YANG Types for DNS Classes and Resource Record Types

`draft-lhotka-dnsop-iana-class-type-yang-00`

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Objectives

- Kick off work on translating DNS-related IANA registries to YANG types.
- Enable further data modelling work — standard or proprietary YANG modules for managing DNS servers, resolvers etc.
- Discuss proper granularity of YANG modules in relation to the corresponding IANA registries.

Domain Name System (DNS) Parameters

https://www.iana.org/assignments/dns-parameters/dns-parameters.xhtml

13 IANA registries:

- **DNS CLASSes**
- **Resource Record (RR) TYPEs**
- DNS OpCodes
- DNS RCODEs
- AFSDB RR Subtype
- DHCID RR Identifier Type Codes
- DHCID RR Digest Type Codes
- DNS Label Types
- DNS EDNS0 Option Codes (OPT)
- DNS Header Flags
- EDNS Header Flags (16 bits)
- EDNS Version Number (8 bits)
- Child Synchronization (CSYNC) Flags

YANG Module *iana-dns-class-rr-type*

- contains derived types for DNS classes and RR types
- if the registry changes, IANA will update the module.

YANG Derived Types

1. Enumeration of mnemonic names

```
typedef rr-type-name {
  type enumeration {
    enum A {
      value "1";
      description
        "A host address.";
      reference
        "RFC 1035: Domain Names - Implementation and
         Specification";
    }
    ...
  }
}
```

2. Union — mnemonic name or number

```
typedef rr-type {
  type union {
    type uint16;
    type rr-type-name;
  }
  description
    "This type allows for referring to a DNS resource
     record type using either the assigned mnemonic
     name or numeric value.";
}
```

For example, AAAA and 28 mean the same RR type (cf. RFC 3597).

Other IANA Registries

- Domain Name System Security (DNSSEC) Algorithm Numbers (3 registries)
- Delegation Signer (DS) Resource Record (RR) Type Digest Algorithms (1)
- Domain Name System Security (DNSSEC) NextSECure3 (NSEC3) Parameters (3)
- DNSKEY FLAGS (1)
- DNS-Based Authentication of Named Entities (DANE) Parameters (3)
- IPSECKEY Resource Record Parameters (2)
- DNS SSHFP Resource Record Parameters (2)
- Secret Key Transaction Authentication for DNS (TSIG) Algorithm Names (1)