Network Working Group
Internet-Draft
Intended status: Standards Track
Expires: 15 October 2026

J. Gould
VeriSign, Inc.
W. Staub
CORE

13 April 2026

Balance Mapping for the Extensible Provisioning Protocol (EPP)
draft-ietf-regext-balance-01

Abstract

This document describes an Extensible Provisioning Protocol (EPP) mapping for retrieving the client balance and other financial information.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at https://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on 15 October 2026.

Copyright Notice

Table of Contents

1. Introduction

This document describes an extension mapping for version 1.0 of the Extensible Provisioning Protocol (EPP) [RFC5730]. This EPP mapping enables a client to get their financial information including the balance, credit limit, cash balance, execution limit, and notification threshold.

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

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

"balance-0.2" is used as an abbreviation for "urn:ietf:params:xml:ns:epp:balance-0.2". The XML namespace prefix "balance" is used, but implementations MUST NOT depend on it. Instead, they are to employ a proper namespace-aware XML parser and serializer to interpret and output the XML documents.

2. Object Attributes

2.1. Currency

The <balance:currency> element is used to indicate the currency of the balance elements that is determined by the server. The value of this element MUST be a three-character currency code from [ISO4217_2015].

2.2. Decimal Attribute Values

All of the EPP Balance object attributes use the XML decimal (http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/#decimal) data type to represent the currency value in the currency of the server. The precision is restricted to 2 fractional digits.

2.3. Balance

The <balance:balance> element represents the calculated Balance value, using the Currency Code (Section 2.1), that determines whether the Notification Threshold (Section 2.7) or the Execution Limit (Section 2.6) are met. The equation used to calculate the Balance is:

```
Balance(B) = Credit Limit(CL) + Cash Balance(CB)
```

Figure 1: Balance Equation

The Balance can be positive or negative. The Balance increases when the Credit Limit increases by adding more credit instruments and increases when the Cash Balance increases with client payments or applying billable credits. The Balance decreases when the Credit Limit decreases by credit instruments being removed or expiring and decreases when the Cash Balance decreases by applying billable debits. The Balance value that disables the ability for the client to perform future billable transactions is defined by the Execution Limit (Section 2.6).

2.4. Credit Limit

The <balance:creditLimit> element represents the calculated level of credit based on the set of active credit instruments. The set of supported credit instruments is up to server policy, with examples including a Line of Credit and an Emergency Credit. Increasing the Credit Limit(CL) results in increasing the Balance(B) in the Balance Equation (Figure 1), and decreasing the Credit Limit(CL) results in decreasing the Balance(B). A Credit Client is a client that works off of credit represented by the Credit Limit. The Credit Limit SHOULD NOT be a negative value with the default value being "0.00".

2.5. Cash Balance

The <balance:cashBalance> element represents the cash on hand that is impacted by client payments and billable transaction debits and credits, inclusive of the fees and taxes. An example is a Domain Create Command debiting (decreasing) the Cash Balance and a grace period Domain Delete Command crediting (increasing) the Cash Balance. Increasing the Cash Balance(CB) results in increasing the Balance(B) in the Balance Equation (Figure 1), and decreasing the Cash Balance(CB) results in decreasing the Balance(B). A Cash Client is a client that works off of the Cash Balance(CB) and not the Credit Limit (Section 2.4).

The Cash Balance can be positive or negative, where the Execution Limit (Section 2.6) determines if the client can perform future billable transactions.

2.6. Execution Limit

The <balance:executionLimit> element represents the Balance that disables the ability for the client to perform future billable transactions. The default value of the Execution Limit is zero ("0.00"), but a server MAY allow for a negative Execution Limit that is reflected by the <balance:executionLimit> element.

2.7. Notification Threshold

The <balance:notificationThreshold> element represents the Balance that triggers the server to insert a Low Balance Poll Message (Section 2.9). The server MUST insert a single Low Balance Poll Message (Section 2.9) when the Balance equals or is less than the Notification Threshold.

2.8. Dates and Times

Date and time attribute values MUST be represented in Universal Coordinated Time (UTC) using the Gregorian calendar. The extended date-time form using upper case "T" and "Z" characters defined in XML Schema Part 2 (http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/) MUST be used to represent date-time values, as XML Schema does not support truncated date-time forms or lower case "T" and "Z" characters.

2.9. Low Balance Poll Message

The EPP <poll> command and response is defined in section 2.9.2.3 of [RFC5730]. For servers that support a credit threshold, the Balance Info Response, as defined in Section 3.1.2, is inserted into the poll queue whenever the available credit for an account reaches or goes below the credit threshold.

