**3GPP TSG-CT WG4 Meeting #110-eC4-223059v1**

**E-Meeting, 12th – 20th May 2022 was C4-223059, C4-223130**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.532** | **CR** | **0018** | **rev** | **1** | **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 |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Application Error for TMGI Service | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE, Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS | | | | |  | ***Date:*** | | | 2022-05-04 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Errors may happen during TMGI allocation, TMGI refreshement (i.e. TMGI expiry refreshment). For example:  - the requested TMGI number is not valid, e.g. less than 1 or great than 255;  - the TMGI to be refreshed does not exist in the MB-SMF, e.g. the TMGI previously allocated is expired and not successfully refreshed within the expiry time.  To support handling of these error cases, corresponding application error should be defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Define application errors for TMGI allocation and TMGI refreshement procedures. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Error case may happen while no corresponding actions are defined. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.1.3.2.3.1, 6.1.3.2.3.2, 6.1.7.3, A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 introduces backward compatible changes to the OpenAPI files: TS29532\_Nmbsmf\_TMGI. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev#1:  - Merge C4-223130;  - Introduce update to clause 6.1.3.2.3.2;  - Update clause A.2 to limit the input value of TMGI number in the OpenAPI. | | | | | | | | |

\* \* \* Begin of Changes \* \* \* \*

6.1.3.2.3.1 POST

This method requests the MB-SMF to allocate one or more TMGIs with Nmbsmf\_TMGI\_Allocate service operation.

This method shall support the URI query parameters specified in table 6.1.3.2.3.1-1.

Table 6.1.3.2.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| <name> or n/a | <type> or <leave empty> | <M, C or O> | 0..1 or 1 or 0..N or 1..N or <leave empty> | <only if applicable> |  |

This method shall support the request data structures specified in table 6.1.3.2.3.1-2 and the response data structures and response codes specified in table 6.1.3.2.3.1-3.

Table 6.1.3.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TmgiAllocate | M" | 1 | Representation of one or more TMGIs to be allocated by the MB-SMF. The Request Body shall contain:  - the requested number of TMGIs (one or more), if TMGIs are requested to be allocated; or.  - a list of TMGIs, if the expiration time of previously allocated TMGI(s) needs to be refreshed. |

Table 6.1.3.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| TmgiAllocated | C | 1 | 200 OK | Successful allocation of one or more TMGI(s) and their expiration time. Alternatively, if the expiration time of the previously allocated TMGI(s) needs to be refreshed, the Response Body shall contain the list of the TMGI(s) and their new expiration time. |
| ProblemDetails | O | 0..1 | 403 Forbidden | When used to represent an unsuccessful TMGI allocation or TMGI refreshment, the "cause" attribute of the "ProblemDetails" may be used to include one of the following application error codes:  - MANDOTORY\_IE\_INCORRECT, if the required TMGI number for TMGI allocation is not valid. |
| ProblemDetails | O | 0..1 | 404 Not Found | When used to represent an unsuccessful TMGI allocation or TMGI refreshment, the "cause" attribute of the "ProblemDetails" may be used to include one of the following application error codes:  - UNKNOWN\_TMGI, if the TMGI to be refreshed is expired or not found in the MB-SMF. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing a different URI, or the same URI if a request is redirected to the same target resource via a different SCP. In the former case, the URI shall be an alternative URI of the resource located on an alternative service instance within the same MB-SMF or MB-SMF (service) set. (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing a different URI, or the same URI if a request is redirected to the same target resource via a different SCP. In the former case, the URI shall be an alternative URI of the resource located on an alternative service instance within the same MB-SMF or MB-SMF (service) set. (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the <method 1> method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: RedirectResponse may be inserted by an SCP, see clause 6.10.9.1 of 3GPP TS 29.500 [4]. | | | | |

Table 6.1.3.2.3.1-4: Headers supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| <header name> | <data type>  e.g. string | "M", "C" or "O" | "0..1", "1", "1..N", "1..N", or <leave empty> | <description> |

Table 6.1.3.2.3.1-5: Headers supported by the 200 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| <header name> | <data type>  e.g. string | "M", "C" or "O" | "0..1", "1", "1..N", "1..N", or <leave empty> | <description> |

Table 6.1.3.2.3.1-6: Links supported by the 200 Response Code on this endpoint

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Resource name | HTTP method or custom operation | Link parameter(s) | Description |
| <link name>  e.g. search | <resource 1>  e.g. Stored Search (Document) | <method 1>  e.g. GET | <parameter>  e.g. searchId | <description of the link> |

