**3GPP TSG-SA5 Meeting #157 *S5-246062d2***

**Hyderabad, India, 14th Oct 2024 - 18th Oct 2024**

**Source: Ericsson**

**Title: Rel-19 pCR TR 28.871 Add evaluation of potential solutions (schema retrieval support)**

**Document for: Approval**

**Agenda Item: 6.19.8**

# 1 Decision/action requested

***Approve the proposal.***

# 2 References

[1] 3GPP TR 28.871 Study on Service Based Management Architecture enhancement phase 3

[2] 3GPP TS 28.532 Generic management services

[3] IETF RFC6022 YANG Module for NETCONF Monitoring

# 3 Rationale

A key enabler to for data-driven producers, and consumers, is the ability to retrieve the supported schemas from the network.

This submission adds Evaluation and Recommendation for the use case.

# 4 Detailed proposal

**First change**

## 5.8 Schema retrieval enhancements

### 5.8.1 Description

This enhancement proposes methods to support retrieval of schema files/modules.

### 5.8.2 Potential requirements

**REQ-Schema-retrieval -1:** The MnS Producer shall support advertising its supported schema files/modules.

**REQ-Schema-retrieval -2:** The schema advertisement shall support files/modules located at any location specified by the MnS Producer.

**REQ-Schema-retrieval -3:** The MnS Producer shall support retrieval of all files/modules.

**REQ-Schema-retrieval -4:** The MnS Producer shall support retrieval of specific schema files/modules.

### 5.8.3 Potential solutions

This enhancement proposes methods to support retrieval of schema files/modules.

#### 5.8.3.1 Potential solution#1, Schema list at known location

This enhancement proposes methods to support advertisement and retrieval of schema files/modules using a model- based approach:

1. Add objects to define each available schema including::
   1. Schema id (identifier, e.g. file/module name).
   2. Schema version (based on versioning information in the file/module).
   3. Schema format (Enum: yang, yaml).
   4. Schema namespace (URI).
   5. Schema location (file URI).
   6. Supported feature list (if applicable).
   7. Indicator of "implemented" vs. "imported" (if applicable).
2. Advertisement of supported schema:
   1. Define a specific location from which the list of supported schema is available. Similar to the ../schemas/.. tree defined in [3], clause 2.1.3 this would be a predefined location from which any consumer can query the list.
   2. Each schema would be an entry in a 'list' of schema available at this location.
3. Schema retrieval:
   1. Consumer uses the information in the schema list entries to retrieve the schema file(s) of interest.
   2. The actual method to retrieve them (e.g. HTTP, sftp) is defined by the solution and indicated in the <protocol> portion of the schema location URI.

#### 5.8.3.2 Potential solution#2 Schema lists as capabilities

This enhancement is similar to #1, but instead of placing the schema at a known location the schema files would be added to the capabilities advertised by specific MnS and/or managed entities. I.e. the schema file details would be data in the capabilities, not individual MOIs per schema file.

#### 5.8.3.3 Potential solution#3 Solution set specific solutions

This enhancement proposes different methods based on solution set:

1. OpenAPI: predefine a resource end point from which the schema list can be queried. Define as a tree allowing single/multiple entries to be queried.
2. NETCONF: implement per RFC6022 or RFC8525

### 5.8.4 Evaluation of potential solutions

Solution #1 is recommended as it provides a standardized set of meta data for each supported schema along with standardized mechanisms to store and query such information. This solution could fulfil the proposed requirements in a consistent manner for all solution sets.

Note: whether the solution has any impact on MNSInfo IOC needs to be determined during normative work.

Solution#2 is not recommended. It introduces an unnecessary coupling between the schema query and the MnS discovery. This solution could fulfil the proposed requirements in a consistent manner for all solution sets.

Solution #3 is not recommended. It adds no benefit from a standardization perspective. It is already possible in current solution. Whether or not the proposed requirements could be met, and how, would be solution set specific.