**3GPP SA3LI#84e-b *S3i220123r1***

**eMeeting, 02-04 March 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **33.128** | **CR** | **0332** | **rev** | **1** | **Current version:** | **17.3.0** |  |
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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:*** | TS 33.128 - Corrections and Editorial changes | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | SA3\_LI (Utimaco TS GmbH) | | | | | | | | | |
| ***Source to TSG:*** | SA3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LI17 | | | | |  | ***Date:*** | | | 2022-02-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Mistakes and editorial errors were found. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Corrected mistakes and fixed editorial errors. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Specification will lack quality. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4.4, 5.2.1, 5.2.2, 5.2.4, 5.2.7, 5.7.2, 5.8, 5.10.2, 6.2.2.2.2, 6.2.2.2.3, 6.2.2.2.4, 6.2.2.2.5, 6.2.2.2.6, 6.2.2.2.7, 6.2.2A.2.1, 6.2.2A.2.2, 6.2.2A.2.3, 6.2.3.1.3, 6.2.3.1.4, 6.2.3.2.2, 6.2.3.2.4, 6.2.3.2.5, 6.2.3.2.6, 6.2.3.2.7.2, 6.2.3.2.7.3, 6.2.3.2.7.5, 6.2.3.2.6, 6.2.3.2.8, 6.2.3.3.1, 6.2.3.4, 6.2.3.5.1, 6.2.3.5.3, 6.2.3.5.4, 6.2.3.6, 6.2.3.7, 6.2.3.8, 6.2.3.9.3, 6.2.3.9.4, 6.2.3.10.2, 6.2.5.1, 6.2.5.3, 6.3.1, 6.3.2.2.1, 6.3.2.2.2, 6.3.2.2.3, 6.3.2.2.4, 6.3.2.2.5, 6.3.2.2.6, 6.3.2.2.7, 6.3.2.3, 6.3.3.2, 6.3.3.4, 6.3.3.5, 7.2.2.3.2, 7.2.2.3.3, 7.2.2.3.4, 7.2.2.4, 7.2.3.3, 7.2.3.4, 7.3.1.1, 7.3.1.2.1, 7.3.1.2.2, 7.3.1.4, 7.3.3.1, 7.4.2.2, 7.4.2.3, 7.4.2.4, 7.4.3.5, 7.4.3.7, 7.4.3.9, 7.4.3.10, 7.4.3.11, 7.4.3.12, 7.4.3.13, 7.4.3.15, 7.4.3.16, 7.4.3.17, 7.4.3.18, 7.4.3.19, 7.5.1, 7.5.2.3, 7.7.2.2, 7.7.2.3, 7.7.3.1.4, 7.7.3.2, 7.7.4.2, 7.7.5.1.2, 7.7.5.2, 7.8.1.2, 7.8.2.1.3, 7.8.2.1.4, 7.8.2.2, 7.8.2.3, 7.8.3.1.3, 7.8.4.2, 7.8.5.1.2, 7.8.5.2, 7.9.1.1, 7.9.1.3.2, 7.9.1.3.3, 7.9.1.3.5, 7.9.1.4.2, 7.9.1.5, 7.10.3.1, 7.10.3.3.2, 7.10.3.5.2, 7.10.3.5.3, 7.10.4.2.2, 7.10.4.8, 7.10.4.10, 7.11.1.3, 7.11.2.2, 7.11.2.3, 7.12.2.1, 7.12.2.4.3, 7.12.3.2.2, 7.12.3.4, 7.12.3.5, 7.13.1.3, 7.13.1.4, 7.13.2.2.1, 7.13.2.3.1, 7.13.3.2, G.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:*** | | S3i220123 | | | | | | | | |

FIRST CHANGE

### 4.4.4 Location Reporting

The LIPF shall be able to provision the POIs and MDF2 according to the requirements of the warrant with the following location reporting types:

- Report location only at the beginning and end of a session.

- Do not report location.

When no location reporting type is provisioned, the POIs and MDF2/MDF3 shall report location every time the target location information is received at the POI (including location update with no physical change of location).

When different location reporting types are applicable to a target due to multiple warrants, then POI may be provisioned as if the reporting of all location information occurrences at the POI is required, with MDF2 restricting the delivery of location to the LEMF as per the provisioned information for a warrant.

NEXT CHANGE

### 5.2.1 General usage of ETSI TS 103 221-1

Functions having an LI\_X1, LI\_T2 or LI\_T3 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.

The LIPF and MDF2/3 shall maintain a mapping between internal interception identifiers (XIDs) and external interception identifiers (LIIDs), as defined by ETSI TS 103 221-1 [7] clause 5.1.2. In case of multiple interceptions for a single target identifier, it is an implementation decision for the LIPF/TF whether multiple XIDs are used (i.e. a one-to-one mapping between XID and LIID is maintained) or whether the single XID is used and mapped to multiple LIIDs at the MDF2/3. Clauses 6 and 7 give further details for specific networks or services (e.g. minimum supported target identifier formats).

