**3GPP TSG-CT WG4 Meeting #99-eC4-204329\_v1**

**E-Meeting, 18th – 28th August 2020**

|  |
| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **29.515** | **CR** | **0072** | **rev** | **-** | **Current version:** | **16.3.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | Essential correction to OpenAPI specification for LocationUpdateNotify service operation |
|  |  |
| ***Source to WG:*** | Orange |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | 5G\_eLCS |  | ***Date:*** | 2020-08-11 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-16 |
|  | *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 canbe 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | LocationUpdateNotify service operation is defined as a“Standalone” callback, which is not possible in the current version of OpenAPI. |
|  |  |
| ***Summary of change:*** | It is proposed to correct this issue by defining a dummy LocationUpdateSubscribe service operation and putting this LocationUpdateNotify callback it. |
|  |  |
| ***Consequences if not approved:*** | Incorrect OpenAPI specification. |
|  |  |
| ***Clauses affected:*** | A.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** | This CR introduces backwords compatible modifications to OpenAPI specification files. |
|  |  |
| ***This CR's revision history:*** | Rev 1: Add a dummy Subscribe service operation in order to put the LocationUpdateSubscribe service operation under it in OpenAPI specification file and solve the existing issue. |

\* \* \* First change \* \* \* \*

5.2.2.1 Introduction

The service operations defined for the Ngmlc\_Location services are as follows:

- ProvideLocation

- LocationUpdate

- LocationUpdateSubscribe

- LocationUpdateNotify

- CancelLocation

- EventNotify

\* \* \* Next change \* \* \* \*

5.2.2.6a LocationUpdateSubscribe

5.2.2.6a.1 General

The service operation is used by a NF Service Consumer (e.g. NEF) to subscribe to notifications on UE location information update for the 5GC-MO-LR Procedure (see 3GPP TS 23.273 [4], clause 6.2). See Figure 5.2.2.6a.1-1.

NOTE: This service operation is not used by the current stage 2 specifications in 3GPP TS 23.273 [4], i.e. the subscription to notifications on UE location information update is implicit.



**Figure 5.2.2.6a.1-1: Subscription to UE location information update**

1. The NF service consumer (e.g. NEF) sends a POST request to the parent resource, i.e. collection of subscriptions (.../{supi}/loc-update-subs), to create a subscription to UE location information update for the 5GC-MO-LR Procedure, as provided in LocUpdateSubs information conveyed in the message body.

2a. On success, the GMLC responds with "201 Created" with the message body containing a representation of the created subscription and related information (LocUpdateSubs). The Location HTTP header shall contain the URI of the created subscription.

2b. If there is an error, the GMLC shall provide a response with the HTTP status code "404 Not Found" including additional error information in the response body (within the "ProblemDetails" IE).

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the POST response body.

\* \* \* Next change \* \* \* \*

5.2.2.6b LocationUpdateNotify

5.2.2.6b.1 General

The service operation is used during the procedure:

- 5GC-MO-LR Procedure (see 3GPP TS 23.273 [4], clause 6.2)

The LocationUpdateNotify enables the NF consumer (e.g. NEF) to get notified about the UE location information update. See Figure 5.2.2.6b.1-1.

****

**Figure 5.2.2.6b.1-1: LocationUpdateNotify Notification**

1. The GMLC shall send an HTTP POST request to the callback URI of the NF consumer (e.g. NEF). The response body shall contain a LocUpdateNotification object.

 The callback URI (e.g. NEF address for callback) is locally configured on GMLC or discovered via NRF.

2a. On success, "204 No content" shall be returned by the NF consumer.

2b. On failure, one of the HTTP status code listed in Table 6.1.4.3.3.1-2 may be returned. For a 4xx response, the message body may contain a ProblemDetails structure with the "cause" attribute set to one of the application errors listed in Table 6.1.4.3.3.1-2.

