**3GPP SA3#96-LI S3i250088**

**Sophia Antipolis; January 28-31, 2025**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **33.928** | **CR** | **0016** | **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:*** | IMS Data Channel related LI provisionng | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | SA3-LI (Nokia) | | | | | | | | | |
| ***Source to TSG:*** | SA3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LI18 | | | | |  | ***Date:*** | | | 2025-01-30 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Stage 2 and stage 3 LI specifications have introduced the LI capabilities to support IMS Data Channel. The TR 33.928 that provides the ADMF logic for the LI provisioning does not illustrate the related aspects. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | LI provisioning logic is added as an addon to the existing IMS LI provisioning logic. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The TR 33.928 will be out of sync with TS 33.128 . | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.5.4.1, 5.5.4.2.3, 5.5.4.2.x (new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | S3i250014 | | | | | | | | |

### \*\* First Change \*\*

#### 5.5.4.1 The flowchart

Figures 5.5.4.1-1, 5.5.4.1-2, 5.5.4.1-3 and 5.5.4.1-4 show the LIPF logic for the service type of Voice when the target is not a non-local ID.



Figure 5.5.4.1-1: Top level LIPF logic for service type of Voice when target is not a non-local ID

For the delivery type of IRI + CC, the IRI-POIs and the CC-TFs are provisioned. For the delivery type of IRI, the IRI-POIs are provisioned. For the delivery type of CC, the CC-TFs are provisioned.

Figure 5.5.4.1-2 shows the LIPF logic for the provisioning of IRI-POIs and figure 5.5.4.1-3 shows the LIPF logic for the provisioning of CC-TFs.



Figure 5.5.4.1-2: LIPF logic for delivery type of IRI for service type of Voice when target is not a non-local ID

The S-CSCF, E-CSCF, P-CSCF, IBCF, MGCF and AS (in figure 5.5.4.1-2) provide IRI-POI functions under certain conditions as noted within the illustration. To prevent those IRI-POIs from providing the LI functions when not supposed to, the LIPF may have to include a parameter during the provisioning. If STIR/SHAKEN is required to be intercepted in the network, then the provisioning of IRI-POIs in IBCF and AS include the parameter ReportDiversionPASSporTInfo if the target identity is IMPU. Additional STIR/SHAKEN related provisioning is illustrated in figure 5.5.4.1-5. Additional LI provisioning logic for IMS Data Channel for the delivery type of IRI is illustrated in figure 5.5.4.1-6.



Figure 5.5.4.1-3: LIPF logic for delivery type of CC for service type of Voice when target is not a non-local ID

The IBCF, MGCF and AS (in figure 5.5.4.1-3) provide CC-TF functions under certain conditions as noted within the illustration. To prevent those CC-TFs from triggering the CC-POIs when not supposed to, the LIPF may have to include a parameter during the provisioning. Additional LI provisioning logic for IMS Data Channel for the delivery type of CC is illustrated in figure 5.5.4.1-7.

Figure 5.5.4.1-4 illustrates the LIPF logic for LALS triggering.



Figure 5.5.4.1-4: LIPF logic for LALS triggering for the service type of Voice

In LALS triggering option 1, the host NF that provides the LTF is same as the NF that provides the IRI-POI functions. And therefore, the host NFs that provide the LTF can be different based on the IMS deployment options.

The P-CSCF, IBCF and LMISF-IRI (in figure 5.5.4.1-4) provide LTF under certain conditions as noted within the illustration. Under special scenario, the S-CSCF may provide the IRI-POI for emergency services (instead of E-CSCF) as specified in TS 33.127 [3]. To prevent those LTFs from providing the LI functions when not supposed to, the LIPF may have to include a parameter during the provisioning.

Figure 5.5.4.1-5 illustrates the LIPF logic for additional STIR/SHAKEN related provisioning.



Figure 5.5.4.1-5: LIPF logic for additional STIR/SHAKEN related provisioning

For STIR/SHAKEN related reporting, IBCF, AS, P-CSCF (VPLMN with LBO), LMISF-IRI (VPLMN with HR) provide the IRI-POI functions. The LIPF logic shown in figure 5.5.4.1-5 is additional logic required to support the LI for STIR/SHAKEN.

As illustrated in figure 5.5.4.1-2, the IRI-POIs in P-CSCF, LMISF-IRI and AS are provisioned as part IMS-based voice LI. Likewise, the IRI-POI in IBCF is also provisioned for IMS-based voice LI when the alternate option is used.

When the STIR/SHAKEN is required to be intercepted in the network, the IRI-POIs in IBCF and AS are to be provisioned with ReportDiversionPASSporTInfo value when the target identity is IMPU.

Figure 5.5.4.1-6 illustrates the LIPF logic for additional IMS Data Channel related provisioning for IRI.



Figure 5.5.4.1-6: LIPF logic for additional IMS Data Channel related LI provisioning for IRI

For IMS Data Channel, the DCSF provides the IRI-POI functions.

Figure 5.5.4.1-7 illustrates the LIPF logic for additional IMS Data Channel related provisioning for CC.



