Support of Network Observation Timestamping in YANG Notifications

draft-tgraf-netconf-yang-push-observation-time-02

Adds observation timestamp and point-in-time objects to describe when metrics were observed

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Extend YANG-Push Notifications with Observation Timestamping

For push-update and push-change-update

```
module: ietf-yp-observation-time

  augment /yp:push-update:
    +--ro observation-time?   yang:date-and-time
    +--ro point-in-time?      enumeration
  augment /yp:push-change-update:
    +--ro observation-time?   yang:date-and-time
    +--ro point-in-time?      enumeration
  augment /sysc:system-capabilities/notc:subscription-capabilities:
    +--ro yang-push-observation-supported?
            inotifseq:notification-support
            {yang-push-observation-timestamp}?
```

```
{
  "ietf-notification:notification": {
    "eventTime": "2023-03-25T08:30:11.22Z",
    "ietf-notification-sequencing:sysName": "example-router",
    "ietf-notification-sequencing:sequenceNumber": 1,
    "ietf-yang-push:push-update": {
      "id": 6666,
      "ietf-yp-observation-time:observation-time": "2023-02-04T16:30:09.44Z",
      "ietf-yp-observation-time:point-in-time": "current-accounting",
      "datastore-contents": {
        "ietf-interfaces:interfaces": [
          {
            "interface": {
              "name": "eth0",
              "type": "iana-if-type:ethernetCsmacd",
              "oper-status": "up",
              "mtu": 1500
            }
          }
        ]
      }
    }
  }
}
```

- **To correlate network data** among different Network Telemetry planes as described in Section 3.1 of RFC 9232 or among different YANG push subscription types defined in Section 3.1 of RFC 8641, **network observation timestamping is needed to understand the timely relationship among these different planes and YANG push subscription types.**
- draft-tgraf-netconf-yang-push-observation-time extends the YANG push streaming update notification defined in RFC 8641 with:
  - **observation-time:** Describes the measurement observation time for the "push-update" notification in a "periodical" and for the "push-change-update" notification in a "on-change" subscription.
  - **point-in-time:** Describes at which point in time the value of observation-time was observed.

Extend YANG-Push Notifications with Observation Timestamping

draft-tgraf-netconf-yang-push-observation-time-02 - Status and Next Steps

Current Status

- Changed semantics:
  - One observation-time timestamp describing when the metric was observed eases end to end integration into streaming processor and time series database.
  - Point-in-time describes at which point in time the value of observation-time was observed.
    - For "periodical" subscription, the "current-accounting" describes the **point in time where the metrics were polled and observed**.
    - For "on-change" subscriptions, the value of point-in-time is **"state-changed", when the state change was observed in real-time.**
    - For "on-change" subscriptions with the "sync on start option", the value of point-in-time **for the initial state is "initial-state".**
- YANG-Push observation timestamping capability is now discoverable by extending YANG-related system capabilities defined in RFC 9196.
- Minor editorial changes and operational considerations and implementation status section added.

Next Steps

➢ **Requesting feedback from the netconf working group and YANG-Push implementers.**

YANG-Push Implementation Status

IETF 120

	6WIND VSR	Huawei VRP	Cisco IOS XR
RFC 8641 YANG-Push	x	x	x
draft-ietf-netconf-udp-notif	x	x	
draft-ietf-netconf-distributed-notif	x	x	
draft-ietf-netconf-yang-notifications-versioning	x	x	
draft-tgraf-netconf-notif-sequencing	x		
draft-tgraf-netconf-yang-push-observation-time	x		
RFC 7895 YANG Module Library		x	
RFC 8525 YANG Library	x		x
draft-lincla-netconf-yang-library-augmentation			

Address YANG Specification and Integration Gaps

Aiming for an automated data processing pipeline

YANG Specifications Gaps:

- YANG model for NETCONF Event Notifications
  draft-ahuang-netconf-notif-yang
- Validating anydata in YANG Library context
  draft-aelhassany-anydata-validation

YANG Integration Gaps:

- Support of Network Observation Timestamping in YANG Notifications
  draft-tgraf-netconf-yang-push-observation-time
- Support of Hostname and Sequencing in YANG Notifications
  draft-tgraf-netconf-notif-sequencing
- Support of Versioning in YANG Notifications Subscription
  draft-ietf-netconf-yang-notifications-versioning
- Augmented-by Addition into the IETF-YANG-Library
  draft-lincla-netconf-yang-library-augmentation

« Addressing those gaps are a prerequisite to enable an automated data processing chain as described in draft-ietf-nmop-yang-message-broker-integration.

Please consider to attend IETF 120 NMOP working group session on Friday 13:00 – 15:00 or go onto the mailing list and contribute to the discussion. »