**3GPP TSG-CT WG4 Meeting #101eC4-205abc**

**E-Meeting, 03rd – 13th November 2020 *was* C4-205081**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.515** | **CR** | **0024** | **rev** | **1** | **Current version:** | **16.2.0** |  |
|  | | | | | | | | |
| *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** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Provide Locations of a group of UEs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_eLCS | | | | |  | ***Date:*** | | | 2020-10-23 |
|  |  | | | |  | |  | | |  |
| ***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 can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | For Support Bulk Operation of LCS Service Request Targeting to Multiple UEs as defined in clause 6.8 of TS23.273.  LS S2- 2008229 and SA2 CR0131 (S2-2008230) indicate that The GMLC is the node to resolve the group identifier to member UEs and is the aggregation point of location response to NEF and LCS client, therefore external group identifier or internal group identifier should be delivered to GMLC when requesting the locations of a target group of UEs, | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Extend the ProvideLocation service operation of Ngmlc\_Location Service to support providing locaitons for a target group of UEs,   1. Extended the ProvideLocation service operation in clause 5.2.2.2. 2. Extended the customized operation provide-location to support providing locaitons for a target group of UEs in clause 6.1.3.2 3. Extended data model InputData and LocationData to include attributs extGroupId and intGroupId. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Support Bulk Operation of LCS Service Request Targeting to Multiple UEs defined in stage 2 won't be implemented in stage 3. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.2, 6.1.3.1, 6.1.5.1, 6.1.5.2.2, 6.1.5.2.3, 6.1.5.3.x(new), A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR will introduce backward compatible corrections in the OpenAPI specification file of TS29515\_Nglmc\_Location OpenAPI. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1:   1. Added Ericsson in ***Source to WG:*** on coversheet. 2. Added the new scenario that ldrReference will be present in the description of ldrReference in Table 6.1.5.2.2-1. 3. Defined the new data model Enumeration: SuccessType, anded new attribute successType in LocationData to indicate whether requesting location service for a target group is partial success or full success. 4. Romved the group identifier (external group identifier or internal group identifier) in the response of Provide Locations of a group of UEs service operation in cluase 5.2.2.2.3 and Table 6.1.5.2.2-1. 5. the description of eventNotificationUri changed: "This IE should be included " --> replaced "should" with "shall" | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 5.2.2.2 ProvideLocation

##### 5.2.2.2.1 General

The following procedures are supported using the "ProvideLocation" service operation:

- Provide Location of a single UE

- Provide Locaitons of a group of UEs

##### 5.2.2.2.2 Provide Location of a single UE

The service operation is used during the procedures:

- 5GC-MT-LR Procedure for the commercial location service (see 3GPP TS 23.273 [4], clause 6.1.2)

- Deferred 5GC-MT-LR Procedure for Periodic, Triggered and UE Available Location Events (see 3GPP TS 23.273 [4], clause 6.3.1)

The ProvideLocation service operation is invoked by a NF Service Consumer, e.g. a NEF or GMLC, towards the GMLC to request to provide the location information (geodetic location and, optionally, civic location) for a target UE or to subscribe to periodic or triggered deferred location for a target UE. See Figure 5.2.2.2.2-1.



Figure 5.2.2.2.2-1: ProvideLocation Request/Response for a target UE

1. The NF Service Consumer shall send an HTTP POST request to the URI associated with the "provide-location" custom operation. The input parameters for the request (the target UE identification (SUPI or GPSI), required QoS, supported GAD shapes, LCS client type, external Service Identity, Codeword, service coverage, LDR type, serving AMF address, LDR reference) should be included in the HTTP POST request body, H-GMLC Callback URI may be included in the HTTP POST request body to V-GMLC (eventually to AMF) for implicit subscrpiton of EventNotify provided by AMF, and NEF Callback URI may be included in the HTTP POST request body to GMLC/H-GMLC for implicit subscrpiton of EventNotify provided by GMLC/H-GMLC.

2a. On success, "200 OK" shall be returned. The response body shall contain the parameters related to the determined position of the UE if any (geodetic position, civic location, positioning methods…).

