Proposed structure for URN use in the IEEE

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# Background

Prompted by the need to allocate OIDs for standards use, for example in order to identify (components of) SNMP MIB modules, the IEEE RAC agreed a structure for OIDs rooted under the IEEE OID root. The structure is documented in a RA tutorial here:

http://standards.ieee.org/develop/regauth/tut/oid.pdf

and the aspects of this structure that are relevant to IEEE 802 are documented in Clause 10 of IEEE Std 802:2014.

Important characteristics of this structure are that:

* It allows the IEEE RA to define further uses beyond use in standards, if such a need ever arises;
* It allows each standard (and indeed, each standards body) to define and administer its own structure beyond the part of the OID that defines the standard (or the standards body). This is an important aspect as it ensures that there is no need to refer back to the RA before allocating arcs; i.e., the standards body/standard acts as its own registration authority.

Given the current move away from SNMP MIBs towards using YANG, there is a need to define a similar hierarchy that would apply to the construction of URN identifiers that are needed for identification in YANG.

The "no brainer" approach would be to simply translate what we did for OIDs into an equivalent URN structure; however this would lead to a URN that had more components, and would be longer, than strictly necessary. Part of the reason for this is that the nature of the OID, being a sequence of integer values, needed additional levels of hierarchy in order to allow an unambiguous sequence of integers to be derived automatically for a given IEEE standard. The URN structure, being based on text strings, allows some optimisations to be made and some of the levels of the hierarchy to be removed.

The proposal below will provide the degree of flexibility that is needed, while keeping the resultant URN reasonably short.

# The structure

The structure is based on the assumption that the IEEE RA applies to the IETF for a base URN of the form:

urn:IEEE

There are potentially uses of URNs in the IEEE outside of standards use. Only standards use is considered in this proposal, but in order to provide a branch point for other uses, the next URN component would specify standards use, hence:

urn:IEEE:Std

IEEE standard numbers are inherently unique, and are prefixed by "IEEE Std", so all we need to do to identify a standard is to make the next component the standard number. Hence, for IEEE Std 802.1Q we would have:

urn:IEEE:Std:802.1Q

And for IEEE Std C37.20 we would have:

urn:IEEE:Std:C37.20

Within IEEE standards, we clearly have a need to define URNs for YANG, but there is the possibility that we might need to define other types of URN in the future even though we have no immediate knowledge of what they might be. So the next component would specify YANG as the use, and would give a branch point for other uses in the future:

urn:IEEE:Std:802.1Q:YANG

The structure after that would follow whatever convention is needed for YANG, but presumably the next component would be a module identifier, as it is in the equivalent OID structure. Of course, YANG could be abbreviated to Y if we cared about saving 3 characters in the length of the string.