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Allocation Token Extension for the Extensible Provisioning Protocol (EPP)
draft-ietf-regext-allocation-token-06

Abstract

This document describes an Extensible Provisioning Protocol (EPP) extension for including an Allocation Token in query and transform commands. The Allocation Token is used as a credential that authorizes a client to request the allocation of a specific object from the server, using one of the EPP transform commands including create and transfer.

Status of This Memo

This Internet-Draft will expire on August 2, 2018.

Copyright Notice

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1. Introduction

This document describes an extension mapping for version 1.0 of the Extensible Provisioning Protocol (EPP) [RFC5730]. This mapping, an extension to EPP object mappings like the EPP domain name mapping [RFC5731], supports passing an Allocation Token as a credential that authorizes a client to request the allocation of a specific object from the server, using one of the EPP transform commands including create and transfer.

Allocation is when a server assigns the sponsoring client of an object based on the use of an Allocation Token credential. Examples include allocating a registration based on a pre-eligibility Allocation Token, allocating a premium domain name registration based on an auction Allocation Token, allocating a registration based on a founders Allocation Token, and allocating an existing domain name held by the server or by a different sponsoring client based on an Allocation Token passed with a transfer command.

A client MUST pass an Allocation Token known to the server to be authorized to use one of the supported EPP transform commands. It is up to server policy which EPP transform commands and which objects require the Allocation Token. The Allocation Token MAY be returned to an authorized client for passing out-of-band to a client that uses it with an EPP transform command.

1.1. Conventions Used in This Document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

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

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

"allocationToken-1.0" is used as an abbreviation for "urn:ietf:params:xml:ns:allocationToken-1.0". The XML namespace prefix "allocationToken" is used, but implementations MUST NOT depend on it and instead employ a proper namespace-aware XML parser and serializer to interpret and output the XML documents.

2. Object Attributes

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

2.1. Allocation Token

The Allocation Token is a simple XML "token" type. The exact format of the Allocation Token is up to server policy. The server MUST have the Allocation Token for each object to match against the Allocation Token passed by the client to authorize the allocation of the object. The <allocationToken:allocationToken> element is used for all of the supported EPP commands as well as the info response. If the Allocation Token passed to the server does not apply to the object, the server MUST return an EPP error result code of 2201.

An example <allocationToken:allocationToken> element with value of "abc123":

```
<allocationToken:allocationToken xmlns:allocationToken=
          "urn:ietf:params:xml:ns:allocationToken-1.0">
  abc123
</allocationToken:allocationToken>
```

3. EPP Command Mapping

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

3.1. EPP Query Commands

EPP provides three commands to retrieve object information: <check> to determine if an object can be provisioned, <info> to retrieve information associated with an object, and <transfer> to retrieve object transfer status information.

3.1.1. EPP <check> Command

This extension defines additional elements to extend the EPP <check> command of an object mapping like [RFC5731].

This extension allow clients to check the availability of an object with an Allocation Token, as described in Section 2.1. Clients can check if an object can be created using the Allocation Token. The Allocation Token is applied to all object names included in the EPP <check> command.

Example <check> command for the example.tld domain name using the <allocationToken:allocationToken> extension with the allocation token of 'abc123':

```
C:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
C:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
C:  <command>
C:    <check>
C:      <domain:check
C:       xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
C:        <domain:name>example.tld</domain:name>
C:      </domain:check>
C:    </check>
C:    <extension>
C:      <allocationToken:allocationToken
C:        xmlns:allocationToken=
C:          "urn:ietf:params:xml:ns:allocationToken-1.0">
C:        abc123
C:      </allocationToken:allocationToken>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

If the query was successful, the server replies with a <check> response providing the availability status of the queried object based on the following Allocation Token cases, where the object is otherwise available:

1. If an object requires an Allocation Token and the Allocation Token does apply to the object, then the server MUST return the availability status as available (e.g., "avail" attribute is "1" or "true").
2. If an object requires an Allocation Token and the Allocation Token does not apply to the object or an object does not require an Allocation Token, then the server SHOULD return the availability status as unavailable (e.g., "avail" attribute is "0" or "false").

Example <check> domain response for a <check> command using the <allocationToken:allocationToken> extension:

