOccurs="unbounded"/>
        <element name="role" type="org:roleType"
          minOccurs="0" maxOccurs="unbounded"/>
        <element name="status" type="org:statusType"
          minOccurs="0" maxOccurs="9"/>
      </sequence>
    </complexType>

<!--
Data elements that can be changed.
-->
    <complexType name="chgType">
      <sequence>
        <element name="parentId"
          type="eppcom:clIDType" minOccurs="0"/>
        <element name="postalInfo"
          type="org:chgPostalInfoType"
          minOccurs="0" maxOccurs="2"/>
        <element name="voice"
          type="org:e164Type" minOccurs="0"/>
      </sequence>
    </complexType>
```



```
<element name="fax"
  type="org:e164Type" minOccurs="0"/>
<element name="email"
  type="eppcom:minTokenType" minOccurs="0"/>
<element name="url"
  type="anyURI" minOccurs="0"/>
</sequence>
</complexType>

<complexType name="chgPostalInfoType">
  <sequence>
    <element name="name"
      type="org:postalLineType" minOccurs="0"/>
    <element name="addr"
      type="org:addrType" minOccurs="0"/>
  </sequence>
  <attribute name="type"
    type="org:postalInfoEnumType" use="required"/>
</complexType>

<!--
Child response elements.
-->
<element name="chkData" type="org:chkDataType"/>
<element name="creData" type="org:creDataType"/>
<element name="infData" type="org:infDataType"/>

<!--
<check> response elements.
-->
<complexType name="chkDataType">
  <sequence>
    <element name="cd" type="org:checkType"
      maxOccurs="unbounded" />
  </sequence>
</complexType>

<complexType name="checkType">
  <sequence>
    <element name="id" type="org:checkIDType" />
    <element name="reason" type="eppcom:reasonType"
      minOccurs="0" />
  </sequence>
</complexType>

<complexType name="checkIDType">
  <simpleContent>
    <extension base="eppcom:clIDType">
```



```
        <attribute name="avail" type="boolean"
          use="required" />
      </extension>
    </simpleContent>
  </complexType>

<!--
<info> response elements.
-->
  <complexType name="infDataType">
    <sequence>
      <element name="id"
        type="eppcom:clIDType"/>
      <element name="roid"
        type="eppcom:roidType"/>
      <element name="role"
        type="org:roleType" maxOccurs="unbounded"/>
      <element name="status"
        type="org:statusType" maxOccurs="9"/>
      <element name="parentId"
        type="eppcom:clIDType" minOccurs="0"/>
      <element name="postalInfo"
        type="org:postalInfoType" minOccurs="0" maxOccurs="2"/>
      <element name="voice"
        type="org:e164Type" minOccurs="0"/>
      <element name="fax"
        type="org:e164Type" minOccurs="0"/>
      <element name="email"
        type="eppcom:minTokenType" minOccurs="0"/>
      <element name="url"
        type="anyURI" minOccurs="0"/>
      <element name="contact"
        type="org:contactType" minOccurs="0" maxOccurs="unbounded"/>
      <element name="clID"
        type="eppcom:clIDType" minOccurs="0"/>
      <element name="crID"
        type="eppcom:clIDType"/>
      <element name="crDate"
        type="dateTime"/>
      <element name="upID"
        type="eppcom:clIDType" minOccurs="0"/>
      <element name="upDate"
        type="dateTime" minOccurs="0"/>
    </sequence>
  </complexType>

