WT-508 and YANG-Push to Message Broker Comparison

Shared synergies and common interests

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Agenda Items

- Discussion on common high-level requirements
- SDO Comparison
- Discussion on action Item
- Next Steps

High Level Requirements

What we both care

- Discoverable subscription capabilities for automation
- Notifications of subscriptions state and schema changes
- Exportability of schema and schema tree
- Standardized notification metadata (hostname, sequence-number, observation timestamping)
- Standardized integration layer for Data Mesh (todays Big Data architecture) to enable multiple Network Analytics use cases
- Beyond YANG, applies to Network Telemetry

BBF WT-508	IETF YANG-Push Message Broker	Comments
DC MF	Manage YANG-Push Subscription Component	Data subscription negotiation mechanism: both DC MF and YANG-Push subscription component perform data subscription management function. But current DC MF is not clear to define how the data subscription capabilities are learned as YANG-Push subscription component, which need to further study.
DCF	Network Node YANG-Push Receiver	Both DCF and YANG-Push receiver support the capabilities of the data acquisition and processing. However, there are some key capabilities still need to further discussion : (a) Data Collection Mechanism: YANG-Push receiver using YANG-Push configured subscription to collected data, which should be agnostic with specified publication protocols such as telemetry or IPFIX etc. However, DCF can support multiple data subscription ways except configured subscription. (b) Schema Processing Capabilities: YANG-Push receiver not only need to collect data from YANG-Push publisher, but also need to get schema from YANG-Push publisher and register the schema in YANG schema registry component. Besides, YANG-Push receiver needs label schema-ID in notification message before publish notification message into message broker. (c) Data Mesh: YANG-push receiver should validate the collected YANG push-update message and serialized to a Message Broker topic, while current WT-508 did not clearly elaborate detailed data subscription and publication mechanism in northbound interface of DCF.
DReqs and DDTs	YANG Data Consumer YANG Data Storage	Data Storage techniques: Within the BNDC framework, current draft use the central data lake and data warehouse to storage collected data. However, current draft is not designed to process the real-time and distributed data. In contrast, the IETF data collection framework utilized data mesh techniques to manage distributed data in multiple domains and to process the real-time subscription via integrated native real-time capabilities such as Kappa or Lambda.
MEs	Network Node YANG-Push Publisher	(a) Network Node Capabilities: Within the BNDC framework, Management Entities (MEs) are embedded in xNF and legacy nodes. No specific capabilities are defined or expressed in requirement form. However, in the YANG-Push framework integrated with a message broker, the YANG-Push publisher must report schema information to the YANG-Push receiver to facilitate automation, on-change/periodically notification message, and syn-on-start message providing initial state information important to configuration automation. (b) Data Reporting Capabilities: Within the BNDC framework, Management Entities (MEs) support multiple data reporting mechanisms to accommodate diverse data collection scenarios, including IPFIX, Bulk, and Telemetry. However, in the YANG-Push framework integrated with a message broker, YANG-Push serves as the native data collection capability, complemented by YANG Schema.
/	YANG Schema Registry	YANG Schema Support: Within the framework of YANG-Push integrated with a message broker, the YANG Schema is crucial for standardized data processing integration and semantic understanding. Consequently, the IETF's proposed architecture defines the YANG Schema Registry component and workflow. However, the BNDC does not consider YANG schema mechanisms.
/	YANG Message Broker	YANG Message Broker: In the IETF-proposed framework, the message broker component is utilized to produce and consume messages via the topic field, facilitating message exchange between data collection YANG-Push Receivers and data consumer components. However, current BNDCs do not take this into consideration in their northbound interface