YANG Mode for Scheduled Attributes

draft-united-tvr-schedule-yang

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A Merge of the two YANG models from IETF !!7

- draft-qu-tvr-schedule-yang-00 - YANG Model for Scheduled Attributes (ietf.org)
- draft-kinzie-tvr-link-availability-00 - A YANG Data Model for Time Variant Link Availability (ietf.org)

- Merged based on the WG feedback
Design of the Model

• TVR Schedule Definitions
  Module ietf-tvr-schedule.yang contains schedule definitions that can be used by other modules.

• TVR Node YANG Module
  Module ietf-tvr-node.yang is a device model and designed to manage a single node with scheduled attributes.

• TVR Topology YANG Module
  Module ietf-tvr-topology.yang describes a network topology with a time-variant availability schedule.
Module ietf-tvr-schedule.yang – Grouping schedule

```yang
grouping schedule:
  +-- start-date-time?     yang:date-and-time
  +-- (end-time)?
  |    +--:(infinite)
  |    |    +-- no-end-time?   empty
  |    +--:(duration)
  |    |    +-- duration?     uint32
  |    +--:(end-date-time)
  |    |    +-- end-date-time? yang:date-and-time
  +-- recurrence?           recurrence-type
  +-- value-default
  +-- base-schedule
    +-- intervals* [start-time]
      +-- start-time?     yang:timeticks
      +-- end-time?       yang:timeticks
      +-- value
```

"recurrence" specifies the repetition pattern of the "base-schedule", such as daily or weekly.

container value {
  description
  "Attribute value(s). This container should be augmented with attributes that apply to the current interval."
}
Module ietf-tvr-node.yang

- Module ietf-tvr-node.yang is a device model and designed to manage a single node with scheduled attributes.
Module ietf-tvr-topology.yang

- Module ietf-tvr-topology.yang describes a network topology with a time-variant availability schedule.

- The module has a list of nodes, identified by a unique "node-id". Each node has a list of links.

```yang
module: ietf-tvr-topology
  +++rw topology-schedule
  +++rw nodes* [node-id]
    | +++rw node-id       inet:uri
    | +++rw available* [start-date-time]
    | ...
  +++rw links* [source-node source-link-id]
    | +++rw source-node   inet:uri
    | +++rw destination-node? inet:uri
    | +++rw source-link-id string
    | +++rw available* [start-date-time]
    | ...
    | +++rw bandwidth
    | ...
    | +++rw delay
    | ...
```

Not augmenting the IETF logical network element model [RFC8530]!
Example: Add a scheduled cost to OSPF interface

```yaml
augment "/rt:routing/rt:control-plane-protocols/
  + "rt:control-plane-protocol/ospf:ospf/ospf:areas/ospf:area/"
  + "ospf:interfaces/ospf:interface" {
    list scheduled-cost {
      key "start-date-time";
      description
      "Augment OSPF interface with a scheduled interface cost."
      uses tvr-schd:schedule {
        augment base-schedule/intervals/value {
          leaf cost {
            type uint32;
            description
            "interface cost";
          }
        }
      }
    }
  }
}
```

Example augmentation in Appendix. How the protocol should handle this augmentation needs to be defined by the protocol, which is out of scope for this draft.
Discussion Points

• draft-ietf-opsawg-ucl-acl also defines a schedule. A meeting is scheduled to work with the authors about possible collaboration.

• Current TVR YANG modules are not augmenting existing IETF modules (e.g., ietf-te-topology.yang [RFC8795]) to avoid implementation/deployment dependencies.
Next Steps

• Reviews and comments are welcome
• Is this ready for WG adoption?

THANKS!