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Provisioning of DNS data through RPP

Abstract

This document proposes an RESTful Provisioning Protocol (RPP) mapping for the provisioning of various DNS data. Specified in JSON, the mapping is decibes common DNS record types used for domain provisioning as well as giving advice on how to adopt future record types.

The RFC Editor will remove this note

About This Document

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

The latest revision of this draft can be found at https://github.com/christian-simmen/draft-simmen-rpp-dns-data-representation. Status information for this document may be found at https://datatracker.ietf.org/doc/draft-simmen-rpp-dns-data/.

Discussion of this document takes place on the WG Working Group mailing list (mailto:rpp@ietf.org), which is archived at https://mailarchive.ietf.org/arch/browse/rpp/. Subscribe at https://www.ietf.org/mailman/listinfo/rpp/.

Source for this draft and an issue tracker can be found at https://github.com/christian-simmen/draft-simmen-rpp-dns-data-representation.

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 12 December 2025.

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1. Introduction

In EPP host objects [RFC5732] are introduced. In the context of domain name service provisioning those objects are used as delegation information (NS) with optional GLUE (A) records. By the time of writing new transport protocols are used for DNS like DNS over HTTPS [RFC8484] or DNS over QUIC [RFC9250]. Along with this development the need for more fine grained delegation information is emerging. The DELEG record type [I-D.draft-ietf-deleg] can be seen as an example. Apart from plain delegation information other DNS related data like DNSSEC [RFC5910] information is common to be provisioned through EPP.

1.1. Domain Names in DNS

DNS domain names are hierachically ordered label separated by a dot ".". Each label may represent the delegation of a subordinate namespace or a host name. DNS resource records [RFC1035] are expressed as a dataset containing:

"NAME" "CLASS" "TYPE" "TTL" "RDATA"

A set of resource records describes the behavior of namespace.

1.1.1. NAME

A server **MUST** only accept a NAME which is a subordinate label to the provisioned domain name or "@" representing the provisioned domain itself.

1.1.2. CLASS

A client **SHOULD** omit the CLASS. The server **MUST** assume "IN" as CLASS of a transferred dataset an **MAY** decline other values.

1.1.3. TYPE

The TYPE of data present in the RDATA. This also implies the expected fields in RDATA.

1.1.4. TTL

A server **MUST** set a default value as TTL and **MAY** decline other values. A client **MAY** omit this value.

1.1.5. RDATA

The RDATA depends on the TYPE. A RR of TYPE "NS" has the hostname of an authorative nameserver. A RR of TYPE "AAAA" holds the IPv6 address of a host. A RR of TYPE "DS" has multiple fields (key tag, key algorithm, the digest hash type and the digest hash)

1.2. JSON mapping

A minimal delegation can be expressed by adding an array of nameservers to dns data of a domain:

{ domain: "example.com" "dns": [{"name": "@", "type": "NS", "rdata": {"host": "ns1.example.net"}}, {"name": "@", "type": "NS", "rdata": {"host": "ns2.example.net"}}] }

If GLUE records are needed the client may add these records:

{ domain: "example.com" "dns": [{"name": "@", "type": "NS", "rdata": {"host": "ns1.example.net"}}, {"name": "@", "type": "NS", "rdata": {"host": "ns2.example.com"}}, {"name": "ns2.example.com", "type": "A", "rdata": {"address": "1.2.3.4"}}, {"name": "ns2.example.com", "type": "AAAA", "rdata": {"address": "dead::beef"}}] }

The provisioning of DNSSEC further extends the structure:

{ domain: "example.com" "dns": [{"name": "@", "type": "NS", "rdata": {"host": "ns1.example.net"}}, {"name": "@", "type": "NS", "rdata": {"host": "ns2.example.com"}}, {"name": "ns2.example.com", "type": "A", "rdata": {"address": "1.2.3.4"}}, {"name": "ns2.example.com", "type": "AAAA", "rdata": {"address": "dead::beef"}}, {"name": "@", "type": "DS", "rdata": { "key_tag": "1234", "key_algorithm": 13, "digest_hash_type": 2, "digest_hash": "F341357809A5954311CCB82ADE114C6C1D724A75C0395137AA397803 5425E78D" } }] }

1.2.1. Well known RR types

TODO Liste der RR aus wiki holen und namen definieren

1.2.2. Future DNS record types

TODO

Beschreibung wie zukünftige RR Types abgebildet werden können

1.3. Signaling supported record types

A server **MUST** support the "NS", "A" and "AAAA" record type. A server **SHOULD** support "DS" record type. Additional record types **MAY** be supported by a server. The server **MUST** provide which record types are supported.

TODO Review

2. Conventions and Definitions

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. Security Considerations

TODO Security

4. IANA Considerations

This document has no IANA actions.

5. References

5.1. Normative References

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5.2. Informative References

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[RFC9250] Huitema, C., Dickinson, S., and A. Mankin, "DNS over Dedicated QUIC Connections", RFC 9250, DOI 10.17487/RFC9250, May 2022, <https://www.rfc-editor.org/rfc/rfc9250>.

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