**3GPP TSG- Meeting #C3-234xxx**

**Xiamen, China, – was C3-234105**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **1051** | **rev** | **1** | **Current version:** |  |  |
|  | | | | | | | | |
| *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:*** | Complete the definition of the NEF's new MBSGroupMsgDelivery API | | | | | | | | |
|  |  | | | | | | | | |
| ***Source to WG:*** | Huawei, Nokia, Nokia Shanghai Bell, Ericsson | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | |
|  |  | | | | | | | | |
| ***Work item code:*** | 5MBS\_Ph2 | | | | |  | ***Date:*** | | 2023-09-29 |
|  |  | | | |  | |  | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | |  |
|  | *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:*** | | | The following aspects/issues need to be specified/solved in order to complete the definition of the MBSGroupMsgDelivery API:   * For the encoding of the MBS Group Message Delivery payload and as already indicated several times, the UsageThreshold data type is clearly not appropriate. It contains data usage thresholds in terms of the overall data volume and DL/UL data volumes. In this case, it is needed to convey data, not its usage information/thresholds. Therefore, and in a similar way to 4G MBMS (cf. GMD via MBMS APIs defined in TS 29.122 for the SCEF), the MBS Group Message Delivery payload should be encoded using the "Bytes" simple data type. * The "service area without MBS capability" should be defined for MBS group message delivery creation/modification responses. * The current data model is not appropriate for CRUD based RESTful design as e.g., it does not enable the PATCH method to work correctly, because the resource representation (MbsGroupMsgDelData) is not at the same level as the content of the Patch request (MbsGroupMsgDelPatch). * In order to simplify the encoding of the MBS Service Area and allow its reusability, it is proposed to define a new umbrella data type to convey it with the MBS service area or External MBS Service Area mutually exclusive alternatives. * The PUT method on the individual resource is defined in clause 5.29.2.1, but it is not used for this API. It should hence be removed. | | | | | | |
|  | | |  | | | | | | |
| ***Summary of change:*** | | | This CR proposes to:   * Specify/correct the above listed aspects/issues. * Improve the service description clauses and apply other additional editorial issues' correction. | | | | | | |
|  | | |  | | | | | | |
| ***Consequences if not approved:*** | | | * The stage 3 definition of the MBSGroupMsgDelivery API remains incomplete and incorrect/faulty. | | | | | | |
|  | |  | | | | | | | |
| ***Clauses affected:*** | | 4.4.29.7.1, 4.4.29.7.2, 4.4.29.7.3, 4.4.29.7.4, 4.4.29.7.5, 5.29, 5.29.2.1, 5.29.2.2.3.2, 5.29.2.3.2, 5.29.2.3.3, 5.29.4.1, 5.29.4.2.2, 5.29.4.2.3, 5.29.5.1, 5.29.5.2.2, 5.29.5.2.3, 5.29.5.2.4, 5.29.5.2.5, 5.29.5.2.6, 5.29.5.3.2, 5.29.5.4 (new clause), 5.29.6, 5.29.7.3, A.27 | | | | | | | |
|  | |  | | | | | | | |
|  | | **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 backwards compatibles new feature and corrections to the OpenAPI description of the MBSGroupMsgDelivery API defined in this specification. | | | | | | | |
|  | |  | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | |

\* \* \* \* Start of changes \* \* \* \*

##### 4.4.29.7.1 General

The procedures described in the clauses below are used by an AF to request and manage MBS Group Message Delivery as defined in clauses 6.15 and 7.5 of 3GPP TS 23.247 [53].

\* \* \* \* Next changes \* \* \* \*

##### 4.4.29.7.2 Procedure for MBS Group Message Delivery Creation

This procedure is used by an AF to request MBS Group Message Delivery.

In order to request MBS Group Message Delivery, an AF shall invoke the Nnef\_MBSGroupMsgDelivery\_Create service operation by sending an HTTP POST request message to the NEF targeting the "MBS Group Message Deliveries" collection resource, with the request body including the MbsGroupMsgDel data structure.

The NEF shall then check whether the AF is authorized to perform this operation or not, as defined in clause 6.1.1 of 3GPP TS 23.247 [53]. If the AF is authorized, the NEF performs MBS User Service and MBS User Data Ingest Session provisioning towards the MBSF using the Object Distribution Method, as specified in 3GPP TS 26.502 [65] and 3GPP TS 29.580 [66]. If the AF provided the MBS service area in the form of geographical area(s) or civic address(es), the NEF may translate this information into a list of TAI(s) and/or a list of cell ID(s) before sending the MBS service area information as part of MBS User Data Ingest Session provisioning towards the MBSF.

