Registry Fee Extension for the Extensible Provisioning Protocol (EPP)

Abstract

   Given the expansion of the DNS namespace and the proliferation of
   novel business models, it is desirable to provide a method for
   Extensible Provisioning Protocol (EPP) clients to query EPP servers
   for the fees and credits associated with various billable
   transactions and provide expected fees and credits for certain
   commands and objects. This document describes an EPP extension
   mapping for registry fees.

Status of This Memo

   This is an Internet Standards Track document.

   This document is a product of the Internet Engineering Task Force
   (IETF). It represents the consensus of the IETF community. It has
   received public review and has been approved for publication by the
   Internet Engineering Steering Group (IESG). Further information on
   Internet Standards is available in Section 2 of RFC 7841.

   Information about the current status of this document, any errata,
   and how to provide feedback on it may be obtained at
   https://www.rfc-editor.org/info/rfc8748.

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1. Introduction

   Historically, domain name registries have applied a simple fee
   structure for billable transactions, namely a basic unit price
   applied to domain <create>, <renew>, <transfer>, and Redemption Grace
   Period (RGP) [RFC3915] restore commands. Given the relatively small
   number of EPP servers to which EPP clients have been required to
   connect, it has generally been the case that client operators have
   been able to obtain details of these fees out of band by contacting
   the server operators.

   Given the expansion of the DNS namespace and the proliferation of
   novel business models, it is desirable to provide a method for EPP
   clients to query EPP servers for the fees and credits associated with
   various billable transactions and certain commands and specific
   objects.

   This document describes an extension mapping for version 1.0 of the
   Extensible Provisioning Protocol (EPP) [RFC5730]. This EPP mapping
   provides a mechanism by which EPP clients may query the fees and
   credits associated with various billable transactions and obtain

their current account balance.

1.1. Conventions Used in This Document

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

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

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

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

2. Migrating to Newer Versions of This Extension

Servers that implement this extension SHOULD provide a way for clients to progressively update their implementations when a new version of the extension is deployed.

Servers SHOULD (for a temporary migration period) provide support for older versions of the extension in parallel to the newest version and allow clients to select their preferred version via the <svcExtension> element of the <login> command.

If a client requests multiple versions of the extension at login, then, when preparing responses to commands that do not include extension elements, the server SHOULD only include extension elements in the namespace of the newest version of the extension requested by the client.

When preparing responses to commands that do include extension elements, the server SHOULD only include extension elements for the extension versions present in the command.

3. Extension Elements

3.1. Client Commands

The <fee:command> element is used in the EPP <check> command to determine the fee that is applicable to the given command.

The "name" attribute of the <fee:command> is used to define which transform fees the client is requesting information about. The possible values for the "name" attribute are:

* "create", indicating a <create> command as defined in [RFC5730].

* "delete", indicating a <delete> command as defined in [RFC5730].

* "renew", indicating a <renew> command as defined in [RFC5730].

* "update", indicating a <update> command as defined in [RFC5730].

* "transfer", indicating a <transfer> command as defined in [RFC5730].

* If the server supports registry grace period mapping [RFC3915], then the server MUST also support the "restore" value as defined in [RFC3915].

* "custom", indicating a custom command that MUST set the "customName" attribute with a custom command name. The possible set of custom command name values is dictated by the server policy.

The <fee:command> element MAY have an OPTIONAL "phase" attribute specifying a launch phase as described in [RFC8334]. It may also contain an OPTIONAL "subphase" attribute identifying the custom or subphase as described in [RFC8334].

3.2. Currency Codes

The <fee:currency> element is used to indicate the currency in which fees are charged. The value of this element MUST be a three-character currency code from [ISO4217_2015].

Note that [ISO4217_2015] provides the special "XXX" code, which MAY be used if the server uses a non-currency-based system for assessing fees, such as a system of credits.

The use of <fee:currency> elements in client commands is OPTIONAL: if a <fee:currency> element is not present in a command, the server MUST determine the currency based on the server default currency or on the client's account settings, which are agreed to by the client and server via an out-of-band channel. However, the <fee:currency> element MUST be present in the responses.

Servers SHOULD NOT perform a currency conversion if a client uses an incorrect currency code. Servers SHOULD return a 2004 "Parameter value range error" instead.

3.3. Validity Periods

When querying for fee information using the <check> command, the <fee:period> element is used to indicate the validity period, which is to be added to extend the registration period of objects by the <create>, <renew>, and <transfer> commands. Validity periods are measured in years or months, with the appropriate units specified using the "unit" attribute. Valid values for the "unit" attribute are "y" for years and "m" for months. This element is derived from

the <domain:period> element described in [RFC5731].

The <fee:period> element is OPTIONAL in <check> commands; if omitted, the server MUST determine the fee(s) using the server default period. The <fee:period> element MUST be present in <check> responses.

3.4. Fees and Credits

Servers that implement this extension will include elements in responses that provide information about the fees and/or credits associated with a given billable transaction. A fee will result in subtracting from the Account Balance (described in Section 3.5), and a credit will result in adding to the Account Balance (described in Section 3.5).

The <fee:fee> and <fee:credit> elements are used to provide this information. The presence of a <fee:fee> element in a response indicates a debit against the client's account balance; a <fee:credit> element indicates a credit. A <fee:fee> element MUST have a zero or greater (non-negative) value. A <fee:credit> element MUST have a negative value.

A server MAY respond with multiple <fee:fee> and <fee:credit> elements in the same response. In such cases, the net fee or credit applicable to the transaction is the arithmetic sum of the values of each of the <fee:fee> and/or <fee:credit> elements. This amount applies to the total additional validity period for the object (where applicable).

