YANG models for ACTN TE Performance Monitoring Telemetry and Network Autonomics

draft-lee-teas-actn-pm-telemetry-autonomics-07

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Overview

- **YANG data models that support**
  - Performance Monitoring (PM) Telemetry for Tunnel and ACTN VN level respectively:
    - `ietf-te-kpi-telemetry`
    - `ietf-actn-te-kpi-telemetry`
  - Network autonomies for Scaling Intent (for TE-tunnels and ACTN VNs.)
    - i.e. setting the exact condition when the tunnel or VN should be scaled in/out
    - and the performance parameter on which scaling should be done!
  - ACTN CMI Model – Customer-Driven Model for ACTN VN and ACTN MPI Model for TE-tunnel

- **Use-case: [I-D.xu-actn-perf-dynamic-service-control-03]**
  - Performance Monitoring
  - Dynamic control in ACTN – creation, modification, optimization etc.
  - Monitor Network Traffic, Detects traffic imbalance, Initiate optimization!
  - Measure customer SLA, take dynamic action to make sure you meet them at all times
  - Scalability of Performance data
Yang Model Relationships

- TE KPI Telemetry model provides the TE tunnel level performance monitoring.
- Augment the TE tunnel State with performance attributes
  - Use the notification subscription (YANG PUSH)
  - Scaling Intent configurations for auto scaling in/out based on the combination of the performance monitored attributes

Example:
(one-way-delay > 50ms) AND (one-way-packet-loss > 1%)
-> Triggers TE Scale In

- ACTN TE KPI Telemetry model provides the VN level aggregated performance monitoring.
- Augment the VN state as well as individual VN-member state with performance attributes.
  - Use notification subscription (YANG PUSH)
  - Scaling Intent configurations at the VN level to reach to the monitored performance KPI
Status

- Presented in IETF 100.
- One major comment was: augment/re-use existing grouping(s) for performance data.
- This version made that change:
  - Basically imported TE-Types and uses the grouping defined in TE-types: `performance-metric-attributes` where uni-directional PM are defined for link and applied them to be used for connections (tunnels).
  - Added bi-directional performance monitoring data for connections (tunnels) in the module `ietf-te-kpi-telemetry` defined in this draft to give a full list of PM data.
Changes in the YANG module ietf-te-kpi-telemetry

```yang
augment "/te:te:te:tunnels/te:tunnel" {
    container te-telemetry {
        config false;
        description "telemetry params";
        leaf id {
            type string;
            description "Id of telemetry param";
        }
        uses te-types:performance-metric-attributes;
        /* all unidirectional PM data is defined in this grouping */
        uses bidirectional-telemetry-data;
        /* all bidirectional PM data is defined in this grouping */
        leaf te-ref {
            type leafref { path '/te:te:te:tunnels/te:tunnel/te:name';
            }
            description "Reference to measured te tunnel";
        }
    }
}
```

- Re-uses a grouping defined in te-types for uni-directional PM data
- Define a grouping in this module for bi-directional PM data
Changes in the YANG module ietf-actn-te-kpi-telemetry

```yang
augment "/vn:actn/vn:vn/vn:vn-list/vn:vn-member-list" {
    description "Augmentation parameters for state TE vn member topologies.";
    container vn-telemetry {
        config false;
        description "VN member telemetry params";
        uses te-types:performance-metric-attributes;
        uses te-kpi:bidirectional-telemetry-data;
        uses vn-telemetry-param;
    }
}
```

Re-uses a grouping defined in te-types for uni-directional PM data

Re-uses a grouping defined in te-kpi for bi-directional PM data
Next Steps

▪ This draft provides Customer-programmable PM telemetry and Network Automatics on the CMI/MPI of ACTN architecture.
  ▪ TE-Tunnel level
  ▪ ACTN-VN level

▪ The authors believe this draft has a good base for WG adoption 😊
Thanks!