2b On failure, one of the HTTP status code listed in Table 6.1.3.2.2-2 may be returned. For a 4xx/5xx response, the message body may contain a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.3.2.2-2.

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

##### 5.2.2.2.3 Provide Locations of a group of UEs

The service operation is used during the procedures:

- Bulk Operation of LCS Service Request Targeting to Multiple UEs (see 3GPP TS 23.273 [4], clause 6.8)

The ProvideLocation service operation is invoked by a NF Service Consumer, e.g. a NEF, towards the GMLC (e.g. (H)GMLC when roaming) to request to provide the location informations (geodetic location and, optionally, civic location) for a target group of UEs or to subscribe to periodic or triggered deferred location for a target group of UEs. See Figure 5.2.2.2.3-1.



Figure 5.2.2.2.3-1: ProvideLocation Request/Response for a target group

1. The NF Service Consumer shall send an HTTP POST request to the URI associated with the "provide-location" custom operation. The input parameters the target group indentification (the External Group ID or the Internal Group ID), External client type, eventNotificationUri shall be included in the HTTP POST request body, LDR type, LDR reference shall be also included in the request if requesting the deferred LCS service, the required QoS, supported GAD shapes, external Service Identity, service coverage should be included in the request.

GMLC shall translate the target group indentification into the list of the UE identifications which belong to the target group by invoking the related service provided by UDM, then for each UE in the list, GMLC initiates following steps of procedures of the 5GC-MT-LR or Deferred 5GC-MT-LR as defined in 3GPP TS 23.273 [4] clause 6.8.

2a. On success, "200 OK" shall be returned. The response body shall contain the success type.

2b On failure, one of the HTTP status code listed in Table 6.1.3.2.2-2 may be returned. For a 4xx/5xx response, the message body may contain a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.3.2.2-2.

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

#### 6.1.3.1 Overview

The structure of the custom operation URIs of the Ngmlc\_Location service is shown in Figure 6.1.3.1-1.



Figure 6.1.3.1-1: Custom operation URI structure of the Ngmlc\_Location API

Table 6.1.3.1-1 provides an overview of the custom operations and applicable HTTP methods.

Table 6.1.3.1-1: 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 or a target group of UEs. |
| {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 |
| {apiRoot}/ngmlc-loc/<apiVersion>/loc-update-subs | POST | Enable a NF service consumer (e.g. NEF) to subscribe to UE location information |

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

#### 6.1.3.2 Operation: provide-location

##### 6.1.3.2.1 Description

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

##### 6.1.3.2.2 Operation Definition

The operation shall support the response data structures and response codes specified in tables 6.1.3.2.2-1 and 6.1.3.2.2-2.

Table 6.1.3.2.2-1: 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 6.1.3.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | 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, or represents completely or partially accept of the requesting locations for a target group.  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\_UE  - DETACHED\_USER  See 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\_FAILED  See 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\_USER  - PEER\_NOT\_RESPONDING  See table 6.1.6.3-1 for the description of this error. |

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

#### 6.1.5.1 General

This clause specifies the application data model supported by the API.

Table 6.1.5.1-1 specifies the data types defined for the Ngmlc\_Location service based interface protocol.

Table 6.1.5.1-1: Ngmlc\_Location specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| InputData | 6.1.5.2.2 | the input parameters in ProvideLocation service operation |  |
| LocationData | 6.1.5.2.3 | the response parameters in ProvideLocation service operation |  |
| CancelLocData | 6.1.5.2.4 | the input parameters in CancelLocation service operation |  |
| LocUpdateData | 6.1.5.2.5 | the input parameters in LocationUpdate service operation |  |
| EventNotifyData | 6.1.5.2.6 | the input parameters in EventNotify Notification service operation |  |
| UePrivacyRequirements | 6.1.5.2.7 | UE privacy requirements from (H)GMLC to the serving AMF or VGMLC(in the roaming case) for the target UE |  |
| LocUpdateNotification | 6.1.5.2.9 | Location Update Notification |  |
| LocUpdateSubs | 6.1.5.2.10 | UE location information subscription |  |
| ServiceIdentity | 6.1.5.3.2 | service identity |  |
| CodeWord | 6.1.5.3.2 | codeword |  |
| ExternalClientIdentification | 6.1.5.3.2 | external client identification |  |
| E164CountryCodeOfGeographicArea | 6.1.5.3.2 | E.164 country codes for geographic areas |  |
| PseudonymIndicator | 6.1.5.3.3 | It defines if a pseudonym is requested |  |
| LocationRequestType | 6.1.5.3.4 | NI-LR, MT-LR or MO-LR |  |
| LocationTypeRequested | 6.1.5.3.5 | the location type requested by the LCS client |  |
| EventNotifyDataType | 6.1.5.3.6 | the type of event that triggers event notification |  |
| SuccessType | 6.1.5.3.x | Success Type to indicate full or partial success |  |