The following attributes are defined for the <fee:fee> element. These are described in detail below:

description: an OPTIONAL attribute that provides a human-readable description of the fee. Servers should provide documentation on the possible values of this attribute and their meanings. An OPTIONAL "lang" attribute MAY be present, per the language structure in [RFC5646], to identify the language of the returned text and has a default value of "en" (English). If the "description" attribute is not present, the "lang" attribute can be ignored.

refundable: an OPTIONAL boolean attribute indicating whether the fee is refundable if the object is deleted.

grace-period: an OPTIONAL attribute that provides the time period during which the fee is refundable.

applied: an OPTIONAL attribute indicating when the fee will be deducted from the client's account.

The <fee:credit> element can take a "description" attribute as described above. An OPTIONAL "lang" attribute MAY be present to identify the language of the returned text and has a default value of "en" (English).

3.4.1. Refunds

<fee:fee> elements MAY have an OPTIONAL "refundable" attribute that takes a boolean value. Fees may be refunded under certain circumstances, such as when a domain application is rejected (as described in [RFC8334]) or when an object is deleted during the relevant grace period (see Section 3.4.2).

If the "refundable" attribute is omitted, then clients SHOULD NOT make any assumptions about the refundability of the fee.

3.4.2. Grace Periods

[RFC3915] describes a system of "grace periods", which are time periods following a billable transaction during which, if an object is deleted, the client receives a refund.

The "grace-period" attribute MAY be used to indicate the relevant grace period for a fee. If a server implements the registry grace period extension [RFC3915], it MUST specify the grace period for all relevant transactions.

If the "grace-period" attribute is omitted, then clients SHOULD NOT make any assumptions about the grace period of the fee.

3.4.3. Correlation between Refundability and Grace Periods

If a <fee:fee> element has a "grace-period" attribute, then it MUST also be refundable, and the "refundable" attribute MUST be true. If the "refundable" attribute of a <fee:fee> element is false, then it MUST NOT have a "grace-period" attribute.

3.4.4. Applicability

Fees may be applied immediately upon receipt of a command from a client or may only be applied once an out-of-band process (such as the processing of applications at the end of a launch phase) has taken place.

The "applied" attribute of the <fee:fee> element allows servers to indicate whether a fee will be applied immediately or whether it will be applied at some point in the future. This attribute takes two possible values: "immediate" or "delayed".

3.5. Account Balance

The <fee:balance> element is an OPTIONAL element that MAY be included in server responses to transform commands. If present, it can be used by the client to determine the remaining credit at the server.

Whether or not the <fee:balance> is included in responses is a matter of server policy. However, if a server chooses to offer support for this element, it MUST be included in responses to all "transform" or billable commands (e.g., <create>, <renew>, <update>, <delete>, <transfer op="request">).

The value of the <fee:balance> MAY be negative. A negative balance

indicates that the server has extended a line of credit to the client (see Section 3.6).

If a server includes a <fee:balance> element in response to transform commands, the value of the element MUST reflect the client's account balance after any fees or credits associated with that command have been applied. If the "applied" attribute of the <fee:fee> element is "delayed", then the <fee:balance> MUST reflect the client's account balance without any fees or credits associated with that command.

3.6. Credit Limit

As described above, if a server returns a response containing a <fee:balance> with a negative value, then the server has extended a line of credit to the client. A server MAY also include in responses a <fee:creditLimit> element that indicates the maximum credit available to a client. A server MAY reject certain transactions if the absolute value of the <fee:balance> is equal to or exceeds the value of the <fee:creditLimit> element.

Whether or not the <fee:creditLimit> is included in responses is a matter of server policy. However, if a server chooses to offer support for this element, it MUST be included in responses to all "transform" commands (e.g., <create>, <renew>, <update>, <delete>, <transfer op="request">).

3.7. Classification of Objects

Objects may be assigned to a particular class, category, or tier, each of which has a particular fee or set of fees associated with it. The <fee:class> element, which MAY appear in <check> and transform responses, is used to indicate the classification of an object.

If a server makes use of this element, it should provide clients with a list of all the values that the element may take via an out-of-band channel. Servers MUST NOT use values that do not appear on this list.

Servers that make use of this element MUST use a <fee:class> element with the value "standard" for all objects that are subject to the standard or default fee.

3.8. "Phase" and "Subphase" Attributes

The <fee:command> element has two attributes, "phase" and "subphase", that provide additional information related to a specific launch phase, as described in [RFC8334]. These attributes are used as filters that should refine the server processing.

If the client <fee:command> contains a server-supported combination of phase/subphase, the server MUST return the fee data (including the phase/subphase attribute(s)) for the specific combination.

If the client <fee:command> contains no "phase"/"subphase" attributes and the server has only one active phase/subphase combination, the server MUST return the data (including the "phase"/"subphase"

attribute(s)) of the currently active phase/subphase.

If the client <fee:command> contains no phase/subphase attributes and the server has more than one active phase/subphase combination, the server MUST respond with a 2003 "Required parameter missing" error.

If the client <fee:command> contains no phase/subphase attributes and the server is currently in a "quiet period" (e.g., not accepting registrations or applications), the server MUST return data consistent with the default general availability phase (e.g., "open" or "claims"), including the appropriate phase/subphase attribute(s).

If the client <fee:command> contains a phase attribute with no subphase and the server has only one active subphase (or no subphase) of this phase, the server MUST return the data (including the phase/ subphase attribute(s)) of the provided phase and currently active subphase.

If the client <fee:command> contains a phase attribute with no subphase and the server has more than one active subphase combination of this phase, the server MUST respond with a 2003 "Required parameter missing" error.

If the client <fee:command> contains a subphase with no phase attribute, the server MUST respond with a 2003 "Required parameter missing" error.

