**3GPP TSG-SA5 Meeting #142-e *S5-223358***

**e-meeting, 4 - 12 April 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.532** | **CR** | **0208** | **rev** | **-** | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Rel-17 CR 28.532 Correct definition of Resource | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17, REST\_SS | | | | |  | ***Date:*** | | | 2022-04-29 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The REST SS definition of "Resource" is missing the "objectClass" and "objectInstance" properties. In the OpenAPI defintion, they are already included. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The "objectClass" and "objectInstance" properties are added to the REST SS definitions | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The REST SS and OpenAPI definitions of "Resource" are not consistent. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 12.1.1.4.1a.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First modification** |

##### 12.1.1.4.1a Structured data types

###### 12.1.1.4.1a.1 Type Resource

**Table 12.1.1.4.1a.1 -1: Definition of type Resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute name** | **Data type** | **Description** | **S** |
| id | string | Identifier of the resource object | M |
| objectClass | string | Object class of the resource object | O |
| objectInstance | Dn | Object instance of the resource object | O |
| attributes | object | “attributes” (JSON) object whose members are the attributes of IOC (except for “id”, “objectClass” and “objectInstance”) | M |
| n/a | map(array(object)) | Name contained objects | M |

This definition of "Resource" does not specify any attributes or name contained objects. Resource representations with specific attributes and name contained objects are contained in the NRM definitions. These definitions should be used in implementations of the Provisioning MnS instead of this generic definition.

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| **Next modification** |

## A.1.1 OpenAPI document "provMnS.yaml"

openapi: 3.0.1

info:

title: Provisioning MnS

version: 16.7.0

description: >-

OAS 3.0.1 definition of the Provisioning MnS

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externalDocs:

description: 3GPP TS 28.532; Generic management services

url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.532/

servers:

- url: '{MnSRoot}/ProvMnS/{MnSVersion}/{URI-LDN-first-part}'

variables:

MnSRoot:

description: See clause 4.4.2 of TS 32.158

default: http://example.com/3GPPManagement

MnSVersion:

description: Version number of the OpenAPI definition

default: XXX

URI-LDN-first-part:

description: See clause 4.4.2 of TS 32.158

default: ''

paths:

'/{className}={id}':

parameters:

- name: className

in: path

required: true

schema:

type: string

- name: id

in: path

required: true

schema:

type: string

put:

summary: Replaces a complete single resource or creates it if it does not exist

description: >-

With HTTP PUT a complete resource is replaced or created if it does not

exist. The target resource is identified by the target URI.

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/Resource'

responses:

'200':

description: >-

Success case ("200 OK").

This status code shall be returned when the resource is replaced, and

when the replaced resource representation is not identical to the resource

representation in the request.

This status code may be retourned when the resource is updated and when the

updated resource representation is identical to the resource representation

in the request.

The representation of the updated resource is returned in the response

message body.

content:

application/json:

schema:

$ref: '#/components/schemas/Resource'

'201':

description: >-

Success case ("201 Created").

This status code shall be returned when the resource is created.

The representation of the created resource is returned in the response

message body.

content:

application/json:

schema:

$ref: '#/components/schemas/Resource'

'204':

description: >-

Success case ("204 No Content").

This status code may be returned only when the replaced resource

representation is identical to the representation in the request.

The response has no message body.

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

callbacks:

notifyMOICreation:

'{request.body#/notificationRecipientAddress}':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/NotifyMoiCreation'

responses:

'204':

description: >-

Success case ("204 No Content").

The notification is successfully delivered. The response

has no message body.

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

notifyMOIDeletion:

'{request.body#/notificationRecipientAddress}':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/NotifyMoiDeletion'

responses:

'204':

description: >-

Success case ("204 No Content").

The notification is successfully delivered. The response

has no message body.

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

notifyMOIAttributeValueChanges:

'{request.body#/notificationRecipientAddress}':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/NotifyMoiAttributeValueChanges'

responses:

'204':

description: >-

Success case ("204 No Content").

The notification is successfully delivered. The response

has no message body.

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

notifyMOIChanges:

'{request.body#/notificationRecipientAddress}':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/NotifyMoiChanges'

responses:

'204':

description: >-

Success case ("204 No Content").

