**3GPP TSG-SA3 Meeting #89-LI *s3i230303***

**Washington DC, United States, 25th Apr 2023 - 28th Apr 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **33.127** | **CR** | **0211** | **rev** | **1** | **Current version:** | **18.3.0** |  |
|  |
| *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:***  | Addition of LI for Trace at the AMF Stage 2 |
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| ***Source to WG:*** | SA3-LI (OTD\_US) |
| ***Source to TSG:*** | SA3 |
|  |  |
| ***Work item code:*** | LI18 |  | ***Date:*** | 26 April 2023 |
|  |  |  |  |  |
| ***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 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)* |
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| ***Reason for change:*** | There is currently no LI support for reporting of Trace Information from the POI in the AMF, resulting in under reporting of UE information. This CR adds such capability. |
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| ***Summary of change:*** | Add Trace to IRI Events and textual description of Trace xIRI in clause 6.2.2.4, remove mandatory location from xIRI, add description of Trace to clause 6.2.2.6 |
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| ***Consequences if not approved:*** | LI reporting at the AMF would remain incomplete. LEAs will not receive relevant information pertaining to target UE network activity.  |
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| ***Clauses affected:*** | 6.2.2.4, 6.2.2.5, 6.2.2.6 |
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|  | **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:*** | Was s3i230259 |

\*\*\* START OF CHANGES \*\*\*\*

\*\*\*START OF FIRST CHANGE \*\*\*

#### 6.2.2.4 IRI events

The IRI-POI present in the AMF shall generate xIRI, when it detects the following specific events or information:

- Registration.

- Deregistration.

- Location update.

- Identifier association.

- Start of interception with already registered UE.

- Unsuccessful communication related attempt.

- Positioning info transfer.

- Handover.

- Trace.

NOTE: AMF reporting of UE state changes other than registration or deregistration is not supported in the present document.

The registration xIRI is generated when the IRI-POI present in an AMF detects that a target UE has successfully registered to the 5GS via 3GPP NG-RAN or non-3GPP access. The registration xIRI describes the type of registration performed (e.g. initial registration, periodic registration, registration mobility update) and the access type (e.g. 3GPP, non-3GPP). Unsuccessful registration shall be reported only if the target UE has been successfully authenticated.

The deregistration xIRI is generated when the IRI-POI present in an AMF detects that a target UE has deregistered from the 5GS. The deregistration xIRI shall indicate whether it was a UE-initiated or a network-initiated deregistration.

The location update xIRI is generated each time the IRI-POI present in an AMF detects that the target's UE location is updated due to target UE mobility (e.g. in case of Xn based inter NG-RAN handover) or when the AMF observes target UE location information during some service operation (e.g., LCS, Location Reporting, or emergency services). The generation of such xIRI may be omitted if the updated UE location information is already included in other xIRIs (e.g. mobility registration) provided by the IRI-POI present in the same AMF. If the information in the AMF received over N2 (TS 38.413 [14]) includes one or more cell IDs, then all cell IDs shall be reported to the LEMF whenever location reporting is triggered at the AMF.

The identifier association xIRI is generated each time the IRI-POI in the AMF detects a SUCI or 5G-GUTI allocation change for a SUPI associated with the target UE.

The start of interception with already registered UE xIRI is generated when the IRI-POI present in an AMF detects that interception is activated on the target UE that has already been registered in the 5GS.

When additional warrants are activated on a target UE, MDF2 shall be able to generate and deliver the start of interception with already registered UE related IRI messages to the LEMF associated with the warrants without receiving the corresponding start of interception with already registered UE xIRI.

The unsuccessful communication related attempt xIRI is generated when the IRI-POI present in an AMF detects that a target UE initiated communication procedure (e.g. session establishment, SMS) is rejected or not accepted by the AMF before the proper NF handling the communication attempt itself is involved. The unsuccessful communications related attempt xIRI is also generated when the IRI-POI present in the AMF detects that a PDU session modification request to convert a single access PDU session to a Multi-Access PDU (MA PDU) session is not accepted by the AMF and therefore not forwarded to the SMF.

The IRI-POI in the AMF shall support per target selective activation or deactivation of reporting of identifier association xIRI independently of activation of LI for all other events. When identifier association xIRI only reporting is activated, the IRI-POI in the AMF shall also generate location update xIRI.

The positioning info transfer xIRI is generated when the IRI-POI present in the AMF detects one the the following events:

- network-based or network-assisted positioning requests, responses or reports related to a target UE are being exchanged between LMF and NG-RAN via the AMF.

- UE-based or UE-assisted positioning requests, responses or reports related to a target UE are being exchanged between LMF and the target UE via the AMF.

NOTE: The activation and invocation of the positioning info transfer capability exclusively for LALS is not supported in the current version of the specification. Instead, the capability is invoked whenever any LCS operation (including LALS) is performed on the target.

The handover xIRI is generated when the IRI-POI in the AMF detects that a target UE is the subject of a handover between radio access nodes in 5GS to EPS, Intra 5GS, 5GS to UTRA, or EPS to 5GS scenarios.

The trace xIRI is generated when the IRI-POI in the AMF detects that a trace session has been initiated for a target.

#### 6.2.2.5 Common IRI parameters

The list of xIRI parameters are specified in TS 33.128 [15]. All xIRI shall include the following:

- Target identity.

- Time stamp.

- Correlation information.

#### 6.2.2.6 Specific IRI parameters

The list of parameters in each xIRI are defined in TS 33.128 [15]. The following give a summary.

The registration xIRI shall include the following:

- Registration type information.

- Access type information.

- Requested slice information.

The deregistration xIRI shall include the following:

- UE initiated de-registration.

- Access type information.

- Network initiated de-registration.

The location update xIRI shall include the following:

- Location of the target UE (see clause 7.3).

The identifier association xIRI shall include the following:

- Subscription permanent identifier.

- Temporary identifier association (i.e. SUCI or 5G-GUTI).

- Association change type indication.

The start of interception with already registered UE xIRI shall include the following:

- Access type information.

- Requested slice information.

The unsuccessful communication attempt xIRI shall include the following:

- Rejected type of communication attempt.

- Access type information.

- Failure reason.

The handover xIRI shall include the following:

- Handover type and reason.

- Radio related information.- UE capability information.

When the access type is non-3GPP, the IP address used by the UE to reach the N3A Entity shall be reported. The port shall also be reported if available.

The trace xIRI shall include the following:

- Trace related information.

\*\*\* END OF FIRST CHANGE \*\*\*\*

\*\*\*END OF CHANGES \*\*\*