If the client <fee:command> contains a phase attribute not defined in [RFC8334] or not supported by the server, the server MUST respond with a 2004 "Parameter value range error".

If the client <fee:command> contains a subphase attribute (or phase/ subphase combination) not supported by the server, the server MUST respond with a 2004 "Parameter value range error".

3.9. Reason

The <fee:reason> element is used to provide server-specific text in an effort to better explain why a <check> command did not complete as the client expected. An OPTIONAL "lang" attribute MAY be present to identify the language, per the language structure in [RFC5646], of the returned text and has a default value of "en" (English).

The <fee:reason> element can be used within the server response <fee:command> element or within the <fee:cd> element. See Section 5.1.1 for details on the <fee:cd> "check data" element.

If the server cannot calculate the relevant fees because the object, command, currency, period, class, or some combination is invalid per server policy, the server has two ways of handling the error processing of <fee:command> element(s):

1. Fast-fail: The server, upon error identification, MAY stop processing <fee:command> elements and return a <fee:cd> to the client containing the <fee:objID> and a <fee:reason> element detailing the reason for failure.

```
S: <fee:cd avail="0">
S:    <fee:objID>example.xyz</fee:objID>
S:    <fee:reason>Only 1 year registration periods are
S:    valid.</fee:reason>
S: </fee:cd>
```

2. Partial-fail: The server, upon error identification, MAY continue
   processing <fee:command> elements and return a <fee:cd> to the
   client containing the successfully processed <fee:command>
   elements and failed <fee:command> elements. All returned failed
   <fee:command> elements MUST have a <fee:reason> element detailing
   the reason for failure, and the server MAY additionally include a
   <fee:reason> element at the <fee:cd> level.

```
S: <fee:cd avail="0">
S:    <fee:objID>example.xyz</fee:objID>
S:    <fee:command name="create">
S:      <fee:period unit="y">2</fee:period>
S:      <fee:reason>Only 1 year registration periods are
S:      valid.</fee:reason>
S:    </fee:command>
S: </fee:cd>
```

In either failure scenario, the server MUST set the <fee:cd> "avail"
attribute to false (0), and the server MUST process all objects in
the client request.

4. Server Handling of Fee Information

Depending on the server policy, a client MAY be required to include
the extension elements described in this document for certain
transform commands. Servers must provide clear documentation to
clients about the circumstances in which this extension must be used.

The server MUST return avail="0" in its response to a <check> command
for any object in the <check> command that does not include the
<fee:check> extension where the server would fail a domain <create>
command when no <fee> extension is provided for that same object.

If a server receives a <check> command from a client that results in
no possible fee combination, the server MUST set the "avail"
attribute of the <fee:cd> element to false (0) and provide a
<fee:reason>.

If a server receives a <check> command from a client that results in
an ambiguous result (i.e., multiple possible fee combinations), the
server MUST reject the command with a 2003 "Required parameter
missing" error.

If a server receives a command from a client that does not include
the fee extension data elements required by the server for that
command, then the server MUST respond with a 2003 "Required parameter
missing" error.

If the total fee provided by the client is less than the server's own

calculation of the fee or the server determines the currency is
inappropriate for that command, then the server MUST reject the
command with a 2004 "Parameter value range error".

5. EPP Command Mapping

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

5.1. EPP Query Commands

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

5.1.1. EPP <check> Command

This extension defines a new command called the Fee Check Command
that defines additional elements for the EPP <check> command to
provide fee information.

The command MAY contain an <extension> element, which MAY contain a
<fee:check> element. The <fee:check> element MAY contain one
<fee:currency> element and MUST contain one or more <fee:command>
elements.

The <fee:command> element(s) MUST contain a "name" attribute (see
Section 3.1), an OPTIONAL "phase" attribute, and an OPTIONAL
"subphase" attribute (see Section 3.8). The <fee:command> element(s)
MAY have the following child elements:

* An OPTIONAL <fee:period> element (as described in Section 3.3).

Example <check> command:

```
C: <?xml version="1.0" encoding="utf-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:   <command>
C:     <check>
C:       <domain:check
C:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:         <domain:name>example.com</domain:name>
C:         <domain:name>example.net</domain:name>
C:         <domain:name>example.xyz</domain:name>
C:       </domain:check>
C:     </check>
C:     <extension>
C:       <fee:check xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
C:         <fee:currency>USD</fee:currency>
C:         <fee:command name="create">
C:           <fee:period unit="y">2</fee:period>
C:         </fee:command>
C:         <fee:command name="renew"/>
C:         <fee:command name="transfer"/>
C:         <fee:command name="restore"/>
C:       </fee:check>
C:     </extension>
```

```
C:       <clTRID>ABC-12345</clTRID>
C:     </command>
C: </epp>
```

When the server receives a <check> command that includes the
extension elements described above, its response MUST contain an
<extension> element, which MUST contain a child <fee:chkData>
element. The <fee:chkData> element MUST contain a <fee:currency>
element and a <fee:cd> element for each object referenced in the
client <check> command.

Each <fee:cd> (check data) element MUST contain the following child
elements:

*   A <fee:objID> element, which MUST match an element referenced in
    the client <check> command.

*   An OPTIONAL <fee:class> element (as described in Section 3.7).

*   A <fee:command> element matching each <fee:command> (unless the
    "avail" attribute of the <fee:cd> is false) that appeared in the
    corresponding <fee:check> of the client command. This element MAY
    have the OPTIONAL "standard" attribute, with a default value of
    "0" (or "false"), which indicates whether the fee is the standard
    or default fee (see Section 3.7). This element MAY have the
    OPTIONAL "phase" and "subphase" attributes, which will match the
    same attributes in the corresponding <fee:command> element of the
    client command if sent by the client.

