IEEE YANG Modeling of EtherTypes

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Introduction

- There is a need to lay the groundwork for a YANG model ethertype definition
- The definition of all the ethertypes is needed, as they are registered with RAC
- A consensus/direction on this would unblock drafts both in IETF and MEF that are dependent on this module and definition

The RAC and ethertypes

- It is an imperative that the YANG model definitions be consistent (or up to date) with the RAC database of ethertypes
  - https://regauth.standards.ieee.org/standards-ra-web/pub/view.html#registries

- It is an objective to have a process (and mechanism) where we could auto-generate the YANG module based the RAC maintained ethertypes (found in the data base)

Proposed solution

- A script (written in Excel) has been created to auto-generate the YANG module based upon imported ethertypes from the RAC data base

  - All you need to do is hit the "**Generate YANG**" button, and a file called `ieee802-rac-ethertype.yang` will be created right in the directory where the spreadsheet is located

- The format of the ethertype is important to IEEE 802
  - Decimal value representations are not deemed to be acceptable
  - The enum in the YANG module generated was of a form resembling an alphanumeric string with a pattern of `'[0-9a-fA-F]{2}-[0-9a-fA-F]{2}'`
  - The specification reference is IEEE 802-2014, clause 9.2

The ethertype type

- In the auto-generated YANG module, you'll notice that the type definition of the ethertype is as shown below:

```
typedef ethertype {
    type union {
      type ethertype-enum;
      type dot1qtypes:ethertype-type;
    }
    description
      "IEEE ethertype definition.";
  }
```

where ethertype-type is defined as shown below:

```
typedef ethertype-type {
    type string {
      pattern '[0-9a-fA-F]{2}-[0-9a-fA-F]{2}';
    }
    description
      "The EtherType value represented in the
       canonical order defined by IEEE 802. The
       canonical representation uses uppercase
       characters.";
    reference
      "IEEE 802-2014 Clause 9.2";
  }
```

This is slightly different from how ethertypes are defined by that IETF draft (draft-ietf-netmod-acl-model). In that draft, ethertype are essentially defined as decimal values.