Upon reception of a successful response from the MBSF, as defined in 3GPP TS 29.580 [66], the NEF shall send a Nnef\_MBSGroupMsgDelivery\_Create response to the AF with an HTTP "201 Created" status code and the response body including the MbsGroupMsgDel data structure that shall contain:

On failure or if the NEF receives an error response from the MBSF, the NEF shall take proper error handling actions, as specified in clause 5.29.7, and respond to the AF with an appropriate error status code. If the NEF received within an error response a ProblemDetails data structure with a "cause" attribute indicating an application error, the NEF shall relay this error response to the AF with a corresponding application error, when applicable.

\* \* \* \* Next changes \* \* \* \*

##### 4.4.29.7.3 Procedure for MBS Group Message Delivery Update

This procedure is used by an AF to request the modification of an existing MBS Group Message Delivery at the NEF.

In order to modify a previously submitted group message delivery, an AF shall invoke the Nnef\_MBSGroupMsgDelivery\_Update service operation by sending an HTTP PATCH request message to the NEF targeting the corresponding "Individual MBS Group Message Delivery" resource, with the request body including the MbsGroupMsgDelPatch data structure.

The NEF shall then check whether the AF is authorized to perform this operation or not, as defined in clause 6.1.1 of 3GPP TS 23.247 [53]. If the AF is authorized the NEF may further interact with the MBSF to request the modification of the associated MBS User Service and MBS User Data Ingest Session instances.

Upon reception of a successful response from the MBSF confirming the modification is successfully performed, the NEF shall send a Nnef\_MBSGroupMsgDelivery\_Update response to the AF, with an HTTP "200 OK" status code containing the representation of the updated "Individual MBS Group Message Delivery" resource within the MbsGroupMsgDel data structure, or an HTTP "204 No Content" status code.

On failure or if the NEF receives an error response from the MBSF, the NEF shall take proper error handling actions, as specified in clause 5.29.7, and respond to the AF with an appropriate error status code. If the NEF received within an error response a ProblemDetails data structure with a "cause" attribute indicating an application error, the NEF shall relay this error response to the AF with a corresponding application error, when applicable.

\* \* \* \* Next changes \* \* \* \*

##### 4.4.29.7.4 Procedure for MBS Group Message Delivery Deletion

This procedure is used by an AF to request the deletion of an existing "Individual MBS Group Message Delivery" resource at the NEF.

In order to delete a previously submitted group message delivery, an AF shall invoke the Nnef\_MBSGroupMsgDelivery\_Delete service operation by sending an HTTP DELETE request message to the NEF targeting the corresponding "Individual MBS Group Message Delivery" resource.

The NEF shall then check whether the AF is authorized to perform this operation or not, as defined in clause 6.1.1 of 3GPP TS 23.247 [53].

Upon reception of a successful response from the MBSF, the NEF shall send a Nnef\_MBSGroupMsgDelivery\_Delete response to the AF, with an HTTP "204 No Content" status code.

On failure or if the NEF receives an error response from the MBSF, the NEF shall take proper error handling actions, as specified in clause 5.29.7, and respond to the AF with an appropriate error status code. If the NEF received within an error response a ProblemDetails data structure with a "cause" attribute indicating an application error, the NEF shall relay this error response to the AF with a corresponding application error, when applicable.

\* \* \* \* Next changes \* \* \* \*

##### 4.4.29.7.5 Procedure for MBS Group Message Delivery Status Notification

This procedure is used by the NEF to notify an already subscribed AF of the status for the previously submitted group message delivery.

In order to notify an AF of the status for a previously submitted group message delivery, the NEF shall invoke the Nnef\_MBSGroupMsgDelivery\_StatusNotify service operation by sending an HTTP POST request message to the AF with the request body including the MbsGroupMsgDelStatusNotif data structure.

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

On failure, the AF shall take proper error handling actions, as specified in clause 5.7.7, and respond to the NEF with an appropriate error status code.

\* \* \* \* Next changes \* \* \* \*

5.29 MBSGroupMsgDelivery API

\* \* \* \* Next changes \* \* \* \*

5.29.2.1 Overview

This clause describes the structure for the Resource URIs as shown in figure 5.29.2.1-1 and HTTP methods used for the MBSGroupMsgDelivery API.