The <fee:cd> element also has an OPTIONAL "avail" attribute, which is
a boolean. If the value of this attribute evaluates to false, this
indicates that the server cannot calculate the relevant fees because
the object, command, currency, period, class, or some combination is
invalid per server policy. If "avail" is false, then the <fee:cd> or
the <fee:command> element MUST contain a <fee:reason> element (as
described in Section 3.9), and the server MAY eliminate some or all
of the <fee:command> element(s).

The <fee:command> element(s) MAY have the following child elements:

*   An OPTIONAL <fee:period> element (as described in Section 3.3),
    which contains the same unit, if present, that appeared in the
    <fee:period> element of the command. If the value of the parent
    <fee:command> element is "restore", this element MUST NOT be
    included; otherwise, it MUST be included. If no <fee:period>
    appeared in the client command (and the command is not "restore"),
    then the server MUST return its default period value.

*   Zero or more <fee:fee> elements (as described in Section 3.4).

*   Zero or more <fee:credit> elements (as described in Section 3.4).

*   An OPTIONAL <fee:reason> element (as described in Section 3.9).

If the "avail" attribute of the <fee:cd> element is true (1) and if
no <fee:fee> elements are present in a <fee:command> element, this

indicates that no fee will be assessed by the server for this
command.

If the "avail" attribute of the <fee:cd> element is true (1), then
the <fee:command> element MUST NOT contain a <fee:reason> element.

Example <check> response:

```
S: <?xml version="1.0" encoding="utf-8" standalone="no"?>
S: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:   <response>
S:     <result code="1000">
S:       <msg>Command completed successfully</msg>
S:     </result>
S:     <resData>
S:       <domain:chkData
S:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:         <domain:cd>
S:           <domain:name avail="1">example.com</domain:name>
S:         </domain:cd>
S:         <domain:cd>
S:           <domain:name avail="1">example.net</domain:name>
S:         </domain:cd>
S:         <domain:cd>
S:           <domain:name avail="1">example.xyz</domain:name>
S:         </domain:cd>
S:       </domain:chkData>
S:     </resData>
S:     <extension>
S:       <fee:chkData
S:           xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
S:         <fee:currency>USD</fee:currency>
S:         <fee:cd avail="1">
S:           <fee:objID>example.com</fee:objID>
S:           <fee:class>Premium</fee:class>
S:           <fee:command name="create">
S:             <fee:period unit="y">2</fee:period>
S:             <fee:fee
S:               description="Registration Fee"
S:               refundable="1"
S:               grace-period="P5D">10.00</fee:fee>
S:           </fee:command>
S:           <fee:command name="renew">
S:             <fee:period unit="y">1</fee:period>
S:             <fee:fee
S:               description="Renewal Fee"
S:               refundable="1"
S:               grace-period="P5D">10.00</fee:fee>
S:           </fee:command>
S:           <fee:command name="transfer">
S:             <fee:period unit="y">1</fee:period>
S:             <fee:fee
S:               description="Transfer Fee"
S:               refundable="1"
S:               grace-period="P5D">10.00</fee:fee>
S:           </fee:command>
```

```
S:               <fee:command name="restore">
S:                 <fee:fee
S:                   description="Redemption Fee">15.00</fee:fee>
S:               </fee:command>
S:             </fee:cd>
S:             <fee:cd avail="1">
S:               <fee:objID>example.net</fee:objID>
S:               <fee:class>standard</fee:class>
S:               <fee:command name="create" standard="1">
S:                 <fee:period unit="y">2</fee:period>
S:                 <fee:fee
S:                   description="Registration Fee"
S:                   refundable="1"
S:                   grace-period="P5D">5.00</fee:fee>
S:               </fee:command>
S:               <fee:command name="renew" standard="1">
S:                 <fee:period unit="y">1</fee:period>
S:                 <fee:fee
S:                   description="Renewal Fee"
S:                   refundable="1"
S:                   grace-period="P5D">5.00</fee:fee>
S:               </fee:command>
S:               <fee:command name="transfer" standard="1">
S:                 <fee:period unit="y">1</fee:period>
S:                 <fee:fee
S:                   description="Transfer Fee"
S:                   refundable="1"
S:                   grace-period="P5D">5.00</fee:fee>
S:               </fee:command>
S:               <fee:command name="restore" standard="1">
S:                 <fee:fee
S:                   description="Redemption Fee">5.00</fee:fee>
S:               </fee:command>
S:             </fee:cd>
S:             <fee:cd avail="0">
S:               <fee:objID>example.xyz</fee:objID>
S:               <fee:command name="create">
S:                 <fee:period unit="y">2</fee:period>
S:                 <fee:reason>Only 1 year registration periods are
S:                   valid.</fee:reason>
S:               </fee:command>
S:             </fee:cd>
S:           </fee:chkData>
S:         </extension>
S:         <trID>
S:           <clTRID>ABC-12345</clTRID>
S:           <svTRID>54322-XYZ</svTRID>
S:         </trID>
S:       </response>
S:     </epp>
```

5.1.2. EPP Transfer Query Command

This extension does not add any elements to the EPP <transfer> query command, but it does include elements in the response when the extension is included in the <login> command service extensions.

When the <transfer> query command has been processed successfully, if the client has included the extension in the <login> command service <svcExtension> element, and if the client is authorized by the server to view information about the transfer, then the server MAY include in the <extension> section of the EPP response a <fee:trnData> element, which contains the following child elements:

*   A <fee:currency> element (as described in Section 3.2).

*   A <fee:period> element (as described in Section 3.3).

*   Zero or more <fee:fee> elements (as described in Section 3.4) containing the fees that will be charged to the gaining client.

