Internet Engineering Task Force
Internet-Draft
Intended status: Standards Track
Expires: February 22, 2018

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August 21, 2017

Launch Phase Mapping for the Extensible Provisioning Protocol (EPP) draft-ietf-regext-launchphase-06

Abstract

This document describes an Extensible Provisioning Protocol (EPP) extension mapping for the provisioning and management of domain name registrations and applications during the launch of a domain name registry.

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1. Introduction

This document describes an extension mapping for version 1.0 of the Extensible Provisioning Protocol (EPP) [RFC5730]. This EPP mapping specifies a flexible schema that can be used to implement several common use cases related to the provisioning and management of domain name registrations and applications during the launch of a domain name registry.

It is typical for domain registries to operate in special modes during their initial launch to facilitate allocation of domain names,

often according to special rules. This document uses the term "launch phase" and the shorter form "launch" to refer to such a period.

The EPP domain name mapping [RFC5731] is designed for the steady-state operation of a registry. During a launch period, the model in place may be different from what is defined in the EPP domain name mapping [RFC5731]. For example, registries often accept multiple applications for the same domain name during the "Sunrise" launch phase, referred to as a Launch Application. A Launch Registration refers to a registration made during a launch phase when the server uses a "first-come, first-served" model. Even in a "first-come, first-served" model, additional steps and information might be required, such as trademark information. In addition, RFC 7848 [RFC7848] defines a registry interface for the Trademark Claims or "claims" launch phase that includes support for presenting a Trademark Claims Notice to the Registrant. This document proposes an extension to the domain name mapping in order to provide a uniform interface for the management of Launch Applications and Launch Registrations in launch phases.

1.1. 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 RFC 2119 [RFC2119].

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

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 protocol.

A Launch Registration is a domain name registration during a launch phase when the server uses a "first-come, first-served" model. Only a single registration for a domain name can exist in the server at a time.

A Launch Application represents the intent to register a domain name during a launch phase when the server accepts multiple applications for a domain name and the server later selects one of the applications to allocate as a registration. Many Launch Applications for a domain name can exist in the server at a time.

"launch-1.0" is used as an abbreviation for "urn:ietf:params:xml:ns:launch-1.0". The XML namespace prefix "launch" 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.

"signedMark-1.0" is used as an abbreviation for "urn:ietf:params:xml:ns:signedMark-1.0" that is defined in [RFC7848]. The XML namespace prefix "smd" 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.

"mark-1.0" is used as an abbreviation for "urn:ietf:params:xml:ns:mark-1.0" that is defined in [RFC7848]. The XML namespace prefix "mark" 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.

2. Object Attributes

This extension adds additional elements to the EPP domain name mapping [RFC5731]. Only those new elements are described here.

2.1. Application Identifier

Servers MAY allow multiple applications, referred to as a Launch Application, of the same domain name during its launch phase operations. Upon receiving a valid <domain:create> command to create a Launch Application, the server MUST create an application object corresponding to the request, assign an application identifier for the Launch Application, set the [RFC5731] pendingCreate status, and return the application identifier to the client with the <launch:applicationID> element. In order to facilitate correlation, all subsequent launch operations on the Launch Application MUST be qualified by the previously assigned application identifier using the <launch:applicationID> element.

2.2. Validator Identifier

The Validator Identifier is the identifier, that is unique to the server, for a Trademark Validator that validates marks and has a repository of validated marks. The OPTIONAL "validatorID" attribute is used to define the Validator Identifier of the Trademark Validator. Registries MAY support more than one Third Party Trademark Validator. The unique set of Validator Identifier values supported by the server is up to server policy. The Internet Corporation for Assigned Names and Numbers (ICANN) Trademark Clearinghouse (TMCH) is the default Trademark Validator and is

reserved the Validator Identifier of "tmch". If the ICANN TMCH is not used or multiple Trademark Validators are used, the Validator Identifier MUST be defined using the "validatorID" attribute.

The Validator Identifier MAY be related to one or more issuer identifiers of the <mark:id> element and the <smd:id> element defined in [RFC7848]. Both the Validator Identifier and the Issuer Identifier used MUST be unique. If the ICANN TMCH is not used or multiple Trademark Validators are used, the server MUST define the list of supported validator identifiers and MUST make this information available to clients using a mutually acceptable, out-of-band mechanism.

The Validator Identifier MAY define a non-Trademark Validator that supports a form of claims.

2.3. Launch Phases

The server MAY support multiple launch phases sequentially or simultaneously. The <launch:phase> element MUST be included by the client to define the target launch phase of the command. The server SHOULD validate the phase and MAY validate the sub-phase of the <launch:phase> element against the active phase and OPTIONAL sub-phase of the server, and return an EPP error result code of 2306 if there is a mismatch.

The following launch phase values are defined:

sunrise The phase during which trademark holders can submit registrations or applications with trademark information that can be validated by the server.

landrush A post-Sunrise phase when non-trademark holders are allowed to register domain names with steps taken to address a large volume of initial registrations.

claims The phase, as defined in the Section 2.3.1, in which a Claims Notice MUST be displayed to a prospective registrant of a domain name that matches trademarks.

open A post-launch phase that is also referred to as "steady state". Servers MAY require additional trademark protection during this phase.

custom A custom server launch phase that is defined using the "name" attribute.

For extensibility, the <launch:phase> element includes an OPTIONAL "name" attribute that can define a sub-phase, or the full name of the phase when the <launch:phase> element has the "custom" value. For example, the "claims" launch phase could have two sub-phases that include "landrush" and "open".

Launch phases MAY overlap to support the "claims" launch phase, defined in the Section 2.3.1, and to support a traditional "landrush" launch phase. The overlap of the "claims" and "landrush" launch phases SHOULD be handled by setting "claims" as the <launch:phase> value and setting "landrush" as the sub-phase with the "name" attribute. For example, the <launch:phase> element SHOULD be <launch:phase name="landrush">claims</launch:phase>.

2.3.1. Trademark Claims Phase

The Trademark Claims Phase is when a Claims Notice MUST be displayed to a prospective registrant of a domain name that matches trademarks. See [I-D.ietf-regext-tmch-func-spec] for additional details of trademark claims handling. The source of the trademarks is a Trademark Validator and the source of the Claims Notice information is a Claim Notice Information Service (CNIS), which MAY be directly linked to a Trademark Validator. The client interfaces with the server to determine if a trademark exists for a domain name, interfaces with a CNIS to get the Claims Notice information, and interfaces with the server to pass the Claims Notice acceptance information in a create command. This document supports the Trademark Claims Phase in two ways including:

Claims Check Form Claims Check Form (Section 3.1.1) is used to determine whether or not there are any matching trademarks for a domain name. If there is at least one matching trademark that exists for the domain name, a claims key is returned. The mapping of domain names and the claims keys is based on an out-of-band interface between the server and the Trademark Validator. The CNIS associated with the claims key Validator Identifier (Section 2.2) MUST accept the claims key as the basis for retrieving the claims information.

Claims Create Form Claims Create Form (Section 3.3.2) is used to pass the Claims Notice acceptance information in a create command. The notice identifier (<launch:noticeID>) format, validation rules, and server processing is up to the interface between the server and the Trademark Validator. The CNIS associated with the Validator Identifier (Section 2.2) MUST generate a notice identifier compliant with the <launch:noticeID> element.

The following shows the Trademark Claims Phase registration flow:

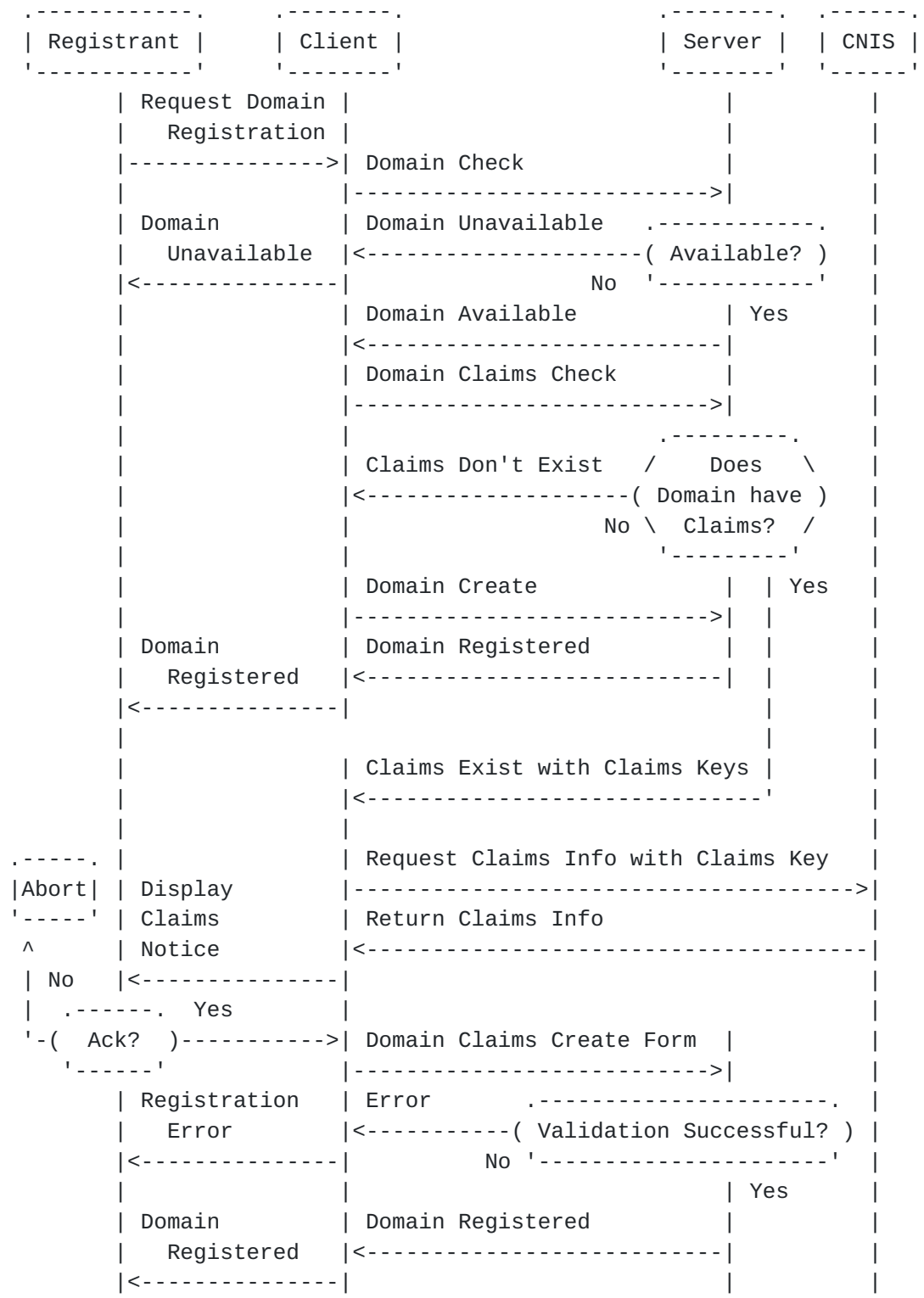

Figure 1

2.4. Status Values

A Launch Application or Launch Registration object MAY have a launch status value. The <launch:status> element is used to convey the launch status pertaining to the object, beyond what is specified in the object mapping. A Launch Application or Launch Registration MUST set the [RFC5731] "pendingCreate" status if a launch status is supported and the launch status is not one of the final statuses, including the "allocated" and "rejected" statuses.

The following status values are defined using the required "s" attribute:

pendingValidation: The initial state of a newly-created application or registration object. The application or registration requires validation, but the validation process has not yet completed.
validated: The application or registration meets relevant registry rules.
invalid: The application or registration does not validate according to registry rules. Server policies permitting, it may transition back into "pendingValidation" for revalidation, after modifications are made to ostensibly correct attributes that caused the validation failure.
pendingAllocation: The allocation of the application or registration is pending based on the results of some out-of-band process (for example, an auction).
allocated: The object corresponding to the application or registration has been provisioned. Is a possible end state of an application or registration object.
rejected: The application or registration object was not provisioned. Is a possible end state of an application or registration object.
custom: A custom status that is defined using the "name" attribute.

Each status value MAY be accompanied by a string of human-readable text that describes the rationale for the status applied to the object. The OPTIONAL "lang" attribute MAY be present to identify the language if the negotiated value is something other than the default value of "en" (English).

For extensibility the <launch:status> element includes an OPTIONAL "name" attribute that can define a sub-status or the full name of the status when the status value is "custom". The server SHOULD NOT use the "custom" status value.

Status values MAY be skipped. For example, an application or registration MAY immediately start at the "allocated" status or an application or registration MAY skip the "pendingAllocation" status.

If the launch phase does not require validation of a request, an application or registration MAY immediately skip to "pendingAllocation".

2.4.1. State Transition

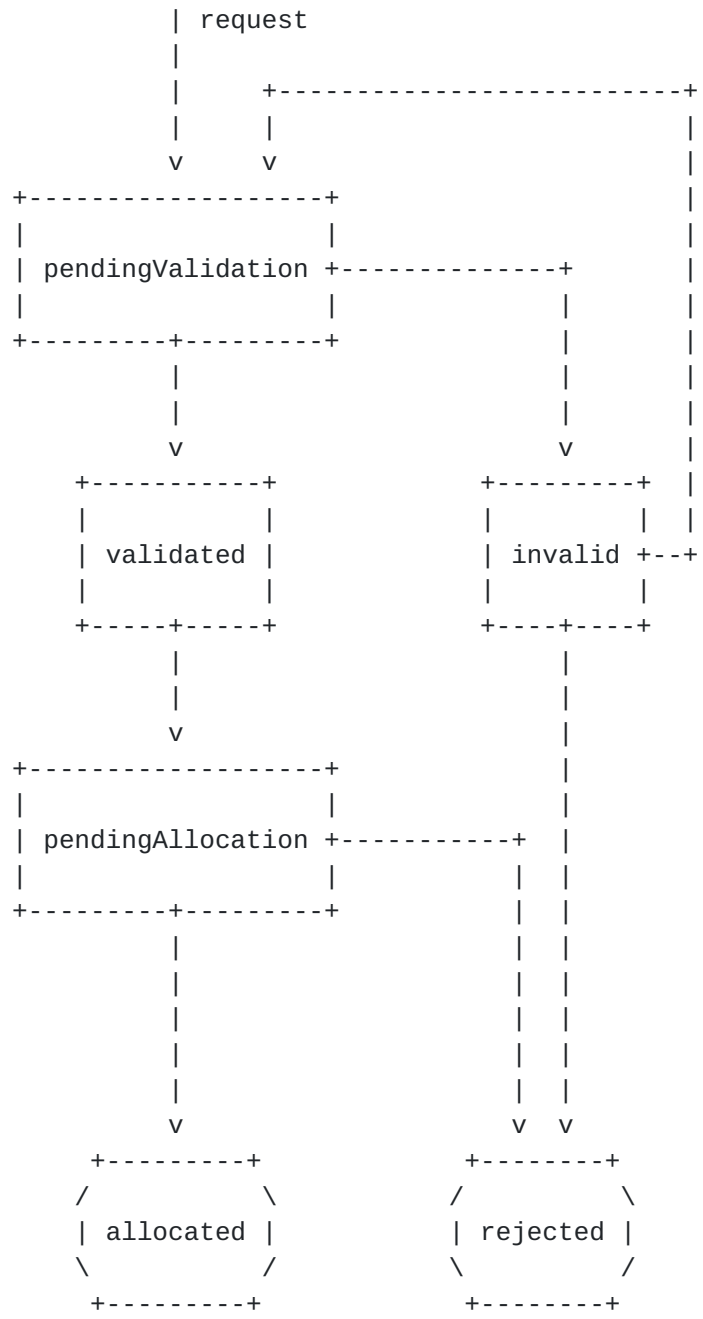

Figure 2

2.5. Poll Messaging

A Launch Application MUST and a Launch Registration MAY be handled as an EPP domain name object as specified in RFC 5731 [RFC5731] in "pendingCreate" status, with the launch status values defined in Section 2.4. As a Launch Application or Launch Registration transitions between the status values defined in Section 2.4, the server SHOULD insert poll messages, per [RFC5730], for the applicable intermediate statuses, including the "pendingValidation", "validated", "pendingAllocation, and "invalid" statuses, using the <domain:infData> element with the <launch:infData> extension. The <domain:infData> element MAY contain non-mandatory information, like contact and name server information. Also, further extensions that would normally be included in the response of a <domain:info> command, per [RFC5731], MAY be included. For the final statuses, including the "allocated" and "rejected" statuses, the server MUST insert a <domain:panData> poll message, per [RFC5731], with the <launch:infData> extension.

The following is an example poll message for a Launch Application that has transitioned to the "pendingAllocation" state.

```
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="1301">
S:      <msg>Command completed successfully; ack to dequeue</msg>
S:    </result>
S:    <msgQ count="5" id="12345">
S:      <qDate>2013-04-04T22:01:00.0Z</qDate>
S:      <msg>Application pendingAllocation.</msg>
S:    </msgQ>
S:    <resData>
S:      <domain:infData
S:       xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>domain.example</domain:name>
S:        ...
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <launch:infData
S:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
S:        <launch:phase>sunrise</launch:phase>
S:        <launch:applicationID>abc123</launch:applicationID>
S:        <launch:status s="pendingAllocation"/>
S:      </launch:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

The following is an example <domain:panData> poll message for an "allocated" Launch Application.

```
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="1301">
S:      <msg>Command completed successfully; ack to dequeue</msg>
S:    </result>
S:    <msgQ count="5" id="12345">
S:      <qDate>2013-04-04T22:01:00.0Z</qDate>
S:      <msg>Application successfully allocated.</msg>
S:    </msgQ>
S:    <resData>
S:      <domain:panData
S:       xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name paResult="1">domain.example</domain:name>
S:        <domain:paTRID>
S:          <clTRID>ABC-12345</clTRID>
S:          <svTRID>54321-XYZ</svTRID>
S:        </domain:paTRID>
S:        <domain:paDate>2013-04-04T22:00:00.0Z</domain:paDate>
S:      </domain:panData>
S:    </resData>
S:    <extension>
S:      <launch:infData
S:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
S:        <launch:phase>sunrise</launch:phase>
S:        <launch:applicationID>abc123</launch:applicationID>
S:        <launch:status s="allocated"/>
S:      </launch:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>BCD-23456</clTRID>
S:      <svTRID>65432-WXY</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