The structure of the resource URIs of the MBSGroupMsgDelivery API is shown in Figure 5.29.2.1-1.



Figure 5.29.2.1-1: Resource URI structure of the MBSGroupMsgDelivery API

Table 5.29.2.1-1 provides an overview of the resources and applicable HTTP methods.

**Table 5.29.2.1-1: Resources and methods overview**

|  |  |  |  |
| --- | --- | --- | --- |
| **Resource name** | **Resource URI (relative path under API URI)** | **HTTP method or custom operation** | **Description**  **(service operation)** |
| MBS Group Message Deliveries | /deliveries | GET | Retrieve the existing MBS Group Message Deliveries. |
| POST | Request the creation of a new MBS Group Message Delivery. |
| Individual MBS Group Message Delivery | /deliveries/{delRef} | GET | Retrieve a previously submitted MBS Group Message Delivery. |
| PATCH | Request the modification of a previously submitted MBS Group Message Delivery. |
| DELETE | Request the deletion of a previously submitted MBS Group Message Delivery. |

\* \* \* \* Next changes \* \* \* \*

###### 5.29.2.2.3.2 POST

This method enables an AF to request the creation of an MBS Group Message Delivery at the NEF.

This method shall support the URI query parameters specified in table 5.29.2.2.3.2-1.

**Table 5.29.2.2.3.2-1: URI query parameters supported by the POST method on this resource**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| n/a |  |  |  |  |  |

This operation shall support the request and response data structures and response codes specified in table 5.29.2.2.3.2-2 and table 5.29.2.2.3.2-3.

**Table 5.29.2.2.3.2-2: Data structures supported by the POST Request Body on this resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Description** |
| MbsGroupMsgDel | M | 1 | Represents the Group Message Delivery to be created at the NEF. |

**Table 5.29.2.2.3.2-3: Data structures supported by the POST Response Body on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Response**  **codes** | **Description** |
| MbsGroupMsgDel | M | 1 | 201 Created | Successful case: A representation of the created "Individual MBS Group Message Delivery" resource is returned in the response body.  An HTTP "Location" header that contains the URI of the created "Individual MBS Group Messge Delivery" resource shall also be included. |
| NOTE 1: 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.  NOTE 2: Failure cases are described in clause 5.29.7. | | | | |

Table 5.29.2.2.3.2-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure:  {apiRoot}/3gpp-mbs-group-msg/v1/deliveries/{delRef} |

\* \* \* \* Next changes \* \* \* \*

###### 5.29.2.3.3.2 PATCH

This method enables an AF to request the modification of an existing "Individual MBS Group Message Delivery" resource at the NEF.

This method shall support the URI query parameters specified in table 5.29.2.3.3.2-1.

**Table 5.29.2.3.3.2-1: URI query parameters supported by the PATCH method on this resource**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| n/a |  |  |  |  |  |

This method shall support the request data structures specified in table 5.29.2.3.3.2-2 and the response data structures and response codes specified in table 5.29.2.3.3.2-3.

**Table 5.29.2.3.3.2-2: Data structures supported by the PATCH Request Body on this resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Description** |
| MbsGroupMsgDelPatch | M | 1 | Contains the parameters to request the modification of the "Individual MBS Group Message Delivery" resource. |

**Table 5.29.2.3.3.2-3: Data structures supported by the PATCH Response Body on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Response**  **codes** | **Description** |
| MbsGroupMsgDel | M | 1 | 200 OK | Successful case. The concerned "Individual MBS Group Message Delivery" resource is successfully modified and a representation of the updated resource is returned in the response body. |
| n/a |  |  | 204 No Content | Successful response. The "Individual MBS Group Message Delivery" resource was successfully modified and no content is returned in the response body. |
| 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 clause 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 clause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE: The mandatory HTTP error status code for the PATCH method listed in table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

**Table 5.29.2.3.3.2-4: 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 in an alternative NEF. |

**Table 5.29.2.3.3.2-5: 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 in an alternative NEF. |

\* \* \* \* Next changes \* \* \* \*

###### 5.29.2.3.3.3 DELETE

This method enables an AF to request the deletion of an existing "Individual MBS Group Message Delivery" resource at the NEF.

This method shall support the URI query parameters specified in table 5.29.2.3.3.3-1.

**Table 5.29.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| n/a |  |  |  |  |  |

This method shall support the request data structures specified in table 5.29.2.3.3.3-2 and the response data structures and response codes specified in table 5.29.2.3.3.3-3.

