

Internet Engineering Task Force
Internet-Draft
Intended status: Informational
Expires: 20 September 2025

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19 March 2025

YANG-CBOR: Allocating SID ranges for PEN holders
draft-bormann-core-yang-sid-pen-02

Abstract

YANG-CBOR, RFC 9254 defines YANG Schema Item iDentifiers (YANG SID), globally unique 63-bit unsigned integers used to identify YANG items. RFC 9595 defines ways to allocate these SIDs on the basis of IANA registries.

The present specification uses these SID allocation mechanisms to allocate ranges with 100 000 63-bit SIDs each for each of the first 1 000 000 holders of IANA-registered Private Enterprise Numbers (PENs), as well as ranges with 10 000 32-bit SIDs each for each of the first 100 000 holders.

About This Document

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

Status information for this document may be found at
<https://datatracker.ietf.org/doc/draft-bormann-core-yang-sid-pen/>.

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

Source for this draft and an issue tracker can be found at
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Status of This Memo

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1. Introduction

YANG-CBOR, [RFC9254] defines YANG Schema Item iDentifiers (YANG SID), globally unique 63-bit unsigned integers used to identify YANG items. RFC 9595 defines ways to allocate these SIDs on the basis of IANA registries.

The present specification uses these SID allocation mechanisms to allocate ranges with 100 000 63-bit SIDs each for each of the first 1 000 000 holders of IANA-registered Private Enterprise Numbers (PENs), as well as ranges with 10 000 32-bit SIDs each for each of the first 100 000 holders.

IANA [is requested to allocate/has allocated] 100 000 mega-ranges, for the SID numbers 300 000 000 000 to 399 999 999 999.

IANA also [is requested to allocate/has allocated] 1000 mega-ranges, for the SID numbers 3 000 000 000 to 3 999 999 999.

The holder of a PEN ppp ppp then can use the SID numbers 3pp ppp p00 000 to 3pp ppp p99 999 for allocation in a scheme defined by the holder. The holder of a PEN pp ppp then can use the SID numbers 3 ppp pp0 000 to 3 ppp pp9 999 for allocation in a scheme defined by the holder.

2. Example

The Department for Mathematics and Computer Science of Universität Bremen holds PEN 30810.

This confers control over the SID range 303 081 000 000 up to 303 081 099 999, as well as 3 308 100 000 up to 3 308 109 999 up to this PEN holder.

3. Discussion

This allocation provides an extremely-low-threshold way for PEN holders to get number space for the YANG SIDs used in their YANG modules. It is, however, not always the approach to recommend to a module author:

- * The large space uses 64-bit numbers. While this is of relatively little consequence due to the delta-encoding used for SIDs in YANG-CBOR, a few further bytes can be saved by allocating the SIDs in one of the mega-ranges that are specifically allocated by an organization (which, for the first 2000 or so, will lead to 32-bit outer deltas).
- * For the first 100 000 PEN holders, there also is a smaller space that uses 32-bit numbers. This space is likely to run out before or around 2040; the expectation is that by that time there will be enough opportunities to request ranges from a megarange operator that this mechanism is no longer needed.
- * This space has no infrastructure to discover the YANG module behind a SID. Of course, each PEN holder can provide such infrastructure, but even then the problem remains how to find that infrastructure for a SID. (Search engines may mitigate this somewhat.) On the other hand, relative obscurity may be exactly what a PEN holder wants to achieve by using this mechanism.

Relying on the PEN registry might theoretically trigger a land-grab by prospective writers of YANG modules. However, PENs have been around for decades [RFC1065] and such a land-grab hasn't occurred for the other allocations implicitly provided by obtaining a PEN.

4. IANA Considerations

This document allocates 100 000 63-bit and 1000 32-bit SID mega-ranges as per Section 7.4 of [RFC9595].

The contact for the allocation is: IETF CORE Working Group (core@ietf.org) or IETF Applications and Real-Time Area (art@ietf.org)

The allocation policy inside the mega-range is "private". The URL is that of the present specification.

The management of the SID blocks of 100 000 SIDs each, 10 such blocks for each mega-range 3nn nnn 000 000, is delegated to the PEN holder for nnn nnx, where x is the sequence number of the SID block in the mega-range (i.e., the PEN holder for nnn nnx controls SID 3nn nnn x00 000 to 3nn nnn x99 999).

Similarly, the management of the SID blocks of 10 000 SIDs each, 100 such blocks for each mega-range 3 nnn 000 000, is delegated to the PEN holder for nn nxx, where x is the sequence number of the SID block in the mega-range (i.e., the PEN holder for nn nxx controls SID 3 nnn xx0 000 to 3 nnn xx9 999).

The technical capacity to ensure the sustained operation of the registry for a period of at least 10 years (as required for registries of class "private") is derived from the capacity of IANA to maintain the PEN number registry.

5. References

5.1. Normative References

- [RFC9254] Veillette, M., Ed., Petrov, I., Ed., Pelov, A., Bormann, C., and M. Richardson, "Encoding of Data Modeled with YANG in the Concise Binary Object Representation (CBOR)", RFC 9254, DOI 10.17487/RFC9254, July 2022, <<https://www.rfc-editor.org/rfc/rfc9254>>.
- [RFC9595] Veillette, M., Ed., Pelov, A., Ed., Petrov, I., Ed., Bormann, C., and M. Richardson, "YANG Schema Item Identifier (YANG SID)", RFC 9595, DOI 10.17487/RFC9595, July 2024, <<https://www.rfc-editor.org/rfc/rfc9595>>.

5.2. Informative References

[RFC1065] McCloghrie, K. and M. Rose, "Structure and identification of management information for TCP/IP-based internets", RFC 1065, DOI 10.17487/RFC1065, August 1988, <<https://www.rfc-editor.org/rfc/rfc1065>>.

Acknowledgments

This document was inspired by the discussion of the authors of [RFC9254] and [RFC9595] how to handle Rob Wilton's feedback.

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