A YANG Data Model for Network Diagnosis by scheduling sequences of OAM tests

draft-contreras-opsawg-scheduling-oam-tests

Luis M. Contreras (Telefonica), Victor Lopez (Nokia)

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Introduction

- OAM testing is an essential part of network operations and management
- However, scheduling tests can be challenging, especially in complex networks.
- This document proposes a way to simplify the scheduling process and improve the reliability of OAM testing.

- This work aims to reuse existing work like [RFC8531], [RFC8532] and, [RFC8533], which defined YANG models for OAM technologies.

- Draft already presented at IETF 118 (Nov. 2023)

Terminology

- Following terms are used for the representation of this data model.
  - **OAM unitary test:** it is a set of parameters that define a type of OAM test to be invoked.
    - As an example, it includes the type test, configuration parameters, and target results.
  - **OAM test sequence:** it is a set of OAM unitary tests that are run based on a set of time constraints, number of repetitions, order, and reporting outputs.

Use cases

- **Troubleshooting.** OAM tests are used for troubleshooting network issues by testing specific components of the network and looking for anomalies or issues.
- **Birth certificate.** The birth certificate process is a set of OAM tests that validate that all relevant parameters are correct for a specific network service, ensuring that it is functioning correctly and meets the requirements defined by the operator.
- **Proactive supervision** involves running periodic OAM tests on service components to identify and resolve issues before they impact the customer or end user, ensuring SLAs are met.
- **Performance-based Path Routing** uses Path Computation Elements (PCEs) and OAM techniques to compute the optimal path for a particular service, taking into account its constraints and requirements, to optimize network performance, reduce congestion, and improve the overall user experience.

Changes from -01

- Reference added to the network incident effort in NMOP
- Refinement of the YANG trees
- Update reference and alignment to leverage on [I-D.ietf-netmod-schedule-yang] for scheduling
- New section for Using Device Mode Within OAM Scheduling Models

YANG model details – unitary test

```
module: ietf-oam-unitary-test
  +--rw oam-unitary-test
     +--rw name?                  string
     +--rw (test-type)
     +--rw period-of-time
     … from ietf-schedule
     +--rw recurrence
     … from ietf-schedule
     +--rw unitary-test-status?   enumeration
```

- Name: Unique name for the test
- test-type: Choose the type of test. They are imported from other RFCs
- Period from ietf-schedule
- Recurrence from ietf-schedule
- Unitary-test-status status of the test

YANG model details – test sequence

```
module: ietf-oam-test-sequence
  +--rw oam-test-sequence
     +--rw test-sequence* [name]
        +--rw name                      string
        +--rw test-ref* [name]
        |  +--rw name                string
        |  +--rw (test-type)
        |  +--rw numexecutions?      uint32
        +--rw period-of-time
        … from ietf-schedule
        +--rw recurrence
        … from ietf-schedule
        +--ro test-sequence-status?
enumeration
```

- Name: Unique name for the test sequence
- test-ref: List to reference to an ietf-oam-unitary-tests.
  - Name: Reference to an ietf-oam-unitary-test name
  - Numexecutions: Number of times the test sequence should be executed.
- Period from ietf-schedule
- Recurrence from ietf-schedule
- test-sequence-status status of the test sequence

Conclusion and future work

- Collect feedback from the WG and confirm interest on this activity within the WG

- Address comments received on top of version -02
- Prepare new version for IETF 121