Figure 5.5.4.1-7: LIPF logic for additional IMS Data Channel related LI provisioning for CC

For IMS Data Channel, the DCSF and IMS-AS (figure 5.5.4.1-7) provide CC-TF functions under certain conditions as noted within the illustration. If the CC-TF in the IMS-AS (shown as AS in other illustrations) is already provisioned for the target Identity of IMPU, then provisioning of the same is not needed.

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

##### 5.5.4.2.3 Summary

Table 5.5.4.2.3-1 provides the scope of NF domain that provides the IRI-POI/CC-TF/CC-POI functions for the service type of Voice with the IMS deployment option Default.

Table 5.5.4.2.3-1: Scope of NF domain in IMS providing the LI functions with Default option

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NFs with LI function | | | Non-roaming | Roaming with LBO | | Roaming with HR | |
| VPLMN | HPLMN | VPLMN | HPLMN |
| HSS | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| AS (NOTE 6, NOTE 12) | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| AS (NOTE 7, NOTE 15, NOTE 17) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| MRFP (NOTE 7) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| S-CSCF (NOTE 8) | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| E-CSCF (NOTE 8) | | | IRI-POI | IRI-POI | n/a | IRI-POI | n/a |
| P-CSCF | | | n/a | IRI-POI (NOTE 1) | n/a | n/a | n/a |
| P-CSCF | | | CC-TF | CC-TF | n/a | CC-TF (NOTE 2) | n/a |
| IMS-AGW | | | CC-POI | CC-POI | n/a | CC-POI (NOTE 2) | n/a |
| MGCF (NOTE 3) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| IM-MGW (NOTE 3) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| IBCF (NOTE 14) | | | IRI-POI | IRI-POI | IRI-POI | IRI-POI | IRI-POI |
| IBCF (NOTE 4) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| TrGW (NOTE 4) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| LMISF-IRI (NOTE 1) | | | n/a | n/a | n/a | IRI-POI | n/a |
| LMISF-CC (NOTE 1) | | | n/a | n/a | n/a | CC-POI | n/a |
| DCSF (NOTE 15) | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| DCSF (NOTE 15, NOTE 16) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| DC-AS (NOTE 15, NOTE 16) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| MF (NOTE 15) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| LALS triggering | Option 1 | S-CSCF | LTF | n/a | LTF | n/a | LTF |
| E-CSCF | LTF | LTF | n/a | LTF | n/a |
| P-CSCF | n/a | LTF (NOTE 1) | n/a | n/a | n/a |
| LMISF-IRI | n/a | n/a | n/a | LTF (NOTE 1) | n/a |
| Option 2 | MDF2 | LTF | LTF | LTF | LTF | LTF |

Table 5.5.4.2.3-2 provides the scope of NF domain that provides the IRI-POI/CC-TF/CC-POI functions for the service type of Voice with the IMS deployment option Alternate option.

Table 5.5.4.2.3-2: Scope of NF domain in IMS providing the LI functions with Alternate option

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| NFs with LI function | | | Non-roaming | Roaming with LBO | | Roaming with HR | |
| VPLMN | HPLMN | VPLMN | HPLMN |
| HSS | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| AS (NOTE 6, NOTE 12) | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| AS (NOTE 7, NOTE 15, NOTE 17) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| MRFP (NOTE 7) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| P-CSCF | | | IRI-POI | IRI-POI | n/a | IRI-POI (NOTE 2) | IRI-POI |
| P-CSCF | | | CC-TF | CC-TF | n/a | CC-TF (NOTE 2) | CC-TF |
| IMS-AGW | | | CC-POI | CC-POI | n/a | CC-POI (NOTE 2) | CC-POI |
| MGCF (NOTE 3) | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| MGCF (NOTE 3) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| IM-MGW (NOTE 3) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| IBCF | | | IRI-POI (NOTE 13) | IRI-POI (NOTE 2, 14) | IRI-POI (NOTE 13) | IRI-POI (NOTE 2, 14) | IRI-POI (NOTE 13) |
| IBCF (NOTE 4) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| TrGW (NOTE4) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| LMISF-IRI (NOTE 1) | | | n/a | n/a | n/a | IRI-POI | n/a |
| LMISF-CC (NOTE 1) | | | n/a | n/a | n/a | CC-POI | n/a |
| DCSF (NOTE 15) | | | IRI-POI | n/a | IRI-POI | n/a | IRI-POI |
| DCSF (NOTE 15, NOTE 16) | | | CC-TF | n/a | CC-TF | n/a | CC-TF |
| DC-AS (NOTE 15, NOTE 16) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| MF (NOTE 15) | | | CC-POI | n/a | CC-POI | n/a | CC-POI |
| LALS Triggering | Option 1 | P-CSCF | LTF | LTF | n/a | LTF (NOTE 2) | LTF |
| IBCF | n/a | n/a | LTF (NOTE 5) | n/a | n/a |
| LMISF-IRI | n/a | n/a | n/a | LTF (NOTE 1) | n/a |
| Option 2 | MDF2 | LTF | LTF | LTF | LTF | LTF |

NOTE 1: For non-emergency sessions only.

