

IANA Registries in YANG Modules

Do we want to provide any guidance?

IESG Meeting at IETF 105

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(Recent) Motivation

- Early SECDIR review of draft-ietf-netconf-crypto-types-10
 - “What’s Sec Area’s list of crypto algorithms?”
- “Yang and embedded IANA registries: today's episode: draft-lhotka-dnsop-iana-class-type-yang” on ietf@ietf, Tue, 16 July 2019 14:14 UTC
 - <https://mailarchive.ietf.org/arch/msg/ietf/FJRKQKMhcDyyWFI3RtyslQpI4iY>
- ...

Design Pattern #1

Source: draft-lhotka-dnsop-iana-class-type-yang-00

```
description
  "This YANG module translates IANA registries 'DNS CLASSES' and
  'Resource Record (RR) TYPES' to YANG derived types.
...
typedef dns-class-name {
  type enumeration {
    enum IN {
      value "1";
      description
        "Internet";
      reference
        "RFC 1035: Domain Names - Implementation and
        Specification";
    }
    enum CH {
      value "3";
      description
        "Chaos";
      reference
        "Moon, D., 'Chaosnet', A. I. Memo 628, MIT Artificial
        Intelligence Laboratory, June 1981";
    }
  }
}
```

Pro

- “YANG native”

Con

- Cannot update the values

Design Pattern #2

Source: draft-ietf-i2nsf-sdn-ipsec-flow-protection-05

```
typedef encryption-algorithm-type {
    type uint32;
    description
        "The encryption algorithm is specified with a 32-bit
        number extracted from IANA Registry. The acceptable
        values MUST follow the requirement levels for
        encryption algorithms for ESP and IKEv2.";
    reference
        "IANA Registry- Transform Type 1 - Encryption
        Algorithm Transform IDs. RFC 8221 - Cryptographic
        Algorithm Implementation Requirements and Usage
        Guidance for Encapsulating Security Payload (ESP)
        and Authentication Header (AH) and RFC 8247 -
        Algorithm Implementation Requirements and Usage
        Guidance for the Internet Key Exchange Protocol
        Version 2 (IKEv2).";
}

...
leaf-list encryption {
    type encryption-algorithm-type;
    default 20;
    ordered-by user;
    description
        "Configuration of ESP encryption
        algorithms. The default value is
        20 (ENCR_AES_GCM_16).";
    reference
        "Section 3.2 in RFC 4303.";
}
```

Pro

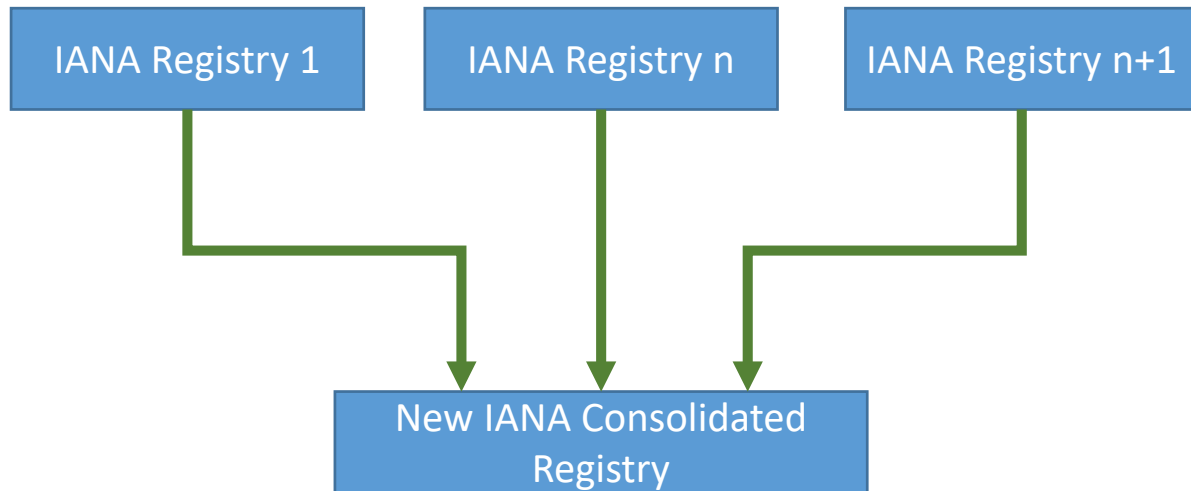
- Extensible

Con

- Uses identifiers rather than YANG enums
- Only works if there is a single IANA registry

Design Pattern #3

Source: nowhere yet, but under discussion for draft-ietf-netconf-crypto-types-10



```
typedef foo-list-type {  
    type uint32;  
    description  
        "The item is specified with a 32-bit  
        number extracted from IANA Registry.";  
    reference  
        "IANA Registry- New IANA Registry.";  
}
```

Pro

- Extensible

Con

- Uses identifiers rather than YANG enums
- Requires duplication of existing registries
- Maintenance requires duplicate registration

Discussion

- Additional design patterns? Pro/con?
- Do we have an opinion?
- Do we want to get involved?
 - Provide guidance, choose not to provide guidance ...