The notification is successfully delivered. The response

has no message body.

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

get:

summary: Reads one or multiple resources

description: >-

With HTTP GET resources are read. The resources to be retrieved are

identified with the target URI. The attributes and fields parameter

of the query components allow to select the resource properties to be returned.

parameters:

- name: scope

in: query

description: >-

This parameter extends the set of targeted resources beyond the base

resource identified with the path component of the URI. No scoping

mechanism is specified in the present document.

required: false

schema:

$ref: '#/components/schemas/Scope'

style: form

explode: true

- name: filter

in: query

description: >-

This parameter reduces the targeted set of resources by applying a

filter to the scoped set of resource representations. Only resource

representations for which the filter construct evaluates to "true"

are targeted. No filter language is specified in the present

document.

required: false

schema:

$ref: 'comDefs.yaml#/components/schemas/Filter'

- name: attributes

in: query

description: >-

This parameter specifies the attributes of the scoped resources that

are returned.

required: true

schema:

type: array

items:

type: string

style: form

explode: false

- name: fields

in: query

description: >-

This parameter specifies the attribute field of the scoped resources

that are returned.

required: false

schema:

type: array

items:

type: string

style: form

explode: false

responses:

'200':

description: >-

Success case ("200 OK").

The resources identified in the request for retrieval are returned

in the response message body. In case the attributes or fields query

parameters are used, only the selected attributes or sub-attributes are

returned. The response message body is constructed according to the

hierarchical response construction method (TS 32.158 [15]).

content:

application/json:

schema:

$ref: '#/components/schemas/Resource'

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

patch:

summary: Patches one or multiple resources

description: >-

With HTTP PATCH resources are created, updated or deleted. The resources

to be modified are identified with the target URI (base resource) and

the patch document included in the request message body.

requestBody:

description: >-

The request body describes changes to be made to the target resources.

The following patch media types are available

- "application/merge-patch+json" (RFC 7396)

- "application/3gpp-merge-patch+json" (TS 32.158)

- "application/json-patch+json" (RFC 6902)

- "application/3gpp-json-patch+json" (TS 32.158)

required: true

content:

application/merge-patch+json:

schema:

$ref: '#/components/schemas/Resource'

application/3gpp-merge-patch+json:

schema:

$ref: '#/components/schemas/Resource'

application/json-patch+json:

schema:

type: array

items:

type: object

application/3gpp-json-patch+json:

schema:

type: array

items:

type: object

responses:

'200':

description: >-

Success case ("200 OK").

This status code is returned when the updated the resource representations

shall be returned for some reason.

The resource representations are returned in the response message body. The

response message body is constructed according to the hierarchical response

construction method (TS 32.158 [15])

content:

application/json:

schema:

$ref: '#/components/schemas/Resource'

'204':

description: >-

Success case ("204 No Content").

This status code is returned when there is no need to return the updated

resource representations.

The response message body is empty.

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

delete:

summary: Deletes one or multiple resources

description: >-

With HTTP DELETE resources are deleted. The resources to be deleted are

identified with the target URI.

parameters:

- name: scope

in: query

description: >-

This parameter extends the set of targeted resources beyond the base

resource identified with the path component of the URI. No scoping

mechanism is specified in the present document.

required: false

schema:

$ref: '#/components/schemas/Scope'

style: form

explode: true

- name: filter

in: query

description: >-

This parameter reduces the targeted set of resources by applying a

filter to the scoped set of resource representations. Only resources

representations for which the filter construct evaluates to "true"

are returned. No filter language is specified in the present

document.

required: false

schema:

$ref: 'comDefs.yaml#/components/schemas/Filter'

responses:

'200':

description: >-

Success case ("200 OK").

This status code shall be returned, when query parameters are present in

the request and one or multiple resources are deleted.

The URIs of the deleted resources are returned in the response message body.

'204':

description: >-

Success case ("204 No Content").

This status code shall be returned, when no query parameters are present in

the request and only one resource is deleted.

