Requirements for Subscription to YANG Datastores

draft-voit-i2rs-pub-sub-requirements-00

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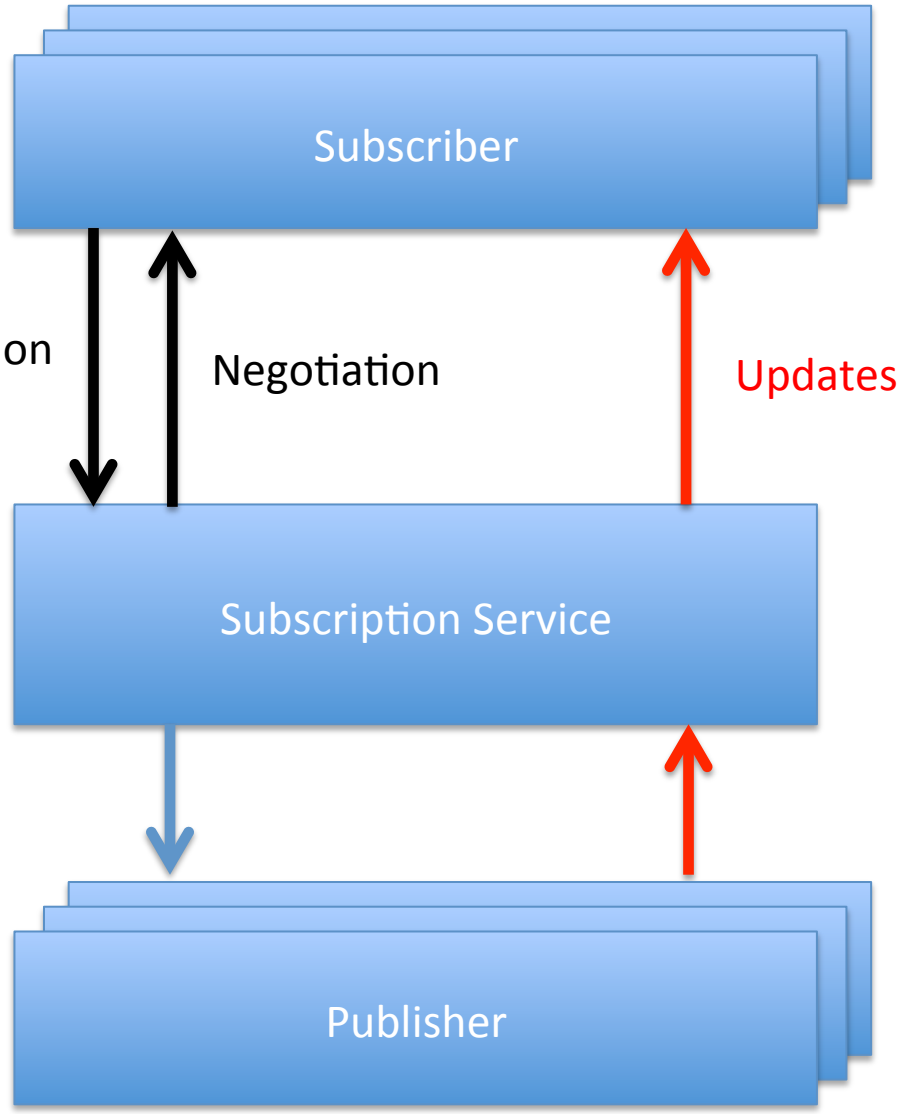
Goals

- Goal
  - Provide requirements for a **"pub/sub" service** for **YANG datastore** updates
- Why?
  - **Push-based** vs. Poll-based
  - I2RS need more robust YANG object subscriptions
- Current YANG technology ecosystem
  - Datastore access paradigm is mainly poll-based
  - Limited support for pushed notification of changes

Pub/Sub Service

- Policy
  - Periodic updates
  - On-change
- Filters
- QoS

Subscription Request



Subscription Service Transport Requirements

- Starting point: **Netconf**
  - I-D: Subscribing to datastore push updates
    - draft-netmod-clemm-datastore-push-00
  - Based on current I2RS requirements

- Long term:
  - Ensure YANG subscription mechanisms can be generalized to allow for additional transports
    - SHOULD support **different transports**
    - SHOULD support **different encodings of payload**

BACKUP SLIDES

(SUBSCRIPTION SERVICE REQUIREMENTS)

Subscription Service Requirements

- Subscription Management
  - MUST support the ability to **create and to terminate a Subscription**
  - MUST be able to support and independently track one or more Subscription Requests by the same Subscriber
  - MUST be able to support an add/change/delete of one or more YANG subtrees as part of the same Subscription Request
  - SHOULD support the ability to **suspend and to resume a Subscription** on request of a client
  - MAY at its discretion **revoke or suspend an existing subscription**
  - MUST **send an indication** to the Subscriber when a Subscription undergoes a **state change**, i.e. when it is started, suspended, resumed, or terminated
  - MUST allow **Subscriptions to be monitored**
- Types of Subscriptions Supported
  - MUST support the ability to **subscribe to periodic updates**
  - SHOULD support the ability to **subscribe to updates "on-change"**
  - SHOULD be able to interpret Subscription Requests **QoS Policy** requests

Subscription Service Requirements (2)

- Subscription Negotiation
  - MUST be able to negotiate the **terms of a Subscription** (interval, dampening period, policy, filters)
  - SHOULD be able to negotiate **QoS criteria** for a Subscription
  - (When a Subscription Request cannot be fulfilled) MUST include in its decline a set of criteria that would have been acceptable when the Subscription Request was made
- Update Distribution
  - For **"on-change"** updates, the Subscription Service MUST **only send deltas** to the object data for which a change occurred
  - For each object needs to include an indication whether it was removed, added, or changed
  - MUST **publish only data nodes that meet the filter criteria**
  - MUST be able include a flag whether updates pertain only to operational data, to configuration data, or both

Subscription Service Requirements (3)

- Transport
  - SHOULD support different transports
  - SHOULD support different encodings of payload
  - MUST be possible for Receivers to associate the update with a specific Subscription.
  - For connection-oriented transport, when a transport connection drops, the associated Subscription SHOULD be terminated. It is up the Subscriber to request a new Subscription

Subscription Service Requirements (4)

- Security
  - Mutual **authentication**
  - **Versioning** MUST be supported
  - data pushed MUST be **authorized** in the same way that regular data retrieval operations are
  - MUST filter Subscriptions to suppress object updates where the Receiver has no read authorization
  - A Subscription Service SHOULD decline a Subscription Request if it would deplete its resources