**3GPP TSG-SA5 Meeting #156 *S5-244773***

Maastricht, Netherlands, 19 - 23 August 2024

**Source: Huawei**

**Title: Rel-19 DP on openAPI solution set for readOnly attributes for different scenarios**

**Document for: Endorsement**

**Agenda Item: 6.19.13**

# 1 Decision/action requested

The group is asked to discuss and approval.

# 2 References

[1] 3GPP TS 32.160: "Management and orchestration; Management service template"

[2] S5-242147 DP Correct Stage 3 YAML isWritable and is isReadable attribute properties

[3] S5-242923 Rel-18 TS 28.623 Correct YAML with attribute properties isReadable and isWritable

# 3 Rationale

### 3.1 Background

### 3.1.1 SA5 Discussion

Following description related to how to document the stage 2 “isWritable” and “isReadable” properties to YAML schema is documented in TS 32.160.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Abstract from TS 32.160 [1]\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

*6.1.11.8 Attribute property "isReadable" and "isWritable"*

*The semantics of these properties are mapped to the "readOnly" and "writeOnly" keywords with the values set according to the following table. The default value of the "readOnly" and "writeOnly" keywords is boolean "false".*

|  |  |  |  |
| --- | --- | --- | --- |
| ***Stage 2 statement*** | ***Stage 2 semantic*** | ***Stage 3 statements*** | ***Stage 3 semantic*** |
| *isReadable=True (default)*  *isWritable=True (default)* | *Attribute can be read.*  *Attribute can be written.* | *readOnly=False (default)*  *writeOnly=False (default)* | *Attribute can be read.*  *Attribute can be written.* |
| *isReadable=True (default) isWritable=False* | *Attribute can be read.*  *Attribute cannot be written.* | *readOnly=True*  *writeOnly=False (default)* | *Attribute can be read.*  *Attribute cannot be written.* |
| *isReadable=False isWritable=True (default)* | *Attribute cannot be read.*  *Attribute can be written.* | *readOnly=False (default)*  *writeOnly=True* | *Attribute cannot be read.*  *Attribute can be written.* |
| *isReadable=False isWritable=False* | *Attribute cannot be read.*  *Attribute cannot be written.* | *readOnly=True*  *writeOnly=True* | *Attribute cannot be read.*  *Attribute cannot be written.* |

*If "writeOnly" for an attribute has a value of boolean "true", it indicates that the attribute shall never be present in instance documents sent by the MnS producer to the MnS consumer.*

*If "readOnly" for an attribute has a value of boolean "true", it indicates that the attribute shall never be present in instance documents sent by the the MnS consumer to the MnS producer.*

*Example:*

*properties:*

*flower:*

*type: string*

*readOnly: true*

*writeOnly: false*

In SA5#154 meeting, the endorsed DP S5-242147 (Correct Stage 3 YAML isWritable and is isReadable attribute properties) observed several SA5 YAML schema definition haven’t following the mapping rule for “isWritable” and “isReadable” properties and proposal to correct corresponding YAML schema.

### 3.1.2 Method to describe the nullable property for the common data type in CT group

Following are the content from TS29571\_CommonData.yaml, separate the definition for the same attribute with nullable property is true.

*Date:*

*format: date*

*type: string*

*DateRm:*

*format: date*

*type: string*

*nullable: true*

*DateTime:*

*format: date-time*

*type: string*

*DateTimeRm:*

*format: date-time*

*type: string*

*nullable: true*

*DiameterIdentity:*

*type: string*

*pattern: '^([A-Za-z0-9]+([-A-Za-z0-9]+)\.)+[a-z]{2,}$'*

*DiameterIdentityRm:*

*type: string*

*pattern: '^([A-Za-z0-9]+([-A-Za-z0-9]+)\.)+[a-z]{2,}$'*

*nullable: true*

*Double:*

*format: double*

*type: number*

*DoubleRm:*

*format: double*

*type: number*

*nullable: true*

*DurationSec:*

*type: integer*

*DurationSecRm:*

*type: integer*

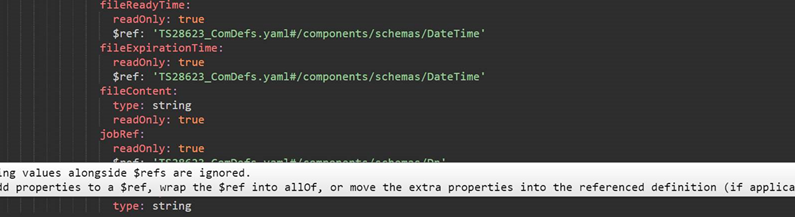
*nullable: true*

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Abstract from TS 32.160 [1]\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

## 3.2 Issues

In SA5#155 meeting, several CRs to correct isWritable and is isReadable attribute properties were submitted, and following generic issues haven’t been observed. This issue mainly happens for the Readonly attributes which refer to common data type schema definition (e.g. DN, DNList)

* The “readOnly” property together with “$ref” will be ignored. Following is one example of this issue in S5-242923.



## 3.3 Solution

Following are the proposed solutions for how to model the readOnly attributes [isReadable= T, isWritable= F] in different scenarios:

1. Regarding the ReadOnly attribute without reference, add readOnly property for this attribute directly. Following is an example for TS28104\_MdaReport.yaml.

