Registration Extensions (REGEXT)
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RDAP Extension for DNS Time-To-Live (TTL Values)
draft-ietf-regext-rdap-ttl-extension-02

Abstract

This document describes an extension to the Registration Data Access Protocol ([RFC9083]) which allows the Time-To-Live (TTL) values for relevant DNS record types to be included in RDAP responses.

About this draft

This note is to be removed before publishing as an RFC.

The source for this draft, and an issue tracker, may can be found at https://github.com/gbxyz/rdap-ttl-extension.

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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This Internet-Draft will expire on 14 May 2026.

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1. Introduction

While [RFC9083] allows RDAP server operators to provide information about the content of the NS, DS, A and AAAA record(s) which are published in the DNS for a given registry object (domain or host object), it does not provide a mechanism to allow the Time-To-Live (TTL) values of those records to be included in responses.

This document describes how TTL information can be included in domain and nameserver objects in RDAP responses.

This document is complementary to the Extensible Provisioning Protocol [RFC5730] (EPP) Mapping for DNS Time-to-Live (TTL) Values [RFC9803], but registry operators do not need to implement that extension in their EPP server in order to implement this RDAP extension.

2. 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.

3. RDAP Response Specification

Servers which support this extension MAY include a ttl0_data property in any domain and nameserver objects included in RDAP responses.

The ttl0_data property is an array of TTL objects, which have the following properties:

* A types property, which is an array of DNS record type mnemonics;

* A value property, which is an unsigned integer indicated the TTL value for those DNS record types;

* An OPTIONAL remarks property, which is an array of remarks (see Section 4.3 of [RFC9083]); and

* An OPTIONAL events property, which is an array of events (see Section 4.5 of [RFC9083]).

DNS record type mnemonics MUST be in all capitals and MUST be registered with IANA in [IANA-RRTYPES]. Each DNS record type MUST only appear once in each TTL object.

TTL values MUST be unsigned integers in the range 0-2,147,483,647.

Example domain object:

```
{
  "objectClassName": "domain",
  "ldhName": "example.com",
  "ttl0_data": [
    {
      "types": [
        "NS"
      ],
      "value": 3600,
      "remarks": [
        {
          "description": [
            "The .example registry does not permit",
```

```
              "NS record TTL values to be changed."
            ]
          }
        ]
      },
      {
        "types": [
          "DS"
        ],
        "value": 300,
        "events": [
          {
            "eventAction": "last updated",
            "eventActor": "example-registry",
            "eventDate": "2024-01T13:52:18Z"
          }
        ],
        "remarks": [
          {
            "description": [
              "For more information about the .example",
              " registry policy relating to DS record TTL changes,",
              "see https://example.com"
            ],
            "links": [
              {
                "rel": "related",
                "title": ".Example Registry DNS TTL Policy",
                "href": "https://example.com"
              }
            ]
          }
        ]
      }
    ]
  }
```

Example nameserver object:

```
{
  "objectClassName": "nameserver",
  "ldhName": "ns1.example.com",
  "ttl0_data": [
    {
      "types": [
        "A",
        "AAAA"
      ],
      "value": 86400,
      "remarks": [
        {
          "description": [
            "The .example registry does not permit TTL ",
            "values for nameservers to be changed."
          ]
        }
      ]
    }
  ]
}
```

3.1. RDAP Conformance

Servers returning responses containing TTL values MUST include the string "ttl0" in the rdapConformance array.

4. IANA Considerations

IANA is requested to register the following value in the RDAP Extensions Registry:

Extension identifier: ttl0

Registry operator: Any

Published specification: this document

Contact: IETF <iesg@ietf.org (mailto:iesg@ietf.org)>

Intended usage: this extension describes how DNS TTL values can be included in RDAP responses.

5. Security Considerations

Security services for the extension specified in this document are described in [RFC7481].

This document only concerns itself with the representation of configure TTL values for domain and host objects. The security implications of those values are described further in Section 6 of [RFC9803].

6. Change Log

This section is to be removed before publishing as an RFC.

6.1. Changes from 01 to 02

1. Include reference to [IANA-RRTYPES] in Section 3 (thanks Jasdip Singh).

2. Removed the value member of the link object in the example domain object so that it conforms with web linking practice (also thanks Jasdip Singh).

6.2. Changes from 00 to 01

1. Updated the extension identifier and extension property name to align with the current best practices in [I-D.ietf-regext-rdap-extensions].

2. Added Section 5.

3. Changed MUST to MAY in the first paragraph of Section 3.

4. Reduce ambiguity around the repetition of DNS record types in responses.

6.3. Changes from draft-brown-rdap-ttl-extension-03 to draft-ietf-regext-rdap-ttl-extension-00

1. Name change only.

6.4. Changes from 02 to 03

1. Update reference to [RFC9803].

6.5. Changes from 01 to 02

1. Update reference to the EPP extension.

6.6. Changes from 00 to 01

1. Extension property name renamed to ttl.

2. The extension data structure is now an array allowing common TTL values, remarks and events to be mapped to multiple DNS record types.

3. The extension data structure may now include remarks and events.

4. Added normative text regarding the value of DNS record mnemonics and TTL values.

7. References

7.1. Normative References

[IANA-RRTYPES] IANA, "Resource Record (RR) TYPEs", <https://www.iana.org/assignments/dns-parameters#dns-parameters-4>.

[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>.

[RFC7481] Hollenbeck, S. and N. Kong, "Security Services for the Registration Data Access Protocol (RDAP)", STD 95, RFC 7481, DOI 10.17487/RFC7481, March 2015, <https://www.rfc-editor.org/info/rfc7481>.

[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>.

[RFC9083] Hollenbeck, S. and A. Newton, "JSON Responses for the Registration Data Access Protocol (RDAP)", STD 95, RFC 9083, DOI 10.17487/RFC9083, June 2021, <https://www.rfc-editor.org/info/rfc9083>.

7.2. Informative References

[I-D.ietf-regext-rdap-extensions] Newton, A., Singh, J., and T. Harrison, "RDAP Extensions", Work in Progress, Internet-Draft, draft-ietf-regext-rdap-extensions-08, 14 October 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-regext-rdap-extensions-08>.

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

[RFC9803] Brown, G., "Extensible Provisioning Protocol (EPP) Mapping for DNS Time-to-Live (TTL) Values", RFC 9803, DOI 10.17487/RFC9803, June 2025, <https://www.rfc-editor.org/info/rfc9803>.

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