**3GPP TSG-SA3 Meeting #90-LI *s3i230420***

**Prague, Czech Republic, 27th Jun 2023 - 30th Jun 2023**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **33.128** | **CR** | **0560** | **rev** | **1** | **Current version:** | **18.4.0** |  |
|  | | | | | | | | |
| *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:*** | Correction to the provisioning for location acquisition | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | SA3-LI (OTD\_US) | | | | | | | | | |
| ***Source to TSG:*** | SA3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LI18 | | | | |  | ***Date:*** | | | 2023-06-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The current LI architecture defines Acquisition and Query functions and interfaces for specific use cases. There are additional use cases that would be able to use the same architectures. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This contribution proposes to define generic versions of these functions and interfaces and re-define the existing functions and interfaces as specific versions of the generic functions. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | There will end up being extensive duplication within the document when additional query/acquisition capabilities are added. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.11, 5.12, 7.3.5.4.1, 7.3.5.5.2, TS33128Dictionaries.xml | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 is associated with the following changes in the Forge: Merge request: [!200](https://forge.3gpp.org/rep/sa3/li/-/merge_requests/200)  Commit hash: [85802e40bd1345655bcf939bcdb62e9a23d7d98a](https://forge.3gpp.org/rep/sa3/li/-/merge_requests/200/diffs?commit_id=85802e40bd1345655bcf939bcdb62e9a23d7d98a) | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | s3i230397 | | | | | | | | |

## \*\*\*\* START OF FIRST CHANGE (MAIN DOCUMENT) \*\*\*

## 5.11 Protocols for LI\_HILA

### 5.11.1 General

Functions having a LI\_HILA interface shall support the use of ETSI TS 103 120 [6] to realise the interface.

In the event of a conflict between ETSI TS 103 120 [6] and the present document, the terms of the present document shall apply.

Prior to issuing of location acquisition requests, the LEA shall provide an authorization for these requests This is done by issuing a warrant over the LI\_HI1 interface prior to issuing the LI\_HILA requests as described in clause 5.4.3.

### 5.11.2 Usage for realising LI\_HILA

#### 5.11.2.1 Request structure

LI\_HILA requests are represented by issuing a CREATE request for an LDTaskObject (see ETSI TS 103 120 [6] clause 8.3), populated as follows:

Table 5.11.2.1-1: LDTaskObject representation of LI\_HILA request

|  |  |  |
| --- | --- | --- |
| Field | Value | M/C/O |
| Reference | The LDID (as in ETSI TS 103 280 [97] with country code, unique LEA identifier, and the LIID used in the warrant as unique request identifier. | M |
| DesiredStatus | Shall be set to "AwaitingDisclosure". | M |
| RequestDetails | Set according to table 5.11.2.1-2 below. | M |
| DeliveryDetails | Shall be set to indicate the delivery destination for the LI\_HILA records (see clause 5.11.2.3 and ETSI TS 103 120 [6] clause 8.3.6.2) unless the delivery destination is known via other means. | C |

The use of any other LDTaskObject parameter is outside the scope of the present document.

Table 5.11.2.1-2: RequestDetails structure

|  |  |  |
| --- | --- | --- |
| Field | Value | M/C/O |
| Type | Shall be set to one of the HIARequestType values as defined in table 5.11.2.1-3. | M |
| RequestValues | Set to the target identifier (see clause 5.11.2.2). | M |

Table 5.11.2.1-3: RequestType Dictionary for LI\_HILA

|  |  |
| --- | --- |
| Dictionary Owner | Dictionary Name |
| 3GPP | RequestType |
|  |  |
| Defined DictionaryEntries | |
| Value | Meaning |
| LocationAcquisition | A request for location information of the target, consisting at least of the TAI and the ECGI/NCGI. |

###### 5.11.2.2 Request parameters

The RequestValues field shall contain at least one of the following:

- IMSI, given in the IMSI format as defined in ETSI TS 103 120 [6] clause C.2.

- MSISDN, given in the E.164 format as as defined in ETSI TS 103 120 [6] clause C.2.

- SUPI, given in either SUPIIMSI or SUPINAI formats as defined in ETSI TS 103 120 [6] clause C.2.

- GPSI, given in either GPSIMSISDN or GPSINAI formats as defined in ETSI TS 103 120 [6] clause C.2.

The LDTaskObject for a location acquisition request may also contain the "ReqCurrentLoc" LDTask flag (see table 5.11.2.2-1). If this flag is present, the LAF shall set the ReqCurrentLoc parameter in the LI\_XLA request sent to the LARF to true. If this flag is absent, the LAF shall either set the ReqCurrentLoc parameter in the LI\_XLA request sent to the LARF to false or not include this parameter.

