**3GPP TSG-CT WG3 Meeting #108-eC3-201346**

**E-Meeting, 19th – 28th February 2020 *(revision of C3-201198)***

**Source: Ericsson**

**Title: Pseudo-CR on multicast NRM support**

**Spec: 3GPP TS 29.549 v1.0.0**

**Agenda item: 16.28**

**Document for: Decision**

**1. Introduction**

<Introduction part (optional)>

**2. Reason for Change**

The multicast network resource management (as in 14.3.4 of TS 23.434) is not specified yet.

**3. Conclusions**

Add API definition for multicast network resource management.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.549 v1.0.0.

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.434: "Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows".

[3] 3GPP TS 23.122: "T8 reference point for Northbound APIs".

[4] IETF RFC 6455: "The Websocket Protocol".

[5] IETF RFC 7230: "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing".

[6] IETF RFC 7231: "Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content".

[7] IETF RFC 7232: "Hypertext Transfer Protocol (HTTP/1.1): Conditional Requests".

[8] IETF RFC 7233: "Hypertext Transfer Protocol (HTTP/1.1): Range Requests".

[9] IETF RFC 7234: "Hypertext Transfer Protocol (HTTP/1.1): Caching".

[10] IETF RFC 7235: "Hypertext Transfer Protocol (HTTP/1.1): Authentication".

[11] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

[12] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[13] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[14] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[15] Open API Initiative, “OpenAPI 3.0.0 Specification”, <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>.

[16] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs; Stage 3”.

[17] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs; Stage 2”.

[18] 3GPP TS 33.122: "Security Aspects of Common API Framework for 3GPP Northbound APIs".

[19] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[TS29500] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[TS29571] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

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

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5GS 5G System

AEF API Exposing Function

API Application Programming Interface

JSON JavaScript Object Notation

PLMN Public Land Mobile Network

REST Representational State Transfer

SCEF Service Capability Exposure Function

SCS Service Capability Server

SEAL Service Enabler Architecture Layer for Verticals

TMGI Temporary Mobile Group Identity

UE User Equipment

VAL Vertical Application Layer

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

##### 7.4.1.2.1 Overview



Figure 7.4.1.2.1-1: Resource URI structure of the SS\_NetworkResourceAdaptation API

Table 7.4.1.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 7.4.1.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Multicast Subscriptions | {apiRoot}/ss-nra/{apiVersion}/multicast-subscriptions | POST | Create a new Individual Multicast Subscription resource. |
| Individual Multicast Subscription | {apiRoot}/ss-nra/{apiVersion}/multicast-subscriptions/{multiSubId} | GET | Read the Individual Multicast Subscription resource. |
| DELETE | Remove a new Individual Multicast Subscription resource. |

##### 7.4.1.2.2 Resource: Multicast Subscriptions

###### 7.4.1.2.2.1 Description

###### 7.4.1.2.2.2 Resource Definition

Resource URI: {apiRoot}/ss-nra/{apiVersion}/multicast-subscriptions

This resource shall support the resource URI variables defined in table 7.4.1.2.2.2-1.

Table 7.4.1.2.2.2-1: Resource URI variables for this resource

|  |  |
| --- | --- |
| Name | Definition |
| apiRoot | See clause 7.4.1.1 |
| apiVersion | See clause 7.4.1.1 |

###### 7.4.1.2.2.3 Resource Standard Methods

7.4.1.2.2.3.1 POST

Table 7.4.1.2.2.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 7.4.1.2.2.3.1-2 and the response data structures and response codes specified in table 7.4.1.2.2.3.1-3.

Table 7.4.1.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MulticastSubscription | M | 1 |  |

Table 7.4.1.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| MulticastSubscription | M | 1 | 201 Created |  |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [TS29500] shall also apply. |

##### 7.4.1.2.x Resource: Individual Multicast Subscription

###### 7.4.1.2.x.1 Description

###### 7.4.1.2.x.2 Resource Definition

Resource URI: {apiRoot}/ss-nra/{apiVersion}/multicast-subscriptions/{multiSubId}

This resource shall support the resource URI variables defined in table 7.4.1.2.x.2-1.

Table 7.4.1.2.x.2-1: Resource URI variables for this resource

|  |  |
| --- | --- |
| Name | Definition |
| apiRoot | See clause 7.4.1.1. |
| apiVersion | See clause 7.4.1.1. |
| multiSubId | The multicast subscription identifier. |

###### 7.4.1.2.x.3 Resource Standard Methods

7.4.1.2.x.3.1 GET

Table 7.4.1.2.x.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 7.4.1.2.x.3.1-2 and the response data structures and response codes specified in table 7.4.1.2.x.3.1-3.

Table 7.4.1.2.x.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 7.4.1.2.x.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| MulticastSubscription | M | 1 | 200 OK |  |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [TS29500] shall also apply. |

7.4.1.2.x.3.2 DELETE

Table 7.4.1.2.x.3.2-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 7.4.1.2.x.3.2-2 and the response data structures and response codes specified in table 7.4.1.2.x.3.2-3.

