     Domain Suggestion Extension for the Extensible Provisioning Protocol
                                    (EPP)
                     draft-mayrhofer-epp-domain-suggest-00

Abstract

   This document specifies an EPP Extension that allows servers to
   suggest available domain names to clients, for example in cases where
   the originally desired domain name is unavailable for registration.

Status of This Memo

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

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   material or to cite them other than as "work in progress."

   This Internet-Draft will expire on May 4, 2020.

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1. Introduction

   The Extensible Provisioning Protocol (EPP) [RFC5730] is a client-
   server protocol for provisioning and managing objects in shared
   repositories. In many cases, EPP is used to provision Domain Names
   between Registrars and Domain Name Registries (see [RFC5731]).

   EPP provides the "check" query command to determine whether an object
   can be provisioned with a registry. That command is typically used
   to determine whether a certain domain name is available for
   registration at a Domain Name Registry. In case a requested domain
   name is not available for registration, it is desirable to suggest
   alternative, available names to the client. However, EPP does
   currently not contain data structures suitable to transport such
   "Domain Suggestions".

   This document specifies a Command-Response level EPP extension for
   the EPP Domain Mapping [RFC5731], allowing servers to include such
   Domain Suggestions in responses to EPP "<domain:check>" commands.

2. Terminology

   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. Indentation and white space in examples are provided only to illustrate element relationships and are not a REQUIRED feature of this protocol.

"ds" is used as a namespace abbreviation for "urn:ietf:params:xml:ns:epp:domainSuggest-1.0", and "domain" is used as an abbreviation for "urn:ietf:params:xml:ns:epp:domain-1.0". The XML namespace prefix "ds" 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.

3. Domain Name Suggestion Structure

In order to convey domain name suggestions, the following XML structure is defined:

o A <ds:suggestions> element for use in responses, containing one or more <ds:name> elements

o Each <ds:name> element contains a suggested (available) fully qualified domain name, and an OPTIONAL "for" attribute.

o If present, the "for" attribute of the <ds:name> element MUST contain a domain name given in one of the <domain:name> elements of the corresponding command. This allows a client to correlate suggestions with originally requested names when multiple names were given in the command.

4. Client and Server Behaviour

o A client MUST indicate support for the "urn:ietf:params:xml:ns:epp:domainSuggest-1.0" in the "<login>" command in order to receive suggestions

o When a client indicates support for the extension, it is local server policy if and when suggestions are provided.

o When a server attempts to provide suggestions, but fails to do so for the set of given names, it SHOULD indicate that situation with an empty <ds:suggestions> element in the response.

o A server SHOULD NOT suggest domain names which are unavailable for
   registration.

o A client hence SHOULD assume that suggested names are available
   for registration, without the need for an additional <check>
   command for those names.

o Servers SHOULD gracefully handle situations where generation of
   suggestions triggers errors, and continue to process the base EPP
   command.

o Servers MAY also give suggestions even if the originally requested
   name is available.

5. EPP Command Mapping

   The only command extended is the <domain:check> command.

5.1. EPP <check> Query Command

   This extension does not add any elements to the EPP <check> command
   described in the EPP Domain Mapping [RFC5731]. However, additional
   elements are defined for the <check> response:

   When a <check> command has been processed succesfully, the EPP
   <extension> element MAY contain a child <ds:suggestions> element,
   structured as described above.

   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="0">example.net</domain:name>
S:          <domain:reason>In use</domain:reason>
S:        </domain:cd>
S:        <domain:cd>
S:          <domain:name avail="1">example.org</domain:name>
S:        </domain:cd>
S:      </domain:chkData>
S:    </resData>
S:    <extension>
S:      <ds:suggestions
S:       xmlns:ds="urn:ietf:params:xml:ns:domainSuggest-1.0">
S:        <ds:name for="example.net">my.example.net</ds:name>
S:        <ds:name for="example.com">wedosubdomains.example.com</ds:name>
S:        <ds:name>betterexample.tld</ds:name>
S:      </ds:suggestions>
S:    <trID>
S:      <clTRID>ABC-12345</clTRID>
S:      <svTRID>54322-XYZ</svTRID>
S:    </trID>
S:  </response>
S:</epp>
```

6. Open Questions

    [Note to RFC Editor: Do not publish this document before that section
    is empty :)]

    The following issues need to be solved / discussed before the
    extension can be deemed stable:

    o Shall there be an element in the commands to explicitly request
       suggestions (<ds:yesplease>).

    o Corner Case: Can error responses contain suggestions? Eg. when a
       domain in an unsupported TLD is given?

o Shall suggestions be allowed in other commands?

o More mechanics for handling keywords (back and forth?)

o Allow conveyance of user location? Tricky, involves handling PII
   data...

o Maximum number of suggestions? Order / weight of suggestions?

7. Formal Syntax

   TODO: Create Schema once structure of extension is stable.

8. Security Considerations

   At this stage of the document, Security Considerations of the
   Extension have not been discussed yet :)

9. IANA Considerations

   IANA is requested to register perform registrations for the Namespace
   and XML schema as follows:

9.1. Namespace

   TODO once stable

9.2. XML Schema

   TODO once stable

10. Changelog

   Note to RFC editor: Remove this entire section before publication.

10.1. mayrhofer-epp-domain-suggestion-00

   Initial strawman proposal

11. Normative References

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   [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC
              2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174,
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Appendix A. Acknowledgments

   Provide in-depth review or actual text if you like your name to
   appear here :D

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