Table 5.11.2.2-1: LDTaskFlags for LI\_HILA Requests

|  |  |
| --- | --- |
| Dictionary Owner | Dictionary Name |
| 3GPP | LIHILAFlags |
| Defined DictionaryEntries | |
| Value | Meaning |
| ReqCurrentLoc | Indicates whether the current location of the UE is requested. |

##### 5.11.2.3 Response structure

If delivery via the LI\_HI2 is required, the LARF will send the acquisition response as either an AMFLocationUpdate (in case of the 5GC) or an MMELocationUpdate (in case of the EPC) xIRI record to the MDF2 via LI\_X2\_LA. Full details are given in clause 7.3.5.6.

If delivery via the LI\_HILA is required, the LARF returns the acquisition response as part of the LI\_XLA response, which the LAF then transforms into a LI\_HILA response given as a LocationResponseDetails structure (see table 5.11.2.3-1). Full details are given in clause 7.3.5. LocationResponseDetails contains LocationOutcome records.

The fields of the LocationResponseDetails structure shall be set as follows:

Table 5.11.2.3-1: LocationResponseDetails

|  |  |  |
| --- | --- | --- |
| Field | Description/Value | M/C/O |
| LocationOutcomes | Locations of the target if determined by the network, or failure causes. The format of each LocationOutcome shall be set as defined in table 5.11.2.3-3 in case of EPC or as defined in table 5.11.2.3-2 in case of 5GC. | C |

Table 5.11.2.3-2: LocationOutcome

|  |  |  |
| --- | --- | --- |
| Field | Description/Value | M/C/O |
| SUPI | SUPI associated with the UE for which location is returned. | M |
| GPSI | GPSI associated with the UE for which location is returned. Shall be included if the GPSI of the UE for which location is returned is known. | C |
| Location | Location of the target if determined by the network.  - It shall include a JSON ProvideLocInfo structure as defined in TS 29.518 [22] clause 6.4.6.2.6, in base-64 encoding, in case the location could be determined. | C |
| FailureCause | If the location acquisition procedure fails, this parameter shall be included.  The values for this parameter shall be derived from values of the failure response received from the AMF.  - If a ProblemDetails structure is returned, the errorDetails field shall be populated with a JSON ProblemDetails structure as defined in TS 29.571 [17] clause 5.2.4.1 in base-64 encoding. | C |

Table 5.11.2.3-3: EPCLocationOutcome

|  |  |  |
| --- | --- | --- |
| Field | Description/Value | M/C/O |
| IMSI | IMSI associated with the UE for which location is returned. | M |
| MSISDNs | List of MSISDNs associated with the UE for which location is returned, if available. | C |
| Location | Location of the target if determined by the network.  It shall include the MME-Location-Information AVP as defined in TS 29.272 [108] clause 7.3.115, in base-64 encoding, in case the location could be determined. | C |
| FailureCause | If the location acquisition procedure fails, this parameter shall be included.  The value of this parameter shall be set to the Result-Code as returned from the MME. | C |

Responses are delivered within a DELIVER Request (see ETSI TS 103 120 [6] clause 6.4.10) containing a DeliveryObject (see ETSI TS 103 120 [6] clause 10).

The DeliveryObject Reference field (see ETSI TS 103 120 [6] clause 10.2.1) shall be set to the Reference of the LDTaskObject used in the request to provide a correlation between request and response. The DeliveryID, SequenceNumber, and LastSequence fields shall be set according to ETSI TS 103 120 [6] clause 10.2.1.

The content manifest (see ETSI TS 103 120 [6] clause 10.2.2) shall be set to indicate the present document and the type of response using the following Specification Dictionary extension.

Table 5.11.2.3-4: Specification Dictionary

|  |  |
| --- | --- |
| Dictionary Owner | Dictionary Name |
| 3GPP | ManifestSpecification |
| Defined DictionaryEntries | |
| Value | Meaning |
| HILAResponse | The delivery contains a LocationResponseDetails (see Annex I) |

## 5.12 Protocols for LI\_XLA

### 5.12.1 General

Functions having a LI\_XLA interface shall support the use of ETSI TS 103 221-1 [7] to realise the interface.

In the event of a conflict between ETSI TS 103 221-1 [7] and the present document, the terms of the present document shall apply.

### 5.12.2 Usage for realising LI\_XLA

LI\_XLA requests are realised using ETSI TS 103 221-1 [7] to transport the LocationAcquisitionRequest and LocationAcquisitionResponse messages (which are derived from X1RequestMessage and X1ResponseMessage respectively, as defined in ETSI TS 103 221-1 [7]), see Annex I. The LocationAcquisitionRequest message is populated as follows:

Table 5.12.2.1-1: LocationAcquisitionRequest representation for an XLA request

|  |  |  |
| --- | --- | --- |
| Field | Description | M/C/O |
| RequestValues | Set to the target identifier specified in the LI\_HILA request (see clause 5.11.2). | M |
| ReqCurrentLoc | Indicates whether the current location of the UE is requested.  If set to true, the LARF shall:  - in case of the EPC, invoke the Insert Subscriber Data Procedure with the IDR-Flags with the "EPS Location Information Request" and the "Current Location Request" bit set (TS 29.272 [108] clause 5.2.2.1.2) at the MME, as described in clause 7.3.5.4.2.  - in case of the 5GC, invoke a ProvideLocationInfo service operation (see TS 29.518 [16] clause 5.5.2.4) as described in clause 7.3.5.4.3.  If set to false, the LARF shall use the location information in the UE context at the MME/AMF.  This parameter shall be set to true if the request received over LI\_HILA had the ReqCurrentLoc flag set and shall be set to false if the request received over LI\_HILA did not have the ReqCurrentLoc flag. | M |
| HILADelivery | Based on the information received over the LI\_HI1 interface (see 5.4.3). If set, the LARF shall return the location information to the LAF (see NOTE). | C |
| HI2Delivery | Based on the information received from the LI\_HI1 interface (see 5.4.3). If present, the format shall be as defined in table 5.12.2.1-2 (See NOTE). | C |
| NOTE: At least one delivery method is required | | |

Table 5.12.2.1-2: HI2Delivery structure

|  |  |  |
| --- | --- | --- |
| Field | Description | M/C/O |
| XID | The value shall be used by the LARF to fill the XID field of the X2 PDUs. The value shall be the same as the one provisioned on the MDF2 (see clause 7.3.5.6.2). | C |
| ListOfDestinations | Delivery endpoints for LI\_X2\_LA for the LARF in the MME/AMF. This field shall be present unless the delivery details are known via other means. | C |

Successful LI\_XLA responses are returned using the LocationAcquisitionResponse message. Error conditions are reported using the normal error reporting mechanisms described in ETSI TS 103 221-1 [7].

LI\_XLA query responses are represented in XML following the LocationAcquisitionResponse schema (see Annex I). If delivery via the LI\_HILA was specified, the fields of the LocationAcquisitionResponse record shall be populated as described in clause 5.11.2.3. If delivery via the LI\_HI2 was specified in the original request, the LARF shall leave the LocationAcquisitionResponse record field unpopulated.

## \*\*\*\* START OF NEXT CHANGE (MAIN DOCUMENT) \*\*\*

##### 7.3.5.4.1 General description

Upon the receipt of a location acquisition request over LI\_XLA, the LARF shall first check that the UE is registered at the MME/AMF. If it is registered the LARF will check the UE context at the MME/AMF to see if the current location for the UE is known.

The LARF/MME/AMF shall override any user consent, privacy and paging restrictions concerned with location acquisition that may apply to the target UE. The LARF/MME/AMF shall ensure that overriding these restrictions does not result in additional detectability issues.

If delivery via the LI\_HI2 is required, the LARF will send the acquisition response as either an AMFLocationUpdate (in case of the 5GC) or an MMELocationUpdate (in case of the EPC) xIRI record to the MDF2 via LI\_X2\_LA. Full details are given in clause 7.3.5.6.

If delivery via the LI\_HILA is required, the LARF returns the acquisition response as part of the LI\_XLA response, which the LAF then transforms into a LI\_HILA response given as a LocationResponseDetails structure (see table 5.11.2.3-1). Full details are given in clause 7.3.5.5 and clause 5.11.2.3.

## \*\*\*\* START OF NEXT CHANGE (MAIN DOCUMENT) \*\*\*

##### 7.3.5.5.2 Location acquisition response over LI\_HILA

On receiving a LocationAcquisitionResponse message containing a LocationResponseDetails field, the LAF shall return the results to the LEA over the LI\_HILA interface. The LI\_HILA response is represented as XML following the LocationResponseDetails type definition (see Annex I) as described in clause 5.11.2.3.

Table 7.3.5.5.2-1: Void



## \*\*\*\* END OF MAIN DOCUMENT CHANGES \*\*\*

## \*\*\*\* START OF CHANGES (ATTACHMENTS) \*\*\*

---a/33128/r18/TS33128Dictionaries.xml  
+++b/33128/r18/TS33128Dictionaries.xml

@@ -72,7 +72,17 @@

72 72 </DictionaryEntry>

73 73 </DictionaryEntries>

74 74 </Dictionary>

75 - <Dictionary> <!--ManifestSpecification: see Clause 5.7.2 Table 5.7.2-6 -->

- 75 <Dictionary> <!--LIHILAFlags: see Clause 5.11.2.2 Table 5.11.2.2-1 -->

- 76 <Owner>3GPP</Owner>

- 77 <Name>LIHIAFlags</Name>

- 78 <DictionaryEntries>

- 79 <DictionaryEntry>

- 80 <Value>ReqCurrentLoc</Value>

- 81 <Meaning>Indicates whether the current location of the UE is requested.</Meaning>

- 82 </DictionaryEntry>

- 83 </DictionaryEntries>

- 84 </Dictionary>

- 85 <Dictionary> <!--ManifestSpecification: see Clause 5.7.2 Table 5.7.2-6 -->

76 86 <Owner>3GPP</Owner>

77 87 <Name>ManifestSpecification</Name>

78 88 <DictionaryEntries>

## \*\*\*\* END OF ALL CHANGES \*\*\*