```
   S:<?xml version="1.0" encoding="UTF-8"?>
   S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
   S: <response>
   S:  <result code="1000">
   S:   <msg lang="en-US">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="0">example.tld</domain:name>
   S:     <domain:reason>Allocation Token mismatch</domain:reason>
   S:    </domain:cd>
   S:   </domain:chkData>
   S:  </resData>
   S:  <trID>
   S:   <clTRID>ABC-DEF-12345</clTRID>
   S:   <svTRID>54321-XYZ</svTRID>
   S:  </trID>
   S: </response>
   S:</epp>
```

Example <check> command with the <allocationToken:allocationToken> extension for the example.tld and example2.tld domain names. Availability of example.tld and example2.tld domain names are based on the Allocation Token 'abc123':

```
   C:<?xml version="1.0" encoding="UTF-8"?>
   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.tld</domain:name>
   C:    <domain:name>example2.tld</domain:name>
   C:   </domain:check>
   C:  </check>
   C:  <extension>
   C:   <allocationToken:allocationToken
   C:     xmlns:allocationToken=
   C:       "urn:ietf:params:xml:ns:allocationToken-1.0">
   C:     abc123
   C:   </allocationToken:allocationToken>
   C:  </extension>
   C:  <clTRID>ABC-DEF-12345</clTRID>
   C: </command>
   C:</epp>
```

Example <check> domain response for multiple domain names in the <check> command using the <allocationToken:allocationToken> extension:

```
S:<?xml version="1.0" encoding="UTF-8"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S: <response>
S:  <result code="1000">
S:   <msg lang="en-US">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="0">example.tld</domain:name>
S:     <domain:reason>Allocation Token mismatch</domain:reason>
S:    </domain:cd>
S:    <domain:cd>
S:     <domain:name avail="1">example2.tld</domain:name>
S:    </domain:cd>
S:   </domain:chkData>
S:  </resData>
S:  <trID>
S:   <clTRID>ABC-DEF-12345</clTRID>
S:   <svTRID>54321-XYZ</svTRID>
S:  </trID>
S: </response>
S:</epp>
```

This extension does not add any elements to the EPP <check> response described in the [RFC5730].

3.1.2. EPP <info> Command

This extension defines additional elements to extend the EPP <info> command of an object mapping like [RFC5731].

The EPP <info> command allows a client to request information associated with an existing object. Authorized clients MAY retrieve the Allocation Token (Section 2.1) along with the other object information using the <allocationToken:info> element. The <allocationToken:info> element is an empty element that serves as a marker to the server to return the <allocationToken:allocationToken> element in the info response. If the client is not authorized to receive the Allocation Token, the server MUST return an EPP error result code of 2201. If the client is authorized to receive the Allocation Token, but there is no Allocation Token associated with

the object, the server MUST return an EPP error result code of 2303 object referencing the <allocationToken:info> element. The auhorization is subject to server policy.

Example <info> command with the allocationToken:info extension for the example.tld domain name:

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

If the query was successful, the server replies with an <allocationToken:allocationToken> element, as described in Section 2.1.

Example <info> domain response using the <allocationToken:allocationToken> extension:

```
S:<?xml version="1.0" encoding="UTF-8" standalone="no"?>
S:<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
S:  <response>
S:    <result code="1000">
S:      <msg>Command completed successfully</msg>
S:    </result>
S:    <resData>
S:      <domain:infData
S:       xmlns:domain="urn:ietf:params:xml:ns:domain-1.0">
S:        <domain:name>example.tld</domain:name>
S:        <domain:roid>EXAMPLE1-REP</domain:roid>
S:        <domain:status s="pendingCreate"/>
S:        <domain:registrant>jd1234</domain:registrant>
S:        <domain:contact type="admin">sh8013</domain:contact>
S:        <domain:contact type="tech">sh8013</domain:contact>
S:        <domain:clID>ClientX</domain:clID>
S:        <domain:crID>ClientY</domain:crID>
S:        <domain:crDate>2012-04-03T22:00:00.0Z</domain:crDate>
S:        <domain:authInfo>
S:          <domain:pw>2fooBAR</domain:pw>
S:        </domain:authInfo>
S:      </domain:infData>
S:    </resData>
S:    <extension>
S:      <allocationToken:allocationToken
S:        xmlns:allocationToken=
S:          "urn:ietf:params:xml:ns:allocationToken-1.0">
S:        abc123
S:      </allocationToken:allocationToken>
S:    </extension>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54321-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

3.1.3. EPP <transfer> Query Command

This extension does not add any elements to the EPP <transfer> query command or <transfer> query response described in the [RFC5730].