*   Zero or more <fee:credit> elements (as described in Section 3.4) containing the credits that will be refunded to the losing client.

Servers SHOULD omit <fee:credit> when returning a response to the gaining client and omit <fee:fee> elements when returning a response to the losing client.

If no <fee:trnData> element is included in the response, then no fee will be assessed by the server for the transfer.

Example <transfer> query response:

```
S: <?xml version="1.0" encoding="utf-8" standalone="no"?>
S: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:   <response>
S:     <result code="1001">
S:       <msg>Command completed successfully; action pending</msg>
S:     </result>
S:     <resData>
S:       <domain:trnData
S:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:         <domain:name>example.com</domain:name>
S:         <domain:trStatus>pending</domain:trStatus>
S:         <domain:reID>ClientX</domain:reID>
S:         <domain:reDate>2019-06-08T22:00:00.0Z</domain:reDate>
S:         <domain:acID>ClientY</domain:acID>
S:         <domain:acDate>2019-06-13T22:00:00.0Z</domain:acDate>
S:         <domain:exDate>2021-09-08T22:00:00.0Z</domain:exDate>
S:       </domain:trnData>
S:     </resData>
S:     <extension>
S:       <fee:trnData xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
S:         <fee:currency>USD</fee:currency>
S:         <fee:period unit="y">1</fee:period>
S:         <fee:fee>5.00</fee:fee>
S:       </fee:trnData>
S:     </extension>
S:     <trID>
S:       <clTRID>ABC-12345</clTRID>
S:       <svTRID>54322-XYZ</svTRID>
S:     </trID>
```

```
S:    </response>
S: </epp>
```

5.2. EPP Transform Commands

5.2.1. EPP <create> Command

This extension adds elements to both the EPP <create> command and
response when the extension is included in the <login> command
service extensions.

When submitting a <create> command to the server, the client MAY
include in the <extension> element a <fee:create> element, which
includes the following child elements:

* An OPTIONAL <fee:currency> element (as described in Section 3.2).

* One or more <fee:fee> elements (as described in Section 3.4).

When the <create> command has been processed successfully, the client
included the extension in the <login> command service extensions, and
a fee was assessed by the server for the transaction, the server MUST
include in the <extension> section of the EPP response a
<fee:creData> element, which contains the following child elements:

* A <fee:currency> element (as described in Section 3.2).

* Zero or more <fee:fee> elements (as described in Section 3.4).

* Zero or more <fee:credit> elements (as described in Section 3.4).

* An OPTIONAL <fee:balance> element (as described in Section 3.5).

* An OPTIONAL <fee:creditLimit> element (as described in
   Section 3.6).

Example <create> command:

```
C: <?xml version="1.0" encoding="utf-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:   <command>
C:     <create>
C:       <domain:create
C:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:         <domain:name>example.com</domain:name>
C:         <domain:period unit="y">2</domain:period>
C:         <domain:ns>
C:           <domain:hostObj>ns1.example.net</domain:hostObj>
C:           <domain:hostObj>ns2.example.net</domain:hostObj>
C:         </domain:ns>
C:         <domain:registrant>jd1234</domain:registrant>
C:         <domain:contact type="admin">sh8013</domain:contact>
C:         <domain:contact type="tech">sh8013</domain:contact>
C:         <domain:authInfo>
C:           <domain:pw>2fooBAR</domain:pw>
C:         </domain:authInfo>
```

```
C:        </domain:create>
C:      </create>
C:      <extension>
C:        <fee:create xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
C:          <fee:currency>USD</fee:currency>
C:          <fee:fee>5.00</fee:fee>
C:        </fee:create>
C:      </extension>
C:      <clTRID>ABC-12345</clTRID>
C:    </command>
C: </epp>
```

Example <create> response:

```
S: <?xml version="1.0" encoding="utf-8" standalone="no"?>
S: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:    <response>
S:      <result code="1000">
S:        <msg>Command completed successfully</msg>
S:      </result>
S:      <resData>
S:        <domain:creData
S:          xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:          <domain:name>example.com</domain:name>
S:          <domain:crDate>2019-04-03T22:00:00.0Z</domain:crDate>
S:          <domain:exDate>2021-04-03T22:00:00.0Z</domain:exDate>
S:        </domain:creData>
S:      </resData>
S:      <extension>
S:        <fee:creData xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
S:          <fee:currency>USD</fee:currency>
S:          <fee:fee
S:            description="Registration Fee"
S:            lang="en"
S:            refundable="1"
S:            grace-period="P5D">5.00</fee:fee>
S:          <fee:balance>-5.00</fee:balance>
S:          <fee:creditLimit>1000.00</fee:creditLimit>
S:        </fee:creData>
S:      </extension>
S:      <trID>
S:        <clTRID>ABC-12345</clTRID>
S:        <svTRID>54321-XYZ</svTRID>
S:      </trID>
S:    </response>
S: </epp>
```

5.2.2. EPP <delete> Command

This extension does not add any elements to the EPP <delete> command,
but it does include elements in the response when the extension is
included in the <login> command service extensions.

When the <delete> command has been processed successfully and the
client included the extension in the <login> command service
extensions, the server MAY include in the <extension> section of the

EPP response a <fee:delData> element, which contains the following
child elements:

*   A <fee:currency> element (as described in Section 3.2).

*   Zero or more <fee:fee> elements (as described in Section 3.4).

*   Zero or more <fee:credit> elements (as described in Section 3.4).

*   An OPTIONAL <fee:balance> element (as described in Section 3.5).

*   An OPTIONAL <fee:creditLimit> element (as described in
    Section 3.6).

