**3GPP SA3LI#85e-a *S3i220208***

**eMeeting, 25 -29 April 2022**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **33.127** | **CR** | **0164** | **rev** | 1 | **Current version:** | **16.10.0** |  |
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| *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:***  | Inconsistent use of IEF, ICF and IQF terminology |
|  |  |
| ***Source to WG:*** | SA3-LI (ZITiS) |
| ***Source to TSG:*** | SA3 |
|  |  |
| ***Work item code:*** | LI16 |  | ***Date:*** | 2022-04-29 |
|  |  |  |  |  |
| ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | Chapter 3.3 Abbreviations defines ICF, IEF and IQF as Identifier Caching Function, Identifier Event Function and Identifier Query Function, respectively, however sections 5.7.2.1, 5.7.2.2 and 5.7.2.3 use the terms Identity Query Function, Identity Event Function and Identity Caching Function, respectively. |
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| ***Summary of change:*** | Clarification regarding the usage of the terms “identity” and “identifier”. |
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| ***Consequences if not approved:*** | Inconsistent terminology might create avoidable confusions. |
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| ***Clauses affected:*** | 3.3, 5.7.1, 5.7.2.1, 5.7.2.2, 6.2.2A.1, 6.2.2A.2, 7.7.1 |
|  |  |
|  | **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's revision history:*** |  |

##### \*\*\* 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].

5GC 5G Core Network

5GS 5G System

AAnF AKMA Anchor Function

ADMF LI Administration Function

AF Application Function

AF\_ID Application Function Identity

AKA Authentication and Key Agreement

A-KID AKMA Key IDentifier

AKMA Authentication and Key Management for Applications

AMF Access and Mobility Management Function

AS Application Server

AUSF Authentication Server Function

BBIFF Bearer Binding Intercept and Forward Function

BSS Business Support System

CAG Closed Access Group

CC Content of Communication

CP Control Plane

CPIM Common Presence and Instant Messaging

CPS Call Placement Service

CSI Cell Supplemental Information

CSP Communication Service Provider

CUPS Control and User Plane Separation

DN Data Network

DNAI Data Network Access Identifier

DoNAS Data over NAS

EAP Extensible Authentication Protocol

eCNAM Enhanced Calling Name

E-CSCF Emergency – Call Session Control Function

GPSI Generic Public Subscription Identifier

HMEE Hardware Mediated Execution Enclave

HR Home Routed

IBCF Interconnection Border Control Functions

ICF Identity Caching Function

IEF Identity Event Function

IMS-AGW IMS Access Gateway

IM-MGW IM Media Gateway

IP Interception Product

IQF Identity Query Function

IRI Intercept Related Information

KAF AKMA Application Key

KAKMA AKMA Anchor Key

KID Key IDentifier

KLI Decryption key(s) for services encrypted by CSP-provided keys

KSF Key Server Function

LALS Lawful Access Location Services

LBO Local Break Out

LEA Law Enforcement Agency

LEMF Law Enforcement Monitoring Facility

LI Lawful Interception

LI CA Lawful Interception Certificate Authority

LICF Lawful Interception Control Function

LI\_HI1 Lawful Interception Handover Interface 1

LI\_HI2 Lawful Interception Handover Interface 2

LI\_HI3 Lawful Interception Handover Interface 3

LI\_HI4 Lawful Interception Handover Interface 4

LI\_HIQR Lawful Interception Handover Interface Query Response

LIID Lawful Interception Identifier

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\_T1 Lawful Interception Internal Triggering Interface 1