\* \* \* Next change \* \* \* \*

### 6.1.3a Resources

#### 6.1.3a.1 Overview

The structure of the Resource URIs of the "Ngmlc\_Location" service is depicted in Figure 6.1.3a.1-1.



Figure 6.1.3a.1-1: Resource URI structure of the Ngmlc\_Location API

Table 6.1.3a.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.1.3a.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| loc-update-subs(Collection) | /{supi}/loc-subs | POST | Create a subscription to notifications of UE location update information. |

#### 6.1.3a.2 Resource: sor-subscriptions

##### 6.1.3a.2.1 Description

This resource represents the collection of subscriptions to notifications of UE location update information.

##### 6.1.3a.2.2 Resource Definition

Resource URI: **{apiRoot}/ngmlc-loc/<apiVersion>/{supi}/loc-update-subs**

This resource shall support the resource URI variables defined in table 6.1.3a.2.2-1.

Table 6.1.3a.2.2-1: Resource URI variables for this resource

|  |  |
| --- | --- |
| Name | Definition |
| apiRoot | See clause 6.1.1 |
| supi | Represents the Subscription Permanent Identifier (see 3GPP TS 23.501 [2] clause 5.9.2) pattern: "^(imsi-[0-9]{5,15}|nai-.+|.+)$" |

##### 6.1.3a.2.3 Resource Standard Methods

###### 6.1.3a.3.2.1 POST

This method shall support the URI query parameters specified in table 6.1.3a.2.3.1-1.

Table 6.1.3a.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 6.1.3a.2.3.1-2 and the response data structures and response codes specified in table 6.1.3a.2.3.1-3.

Table 6.1.3a.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocUpdateSubs | M | 1 | Contains the subscription to UE location update information that is to be created. |

Table 6.1.3a.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| LocUpdateSubs | M | 1 | 201 Created | Upon success, an HTTP response with status code "201 Created" and a response body containing a representation of the created individual subscription resource shall be returned.The HTTP response shall also include a "Location" HTTP header that contains the resource URI of the created resource. |
| ProblemDetails | M | 1 | 404 Not Found | The "cause" attribute shall be set to the following application error:- USER\_NOT\_FOUND |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. |

\* \* \* Next change \* \* \* \*

### 6.1.3b Custom Operations without associated resources

6.1.3b.1 Overview

The structure of the custom operation URIs of the Ngmlc\_Location service is shown in Figure 6.1.3a.2-1.

Table 6.1.3b.1-1 provides an overview of the custom operations and applicable HTTP methods.

**Table 6.1.3b.1-1: Custom operations**

|  |  |  |
| --- | --- | --- |
| **Custom operation URI** | **Mapped HTTP method** | **Description** |
| {apiRoot}/ngmlc-loc/<apiVersion>/provide-location | POST | Request or Subscribe the geodetic and optionally civic location of a target UE |
| {apiRoot}/ngmlc-loc/<apiVersion>/cancel-location | POST | Cancel an on-going periodic or triggered location request of a target UE |
| {apiRoot}/ngmlc-loc/<apiVersion>/location-update | POST | Enable the UE to update UE location information towards the consumer NF |

#### 6.1.3b.2 Operation: provide-location

##### 6.1.3b.2.1 Description

This clause will describe the custom operation and what it is used for, and the custom operations URI.

##### 6.1.3b.2.2 Operation Definition

The operation shall support the response data structures and response codes specified in tables 6.1.3b.2.2-1 and 6.1.3b.2.2-2.