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

This extension defines additional elements to extend the EPP <create> command of an object mapping like [RFC5731].

The EPP <create> command provides a transform operation that allows a client to create an instance of an object. In addition to the EPP command elements described in an object mapping like [RFC5731], the command MUST contain a child <allocationToken:allocationToken> element for the client to be authorized to create and allocate the object. If the Allocation Token does not apply to the object, the server MUST return an EPP error result code of 2201.

Example <create> command to create a domain object with an Allocation Token:

```
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.tld</domain:name>
C:        <domain:registrant>jd1234</domain:registrant>
C:        <domain:contact type="admin">sh8013</domain:contact>
C:        <domain:contact type="tech">sh8013</domain:contact>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:create>
C:    </create>
C:    <extension>
C:      <allocationToken:allocationToken
C:        xmlns:allocationToken=
C:          "urn:ietf:params:xml:ns:allocationToken-1.0">
C:        abc123
C:      </allocationToken:allocationToken>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

This extension does not add any elements to the EPP <create> response described in the [RFC5730].

3.2.2. EPP <delete> Command

This extension does not add any elements to the EPP <delete> command or <delete> response described in the [RFC5730].

3.2.3. EPP <renew> Command

This extension does not add any elements to the EPP <renew> command or <renew> response described in the [RFC5730].

3.2.4. EPP <transfer> Command

This extension defines additional elements to extend the EPP <transfer> request command of an object mapping like [RFC5731].

The EPP <transfer> request command provides a transform operation that allows a client to request the transfer of an object. In addition to the EPP command elements described in an object mapping like [RFC5731], the command MUST contain a child <allocationToken:allocationToken> element for the client to be authorized to transfer and allocate the object. The authorization associated with the Allocation Token is in addition to and does not replace the authorization mechanism defined for the object's <transfer> request command. If the Allocation Token does not apply to the object, the server MUST return an EPP error result code of 2201.

Example <transfer> request command to allocate the domain object with the Allocation Token:

```
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>example1.tld</domain:name>
C:        <domain:period unit="y">1</domain:period>
C:        <domain:authInfo>
C:          <domain:pw>2fooBAR</domain:pw>
C:        </domain:authInfo>
C:      </domain:transfer>
C:    </transfer>
C:    <extension>
C:      <allocationToken:allocationToken
C:        xmlns:allocationToken=
C:          "urn:ietf:params:xml:ns:allocationToken-1.0">
C:        abc123
C:      </allocationToken:allocationToken>
C:    </extension>
C:    <clTRID>ABC-12345</clTRID>
C:  </command>
C:</epp>
```

This extension does not add any elements to the EPP <transfer> response described in the [RFC5730].

3.2.5. EPP <update> Command

This extension does not add any elements to the EPP <update> command or <update> response described in the [RFC5730].

4. Formal Syntax

One schema is presented here that is the EPP Allocation Token Extension schema.

The formal syntax presented here is a complete schema representation of the object mapping suitable for automated validation of EPP XML instances. The BEGIN and END tags are not part of the schema; they are used to note the beginning and ending of the schema for URI registration purposes.

4.1. Allocation Token Extension Schema

```
BEGIN
<?xml version="1.0" encoding="UTF-8"?>
<schema
  targetNamespace="urn:ietf:params:xml:ns:allocationToken-1.0"
  xmlns:allocationToken="urn:ietf:params:xml:ns:allocationToken-1.0"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified"
>

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

  <!-- Element used in info command to get allocation token. -->
  <element name="info"/>

  <!-- Allocation Token used in transform
    commands and info response -->
  <element
    name="allocationToken"
    type="allocationToken:allocationTokenType"/>