The following is an example <domain:panData> poll message for an "allocated" Launch Registration.

```
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="1301">
S:      <msg>Command completed successfully; ack to dequeue</msg>
S:    </result>
S:    <msgQ count="5" id="12345">
S:      <qDate>2013-04-04T22:01:00.0Z</qDate>
S:      <msg>Registration successfully allocated.</msg>
S:    </msgQ>
S:    <resData>
S:      <domain:panData
S:       xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name paResult="1">domain.example</domain:name>
S:        <domain:paTRID>
S:          <clTRID>ABC-12345</clTRID>
S:          <svTRID>54321-XYZ</svTRID>
S:        </domain:paTRID>
S:        <domain:paDate>2013-04-04T22:00:00.0Z</domain:paDate>
S:      </domain:panData>
S:    </resData>
S:    <extension>
S:      <launch:infData
S:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
S:        <launch:phase>sunrise</launch:phase>
S:        <launch:status s="allocated"/>
S:      </launch:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>BCD-23456</clTRID>
S:      <svTRID>65432-WXY</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

2.6. Mark Validation Models

A server MUST support at least one of the following models for validating trademark information:

code Use of a mark code by itself to validate that the mark matches the domain name. This model is supported using the <launch:codeMark> element with just the <launch:code> element.

mark The mark information is passed without any other validation element. The server will use some custom form of validation to

validate that the mark information is authentic. This model is supported using the <launch:codeMark> element with just the <mark:mark> (Section 2.6.2) element.

code with mark: A code is used along with the mark information by the server to validate the mark utilizing an external party. The code represents some form of secret that matches the mark information passed. This model is supported using the <launch:codeMark> element that contains both the <launch:code> and the <mark:mark> (Section 2.6.2) elements.

signed mark: The mark information is digitally signed as described in the Digital Signature (Section 2.6.3) section. The digital signature can be directly validated by the server using the public key of the external party that created the signed mark using its private key. This model is supported using the <smd:signedMark> (Section 2.6.3.1) and <smd:encodedSignedMark> (Section 2.6.3.2) elements.

More than one <launch:codeMark>, <smd:signedMark> (Section 2.6.3.1), or <smd:encodedSignedMark> (Section 2.6.3.2) element MAY be specified. The maximum number of marks per domain name is up to server policy.

2.6.1. <launch:codeMark> element

The <launch:codeMark> element that is used by the "code", "mark", and "code with mark" validation models, has the following child elements:

<launch:code>: OPTIONAL mark code used to validate the <mark:mark> (Section 2.6.2) information. The mark code is be a mark-specific secret that the server can verify against a third party. The OPTIONAL "validatorID" attribute is the Validator Identifier (Section 2.2) whose value indicates which Trademark Validator that the code originated from, with no default value.

<mark:mark>: OPTIONAL mark information with child elements defined in the Mark (Section 2.6.2) section.

The following is an example <launch:codeMark> element with both a <launch:code> and <mark:mark> (Section 2.6.2) element.

```
<launch:codeMark>
  <launch:code validatorID="sample">
    49FD46E6C4B45C55D4AC</launch:code>
  <mark:mark xmlns:mark="urn:ietf:params:xml:ns:mark-1.0">
    ...
  </mark:mark>
</launch:codeMark>
```

2.6.2. <mark:mark> element

A <mark:mark> element describes an applicant's prior right to a given domain name that is used with the "mark", "mark with code", and the "signed mark" validation models. The <mark:mark> element is defined in [RFC7848]. A new mark format can be supported by creating a new XML schema for the mark that has an element that substitutes for the <mark:abstractMark> element from [RFC7848].

2.6.3. Digital Signature

Digital signatures MAY be used by the server to validate either the mark information, when using the "signed mark" validation model with the <smd:signedMark> (Section 2.6.3.1) element or the <smd:encodedSignedMark> (Section 2.6.3.2) element.

2.6.3.1. <smd:signedMark> element

The <smd:signedMark> element contains the digitally signed mark information. The <smd:signedMark> element is defined in [RFC7848]. A new signed mark format can be supported by creating a new XML schema for the signed mark that has an element that substitutes for the <smd:abstractSignedMark> element from [RFC7848].

2.6.3.2. <smd:encodedSignedMark> element

The <smd:encodedSignedMark> element contains an encoded form of the digitally signed <smd:signedMark> (Section 2.6.3.1) element. The <smd:encodedSignedMark> element is defined in [RFC7848]. A new encoded signed mark format can be supported by creating a new XML schema for the encoded signed mark that has an element that substitutes for the <smd:encodedSignedMark> element from [RFC7848].

3. 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 the Launch Phase Extension.

This mapping is designed to be flexible, requiring only a minimum set of required elements.

While it is meant to serve several use cases, it does not prescribe any interpretation by the client or server. Such processing is typically highly policy-dependent and therefore specific to implementations.

Operations on application objects are done via one or more of the existing EPP verbs defined in the EPP domain name mapping [RFC5731]. Registries MAY choose to support a subset of the operations.

3.1. EPP <check> Command

There are three forms of the extension to the EPP <check> command: the Claims Check Form (Section 3.1.1), the Availability Check Form (Section 3.1.2), and the Trademark Check Form (Section 3.1.3). The <launch:check> element "type" attribute defines the form, with the value of "claims" for the Claims Check Form (Section 3.1.1), with the value of "avail" for the Availability Check Form (Section 3.1.2), and with the value of "trademark" for the Trademark Check Form (Section 3.1.3). The default value of the "type" attribute is "claims". The forms supported by the server is determined by server policy. The server MUST return an EPP error result code of 2307 if it receives a check form that is not supported.

3.1.1. Claims Check Form

The Claims Check Form defines a new command called the Claims Check Command that is used to determine whether or not there are any matching trademarks, in the specified launch phase, for each domain name passed in the command, that requires the use of the "Claims Create Form" on a Domain Create Command. The availability check information defined in the EPP domain name mapping [RFC5731] MUST NOT be returned for the Claims Check Command. This form is the default form and MAY be explicitly identified by setting the <launch:check> "type" attribute to "claims".

Instead of returning whether the domain name is available, the Claims Check Command will return whether or not at least one matching trademark exists for the domain name, that requires the use of the "Claims Create Form" on a Domain Create Command. If there is at least one matching trademark that exists for the domain name, a <launch:claimKey> element is returned. The client MAY then use the value of the <launch:claimKey> element to obtain information needed to generate the Trademark Claims Notice from Trademark Validator based on the Validator Identifier (Section 2.2). The unique notice identifier of the Trademark Claims Notice MUST be passed in the <launch:noticeID> element of the extension to the Create Command (Section 3.3).

The <domain:name> elements in the EPP <check> command of EPP domain name mapping [RFC5731] define the domain names to check for matching trademarks. The <launch:check> element contains the following child elements:

<launch:phase> Contains the value of the active launch phase of the server. The server SHOULD validate the value according to Section 2.3.

Example Claims Check command using the <check> domain command and the <launch:check> extension with the "type" explicitly set to "claims", to determine if "domain1.example", "domain2.example", and "domain3.example" require claims notices during the "claims" launch phase:

```
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:    <domain:check
C:     xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:      <domain:name>domain1.example</domain:name>
C:      <domain:name>domain2.example</domain:name>
C:      <domain:name>domain3.example</domain:name>
C:    </domain:check>
C:   </check>
C:   <extension>
C:    <launch:check
C:     xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
C:     type="claims">
C:      <launch:phase>claims</launch:phase>
C:    </launch:check>
C:   </extension>
C:   <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

If the <check> command has been processed successfully, the EPP <response> MUST contain an <extension> <launch:chkData> element that identifies the launch namespace. The <launch:chkData> element contains the following child elements:

<launch:phase> The phase that mirrors the <launch:phase> element included in the <launch:check>.

<launch:cd> One or more <launch:cd> elements that contain the following child elements:

<launch:name> Contains the fully qualified name of the queried domain name. This element MUST contain an "exists" attribute whose value indicates if a matching trademark exists for the domain name that requires the use of the "Claims Create Form" on a Domain Create Command. A value of "1" (or "true") means

that a matching trademark does exist and that the "Claims Create Form" is required on a Domain Create Command. A value of "0" (or "false") means that a matching trademark does not exist or that the "Claims Create Form" is NOT required on a Domain Create Command.

<launch:claimKey> Zero or more OPTIONAL claim keys that MAY be passed to a third-party Trademark Validator such as the ICANN Trademark Clearinghouse (TMCH) for querying the information needed to generate a Trademark Claims Notice. The <launch:claimKey> is used as the key for the query in place of the domain name to securely query the service without using a well-known value like a domain name. The OPTIONAL "validatorID" attribute is the Validator Identifier (Section 2.2) whose value indicates which Trademark Validator to query for the Claims Notice information, with the default being the ICANN TMCH. The "validatorID" attribute MAY reference a non-trademark claims clearinghouse identifer to support other forms of claims notices.

Example Claims Check response when a claims notice is not required for the domain name domain1.example, a claims notice is required for the domain name domain2.example in the "tmch", and a claims notice is required for the domain name domain3.example in the "tmch" and "custom-tmch", for the "claims" launch phase:

```
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:     <launch:chkData
S:      xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
S:      <launch:phase>claims</launch:phase>
S:      <launch:cd>
S:        <launch:name exists="0">domain1.example</launch:name>
S:      </launch:cd>
S:      <launch:cd>
S:        <launch:name exists="1">domain2.example</launch:name>
S:        <launch:claimKey validatorID="tmch">
S:        2013041500/2/6/9/rJ1NrDO92vDsAzf7EQzgjX4R0000000001
S:        </launch:claimKey>
S:      </launch:cd>
S:      <launch:cd>
S:        <launch:name exists="1">domain3.example</launch:name>
S:        <launch:claimKey validatorID="tmch">
S:        2013041500/2/6/9/rJ1NrDO92vDsAzf7EQzgjX4R0000000001
S:        </launch:claimKey>
S:        <launch:claimKey validatorID="custom-tmch">
S:        20140423200/1/2/3/rJ1Nr2vDsAzasdff7EasdfgjX4R000000002
S:        </launch:claimKey>
S:      </launch:cd>
S:     </launch:chkData>
S:    </extension>
S:    <trID>
S:     <clTRID>ABC-12345</clTRID>
S:     <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.1.2. Availability Check Form

The Availability Check Form defines additional elements to extend the EPP <check> command described in the EPP domain name mapping [RFC5731]. No additional elements are defined for the EPP <check>

response. This form MUST be identified by setting the <launch:check> "type" attribute to "avail".

The EPP <check> command is used to determine if an object can be provisioned within a repository. Domain names may be made available only in unique launch phases, whilst remaining unavailable for concurrent launch phases. In addition to the elements expressed in the <domain:check>, the command is extended with the <launch:check> element that contains the following child elements:

<launch:phase> The launch phase to which domain name availability should be determined. The server SHOULD validate the value and return an EPP error result code of 2306 if it is invalid.

Example Availability Check Form command using the <check> domain command and the <launch:check> extension with the "type" set to "avail", to determine the availability of two domain names in the "idn-release" custom launch phase:

```
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:    <domain:check
C:     xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:      <domain:name>domain1.example</domain:name>
C:      <domain:name>domain2.example</domain:name>
C:    </domain:check>
C:   </check>
C:   <extension>
C:    <launch:check
C:     xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
C:     type="avail">
C:      <launch:phase name="idn-release">custom</launch:phase>
C:    </launch:check>
C:   </extension>
C:   <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

The Availability Check Form does not define any extension to the response of an <check> domain command. After processing the command, the server replies with a standard EPP response as defined in the EPP domain name mapping [RFC5731].