The message body is empty.

content:

application/json:

schema:

type: array

items:

$ref: 'comDefs.yaml#/components/schemas/Uri'

default:

description: Error case.

content:

application/json:

schema:

$ref: 'comDefs.yaml#/components/schemas/ErrorResponse'

components:

schemas:

CorrelatedNotification:

type: object

properties:

source:

$ref: 'comDefs.yaml#/components/schemas/Dn'

notificationIds:

type: array

items:

$ref: 'comDefs.yaml#/components/schemas/NotificationId'

required:

- source

- notificationIds

CmNotificationTypes:

type: string

enum:

- notifyMOICreation

- notifyMOIDeletion

- notifyMOIAttributeValueChanges

- notifyMOIChanges

SourceIndicator:

type: string

enum:

- RESOURCE\_OPERATION

- MANAGEMENT\_OPERATION

- SON\_OPERATION

- UNKNOWN

Operation:

type: string

enum:

- CREATE

- DELETE

- REPLACE

ScopeType:

type: string

enum:

- BASE\_ONLY

- BASE\_NTH\_LEVEL

- BASE\_SUBTREE

- BASE\_ALL

Scope:

type: object

properties:

scopeType:

$ref: '#/components/schemas/ScopeType'

scopeLevel:

type: integer

Resource:

oneOf:

- type: object

properties:

id:

objectClass:

type: string

objectInstance:

$ref: 'comDefs.yaml#/components/schemas/Dn'

type: string

attributes:

type: object

additionalProperties:

type: array

items:

type: object

required:

- id

- anyOf:

- $ref: 'genericNrm.yaml#/components/schemas/resources-genericNrm'

- $ref: 'nrNrm.yaml#/components/schemas/resources-nrNrm'

- $ref: '5gcNrm.yaml#/components/schemas/resources-5gcNrm'

- $ref: 'sliceNrm.yaml#/components/schemas/resources-sliceNrm'

MoiChange:

type: object

properties:

notificationId:

$ref: 'comDefs.yaml#/components/schemas/NotificationId'

correlatedNotifications:

type: array

items:

$ref: '#/components/schemas/CorrelatedNotification'

additionalText:

type: string

sourceIndicator:

$ref: '#/components/schemas/SourceIndicator'

path:

$ref: 'comDefs.yaml#/components/schemas/Uri'

operation:

$ref: '#/components/schemas/Operation'

value:

oneOf:

- $ref: 'comDefs.yaml#/components/schemas/AttributeNameValuePairSet'

- $ref: 'comDefs.yaml#/components/schemas/AttributeValueChangeSet'

NotifyMoiCreation:

allOf:

- $ref: 'comDefs.yaml#/components/schemas/NotificationHeader'

- type: object

properties:

correlatedNotifications:

type: array

items:

$ref: '#/components/schemas/CorrelatedNotification'

additionalText:

type: string

sourceIndicator:

$ref: '#/components/schemas/SourceIndicator'

attributeList:

$ref: 'comDefs.yaml#/components/schemas/AttributeNameValuePairSet'

NotifyMoiDeletion:

allOf:

- $ref: 'comDefs.yaml#/components/schemas/NotificationHeader'

- type: object

properties:

correlatedNotifications:

type: array

items:

$ref: '#/components/schemas/CorrelatedNotification'

additionalText:

type: string

sourceIndicator:

$ref: '#/components/schemas/SourceIndicator'

attributeList:

$ref: 'comDefs.yaml#/components/schemas/AttributeNameValuePairSet'

NotifyMoiAttributeValueChanges:

allOf:

- $ref: 'comDefs.yaml#/components/schemas/NotificationHeader'

- type: object

properties:

correlatedNotifications:

type: array

items:

$ref: '#/components/schemas/CorrelatedNotification'

additionalText:

type: string

sourceIndicator:

$ref: '#/components/schemas/SourceIndicator'

attributeListValueChanges:

$ref: 'comDefs.yaml#/components/schemas/AttributeValueChangeSet'

required:

- attributeListValueChanges

NotifyMoiChanges:

allOf:

- $ref: 'comDefs.yaml#/components/schemas/NotificationHeader'

- type: object

properties:

moiChanges:

type: array

items:

$ref: '#/components/schemas/MoiChange'

required:

- moiChanges

|  |
| --- |
| **End of modifications** |