LI\_T2 Lawful Interception Internal Triggering Interface 2

LI\_T3 Lawful Interception Internal Triggering Interface 3

LI\_X0 Lawful Interception Internal Interface 0

LI\_X1 Lawful Interception Internal Interface 1

LI\_X2 Lawful Interception Internal Interface 2

LI\_X3 Lawful Interception Internal Interface 3

LI\_X3A Lawful Interception Internal Interface 3 Aggregator

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

LMF Location Management Function

LMISF LI Mirror IMS State Function

LMISF-CC LMISF for the handling of CC

LMISF-IRI LMISF for the handling of IRI

LTF Location Triggering Function

MA Multi-Access

MANO Management and Orchestration

MDF Mediation and Delivery Function

MDF2 Mediation and Delivery Function 2

MDF3 Mediation and Delivery Function 3

MRFP Multimedia Resource Function Processor

MSRP Message Session Relay Protocol

N3A Non-3GPP Access

N3IWF Non 3GPP Inter Working Function

N9HR N9 Home Routed

NAS Non-Access Stratum

NEF Network Exposure Function

NFV Network Function Virtualisation

NFVI Network Function Virtualisation Infrastructure

NFVO Network Function Virtualisation Orchestrator

NIDD Non-IP Data Delivery

NPLI Network Provided Location Information

NR New Radio

NRF Network Repository Function

NSSF Network Slice Selection Function

OSS Operations Support System

PAG POI Aggregator

PCF Policy Control Function

P-CSCF Proxy - Call Session Control Function

PEI Permanent Equipment Identifier

PGW PDN Gateway

PGW-C PDN Gateway Control Plane

PGW-U PDN Gateway User Plane

POI Point Of Interception

PLMN Public Land Mobile Network

PTC Push to Talk over Cellular

RCD Rich Call Data

RCS Rich Communication Suite

S8HR S8 Home Routed

SCEF Service Capability Exposure Function

SCS Service Capability Server

SGW Serving Gateway

SGW-C Serving Gateway Control Plane

SGW-U Serving Gateway User Plane

SHAKEN Signature-based Handling of Asserted information using toKENs

SIRF System Information Retrieval Function

S-CSCF Serving - Call Session Control Function

SIP Session Initiation Protocol

SMF Session Management Function

SMSF SMS-Function

STF Security Terminating Function

STIR Secure Telephony Identity Revisited

SUCI Subscriber Concealed Identifier

SUPI Subscriber Permanent Identifier

TF Triggering Function

TLS Transport Layer Security

TNGF Trusted Non-3GPP Gateway Function

TrGW Transit Gateway

TWIF Trusted WLAN Interworking Function

UDM Unified Data Management

UDR Unified Data Repository

UDSF Unstructured Data Storage Function

UPF User Plane Function

VNF Virtual Network Function

VNFC Virtual Network Function Component

W-AFG Wireline Access Gateway Function

xCC LI\_X3 Communications Content

xIRI LI\_X2 Intercept Related Information

##### \*\*\* End of First Change \*\*\*

##### \*\*\* Second Change \*\*\*

### 5.7.1 General

3GPP networks use temporary identifiers in place of permanent identifiers to ensure that identities which are visible on exposed interfaces (e.g. RAN) cannot be used to track or degrade the privacy of a subscriber. For LI purposes, CSPs are required to be able to provide real-time association between temporary and permanent identifiers where the use of such identifier associations impact the ability of the LEA to uniquely identify the UE, subscriber or true permanent identifiers associated with a service.

The present document defines two sets of capabilities which allow CSPs to report such association to LEAs:

- Real-time reporting of associations as observed by POIs as part of network access, target communications and service usage.

- Dedicated real-time query, lookup and reporting of identifier associations.

For real-time reporting based on POI observation, associations are reported through a combination of dedicated event records sent from the POI to the MDF over LI\_X2 and through inclusion of specific parameters in other communications service records reported over LI\_X2.

For dedicated query, lookup and reporting, figure 5.7-1 shows the high-level architecture used to support identifier association query and response requirements. The Identifier Event Function (IEF) provides the Identifier Caching Function (ICF) with the events necessary to answer the identifier association queries from the IQF. LEAs are able to issue real-time queries to the Identifier Query Function (IQF), which in turn queries the ICF.

 

Figure 5.7-1 High-level identifier retrieval via Query and Response.

The IQF and ICF shall support the following query types:

- Single query and response.

- Single query and response followed by triggered real-time reporting of any subsequent changes reported to the ICF (see NOTE 2).

Within the present document, only a single ICF for all IEFs is supported.

Within the present document, interfaces and generic functionality for dedicated identifier query and response are defined in this clause, while specific instances of the IEFs are defined within clause 6 and the ICF in clause 7.

For each request over LI\_HIQR, the LEA shall provide a legal warrant/authorisation unique identifier. In addition, depending on the scenario, the LEA needs to provide, the observed identity (temporary or permanent), along with the serving cell identity, tracking area identifier, and time of observation by LEA.

The IQF shall obtain in real-time the identifier associations which match the LEA query from the ICF and provide a response to the LEA over LI\_HIQR.

In some cases, it may not be possible to establish a single unique identifier association given the information provided by the LEA. IQF handling in such a scenario is subject to the authorisation in the warrant and is outside the scope of the present document.

NOTE 1: If the LEA is unable to provide the tracking area associated with an observed temporary identifier this may prevent the CSP from uniquely associating the identifier to the correct UE.

NOTE 2: Single query and response followed by triggered real-time reporting of any subsequent changes detected by the IEF is only applicable to queries based on a permanent identifier where the changes reported are new temporary identifiers to which that permanent identifier has been associated.

NOTE 3: The terms identifier and identity are used interchangeably in clause 5.7. This also applies to the naming of functions like IQF.

##### \*\*\* End of Second Change \*\*\*

##### \*\*\* Third Change \*\*\*

5.7.2.1 Identity Query Function (IQF)

The IQF is the function responsible for receiving and responding to dedicated LEA real-time queries for identifier associations. The IQF is a sub-function of the ADMF.