**Table 5.29.2.3.3.3-2: Data structures supported by the DELETE Request Body on this resource**

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

**Table 5.29.2.3.3.3-3: Data structures supported by the DELETE Response Body on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Response**  **Codes** | **Description** |
| n/a |  |  | 204 No Content | Successful response. The "Individual MBS Group Message Delivery" resource was successfully deleted. |
|  |  |  | 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 clause 5.2.10 of 3GPP TS 29.122 [4]. |
|  |  |  | 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 clause 5.2.10 of 3GPP TS 29.122 [4]. |
| NOTE: The mandatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [4] also apply. | | | | |

**Table 5.29.2.3.3.3-4: 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 in an alternative NEF. |

**Table 5.29.2.3.3.3-5: 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 in an alternative NEF. |

\* \* \* \* Next changes \* \* \* \*

5.29.4.1 General

Notifications shall comply to clause 5.2.5 of 3GPP TS 29.122 [4].

**Table 5.29.4.1-1: Notifications overview**

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| MBS Group Message Delivery Notification | {notifUri} | POST | Enable the NEF to notify an AF of the status of an MBS Group Message Delivery. |

\* \* \* \* Next changes \* \* \* \*

5.29.4.2.2 Target URI

The Callback URI **"{notifUri}"** shall be used with the callback URI variables defined in table 5.29.4.2.2-1.

**Table 5.29.4.2.2-1: Callback URI variables**

|  |  |
| --- | --- |
| **Name** | **Definition** |
| notifUri | Contains the notification URI provided by the AF during MBS Group Message Delivery creation/modification procedures. |

\* \* \* \* Next changes \* \* \* \*

5.29.4.2.3 Operation Definition

This method shall support the request data structures specified in table 5.29.4.2.3-1 and the response data structures and response codes specified in table 5.29.4.2.3.1-2.

**Table 5.29.4.2.3-1: Data structures supported by the POST Request Body on this resource**

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MbsGroupMsgDelStatusNotif | M | 1 | Represents the MBS Group Message Delivery Notification. |

**Table 5.29.4.2.3-2: 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 notification is successfully received and acknowledged. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative AF towards which the notification should be sent.  Redirection handling is described in clause 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 URI representing the end point of an alternative AF towards which the notification should be sent.  Redirection handling is described in clause 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 5.29.4.2.3-3: 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 5.29.4.2.3-4: 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 \* \* \* \*

5.29.5.1 General

This clause specifies the application data model supported by the MBSGroupMsgDelivery API. Table 5.29.5.1-1 specifies the data types defined for the MBSGroupMsgDelivery API.

**Table 5.29.5.1-1: MBSGroupMsgDelivery specific Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Clause defined** | **Description** | **Applicability** |
| MbsGroupMsgDel | 5.29.5.2.2 | Represents an MBS Group Message Delivery. |  |
| MbsGroupMsgDelPatch | 5.29.5.2.3 | Represents the parameters to request the modification of an existing MBS Group Message Delivery. |  |
| MbsGroupMsgDelStatusNotif | 5.29.5.2.4 | Represents an MBS Group Message Delivery Notification. |  |
| MbsServArea | 5.29.5.4.1 | Represents an MBS service area. |  |

Table 5.29.5.1-2 specifies data types re-used by the MBSGroupMsgDelivery API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the MBSGroupMsgDelivery API.

**Table 5.29.5.1-2: MBSGroupMsgDelivery API re-used Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Reference** | **Comments** | **Applicability** |
| Bytes | 3GPP TS 29.122 [4] | Represents a sequence of bytes. |  |
| DateTime | 3GPP TS 29.122 [4] | Represents a date and a time. |  |
| ExternalGroupId | 3GPP TS 29.122 [4] | Represents an external Group Identifier. |  |
| ExternalMbsServiceArea | 3GPP TS 29.571 [8] | Represents an external MBS service area. |  |
| MbsServiceArea | 3GPP TS 29.571 [8] | Represents an MBS service area. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Represents the list of supported feature(s) and is used to negotiate the applicability of the optional features. |  |
| Uri | 3GPP TS 29.122 [4] | Contains a Uri. |  |
| UserServiceDescription | 3GPP TS 26.517 [68] | Contains MBS User Service Announcement information. |  |

