**3GPP TSG-CT WG3 Meeting #122-eC3-223152**

**E-Meeting, 12th – 20th May 2022**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.522** | **CR** | **0609** | **rev** | **-** | **Current version:** | **17.5.0** |  |
|  | | | | | | | | |
| *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:*** | Resolution of EN related to Error cases related to TMGI management. | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBS | | | | |  | ***Date:*** | | | 2022-05-05 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Editor Notes was added for all the procedures related to TMGI management to further add any possible Error cases and its responses. Based on final SA2 updates, no new error cases were identified and hence propose to resolve the ENs. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Remove ENs related to TMGI management. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Incomplete requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4.29.2.2, 4.4.29.2.3, 4.4.29.2.4, 5.19.3.2.2, 5.19.3.3.2, 5.19.4.2.3.1, 5.19.4.2.3.2, 5.19.X (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 does not impact the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

##### 4.4.29.2.2 Procedure for TMGI(s) allocation or TMGI(s) expiry time refresh

This procedure is used by an AF to request the allocation of TMGI(s) for new MBS session(s) or the refresh of the expiry time of already allocated TMGI(s).

In order to request the allocation of TMGI(s) for new MBS session(s) or the refresh of the expiry time of already allocated TMGI(s), an AF shall send a Nnef\_MBSTMGI\_Allocation Request message to the NEF using the HTTP POST method with the request body including the TmgiAllocRequest data structure which shall contain:

- within the "afId" attribute, the identifier of the AF that is sending the request;

- within the "tmgiParams" attribute, the parameters (e.g. number of TMGI(s) to be allocated, etc.) to request the allocation of TMGI(s) for new MBS session(s) or the refresh of the expiry time of already allocated TMGI(s);

and may contain:

- within the "notificationUri" attribute, the notification URI via which the AF desires to receive notifications on timer expiry for TMGI(s);

- within the "requestTestNotification" attribute, an indication on whether the NEF should send a test notification, if the "Notification\_test\_event" feature is supported;

- within the "websockNotifConfig" attribute, the configuration parameters to set up notification delivery over Websocket protocol, if the "Notification\_websocket" feature is supported; and/or

- within the "suppFeat" attribute, the features supported by the AF.

The NEF shall then check whether the AF is authorized to perform this operation or not as defined in subclause 6.1.1 of 3GPP TS 23.247 [53]. If the AF is authorized, the NEF may query the NRF to discover and select an MB-SMF (service) instance that can handle this request. Otherwise, the target MB-SMF is determined based on local configuration. Then, the NEF shall convey this TMGI(s) allocation or expiry time refresh request to the selected MB-SMF using the Nmbsmf\_TMGI service as defined in 3GPP TS 29.532 [52].

Upon reception of a reply from the MB-SMF as defined in 3GPP TS 29.532 [52], the NEF shall forward the received information (e.g. allocated TMGI(s), expiry time or updated expiry time, etc.) in a Nnef\_MBSTMGI\_Allocation Response message with an HTTP "200 OK" status code to the AF. The response body shall include the TmgiAllocResponse data structure which shall contain:

- within the "tmgiInfo" attribute, the TMGI(s) allocation information or the refreshed expiry time for already allocated TMGI(s);

and may contain:

- within the "suppFeat" attribute, the features supported by both the AF and the NEF.

On failure or if the NEF receives an error code from the MB-SMF, the NEF shall take proper error handling actions, as specified in subclause 5.19.X, and respond to the AF with an appropriate error status code.

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

##### 4.4.29.2.3 Procedure for TMGI(s) deallocation

This procedure is used by an AF to request the deallocation of previously allocated TMGI(s).

In order to request the deallocation of previously allocated TMGI(s), an AF shall send a Nnef\_MBSTMGI\_Deallocation Request message to the NEF using the HTTP POST method with the request body including the TmgiDeallocRequest data structure that shall contain :

- within the "afId" attribute, the identifier of the AF that is sending the request; and

- within the "tmgis" attribute, the list of TMGI(s) for which deallocation is requested.

The NEF shall then check whether the AF is authorized to perform this operation or not as defined in subclause 6.1.1 of 3GPP TS 23.247 [53]. If the AF is authorized, the NEF shall convey this TMGI(s) deallocation request to the MB-SMF using the Nmbsmf\_TMGI service as defined in 3GPP TS 29.532 [52].

Upon reception of a reply from the MB-SMF confirming the deallocation of the TMGI(s), the NEF shall forward this confirmation in a Nnef\_MBSTMGI\_Deallocation Response message with an HTTP "204 No Content" status code to the AF.