Table 6.1.3.2.3.1-7: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located on an alternative service instance within the same MB-SMF or MB-SMF (service) set.  Or the same URI, if a request is redirected to the same target resource via a different SCP. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target MB-SMF (service) instance ID towards which the request is redirected |

Table 6.1.3.2.3.1-8: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located on an alternative service instance within the same MB-SMF or MB-SMF (service) set.  Or the same URI, if a request is redirected to the same target resource via a different SCP. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target MB-SMF (service) instance ID towards which the request is redirected |

\* \* \* Next Change \* \* \* \*

6.1.3.2.3.2 DELETE

This method deallocates one or more of the previously allocated individual TMGIs in the MB-SMF with Nmbsmf\_TMGI\_Deallocate service operation.

This method shall support the URI query parameters specified in table 6.1.3.2.3.2-1.

Table 6.1.3.2.3.2-1: URI query parameters supported by the DELETE method on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| tmgi-list | array(Tmgi) | M | 1..N | The list of the TMGIs, which shall be deallocated by MB-SMF. |  |

This method shall support the request data structures specified in table 6.1.3.3.3.2-2 and the response data structures and response codes specified in table 6.1.3.2.3.2-3.

Table 6.1.3.3.3.2-2: Data structures supported by the DELETE Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 6.1.3.2.3.2-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | This case represents a successful deletion of TMGI list. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing a different URI, or the same URI if this is a redirection triggered by an SCP to the same target resource via another SCP. In the former case, the URI shall be an alternative URI of the resource located on an alternative service instance within the same MB-SMF or MB-SMF (service) set.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing a different URI, or the same URI if this is a redirection triggered by an SCP to the same target resource via another SCP. In the former case, the URI shall be an alternative URI of the resource located on an alternative service instance within the same MB-SMF or MB-SMF (service) set.  (NOTE 2) |
| ProblemDetails | O | 0..1 | 404 Not Found | When used to represent an unsuccessful deletion of TMGI, the "cause" attribute of the "ProblemDetails" may be used to include one of the following application error codes:  - UNKNOWN\_TMGI, if the TMGI to be deleted is not found in MB-SMF. |
| NOTE 1: The mandatory HTTP error status codes for the DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: RedirectResponse may be inserted by an SCP, see clause 6.10.9.1 of 3GPP TS 29.500 [4]. | | | | |

Table 6.1.3.2.3.2-4: Headers supported by the DELETE method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| If-Match | String | O | 0..1 | Validator for conditional requests, as described in IETF RFC 7232 [18], clause 3.1 |

Table 6.1.3.2.3.2-5: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | String | M | 1 | An alternative URI of the resource located on an alternative service instance within the same SMSF or SMSF (service) set.  Or the same URI, if a request is redirected to the same target resource via a different SCP. |
| 3gpp-Sbi-Target-Nf-Id | String | O | 0..1 | Identifier of the target NF (service) instance ID towards which the request is redirected |

Table 6.1.3.2.3.2-6: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located on an alternative service instance within the same SMSF or SMSF (service) set.  Or the same URI, if a request is redirected to the same target resource via a different SCP. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance ID towards which the request is redirected |

\* \* \* Next Change \* \* \* \*

#### 6.1.7.3 Application Errors

The application errors defined for the Nmbsmf\_TMGI service are listed in Table 6.1.7.3-1.

Table 6.1.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| UNKNOWN\_TMGI | 404 Not Found | The requested TMGI Allocate or TMGI Deallocate service operation failed, because requested TMGI expired or cannot be found. |

\* \* \* Next Change \* \* \* \*

## A.2 Nmbsmf\_TMGI API

**\*\*\*\*\*\*\*\*TEXT SKIPPED\*\*\*\*\*\*\*\***

TmgiAllocate:

description: Data within TMGI Allocate Request

type: object

properties:

tmgiNumber:

description: The number of requested TMGIs

type: integer

minimum: 1

maximum: 255

tmgiList:

description: The list of TMGIs to be refreshed

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Tmgi'

minItems: 1

TmgiAllocated:

description: Data within TMGI Allocate Response

type: object

properties:

tmgiList:

description: One or more TMGI values

type: array

items:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Tmgi'

minItems: 1

expirationTime:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'

required:

- tmgiList

- expirationTime

**\*\*\*\*\*\*\*\*TEXT SKIPPED\*\*\*\*\*\*\*\***

\* \* \* End of Changes \* \* \* \*