<!--
<create> response elements.
-->
```



```
<complexType name="creDataType">
  <sequence>
    <element name="id" type="eppcom:clIDType" />
    <element name="crDate" type="dateTime" />
  </sequence>
</complexType>
<!--
End of schema.
-->
</schema>
END
```

## 6. 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 organization object mapping, the elements and 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.

## 7. IANA Considerations

### 7.1. XML Namespace

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 URI.

Registration request for the organization namespace:

URI: urn:ietf:params:xml:ns:org-1.0

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

XML: None. Namespace URIs do not represent an XML specification.

Registration request for the organization XML schema:

URI: urn:ietf:params:xml:ns:org-1.0





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

XML: See the "Formal Syntax" section of this document.

## **7.2. EPP Extension Registry**

The EPP extension described in this document should be registered by the IANA in the EPP Extension Registry described in [[RFC7451](#)]. The details of the registration are as follows:

Name of Extension: Organization Object Extension

Document status: Standards Track

Reference: (insert reference to RFC version of this document)

Registrant Name and Email Address: IESG

TLDs: any

IPR Disclosure: none

Status: active

Notes: none

## **7.3. Role Values Registry**

The following values should be registered by the IANA in the "EPP Organization Role Values" registry. The registration policy for this registry is "Expert Review" [[RFC8126](#)].

### **7.3.1. Registration Template**

Value: the string value being registered.

Description: Brief description of the organization role values.

Registrant Name: For Standards Track RFCs, state "IESG". For others, give the name of the responsible party.

Registrant Contact Information: an email address, postal address, or some other information to be used to contact the registrant.



### **7.3.2. Initial Registry Contents**

Followings are the initial registry contents:

Value: registrar

Description: The entity object instance represents the authority responsible for the registration in the registry.

Registrant Name: IESG

Registrant Contact Information: iesg@ietf.org

Value: reseller

Description: The entity object instance represents a third party through which the registration was conducted (i.e., not the registry or registrar).

Registrant Name: IESG

Registrant Contact Information: iesg@ietf.org

Value: privacyproxy

Description: The entity object instance represents a third-party who could help to register a domain without exposing the registrants' private information..

Registrant Name: IESG

Registrant Contact Information: iesg@ietf.org

## **8. Implementation Status**

Note to RFC Editor: Please remove this section and the reference to [\[RFC7942\]](#) before publication. This section records the status of known implementations of the protocol defined by this specification at the time of posting of this Internet-Draft, and is based on a proposal described in [\[RFC7942\]](#). The description of implementations in this section is intended to assist the IETF in its decision processes in progressing drafts to RFCs. Please note that the listing of any individual implementation here does not imply endorsement by the IETF. Furthermore, no effort has been spent to verify the information presented here that was supplied by IETF contributors. This is not intended as, and must not be construed to be, a catalog of available implementations or their features. Readers are advised to note that other implementations may exist.



According to [[RFC7942](#)], "this will allow reviewers and working groups to assign due consideration to documents that have the benefit of running code, which may serve as evidence of valuable experimentation and feedback that have made the implemented protocols more mature. It is up to the individual working groups to use this information as they see fit".

Verisign has already implemented this object mapping. CNNIC and Net::DRI (Patrick Mevzek) are in the process of development research to update organization object from reseller object. Dns Belgium is planning to implement it after the publication of this document.

### **8.1. Verisign EPP SDK**

Organization: Verisign Inc.

Name: Verisign EPP SDK

Description: The Verisign EPP SDK includes both a full client implementation and a full server stub implementation of [draft-ietf-regext-org](#).

Level of maturity: Development

Coverage: All aspects of the protocol are implemented.

Licensing: GNU Lesser General Public License

Contact: [jgould@verisign.com](mailto:jgould@verisign.com)

URL: [https://www.verisign.com/en\\_US/channel-resources/domain-registry-products/epp-sdks](https://www.verisign.com/en_US/channel-resources/domain-registry-products/epp-sdks)

### **8.2. CNNIC Implementation**

Organization: CNNIC

Name: EPP Organization Mapping

Description: CNNIC is trying to update EPP organization mapping from previous reseller mapping according to this document.

Level of maturity: Development

Coverage: EPP organization mapping

Contact: [zhouguiqing@cnnic.cn](mailto:zhouguiqing@cnnic.cn)



### **8.3. Reseller Extension**

This document was updated from [ID.[draft-ietf-regext-reseller](#)].  
CNNIC, Verisign and Net::DRI (Patrick Mevzek) have already  
implemented the reseller mapping.

## **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. The security considerations  
described in these other specifications apply to this specification  
as well.

## **10. Acknowledgment**

The authors would like to thank Rik Ribbers, Marc Groeneweg, Patrick  
Mevzek, Antoin Verschuren and Scott Hollenbeck for their careful  
review and valuable comments.

## **11. References**

### **11.1. Normative References**

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Biron, P. and A. Malhotra, "XML Schema Part 2: Datatypes Second Edition", World Wide Web Consortium Recommendation REC-xmlschema-2-20041028", October 2004, <<http://www.w3.org/TR/2004/REC-xmlschema-2-20041028>>.

## **11.2. Informative References**

[ID.[draft-ietf-regext-reseller](#)]

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[RFC7451] Hollenbeck, S., "Extension Registry for the Extensible Provisioning Protocol", [RFC 7451](#), DOI 10.17487/RFC7451, February 2015, <<https://www.rfc-editor.org/info/rfc7451>>.

## **Appendix A. Change Log**

Initial -00: Individual document submitted.

-01:

- \* Updated abstract text.
- \* Added sentences to avoid loop of parent identifiers in [section 3.4](#).
- \* Revised typos in [section 3.6](#).
- \* Added explanation of contact type attribute in [section 4.1.2](#).
- \* Updated <info> responses.



- \* Deleted description of <transfer> command in [section 4.1](#) and 4.2.
- \* Deleted whoisInfo disclose type in XML schema.
- \* Deleted maxOccurs of addRemType.
- \* Deleted extra "OPTIONAL" in [section 4.2.5](#).
- \* Updated typos in <update> response.

-02:

- \* Changed author information.
- \* Updated url definition.
- \* Updated XML schema.

-03:

- \* Changed author information.
- \* Updated [section 3.1](#).
- \* Refactoried the XSD file. Added <chgPostalInfoType> element.
- \* Added acknowledgment.

WG document-00: WG document submitted

WG document-01: Keep document alive for further discussion.  
Reseller object or entity object with multiple roles?

Organization WG document-00: Change to a generic organization object mapping.

Organization WG document-01: Added "Implementation Status" section.

Organization WG document-02: Accepted some of the feedbacks on the mailing list.

Organization WG document-03:

- \* Updated [section 3.2](#), changed the structure of organization role.
- \* Updated [section 4.2.5](#) for the "add", "rem" and "chg" example.



- \* Updated [section 5](#) of formal syntax.
- \* Updated [section 7.2](#) for the registration template and initial values.
- \* Updated [section 8](#) of implementation status.

#### Organization WG document-04:

- \* Updated [section 3.2](#), changed the structure of organization role.
- \* Updated references.
- \* Updated [section 8](#) of implementation status.

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