**3GPP TSG-SA5 Meeting #143-e *S5-223360***

**Online, , 9th May 2022 - 17th May 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.532** | **CR** | **0210** | **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 notifyMOIChanges (REST SS) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | SA5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | REST\_SS, TEI17 | | | | |  | ***Date:*** | | | 2022-04-29 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Stage 2 of ther notification "notifyMOIChanges" is corrected. The change needs to be reflercxted in the REST SS. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The stage 2 changes to "notifyMOIChanges" are reflected in the REST SS | | | | | | | | |
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| ***Consequences if not approved:*** | | Stage 2 for "notifyMOIChanges" would not be aligned with the REST SS. | | | | | | | | |
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| ***Clauses affected:*** | | 12.1.1.2.5, 12.1.1.3.2.4.3.1, 12.1.1.4.1a.4, 12.1.1.4.1a.8, 12.1.1.4.4.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 28.532... CR 0211 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First modification** |

##### 12.1.1.2.5 Notification notifyMOIChanges

The IS notification parameters are mapped to SS equivalents according to table 12.1.1.2.5-1.

Table 12.1.1.2.5-1: Mapping of IS notification input parameters to SS equivalents (HTTP POST)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IS parameter name** | **SS parameter location** | **SS parameter name** | **SS parameter type** | **S** |
| objectClass | request body | href | Uri | M |
| objectInstance |
| notificationId | request body | notificationId | NotificationId | M |
| notificationType | request body | notificationType | NotificationType | M |
| eventTime | request body | eventTime | DateTime | M |
| systemDN | request body | systemDN | SystemDN | M |
| moiChanges | request body | moiChanges | array(MoiChange) | M |

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| **Next modification** |

12.1.1.3.2.4.3.1 POST

This method shall support the URI query parameters specified in table 12.1.1.3.2.4.3.1-1.

Table 12.1.1.3.2.4.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Description | S |
| n/a | n/a | n/a | n/a |

This method shall support the request data structures specified in table 12.1.1.3.2.4.3.1-2 and the response data structures and response codes specified in table 12.1.1.3.2.4.3.1-3.

Table 12.1.1.3.2.4.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |
| --- | --- | --- |
| Data type | Description | S |
| NotifyMOICreation | Type for a notifyMOICreation notification | M |
| NotifyMOIDeletion | Type for a notifyMOIDeletion notification | M |
| NotifyAttributeValueChanges | Type for a notifyAttributeValueChanges notification | M |
| NotifyMoiChanges | Type for a notifyMOIChanges notification | M |

Table 12.1.1.3.2.4.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Response codes | Description | S |
| n/a | 204 No Content | In case of success no message body is returned | M |
| ErrorResponse | 4xx/5xx | In case of failure the error object is returned. | M |

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| **Next modification** |

###### 12.1.1.4.1a.4 Type MoiChange

Table 12.1.1.4.1a.4 -1: Definition of type MoiChange

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| --- | --- | --- | --- |
| Attribute name | Data type | Description | S |
| notificationId | NotificationId | Notification identifier as defined in ITU-T Rec. X. 733 [4] | M |
| correlatedNotifications | array(CorrelatedNotification) | Set of all notifications to which this notification is considered to be correlated as defined in ITU-T Rec. X. 733 [4] | O |
| additionalText | string | Allows a free form text description to be reported as defined in ITU-T Rec. X. 733 [4] | O |
| sourceIndicator | SourceIndicator | Indicates the source of the operation that led to the generation of this notification. | O |
| op | Operation | Operation associated to the reported change ("add", "remove, "replace") | M |
| path | string | URI path component segments specifying when appended to "href" the created, deleted or updated resource or secondary resource | M |
| value | any type | New value of the created or updated resource or secondary resource. Optional old value of the deleted resource or secondary resource | M |
| oldValue | any type | Old value of the updated secondary resource | O |

The properties "op", "path" and "value" shall use the 3GPP JSON Patch format (3GPP TS 32.158 [15]) for reporting NRM changes. The "merge" operation specified by 3GPP JSON Patch is not supported in "notifyMOIChanges". The "move", "copy" and "test" operations specified by JSON Patch are not supported either.

The "oldValue" is an optional extension for "notifyMOIChanges" allowing to report also the old value before the replacemement of the value by the new value contained in "value".

