YANG models for ACTN TE Performance Monitoring Telemetry and Network Autonomics
draft-lee-teas-actn-pm-telemetry-autonomics-08

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Overview

- **YANG data models that support**
  - Performance Monitoring (PM) Telemetry for TE-Tunnels and ACTN VNs:
    - ietf-te-kpi-telemetry
    - ietf-actn-te-kpi-telemetry
  - Network Autonomics 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!
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 102 and received good support from the floor.

- The revision imports the grouping defined in the latest `ietf-te-types`, the performance-metric-container grouping (where all one-way and two-way performance-related data for delay are defined such as one-way-min-delay, one-way-max-delay, one-way-delay-variation, two-way-min-delay, two-way-max-delay, two-way-delay-variation)

- STAMP defines much detailed level of delay data, which is not in scope of this draft. Besides, STAMP does not support all b/w related data. This draft imported all B/W related data from the `ietf-routing-types` module (e.g., one-way-residual-bandwidth, one-way-available-bandwidth, one-way-utilized-bandwidth) and re-use them.

- Besides, what is needed in this draft is "reported" data, not "measured/raw data" (which is the scope of STAMP). The draft is concerned about “concatenated” TE-related data on the level of VN, VN member, or TE tunnel as opposed to the link level.
Changes in the YANG module
ietf-te-kpi-telemetry

augment "/te:te: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-container;

        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 PM data
Changes in the YANG module ietf-actn-te-kpi-telemetry

```yang
augment "/vn:actn/vn:vn/vn:vn-list" { ....
    container vn-telemetry {
        config false;
        description "VN telemetry params";
        uses te-types:performance-metric-container;
        leaf grouping-operation {
            type grouping-operation;
            description "describes the operation to apply to the VN-members";
        }
    }
}
```
module: ietf-te-kpi-telemetry
augment /te:te/tunnels/tc:tunnel:
  +rw tc-scaling-intent
  | +rw threshold-time? uint32
  | +rw cooldown-time? uint32
  | +rw scale-in-operation-type? scaling-criteria-operation
  | +rw scale-out-operation-type? scaling-criteria-operation
  | +rw scaling-condition* [performance-type]
  | +rw performance-type identityref
  | +rw te-telemetry-tunnel-ref? -> /te:te/tunnels/tunnel/name
  +rw scale-out-intent
  | +rw threshold-time? uint32
  | +rw cooldown-time? uint32
  | +rw scale-in-operation-type? scaling-criteria-operation
  | +rw scale-out-operation-type? scaling-criteria-operation
  | +rw scaling-condition* [performance-type]
  | +rw performance-type identityref
  | +rw te-telemetry-tunnel-ref? -> /te:te/tunnels/tunnel/name
+ro te-telemetry
+ro id? string
+ro performance-metric-one-way
  | +ro one-way-delay? uint32
  | +ro one-way-min-delay? uint32
  | +ro one-way-max-delay? uint32
  | +ro one-way-delay-variation? uint32
  | +ro one-way-packet-loss? decimal64
  | +ro one-way-residual-bandwidth? rt-types:bandwidth-ieee-float32
  | +ro one-way-available-bandwidth? rt-types:bandwidth-ieee-float32
  | +ro one-way-utilized-bandwidth? rt-types:bandwidth-ieee-float32
+ro performance-metric-two-way
  | +ro two-way-delay? uint32
  | +ro two-way-min-delay? uint32
  | +ro two-way-max-delay? uint32
  | +ro two-way-delay-variation? uint32
  | +ro two-way-packet-loss? decimal64
+ro te-ref? -> /te:te/tunnels/tunnel/name
Next Steps

- The authors believe this draft has a good base for WG adoption

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Thanks!