\* \* \* \* Next changes \* \* \* \*



\* \* \* \* Next changes \* \* \* \*

5.29.5.2.2 Type: MbsGroupMsgDel

**Table 5.29.5.2.2-1: Definition of type MbsGroupMsgDel**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| afId | string | C | 0..1 | Contains the identifier of the AF that is sending the request.  This attribute shall be present only in MBS Group Message Delivery creation/modification requests. |  |
| extGroupId | ExternalGroupId | M | 1 | Identifies the targeted group of UEs. |  |
| groupMsgDelPayload | Bytes | M | 1 | Contains the payload of the requested MBS Group Message Delivery. |  |
| mbsServArea | MbsServArea | M | 1 | Represents the targeted MBS service area. |  |
| startTime | DateTime | M | 1 | Represents the start time of the MBS Group Message Delivery. |  |
| stopTime | DateTime | M | 1 | Represents the end time of the MBS Group Message Delivery. |  |
| notifUri | Uri | M | 1 | The notification URI via which the AF desires to receive notifications on the status of an MBS Group Message Delivery. |  |
| delStatus | boolean | C | 0..1 | Indicates the status of Group Message Delivery.  - "true": Successful delivery.  - "false": Failed delivery.  - Default value if omitted: "true".  This attribute shall be present only in MBS Group Message Delivery creation/modification responses. |  |
| mbsUserServiceAnmt | UserServiceDescription | C | 0..1 | Represents the MBS User Service Announcement information currently associated with the MBS group message delivery.  This attribute shall be present in the response to an MBS Group Message Delivery Creation request and may be present in the response to an MBS Group Message Delivery Update request. |  |
| servAreaWithoutMbs | MbsServArea | O | 0..1 | Contains the service area without MBS capability.  This attribute may be present only in MBS Group Message Delivery creation/modification responses. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the list of supported features.  This attribute shall be provided if feature negotiation needs to take place. |  |

\* \* \* \* Next changes \* \* \* \*



\* \* \* \* Next changes \* \* \* \*

5.29.5.2.3 Type: MbsGroupMsgDelPatch

**Table 5.29.5.2.3-1: Definition of type MbsGroupMsgDelPatch**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| groupMsgDelPayload | Bytes | O | 0..1 | Contains uri to the payload of the requested MBS Group Message Delivery. |  |
| mbsServArea | MbsServArea | O | 0..1 | Represents the updated MBS service area.  (NOTE) |  |
| startTime | DateTime | O | 0..1 | Represents the start time when the MBS Group Message Delivery starts. |  |
| stopTime | DateTime | O | 0..1 | Represents the stop time when the MBS Group Message Delivery stops. |  |
| notifUri | Uri | O | 0..1 | The notification URI via which the AF desires to receive notifications on the status of an MBS Group Message Delivery. |  |

\* \* \* \* Next changes \* \* \* \*

5.29.5.2.4 Type: MbsGroupMsgDelStatusNotif

**Table 5.29.5.2.4-1: Definition of type MbsGroupMsgDelStatusNotif**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| delStatus | boolean | M | 1 | Indicate the status of Group Message Delivery.  - "true": Successful delivery.  - "false": Failed delivery. |  |

\* \* \* \* Next changes \* \* \* \*

5.29.5.3.2 Simple data types

The simple data types defined in Table 5.29.5.3.2-1 shall be supported.

**Table 5.29.5.3.2-1: Simple data types**

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type Definition | Description | Applicability |
|  |  |  |  |

\* \* \* \* Next changes \* \* \* \*

#### 5.29.5.4 Data types describing alternative data types or combinations of data types

##### 5.29.5.4.1 Type: MbsServArea

Table 5.29.5.4.1-1: Definition of type MbsServArea as a list of mutually exclusive alternatives

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Cardinality | Description | Applicability |
| MbsServiceArea | 0..1 | Represents the internal MBS service area (i.e. in the form of a list of cell ID(s) and/or list of TAI(s)). |  |
| ExternalMbsServiceArea | 0..1 | Represents the external MBS service area (i.e. in the form of geographical area(s) or civic address(es)). |  |

\* \* \* \* Next changes \* \* \* \*

5.29.6 Used Features

The table below defines the features applicable to the MBSGroupMsgDelivery API. Those features are negotiated as described in clause 5.2.7 of 3GPP TS 29.122 [4].

**Table 5.29.6-1: Features used by the MBSGroupMsgDelivery API**

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
|  |  |  |

\* \* \* \* Next changes \* \* \* \*

5.29.7.3 Application Errors

The application errors defined for the MBSGroupMsgDelivery API are listed in table 5.29.7.3-1.