*MDAReport:*

*allOf:*

*- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'*

*- type: object*

*properties:*

*attributes:*

*allOf:*

*- type: object*

*properties:*

*mDAReportID:*

*type: string*

*readOnly: true*

1. Regarding the ReadOnly attribute referring to a datetype defined in the same yaml file and this datatype is used for this attribute Only, add readOnly property for the referred dataType. Following is an example for TS28312\_IntentNrm.yaml.

*FulfilmentStatus:*

*type: string*

*readOnly: true*

*enum:*

*- FULFILLED*

*- NOT\_FULFILLED*

*default: NOT\_FULFILLED*

*description: It describes the current status of the intent fulfilment result.*

1. Regarding the ReadOnly attribute referring to common datatype defined in TS28623\_ComDefs.yaml and this datatype is only referred by readOnly attributes, add readOnly property for the common data type in TS28623\_ComDefs.yaml. Following is an example in TS28623\_ComDefs.yaml.

*OperationalState:*

*type: string*

*enum:*

*- ENABLED*

*- DISABLED*

*default: DISABLED*

*readOnly: true*

1. Regarding the ReadOnly attribute referring to common datatype defined in TS28623\_ComDefs.yaml and this data type also referred by writable attributes, add new readOnly datatype in the TS28623\_ComDefs.yaml to be referred by ReadOnly attributes. Following is an example for TS28623\_ComDefs.yaml and TS28104\_MdaReport.yaml

*DateTime:*

*type: string*

*format: date-time*

*DateTimeRo:*

*type: string*

*format: date-time*

*readOnly: true*

*……*

*Dn:*

*type: string*

*DnRo:*

*type: string*

*readOnly: true*

*IntentReport-Single:*

*description: It represents intent report information from MnS producer to MnS consumer.*

*allOf:*

*- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'*

*- type: object*

*properties:*

*intentFulfilmentReport:*

*$ref: '#/components/schemas/IntentFulfilmentReport'*

*intentConflictReports:*

*type: array*

*items:*

*$ref: '#/components/schemas/IntentConflictReport'*

*intentFeasibilityCheckReport:*

*$ref: '#/components/schemas/IntentFeasibilityCheckReport'*

*lastUpdatedTime:*

*$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTimeRo'*

*intentReference:*

*$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnRo'*

1. Regarding the ReadOnly attribute referring to datatype defined in the same YAML file but this data type also referred by other writable attributes, add new readOnly datatype in the same YAML file to be referred by ReadOnly attributes.Following is an example for TS28538\_EdgeNrm.yaml. This solution needs more investigation.

*ServingLocation:*

*type: object*

*properties:*

*geographicalLocation:*

*$ref: '#/components/schemas/GeoLoc'*

*topologicalLocation:*

*$ref: '#/components/schemas/TopologicalServiceArea'*

*TopologicalServiceArea:*

*type: object*

*properties:*

*cellIdList:*

*type: array*

*items:*

*type: integer*

*trackingAreaIdList:*

*$ref: 'TS28541\_NrNrm.yaml#/components/schemas/TaiList'*

*servingPLMN:*

*$ref: 'TS28623\_ComDefs.yaml#/components/schemas/PlmnId'*

*TopologicalServiceAreaRo:*

*type: object*

*properties:*

*cellIdList:*

*type: array*

*items:*

*type: integer*

*readOnly: true*

*trackingAreaIdList:*

*$ref: 'TS28541\_NrNrm.yaml#/components/schemas/TaiListRo'*

*servingPLMN:*

*$ref: 'TS28623\_ComDefs.yaml#/components/schemas/PlmnIdRo'*

*……*

*EASProfile-Single:*

*allOf:*

*- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'*

*- type: object*

*properties:*

*aCID:*

*type: string*

*eASProvider:*

*type: string*

*eASdescription:*

*type: string*

*eASSchedule:*

*$ref: '#/components/schemas/Duration'*

*eASGeographicalServiceArea:*

*$ref: '#/components/schemas/GeoLoc'*

*eASTopologicalServiceArea:*

*$ref: '#/components/schemas/TopologicalServiceAreaRo'*

*eASServicePermissionLevel:*

*$ref: '#/components/schemas/EASServicePermission'*

*eASFeature:*

*$ref: '#/components/schemas/EASFeature'*

# 4 Detailed proposal

It proposes to endorse to adopt the following guidelines for the YAML definition for readOnly attributes [isReadable= T, isWritable= F] for Rel-19 SA5 YAML files:

* Regarding the ReadOnly attribute without reference, add readOnly property for this attribute directly.
* Regarding the ReadOnly attribute referring to a datetype defined in the same yaml file and this datatype is used for this attribute Only, add readOnly property for the referred dataType.
* Regarding the ReadOnly attribute referring to common datatype defined in TS28623\_ComDefs.yaml and this datatype is only referred by readOnly attributes, add readOnly property for the common data type in TS28623\_ComDefs.yaml.
* Regarding the ReadOnly attribute referring to common datatype defined in TS28623\_ComDefs.yaml and this data type also referred by writable attributes, add new readOnly datatype in the TS28623\_ComDefs.yaml to be referred by ReadOnly attributes.