3.1.3. Trademark Check Form

The Trademark Check Form defines a new command called the Trademark Check Command that is used to determine whether or not there are any matching trademarks for each domain name passed in the command, independent of the active launch phase of the server and whether the "Claims Create Form" is required on a Domain Create Command. The availability check information defined in the EPP domain name mapping [RFC5731] MUST NOT be returned for the Trademark Check Command. This form MUST be identified by setting the <launch:check> "type" attribute to "trademark".

Instead of returning whether the domain name is available, the Trademark Check Command will return whether or not at least one matching trademark exists for the domain name. If there is at least one matching trademark that exists for the domain name, a <launch:claimKey> element is returned. The client MAY then use the value of the <launch:claimKey> element to obtain Trademark Claims Notice information from Trademark Validator based on the Validator Identifier (Section 2.2).

The <domain:name> elements in the EPP <check> command of EPP domain name mapping [RFC5731] define the domain names to check for matching trademarks. The <launch:check> element does not contain any child elements with the "Trademark Check Form":

Example Trademark Check command using the <check> domain command and the <launch:check> extension with the "type" set to "trademark", to determine if "domain1.example", "domain2.example", and "domain3.example" have any matching trademarks:

```
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:    <domain:check
C:     xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:      <domain:name>domain1.example</domain:name>
C:      <domain:name>domain2.example</domain:name>
C:      <domain:name>domain3.example</domain:name>
C:    </domain:check>
C:   </check>
C:   <extension>
C:    <launch:check
C:     xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
C:     type="trademark"/>
C:   </extension>
C:   <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

If the <check> command has been processed successfully, the EPP <response> MUST contain an <extension> <launch:chkData> element that identifies the launch namespace. The <launch:chkData> element contains the following child elements:

<launch:cd> One or more <launch:cd> elements that contain the following child elements:

<launch:name> Contains the fully qualified name of the queried domain name. This element MUST contain an "exists" attribute whose value indicates if a matching trademark exists for the domain name. A value of "1" (or "true") means that a matching trademark does exist. A value of "0" (or "false") means that a matching trademark does not exist.

<launch:claimKey> Zero or more OPTIONAL claim keys that MAY be passed to a third-party Trademark Validator such as the ICANN Trademark Clearinghouse (TMCH) for querying the information needed to generate a Trademark Claims Notice. The <launch:claimKey> is used as the key for the query in place of the domain name to securely query the service without using a well-known value like a domain name. The OPTIONAL "validatorID" attribute is the Validator Identifier

(Section 2.2) whose value indicates which Trademark Validator to query for the Claims Notice information, with the default being the ICANN TMCH. The "validatorID" attribute MAY reference a non-trademark claims clearinghouse identifer to support other forms of claims notices.

Example Trademark Check response when no matching trademarks are found for the domain name domain1.example, matching trademarks are found for the domain name domain2.example in the "tmch", matching trademarks are found for domain name domain3.example in the "tmch" and "custom-tmch", for the "claims" launch phase:

```
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:     <launch:chkData
S:      xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
S:      <launch:cd>
S:        <launch:name exists="0">domain1.example</launch:name>
S:      </launch:cd>
S:      <launch:cd>
S:        <launch:name exists="1">domain2.example</launch:name>
S:        <launch:claimKey validatorID="tmch">
S:        2013041500/2/6/9/rJ1NrDO92vDsAzf7EQzgjX4R0000000001
S:        </launch:claimKey>
S:      </launch:cd>
S:      <launch:cd>
S:        <launch:name exists="1">domain3.example</launch:name>
S:        <launch:claimKey validatorID="tmch">
S:        2013041500/2/6/9/rJ1NrDO92vDsAzf7EQzgjX4R0000000001
S:        </launch:claimKey>
S:        <launch:claimKey validatorID="custom-tmch">
S:        20140423200/1/2/3/rJ1Nr2vDsAzasdff7EasdfgjX4R000000002
S:        </launch:claimKey>
S:      </launch:cd>
S:     </launch:chkData>
S:    </extension>
S:    <trID>
S:     <clTRID>ABC-12345</clTRID>
S:     <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.2. EPP <info> Command

This extension defines additional elements to extend the EPP <info> command and response to be used in conjunction with the EPP domain name mapping [RFC5731].

The EPP <info> command is used to retrieve information for a launch phase registration or application. The Application Identifier (Section 2.1) returned in the <launch:creData> element of the create response (Section 3.3) can be used for retrieving information for a Launch Application. A <launch:info> element is sent along with the regular <info> domain command. The <launch:info> element includes an OPTIONAL "includeMark" boolean attribute, with a default value of "false", to indicate whether or not to include the mark in the response. The <launch:info> element contains the following child elements:

<launch:phase> The phase during which the application or registration was submitted or is associated with. Server policy defines the phases that are supported. The server SHOULD validate the value and return an EPP error result code of 2306 if it is invalid.

<launch:applicationID> OPTIONAL application identifier of the Launch Application.

Example <info> domain command with the <launch:info> extension to retrieve information for the sunrise application for domain.example and application identifier "abc123":

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:  <command>
C:   <info>
C:    <domain:info
C:     xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:      <domain:name>domain.example</domain:name>
C:    </domain:info>
C:   </info>
C:   <extension>
C:    <launch:info
C:     xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
C:       includeMark="true">
C:      <launch:phase>sunrise</launch:phase>
C:      <launch:applicationID>abc123</launch:applicationID>
C:    </launch:info>
C:   </extension>
C:   <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

Example <info> domain command with the <launch:info> extension to retrieve information for the sunrise registration for domain.example:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:  <command>
C:   <info>
C:    <domain:info
C:     xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:      <domain:name>domain.example</domain:name>
C:    </domain:info>
C:   </info>
C:   <extension>
C:    <launch:info
C:     xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:      <launch:phase>sunrise</launch:phase>
C:    </launch:info>
C:   </extension>
C:   <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

If the query was successful, the server replies with a <launch:infData> element along with the regular EPP <resData>. The <launch:infData> contains the following child elements:

<launch:phase> The phase during which the application was submitted, or is associated with, that matches the associated <info> command <launch:phase>.
<launch:applicationID> OPTIONAL Application Identifier of the Launch Application.
<launch:status> OPTIONAL status of the Launch Application using one of the supported status values (Section 2.4).
<mark:mark> Zero or more <mark:mark> (Section 2.6.2) elements only if the "includeMark" attribute is "true" in the command.

Example <info> domain response using the <launch:infData> extension with the mark information:

```
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>domain.example</domain:name>
S:        <domain:roid>EXAMPLE1-REP</domain:roid>
S:        <domain:status s="pendingCreate"/>
S:        <domain:registrant>jd1234</domain:registrant>
S:        <domain:contact type="admin">sh8013</domain:contact>
S:        <domain:contact type="tech">sh8013</domain:contact>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2012-04-03T22:00:00.0Z</domain:crDate>
S:        <domain:authInfo>
S:          <domain:pw>2fooBAR</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <launch:infData
S:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
S:        <launch:phase>sunrise</launch:phase>
S:          <launch:applicationID>abc123</launch:applicationID>
S:          <launch:status s="pendingValidation"/>
S:          <mark:mark
S:            xmlns:mark="urn:ietf:params:xml:ns:mark-1.0">
S:              ...
S:         </mark:mark>
S:      </launch:infData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.3. EPP <create> Command

There are four forms of the extension to the EPP <create> command that include the Sunrise Create Form (Section 3.3.1), the Claims Create Form (Section 3.3.2), the General Create Form (Section 3.3.3), and the Mixed Create Form (Section 3.3.4). The form is dependent on the supported launch phases (Section 2.3) as defined below.

sunrise The EPP <create> command with the "sunrise" launch phase is used to submit a registration with trademark information that can be verified by the server with the <domain:name> value. The Sunrise Create Form (Section 3.3.1) is used for the "sunrise" launch phase.

landrush The EPP <create> command with the "landrush" launch phase MAY use the General Create Form (Section 3.3.3) to explicitly specify the phase and optionally define the expected type of object to create.

claims The EPP <create> command with the "claims" launch phase is used to pass the information associated with the presentation and acceptance of the Claims Notice. The Claims Create Form (Section 3.3.2) is used and the General Create Form (Section 3.3.3) MAY be used for the "claims" launch phase.

open The EPP <create> command with the "open" launch phase is undefined but the form supported is up to server policy. Use of the Claims Create Form (Section 3.3.2) MAY be used to pass the information associated with the presentation and acceptance of the Claims Notice if required for the domain name.

custom The EPP <create> command with the "custom" launch phase is undefined but the form supported is up to server policy.

3.3.1. Sunrise Create Form

The Sunrise Create Form of the extension to the EPP domain name mapping [RFC5731] includes the verifiable trademark information that the server uses to match against the domain name to authorize the domain create. A server MUST support one of four models in Claim Validation Models (Section 2.6) to verify the trademark information passed by the client.

A <launch:create> element is sent along with the regular <create> domain command. The <launch:create> element has an OPTIONAL "type" attribute that defines the expected type of object ("application" or "registration") to create. The server SHOULD validate the "type" attribute, when passed, against the type of object that will be created, and return an EPP error result code of 2306 if the type is incorrect. The <launch:create> element contains the following child elements:

<launch:phase> The identifier for the launch phase. The server SHOULD validate the value according to Section 2.3.
<launch:codeMark> or <smd:signedMark> or <smd:encodedSignedMark>

<launch:codeMark> Zero or more <launch:codeMark> elements. The <launch:codeMark> child elements are defined in the <launch:codeMark> element (Section 2.6.1) section.
<smd:signedMark> Zero or more <smd:signedMark> elements. The <smd:signedMark> child elements are defined in the <smd:signedMark> element (Section 2.6.3.1) section.
<smd:encodedSignedMark> Zero or more <smd:encodedSignedMark> elements. The <smd:encodedSignedMark> child elements are defined in the <smd:encodedSignedMark> element (Section 2.6.3.2) section.

The following is an example <create> domain command using the <launch:create> extension, following the "code" validation model, with multiple sunrise codes:

```
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>domain.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:        <launch:phase>sunrise</launch:phase>
C:        <launch:codeMark>
C:          <launch:code validatorID="sample1">
C:            49FD46E6C4B45C55D4AC</launch:code>
C:        </launch:codeMark>
C:        <launch:codeMark>
C:          <launch:code>49FD46E6C4B45C55D4AD</launch:code>
C:        </launch:codeMark>
C:        <launch:codeMark>
C:          <launch:code validatorID="sample2">
C:            49FD46E6C4B45C55D4AE</launch:code>
C:        </launch:codeMark>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

The following is an example <create> domain command using the <launch:create> extension, following the "mark" validation model, with the mark information:

```
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>domainone.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:        <launch:phase>sunrise</launch:phase>
C:        <launch:codeMark>
C:          <mark:mark
C:            xmlns:mark="urn:ietf:params:xml:ns:mark-1.0">
C:            ...
C:          </mark:mark>
C:        </launch:codeMark>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

The following is an example <create> domain command using the <launch:create> extension, following the "code with mark" validation model, with a code and mark information:

```
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>domain.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:        <launch:phase>sunrise</launch:phase>
C:        <launch:codeMark>
C:          <launch:code validatorID="sample">
C:            49FD46E6C4B45C55D4AC</launch:code>
C:          <mark:mark
C:           xmlns:mark="urn:ietf:params:xml:ns:mark-1.0">
C:           ...
C:          </mark:mark>
C:        </launch:codeMark>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

The following is an example <create> domain command using the <launch:create> extension, following the "signed mark" validation model, with the signed mark information for a sunrise application:

```
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>domainone.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
C:       type="application">
C:        <launch:phase>sunrise</launch:phase>
C:        <smd:signedMark id="signedMark"
C:         xmlns:smd="urn:ietf:params:xml:ns:signedMark-1.0">
C:         ...
C:        </smd:signedMark>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

The following is an example <create> domain command using the <launch:create> extension, following the "signed mark" validation model, with the base64 encoded signed mark information:

```
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>domainone.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:        <launch:phase>sunrise</launch:phase>
C:        <smd:encodedSignedMark
C:         xmlns:smd="urn:ietf:params:xml:ns:signedMark-1.0">
C:         ...
C:        </smd:encodedSignedMark>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

3.3.2. Claims Create Form

The Claims Create Form of the extension to the EPP domain name mapping [RFC5731] includes the information related to the registrant's acceptance of the Claims Notice.

A <launch:create> element is sent along with the regular <create> domain command. The <launch:create> element has an OPTIONAL "type" attribute that defines the expected type of object ("application" or "registration") to create. The server SHOULD validate the "type" attribute, when passed, against the type of object that will be created, and return an EPP error result code of 2306 if the type is incorrect. The <launch:create> element contains the following child elements:

<launch:phase> Contains the value of the active launch phase of the server. The server SHOULD validate the value according to Section 2.3.
<launch:notice> One or more <launch:notice> elements that contain the following child elements:

<launch:noticeID> Unique notice identifier for the Claims Notice. The <launch:noticeID> element has an OPTIONAL "validatorID" attribute is the Validator Identifier (Section 2.2) whose value indicates which Trademark Validator is the source of the claims notice, with the default being the ICANN TMCH.
<launch:notAfter> Expiry of the claims notice.
<launch:acceptedDate> Contains the date and time that the claims notice was accepted.

The following is an example <create> domain command using the <launch:create> extension with the <launch:notice> information for the "tmch" and the "custom-tmch" validators, for the "claims" launch phase:

```
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>domain.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:        <launch:phase>claims</launch:phase>
C:        <launch:notice>
C:          <launch:noticeID validatorID="tmch">
C:          370d0b7c92233720368547758O7</launch:noticeID>
C:          <launch:notAfter>2014-06-19T10:00:00.0Z
C:          </launch:notAfter>
C:          <launch:acceptedDate>2014-06-19T09:00:00.0Z
C:          </launch:acceptedDate>
C:        </launch:notice>
C:        <launch:notice>
C:          <launch:noticeID validatorID="custom-tmch">
C:          470d0b7c9223654313275808</launch:noticeID>
C:          <launch:notAfter>2014-06-19T10:00:00.0Z
C:          </launch:notAfter>
C:          <launch:acceptedDate>2014-06-19T09:00:30.0Z
C:          </launch:acceptedDate>
C:        </launch:notice>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

3.3.3. General Create Form

The General Create Form of the extension to the EPP domain name mapping [RFC5731] includes the launch phase and optionally the object type to create. The OPTIONAL "type" attribute defines the expected type of object ("application" or "registration") to create. The server SHOULD validate the "type" attribute, when passed, against the type of object that will be created, and return an EPP error result code of 2306 if the type is incorrect.

A <launch:create> element is sent along with the regular <create> domain command. The <launch:create> element contains the following child elements:

<launch:phase> Contains the value of the active launch phase of the server. The server SHOULD validate the value according to Section 2.3.

The following is an example <create> domain command using the <launch:create> extension for a "landrush" launch phase application:

```
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>domain.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
C:       type="application">
C:        <launch:phase>landrush</launch:phase>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

3.3.4. Mixed Create Form

The Mixed Create Form supports a mix of the create forms, where for example the Sunrise Create Form (Section 3.3.1) and the Claims Create Form (Section 3.3.2) MAY be supported in a single command by including both the verified trademark information and the information related to the registrant's acceptance of the Claims Notice. The server MAY support the Mixed Create Form. The "custom" launch phase SHOULD be used when using the Mixed Create Form.

The following is an example <create> domain command using the <launch:create> extension, with using a mix of the Sunrise Create Form (Section 3.3.1) and the Claims Create Form (Section 3.3.2) by including both a mark and a notice:

```
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>domainone.example</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <launch:create
C:       xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
C:       type="application">
C:        <launch:phase name="non-tmch-sunrise">custom</launch:phase>
C:        <launch:codeMark>
C:          <mark:mark
C:            xmlns:mark="urn:ietf:params:xml:ns:mark-1.0">
C:            ...
C:          </mark:mark>
C:        </launch:codeMark>
C:        <launch:notice>
C:          <launch:noticeID validatorID="tmch">
C:            49FD46E6C4B45C55D4AC
C:          </launch:noticeID>
C:          <launch:notAfter>2012-06-19T10:00:10.0Z
C:          </launch:notAfter>
C:          <launch:acceptedDate>2012-06-19T09:01:30.0Z
C:          </launch:acceptedDate>
C:        </launch:notice>
C:      </launch:create>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

3.3.5. Create Response

If the create was successful, the server MAY add a <launch:creData> element along to the regular EPP <resData> to indicate the server generated Application Identifier (Section 2.1), when multiple applications of a given domain name are supported; otherwise no extension is included with the regular EPP <resData>. The <launch:creData> element contains the following child elements:

<launch:phase> The phase of the application that mirrors the <launch:phase> element included in the <launch:create>.
<launch:applicationID> The application identifier of the application.

An example response when multiple overlapping applications are supported by the server:

```
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:creData
S:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:       <domain:name>domain.example</domain:name>
S:       <domain:crDate>2010-08-10T15:38:26.623854Z</domain:crDate>
S:      </domain:creData>
S:    </resData>
S:    <extension>
S:      <launch:creData
S:        xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
S:        <launch:phase>sunrise</launch:phase>
S:        <launch:applicationID>2393-9323-E08C-03B1
S:        </launch:applicationID>
S:      </launch:creData>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.4. EPP <update> Command

This extension defines additional elements to extend the EPP <update> command to be used in conjunction with the domain name mapping.

A client MUST NOT pass the extension on an EPP <update> command to a server that does not support launch applications. A server that does not support launch applications during its launch phase MUST return an EPP error result code of 2102 when receiving an EPP <update> command with the extension.

Registry policies permitting, clients may update an application object by submitting an EPP <update> command along with a <launch:update> element to indicate the application object to be updated. The <launch:update> element contains the following child elements:

<launch:phase> The phase during which the application was submitted or is associated with. The server SHOULD validate the value and return an EPP error result code of 2306 if it is invalid.
<launch:applicationID> The application identifier for which the client wishes to update.

