YANG Data Model for Configuration Scheduling

draft-liu-netmod-yang-schedule-00

Github: https://github.com/ietf-mpls-yang/te/blob/master/ietf-schedule.yang

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Introduction

- A YANG grouping for configuration scheduling.
- The grouping was initially introduced in the TE Topology Model (draft-ietf-teas-yang-te-topo), and determined to be too generic to be in that model.
- The grouping can be added to a YANG schema node to specify configuration schedules.
- When schedules are specified on a data object, the object is configured or removed based on the schedules.

Model Structure

```
module: ietf-schedule
  grouping schedules:
   +--rw schedules
      +--rw schedule* [schedule-id]
         +--rw schedule-id           uint32
         +--rw start?                yang:date-and-time
         +--rw schedule-duration?    string
         +--rw repeat-interval?      String
```

- The grouping is defined as a container of a schedule list.
- Each schedule entry contains a start time, a duration and a repeat interval.
- The duration and repeat interval are in ISO 8601 format.

Usage Example

```
 +--rw te-link* [id]
    +--rw id                          string
    +--rw schedules
       +--rw schedule* [schedule-id]
          +--rw schedule-id           uint32
          +--rw start?                yang:date-and-time
          +--rw schedule-duration?    string
          +--rw repeat-interval?      String

<te-link>
  <id>link-1</id>
  <schedules>
    <schedule>
    <schedule-id>1</schedule-id>
    <start>2016-04-12T23:20:50.52Z</start>
    <schedule-duration>P1D</schedule-duration>
    <repeat-interval>R5/P1W</repeat-interval>
    </schedule>
  </schedules>
</te-link>
```

link-1 is configured weekly for 5 1-day periods, starting from 2016-04-12T23:20:50.52Z.

Comparison with LMAP

```
module: ietf-lmap-control
  +--rw lmap
  |  +--rw agent
  |  +--rw tasks
  |  +--rw schedules
  |  |  +--rw schedule* [name]
  |  |     +--rw name                lmap:identifier
  |  |     +--rw start               event-ref
  |  |     +--rw (stop)?
  |  |     |  +--:(end)
  |  |     |  |  +--rw end?                 event-ref
  |  |     |  +--:(duration)
  |  |     |     +--rw duration?            uint32
  |  |     +--rw execution-mode?     enumeration
  |  |     +--rw tag*                lmap:tag
  |  |     +--rw suppression-tag*    lmap:tag
  |  |     +--rw action* [name]
  |  |        +--rw name                lmap:identifier
  |  |        +--rw task                task-ref
  |  |        +--rw parameters
  |  |        |  +--rw (extension)?
  |  |        +--rw option* [id]
  |  |        |  +--rw id       lmap:identifier
  |  |        |  +--rw name?    string
  |  |        |  +--rw value?   string
  |  |        +--rw destination*       schedule-ref
  |  |        +--rw tag*               lmap:tag
  |  |        +--rw suppression-tag*   lmap:tag
```

Comparison with LMAP

```
module: ietf-lmap-control
  +--rw lmap
  |  +--rw events
  |     +--rw event* [name]
  |        +--rw name                    lmap:identifier
  |        +--rw (event-type)?
  |        |  +--:(periodic)
  |        |  |  +--rw periodic
  |        |  |     +--rw interval    uint32
  |        |  |     +--rw start?      yang:date-and-time
  |        |  |     +--rw end?        yang:date-and-time
  |        |  +--:(calendar)
  |        |  |  +--rw calendar
  |        |  |     +--rw month*             lmap:month-or-all
  |        |  |     +--rw day-of-month*      lmap:day-of-months-or-all
  |        |  |     +--rw day-of-week*       lmap:weekday-or-all
  |        |  |     +--rw hour*              lmap:hour-or-all
  |        |  |     +--rw minute*            lmap:minute-or-all
  |        |  |     +--rw second*            lmap:second-or-all
  |        |  |     +--rw timezone-offset?   lmap:timezone-offset
  |        |  |     +--rw start?             yang:date-and-time
  |        |  |     +--rw end?               yang:date-and-time
  |        |  +--:(one-off)
  |        |  |  +--rw one-off
  |        |  |     +--rw time    yang:date-and-time
  |        |  +--:(immediate)
  |        |  |  +--rw immediate              empty
  |        |  +--:(startup)
  |        |  |  +--rw startup                empty
  |        |  +--:(controller-lost)
  |        |  |  +--rw controller-lost        empty
  |        |  +--:(controller-connected)
  |        |     +--rw controller-connected    empty
  |        +--rw random-spread?          uint32
```

Comparison with LMAP

- Large-Scale Measurement Platforms (LMAP) Model
  - https://tools.ietf.org/html/draft-ietf-lmap-yang-04
  - Scheduler is used as a part of Measurement Agent (MA).
  - Purpose is to tell the MA to execute a task, e.g. measurement, reporting, or communicating with controller.
  - Schedules and tasks are executed in MA.
  - Schedules are in centralized database.
- This Configuration Scheduling
  - Purpose is to activate a configuration.
  - Schedules are specified in-place where functional component is implemented.
  - The related functional component implements the scheduling timers.

Next Steps

- Solicit comments
- WG consensus