Table 6.1.3b.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| InputData | M | 1 | Input parameters to the "Provide-Location" operation |

Table 6.1.3b.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| LocationData | M | 1 | 200 OK | This case represents the successful retrieval of the location of the UE or successful subscription of periodic or triggered location of the UE.Upon success, a response body is returned containing the different parameters of the location data if obtained, such as:- Geographic Area- Civic Location- Age of Location- Accuracy of Location- Positioning methods |
| ProblemDetails | O | 0..1 | 403 Forbidden | The "cause" attribute may be used to indicate one of the following application errors:- POSITIONING\_DENIED- UNSPECIFIED- UNSUPPORTED\_BY\_UESee table 6.1.6.3-1 for the description of these errors. |
| ProblemDetails | O | 0..1 | 500 Internal Server Error | The "cause" attribute may be used to indicate the following application error:- POSITIONING\_FAILEDSee table 6.1.6.3-1 for the description of these errors. |
| ProblemDetails | O | 0..1 | 504 Gateway Timeout | The "cause" attribute may be used to indicate the following application error:- UNREACHABLE\_USERSee table 6.1.6.3-1 for the description of this error. |

#### 6.1.3b.3 Operation: cancel-location

##### 6.1.3b.3.1 Description

This clause will describe the custom operation and what it is used for, and the custom operation's URI.

##### 6.1.3.3.2 Operation Definition

This operation shall support the request and response data structures and response codes specified in table 6.1.3b.3.2-1 and table 6.1.3b.3.2-2.

Table 6.1.3b.3.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| CancelLocData | M | 1 | The information is used to cancel location. |

Table 6.1.3b.3.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | This case represents successful cancellation of location. |
| ProblemDetails | O | 0..1 | 403 Forbidden | The "cause" attribute may be used to indicate one of the following application errors:- UNSPECIFIED- LOCATION\_SESSION\_UNKNOWNSee table 6.1.6.3-1 for the description of this error. |

#### 6.1.3b.4 Operation: location-update

##### 6.1.3b.4.1 Description

This clause will describe the custom operation and what it is used for, and the custom operation's URI.

##### 6.1.3b.4.2 Operation Definition

This operation shall support the request and response data structures and response codes specified in table 6.1.3b.4.2-1 and table 6.1.3b.4.2-2.

Table 6.1.3b.4.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocUpdateData |  M | 1 | Input parameters to the "location-update" operation |

Table 6.1.3b.4.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | This case represents successful update of location. |
| ProblemDetails | O | 0..1 | 403 Forbidden | The "cause" attribute may be used to indicate one of the following application errors:- UNSPECIFIED- UNREQUESTED\_BY\_UE- UNKOWN\_EXTERNAL\_CLIENT\_OR\_AF- UNREACHABLE\_EXTERNAL\_CLIENT\_OR\_AFSee table 6.1.6.3-1 for the description of this error. |

\* \* \* Next change \* \* \* \*

##### 6.1.5.2.y Type: LocUpdateSubs

Table 6.1.5.2.y-1: Definition of type LocUpdateSubs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| nfInstanceId | NfInstanceId | M | 1 | Identity of the NF Instance creating the subscription. |  |
| notifUri | Uri | M | 1 | The URI via which the NF service consumer wants to receive notifications related to this subscription. |  |
| monitoredResourceUris | array(Uri) | M | 1..N | A set of URIs that identify the resources for which a change triggers a notification.The URI shall take the form of either an absolute URI or an absolute-path reference as defined in IETF RFC 3986 [31]. |  |

\* \* \* Next change \* \* \* \*

A.2 Ngmlc\_Location API

openapi: 3.0.0

info:

 version: '1.0.0'

 title: Ngmlc\_Location

 description: |

 Ngmlc\_Location Service.

 © 2020, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

 All rights reserved.

externalDocs:

 description: 3GPP TS 29.515 V16.1.0; 5G System; Gateway Mobile Location Services; Stage 3

 url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.515/'

servers:

 - url: '{apiRoot}/ngmlc-loc/v1'

 variables:

 apiRoot:

 default: https://example.com

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

security:

 - {}

 - oAuth2ClientCredentials:

 - ngmlc-loc

paths:

 /provide-location:

 post:

 summary: Request Location of an UE

 operationId: RequestLocation

 tags:

 - Request Location

 requestBody:

 content:

 application/json:

 schema:

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

 required: true

 responses:

 '200':

 description: Expected response to a valid request

 content:

 application/json:

 schema:

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

 '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'

 '504':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/504'

 default:

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

 callbacks:

 EventNotify:

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

 post:

 requestBody:

 description: UE Event Notification

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: Expected response to a valid notification

 '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'

 '504':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/504'

 default:

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

 /cancel-location:

 post:

 summary: request cancellation of periodic or triggered location

 operationId: CancelLocation

 tags:

 - Cancel Location

 requestBody:

 content:

 application/json:

 schema:

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

 required: true

 responses:

 '204':

 description: Expected response to a successful cancellation

 '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'

 '504':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/504'

 default:

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

 /location-update:

 post:

 summary: update UE location information

 operationId: UpdateLocation

 tags:

 - Update Location

 requestBody:

 content:

 application/json:

 schema:

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

 required: true

 responses:

 '204':

 description: Expected response to successful location context transfer

 '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'

 '504':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/504'

 default:

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

 /{supi}/loc-update-subs:

 post:

 summary: subscribe to notifications of UE location information

 operationId: LocationUpdateSubcribe

 tags:

 - UE location information Subscription creation

 parameters:

 - name: supi

 in: path

 description: Identifier of the UE

 required: true

 schema:

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

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Successful creation of the UE location update Subscription to notifications

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: 'Contains the URI of the newly created resource, according to the structure: {apiRoot}/ngmlc-loc/{version}/loc-update-subs/{subscriptionId}'

 required: true

 schema:

 type: string

 '400':

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

 '404':

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

 '500':

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

 '501':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/501'

 '503':

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

 default:

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

 callbacks:

 LocationUpdateNotify:

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

 post:

 requestBody:

 description: Location Update Notification

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: Expected response to a valid notification

 '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'

 '504':

 $ref: 'TS29571\_CommonData.yaml#/components/responses/504'

 default:

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

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{nrfApiRoot}/oauth2/token'

 scopes:

 ngmlc-loc: Access to the Ngmlc\_Location API

 schemas:

#

# COMPLEX TYPES

#

 InputData:

 type: object

 required:

 - externalClientType

 properties:

 gpsi:

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

 supi:

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

 externalClientType:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/ExternalClientType'

 locationQoS:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationQoS'

 supportedGADShapes:

 type: array

 items:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/SupportedGADShapes'

 minItems: 1

 serviceIdentity:

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

 serviceCoverage:

 type: array

 items:

 $ref: '#/components/schemas/E164CountryCodeOfGeographicArea'

 minItems: 1

 ldrType:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LdrType'

 periodicEventInfo:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/PeriodicEventInfo'

 areaEventInfo:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AreaEventInfo'

 motionEventInfo:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/MotionEventInfo'

 ldrReference:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LdrReference'

 hgmlcCallBackUri:

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

 externalClientIdentification:

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

 afId:

 type: string

 uePrivacyRequirements:

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

 lcsServiceType:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LcsServiceType'

 velocityRequested:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/VelocityRequested'

 priority:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LcsPriority'

 locationTypeRequested:

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

 maximumAgeOfLocationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AgeOfLocationEstimate'

 amfId:

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

 codeWord:

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

 LocationData:

 type: object

 properties:

 gpsi:

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

 supi:

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

 locationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

 civicAddress:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/CivicAddress'

 ageOfLocationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AgeOfLocationEstimate'

 positioningDataList:

 type: array

 items:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/PositioningMethodAndUsage'

 minItems: 1

 gnssPositioningDataList:

 type: array

 items:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GnssPositioningMethodAndUsage'

 minItems: 1

 accuracyFulfilmentIndicator:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AccuracyFulfilmentIndicator'

 ueVelocity:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/VelocityEstimate'

 ldrReference:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LdrReference'

 CancelLocData:

 type: object

 required:

 - hgmlcCallBackUri

 - ldrReference

 properties:

 gpsi:

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

 supi:

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

 hgmlcCallBackUri:

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

 ldrReference:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LdrReference'

 lmfIdentification:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LMFIdentification'

 amfId:

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

 LocUpdateData:

 type: object

 required:

 - locationRequestType

 - locationEstimate

 - ageOfLocationEstimate

 - accuracyFulfilmentIndicator

 - lcsQosClass

 properties:

 gpsi:

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

 supi:

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

 locationRequestType:

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

 locationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

 ageOfLocationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AgeOfLocationEstimate'

 accuracyFulfilmentIndicator:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AccuracyFulfilmentIndicator'

 civicAddress:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/CivicAddress'

 lcsQosClass:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LcsQosClass'

 externalClientIdentification:

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

 afId:

 type: string

 hgmlcAddress:

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

 serviceIdentity:

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

 EventNotifyData:

 type: object

 required:

 - eventNotifyDataType

 - ldrReference

 properties:

 gpsi:

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

 supi:

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

 ldrReference:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LdrReference'

 eventNotifyDataType:

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

 locationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

 civicAddress:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/CivicAddress'

 ageOfLocationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AgeOfLocationEstimate'

 positioningDataList:

 type: array

 items:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/PositioningMethodAndUsage'

 minItems: 1

 gnssPositioningDataList:

 type: array

 items:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GnssPositioningMethodAndUsage'

 minItems: 1

 lmfIdentification:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LMFIdentification'

 amfId:

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

 terminationCause:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/TerminationCause'

 UePrivacyRequirements:

 type: object

 properties:

 lcsServiceAuthInfo:

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

 codeWordCheck:

 type: boolean

 LocUpdateNotification:

 type: object

 required:

 - locationRequestType

 - locationEstimate

 - ageOfLocationEstimate

 - accuracyFulfilmentIndicator

 - lcsQosClass

 properties:

 gpsi:

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

 supi:

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

 locationRequestType:

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

 locationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

 ageOfLocationEstimate:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AgeOfLocationEstimate'

 accuracyFulfilmentIndicator:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/AccuracyFulfilmentIndicator'

 civicAddress:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/CivicAddress'

 lcsQosClass:

 $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LcsQosClass'

 afId:

 type: string

 serviceIdentity:

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

 LocUpdateSubs:

 type: object

 required:

 - nfInstanceId

 - notifURI

 - monitoredResourceUris

 properties:

 nfInstanceId:

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

 notifURI:

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

 monitoredResourceUris:

 type: array

 items:

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

 minItems: 1

#

# SIMPLE TYPES

#

 ServiceIdentity:

 type: string

 ExternalClientIdentification:

 type: string

 CodeWord:

 type: string

 E164CountryCodeOfGeographicArea:

 type: string

#

# ENUMS

#

 PseudonymIndicator:

 anyOf:

 - type: string

 enum:

 - PSEUDONYM\_REQUESTED

 - PSEUDONYM\_NOT\_REQUESTED

 - type: string

 LocationRequestType:

 anyOf:

 - type: string

 enum:

 - NI\_LR

 - MT\_LR

 - MO\_LR

 - type: string

 LocationTypeRequested:

 anyOf:

 - type: string

 enum:

 - CURRENT\_LOCATION

 - CURRENT\_OR\_LAST\_KNOWN\_LOCATION

 - INITIAL\_LOCATION

 - NOTIFICATION\_VERIFICATION\_ONLY

 - type: string

 EventNotifyDataType:

 anyOf:

 - type: string

 enum:

 - UE\_AVAILABLE

 - PERIODIC

 - ENTERING\_INTO\_AREA

 - LEAVING\_FROM\_AREA

 - BEING\_INSIDE\_AREA

 - MOTION

 - MAXIMUM\_INTERVAL\_EXPIRATION\_EVENT

 - LOCATION\_CANCELLATION\_EVENT

 - ACTIVATION\_OF\_DEFERRED\_LOCATION

 - type: string

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