The following is an example <update> domain command with the <launch:update> extension to add and remove a name server of a sunrise application with the application identifier "abc123":

```
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>domain.example</domain:name>
C:        <domain:add>
C:            <domain:ns>
C:              <domain:hostObj>ns2.domain.example</domain:hostObj>
C:            </domain:ns>
C:          </domain:add>
C:          <domain:rem>
C:            <domain:ns>
C:              <domain:hostObj>ns1.domain.example</domain:hostObj>
C:            </domain:ns>
C:          </domain:rem>
C:      </domain:update>
C:    </update>
C:    <extension>
C:    <launch:update
C:     xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:      <launch:phase>sunrise</launch:phase>
C:      <launch:applicationID>abc123</launch:applicationID>
C:    </launch:update>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

This extension does not define any extension to the response of an <update> domain command. After processing the command, the server replies with a standard EPP response as defined in the EPP domain name mapping [RFC5731].

3.5. EPP <delete> Command

This extension defines additional elements to extend the EPP <delete> command to be used in conjunction with the domain name mapping.

A client MUST NOT pass the extension on an EPP <delete> command to a server that does not support launch applications. A server that does not support launch applications during its launch phase MUST return

an EPP error result code of 2102 when receiving an EPP <delete> command with the extension.

Registry policies permitting, clients MAY withdraw an application by submitting an EPP <delete> command along with a <launch:delete> element to indicate the application object to be deleted. The <launch:delete> element contains the following child elements:

<launch:phase> The phase during which the application was submitted or is associated with. The server SHOULD validate the value and return an EPP error result code of 2306 if it is invalid.
<launch:applicationID> The application identifier for which the client wishes to delete.

The following is an example <delete> domain command with the <launch:delete> extension:

```
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:    <domain:delete
C:     xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:      <domain:name>domain.example</domain:name>
C:    </domain:delete>
C:   </delete>
C:   <extension>
C:    <launch:delete
C:     xmlns:launch="urn:ietf:params:xml:ns:launch-1.0">
C:      <launch:phase>sunrise</launch:phase>
C:      <launch:applicationID>abc123</launch:applicationID>
C:    </launch:delete>
C:   </extension>
C:   <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

This extension does not define any extension to the response of a <delete> domain command. After processing the command, the server replies with a standard EPP response as defined in the EPP domain name mapping [RFC5731].

3.6. EPP <renew> Command

This extension does not define any extension to the EPP <renew> command or response described in the EPP domain name mapping [RFC5731].

3.7. EPP <transfer> Command

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

4. Formal Syntax

One schema is presented here that is the EPP Launch Phase Mapping schema.

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.

4.1. Launch Schema

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```
BEGIN
<?xml version="1.0" encoding="UTF-8"?>
<schema
  targetNamespace="urn:ietf:params:xml:ns:launch-1.0"
  xmlns:launch="urn:ietf:params:xml:ns:launch-1.0"
  xmlns:eppcom="urn:ietf:params:xml:ns:eppcom-1.0"
  xmlns:mark="urn:ietf:params:xml:ns:mark-1.0"
  xmlns:smd="urn:ietf:params:xml:ns:signedMark-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:mark-1.0"/>
  <import namespace="urn:ietf:params:xml:ns:signedMark-1.0"/>

  <annotation>
    <documentation>
      Extensible Provisioning Protocol v1.0
      domain name extension schema
      for the launch phase processing.
    </documentation>
  </annotation>

  <!--
  Child elements found in EPP commands.
  -->
  <element name="check" type="launch:checkType"/>
  <element name="info" type="launch:infoType"/>
  <element name="create" type="launch:createType"/>
  <element name="update" type="launch:idContainerType"/>
  <element name="delete" type="launch:idContainerType"/>

  <!--
  Common container of id (identifier) element
  -->
  <complexType name="idContainerType">
    <sequence>
      <element name="phase"
      type="launch:phaseType"/>
      <element name="applicationID"
      type="launch:applicationIDType"/>
    </sequence>
  </complexType>

  <!--
```

```
     Definition for application identifier
     -->
     <simpleType name="applicationIDType">
       <restriction base="token"/>
     </simpleType>

     <!--
     Definition for launch phase.  Name is an optional attribute
     used to extend the phase type.  For example, when
     using the phase type value of "custom", the name
     can be used to specify the custom phase.
     -->
     <complexType name="phaseType">
       <simpleContent>
         <extension base="launch:phaseTypeValue">
           <attribute name="name" type="token"/>
         </extension>
       </simpleContent>
     </complexType>

     <!--
     Enumeration of for launch phase values.
     -->
     <simpleType name="phaseTypeValue">
         <restriction base="token">
           <enumeration value="sunrise"/>
           <enumeration value="landrush"/>
           <enumeration value="claims"/>
           <enumeration value="open"/>
           <enumeration value="custom"/>
       </restriction>
     </simpleType>


     <!--
     Definition for the sunrise code
     -->
     <simpleType name="codeValue">
       <restriction base="token">
         <minLength value="1"/>
       </restriction>
     </simpleType>

     <complexType name="codeType">
       <simpleContent>
         <extension base="launch:codeValue">
           <attribute name="validatorID"
           type="launch:validatorIDType" use="optional"/>
```

```
        </extension>
      </simpleContent>
    </complexType>

    <!--
    Definition for the notice identifier
    -->
    <simpleType name="noticeIDValue">
      <restriction base="token">
        <minLength value="1"/>
      </restriction>
    </simpleType>

    <complexType name="noticeIDType">
      <simpleContent>
        <extension base="launch:noticeIDValue">
          <attribute name="validatorID"
          type="launch:validatorIDType" use="optional"/>
        </extension>
      </simpleContent>
    </complexType>

    <!--
    Definition for the validator identifier
    -->
    <simpleType name="validatorIDType">
      <restriction base="token">
        <minLength value="1"/>
      </restriction>
    </simpleType>

    <!--
    Possible status values for sunrise application
    -->
      <simpleType name="statusValueType">
      <restriction base="token">
          <enumeration value="pendingValidation"/>
          <enumeration value="validated"/>
          <enumeration value="invalid"/>
          <enumeration value="pendingAllocation"/>
          <enumeration value="allocated"/>
          <enumeration value="rejected"/>
          <enumeration value="custom"/>
        </restriction>
      </simpleType>

    <!--
    Status type definition
```

```
    -->
    <complexType name="statusType">
      <simpleContent>
        <extension base="normalizedString">
          <attribute name="s" type="launch:statusValueType"
            use="required"/>
          <attribute name="lang" type="language"
            default="en"/>
          <attribute name="name" type="token"/>
        </extension>
      </simpleContent>
    </complexType>

    <!--
    codeMark Type that contains an optional code
    with mark information.
    -->
    <complexType name="codeMarkType">
      <sequence>
      <element name="code" type="launch:codeType"
        minOccurs="0"/>
      <element ref="mark:abstractMark"
        minOccurs="0"/>
    </sequence>
    </complexType>

    <!--
    Child elements for the create command
    -->
    <complexType name="createType">
      <sequence>
        <element name="phase" type="launch:phaseType"/>
        <choice minOccurs="0">
          <element name="codeMark" type="launch:codeMarkType"
            maxOccurs="unbounded"/>
          <element ref="smd:abstractSignedMark"
           maxOccurs="unbounded"/>
          <element ref="smd:encodedSignedMark"
           maxOccurs="unbounded"/>
        </choice>
        <element name="notice"
         type="launch:createNoticeType"
         minOccurs="0" maxOccurs="unbounded"/>
      </sequence>
      <attribute name="type" type="launch:objectType"/>
    </complexType>

    <!--
```

```
    Type of launch object
    -->
    <simpleType name="objectType">
        <restriction base="token">
          <enumeration value="application"/>
          <enumeration value="registration"/>
      </restriction>
    </simpleType>


    <!--
    Child elements of the create notice element.
    -->
    <complexType name="createNoticeType">
      <sequence>
        <element name="noticeID" type="launch:noticeIDType"/>
        <element name="notAfter" type="dateTime"/>
        <element name="acceptedDate" type="dateTime"/>
      </sequence>
    </complexType>


    <!--
    Child elements of check (Claims Check Command).
    -->
    <complexType name="checkType">
      <sequence>
        <element name="phase" type="launch:phaseType"
          minOccurs="0"/>
      </sequence>
      <attribute name="type" type="launch:checkFormType"
      default="claims"/>
    </complexType>


    <!--
    Type of check form
    (claims check or availability check)
    -->
    <simpleType name="checkFormType">
        <restriction base="token">
          <enumeration value="claims"/>
          <enumeration value="avail"/>
          <enumeration value="trademark"/>
      </restriction>
    </simpleType>
```

```
<!--
Child elements of info command.
-->
<complexType name="infoType">
  <sequence>
    <element name="phase" type="launch:phaseType"/>
    <element name="applicationID"
      type="launch:applicationIDType"
      minOccurs="0"/>
  </sequence>
  <attribute name="includeMark" type="boolean"
    default="false"/>
</complexType>

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

<!--
 <check> response elements.
 -->
<complexType name="chkDataType">
  <sequence>
    <element name="phase" type="launch:phaseType"
     minOccurs="0"/>
    <element name="cd" type="launch:cdType"
     maxOccurs="unbounded"/>
  </sequence>
</complexType>

<complexType name="cdType">
  <sequence>
    <element name="name" type="launch:cdNameType"/>
    <element name="claimKey" type="launch:claimKeyType"
     minOccurs="0" maxOccurs="unbounded"/>
  </sequence>
</complexType>

<complexType name="cdNameType">
  <simpleContent>
    <extension base="eppcom:labelType">
      <attribute name="exists" type="boolean"
       use="required"/>
    </extension>
  </simpleContent>
```

```
    </complexType>

    <complexType name="claimKeyType">
      <simpleContent>
        <extension base="token">
          <attribute name="validatorID"
          type="launch:validatorIDType" use="optional"/>
        </extension>
      </simpleContent>
    </complexType>

