Adaptive Subscription to YANG Notification

draft-wang-netconf-adaptive-subscription-06
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Recap: Adaptive Subscription

- YANG-Push subscriptions [RFC8641] allow client applications to subscribe to continuous datastore updates without needing to poll.

- Two subscription modes are supported: periodical subscription vs on-change subscription
  - Periodical subscription: Send subscribed data periodically
  - On-change subscription: trigger by subscribed data value change or datastore change type

- In some cases, there is a need for a service to configure both collectors and publishers with multiple period intervals and automatically switch to different period intervals according to network resource usage,
  - Massive data collection and processing
  - Expensive data management cost,
  - High Frequency data collection Lead to more resource Consumption while low frequency data collection Lead to no enough data For fault localization

- Therefore adaptive subscription mode is proposed
  - Allow the server or publisher support multiple fixed update intervals and switch among them based on network condition change
    - Condition can be described using external xpath expression as part of subscription policy
    - External xpath expression is used to track the monitored data object change (such as wifi signal strength change)
  - Send update interval change event notification to the subscriber
  - During each fixed update interval, the subscribed data is sent in the same way as periodical subscription
Change 04 - 06

• Remove "modify-subscription" RPC usage.
  • Add no change to modify-subscription.
  • Support Client initiated update interval change but can not provide prompt response to the network change

• Replace example-wifi-mac module definition in the Appendix with example-wifi-network-diagnostic using WIFI statistics specified in CHIP specification.

• Add reference to CHIP Specification for wifi example module.

• Update adaptive subscription Example to align with WIFI example module change.
      ds:running
    </yp:datastore>
    <yp:datastore-xpath-filter xmlns:wnd="https://example.com/sample-data/1.0">
      /wnd:example-wifi-network-diagnostic
    </yp:datastore-xpath-filter>
    <as:adaptive-subscriptions xmlns:as="urn:ietf:params:xml:ns:yang:ietf-adaptive-subscription">
      <as:adaptive-period>
        <as:xpath-external-eval>wnd:server[rssi &lt; -65]</as:xpath-external-eval>
        <as:watermark>-65</as:watermark>
        <as:period>5</as:period>
      </as:adaptive-period>
      <as:adaptive-period>
        <as:xpath-external-eval>wnd:server[rssi &ge; -65]</as:xpath-external-eval>
        <as:watermark>-65</as:watermark>
        <as:period>60</as:period>
      </as:adaptive-period>
    </as:adaptive-subscriptions>
  </establish-subscription>
</netconf:rpc>

When RSSI >= -65dBm, switch update interval to 60 seconds

When RSSI < -65dBm, switch update interval to 5 seconds

Adaptive subscription policy

Install using establish-subscription

---

module: example-wifi-network-diagnostic

---rw server
  +-rw bssid? yang:mac-address
  +--rw security-type? enumeration
  +--rw wifi-version? enumeration
  +--rw channel-num? int8
  +--rw rssi? int8

.............
Next Step

• Request adoption as workgroup document

• Received support on last IETF

• Received support and comments on the mailing list
When condition A is met, report period interval sets to \( \alpha \); when condition B is met, report period interval sets to \( \beta \).

Adaptive-Subscription Model Overview

- **Device**
- **Telemetry data collector**

- **Period**
  - The new duration for push updates
  - Can be changed based on trigger condition
- **Anchor-time**
  - Update intervals fall on the points in time that are a multiple of a “period” from an “anchor-time”
- **Watermark**
  - The threshold value of the targeted data object
- **Xpath-external-eval**
  - An evaluation criteria
  - Be used to trigger update interval switch

### Condition A=True
- Period = \( \alpha \)

- **Adaptive subscription to YANG notification**

### Condition B=True
- Period = \( \beta \)

- **Adaptive period update notification**