  <simpleType name="allocationTokenType">
    <restriction base="token">
      <minLength value="1"/>
    </restriction>
  </simpleType>

<!-- End of schema. -->
</schema>
END
```

5. IANA Considerations

5.1. XML Namespace

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

Registration request for the allocationToken namespace:

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

Registration request for the allocationToken XML schema:

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

5.2. EPP Extension Registry

The following registration of the EPP Extension Registry, described in [RFC7451], is requested:

Name of Extension: "Allocation Token Extension for the Extensible Provisioning Protocol (EPP)"

Document status: Standards Track

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

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

TLDs: Any

IPR Disclosure: None

Status: Active

Notes: None

6. Implementation Status

Note to RFC Editor: Please remove this section and the reference to RFC 6982 [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 RFC 6982 [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 RFC 6982 [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".

6.1. Verisign EPP SDK

Organization: Verisign Inc.

Name: Verisign EPP SDK

Description: The Verisign EPP SDK includes both a full client implementation and a full server stub implementation of draft-ietf-regext-allocation-token.

Level of maturity: Production

Coverage: All aspects of the protocol are implemented.

Licensing: GNU Lesser General Public License

Contact: jgould@verisign.com

URL: https://www.verisign.com/en_US/channel-resources/domain-registry-products/epp-sdks

6.2. Neustar EPP SDK

Organisation: Neustar Inc.

Name: Neustar EPP SDK

Description: The Neustar EPP SDK includes a full client implementation of draft-ietf-regext-allocation-token.

Level of maturity: Production

Coverage: All aspects of the protocol are implemented.

Licensing: GNU Lesser General Public License

Contact: kal.feher@team.neustar

URL: http://registrytoolkit.neustar

6.3. Neustar gTLD SRS

Organisation: Neustar Inc.

Name: Neustar generic Top Level Domain (gTLD) Shared Registry System (SRS).

Description: The Neustar gTLD SRS implements the server side of draft-ietf-regext-allocation-token for several Top Level Domains.

Level of maturity: Production

Coverage: All server side aspects of the protocol are implemented.

Licensing: Proprietary

Contact: kal.feher@team.neustar

7. Security Considerations

The mapping described in this document does 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.

The mapping acts as a conduit for the passing of Allocation Tokens between a client and a server. The definition of the Allocation Token is defined outside of this mapping. The following are security considerations in the definition and use of an Allocation Token:

1. An Allocation Token should be considered secret information by the client and should be protected at rest and in transit.
2. An Allocation Token should be single use, meaning it should be unique per object and per allocation operation.

3. An Allocation Token should have a limited life with some form of expiry in the Allocation Token if generated by a trusted 3rd third party, or with a server-side expiry if generated by the server.
4. An Allocation Token should use a strong random value if it is based on an unsigned code.
5. An Allocation Token should leverage digital signatures to confirm its authenticity if generated by a trusted 3rd party.
6. An Allocation Token should is signed XML should be encoded (e.g., base64) to mitigate server validation issues.

8. Acknowledgements

The authors wish to acknowledge the original concept for this draft and the efforts in the initial versions of this draft by Trung Tran and Sharon Wodjenski.

Special suggestions that have been incorporated into this document were provided by Scott Hollenbeck, Rubens Kuhl, Alexander Mayrhofer, and Patrick Mevzek.

9. Normative References

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

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

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

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

[RFC6982] Sheffer, Y. and A. Farrel, "Improving Awareness of Running Code: The Implementation Status Section", RFC 6982, DOI 10.17487/RFC6982, July 2013, <https://www.rfc-editor.org/info/rfc6982>.

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

Appendix A. Change History

A.1. Change from 00 to 01

1. Amended XML Namespace section of IANA Considerations, added EPP Extension Registry section.
2. Moved Change History to the back section as an Appendix.

A.2. Change from 01 to 02

1. Ping update.

A.3. Change from 02 to 03

1. Ping update.

A.4. Change from 03 to 04

1. Updated the authors for the draft.

A.5. Change from 04 to REGEXT 00

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