Table 6.1.5.1-2 specifies data types re-used by the Ngmlc\_Location service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Ngmlc\_Location service based interface.

Table 6.1.5.1-2: Ngmlc\_Location re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Gpsi | 3GPP TS 29.571 [11] |  |  |
| Supi | 3GPP TS 29.571 [11] |  |  |
| Uri | 3GPP TS 29.571 [11] |  |  |
| AmfId | 3GPP TS 29.571 [11] |  |  |
| NfInstanceId | 3GPP TS 29.571 [11] |  |  |
| ExternalClientType | 3GPP TS 29.572 [12] |  |  |
| LocationQoS | 3GPP TS 29.572 [12] |  |  |
| LcsQosClass | 3GPP TS 29.572 [12] |  |  |
| SupportedGADShapes | 3GPP TS 29.572 [12] |  |  |
| PeriodicEventInfo | 3GPP TS 29.572 [12] |  |  |
| AreaEventInfo | 3GPP TS 29.572 [12] |  |  |
| MotionEventInfo | 3GPP TS 29.572 [12] |  |  |
| LdrType | 3GPP TS 29.572 [12] |  |  |
| LdrReference | 3GPP TS 29.572 [12] |  |  |
| AgeOfLocationEstimate | 3GPP TS 29.572 [12] |  |  |
| PositioningMethod | 3GPP TS 29.572 [12] |  |  |
| AccuracyFulfilmentIndicator | 3GPP TS 29.572 [12] |  |  |
| LmfIdentification | 3GPP TS 29.572 [12] |  |  |
| LcsServiceType | 3GPP TS 29.572 [12] |  |  |
| VelocityRequested | 3GPP TS 29.572 [12] |  |  |
| LcsPriority | 3GPP TS 29.572 [12] |  |  |
| VelocityEstimate | 3GPP TS 29.572 [12] |  |  |
| TerminationCause | 3GPP TS 29.572 [12] |  |  |
| PositioningMethodAndUsage | 3GPP TS 29.572 [12] |  |  |
| GnssPositioningMethodAndUsage | 3GPP TS 29.572 [12] |  |  |
| LcsServiceAuth | 3GPP TS 29.571 [11] |  |  |
| Ecgi | 3GPP TS 29.571 [11] |  |  |
| Ncgi | 3GPP TS 29.571 [11] |  |  |
| Altitude | 3GPP TS 29.572 [12] | Altitude |  |
| BarometricPressure | 3GPP TS 29.572 [12] | Barometric pressure |  |
| LocationPrivacyVerResult | 3GPP TS 29.518 [20] |  |  |
| ExternalGroupId | 3GPP TS 29.571 [11] | External Group Identifier |  |
| GroupId | 3GPP TS 29.571 [11] | Group Identifier |  |

