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G. Brown
CentralNic Group plc
J. Frakes
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Registry Fee Extension for the Extensible Provisioning Protocol (EPP)
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Abstract

This document describes an Extensible Provisioning Protocol (EPP) extension mapping for registry fees.

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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 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 recent expansion of the DNS namespace, and the proliferation of novel business models, it is now desirable to provide a method for EPP clients to query EPP servers for the fees and credits associated with 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 also 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", "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.

"fee" is used as an abbreviation for "urn:ietf:params:xml:ns:fee-0.11". 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.

(Note to RFC Editor: remove the following paragraph before publication as an RFC.)

The XML namespace prefix above contains a version number, specifically "0.11". This version number will increment with successive versions of this document, and will reach 1.0 if and when this document is published as an RFC. This permits clients to distinguish which version of the extension a server has implemented.

2. Migrating to Newer Versions of This Extension

(Note to RFC Editor: remove this section before publication as an RFC.)

Servers which 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 which 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 which 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 which is applicable to the given command.

The element values permitted by the server is a matter of repository policy, but MUST include as a minimum the following values:

- o "create" indicating a <create> command;
- o "renew" indicating a <renew> command;
- o "transfer" indicating a <transfer> command;

If the server supports the Registry Grace Period Mapping [RFC3915], then the server MUST also support the "restore" value.

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

in [draft-ietf-eppext-launchphase].

3.2. Currency Codes

The <fee:currency> element is used to indicate which currency fees are charged in. This value of this element MUST be a three-character currency code from [ISO4217].

Note that ISO 4217 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 commands is OPTIONAL: if a <fee:currency> element is not present in a command, the server MUST determine the currency based on the client's account settings which MUST be agreed by the client and server via an out-of-band channel. However, the <fee:currency> element MUST be present in responses.

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

3.3. Validity Periods

When querying for fee information using the <check> command, the <fee:period> element is used to indicate the units to be added to the registration period of objects by the <create>, <renew> and <transfer> commands. 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 a validity period of 1 year. The <fee:period> element MUST be present in <check> responses.

3.4. Fees and Credits

Servers which implement this extension will include elements in responses which provide information about the fees and/or credits associated with a given billable transaction.

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 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 applied to the object (where applicable) rather than to any incremental unit.

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

description: an OPTIONAL attribute which provides a human-readable description of the fee. Servers should provide documentation on the possible values of this attribute, and their meanings.

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

grace-period: an OPTIONAL attribute which 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. No other attributes are defined for this element.

3.4.1. Refunds

<fee:fee> elements MAY have an OPTIONAL "refundable" attribute which takes a boolean value. Fees may be refunded under certain circumstances, such as when a domain application is rejected (as described in [draft-ietf-epext-launchphase]) or when an object is deleted during the relevant Grace Period (see below).

If the "refundable" attribute is omitted, then clients SHOULD NOT make any assumption 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, it MUST specify the grace period for all relevant transactions.

If the "grace-period" attribute is omitted, then clients SHOULD NOT make any assumption 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. 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" (which is the default) or "delayed".

3.5. Account Balance

The <fee:balance> element is an OPTIONAL element which 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" commands (ie <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 below).

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.

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 a <fee:creditLimit> element in responses which 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 (ie <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 appears in <check> 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 which do not appear on this list.

Servers which 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.

4. Server Handling of Fee Information

Depending on 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.

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

If the currency or total fee provided by the client do not agree with the server's own calculation of the fee 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 additional elements for the EPP <check> command.

The command MAY contain an <extension> element which MAY contain a <fee:check> element. The <fee:check> element contains the following child elements:

- o A <fee:command> element;
- o An OPTIONAL <fee:currency> element;
- o An OPTIONAL <fee:period> element.
- o An OPTIONAL <fee:class> element.

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:fee-0.11">
C:         <fee:command>create</fee:command>
C:         <fee:currency>USD</fee:currency>
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 (subject to the exception described below) contain an <extension> element, which MUST

contain a child `<fee:chkData>` element. The `<fee:chkData>` element MUST contain a `<fee:cd>` element for each object referenced in the `<check>` element in the command.

The `<fee:cd>` element 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 or class is invalid according to server policy.

