**3GPP SA3LI#81-e-a *S3i210275***

**eMeeting, 12-16 April 2021**

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| *CR-Form-v11.4* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **33.128** | **CR** |  | **rev** |  | **Current version:** | **16.6.0** |  |
|  | | | | | | | | |
| *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:*** | LI state information transfer in SMF sets | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | SA3 LI (PIDS) | | | | | | | | | |
| ***Source to TSG:*** | SA3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2021-04-07 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | ***C*** |  | | | | | ***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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | SMF sets share SM context information and together handle PDU sessions for a group of users. The same PDU session can be managed by different SMs, requiring the TF in the SMF sets to share LI state information, mainly the XID. The behaviour of LI functions in SMF sets is currently undefined and can violate LI requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Defining LISSF function and LI\_ST interface. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Implementation of LI for SMF sets remains undefined and confusing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 3.3, 4.2, 5.X, 6.2.3.X | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS/TR 33.127 CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |

-------------------------FIRST CHANGE-------------------------

## 3.3 Abbreviations

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

ADMF LI Administration Function

CC Content of Communication

CSP Communication Service Provider

CUPS Control and User Plane Separation

ICF Identifier Caching Function

IEF Identifier Event Function

IQF Identifier Query Function

IRI Intercept Related Information

LALS Lawful Access Location Services

LEA Law Enforcement Agency

LEMF Law Enforcement Monitoring Facility

LI Lawful Interception

LICF Lawful Interception Control Function

LI\_HI1 LI\_Handover Interface 1

LI\_HI2 LI\_Handover Interface 2

LI\_HI3 LI\_Handover Interface 3

LI\_HI4 LI\_Handover Interface 4

LI\_HIQR Lawful Interception Handover Interface Query Response

LIPF Lawful Interception Provisioning Function

LIR Location Immediate Request

LI\_SI Lawful Interception System Information Interface

LISSF Lawful Interception State Storage Function

LI\_ST Lawful Interception State Transfer Interface

LI\_X1 Lawful Interception Internal Interface 1

LI\_X2 Lawful Interception Internal Interface 2

LI\_X3 Lawful Interception Internal Interface 3

LI\_XEM1 Lawful Interception Internal Interface Event Management Interface 1

LI\_XER Lawful Interception Internal Interface Event Record

LI\_XQR Lawful Interception Internal Interface Query Response

LTF Location Triggering Function

MDF Mediation and Delivery Function

MDF2 Mediation and Delivery Function 2

MDF3 Mediation and Delivery Function 3

MM Multimedia Message

MMS Multimedia Message Service

NPLI Network Provided Location Information

O&M Operations and Management

POI Point Of Interception

SDP Session Description Protocol

SIRF System Information Retrieval Function

SOI Start Of Interception

TF Triggering Function

xCC LI\_X3 Communications Content.

xIRI LI\_X2 Intercept Related Information

------------------------SECOND CHANGE-----------------------

## 4.2 Basic principles for internal interfaces

This clause lists the internal interfaces shown in clause 4.1, indicates the protocol used to realise each interface, and gives a reference to the relevant clauses of the present document that specify how the protocol is to be used for the given interface.

Table 4.2-1: Internal interfaces and related protocols

|  |  |  |  |
| --- | --- | --- | --- |
| Interface | Description | Protocol used to realise interface | Usage |
| LI\_SI | Used to provide system information to the LIPF from the SIRF. | Out of scope of the present document. |  |
| LI\_X1 | Used to configure and audit Directly-provisioned POIs, TFs and MDFs. | ETSI TS 103 221-1 [7]. | See clause 5.2.2 |
| LI\_X1 (Management) | Used to audit Triggered POIs. | ETSI TS 103 221-1 [7]. | See clause 5.2.3 |
| LI\_X2 | Used to pass xIRI from IRI-POIs to the MDF2. | ETSI TS 103 221-2 [8]. | See clause 5.3.2 |
| LI\_X3 | Used to pass xCC from CC-POIs to the MDF3. | ETSI TS 103 221-2 [8]. | See clause 5.3.3 |
| LI\_T2 | Used to pass triggering information from the IRI-TF to a Triggered IRI-POI. | ETSI TS 103 221-1 [7]. | See clause 5.2.4 |
| LI\_T3 | Used to pass triggering information from a CC-TF to a Triggered CC-POI. | ETSI TS 103 221-1 [7]. | See clause 5.2.4 |
| LI\_XQR | Used to pass queries from IQF to ICF and responses from ICF to IQF. | ETSI TS 103 221-1 [7]. | See clause 5.8 |
| LI\_XER | Used to pass identifier association event records from IEFs to ICF. | See Clause 5.9. | See clause 5.9 |
| LI\_XEM1 | Used by the LICF/LIPF to manage IEFs and ICF. | ETSI TS 103 221-1 [7]. | See clause 5.2.7 |
| LI\_ADMF | Used to pass intercept provisioning information form the LICF to the LIPF. | Out of scope of the present document. |  |
| LI\_MDF | Used by MDF2 and MDF3 in interactions necessary to correctly generate CC and IRI from xCC and xIRI. | Out of scope of the present document. |  |
| LI\_IQF | Used to pass information related to IEFs and ICF to IQF. | Out of scope of the present document. |  |
| LI\_ST | Used to transfer LI state information to and from the LISSF. | Out of scope of the present document. |  |

-------------------------THIRD CHANGE------------------------

## 5.X Protocols for LI\_ST interface

LI\_ST messages are realised using a TLS connection as defined in clause 6.2.3.X.