    <!--
    <info> response elements
    -->
    <complexType name="infDataType">
      <sequence>
        <element name="phase" type="launch:phaseType"/>
       <element name="applicationID"
        type="launch:applicationIDType"
        minOccurs="0"/>
       <element name="status" type="launch:statusType"
        minOccurs="0"/>
        <element ref="mark:abstractMark"
        minOccurs="0" maxOccurs="unbounded"/>
      </sequence>
    </complexType>

  </schema>
  END
```

5. IANA Considerations

5.1. XML Namespace

This document uses URNs to describe XML namespaces and XML schemas conforming to a registry mechanism described in [RFC3688].

Registration request for the launch namespace:

- URI: urn:ietf:params:xml:ns:launch-1.0
- Registrant Contact: IESG
- XML: None. Namespace URIs do not represent an XML specification.

Registration request for the launch XML schema:

- URI: urn:ietf:params:xml:schema:launch-1.0
- Registrant Contact: IESG
- XML: See the "Formal Syntax" section of this document.

5.2. 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: "Launch Phase Mapping for the Extensible Provisioning Protocol (EPP)"

Document status: Standards Track

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

Registrant Name and Email Address: IESG, <iesg@ietf.org>

TLDs: Any

IPR Disclosure: None

Status: Active

Notes: None

6. Implementation Status

Note to RFC Editor: Please remove this section and the reference to RFC 7942 [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 RFC 7942 [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 RFC 7942 [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".

6.1. 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-launchphase.

Level of maturity: Production

Coverage: All aspects of the protocol are implemented.

Licensing: GNU Lesser General Public License

Contact: jgould@verisign.com

URL: http://www.verisigninc.com/en_US/channel-resources/domain-registry-products/epp-sdks

6.2. Verisign Consolidated Top Level Domain (CTLD) SRS

Organization: Verisign Inc.

Name: Verisign Consolidated Top Level Domain (CTLD) Shared Registry System (SRS)

Description: The Verisign Consolidated Top Level Domain (CTLD) Shared Registry System (SRS) implements the server-side of draft-ietf-regext-launchphase for a variety of Top Level Domains (TLD's).

Level of maturity: Production

Coverage: The "signed mark" Mark Validation Model, the Claims Check Form for the EPP <check> Command, the Sunrise and Claims Forms for the EPP <create> Command of Launch Registrations and Launch Applications. For Launch Applications the Poll Messaging, the EPP <info> Command, the EPP <update> Command, and the EPP <delete> Command is covered.

Licensing: Proprietary

Contact: jgould@verisign.com

6.3. Verisign .COM / .NET SRS

Organization: Verisign Inc.

Name: Verisign .COM / .NET Shared Registry System (SRS)

Description: The Verisign Shared Registry System (SRS) for .COM, .NET and other IDN TLD's implements the server-side of draft-ietf-regext-launchphase.

Level of maturity: Operational Test Environment (OTE)

Coverage: The "signed mark" Mark Validation Model, the Claims Check Form for the EPP <check> Command, the Sunrise and Claims Forms for the EPP <create> Command of Launch Registrations.

Licensing: Proprietary

Contact: jgould@verisign.com

6.4. REngin v3.7

Organization: Domain Name Services (Pty) Ltd

Name: REngin v3.7

Description: Server side implementation only

Level of maturity: Production

Coverage: All features from version 12 have been implemented

Licensing: Proprietary Licensing with Maintenance Contracts

Contact: info@dnservices.co.za

URL: https://www.registry.net.za and soon http://dnservices.co.za

6.5. RegistryEngine EPP Service

Organization: CentralNic

Name: RegistryEngine EPP Service

Description: Generic high-volume EPP service for gTLDs, ccTLDs and SLDs

Level of maturity: Deployed in CentralNic's production environment as well as two other gTLD registry systems, and two ccTLD registry systems.

Coverage: Majority of elements including TMCH sunrise, landrush and TM claims as well as sunrise applications validated using codes.

Licensing: Proprietary In-House software

Contact: epp@centralnic.com

URL: https://www.centralnic.com

6.6. Neustar EPP SDK

Organization: Neustar

Name: Neustar EPP SDK

Description: The Neustar EPP SDK includes client implementation of draft-ietf-regext-launchphase in both Java and C++.

Level of maturity: Production

Coverage: All aspects of the protocol are implemented.

Licensing: GNU Lesser General Public License

Contact: trung.tran@neustar.biz

6.7. gTLD Shared Registry System

Organization: Stichting Internet Domeinnaamregistratie Nederland (SIDN)

Name: gTLD Shared Registry System

Description: The gTLD SRS implements the server side of the draft-ietf-regext-launchphase.

Level of maturity: (soon) Production

Coverage: The following parts of the draft are supported:

Signed mark validation model using Digital Signature (Section 2.6.3)
Claims Check Form (Section 3.1.1)
Sunrise Create Form (Section 3.3.1)

Claims Create Form (Section 3.3.2)

The parts of the document not described here are not implemented.

Licensing: Proprietary

Contact: rik.ribbers@sidn.nl

7. Security Considerations

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

Updates to, and deletion of an application object must be restricted to clients authorized to perform the said operation on the object.

Information contained within an application, or even the mere fact that an application exists may be confidential. Any attempt to operate on an application object by an unauthorized client MUST be rejected with an EPP 2201 (authorization error) return code. Server policy may allow <info> operation with filtered output by clients other than the sponsoring client, in which case the <domain:infData> and <launch:infData> response SHOULD be filtered to include only fields that are publicly accessible.

8. Acknowledgements

The authors wish to acknowledge the efforts of the leading participants of the Community TMCH Model that led to many of the changes to this document, which include Chris Wright, Jeff Neuman, Jeff Eckhaus, and Will Shorter.

Special suggestions that have been incorporated into this document were provided by Jothan Frakes, Keith Gaughan, Seth Goldman, Scott Hollenbeck, Michael Holloway, Jan Jansen, Rubens Kuhl, Ben Levac, Gustavo Lozano, Klaus Malorny, Alexander Mayrhofer, Patrick Mevzek, James Mitchell, Francisco Obispo, Mike O'Connell, Bernhard Reutner-Fischer, Trung Tran, Ulrich Wisser and Sharon Wodjenski.

Some of the description of the Trademark Claims Phase was based on the work done by Gustavo Lozano in the ICANN TMCH functional specifications.

9. References

9.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <https://www.rfc-editor.org/info/rfc2119>.

[RFC3688] Mealling, M., "The IETF XML Registry", BCP 81, RFC 3688, DOI 10.17487/RFC3688, January 2004, <https://www.rfc-editor.org/info/rfc3688>.

[RFC5730] Hollenbeck, S., "Extensible Provisioning Protocol (EPP)", STD 69, RFC 5730, DOI 10.17487/RFC5730, August 2009, <https://www.rfc-editor.org/info/rfc5730>.

[RFC5731] Hollenbeck, S., "Extensible Provisioning Protocol (EPP) Domain Name Mapping", STD 69, RFC 5731, DOI 10.17487/RFC5731, August 2009, <https://www.rfc-editor.org/info/rfc5731>.

[RFC7848] Lozano, G., "Mark and Signed Mark Objects Mapping", RFC 7848, DOI 10.17487/RFC7848, June 2016, <https://www.rfc-editor.org/info/rfc7848>.

[RFC7942] Sheffer, Y. and A. Farrel, "Improving Awareness of Running Code: The Implementation Status Section", BCP 205, RFC 7942, DOI 10.17487/RFC7942, July 2016, <https://www.rfc-editor.org/info/rfc7942>.

9.2. Informative References

[I-D.ietf-regext-tmch-func-spec] Lozano, G., "ICANN TMCH functional specifications", draft-ietf-regext-tmch-func-spec-03 (work in progress), July 2017.

[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 History

A.1. Change from 00 to 01

1. Changed to use camel case for the XML elements.
2. Replaced "cancelled" status to "rejected" status.
3. Added the child elements of the <claim> element.
4. Removed the XML schema and replaced with "[TBD]".

A.2. Change from 01 to 02

1. Added support for both the ICANN and ARI/Neustar TMCH models.
2. Changed the namespace URI and prefix to use "launch" instead of "launchphase".
3. Added definition of multiple claim validation models.
4. Added the <launch:signedClaim> and <launch:signedNotice> elements.
5. Added support for Claims Info Command

A.3. Change from 02 to 03

1. Removed XSI namespace per Keith Gaughan's suggestion on the provreg list.
2. Added extensibility to the launch:status element and added the pendingAuction status per Trung Tran's feedback on the provreg list.
3. Added support for the Claims Check Command, updated the location and contents of the signedNotice, and replaced most references of Claim to Mark based on the work being done on the ARI/Neustar launch model.

A.4. Change from 03 to 04

1. Removed references to the ICANN model.
2. Removed support for the Claims Info Command.
3. Removed use of the signedClaim.
4. Revised the method for referring to the signedClaim from the XML Signature using the IDREF URI.
5. Split the launch-1.0.xsd into three XML schemas including launch-1.0.xsd, signeMark-1.0.xsd, and mark-1.0.xsd.
6. Split the "claims" launch phase to the "claims1" and "claims2" launch phases.
7. Added support for the encodedSignedMark with base64 encoded signedMark.
8. Changed the elements in the createNoticeType to include the noticeID, timestamp, and the source elements.
9. Added the class and effectiveDate elements to mark.

A.5. Change from 04 to 05

1. Removed reference to <smd:zone> in the <smd:signedMark> example.
2. Incorporated feedback from Bernhard Reutner-Fischer on the provreg mail list.
3. Added missing launch XML prefix to applicationIDType reference in the idContainerType of the Launch Schema.
4. Added missing description of the <mark:pc> element in the <mark:addr> element.
5. Updated note on replication of the EPP contact mapping elements in the Mark Contact section.

A.6. Change from 05 to 06

1. Removed the definition of the mark-1.0 and signedMark-1.0 and replaced with reference to draft-lozano-smd, that contains the definition for the mark, signed marked, and encoded signed mark.
2. Split the <launch:timestamp> into <launch:generatedDate> and <launch:acceptedDate> based on feedback from Trung Tran.