NOTE 2: For emergency sessions only.

NOTE 3: Only when an incoming session to a target is redirected over a CS domain.

NOTE 4: Only when target is outbound roaming or when an incoming session to a target is redirected over an IP domain, or to an outbound roaming party with LBO.

NOTE 5: Only when the target is outbound roaming without a redirection.

NOTE 6: When the interception of conferencing services is required.

NOTE 7: When the content interception of conferencing, or application of music/ is required.

NOTE 8: For IMS emergency sessions in fixed networks when the S-CSCF is on the signalling path, S-CSCF may optionally (instead of E-CSCF) provide the IRI-POI functions with the default option.

NOTE 9: The use of "n/a" in the above table implies that the LI function is not applicable to the NF for the indicated scenario.

NOTE 10: The LIPF is not aware of the above role played by the host NFs in providing the LI functions.

NOTE 11: MDF2, MDF3 and LI-LCS Client which are also involved in providing the LI functions are not shown in the tables above.

NOTE 12: When the interception of STIR/SHAKEN is required.

NOTE 13: Only when target is outbound roaming or when an incoming session to a target is redirected over an IP domain, or to an outbound roaming party with LBO, or when the interception of STIR/SHAKEN is required.

NOTE 14: Only when the interception of STIR/SHAKEN is required.

NOTE 15: When the IMS Data Channel is supported.

NOTE 16: When the DC-AS is provided by the CSP that provides the LI.

NOTE 17: In the IMS Data Channel related drawings, this is denoted as IMS-AS.

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

##### 5.5.4.2.x IMS Data Channel

Since the CC-TF in AS, in support of LI for special services such as conferencing, is provisioned when the interception of CC is required, there is no need to provision the CC-TF in the AS (denoted as IMS-AS in the IMS data Channel relate diagrams) unless the target identity used for the other cases is other than the IMPU.

The diagram shown in figure 5.5.4.2.x-1 below illustrates the LI provisioning just from IMS Data Channel perspective. This logic may also be helpful in case the LI provisioning for IMS Data Channel has to be handled independent of LI provisioning for IMS-based voice services. In a general sense, from an overall provisioning perspective, LI provisioning for IMS Data Channel is embedded within the LIPF logic of IMS LI provisioning as illustrated in clause 5.5.4.1.



Figure 5.5.4.2.x-1: IMS Data Channel perspective

Table 5.5.4.2.x-1 shows the NFs that will have to provide the IMS Data Channel related LI functions for various scenarios. All the scenarios are applicable to a non-roaming case or to HPLMN in a roaming case.

Note that these aspects are beyond the scope of LIPF logic for the LI provisioning.

Table 5.5.4.2.x-1: Scope of NF domain in IMS providing the LI functions for IMS Data Channel

|  |  |  |  |
| --- | --- | --- | --- |
| Scenario | IRI-POI | CC-TF | CC-POI |
| Bootstrap channel | DCSF | IMS-AS | MF |
| P2A/A2P (NOTE 1) | DCSF | IMS-AS | MF |
| P2A/A2P (NOTE 2) | DCSF | DCSF | DC-AS |
| P2A/A2P (NOTE 3) | DCSF | n/a | n/a |
| P2A2P (NOTE 1) | DCSF | IMS-AS | MF |
| P2A2P (NOTE 2) | DCSF | DCSF | DC-AS |
| P2A2P (NOTE 3) | DCSF | n/a | n/a |
| P2P (NOTE 4) | DCSF | IMS-AS | MF |

NOTE 1: MF is on the media path as an HTTP Proxy.

NOTE 2: MF is on the media path as an UDP Proxy and the DC-AS provided by the CSP that has the DCSF.

NOTE 3: MF is on the media path as an UDP Proxy and the DC-AS provided by a third party provider. In this case, the media is encrypted within the CSP domain and hence, the interception of user-plane data in an unencrypted form is not possible.

NOTE 4: It is assumed that the media path of a P2P IMS Data Channel passes through the MF.

In the cases where the media in an unencrypted form is not available within the CSP domain, the media interception is presumed to be not possible. However, based on the mutual agreement between the CSP and the LEA, one of the following two approaches may be supported:

* If the media pass through the MF, intercept the media at the MF, deliver the intercepted media in an encrypted form to the LEA if other means to deliver the encryption keys to the LEA is implemented.
* If the media does not pass through the MF, intercept the media at the IMS-AGW, deliver the intercepted media in an encrypted form to the LEA if other means to deliver the encryption keys to the LEA is implemented.

In the cases, where the media is not encrypted, for the scenarios of P2A/A2P or P2A2P where the MF is on the media path as an UDP Proxy with DC-AS provided by the third party, either of the two approaches listed in the above bullets can be used and in this case, the delivery of encryption keys is not required. When the media is not encrypted, the interception can be done at the IMS-AGW even for the cases where the MF is not on the media path.

### \*\* End of all Changes \*\*