------------------------FOURTH CHANGE-----------------------

#### 6.2.3.X Sharing LI state information over LI\_ST

TFs in SMFs in SMF sets need to share LI state information to avoid losing track of the XIDs and CorrelationIDs used in the tasks activated in the POI in the UPF after the TF that originally activated the task is removed.

When the TF in a SMF in a SMF set is provisioned by the LIPF with access to a LISSF and it is provisioned against a specific target, if the SMF receives SM context information from another SMF in the set or from a UDSF matching the target, the TF shall request the related LI state information from the LISSF. Furthermore, the TF shall keep the relevant LI state updated in the shared LISSF. Keeping the records up to date involves storing records related to newly activated tasks and modified tasks , and removing old records once they are not needed anymore, for example after a task that has been successfully deactivated.

The LIPF may request, store or remove any LI state records at any moment. On top of that the LIPF can revoke the credentials of any LI function to use the LI\_ST interface.

The LI state stored in the LISSF shall be indexed based on the ProductID of the related task in the POI of the UPF, which is the XID of the task in the TF in the SMF. The rest of the relevant LI state shall be stored in a compound type described as follows.

Table 6.2.3-X: LIStateValue contents

|  |  |
| --- | --- |
| Field Name | Description |
| XID | The XID allocated by the TF for the task activated in the POI in the UPF |
| PDUSessionID | Identifier for the PDU session related to the task, as described below |
| CorrelationID | Correlation ID to assign to interception product generated by the POI in the UPF. |

The PDUSessionID used in the LIStateValue shall be one of the following identifiers:

* PDUSessionID
* TBD

The LI state related to a task in the UPF POI shall be stored in the LISSF when the task is activated or modified, and it can be achieved by sending a message with the following details.

Table 6.2.3-X+1: StoreState message for storing state information in the LISSF

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| XID | The XID allocated by the TF for the task activated in the POI in the UPF | M |
| LIStateValue | LI state as defined in Table 6.2.3-X | M |

The LISSF shall acknowledge back to the sender that the meassage was successfully received and processed.

When an SMF in a SMF set receives SM context information related to a target provisioned in the TF, the TF shall request the records associated to the XID of the Task Object in the TF related to that same target, which is the ProductID used in the LISSF records and in the tasks activated in the UPF. The TF can request the records with the following details.

Table 6.2.3-X+2: RequestState message for requesting state information in the LISSF.

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| ProductID | Shall be set to the XID of the Task Object associated with the interception at the TF. | M |

This request will be answered by the LISSF using the following details.

Table 6.2.3-X+3: AnswerRequestState message for answering a state information request to the LISSF.

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| Result | Can be SuccessEmpty, SuccessHit or Error | M |
| LIStateValueList | List of all the LIStateValues matching the requested ProductID | C |
| ProductID | Shall be set to the XID of the Task Object associated with the interception at the TF. | M |

If there aren’t any records matching the specified ProductID, the LISSF shall use the SuccessEmpty value in the Result field. The XIDList, PDUSessionIDList and the CorrelationIDList may be omitted, and the ProductID shall be set to the ProductID used in the request.

If there are records related to the requested ProductID, the LISSF shall use the SuccessHit value in the Result field. It must return all of the records matching the requested ProductID keeping the same order in the XIDList, the PDUSessionIDList and the CorrelationIDList.

If the request cannot be processed, the LISSF shall use Error in the Result and the ProductID of the request. The XIDList, the PDUSessionIDList and the CorrelationIDList may be omitted. Additionally, the LISSF shall send an error report to the LIPF specifying the cause of the error and, if applicable, the identity of the function whose request failed.

When a task is deactivated successfully in the UPF POI (i.e. the DeactivateTask message is sent and a successful response is received), the TF shall remove the LI state record from the LISSF by sending a message with the following details.

Table 6.2.3-X+4: RemoveState message for removing state information in the LISSF

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| XID | The XID allocated by the TF for the task activated in the POI in the UPF | M |
| ProductID | Shall be set to the XID of the Task Object associated with the interception at the TF. | M |

The LISSF shall acknowledge back to the sender that the meassage was successfully received and processed.

The TF needs to specify the XID in order to avoid removing the LI state related to the same ProductID but a different task in the UPF POI, for example if there is more than one PDU session.

--------------------THE END OF CHANGES--------------------