Table 7.4.1.2.x.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 7.4.1.2.x.3.2-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | Successful case. The Individual Multicast Subscription resource was deleted. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [TS29500] shall also apply. |

###### 7.4.1.2.x.4 Resource Custom Operations

None.

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

#### 7.4.1.3 Notifications

##### 7.4.1.3.1 General

Table 7.4.1.3.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Resource URI | HTTP method or custom operation | Description(service operation) |
| User Plane notification | {notificationURI} | POST | Report User Plane notification |

##### 7.4.1.3.2 User Plane notification

###### 7.4.1.3.2.1 Description

###### 7.4.1.3.2.2 Notification definition

Resource URI: **{notificationURI}**

This method shall support the URI query parameters specified in table 7.4.1.3.2.2-1.

Table 7.4.1.3.2.2-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 7.4.1.3.2.2-2 and the response data structures and response codes specified in table 7.4.1.3.2.2-3.

Table 7.4.1.3.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UserPlaneNotification | M | 1 |  |

Table 7.4.1.3.2.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The receipt of the Notification is acknowledged. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [TS29500] also apply. |

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

##### 7.4.1.4.1 General

This clause specifies the application data model supported by the API. Data types listed in clause 6.2 apply to this API

Table 7.4.1.4.1-1 specifies the data types defined specifically for the SS\_Network\_Resource\_Adaptation API service.

Table 7.4.1.4.1-1: SS\_Network\_Resource\_Adaptation API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| DeliveryMode | 7.4.1.4.3.y |  |  |
| MulticastSubscription | 7.4.1.4.2.x |  |  |
| NrmEvent | 7.4.1.4.3.z |  |  |
| NrmEventNotification | 7.4.1.4.2.z |  |  |
| ServiceAnnoucementMode | 7.4.1.4.3.x |  |  |
| UserPlaneNotification | 7.4.1.4.2.y |  |  |

Table 7.4.1.4.1-2 specifies data types re-used by the SS\_Network\_Resource\_Adaptation API service.

Table 7.4.1.4.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DateTime | 3GPP TS 29.571 [TS29571] |  |  |
| MbmsLocArea | 3GPP TS 29.122 [3] |  |  |
| SupportedFeatures | 3GPP TS 29.571 [TS29571] |  |  |
| Uint32 | 3GPP TS 29.571 [TS29571] |  |  |
| Uri | 3GPP TS 29.571 [TS29571] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [3] |  |  |

###### 7.4.1.4.2.x Type: MulticastSubscription

Table 7.4.1.4.2.x-1: Definition of type MulticastSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| valGroupId | string | M | 1 | The identity of the group that the MBMS bearer is requested for. |  |
| anncMode | ServiceAnnoucementMode | M | 1 | Indicates whether the service announcement is sent by NRM server or by the VAL server. |  |
| qosReq | QosRequirement | M | 1 | The QoS requirement for the multicast. |  |
| locArea | MbmsLocArea | O | 0..1 | Indicate the area where the MBMS bearer is requested for. |  |
| duration | DateTime | O | 0..1 | Identifies the absolute time at which the subscription resource is considered to expire. When omitted in the request, it indicates the resource is requested to be valid forever by the VAL server. When omitted in the response, it indicates the resource is set to valid forever by the VAL server. |  |
| tmgi | Uint32 | O | 0..1 | TMGI. Shall be provided by the NRM server if announcement mode is set to VAL. |  |
| notifUri | Uri | M | 1 | Identifies the notification URI where the NRM notification shall be sent to. |  |
| reqTestNotif | boolean | O | 0..1 | Set to true by the NF service consumer to request the VAE server to send a test notification as defined in clause 6.3.5.3. Set to false or omitted otherwise. | Notification\_test\_event |
| wsNotifCfg | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in clause 6.3.5.4. | Notification\_websocket |
| suppFeat | SupportedFeatures | M | 1 | This parameter shall be supplied by VAL server in the POST request that request the creation of a Multicast Subscription resource and shall be supplied in the reply of corresponding request. |  |

Editor's note: definition of QosRequirement is FFS.

Editor's note: The service description and UP information provided in the response is FFS.

###### 7.4.1.4.2.y Type: UserPlaneNotification

Table 7.4.1.4.2.y-1: Definition of type UserPlaneNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifId | Uri | M | 1 | The subscription resource Uri to which this notification is related. |  |
| eventNotifs | array(NrmEventNotification) | M | 1..N | Notifications about Individual Events |  |

###### 7.4.1.4.2.z Type: NrmEventNotification

Table 7.4.1.4.2.z-1: Definition of type NrmEventNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | NrmEvent | M | 1 | Event that is notified. |  |
| ts | DateTime | M | 1 | Time at which the event is observed. |  |
| deliveryMode | DeliveryMode | C | 0..1 | Indicates delivery of the user data to the UE(s) via unicast mode or multicast mode.Shall be present if event is UP\_DELIVERY\_MODE. |  |
| streamIds | array(string) | O | 1..N | Indicates the media streams (unicast or multicast) to be used.May be present if event is UP\_DELIVERY\_MODE and NRM already has the streams available. |  |

