Hackathon – Plan, Software, Repo

Plan
• Validate work in progress vendor YANG-Push publisher implementations.
• Configure RFC 8641 compliant YANG-Push configured subscription.
• Verify output in packet capture before YANG-Push receiver and after transformation.

Software
• 6WIND VSR 3.8
• Huawei VRP 8.230 C10SPC305T
• Pmacct 1.7.10 (20240314.1.7fae9b2-1.el8)

Test Repository
An Architecture for YANG-Push to Apache Kafka Integration
draft-netana-nmop-yang-kafka-integration

- Subscription to YANG Notifications for Datastore Updates
  RFC 8641
- UDP-based Transport for Configured Subscriptions
  draft-ietf-netconf-udp-notif
- Subscription to Distributed Notifications
  draft-ietf-netconf-distributed-notif
- 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
- Support of Network Observation Timestamping in YANG Notifications
  draft-tgraf-netconf-yang-push-observation-time
- YANG Library
  RFC 8525
- Augmented-by Addition into the IETF-YANG-Library
  draft-lincla-netconf-yang-library-augmentation

Figure 1: End to End Workflow
Subscription Started Notifications (1)

```
{
    "ietf-subscribed-notifications:notification": {
        "eventName": "2024-03-08T16:10:02.175903116+00:00",
        "sysName": "daisy-ietf-ipf-zbl1843-r-daisy-58",
        "publisherId": 0,
        "sequenceNumber": 1481,
        "ietf-subscribed-notifications:subscription-started": {
            "id": 12345678,
            "ietf-yang-push:dataplane": "ietf-datastores:operational",
            "ietf-yang-push:dataplane-xpath-filter": "/state/vrf/interface/physical[name='ens192']/counters",
            "transport": "ietf-udp-notif-transport:udp-notif",
            "encoding": "encode-json",
            "purpose": "send notifications",
            "ietf-yang-push:periodic": {
                "period": 3000
            }
        }
    }
}
```

- **Support of Hostname and Sequencing in YANG Notifications**, [draft-tgraf-netconf-notif-sequencing](draft-tgraf-netconf-notif-sequencing), extends the NETCONF notification defined in RFC5277 with sysName, publisherId and sequenceNumber.
Support of Versioning in YANG Notifications Subscription, draft-ietf-netconf-yang-notifications-versioning, adds the ability to subscribe to a specific revision or latest-compatible-semversion. Extends the YANG-Push Subscription State Change Notifications so that the receiver learns on top of xpath and the sub-tree filter also the YANG module name, revision and revision-label.
Support of Hostname and Sequencing in YANG Notifications, draft-tgraf-netconf-notif-sequencing, extends the NETCONF notification defined in RFC5277 with sysName, publisherId and sequenceNumber.
Push Change Update Notifications

```json
{
    "ietf-subscribed-notifications:notification": {
        "eventTime": "2024-03-08T16:34:07.7768449+00:00",
        "sysName": "daisy-ietf-ipf-zbl1843-r-daisy-58",
        "publisherId": 0,
        "sequenceNumber": 1515,
        "ietf.yang-push:push-change-update": {
            "id": 12345678,
            "datastore-changes": {
                "yang-patch": {
                    "patch-id": "patch-4",
                    "edit": {
                        "edit-id": "edit-1",
                        "operation": "replace",
                        "target": "/vrouter:state/vrf[name='main']/l3vrf[name='A9']/vrouter-interface:interface/vrouter-loopback:loopback[name='Loopback-A9']/enabled",
                        "value": {
                            "vrouter-loopback:enabled": true
                        }
                    }
                }
            },
            "ietf.yang-push-netobs-timestamping:state-changed-observation-time": "2024-03-08T16:34:07.776739137+00:00"
        }
    }
}
```

- **Support of Hostname and Sequencing in YANG Notifications**, draft-tgraf-netconf-notif-sequencing, extends the NETCONF notification defined in RFC5277 with sysName, publisherId and sequenceNumber.

# YANG-Push Implementation Status

<table>
<thead>
<tr>
<th>RFC 8641 YANG-Push</th>
<th>6WIND VRP</th>
<th>Huawei VSR</th>
<th>Cisco IOS XR</th>
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<tbody>
<tr>
<td>draft-ietf-netconf-udp-notif</td>
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An Architecture for YANG-Push to Apache Kafka Integration

Status and Summary

Status

- draft-ietf-netconf-yang-notifications-versioning-03 was presented at NETCONF at IETF 118.
- draft-tgraf-netconf-notif-sequencing-02 was presented at NETCONF at IETF 118. Comments were addressed in -03.
- draft-tgraf-netconf-yang-push-observation-time was presented at NETCONF at IETF 116. Comments were addressed.
- draft-netana-nmop-yang-kafka-integration-01 was introduced at NMOP at IETF 119.

Summary

- draft-netana-nmop-yang-kafka-integration describes motivation, architecture and dependencies on YANG-Push, YANG Library and YANG enhancements.
- Do you realize the benefit of having YANG-Push natively integrated into Apache Kafka? -> What are your thoughts and comments?
- Do you agree on the shortcomings in YANG-Push, YANG Library and YANG and how they are addressed and validated? -> What are your thoughts and comments? Working group adoption?

thomas.graf@swisscom.com

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