Subscription to Multiple Stream Originators

draft-zhou-netconf-multi-stream-originators

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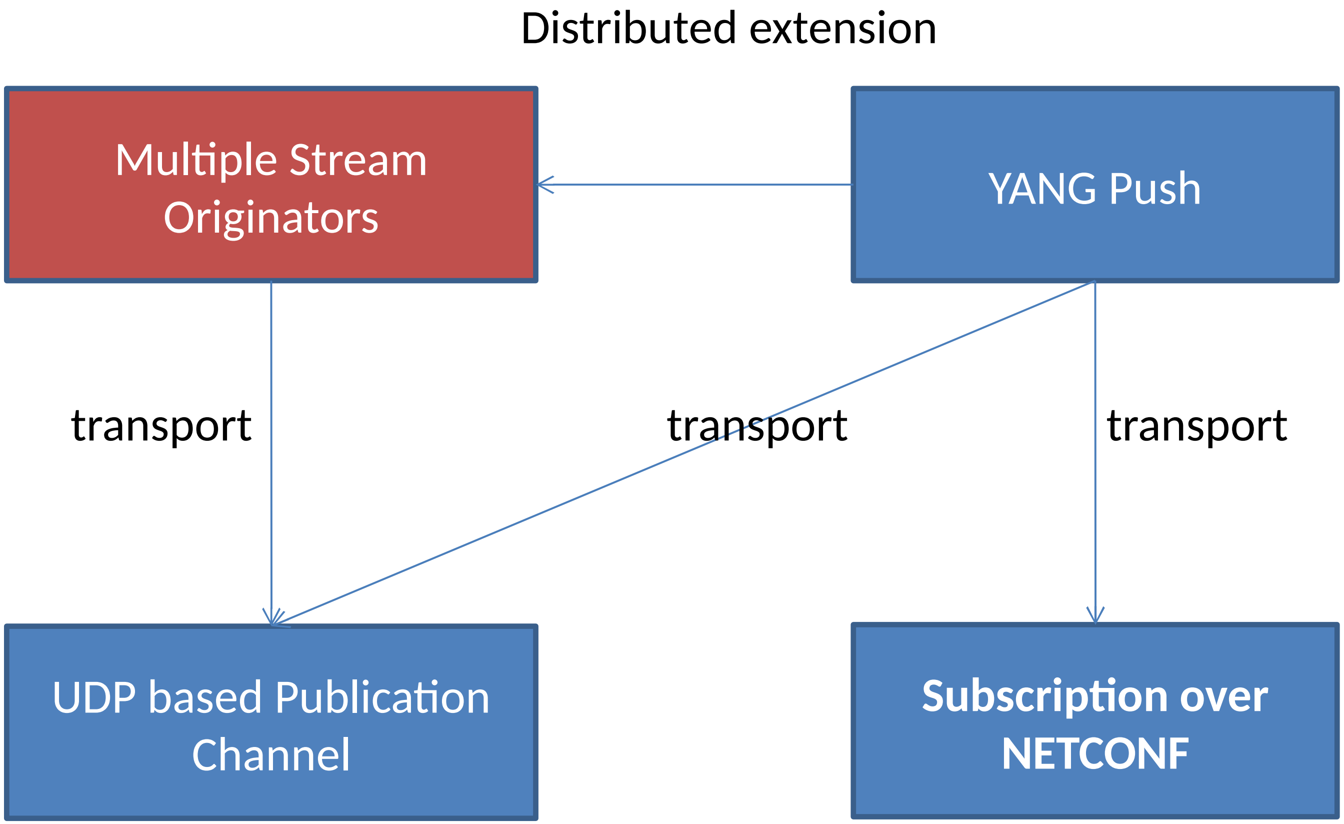
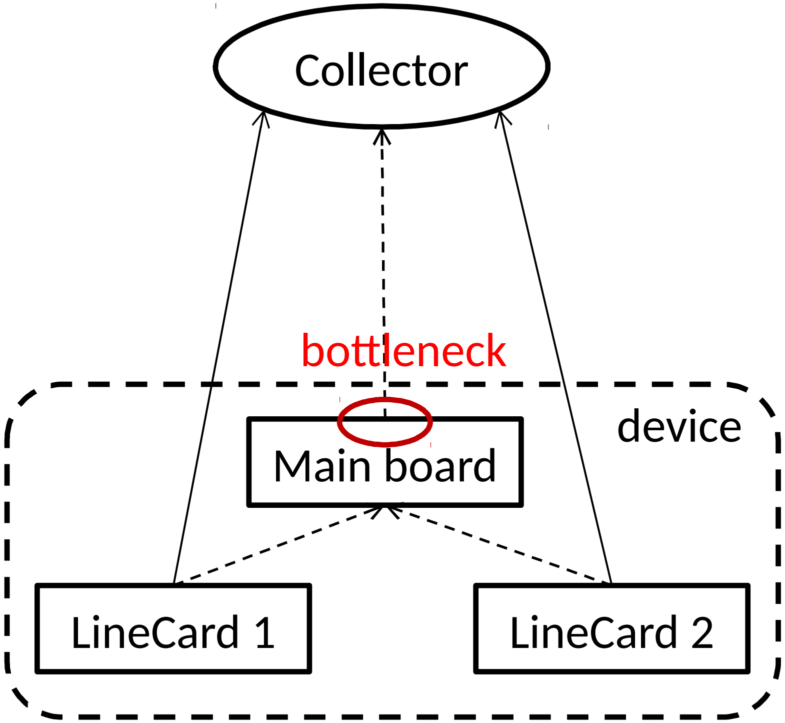
Draft Dependencies


