

# Support of Hostname and Sequencing in YANG Notifications

## draft-tgraf-netconf-notif-sequencing-02

Adds sysName, messagePublisherId and sequenceNumber  
to identify from where the message was exported from  
for automated data mesh integration

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# Extend Streaming Update Notifications with **Hostname and Sequencing**

For push-update and push-change-update

```
module: ietf-notification

structure notification:
  +-- eventTime          yang:date-and-time
  +-- inotifseq:sysName  inet:host
  +-- inotifseq:messagePublisherId  uint32
  +-- inotifseq:sequenceNumber  yang:counter32

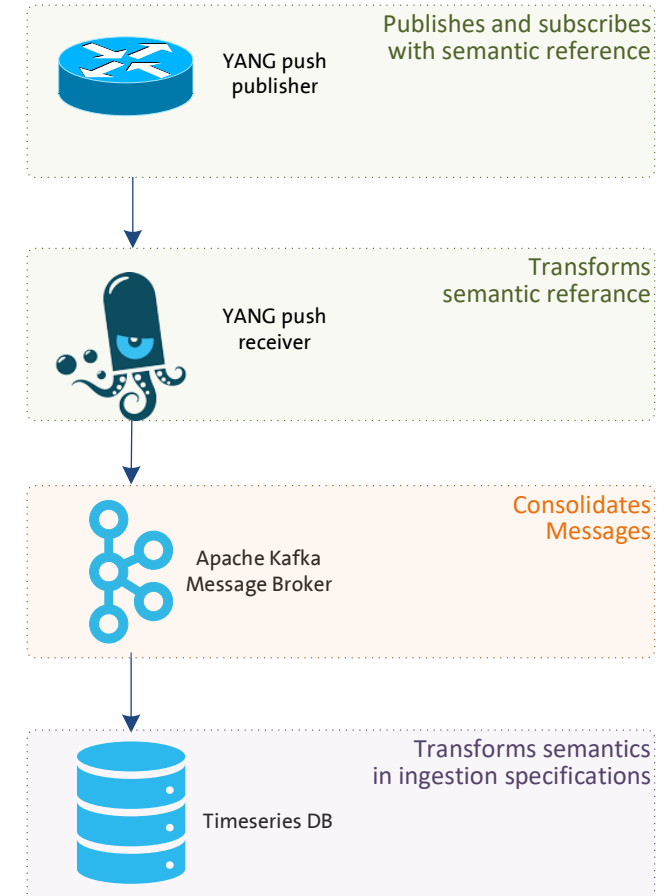
<notification
  xmlns="urn:ietf:params:xml:ns:netconf:notification:1.0">
  <eventTime>2023-02-04T16:30:11.22Z</eventTime>
  <sysName xmlns="urn:ietf:params:xml:ns:yang:ietf-notification-sequencing">
    example-router
  </sysName>
  <messagePublisherId xmlns="urn:ietf:params:xml:ns:yang:ietf-notification-sequencing">
    1
  </messagePublisherId>
  <sequenceNumber xmlns="urn:ietf:params:xml:ns:yang:ietf-notification-sequencing">
    187653
  </sequenceNumber>
  <push-update xmlns="urn:ietf:params:xml:ns:yang:ietf-yang-push">
    <id>1011</id>
    <datastore-contents>
      <interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
        <interface>
          <name>eth0</name>
          <oper-status>up</oper-status>
        </interface>
      </interfaces>
    </datastore-contents>
  </push-update>
</notification>
```

- When the **NETCONF event notification message is forwarded from the YANG push receiver to another system**, such as a messaging system or a time series database where the message is stored, the **transport context is lost since it is not part of the NETCONF event notification message metadata**. Therefore, the downstream system is unable to associate the message to the publishing process (the exporting router), nor able to detect message loss or reordering.
- **draft-tgraf-netconf-notif-sequencing** extends the NETCONF notification defined in RFC5277 with:
  - **sysName**: Describes the hostname following the 'sysName' object definition in RFC1213 from where the message was published from.
  - **messagePublisherId**: netconf-distributed-notif describes the ability to publish from network processors directly. With this identifier the publishing process from where the message was published from can be uniquely identified.
  - **sequenceNumber**: Generates a unique sequence number as described in RFC9187 for each published message.