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

7.4.1.4.3.x Enumeration: ServiceAnnoucementMode

Table 7.4.1.4.3.x-1: Enumeration ServiceAnnoucementMode

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| NRM | NRM server performs the service announcement. |  |
| VAL | VAL server performs the service announcement. |  |

7.4.1.4.3.y Enumeration: DeliveryMode

Table 7.4.1.4.3.y-1: Enumeration DeliveryMode

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| UNICAST | Unicast delivery |  |
| MULTICAST | Multicast delivery |  |

7.4.1.4.3.z Enumeration: NrmEvent

Table 7.4.1.4.3.z-1: Enumeration NrmEvent

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| UP\_DELIVERY\_MODE | User Plane delivery mode. |  |

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

#### 7.4.1.6 Feature negotiation

Table 7.4.1.6-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | Notification\_test\_event | The testing of notification connection is supported according to clause 6.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 6.6. This feature requires that the Notification\_test\_event feature is also supported. |

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

# A.X SS\_NetworkResourceAdaption API

openapi: 3.0.0

info:

 version: 1.0.0.alpha-1

 title: SS\_NetworkResourceAdaptation

 description: |

 SS Network Resource Adaptation Service.

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externalDocs:

 description: 3GPP TS 29.549 V1.0.0; Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification.

 url: http://www.3gpp.org/ftp/Specs/archive/29\_series/29.549/

security:

 - {}

 - oAuth2ClientCredentials: []

servers:

 - url: '{apiRoot}/ss-nra/v1'

 variables:

 apiRoot:

 default: https://example.com

 description: apiRoot as defined in subclause 4.4 of 3GPP TS 29.501

paths:

 /multicast-subscriptions:

 post:

 summary: Creates a new Individual Multicast Subscription resource

 operationId: CreateMulticastSubscription

 tags:

 - Multicast Subscriptions (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Success

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: 'Contains the URI of the created individual multicast subscription resource'

 required: true

 schema:

 type: string

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 callbacks:

 UserPlaneNotification:

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

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: No Content, Notification was succesfull

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 /multicast-subscriptions/{multiSubId}:

 get:

 summary: "Reads an existing Individual Multicast Subscription"

 operationId: GetMulticastSubscription

 tags:

 - Individual Multicast Subscription (Document)

 parameters:

 - name: multiSubId

 in: path

 description: Multicast Subscription ID

 required: true

 schema:

 type: string

 responses:

 '200':

 description: OK. Resource representation is returned

 content:

 application/json:

 schema:

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

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '406':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/406'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

 delete:

 summary: "Delete an existing Individual Multicast Subscription"

 operationId: DeleteMulticastSubscription

 tags:

 - Individual Multicast Subscription (Document)

 parameters:

 - name: multiSubId

 in: path

 description: Multicast Subscription ID

 required: true

 schema:

 type: string

 responses:

 '204':

 description: No Content. Resource was succesfully deleted

 '400':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/404'

 '429':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29571\_CommonData.yaml#/components/responses/default'

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{tokenUrl}'

 scopes: {}

 schemas:

 MulticastSubscription:

 type: object

 properties:

 valGroupId:

 type: string

 anncMode:

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

 qosReq:

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

 locArea:

 $ref: 'TS29122\_GMDviaMBMSbyMB2.yaml#/components/schemas/MbmsLocArea'

 duration:

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

 tmgi:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

 notifUri:

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

 reqTestNotif:

 type: boolean

 wsNotifCfg:

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

 suppFeat:

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

 required:

 - valGroupId

 - anncMode

 - qosReq

 - notifUri

 UserPlaneNotification:

 type: object

 properties:

 notifId:

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

 eventNotifs:

 type: array

 items:

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

 minItems: 1

 required:

 - notifId

 - eventNotifs

 NrmEventNotification:

 type: object

 properties:

 event:

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

 ts:

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

 deliveryMode:

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

 streamIds:

 type: array

 items:

 type: string

 minItems: 1

 required:

 - event

 - ts

 QosRequirement:

 type: string

# QoS requirment definition is FFS

# Simple data types and Enumerations

 ServiceAnnoucementMode:

 anyOf:

 - type: string

 enum:

 - NRM

 - VAL

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - NRM: NRM server performs the service announcement.

 - VAL: VAL server performs the service announcement.

 DeliveryMode:

 anyOf:

 - type: string

 enum:

 - UNICAST

 - MULTICAST

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - UNICAST: Unicast delivery.

 - MULTICAST: Multicast delivery.

 NrmEvent:

 anyOf:

 - type: string

 enum:

 - UP\_DELIVERY\_MODE

 - type: string

 description: >

 This string provides forward-compatibility with future

 extensions to the enumeration but is not used to encode

 content defined in the present version of this API.

 description: >

 Possible values are

 - UP\_DELIVERY\_MODE: User Plane delivery mode.

\* \* \* End of Change \* \* \* \*