Example <delete> response:

```
S: <?xml version="1.0" encoding="utf-8" standalone="no"?>
S: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:   <response>
S:     <result code="1000">
S:       <msg>Command completed successfully</msg>
S:     </result>
S:     <extension>
S:       <fee:delData
S:         xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
S:         <fee:currency>USD</fee:currency>
S:         <fee:credit
S:           description="AGP Credit"
S:           lang="en">-5.00</fee:credit>
S:         <fee:balance>1005.00</fee:balance>
S:       </fee:delData>
S:     </extension>
S:     <trID>
S:       <clTRID>ABC-12345</clTRID>
S:       <svTRID>54321-XYZ</svTRID>
S:     </trID>
S:   </response>
S: </epp>
```

5.2.3. EPP <renew> Command

This extension adds elements to both the EPP <renew> command and
response when the extension is included in the <login> command
service extensions.

When submitting a <renew> command to the server, the client MAY
include in the <extension> element a <fee:renew> element, which
includes the following child elements:

*   An OPTIONAL <fee:currency> element (as described in Section 3.2).

*   One or more <fee:fee> elements (as described in Section 3.4).

When the <renew> command has been processed successfully and the
client included the extension in the <login> command service
extensions, the server MAY include in the <extension> section of the

EPP response a <fee:renData> element, which contains the following child elements:

* A <fee:currency> element (as described in Section 3.2).

* Zero or more <fee:fee> elements (as described in Section 3.4).

* Zero or more <fee:credit> elements (as described in Section 3.4).

* An OPTIONAL <fee:balance> element (as described in Section 3.5).

* An OPTIONAL <fee:creditLimit> element (as described in Section 3.6).

Example <renew> command:

```
C: <?xml version="1.0" encoding="utf-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:   <command>
C:     <renew>
C:       <domain:renew
C:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:         <domain:name>example.com</domain:name>
C:         <domain:curExpDate>2019-04-03</domain:curExpDate>
C:         <domain:period unit="y">5</domain:period>
C:       </domain:renew>
C:     </renew>
C:     <extension>
C:       <fee:renew xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
C:         <fee:currency>USD</fee:currency>
C:         <fee:fee>5.00</fee:fee>
C:       </fee:renew>
C:     </extension>
C:     <clTRID>ABC-12345</clTRID>
C:   </command>
C: </epp>
```

Example <renew> response:

```
S: <?xml version="1.0" encoding="utf-8" standalone="no"?>
S: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:   <response>
S:     <result code="1000">
S:       <msg>Command completed successfully</msg>
S:     </result>
S:     <resData>
S:       <domain:renData
S:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:         <domain:name>example.com</domain:name>
S:         <domain:exDate>2024-04-03T22:00:00.0Z</domain:exDate>
S:       </domain:renData>
S:     </resData>
S:     <extension>
S:       <fee:renData xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
S:         <fee:currency>USD</fee:currency>
S:         <fee:fee
```

```
S:                  refundable="1"
S:                  grace-period="P5D">5.00</fee:fee>
S:                <fee:balance>1000.00</fee:balance>
S:              </fee:renData>
S:          </extension>
S:          <trID>
S:              <clTRID>ABC-12345</clTRID>
S:              <svTRID>54322-XYZ</svTRID>
S:          </trID>
S:      </response>
S: </epp>
```

5.2.4. EPP <transfer> Command

This extension adds elements to both the EPP <transfer> command and
response when the value of the "op" attribute of the <transfer>
command element is "request" and the extension is included in the
<login> command service extensions.

When submitting a <transfer> command to the server, the client MAY
include in the <extension> element a <fee:transfer> element, which
includes the following child elements:

* An OPTIONAL <fee:currency> element (as described in Section 3.2).

* One or more <fee:fee> elements (as described in Section 3.4).

When the <transfer> command has been processed successfully and the
client included the extension in the <login> command service
extensions, the server MAY include in the <extension> section of the
EPP response a <fee:trnData> element, which contains the following
child elements:

* A <fee:currency> element (as described in Section 3.2).

* Zero or more <fee:fee> elements (as described in Section 3.4).

* Zero or more <fee:credit> elements (as described in Section 3.4).

* An OPTIONAL <fee:balance> element (as described in Section 3.5).

* An OPTIONAL <fee:creditLimit> element (as described in
   Section 3.6).

Example <transfer> command:

```
C: <?xml version="1.0" encoding="utf-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:    <command>
C:       <transfer op="request">
C:          <domain:transfer
C:            xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:            <domain:name>example.com</domain:name>
C:            <domain:period unit="y">1</domain:period>
C:            <domain:authInfo>
C:                <domain:pw roid="JD1234-REP">2fooBAR</domain:pw>
```

```
C:           </domain:authInfo>
C:         </domain:transfer>
C:       </transfer>
C:       <extension>
C:        <fee:transfer xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
C:          <fee:currency>USD</fee:currency>
C:          <fee:fee>5.00</fee:fee>
C:        </fee:transfer>
C:       </extension>
C:       <clTRID>ABC-12345</clTRID>
C:     </command>
C: </epp>
```

Example <transfer> response:

```
S: <?xml version="1.0" encoding="utf-8" standalone="no"?>
S: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:     <response>
S:       <result code="1001">
S:         <msg>Command completed successfully; action pending</msg>
S:       </result>
S:       <resData>
S:         <domain:trnData
S:           xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:           <domain:name>example.com</domain:name>
S:           <domain:trStatus>pending</domain:trStatus>
S:           <domain:reID>ClientX</domain:reID>
S:           <domain:reDate>2019-06-08T22:00:00.0Z</domain:reDate>
S:           <domain:acID>ClientY</domain:acID>
S:           <domain:acDate>2019-06-13T22:00:00.0Z</domain:acDate>
S:           <domain:exDate>2021-09-08T22:00:00.0Z</domain:exDate>
S:         </domain:trnData>
S:       </resData>
S:       <extension>
S:         <fee:trnData xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
S:           <fee:currency>USD</fee:currency>
S:           <fee:fee
S:             refundable="1"
S:             grace-period="P5D">5.00</fee:fee>
S:         </fee:trnData>
S:       </extension>
S:       <trID>
S:         <clTRID>ABC-12345</clTRID>
S:         <svTRID>54322-XYZ</svTRID>
S:       </trID>
S:     </response>
S: </epp>
```

5.2.5. EPP <update> Command

This extension adds elements to both the EPP <update> command and
response when the extension is included in the <login> command
service extensions.

