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RDAP Extension for DNS DELEG
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Abstract

This document describes an extension of the Registration Data Access Protocol (RDAP) that includes DNS DELEG values in responses to RDAP domain object queries.

Status of This Memo

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1. Introduction

This document describes an extension of the Registration Data Access Protocol (RDAP) that includes DNS DELEG values in responses to RDAP domain object queries as described in section 5.3 of RFC 9083 [RFC9083]. The definition of DNS DELEG information is based on concepts described in Internet-Draft "Extensible Delegation for DNS" [DELEG] and Internet-Draft "Extensible Provisioning Protocol (EPP) mapping for DELEG records" [brown-epp-deleg]. This draft is subject to changes that may take place in [DELEG] and [brown-epp-deleg] as they are developed. This document describes how DNS DELEG record information can be included in RDAP responses that contain RDAP domain objects.

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 Conformance

RDAP responses that contain values described in this document MUST indicate conformance with this specification by including an rdapConformance ([RFC9083]) value of "deleg". The information needed to register this value in the RDAP Extensions Registry is described in Section 5.

Example rdapConformance structure with extension specified:

```
   "rdapConformance" :
     [
       "rdap_level_0",
       "deleg"
     ]
```

Figure 1

4. RDAP Response Specification

This specification describes a new data structure that is used to return DNS DELEG information in a RDAP domain response. s described in Internet-Draft "Extensible Delegation for DNS" [DELEG], a DELEG record is a specialized form of a DNS SVCB [RFC9460] resource record. "deleg_delegInfo" is a data structure that contains information that describes DNS DELEG record information associated with a registered domain name. The "deleg_delegInfo" data structure is a list of objects. The list of objects contains the following members whose values and presentations are described in Section 2.1, and Appendix A of RFC 9460 [RFC9460]:

1. "priority": a number that represents the SvcPriority value of the record.

2. "target": a domain name that represents the TargetName of the record.

3. "params": an OPTIONAL object that contains SvcParam key-value pairs.

4.1. Examples of deleg_delegInfo

Example 1: single DELEG AliasMode record type from a single provider based on the example shown in section 2.2 of [DELEG]:

```
        "deleg_delegInfo": [
          {
            "priority": 0,
            "target": "config1.example.net"
          }
        ]
```

Example 2: multiple DELEG AliasMode records type from multiple providers based on the example shown in section 2.2.1 of [DELEG]:

```
           "deleg_delegInfo": [
             {
               "priority": 0,
               "target": "config1.example.net"
             {
               "priority": 0,
               "target": "config1.example.org"
           ]
```

Example 3: single DELEG ServiceMode record type from a single provider based on the example shown in section 2.1 of [DELEG]:

```
       "deleg_delegInfo": [
          {
            "priority": 1,
            "target": "config3.example.net",
            "params": {
              "ipv6hint": "2001:db8:2423::3"
            }
          }
       ]
```

Example 4: multiple DELEG ServiceMode records type from multiple providers based on the example shown in section 5.1.1 of [brown-epp-deleg]:

```
       "deleg_delegInfo": [
          {
            "priority": 1,
            "target": "ns1.example.com",
            "params": {
              "ipv4hint": "192.0.2.1",
              "ipv6hint": "2001:DB8::1"
            }
          },
          {
            "priority": 1,
            "target": "ns2.example.net",
            "params": {
              "ipv4hint": "192.0.2.2",
              "ipv6hint": "2001:DB8::2"
            }
          }
       ]
```

4.2. Examples of full RDAP responses including deleg_delegInfo

Example 1: Domain object class with a single DELEG AliasMode record type:

```
{
  "objectClassName": "domain",
  "handle": "2336799_SomeHandle",
  "ldhName": "EXAMPLE.COM",
  "links": [
    ...
  ],
  "status": [
    "client delete prohibited",
    "client transfer prohibited",
    "client update prohibited"
  ],
  "entities": [
    ...
  ],
  "events": [
    ...
  ],
  "secureDNS": {
    ...
  },
  "deleg_delegInfo": [
     {
        "priority": 0,
        "target" : "config1.example.net",
     }
  ],
  "nameservers": [
    {
      "objectClassName": "nameserver",
      "ldhName": "ns1.example.net"
    },
    {
      "objectClassName": "nameserver",
      "ldhName": "ns2.example.net"
    }
  ],
  "rdapConformance": [
    "rdap_level_0",
    "deleg"
  ],
  "notices": [
    ...
  ]
}
```

Example 2: Domain object class with multiple DELEG ServiceMode records:

```
{
  "objectClassName": "domain",
  "handle": "2336799_SomeHandle",
  "ldhName": "EXAMPLE.COM",
  "links": [
    {
      ...
    }
  ],
  "status": [
    "client delete prohibited",
    "client transfer prohibited",
    "client update prohibited"
  ],
  "entities": [
    ...
  ],
  "events": [
    ...
  ],
  "secureDNS": {
    ...
  },
  "deleg_delegInfo": [
     {
        "priority": 1,
        "target" : "ns1.example.com",
        "params": {
           "ipv4hint": "192.0.2.1",
           "ipv6hint": "2001:BE8::1"
         }
     },
     {
        "priority": 1,
        "target" : "ns2.example.net",
        "params": {
           "ipv4hint": "192.0.2.2",
           "ipv6hint": "2001:DB8::2"
         }
     }
  ],
  "nameservers": [
    {
      "objectClassName": "nameserver",
      "ldhName": "ns1.example.com"
    },
    {
      "objectClassName": "nameserver",
```

```
        "ldhName": "ns2.example.com"
      }
    ],
    "rdapConformance": [
      "rdap_level_0",
      "deleg"
    ],
    "notices": [
      ...
    ]
  }
```

5. IANA Considerations

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

Extension identifier: deleg

Registry operator: Any

Published specification: this document

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

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

6. Security Considerations

The Security Considerations described in RFC 9083 [RFC9083] are applicable to this extension.

7. Acknowledgments

The following individuals have provided feedback and contributions to the content and direction of this document: James Gould

8. References

8.1. Normative References

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8.2. Informative References

[DELEG] paek, P., Weber, R., and D. Lawrence, "Extensible Delegation for DNS", Work in Progress, Internet-Draft, draft-dnsop-deleg-00, March 2026, <https://datatracker.ietf.org/doc/draft-dnsop-deleg/>.

[brown-epp-deleg] Brown, G. and P. Hoffman, "Extensible Provisioning Protocol (EPP) mapping for DELEG records", Work in Progress, Internet-Draft, draft-brown-epp-deleg, 26 January 2024, <https://datatracker.ietf.org/doc/draft-brown-epp-deleg/>.

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