# Extend Streaming Update Notifications

## Status and Next Steps

- **Introduced at IETF 116**
  - Poll showed much interested in the NETCONF working group.
- **Updates introduced in -02**
  - Message Publisher ID terminology aligned with latest update in terminology section of draft-ietf-netconf-distributed-notif-08.
  - No open points. Requesting to initiate working group adoption call.
- **YANG @ Kafka side meeting today**  
**November 7<sup>th</sup> at 15:30 in room Palmovka 1/2.**  
-> Updates on semantic YANG Push message validation outcome from hackathon activity



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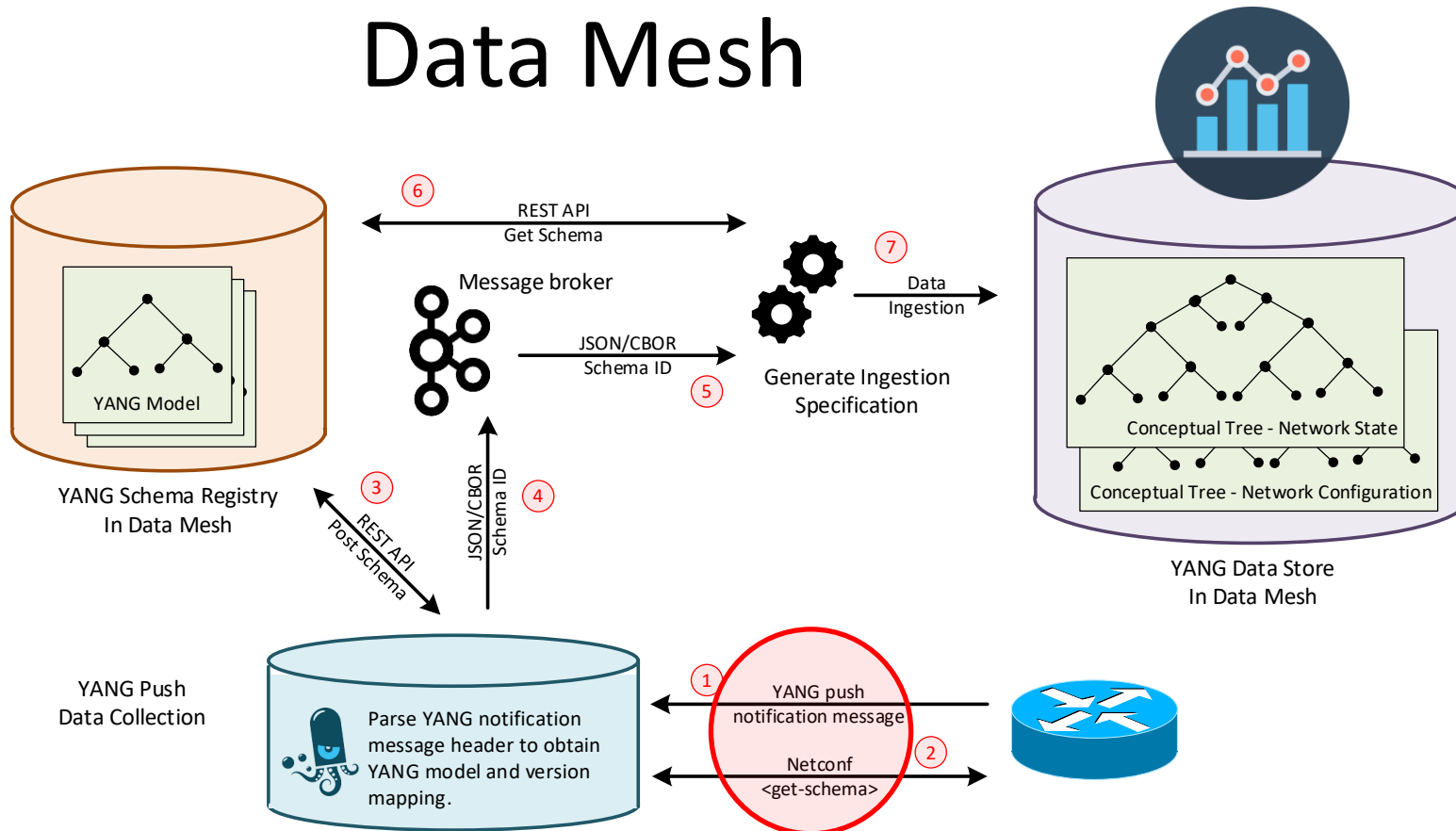
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Backup

# When Big Data and Network becomes **one**

Marrying two messaging protocols

## Data Mesh



- **Data Mesh** is a big data architecture where different domains can exchange data with a **bounded context** and **SLO's** are defined in Data Products. **Same principle as in networks.**
- **Semantics** are needed to describe the data. **A gauge32 is not the same as counter32.** Values can increase or decrease. Needs monotonic increasing counter normalization or not.
- **Versioning** is needed to not only understand that the semantic has changed, but also wherever the new semantic is backward compatible or not. **Preventing to break the data processing pipeline.**
- **Hostname, publisher ID, sequence numbers and observation timestamping** are needed to **measure loss and delay for SLO's.**
- **YANG push as defined in RFC8641 is missing** hostname, sequence numbers, observation timestamping and versioning. **draft-ahuang-netconf-notif-yang, draft-tgraf-netconf-notif-sequencing, draft-tgraf-netconf-yang-push-observation-time and draft-ietf-netconf-yang-notifications-versioning** addresses this.