Subscription to Multiple Stream Originators

draft-zhou-netconf-multi-stream-originators

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Introduction

• **Distributed data collection** mechanism that allows multiple data streams to be managed using **a single subscription**.

• Transport independent
Use Case 1

- Large amount of data collection from devices with main board and line cards.
- Existing solution consider only one push server reside in the main board.
  - Result in performance bottleneck when data are forwarded to the main board and converged to one consolidated stream.
- Request for **distributed data collection mechanism** which can directly push data from line cards to a collector.
Use Case 2

- IoT data collection
  - Collector cannot subscribe/access data directly from IoT nodes.
    - subscribe data from border router
    - border router distribute the subscription to Nodes.
    - IoT Nodes stream data to the collector through BR.
    - Collector assembles the subscription data.
- The border router does not assemble data as a broker.
Solution Overview

• Collector
  – Subscriber
  – Receiver

• Distributed Publisher
  – Master with the Subscription server
  – Agent with the Component subscription server

• Assumption
  – The connection between the master and the agents exist
  – Master knows the resource-location map.
Subscription Decomposition

• The Master
  – expose the Global Capability that can be served by multiple Publishers;
  – disassemble the Global Subscription to multiple Component Subscriptions, and distribute them to the corresponding telemetry sources;
  – notify on changes when portions of subscription moving between different Agents over time.

• The Master may need a data structure, typically a Resource-Location Table, to keep track of the mapping between the resource and the corresponding location of the Subscription Server which commits to serve the data.
Publication Composition

• The Receiver recognizes data records associated with one subscription according the Subscription ID.
• The Receiver assembles data generated at the same time period based on the recording time consisted in each data record.
• Receiver need to know the number of Component Subscriptions which the Global Subscription is decomposed to.
  – Propose to add a list of Publisher ID
  – The "subscription-started" and "subscription-modified" notification
Subscription State Change Notifications

• Two options:
  – Each agent sends its own notification to the subscriber
  – **Master sends a notification to acknowledge the Globe Subscription.**

• All the subscription state change notifications **MUST** be delivered by the **Master Publication Channel** which is the session between the Master Publisher and the Receiver.

• When the subscription decomposition result changed, the "subscription-modified" notification **MUST** be sent to indicate the new list of Publishers.
Support Multiple Transports

```
+-rw subscription* [id]
  +-rw id
    | subscription-id
    ...
  +--rw transport?  transport
    | {configured}?  
  +--rw encoding?  Encoding
    ...
+-rw receivers
  +--rw receiver* [name]
    +--rw name  string
    | ...
    Augment Address and port?
```

ietf-subscribed-notifications@2019-01-16.yang
Next

• Need dynamic subscription?
• Any other issues need to consider for this distributed extension of the YANG-Push work?
• Ask for the WG Adoption.
Thank you