When submitting an <update> command to the server, the client MAY
include in the <extension> element a <fee:update> element, which

includes the following child elements:

*   An OPTIONAL <fee:currency> element (as described in Section 3.2).

*   One or more <fee:fee> elements (as described in Section 3.4).

When the <update> command has been processed successfully and the
client included the extension in the <login> command service
extensions, the server MAY include in the <extension> section of the
EPP response a <fee:updData> element, which contains the following
child elements:

*   A <fee:currency> element (as described in Section 3.2).

*   Zero or more <fee:fee> elements (as described in Section 3.4).

*   Zero or more <fee:credit> elements (as described in Section 3.4).

*   An OPTIONAL <fee:balance> element (as described in Section 3.5).

*   An OPTIONAL <fee:creditLimit> element (as described in
    Section 3.6).

Example <update> command:

```
C: <?xml version="1.0" encoding="utf-8" standalone="no"?>
C: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:   <command>
C:     <update>
C:       <domain:update
C:         xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:         <domain:name>example.com</domain:name>
C:         <domain:chg>
C:           <domain:registrant>sh8013</domain:registrant>
C:         </domain:chg>
C:       </domain:update>
C:     </update>
C:     <extension>
C:       <fee:update xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
C:         <fee:currency>USD</fee:currency>
C:         <fee:fee>5.00</fee:fee>
C:       </fee:update>
C:     </extension>
C:     <clTRID>ABC-12345</clTRID>
C:   </command>
C: </epp>
```

Example <update> response:

```
S: <?xml version="1.0" encoding="utf-8" standalone="no"?>
S: <epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:   <response>
S:     <result code="1000">
S:       <msg>Command completed successfully</msg>
S:     </result>
S:     <extension>
```

```
S:            <fee:updData xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0">
S:              <fee:currency>USD</fee:currency>
S:              <fee:fee>5.00</fee:fee>
S:            </fee:updData>
S:          </extension>
S:          <trID>
S:            <clTRID>ABC-12345</clTRID>
S:            <svTRID>54321-XYZ</svTRID>
S:          </trID>
S:        </response>
S:   </epp>
```

6. Formal Syntax

One schema is presented here -- the EPP Fee Extension schema.