The `<fee:cd>` contains the following child elements:

- o A `<fee:object>` element, which contains a copy of the child element of the `<check>` element of the command, to which the fee information relates.
- o A `<fee:command>` element, which contains the same command that appeared in the corresponding `<fee:object>` element. This element MAY have the OPTIONAL "phase" and "subphase" elements, which MUST match the same attributes in the corresponding `<fee:object>` element.
- o A `<fee:currency>` element, which contains the same currency code that appeared in the `<fee:currency>` element of the command. If no `<fee:currency>` element appeared in the command, then the client's default billing currency should be used.
- o An OPTIONAL `<fee:period>` element, which contains the same unit that appeared in the `<fee:currency>` element of the command. If the value of the preceding `<fee:command>` element is "restore", this element MUST NOT be included. Otherwise it MUST be included. If no `<fee:period>` appeared in command (and the command is not "restore") then this element MUST have a value of 1 year.
- o Zero or more `<fee:fee>` elements.
- o Zero or more `<fee:credit>` elements.
- o An OPTIONAL `<fee:class>` element.
- o An OPTIONAL `<fee:reason>` element.

If no `<fee:fee>` elements are present in a `<fee:cd>` 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 false, then the `<fee:cd>` element MUST NOT contain any `<fee:fee>` or `<fee:credit>` child

elements. If the "avail" attribute is true, then the <fee:cd> 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:fee-0.11"
S:           xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:             <fee:cd avail="1">
S:               <fee:object>
S:                 <domain:name>example.com</domain:name>
S:               </fee:object>
S:               <fee:command>create</fee:command>
S:               <fee:currency>USD</fee:currency>
S:               <fee:period unit="y">1</fee:period>
S:             <fee:fee
S:               description="Registration Fee"
S:               refundable="1"
S:               grace-period="P5D">5.00</fee:fee>
S:             </fee:cd>
S:             <fee:cd avail="1">
S:               <fee:object>
S:                 <domain:name>example.com</domain:name>
S:               </fee:object>
S:               <fee:command>create</fee:command>
S:               <fee:currency>USD</fee:currency>
S:               <fee:period unit="y">1</fee:period>
```