Example <poll> 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:  <poll op="req"/>
 C:    <clTRID>ABC-12345</clTRID>
 C:  </command>
 C:</epp>
```

Example low balance <poll> 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="1301">
S:      <msg>Command completed successfully; ack to dequeue</msg>
S:    </result>
S:    <msgQ count="1" id="12345">
S:      <qDate>2026-03-18T15:25:01.0078Z</qDate>
S:      <msg>Low Balance</msg>
S:    </msgQ>
S:    <resData>
S:      <balance:infData
S:        xmlns:balance="urn:ietf:params:xml:ns:epp:balance-0.2">
S:        <balance:currency>USD</balance:currency>
S:        <balance:balance>200.00</balance:balance>
S:        <balance:creditLimit>1000.00</balance:creditLimit>
S:        <balance:cashBalance>-800.00</balance:cashBalance>
S:        <balance:executionLimit>0.00</balance:executionLimit>
S:        <balance:notificationThreshold>500.00
S:        </balance:notificationThreshold>
S:      </balance:infData>
S:    </resData>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3. EPP Command Mapping

A detailed description of the EPP syntax and semantics can be found in the EPP core protocol specification [RFC5730]. The command mappings described here are specifically for use with the Balance Object Mapping.

3.1. EPP Query Commands

EPP [RFC5730] provides three commands to retrieve object information: <check> to determine if an object is known to the server, <info> to retrieve detailed information associated with an object, and <transfer> to retrieve object transfer status information.

3.1.1. EPP <check> Command

Available check semantics do not apply to balance objects, so there is no mapping defined for the EPP <check> command.

3.1.2. EPP <info> Command

EPP provides the <info> command that is used to retrieve client balance and other financial information for the currently logged-in client. In addition to the standard EPP command elements, the <info> command MUST contain a <balance:info> element that identifies the balance namespace. The <balance:info> element does not contain any child elements.

Example <info> command:

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:  <command>
C:    <info>
C:      <balance:info
C:        xmlns:balance="http://www.verisign.com/epp/balance-0.2"/>
C:    </info>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

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

<balance:currency>
: The <balance:currency> element is used to indicate the Currency (Section 2.1) used by the account balance elements.

<balance:balance>
: The <balance:balance> element contains the calculated Balance (Section 2.3) using the Currency (Section 2.1) of the <balance:currency> element.

<balance:balance>
: The <balance:creditLimit> element contains the calculated Credit Limit (Section 2.4) based on the set of active credit instruments using the Currency (Section 2.1) of the <balance:currency> element.

<balance:cashBalance>
: The <balance:cashBalance> element that contains the Cash Balance (Section 2.5) representing the cash on hand that is impacted by client payments and billable transaction debits and credits using the Currency (Section 2.1) of the <balance:currency> element.

<balance:executionLimit>
The OPTIONAL <balance:executionLimit> element, with a default value of "0.00", that contains the Execution Limit (Section 2.6) representing the Balance that disables the ability for the client to perform future billable transactions using the Currency (Section 2.1) of the <balance:currency> element.
<balance:notificationThreshold>
The OPTIONAL <balance:notificationThreshold> element that contains the Notification Threshold (Section 2.7) representing the Balance that triggers the server to insert a Low Balance Poll Message (Section 2.9) using the Currency (Section 2.1) of the <balance:currency> element.

Example <info> response 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:      <balance:infData
S:        xmlns:balance="urn:ietf:params:xml:ns:epp:balance-0.2">
S:        <balance:currency>USD</balance:currency>
S:        <balance:balance>800.00</balance:balance>
S:        <balance:creditLimit>1000.00</balance:creditLimit>
S:        <balance:cashBalance>-200.00</balance:cashBalance>
S:        <balance:executionLimit>-500.00</balance:executionLimit>
S:        <balance:notificationThreshold>500.00
S:        </balance:notificationThreshold>
S:      </balance:infData>
S:    </resData>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.1.3. EPP <transfer> Command

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

3.2. EPP Transform Commands

EPP provides five commands to transform objects: <create> to create an instance of an object, <delete> to delete an instance of an object, <renew> to extend the validity period of an object, <transfer> to manage object sponsorship changes, and <update> to change information associated with an object.

3.2.1. EPP <create> Command

Create semantics do not apply to balance objects, so there is no mapping defined for the EPP <create> command.

3.2.2. EPP <delete> Command

Delete semantics do not apply to balance objects, so there is no mapping defined for the EPP <delete> command.

3.2.3. EPP <renew> Command

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

3.2.4. EPP <transfer> Command

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

3.2.5. EPP <update> Command

Update semantics do not apply to balance objects, so there is no mapping defined for the EPP <update> command.

4. Formal Syntax

The EPP Balance Mapping schema is presented here.

The formal syntax shown here is a complete XML Schema representation of the object mapping suitable for automated validation of EPP XML instances. The <CODE BEGINS> and <CODE ENDS> tags are not part of the XML Schema; they are used to note the beginning and ending of the XML Schema for URI registration purposes.

4.1. Balance Mapping Schema