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

6.1. Fee Extension Schema

The formal syntax presented here is a complete schema representation
[W3C.REC-xmlschema-1-20041028] of the object mapping suitable for
automated validation of EPP XML instances. The <CODE BEGINS> and
<CODE ENDS> tags are not part of the schema; they are used to note
the beginning and end of the schema for URI registration purposes.

```
<CODE BEGINS>
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns="http://www.w3.org/2001/XMLSchema"
   xmlns:fee="urn:ietf:params:xml:ns:epp:fee-1.0"
   xmlns:eppcom="urn:ietf:params:xml:ns:eppcom-1.0"
   xmlns:domain="urn:ietf:params:xml:ns:domain-1.0"
   targetNamespace="urn:ietf:params:xml:ns:epp:fee-1.0"
   elementFormDefault="qualified">

   <import namespace="urn:ietf:params:xml:ns:eppcom-1.0" />
   <import namespace="urn:ietf:params:xml:ns:domain-1.0" />

   <annotation>
     <documentation>
       Extensible Provisioning Protocol v1.0 Fee Extension
     </documentation>
   </annotation>

   <!-- Child elements found in EPP commands and responses -->
   <element name="check" type="fee:checkType" />
   <element name="chkData" type="fee:chkDataType" />
   <element name="create" type="fee:transformCommandType" />
   <element name="creData" type="fee:transformResultType" />
   <element name="renew" type="fee:transformCommandType" />
   <element name="renData" type="fee:transformResultType" />
   <element name="transfer" type="fee:transformCommandType" />
   <element name="trnData" type="fee:transformResultType" />
   <element name="update" type="fee:transformCommandType" />
```

```xml
<element name="updData" type="fee:transformResultType" />
<element name="delData" type="fee:transformResultType" />

<!-- client <check> command -->
<complexType name="checkType">
  <sequence>
    <element name="currency" type="fee:currencyType"
      minOccurs="0" />
    <element name="command" type="fee:commandType"
      minOccurs="1" maxOccurs="unbounded" />
  </sequence>
</complexType>

<complexType name="objectIdentifierType">
  <simpleContent>
    <extension base="eppcom:labelType">
      <attribute name="element"
      type="NMTOKEN" default="name" />
    </extension>
  </simpleContent>
</complexType>

<!-- server <check> result -->
<complexType name="chkDataType">
  <sequence>
    <element name="currency" type="fee:currencyType" />
    <element name="cd" type="fee:objectCDType"
      maxOccurs="unbounded" />
  </sequence>
</complexType>

<complexType name="objectCDType">
  <sequence>
    <element name="objID" type="fee:objectIdentifierType" />
    <element name="class" type="token" minOccurs="0" />
    <element name="command" type="fee:commandDataType"
      minOccurs="0" maxOccurs="unbounded" />
    <element name="reason" type="fee:reasonType" minOccurs="0" />
  </sequence>
  <attribute name="avail" type="boolean" default="1" />
</complexType>

<!-- general transform (create, renew, update, transfer) command-->
<complexType name="transformCommandType">
  <sequence>
    <element name="currency" type="fee:currencyType"
      minOccurs="0" />
    <element name="fee" type="fee:feeType"
      maxOccurs="unbounded" />
    <element name="credit" type="fee:creditType"
      minOccurs="0" maxOccurs="unbounded" />
  </sequence>
</complexType>

<!-- general transform (create, renew, update) result -->
<complexType name="transformResultType">
```

```xml
    <sequence>
      <element name="currency" type="fee:currencyType"
        minOccurs="0" />
      <element name="period" type="domain:periodType"
        minOccurs="0" />
      <element name="fee" type="fee:feeType"
        minOccurs="0" maxOccurs="unbounded" />
      <element name="credit" type="fee:creditType"
        minOccurs="0" maxOccurs="unbounded" />
      <element name="balance" type="fee:balanceType"
        minOccurs="0" />
      <element name="creditLimit" type="fee:creditLimitType"
        minOccurs="0" />
    </sequence>
</complexType>

<!-- common types -->
<simpleType name="currencyType">
  <restriction base="string">
    <pattern value="[A-Z]{3}" />
  </restriction>
</simpleType>

<complexType name="commandType">
  <sequence>
    <element name="period" type="domain:periodType"
      minOccurs="0" maxOccurs="1" />
  </sequence>
  <attribute name="name" type="fee:commandEnum" use="required"/>
  <attribute name="customName" type="token"/>
  <attribute name="phase" type="token" />
  <attribute name="subphase" type="token" />
</complexType>

<complexType name="commandDataType">
  <complexContent>
    <extension base="fee:commandType">
      <sequence>
        <element name="fee" type="fee:feeType"
          minOccurs="0" maxOccurs="unbounded" />
        <element name="credit" type="fee:creditType"
          minOccurs="0" maxOccurs="unbounded" />
        <element name="reason" type="fee:reasonType"
          minOccurs="0" />
      </sequence>
      <attribute name="standard" type="boolean" default="0" />
    </extension>
  </complexContent>
</complexType>

<complexType name="reasonType">
  <simpleContent>
    <extension base="token">
      <attribute name="lang" type="language" default="en"/>
    </extension>
  </simpleContent>
</simpleType>
```

```xml
    </complexType>

    <simpleType name="commandEnum">
      <restriction base="token">
        <enumeration value="create"/>
        <enumeration value="delete"/>
        <enumeration value="renew"/>
        <enumeration value="update"/>
        <enumeration value="transfer"/>
        <enumeration value="restore"/>
        <enumeration value="custom"/>
      </restriction>
    </simpleType>

    <simpleType name="nonNegativeDecimal">
      <restriction base="decimal">
        <minInclusive value="0" />
      </restriction>
    </simpleType>

    <simpleType name="negativeDecimal">
      <restriction base="decimal">
        <maxInclusive value="0" />
      </restriction>
    </simpleType>

    <complexType name="feeType">
      <simpleContent>
        <extension base="fee:nonNegativeDecimal">
          <attribute name="description"/>
          <attribute name="lang" type="language" default="en"/>
          <attribute name="refundable" type="boolean" />
          <attribute name="grace-period" type="duration" />
          <attribute name="applied">
            <simpleType>
              <restriction base="token">
                <enumeration value="immediate" />
                <enumeration value="delayed" />
              </restriction>
            </simpleType>
          </attribute>
        </extension>
      </simpleContent>
    </complexType>

    <complexType name="creditType">
      <simpleContent>
        <extension base="fee:negativeDecimal">
          <attribute name="description"/>
          <attribute name="lang" type="language" default="en"/>
        </extension>
      </simpleContent>
    </complexType>

    <simpleType name="balanceType">
      <restriction base="decimal" />
```

```
        </simpleType>

        <simpleType name="creditLimitType">
          <restriction base="decimal" />
        </simpleType>

      </schema>
      <CODE ENDS>
```

7. Security Considerations

   The mapping extensions described in this document do not provide any
   security services beyond those described by the EPP [RFC5730], the
   EPP domain name mapping [RFC5731], and the protocol layers used by
   the EPP. The security considerations described in these other
   specifications apply to this specification as well. This extension
   passes financial information using the EPP protocol, so
   confidentiality and integrity protection must be provided by the
   transport mechanism. All transports compliant with [RFC5730] provide
   the needed level of confidentiality and integrity protections. The
   server will only provide information, including financial
   information, that is relevant to the authenticated client.

8. IANA Considerations

8.1. 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 fee namespace:

   URI: urn:ietf:params:xml:ns:epp:fee-1.0

   Registrant Contact: IESG

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

   Registration request for the fee schema:

   URI: urn:ietf:params:xml:schema:epp:fee-1.0

   Registrant Contact: IESG

   XML: See Section 6 of this document.

8.2. EPP Extension Registry

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

   Name of Extension: Registry Fee Extension for the Extensible
   Provisioning Protocol (EPP)

Document status: Standards Track

Reference: RFC 8748

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Authors' Addresses

   Roger Carney
   GoDaddy Inc.
   14455 N. Hayden Rd. #219
   Scottsdale, AZ 85260
   United States of America

   Email: rcarney@godaddy.com
   URI: http://www.godaddy.com

   Gavin Brown
   CentralNic Group plc
   35-39 Moorgate
   London
   EC2R 6AR
   United Kingdom

   Phone: +44 20 33 88 0600
   Email: gavin.brown@centralnic.com
   URI: http://www.centralnic.com

Jothan Frakes

Email: jothan@jothan.com
URI: http://jothan.com