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

##### 6.1.5.2.2 Type: InputData

Table 6.1.5.2.2-1: Definition of type InputData

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability | |
| gpsi | Gpsi | O | 0..1 | Generic Public Subscription Identifier  (NOTE x). |  | |
| supi | Supi | O | 0..1 | Subscription Permanent Identifier  (NOTE x). |  | |
| extGroupId | ExternalGroupId | O | 0..1 | This IE may be present when requesting LCS service for a group of target UEs, if present this IE shall contain the External Group ID  (NOTE x). |  | |
| intGroupId | GroupId | O | 0..1 | This IE may be present when requesting LCS service for a group of target UEs, if present this IE shall contain the Internal Group ID  (NOTE x). |  | |
| externalClientType | ExternalClientType | M | 1 | External client type |  | |
| locationQoS | LocationQoS | O | 0..1 | Requested location QoS |  | |
| supportedGADShapes | array(SupportedGADShapes) | O | 1..N | Supported Geographical Area Description shapes |  | |
| serviceIdentity | ServiceIdentity | O | 0..1 | Service identity |  | |
| serviceCoverage | array(E164CountryCodeOfGeographicArea) | O | 1..N | A list of E.164 country codes for geographic areas (see ITU Recommendation E.164 [13]) where the LCS client is permitted to request and receive UE location information. |  | |
| ldrType | LdrType | C | 0..1 | Location deferred request event type |  | |
| periodicEventInfo | PeriodicEventInfo | C | 0..1 | Periodic event information of the location request for a target UE |  | |
| areaEventInfo | AreaEventInfo | C | 0..1 | Area event information of the location request for a target UE |  | |
| motionEventInfo | MotionEventInfo | C | 0..1 | Motion event information of the location request for a target UE |  | |
| ldrReference | LdrReference | C | 0..1 | Notification correlation  ID  It shall be present in the request from NEF if it is allocated by NEF for the Deferred 5GC-MT-LR procedure.  It shall be present in the request from NEF for requesting location service for a group of UEs.  It shall be present in the request to VGMLC for the Deferred 5GC-MT-LR procedure. |  | |
| hgmlcCallBackUri | Uri | O | 0..1 | Notification target address for HGMLC |  |
| eventNotificationUri | Uri | O | 0..1 | The call-back Uri of NF service consumer (i.e. NEF) for implicit subscription to notification of Eventnotify.  This IE shall be included and is used to receive the location informations for UEs in the group when requesting LCS service for a group of target UEs or requesting deferred 5GC MT LCS service for a single UE. |  |
| externalClientIdentification | ExternalClientIdentification | O | 0..1 | External LCS client identification |  | |
| afId | string | O | 0..1 | The identification of AF that initiated location request |  |
| uePrivacyRequirements | UePrivacyRequirements | O | 0..1 | UE privacy requirement |  |
| lcsServiceType | LcsServiceType | O | 0..1 | LCS service type |  | |
| velocityRequested | VelocityRequested | O | 0..1 | Velocity of the target UE is requested |  | |
| priority | LcsPriority | O | 0..1 | Priority of the location request |  | |
| locationTypeRequested | LocationTypeRequested | O | 0..1 | Requested type of location, applicable to location immediate request (NOTE 2) |  | |
| maximumAgeOfLocationEstimate | AgeOfLocationEstimate | O | 0..1 | Requested maximum age of the location estimate |  | |
| amfId | AmfId | O | 0..1 | The identification of serving AMF |  | |
| codeWord | CodeWord | O | 0..1 | Code word (NOTE 1) |  | |
| NOTE 1: Checking of the Codeword in UE applies only when the Codeword parameter is present and when the codeWordCheck parameter (specified in clause 6.1.5.2.7) is present and set to TRUE.  NOTE 2: If the LocationTypeRequested parameter is set to value "NOTIFICATION\_VERIFICATION\_ONLY", then the lcsServiceAuthInfo attribute in the uePrivacyRequirements IE, if present, shall be set to either "NOTIFICATION\_ONLY" or "NOTIFICATION\_AND\_VERIFICATION\_ONLY".  NOTE x: If retrieving the location for a target UE, the UE identification (attributes gpsi and/or supi) shall be included, if retrieving the UE locations for a target group, the group identification (attributes extGroupId and/or intGroupId), UE identification and group identification shall be included exclusively. | | | | | | |

