Augmentation Impact on Configuration

YANGsters Discussion (2021-11-30)

Scott Mansfield

Ericsson

Introduction

- Augmentation is an excellent way to add capabilities to a YANG module.
- For example ieee802-dot1q-bridge.yang augments the IETF's interface capability.
- However there is a potential issue that is driving this discussion in YANGsters

- The work on ieee802-dot1q-sched.yang has introduced an augment that adds constraints that causes configuration errors even when you don't want to use the scheduled-traffic feature.

A small example to demonstrate the issue

- Two yang modules
- main.yang has a list that has two leafs
- aug1.yang augments main-list with a container that includes a list that has a must constraint

YANG files

```
container main-container {
    description "main container";
    list main-list {
        key "leaf1";
        leaf leaf1 {
            type string;
        }

        leaf leaf2 {
            type string;
        }
    }
}
```

```
augment "/m:main-container/m:main-list" {
    container admin-control-list {
        list gate-control-entry {
            key "index";
            leaf index {
                type uint32;
            }
            leaf gce-leaf1 {
                type string;
            }
        }
        leaf augleaf1 {
            type string;
        }

        must "(count(./gate-control-entry) > 0)" {
            error-message "admin-control-list empty.";
        }
    }
}
```

This will be troublesome….
Because, if you include the augment in a solution, then any instances of main-list will have to have an admin-control-list whether they want it or not.

Example Instances…

- running with just main.yang
- running with both main.yang and aug1.yang

```
> load main
> data -t config -f json main.xml
{
  "main:main-container": {
    "main-list": [
      {
        "leaf1": "foo",
        "leaf2": "foo"
      },
      {
        "leaf1": "bar",
        "leaf2": "bar"
      }
    ]
  }
}
```

```
> data -t config -f json main-on.xml
libyang[0]: admin-control-list empty. (path: Schema location /main:main-containe
r/main-list/aug1:admin-control-list, data location /main:main-container/main-lis
t[leaf1='foo']/aug1:admin-control-list.)
YANGLINT[E]: Failed to parse input data file "main-on.xml".
> quit
```

Potential Solution

- Create a leaf that will toggle when you want to support the functionality needed by the container, then use a when statement in the container.

```
augment "/m:main-container/m:main-list" {

    leaf tsn-type {
       type string;
       default "tsn-off";
    }

    container admin-control-list {
       when "../a1:tsn-type = 'tsn-on'";

       list gate-control-entry {
          key "index";
          leaf index {
             type uint32;
          }
          leaf gce-leaf1 {
             type string;
          }
       }
       leaf augleaf1 {
          type string;
       }


       must "(count(./gate-control-entry) > 0)" {
          error-message "admin-control-list empty.";
       }
    }
}
```

Example Results

- There is one list that doesn’t have the admin-control-list and one that does…

```
> load main
> load aug1
> data -t config -f json main-on-w.xml
{
  "main:main-container": {
    "main-list": [
      {
        "leaf1": "foo",
        "leaf2": "foo"
      },
      {
        "leaf1": "bar",
        "leaf2": "bar",
        "aug1:tsn-type": "tsn-on",
        "aug1:admin-control-list": {
          "gate-control-entry": [
            {
              "index": 42,
              "gce-leaf1": "Pizza"
            }
          ]
        }
      }
    ]
  }
```

Discussion

- This example was created because if you have a configuration that doesn't use scheduled-traffic and then you include the yang files for scheduled-traffic your configuration will break.
  - The "feature" statement doesn't help because there are times when you only need some of your bridge-ports to support the feature. When the feature is on, all the YANG in the feature appears in the tree.

- Where else are there must statements that could cause this type of problem with configuration?
- Are there other solutions that work?