```
S:      <fee:fee
S:          description="Registration Fee"
S:          refundable="1"
S:          grace-period="P5D">5.00</fee:fee>
S:      </fee:cd>
S:      <fee:cd avail="0">
S:          <fee:object>
S:              <domain:name>example.com</domain:name>
S:          </fee:object>
S:          <fee:command>create</fee:command>
S:          <fee:currency>USD</fee:currency>
S:          <fee:period unit="y">1</fee:period>
S:          <fee:reason>
S:              minimum period is 2 years.
S:          </fee:reason>
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>
```

5.1.1.1. Server Handling of <fee:class> Elements

Clients MAY include a <fee:class> in the <fee:check> element. There are three ways in which servers may handle this element:

1. If the server supports the concept of tiers or classes of objects, then the value of this element MUST be validated. If incorrect for the specified object, the "avail" attribute of the corresponding <fee:cd> element MUST be false.
2. If the server supports different "types" of object registrations (such as a "blocking" registration which does not resolve, or where a registry provides a value-added service that requires an opt-out to disable), then, as with the first model, the server MUST validate the value of the element. If the value is incorrect, the "avail" attribute of the corresponding <fee:cd> element MUST be false.
3. If the server supports neither of the above models, the element MUST be ignored.

Server operators must provide clear documentation to client operators which of the above models it supports.

5.1.2. EPP Transfer Query Command

This extension does not add any elements to the EPP <transfer> query command, but does include elements in the response, when the extension has been selected during a <login> command.

When the <transfer> query command has been processed successfully, the client selected the extension when it logged in, and the client is authorised by the server to view information about the transfer, the server MAY include in the <extension> section of the EPP response a <fee:trnData> element, which contains the following child elements:

- o A <fee:currency> element.
- o A <fee:period> element.
- o Zero or more <fee:fee> elements containing the fees that will be charged to the gaining client.
- o Zero or more <fee:credit> elements 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>2000-06-08T22:00:00.0Z</domain:reDate>
S:         <domain:acID>ClientY</domain:acID>
S:         <domain:acDate>2000-06-13T22:00:00.0Z</domain:acDate>
S:         <domain:exDate>2002-09-08T22:00:00.0Z</domain:exDate>
S:       </domain:trnData>
S:     </resData>
S:     <extension>
S:       <fee:trnData xmlns:fee="urn:ietf:params:xml:ns:fee-0.11">
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 has been selected during a <login> command.

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:

- o An OPTIONAL <fee:currency> element;
- o One or more <fee:fee> elements.

When the <create> command has been processed successfully, and the client selected the extension when it logged in, 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:

- o A <fee:currency> element;
- o Zero or more <fee:fee> elements;
- o Zero or more <fee:credit> elements;
- o An OPTIONAL <fee:balance> element;
- o An OPTIONAL <fee:creditLimit> element.

If no fee or credit has been assessed by the server for this transaction, a <fee:creData> element MUST NOT be included in the response.

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>jdl234</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:fee-0.11">
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>1999-04-03T22:00:00.0Z</domain:crDate>
S:           <domain:exDate>2001-04-03T22:00:00.0Z</domain:exDate>
S:         </domain:creData>
S:       </resData>
S:       <extension>
S:         <fee:creData xmlns:fee="urn:ietf:params:xml:ns:fee-0.11">
S:           <fee:currency>USD</fee:currency>
S:           <fee:fee 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 does include elements in the response, when the extension has been selected during the <login> command.

When the <delete> command has been processed successfully, and the client selected the extension when it logged in, the server MAY include in the <extension> section of the EPP response a <fee:delData> element, which contains the following child elements:

- o A <fee:currency> element;
- o Zero or more <fee:credit> elements;
- o An OPTIONAL <fee:balance> element;
- o An OPTIONAL <fee:creditLimit> element.

If no credit has been assessed by the server for this transaction, a `<fee:delData>` element MUST NOT be included in the response.

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:fee-0.11">
S:         <fee:currency>USD</fee:currency>
S:         <fee:credit description="AGP Credit">-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 has been selected during a `<login>` command.

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:

- o An OPTIONAL `<fee:currency>` element;
- o One or more `<fee:fee>` elements.

When the `<renew>` command has been processed successfully, and the client selected the extension when it logged in, the server MAY include in the `<extension>` section of the EPP response a `<fee:renData>` element, which contains the following child elements:

- o A `<fee:currency>` element;

- o Zero or more <fee:fee> elements;
- o Zero or more <fee:credit> elements;
- o An OPTIONAL <fee:balance> element;
- o An OPTIONAL <fee:creditLimit> element.

If no fee or credit has been assessed by the server for this transaction, a <fee:renData> element MUST NOT be included in the response.

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>2000-04-03</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:fee-0.11">
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>2005-04-03T22:00:00.0Z</domain:exDate>
S:         </domain:renData>
S:       </resData>
S:       <extension>
S:         <fee:renData xmlns:fee="urn:ietf:params:xml:ns:fee-0.11">
S:           <fee:currency>USD</fee:currency>
S:           <fee:fee 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 has been selected during the <login> command.

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:

- o An OPTIONAL <fee:currency> element;
- o One or more <fee:fee> elements.

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

- o A <fee:currency> element;
- o Zero or more <fee:fee> elements;
- o Zero or more <fee:credit> elements;
- o An OPTIONAL <fee:balance> element;
- o An OPTIONAL <fee:creditLimit> element.

If no fee or credit has been assessed by the server for this transaction, a <fee:trnData> element MUST NOT be included in the response.

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:fee-0.11">
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>2000-06-08T22:00:00.0Z</domain:reDate>
S:         <domain:acID>ClientY</domain:acID>
S:         <domain:acDate>2000-06-13T22:00:00.0Z</domain:acDate>
S:         <domain:exDate>2002-09-08T22:00:00.0Z</domain:exDate>
S:       </domain:trnData>
S:     </resData>
S:     <extension>
S:       <fee:trnData xmlns:fee="urn:ietf:params:xml:ns:fee-0.11">
S:         <fee:currency>USD</fee:currency>
S:         <fee:fee 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 has been selected during a <login> has been selected during the <login> command.

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

- o An OPTIONAL <fee:currency> element;
- o One or more <fee:fee> elements.

When the <update> command has been processed successfully, and the client selected the extension when it logged in, the server MAY include in the <extension> section of the EPP response a <fee:upData>

element, which contains the following child elements:

- o A <fee:currency> element;
- o Zero or more <fee:fee> elements;
- o Zero or more <fee:credit> elements;
- o An OPTIONAL <fee:balance> element;
- o An OPTIONAL <fee:creditLimit> element.

If no fee or credit has been assessed by the server for this transaction, a <fee:upData> element MUST NOT be included in the response.

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:fee-0.11">
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:fee-0.11">
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>
```