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

##### 6.1.5.2.3 Type: LocationData

Table 6.1.5.2.3-1: Definition of type LocationData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| gpsi | Gpsi | O | 0..1 | Generic Public Subscription Identitfier |  |
| supi | Supi | O | 0..1 | Subscription Permanent Identifier |  |
| locationEstimate | GeographicArea | O | 0..1 | Geographic area of the target UE |  |
| civicAddress | CivicAddress | O | 0..1 | Civic address of the target UE |  |
| ageOfLocationEstimate | AgeOfLocationEstimate | O | 0..1 | Age of location estimate |  |
| positioningDataList | array(PositioningMethodAndUsage) | O | 1..N | If present, this IE shall indicate the usage of each non-GANSS positioning method that was attempted to determine the location estimate, either successfully or unsuccessfully. |  |
| gnssPositioningDataList | array(GnssPositioningMethodAndUsage) | O | 1..N | If present, this IE shall indicate the usage of each GANSS positioning method that was attempted to determine the location estimate, either successfully or unsuccessfully. |  |
| accuracyFulfilmentIndicator | AccuracyFulfilmentIndicator | O | 0..1 | The indication whether the obtained location estimate satisfies the requested accuracy or not |  |
| ueVelocity | VelocityEstimate | O | 0..1 | Responded UE velocity, if requested and available |  |
| ldrReference | LdrReference | C | 0..1 | Notification correlation ID  It shall be present in the response to NEF if it is allocated by HGMLC for the the Deferred 5GC-MT-LR procedure. |  |
| altitude | Altitude | C | 0..1 | If present, this IE indicates the altitude of the positioning estimate.  This IE shall be sent from (V)GMLC to (H)GMLC if received by VGMLC from AMF when roaming. |  |
| servingLMFIdentification | LMFIdentification | C | 0..1 | If present, this IE contains the identification of a serving LMF for periodic or triggered location.  This IE shall be sent from (V)GMLC to (H)GMLC if received by VGMLC from AMF when roaming. |  |
| locationPrivacyVerResult | LocationPrivacyVerResult | C | 0..1 | If present, this IE contains the result of location privacy verification by UE.  The IE shall be included from (V)GMLC to (H)GMLC if received from the serving AMF by (V)GMLC when roaming and a location request with notification and privacy verification only indication is sent to the serving AMF via (V)GMLC by (H)GMLC during location request procedure.. |  |
| successType | SuccessType | C | 0..1 | This IE is only used for requesting LCS service for a group, and shall be present to indicate one of the following value.  - SUCCESS\_COMPLETELY  - SUCCESS\_PARTIALLY  The value “SUCCESS\_COMPLETELY” indicates that requesting/subscribing to LCS service is successful for all the UE(s) within the group identified by the external/internal group ID.  The value “SUCCESS\_PARTIALLY” indicates that requesting/subscribing to LCS service is only successful for a part of the UE(s) within the group identified by the external/internal group ID.  The default value of this attribute is “SUCCESS\_COMPLETELY” if this IE is not present. |  |

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

##### 6.1.5.3.x Enumeration: SuccessType

The enumeration SuccessType represents the type of success. It shall comply with the provisions defined in table 6.1.5.3.x-1.

Table 6.1.5.3.x-1: Enumeration PseudonymIndicator

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| "SUCCESS\_COMPLETELY" | It is completely successful. |  |
| "SUCCESS\_PARTIALLY" | It is partially successful. |  |

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

## A.2 Ngmlc\_Location API

openapi: 3.0.0

info:

version: '1.0.1'

title: Ngmlc\_Location

description: |

Ngmlc\_Location Service.

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***(… text not shown for clarity …)***

InputData:

type: object

required:

- externalClientType

properties:

gpsi:

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

supi:

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

extGroupId:

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

intGroupId:

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

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'

eventNotificationUri:

$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'

altitude:

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

servingLMFIdentification:

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

locationPrivacyVerResult:

$ref: 'TS29518\_Namf\_Location.yaml#/components/schemas/LocationPrivacyVerResult'

successType:

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

***(… text not shown for clarity …)***

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

- UE\_MOBILITY\_FOR\_DEFERRED\_LOCATION

- type: string

SuccessType:

anyOf:

- type: string

enum:

- SUCCESS\_COMPLETELY

- SUCCESS\_PARTIALLY

- type: string

***(… text not shown for clarity …)***

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The end of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*