Distributed extension
Multiple Stream Originators
YANG Push
transport
transport
transport
UDP based Publication Channel
Subscription over NETCONF

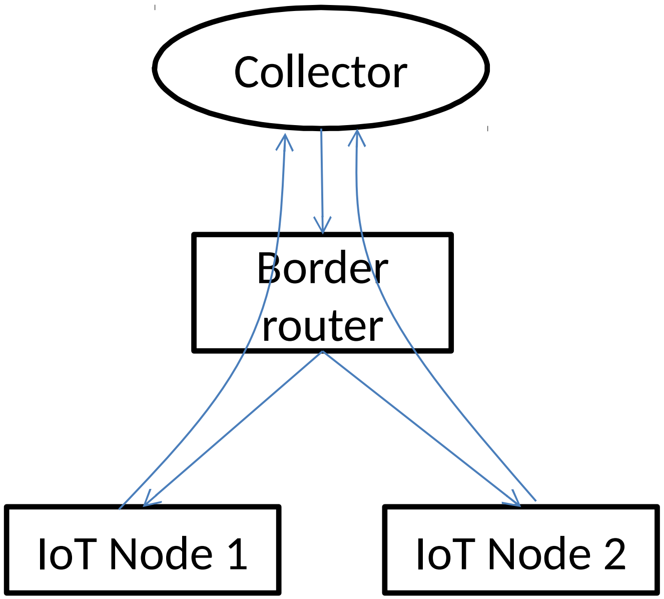
Use Case 1

- 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.



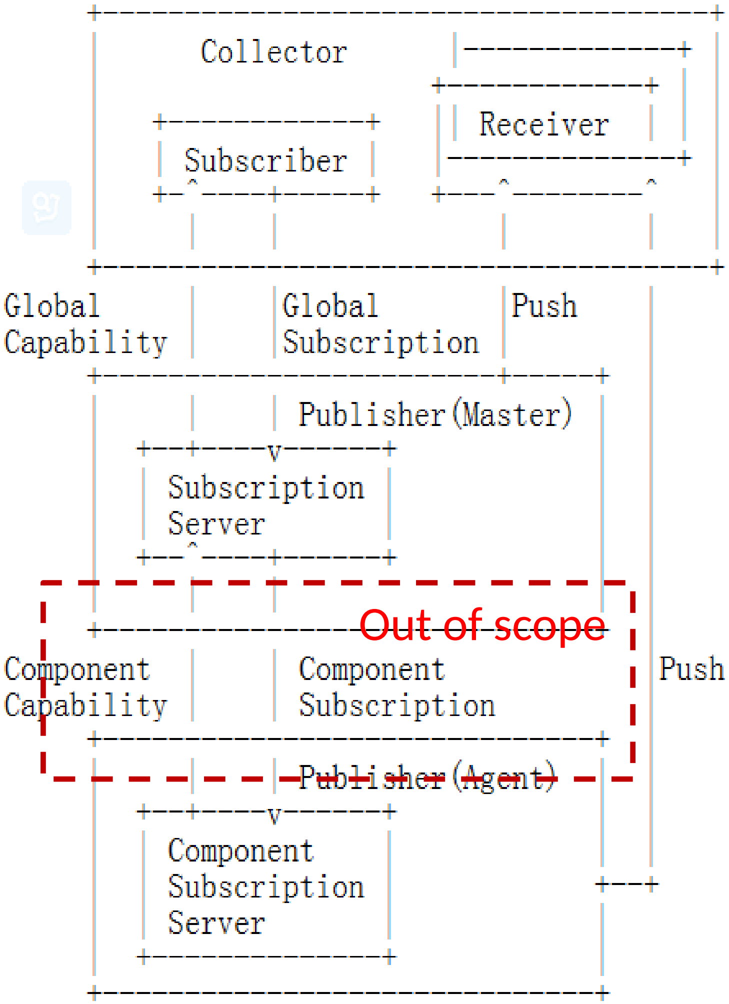
Use Case 2

- 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.



Solution Overview

- Publisher
  - Two roles: master and agent
- Interactions between the Master and Agents
  - Agents need to have a registration or announcement handshake with the Master, so the Master is aware of them and of life-cycle events.
  - Contracts are needed between the Master and each Agent on the Component Capability, and the format for streaming data structure.
  - The Master relays the component subscriptions to the Agents.
  - The Agents indicate status of Component Subscriptions to the Master. The status of the overall subscription is maintained by the Master.



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 response of the "establish-subscription" and "modify-subscription“
  - The "subscription-started" and "subscription-modified" notification

Subscription State Change Notifications

- In addition to sending event records to receivers, the Master MUST also send subscription state change notifications when events related to subscription management have occurred.
- 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.

Next

- Add the YANG Model to show how to extend t he existing Subscribed Notification Model.
- Any other issues need to consider for this distr ibuted extension of the YANG-Push work?
- Ask for the WG Adoption.

Thank you