5.3. Formal Syntax

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

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BEGIN

```
<?xml version="1.0" encoding="utf-8"?>
<schema xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:fee="urn:ietf:params:xml:ns:fee-0.11"
  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:fee-0.11"
  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
      vl.0 extension schema for fee
      information.</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:transferResultType" />
  <element name="update" type="fee:transformCommandType" />
  <element name="updData" type="fee:transformResultType" />
  <element name="delData" type="fee:deleteDataType" />

  <!--
  client <check> command
  -->
  <complexType name="checkType">
    <sequence>
```

```
<element name="command" type="fee:commandType" />
<element name="currency" type="fee:currencyType"
  minOccurs="0" />
<element name="period" type="domain:periodType"
  minOccurs="0" />
<element name="class" type="token"
  minOccurs="0" />
</sequence>
</complexType>

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

<complexType name="objectCDType">
  <sequence>
    <element name="object">
      <complexType>
        <sequence>
          <any namespace="##other" processContents="lax"/>
        </sequence>
      </complexType>
    </element>
    <element name="command" type="fee:commandType" />
    <element name="currency" type="fee:currencyType" />
    <element name="period" type="domain:periodType"
      minOccurs="0" maxOccurs="1" />
    <element name="fee" type="fee:feeType"
      minOccurs="0" maxOccurs="unbounded" />
    <element name="credit" type="fee:creditType"
      minOccurs="0" maxOccurs="unbounded" />
    <element name="class" type="token" minOccurs="0" />
    <element name="reason" type="token" 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"
  minOccurs="0" maxOccurs="unbounded" />
<element name="credit" type="fee:creditType"
  minOccurs="0" maxOccurs="unbounded" />
</sequence>
</complexType>

<!--
  general transform (create, renew, update) result
-->
<complexType name="transformResultType">
  <sequence>
    <element name="currency" type="fee:currencyType" />
    <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>

<!--
  transfer result
-->
<complexType name="transferResultType">
  <sequence>
    <element name="currency" type="fee:currencyType" />

    <!-- only used op="query" responses -->
    <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" />
  </sequence>
</complexType>

<!--
  delete result
-->
<complexType name="deleteDataType">
```

```
<sequence>
  <element name="currency" type="fee:currencyType" />
  <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">
  <simpleContent>
    <extension base="fee:commandTypeValue">
      <attribute name="phase" type="token" />
      <attribute name="subphase" type="token" />
    </extension>
  </simpleContent>
</complexType>

<simpleType name="commandTypeValue">
  <restriction base="token">
    <minLength value="3"/>
    <maxLength value="16"/>
  </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="refundable" type="boolean" />
      <attribute name="grace-period" type="duration" />
      <attribute name="applied" default="immediate">
        <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"/>
    </extension>
  </simpleContent>
</complexType>

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

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

</schema>

END
```

6. 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.

7. IANA Considerations

7.1. XML Namespace

This document uses URNs to describe XML namespaces and XML schemas conforming to a registry mechanism described in [RFC3688]. The following URI assignment is requested of IANA:

URI: urn:ietf:params:xml:ns:fee-0.11

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

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

7.2. EPP Extension Registry

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

Name of Extension: EPP Fee Extension

Document status: Standards Track

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

Registrant Name and Email Address: See the "Author's Address" section of this document.

TLDs: any

IPR Disclosure: none

Status: active

Notes: none

8. Implementation Status

Note to RFC Editor: Please remove this section and the reference to [RFC6982] 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 [RFC6982]. 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 [RFC6982], "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".

8.1. 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: All aspects of the protocol are implemented.

Licensing: Proprietary In-House software

Contact: epp@centralnic.com

URL: <https://www.centralnic.com>

9. Acknowledgements

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- o Luis Munoz of ISC

- o Michael Young of Architelos
- o Ben Levac and Jeff Eckhaus of Demand Media
- o Seth Goldman of Google
- o Klaus Malorny and Michael Bauland of Knipp
- o Jody Kolker and Roger Carney of Go Daddy
- o Michael Holloway of Com Laude
- o Santosh Kalsangrah of Impetus Infotech
- o Alex Mayrhofer of Nic.at

10. Change History

10.1. Changes from 00 to 01

1. Restore the <check> command extension; either <check> or <info> can be used.
2. added extension elements for <create>, <renew>, <transfer> and <update> so that the server can reject the command if the fee is incorrect.