On receiving a valid query, the IQF shall query the ICF in order to obtain the required mapped identities. The IQF shall be able to support both association from permanent identifiers to temporary identifiers and from temporary identifiers to permanent identifiers.

NOTE 1: Only queries based on applicable subscription permanent identifiers or associated temporary identifiers are supported by the present document. Queries based on ME hardware identifiers or communications services identifiers (e.g. E.164 numbers) are not supported by the IQF.

NOTE 2: A specific query response to the LEA may require both permanent and temporary identifiers to be returned in a single response for a given query. For example, if an LEA queries using a temporary identifier, then it may be necessary to respond with a permanent identifier, plus other associated temporary identifiers in order to fulfil the query.

The IQF shall only support queries that are received from the LEA within the caching duration and shall reject any queries from the LEA which fall outside those time limits.

NOTE 3: It may not always be possible for the CSP to provide an answer due to association information no longer being available in the network. The IQF shall provide support for multiple LEA scenarios. The IQF shall be able to support different query constraints for different LEAs.

NOTE 4: Since IEF event generation and ICF temporary caching applies to all UEs served by the parent NF, any multiple LEA scenarios or differences in requirements are handled by the IQF only and no specific support is provided by IEF or ICF.

The IQF shall support both query and response types as defined in clause 5.7.1.

##### \*\*\* End of Third Change \*\*\*

##### \*\*\* Fourth Change \*\*\*

#### 5.7.2.2 Identity Event Function (IEF)

The IEF is the function responsible for observing and detecting identifier association changes within its parent NF and providing those changes in the form of event records to the ICF over LI\_XER.

IEFs may be co-located with POIs but may also be placed in other NFs where the NFs handling identifier association do not otherwise support POI functionality.

The IEF shall be able to support event records to the ICF when associations are updated. Association events include both allocation or deallocation events for temporary idenifiers managed by the IEF’s parent NF and for identifier associations which are registered or deregistered in the IEF’s parent NF but the identifier allocation is not controlled by that NF.

The IEF shall support activation and deactivation of IEF association reporting capabilities, as controlled by the LICF (proxied by the LIPF) over the LI\_XEM1 interface.

When IEF reporting capabilities are activated, the IEF shall obtain the current allocation and registration state of all UEs known to the parent NF, (where that information has been retained in the NF as part of normal network operations) and send this as a series of allocation/registration events to the ICF.

NOTE: The IEF can only report on associations that occurred before activation of the IEF if those associations remain valid for UEs which are still served by the parent NF (some allocations may not be retained by the parent NF). Therefore, not all UE identifier associations may be available at IEF activation (e.g. due to NF or UE mobility) and therefore ICF caching may be incomplete until network reauthentication timers or similar reallocation timers have refreshed all served UEs as part of normal network operation. Such incomplete data will result in no matching identifier responses from the ICF.

When IEF reporting capabilities are deactivated, the IEF shall immediately stop sending event records to the ICF.

##### \*\*\* End of Fourth Change \*\*\*

##### \*\*\* Fifth Change \*\*\*

#### 6.2.2A.1 General

The AMF shall provide IEF capabilities. The IEF present in the AMF shall support LI\_XEM1 interface and upon activation shall provide IEF events to the ICF over LI\_XER interface.

The IEF shall not generate events prior to UEs being successfully registered by the AMF onto the network.

##### \*\*\* End of Fifth Change \*\*\*

##### \*\*\* Sixth Change \*\*\*

#### 6.2.2A.2 IEF Events

The IEF present in the AMF shall generate report records, when it detects the following specific events or information for any UE:

- Association of a 5G-GUTI to a SUPI (this may also include SUCI to SUPI association).

- De-association of a 5G-GUTI from a SUPI.

NOTE1: The de-association event is only generated if a new 5G-GUTI is not allocated to a SUPI to update a previous association (e.g. at inter-AMF handover).

NOTE 2: For SUCIs seen during registration, they shall only be reported if UE registration is successfully completed.

The association event shall be generated by the IEF in the AMF whenever the AMF initiates any action or procedure for which a new allocated 5G-GUTI is sent to the UE regardless of whether the action or procedure is completed successfully.

##### \*\*\* End of Sixth Change \*\*\*

##### \*\*\* Seventh Change \*\*\*

### 7.7.1 General

The ICF is responsible for receiving identity caching events from all IEFs in the network over the LI\_XER interface and handling queries from the IQF over the LI\_XQR interface to the IQF as defined in clause 5.7.

The temporary cache duration shall be configurable by the LICF on a per CSP network basis.

NOTE: The terms identifier and identity are used interchangeably in clause 7.7. This also applies to the naming of functions like IQF.

##### \*\*\* End of Seventh Change \*\*\*

##### \*\*\* End of All Changes \*\*\*