```
<CODE BEGINS>
<?xml version="1.0" encoding="UTF-8"?>
<schema xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:balance="urn:ietf:params:xml:ns:epp:balance-0.2"
  targetNamespace="urn:ietf:params:xml:ns:epp:balance-0.2"
  elementFormDefault="qualified">
  <annotation>
    <documentation>Extensible Provisioning Protocol v1.0
      Balance mapping.
    </documentation>
  </annotation>
  <!--
    Child elements found in EPP commands.
  -->
  <!-- Empty balance:info command element -->
  <element name="info" />
  <!--
    Child response elements.
  -->
  <element name="infData"
    type="balance:infDataType" />
  <!--Child elements of the balance:infData element -->
  <complexType name="infDataType">
    <sequence>
      <element name="currency"
        type="balance:currencyType" />
      <element name="balance"
        type="balance:currencyValueType" />
      <element name="creditLimit"
        type="balance:currencyValueType" />
      <element name="cashBalance"
        type="balance:currencyValueType" />
      <element name="executionLimit"
        type="balance:currencyValueType"
        minOccurs="0" default="0.00"/>
      <element name="notificationThreshold"
        type="balance:currencyValueType"
        minOccurs="0"/>
    </sequence>
  </complexType>
  <simpleType name="currencyType">
    <restriction base="string">
      <pattern value="[A-Z]{3}" />
    </restriction>
  </simpleType>
  <simpleType name="currencyValueType">
    <restriction base="decimal">
      <fractionDigits value="2" />
```

```
      </restriction>
    </simpleType>
  </schema>
  <CODE ENDS>
```

5. IANA Considerations

5.1. XML Namespace

This document uses URNs to describe XML namespaces and XML schemas conforming to a registry mechanism described in [RFC3688]. The following URI assignment has been made by IANA:

Registration request for the balance namespace:

URI: urn:ietf:params:xml:ns:epp:balance-0.2
Registrant Contact: IESG
XML: None. Namespace URIs do not represent an XML specification.

Registration request for the balance XML Schema:

URI: urn:ietf:params:xml:schema:epp:balance-0.2
Registrant Contact: IESG
XML: See the formal syntax in Section 4.1.

5.2. 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: "Balance Mapping for the Extensible Provisioning Protocol (EPP)"
Document Status: Standards Track
Reference: (insert reference to RFC version of this document)
Registrant Name and Email Address: IESG, <iesg@ietf.org>
TLDs: Any
IPR Disclosure: None
Status: Active
Notes: None

6. Security Considerations

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

Financial information is confidential information for a client, so the server MUST have access control restrictions in place to limit access to financial information of the currently logged-in client.

7. Normative References

[ISO4217_2015] ISO, "Codes for the representation of currencies", ISO 4217:2015, August 2015, <https://www.iso.org/standard/64758.html>.

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

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

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

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/info/rfc8174>.

8. Informative References

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

Appendix A. Change History

A.1. Change from 00 to REGEXT 00

1. Changed to regext working group draft by changing draft-gould-regext-balance to draft-ietf-regext-balance.

A.2. Change from REGEXT 00 to REGEXT 01

1. Added Werner Staub from CORE as co-editor.

2. Changed the XML namespace from "urn:ietf:params:xml:ns:epp:balance-0.1" to "urn:ietf:params:xml:ns:epp:balance-0.2" and the XML schema from "urn:ietf:params:xml:schema:epp:balance-0.1" to "urn:ietf:params:xml:schema:epp:balance-0.2", based on the needed XML schema changes.
3. Updated the XML schema and the example XML.
4. Updated the info response elements and re-ordered to match the equation order.
5. UAdded a sub-section in the "Object Attributes" section for each of the Balance Mapping elements / variables. The sub-sections are referenced in defining the info response elements.
6. Changed the equation from Available Credit(AC) = Credit Limit (CL) - Balance (B) to Balance (B) = Credit Limit (CL) + Cash Balance (CB).
7. Added the definition of the Execution Limit (EL).
8. Changed the Credit Threshold to Notification Threshold.
9. Added ", inclusive of the fees and taxes" for the debits and credits of the Cash Balance.
10. Added a reference to Section 4.1 "XML Schema" in the XML Schema IANA registration based on feedback from IANA.

Authors' Addresses

James Gould
VeriSign, Inc.
12061 Bluemont Way
Reston, VA 20190
United States of America
Email: jgould@verisign.com
URI: http://www.verisign.com

Werner Staub
CORE
Email: werner.staub@corenic.org
URI: https://corenic.org