Schema Identifier (SID) Considerations for YANGsters

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Goal of Discussion

- Update on the Schema Identifiers work in the IETF Education/Review of what Schema Identifiers are and what they are used for
- Provide an understanding of why I'm talking about this again

Background: 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
  - https://www.ieee802.org/1/files/public/docs2022/yangsters-smansfield-sid-yang-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)
- The YANG SID work is almost finished
  - https://datatracker.ietf.org/doc/draft-ietf-core-sid/
- 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

Mega-Range

- From the draft…
- 6.3. Create new IANA Registry: "YANG SID Mega-Range" registry

  The name of this registry is "YANG SID Mega-Range". This registry is used to record the delegation of the management of a block of SIDs to third parties (such as SDOs or registrars).

- Now is the time to act…

Why am I talking about this again?

- Now is the time to consider requesting a "mega-range" for the IEEE for use by YANG that will be used in constrained environments

- Looking for interest, and next steps

Thanks

(there is some background information following this slide if you want more)

Backup information

Information provided at the July 2022 Plenary meeting

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@2021-09-22.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?