**3GPP TSG-CT WG4 Meeting #111-e C4-224**

**E-Meeting, 18th – 26th August 2022 was C4-224348**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.515** | **CR** | **0082** | **rev** | **1** | **Current version:** | **17.5.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

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

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Indication of Network Assisted Positioning method | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | C4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ID\_UAS, 5G\_eLCS\_ph2 | | | | |  | ***Date:*** | | | 2022-08-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | TS 33.256 defined the Location information veracity and location tracking authorization in 5GS in clause 5.3.2 as below：  1. The USS sends the location request to UAS NF/NEF to request the UAV location or presence from network. The location request includes the GPSI of the UAV to request the location information or presence about an individual UE, or a geographic area when trying to find the information of all UAVs in an area. The LCS request also indicates the 5GS to obtain reliable UE location information, i.e. the location calculated and provided by the network.  If the USS/TPAE does not specify target 3GPP UAV ID and request UAS NF for a list of the UAVs in the geographic area and served by the PLMN, clauses 5.3.1.3 and 5.3.4 in TS 23.256 [3] apply.  2. The UAS NF/NEF first verifies the request in step 1 is authorized. When the USS sends a GPSI, this is done by checking whether the identifier of the USS sending the request matches the previously associated mapping between the GPSI and the USS identifier. When the USS request UAS NF for a list of the UAVs in the geographic area, this is done by checking the USS is authorized to receive the CAA level ID of all UAVs in a geographic area indicated by the USS. The UAS NF/NEF gets the relevant UAV(s) location information or presence from AMF or GMLC by the current location services supported by AMF or GMLC if passes the above authorization check. On the condition of the location services provided by AMF, the UE presence status is provided by reusing the Area of Interest mechanism. On the condition of the location services provided by GMLC, the GMLC indicates LMF via AMF to select Network Assisted Positioning method which relies on the location measurement from NG-RAN nodes, if receiving reliable location information request in step 1.  Based on the reply LS S3-221254 below:  **CT4 question:**  *However, there is no clear definition of high reliability requirement in Stage2. There are 2 alternatives for implementation of this indication in CT4.*  *- If the positioning for UAS requires (or will potentially require in future) some specific treatment in GMLC/LMF, it is better to extend the LCS service type by Stage 1 and Stage 2.*  *- If only the high reliability requirement is needed, i.e. the UAS NF/NEF will either use AMF with PRA mechanism or using GMLC/AMF/LMF with network assisted positioning, then an indication on GMLC API implemented by CT4 is sufficient.*  *CT4 would like to ask SA3, SA2 kindly clarify the scenario and the definition of above high reliability requirement in stage 2, thus help CT4 to select the appropriate alternative in stage 3 implementation.*  **SA3 answer:**  In general, both alternatives are acceptable from the security perspective of view. SA3 tends to recommend alternative 2 for sake of progress.  SA3 would also like to provide the background for information. As specified in TS 33.256, the location information from 5GS is used to check and verify the location information reported by UAV via the application layer. The location information from 5GS with high reliability is expected. ‘High reliability’ is clarified in the attached CR.  There is an indication to indicate 5GS to obtain reliable UE location information and implicit indicate LMF to select Network Assisted Positioning method. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | It proposes to add the indication in InputData. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | It is not aligned with Stage2 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 6.1.5.2.2, 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 introduces backward compatibile corrections to the OpenAPI files of Ngmlc\_Location API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* Begin of Changes \* \* \* \*

# 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 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 23.273: "5G System Location Services (LCS)".

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

[6] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[7] OpenAPI Initiative, "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

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

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

[10] IETF RFC 7807: "Problem Details for HTTP APIs".

[11] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[12] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[13] ITU Recommendation E.164: "The international public telecommunication numbering plan".

[14] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[15] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

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

[17] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".

[18] 3GPP TS 22.071: "Location Services (LCS); Service description; Stage 1".

[19] 3GPP TR 21.900: "Technical Specification Group working methods".

[20] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".

[21] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[x1] 3GPP TS 33.256: "Security aspects of Uncrewed Aerial Systems (UAS)".

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

#### 6.1.5.2 Structured data types

##### 6.1.5.2.1 Introduction

This clause defines the structures to be used in resource representations.

##### 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 3). |  |
| supi | Supi | O | 0..1 | Subscription Permanent Identifier  (NOTE 3). |  |
| 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 3). |  |
| 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 3). |  |
| externalClientType | ExternalClientType | M | 1 | This IE shall contain LCS client type |  |
| locationQoS | LocationQoS | O | 0..1 | Requested location QoS  Multiple QoS Class (lcsQosClass sets to "MULTIPLE\_QOS") shall only be used when GMLC support MUTIQOS feature. |  |
| 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 | AreaEventInfoExt | 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 should be included and is used to receive the location information 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  This IE may be present when being sent from HGMLC to VGMLC.  When present, it shall contain the LCS service type, which is mapped from attribute serviceIdentity of the LCS Request by the HGMLC. |  |
| 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) |  |
| scheduledLocTime | DateTime | O | 0..1 | The scheduled time for location determination |  |
| reliableLocReq | boolean | C | 0..1 | This IE shall be included with the value "true" to indicate that reliable UE location information is required, as specified in 3GPP TS 33.256 [x1] clause 5.3.2.  When present, this IE shall be set as following:  - true: the reliable UE location information is required  - false (default): the reliable UE location information is not required |  |
| 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 3: 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 \* \* \* \*

# A.2 Ngmlc\_Location API

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

schemas:

#

# COMPLEX TYPES

#

InputData:

description: Contains the input parameters in ProvideLocation service operation

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: '#/components/schemas/AreaEventInfoExt'

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'

scheduledLocTime:

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

reliableLocReq:

type: boolean

default: false

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

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