10.2. Changes from 01 to 02

1. Use Internet-Draft version number rather than XML namespace version number in this section.
2. Support for multiple <fee:fee> and <fee:credit> elements.
3. Added the "description" attribute to <fee:fee> and <fee:credit> elements.
4. Added the <fee:balance> element.
5. Added the <fee:creditLimit> element.
6. Updated reference to [draft-ietf-eppext-launchphase].
7. Use <fee:command> instead of <fee:action>.
8. Use a single child element of <fee:chkData> instead of multiple elements for each domain. This also requires using a different

name (<fee:name>) for the domain name.

9. Added the "refundable" attribute to <fee:fee> elements.

10. Added the "grace-period" attribute to <fee:fee> elements.

10.3. Changes from 02 to 03

1. Added the "applied" attribute to <fee:fee> elements.

2. Simplified the wording in relation to when a server can return an error for extended <info> commands.

3. Added the <fee:period> element to transfer query responses.

4. Removed wording about how servers behave when receiving incorrect fee information from transform commands, and put it into a single section at the top of the document.

5. Allow servers to omit <fee:fee> elements from <fee:cd> elements if the command specified by the client is forbidden.

10.4. Changes from 03 to 04

1. Changed Intended Status to Standards Track.

2. As per suggestion from Michael Bauland, the <fee:period> element is no longer included in <check> and <info> responses for "restore" commands. It's still mandatory for all other commands.

3. Added summary of the attributes for the <fee:fee> element.

4. Clarified that the "refundable" and "grace-period" attributes of the <fee:fee> elements are dependant on each other and cannot appear on their own.

5. Removed the option of returning a 1001 response when the fee is incorrect.

6. Forbidden the inclusion of extension elements in transform responses if no fee/credit has been assessed.

7. Made the <fee:currency> element optional in transform commands.

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

10.5. Changes from 04 to 05

1. Removed the extended <info> command. The <check> command is the only command that can be used now.
2. Introduced a mandatory-to-implement "standard" class for non-premium domains.
3. The decision was made to keep availability info in <check> responses as registrars have indicated that it is very useful as it avoids unnecessary round trips to the server.
4. Allow <fee:credit> elements to be present in <check> responses.
5. Allow the number of <fee:fee> which can appear in transform responses to be zero.
6. Removed the <fee:balance> and <fee:creditLimit> elements from transfer query responses. The reason is that these elements are defined as containing the values after the transform command has taken place - which means that it is not appropriate to include them in a query response.
7. Added Implementation Status section.

10.6. Changes from 05 to 06

1. The specification is now object-agnostic, but works with RFC5731 [RFC5731] domains by default.
2. Renamed the <fee:domain> element to <fee:object>. Added the "objURI" attribute.
3. Removed the default value for the "refundable" attribute of <fee:fee> elements, and added text about how clients should handle such cases. Added similar text to the documentation of the "grace-period" attribute.
4. Removed references to the defunct <info> command syntax.
5. "MUST" requirements regarding documentation have been changed to "must".
6. Created separate "Correlation between Refundability and Grace Periods" section describing how the "refundable" and "grace-period" attributes work together.

10.7. Changes from 06 to 07

1. Changed the syntax of the <check> form to be simpler: a single set of <fee:command>, <fee:currency> etc elements is applied to the objects specified in the main body of the <check> command.
2. Simplified the object-agnosticism to simply copy the element from the <check> command into the <fee:cd> element.
3. Added the "avail" attribute to the <fee:cd> element and added commentary about its semantics.
4. Added the <fee:reason> element to the <check> response so servers can indicate why fee information is not available.

11. Normative References

- [ISO4217] International Organization for Standardization, "ISO 4217: 2008, Codes for the representation of currencies and funds", 2008.
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Authors' Addresses

Gavin Brown
CentralNic Group plc
35-39 Moorgate
London, England EC2R 6AR
GB

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

Jothan Frakes

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