A.6. Change from REGEXT 00 to REGEXT 01

1. Ping update.

A.7. Change from REGEXT 01 to REGEXT 02

1. Added the Implementation Status section.

A.8. Change from REGEXT 02 to REGEXT 03

1. Changed Neustar author to Kal Feher.

A.9. Change from REGEXT 03 to REGEXT 04

1. Added Neustar implementation to the Implementation Status section.

A.10. Change from REGEXT 04 to REGEXT 05

1. Updates based on feedback from Patrick Mevzek, that include:

   1. Remove "or code" from the Abstract section.
   2. Add a missing "to" in "an allocation token TO one of the EPP..." in the Introduction section.
   3. Reword the "The allocation token is known to the server..." sentence in the Introduction section.
   4. Modify the "The allocation token MAY be returned to an authorized client for passing out-of-band to a client that uses it with an EPP transform command" to clarify who the two separate clients are.
   5. Removed an unneeded ":" from the EPP <transfer> Command and EPP <update> Command sections.

A.11. Change from REGEXT 05 to REGEXT 06

1. Fix description of Neustar gTLD SRS based on feedback from Rubens Kuhl.
2. Updates based on feedback from Alexander Mayrhofer, that include:

   1. Making all references to Allocation Token to use the upper case form.
   2. Revise the language of the abstract to include "for including an Allocation Token in query and transform commands. The Allocation Token is used as a credential that authorizes a client to request the allocation of a specific object from the server, using one of the EPP transform commands..."
   3. Replace the title "EPP <transfer> Command" with "EPP <transfer> Query Command" for section 3.1.3.
   4. Revise the second sentence of the Introduction to "The mapping, ..., supports passing an Allocation Token..."
   5. Change "support" to "require" in the Introduction sentence "It is up to server policy which EPP transform commands and which objects support the Allocation Token."
   6. Add the definition of Allocation to the Introduction.
   7. Removed "transform" from "all of the supported EPP transform commands" in the "Allocation Token" section, since the Allocation Token can be used with the "check" command as well.
   8. Remove the word "same" from "The same <allocationToken:allocationToken> element is used for all..." in the "Allocation Token" section.
   9. Change the description of the use of the 2201 error in the "Allocation Token" section, the "EPP <create> Command"

section, the "EPP <transfer> Command" section, and the "EPP <update> Command" section.

10. Revise "<check> to determine if an object is known to the server..." to "<check> to determine if an object can be provisioned..." and remove "detailed" in the description of the <info> in the "EPP Query Commands" section.
11. Add missing description of the expected <check> response behavior.
12. Replaced the example reason "Invalid domain-token pair" with "Allocation Token mismatch".
13. Replace "information on" with "information associated with" in the "EPP <info> Command" section.
14. Removed the "that identifies the extension namespace", the ", defined in...", the Allocation Token links from the error response sentences, and the "object referencing the <allocationToken:info> element" in the "EPP <info> Command" section.
15. Added "The authorization is subject to server policy." to the "EPP <info> Command" section.
16. Replace "or <transfer> response>" with "or <transfer> query response>" in the EPP <transfer> Query Command" section.
17. Replace "create an object" with "create an instance of an object" in the "EPP <create> Command" section.
18. Revised the sentence to include "the command MUST contain a child <allocationToken:allocationToken> element for the client to be authorized to create and allocate the object" in the "EPP <create> Command" section.
19. Removed the reference to section 2.1 and the namespace identification text in the "EPP <transfer> Command" section.
20. Added "The authorization associated with the Allocation Token is in addition to and does not replace the authorization mechanism defined for the object's <transfer> request command." to the "EPP <transfer> Command" section.
21. Modified the first sentence of the "EPP Extension Registry" section to read "The following registration of the EPP Extension Registry, described in RFC7451, is requested"
22. Removed support with using the Allocation Token with an empty extension of update (e.g., release command), based on the confusion and lack of known applicability.

3. Updates based on feedback from Scott Hollenbeck, that include:

   1. Revised XML schema to included a minimum length of 1 for the allocationTokenType.
   2. Revised the "IANA Considerations" section to include the registration of the XML schema.
   3. Revised the "Security Considerations" section to include considerations for the definition of the Allocation Tokens.

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