3. Added the "includeMark" optional attribute to the <launch:info> element to enable the client to request whether or not to include the mark in the info response.
4. Fixed state diagram to remove redundant transition from "invalid" to "rejected"; thanks Klaus Malorny.

A.7. Change from 06 to 07

1. Proof-read grammar and spelling.
2. Changed "pendingAuction" status to "pendingAllocation", changed "pending" to "pendingValidation" status, per proposal from Trung Tran and seconded by Rubens Kuhl.
3. Added text related to the use of RFC 5731 pendingCreate to the Application Identifier section.
4. Added the Poll Messaging section to define the use of poll messaging for intermediate state transitions and pending action poll messaging for final state transitions.

A.8. Change from 07 to 08

1. Added support for use of the launch statuses and poll messaging for Launch Registrations based on feedback from Sharon Wodjenski and Trung Tran.
2. Incorporated changes based on updates or clarifications in draft-lozano-tmch-func-spec-01, which include:

    1. Removed the unused <launch:generatedDate> element.
    2. Removed the <launch:source> element.

3. Added the <launch:notAfter> element based on the required <tmNotice:notAfter> element.

A.9. Change from 08 to 09

1. Made <choice> element optional in <launch:create> to allow passing just the <launch:phase> in <launch:create> per request from Ben Levac.
2. Added optional "type" attribute in <launch:create> to enable the client to explicitly define the desired type of object (application or registration) to create to all forms of the create extension.
3. Added text that the server SHOULD validate the <launch:phase> element in the Launch Phases section.
4. Add the "General Create Form" to the create command extension to support the request from Ben Levac.
5. Updated the text for the Poll Messaging section based on feedback from Klaus Malorny.
6. Replaced the "claims1" and "claims2" phases with the "claims" phase based on discussion on the provreg list.
7. Added support for a mixed create model (Sunrise Create Model and Claims Create Model), where a trademark (encoded signed mark, etc.) and notice can be passed, based on a request from James Mitchell.
8. Added text for the handling of the overlapping "claims" and "landrush" launch phases.
9. Added support for two check forms (claims check form and availability check form) based on a request from James Mitchell. The availability check form was based on the text in draft-rbp-application-epp-mapping.

A.10. Change from 09 to 10

1. Changed noticeIDType from base64Binary to token to be compatible with draft-lozano-tmch-func-spec-05.
2. Changed codeType from base64Binary to token to be more generic.
3. Updated based on feedback from Alexander Mayrhofer, which include:

    1. Changed "extension to the domain name extension" to "extension to the domain name mapping".
    2. Changed use of 2004 return code to 2306 return code when phase passed mismatches active phase and sub-phase.
    3. Changed description of "allocated" and "rejected" statuses.
    4. Moved sentence on a synchronous <domain:create> command without the use of an intermediate application, then an Application Identifier MAY not be needed to the Application Identifier section.

5. Restructured the Mark Validation Models section to include the "<launch:codeMark> element" sub-section, the "<mark:mark> element" sub-section, and the Digital Signature sub-section.
6. Changed "Registries may" to "Registries MAY".
7. Changed "extensed" to "extended" in "Availability Check Form" section.
8. Broke the mix of create forms in the "EPP <create> Command" section to a fourth "Mixed Create Form" with its own sub-section.
9. Removed "displayed or" from "displayed or accepted" in the <launch:acceptedDate> description.
10. Replaced "given domain name is supported" with "given domain name are supported" in the "Create Response" section.
11. Changed the reference of 2303 (object does not exist) in the "Security Considerations" section to 2201 (authorization error).
12. Added arrow from "invalid" status to "pendingValidation" status and "pendingAllocation" status to "rejected" status in the State Transition Diagram.

4. Added the "C:" and "S:" example prefixes and related text in the "Conventions Used in This Document" section.

A.11. Change from 10 to 11

1. Moved the claims check response <launch:chkData> element under the <extension> element instead of the <resData> element based on the request from Francisco Obispo.

A.12. Change from 11 to 12

1. Added support for multiple validator identifiers for claims notices and marks based on a request and text provided by Mike O'Connell.
2. Removed domain:exDate element from example in section 3.3.5 based on a request from Seth Goldman on the provreg list.
3. Added clarifying text for clients not passing the launch extension on update and delete commands to servers that do not support launch applications based on a request from Sharon Wodjenski on the provreg list.

A.13. Change from 12 to EPPEXT 00

1. Changed to eppext working group draft by changing draft-tan-epp-launchphase to draft-ietf-eppext-launchphase and by changing references of draft-lozano-tmch-smd to draft-ietf-eppext-tmch-smd.

A.14. Change EPPEXT 00 to EPPEXT 01

1. Removed text associated with support for the combining of status values based on feedback from Patrick Mevzek on the provreg mailing list, discussion on the eppext mailing list, and discussion at the eppext IETF meeting on March 6, 2014.

A.15. Change EPPEXT 01 to EPPEXT 02

1. Changed the <launch:claim> element to be zero or more elements and the <launch:notice> element to be one or more elements in the Claims Create Form. These changes were needed to be able to support more than one concurrent claims services.

A.16. Change EPPEXT 02 to EPPEXT 03

1. Added the "Implementation Status" section based on an action item from the eppext IETF-91 meeting.
2. Moved Section 7 "IANA Considerations" and Section 9 "Security Considerations" before Section 5 "Acknowledgements". Moved "Change Log" Section to end.
3. Updated the text for the Claims Check Form and the Claims Create Form to support checking for the need of the claims notice and passing the claims notice outside of the "claims" phase.
4. Added the new Trademark Check Form to support determining whether or not a trademark exists that matches the domain name independent of whether a claims notice is required on create. This was based on a request from Trung Tran and a discussion on the eppext mailing list.

A.17. Change EPPEXT 03 to EPPEXT 04

1. Amended XML Namespace section of IANA Considerations, added EPP Extension Registry section.

A.18. Change EPPEXT 04 to EPPEXT 05

1. Added a missing comma to the descripton of the <launch:phase> element, based on feedback from Keith Gaughan on the eppext mailing list.
2. Added the SIDN implementation status information.
3. Fixed a few indentation issues in the samples.

A.19. Change EPPEXT 05 to EPPEXT 06

1. Removed duplicate "TMCH Functional Specification" URIs based on feedback from Scott Hollenbeck on the eppext mailing list.

2. Changed references of example?.tld to domain?.example to be consistent with RFC 6761 based on feedback from Scott Hollenbeck on the eppext mailing list.
3. A template was added to section 5 to register the XML schema in addition to the namespace based on feedback from Scott Hollenbeck on the eppext mailing list.

A.20. Change EPPEXT 06 to EPPEXT 07

1. Changed reference of lozano-tmch-func-spec to ietf-eppext-tmch-func-spec.

A.21. Change from EPPEXT 07 to REGEXT 00

1. Changed to regext working group draft by changing draft-ietf-eppext-launchphase to draft-ietf-regext-launchphase and by changing references of draft-ietf-eppext-tmch-func-spec to draft-ietf-regext-tmch-func-spec.

A.22. Change from REGEXT 00 to REGEXT 01

1. Fixed reference of Claims Check Command to Trademark Check Command in the Trademark Check Form section.
2. Replaced reference of draft-ietf-eppext-tmch-smd to RFC 7848.

A.23. Change from REGEXT 01 to REGEXT 02

1. Removed the reference to ietf-regext-tmch-func-spec and briefly described the trademark claims phase that is relavent to draft-ietf-regext-launchphase.

A.24. Change from REGEXT 02 to REGEXT 03

1. Ping update.

A.25. Change from REGEXT 03 to REGEXT 04

1. Updates based on feedback from Scott Hollenbeck that include:

    1. Nit on reference to RFC 7848 in section 1.
    2. Added reference to <domain:create> for the request to create a Launch Application in section 2.1.
    3. Removed the second paragraph of section 2.1 describing the option of creating an application identifier for a Launch Registration.
    4. Provided clarification in section 2.2 on the responsibility of the server to ensure that the supported validator identifiers are unique.

5. Updated the text in section 2.5 referencing the domain name object in RFC 5731.
6. Updated the copyright to 2017 in section 4.1.

A.26. Change from REGEXT 04 to REGEXT 05

1. Updates based on feedback from Ulrich Wisser that include:

    1. Updated reference to obsoleted RFC 6982 with RFC 7942.
    2. Moved RFC 7451 reference from normative to informative.

A.27. Change from REGEXT 05 to REGEXT 06

1. Updates based on feedback from Adam Roach that include:

    1. Added an informative reference to draft-ietf-regext-tmch-func-spec in section 2.3.1 "Trademark Claims Phase".
    2. Added formal definition of a Launch Registration and Launch Application to section 1.1.
    3. Updated the description of the Validator Identifier to indicate that the uniqueness is based on server policy.
    4. Updated "Does Domain have Claims?" "No" and "Yes" branch labels in Figure 1.
    5. Updated the description of the <launch:phase> element in the commands to explicitly specify the return of a 2306 EPP error result when invalid or referring to section 2.3 for validation.
    6. Fixed indentation of the <launch:applicationID> and <launch:status> elements in the section 2.5 examples.
    7. Updated the description of the <mark:mark> element in the info response.
    8. Added returning an EPP error result code of 2306 if the "type" attribute is incorrect in section 3.3.1, 3.3.2, and 3.3.3.
    9. Made small change in the description of the Create Response in section 3.3.5.
    10. Updated the Registrant Contact in section 7 to the IESG.

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