Schema Identifier (SID) Considerations for YANGsters

Scott Mansfield

2022-07-26

v01

Goal of Discussion

- Education/Review of what Schema Identifiers are and what they are used for

- Tooling to support SIDs

- Determine need for IEEE 802.1
  - Registry Needs

SID and CBOR

- Presentation given at the YANGsters meeting during July Plenary
  - https://www.ieee802.org/1/files/public/docs2022/yangsters-bormann-coreconf-0722-v01.pdf
- Terms Introduced
  - SID: Schema Identifier
  - CBOR: Concise Binary Object Representation (RFC 8949 – Homepage)
  - YANG-CBOR: Encoding of Data Modeled with YANG in the Concise Binary Object Representation (RFC 9254)
- Bottom Line
  - NETCONF and RESTCONF use text-based identifiers
  - Constrained Devices can use CORECONF which can use compact binary-encoded identifiers
    - Significantly reducing the size of the encoded information

Why use SID and RFC 9254

- YANG is a good modeling language for many different types of applications
- Encoding YANG and supporting instance data can get resource intensive because of the verbose nature of XML or JSON
- RFC 9254 provides an industry standard for the compact binary encoding of YANG meta-data/instance data
- Other than engaging with IANA to get a "mega-range" of identifiers, the management of the assignment of ids to objects is handled by the target organization.
- Tooling already exists for the creation and maintenance of SID files
  - YANG Catalog extensions still TBD
- What if nothing is done
  - Anyone can run the tooling and produce SID files so that IEEE YANG can be used with CORECONF
  - This reduces interoperability and may lead to serious market confusion

Tooling

- pyang can be used to create the .sid file that is needed to use RFC 9254 encoding (YANG-CBOR)

- For example using a simple YANG file (minerals.yang), I created an example .sid file using an experimental range.

- Command line:
  - pyang --sid-generate-file 70000:100 minerals.yang

- Files:

minerals.yang   minerals.tree   minerals@2021-0
9-22.sid

This is the start of the range. The 802.1 group would have to assign the value to a module from the mega-range

Process

- Request a new mega-range
  - https://www.ietf.org/archive/id/draft-ietf-core-sid-18.html#name-create-new-iana-registry-ya
- Information needed in the Registry
  - https://www.ietf.org/archive/id/draft-ietf-core-sid-18.html#table-1
- What needs to be maintained
  - https://www.ietf.org/archive/id/draft-ietf-core-sid-18.html#name-allocation-policy
- This could be done with a spreadsheet like the MIB OID list
  - https://1.ieee802.org/assigned-numbers/

Discussion

- IEEE 802.1 desire to support SID?
- Who would use it?
  - Industrial applications
  - Automotive & Aeronautic profiles?
- Discussion with 802.1 and others using YANG, like 802.3 and 1588
- Timeframe/Urgency?
- Industry Adoption?
- Next Steps?