The following example notification (where JSON is expressed in YAML notation) reports an object creation

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: add

path: /ClassA=1

value:

id: 1,

objectClass: ClassA,

attributes:

attrA: 123

attrB:

subAttrB1: ABC

subAttrB2: 56

The following example reports the deletion of an object.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: remove

path: /ClassA=1

The following example reports the addition of a new attribute "attrC".

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: add

path: /ClassA=1#/attributes/attrC

value: XYZ

The following example reports the deletion of the attribute "attrC".

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: remove

path: /ClassA=1#/attributes/attrC

The following example reports a value change for the simple attribute "attrA".

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: /ClassA=1#/attributes/attrA

value: 456

When the old value is reported as well, the notification looks like.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: /ClassA=1#/attributes/attrA

value: 456

oldValue: 123

The following example reports a value change for the complex attribute "attrB".

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: /ClassA=1#/attributes/attrB

value:

subAttrB1: DEF

subAttrB2: 78

The previous two notifications can be combined into a single notification as follows.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: /ClassA=1#/attributes/attrA

value: 456

- notificationId: 123456789

op: replace

path: /ClassA=1#/attributes/attrB

value:

subAttrB1: DEF

subAttrB2: 78

Note the operation "replace" has replace semantics and not merge semantics. The following notification reports the value change of the attribute field "attrB:subAttrB1" and the deletion of the attribute field"attrB:subAttrB2".

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: /ClassA=1#/attributes/attrB

value:

subAttrB1: DEF

The value change of the attribute field "attrA:subAttrB1" is reported as follows.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: /ClassA=1#/attributes/attrA/subAttrB1

value: DEF

Assume "attrD" is a JSON array with simple elements, then the creation of this multi-value attribute is reported as follows.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: add

path: /ClassA=1#/attributes/attrD

value:

- 1

- 2

- 3

Its deletion is reported by the following notification.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: remove

path: /ClassA=1#/attributes/attrD

The complete replacement of the array is reported by the following notification.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: add

path: /ClassA=1#/attributes/attrD

value:

- 11

- 21

- 31

The following example reports the second item in the array changed to "22".

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: [/ClassA=1#/attributes/attrD/1](https://example.com/3gpp/ClassA=1#/attributes/attrE/1)

value: 22

Note the array index of the second item is "1".

Assume now "attrE" is a JSON array with complex array items, for example.

[{subItemE1: 11, subItemD2: ABC}, {subItemE1: 21, subItemE2: DEF}, {subItemE1: 31, subItemE2": GHI}.

A value change to

[{subItemE1: 11, subItemE2: ABC}, {subItemE1: 21, subItemE2: XYZ}, {subItemE1: 31, subItemE2": GHI}.

is reported by

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: [/ClassA=1#/attributes/attrE/1](https://example.com/3gpp/ClassA=1#/attributes/attrE/1)/subItemE2

value: XYZ

When "subItemE2" is defined as array item key at stage 2, then "attrE" should contain a JSON map.

attrE:

11:

subItemE2: ABC

21:

subItemE2: DEF

31:

subItemE2: GHI

The same change as above is now reported by the notification.

href: https://example.com/3gpp

...

moiChanges

- notificationId: 123456789

op: replace

path: [/ClassA=1#/attributes/attrE/21](https://example.com/3gpp/ClassA=1#/attributes/attrE/1)/subItemD2

value: XYZ

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| **Next modification** |

###### 12.1.1.4.1a.8 Type NotifyMoiChanges

**Table 12.1.1.4.1a.8 -1: Definition of type NotifyMoiChanges**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute name** | **Data type** | **Description** | **S** |
| href | Uri | URI of a common ancestor resource (object) of the resources for which changes are reported. A MnS producer may set this attribute always to the parent of the root resource in the MIB. | M |
| notificationId | NotificationId | Notification identifier as defined in ITU-T Rec. X. 733 [4]. | M |
| notificationType | NotificationType | Notification type (notifyMOIChanges) | M |
| eventTime | DateTime | Event (NRM updates) occurrence time | M |
| systemDN | SystemDN | System DN | M |
| moiChanges | array(MoiChange) | MOI changes to be reported | M |

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| **Next modification** |

12.1.1.4.4.6 Enumeration Operation

Table 12.1.1.4.4.4.6-1: Enumeration Operation

|  |  |
| --- | --- |
| Enumeration value | Description |
| add | Create operation |
| remove | Delete operation |
| replace | Replace operation |

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| **Next modification** |