On failure or if the NEF receives an error code from the MB-SMF, the NEF shall take proper error handling actions, as specified in subclause 5.19.X, and respond to the AF with an appropriate error status code.

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

##### 4.4.29.2.4 Procedure for TMGI(s) timer expiry notification

This procedure is used by the NEF to notify an AF of timer expiry for previously allocated TMGI(s).

In order to notify an AF of timer expiry for previously allocated TMGI(s), the NEF shall send a Nnef\_MBSTMGI\_ExpiryNotify Request message to the AF using the HTTP POST method with the request body including the ExpiryNotif data structure that shall contain:

- within the "tmgis" attribute, the list of TMGI(s) for which the timer has expired.

Upon reception of this notification request, the AF shall acknowledge its successful reception by sending a Nnef\_MBSTMGI\_ExpiryNotify Response message with an HTTP "204 No Content" status code.

On failure, the AF shall take proper error handling actions, as specified in subclause 5.19.X, and respond to the NEF with an appropriate error status code.

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

##### 5.19.3.2.2 Operation Definition

This operation shall support the request and response data structures and response codes specified in table 5.19.3.2.2-1 and table 5.19.3.2.2-2.

Table 5.19.3.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TmgiAllocRequest | M | 1 | Represents the parameters to request the allocation of TMGI(s) for new MBS session(s) or the refresh of the expiry time of already allocated TMGI(s). |

Table 5.19.3.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| TmgiAllocResponse | M | 1 | 200 OK | Successful case: The TMGI allocation information (e.g. allocated TMGIs, expiry time) or the refreshed expiry time for the concerned already allocated TMGI(s) is/are returned to the requesting AF. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [4]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [4] |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

Table 5.19.3.2.2-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | String | M | 1 | An alternative target URI located in an alternative NEF. |

Table 5.19.3.2.2-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | String | M | 1 | An alternative target URI located in an alternative NEF. |

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

##### 5.19.3.3.2 Operation Definition

This operation shall support the request and response data structures and response codes specified in table 5.19.3.3.2-1 and table 5.19.3.3.2-2.

Table 5.19.3.3.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TmgiDeallocRequest | M | 1 | Represents the TMGI(s) deallocation request information (e.g. list of TMGI(s) to be deallocated). |

Table 5.19.3.3.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | Successful case: The TMGI(s) have been deallocated. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [4]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative NEF.  Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [4] |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

Table 5.19.3.3.2-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | String | M | 1 | An alternative target URI located in an alternative NEF. |

Table 5.19.3.3.2-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | String | M | 1 | An alternative target URI located in an alternative NEF. |

\* \* \* Next Changes \* \* \* \*

###### 5.19.4.2.3.1 Notification via HTTP POST

This method shall support the request data structures specified in table 5.19.4.2.3.1-1 and the response data structures and response codes specified in table 5.19.4.2.3.1-2 and the Location Headers specified in table 5.19.4.2.3.1-3 and table 5.19.4.2.3.1-4.

Table 5.19.4.2.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ExpiryNotif | M | 1 | Represents the TMGI(s) timer expiry notification information (e.g. list of TMGI(s) for which the timer has expired). |

Table 5.19.4.2.3.1-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | The notification is received successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during event notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative AF where the notification should be sent.  Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [4]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during event notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative AF where the notification should be sent.  Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

Table 5.19.4.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative AF towards which the notification should be redirected. |

Table 5.19.4.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative AF towards which the notification should be redirected. |

\* \* \* Next Changes \* \* \* \*

###### 5.19.4.2.3.2 Notification via Websocket

If supported by both AF and NEF and successfully negotiated, the Notification of Allocated TMGI(s) Timer Expiry may alternatively be delivered through the Websocket mechanism as defined in subclause 5.2.5.4 of 3GPP TS 29.122 [4].

Table 5.19.4.2.3.2-1: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative AF towards which the notification should be redirected. |

Table 5.19.4.2.3.2-2: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative AF towards which the notification should be redirected. |

\* \* \* Next Changes \* \* \* \*

### 5.19.X Error handling

#### 5.19.X.1 General

HTTP error handling shall be supported as specified in subclause 5.2.6 of 3GPP TS 29.122 [4].

In addition, the requirements in the following subclauses shall apply.

#### 5.19.X.2 Protocol Errors

In this Release of the specification, there are no additional protocol errors applicable for the MBSTMGI API.

#### 5.19.X.3 Application Errors

The application errors defined for the MBSTMGI API are listed in table 5.20.7.3-1.

Table 5.19.X.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| **Application Error** | **HTTP status code** | **Description** |
|  |  |  |

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