**Table 5.29.7.3-1: Application errors**

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

\* \* \* \* Next changes \* \* \* \*

# A.27 MBSGroupMsgDelivery API

openapi: 3.0.0

info:

title: 3gpp-mbs-group-msg

version: 1.0.0-alpha.3

description: |

API for MBS Group Message Delivery.

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externalDocs:

description: >

3GPP TS 29.522 V18.3.0; 5G System; Network Exposure Function Northbound APIs.

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.522/'

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/3gpp-mbs-group-msg/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 5.2.4 of 3GPP TS 29.122.

paths:

/deliveries:

get:

summary: Retrieve all the active MBS Group Message Deliveries.

operationId: GetMbsGroupMsgDeliveries

tags:

- MBS Group Message Deliveries (Collection)

responses:

'200':

description: >

OK. All the active MBS Group Message Deliveries managed by the NEF are returned.

content:

application/json:

schema:

type: array

items:

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

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

post:

summary: Request the creation of an MBS Group Message Delivery.

operationId: CreateMbsGroupMsgDelivery

tags:

- MBS Group Message Deliveries (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: >

Created. Successful case. The requested MBS Group Message Delivery is successfully

created.

content:

application/json:

schema:

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

headers:

Location:

description: Contains the URI of the newly created resource.

required: true

schema:

type: string

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

callbacks:

MbsGroupMsgDelStatusNotif:

'{$request.body#/notifUri}':

post:

requestBody:

description: >

Represents the notification on the status of MBS Group Message Delivery.

required: true

content:

application/json:

schema:

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

responses:

'204':

description: >

No content. The MBS Group Message Delivery Status notification is successfully

received.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/deliveries/{delRef}:

parameters:

- name: delRef

in: path

description: >

Contains the identifier of the Individual MBS Group Message Delivery resource.

required: true

schema:

type: string

get:

summary: Retrieve an existing MBS Group Message Delivery.

operationId: GetMbsGroupMsgDelivery

tags:

- Individual MBS Group Message Delivery (Document)

responses:

'200':

description: >

OK. All the requested MBS Group Message Delivery is successfully returned.

content:

application/json:

schema:

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

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

patch:

summary: Request the modification of an existing MBS Group Message Delivery.

operationId: ModifyMbsGroupMsgDelivery

tags:

- Individual MBS Group Message Delivery (Document)

requestBody:

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

OK. Successful case. The MBS Group Message Delivery is successfully modified and a

representation of the updated resource is returned in the response body.

content:

application/json:

schema:

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

'204':

description: >

No Content. Successful case. The MBS Group Message Delivery is

successfully modified and no content is returned in the response body.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

delete:

summary: Request the deletion of an existing Individual MBS Group Message Delivery resource.

operationId: DeleteMbsGroupMsgDelivery

tags:

- Individual MBS Group Message Delivery (Document)

responses:

'204':

description: >

No Content. The targeted MBS Group Message Delivery is successfully deleted.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

# STRUCTURED DATA TYPES

MbsGroupMsgDelData:

description: Represents the MBS Group Message Delivery.

type: object

properties:

afId:

type: string

externalGroupId:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/ExternalGroupId'

groupMsgDelPayload:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bytes'

mbsServArea:

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

startTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

stopTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

notifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

delStatus:

type: boolean

description: >

Indicates the status of Group Message Delivery.

true indicates a successful delivery.

false indicates a failed delivery.

The default value if omitted is true.

mbsUserServiceAnmt:

$ref: 'TS26517\_MBSUserServiceAnnouncement.yaml#/components/schemas/UserServiceDescription'

servAreaWithoutMbs:

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

suppFeat:

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

required:

- externalGroupId

- mbsServArea

- startTime

- stopTime

- notifUri

MbsGroupMsgDelPatch:

description: Represents the requested modifications to an existing MBS Group Message Delivery.

type: object

properties:

groupMsgDelPayload:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bytes'

mbsServArea:

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

startTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

stopTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

notifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

MbsGroupMsgDelStatusNotif:

description: Represents the status notification information for an MBS group message delivery.

type: object

properties:

delStatus:

type: boolean

description: >

Indicates the status of Group Message Delivery.

true indicates a successful delivery.

false indicates a failed delivery.

required:

- delStatus

# SIMPLE DATA TYPES

#

#

# ENUMERATIONS

#

# Data types describing alternative data types or combinations of data types

MbsServArea:

description: Represents an MBS service area.

oneOf:

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

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

\* \* \* \* End of changes \* \* \* \*