In the event of a request issued over the interface fails, or an error is reported, the LIPF should raise an alert in the appropriate LI Operations and Management (O&M) system. Further procedures (e.g. retrying a failed request) are left to CSP policy to define.

A failure of LI shall not impact the target's or other users' services.

In general, and unless otherwise specified, the function playing the role of the NE (i.e. IRI-POI, IRI-TF, CC-TF, CC-POI, MDF2 or MDF3) shall:

- Accept CreateDestination and ModifyDestination messages regardless of the DeliveryType.

- Reject ActivateTask/ModifyTask messages that contain destination identifiers (DIDs) that reference Destinations that have not been created via a CreateDestination message; Destinations shall be created before they are used.

- Reject ActivateTask/ModifyTask messages that do not result in at least one valid DID for their DeliveryType (e.g. at least one valid DID for an X2 delivery destination for an "X2Only" Task). Additional DIDs for Destinations of other DeliveryTypes (e.g. a DID for an X3 Destination for an "X2Only" Task) shall be accepted, but a ReportTaskIssue message may be sent to indicate the mismatch.

NEXT CHANGE

### 5.2.2 Usage for realising LI\_X1

For the purposes of realising LI\_X1 between the LIPF and a POI, MDF or TF, the LIPF plays the role of the ADMF as defined in ETSI TS 103 221-1 [7] reference model (clause 4.2), and the POI, MDF or TF plays the role of the NE.

In general, and unless otherwise specified, the ADMF shall:

- When the provisioning of an IRI-POI/IRI-TF/MDF2 is needed to meet the requirements of the warrant, send an ActivateTask (and subsequent ModifyTask if/as needed) with the DeliveryType set to "X2Only" and the ListOfDIDs containing at least one DID for an X2 or LI\_HI2 delivery destination over LI\_X1 to each of the relevant functions.

- When the provisioning of a CC-POI/CC-TF/MDF3 is needed to meet the requirements of the warrant, send an ActivateTask (and subsequent ModifyTask if/as needed) with the DeliveryType set to "X3Only" and the ListOfDIDs containing at least one DID for X3 or LI\_HI3 delivery destination over LI\_X1 to each of the relevant functions.

When both the above are required to meet the requirements of the warrant, the ADMF shall send each independently to each relevant function.

When it is required to cease interception, the ADMF shall send a DeactivateTask message to each relevant function, unless the Task has already been removed by other means (e.g. by the use of the ImplicitDeactivationAllowed flag, see ETSI TS 103 221-1 [7] clause 6.2.12).

Other deployments compliant with ETSI TS 103 221-1 [7] may be used subject to local agreement.

NEXT CHANGE

### 5.2.4 Service scoping

The LIPF shall be able to provision the POI, TFs and the MDF2/MDF3 according to the service scoping (see clause 4.4) applicable to a warrant as described in clause 6.2.1.2 and Annex C of ETSI TS 103 221-1 [7].

NEXT CHANGE

### 5.2.7 Usage for realising LI\_XEM1

For the purposes of realising LI\_XEM1 between the LIPF and an IEF, the LIPF plays the role of the ADMF as defined in ETSI TS 103 221-1 [7] reference model (clause 4.2), and the IEF plays the role of the NE.

The IEF shall be enabled by sending the following ActivateTask message from the LIPF.

Table 5.2.7-1: ActivateTask message for activating an IEF

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 field name | Description | M/C/O |
| XID | Shall be set to a value assigned by the LIPF. | M |
| TargetIdentifiers | Shall contain a single Target Identifier of type "IdentityAssociation" (see table 5.2.7-2) | M |
| DeliveryType | Set to "X2Only". | M |
| ListOfDIDs | Shall give the DID of the delivery endpoint of the ICF(s) to which identity association events should be delivered. These delivery endpoints are configured using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to the task activation. | M |

The following Target Identifier Type is defined for the use of LI\_XEM1. Unless otherwise specified, use of any other Target Identifier Type (including adding a target identifier more than once) shall result in the ActivateTask message being rejected with the appropriate error.

Table 5.2.7-2: Target Identifier Type for LI\_XEM1

|  |  |  |
| --- | --- | --- |
| Identifier type | ETSI TS 103 221-1 [7] TargetIdentifier type | Definition |
| IdentityAssociationTargetIdentifier | TargetIdentifierExtension / IdentityAssociationTargetIdentifier | Empty tag (see XSD schema) |

The IEF may be reconfigured to send identity associations to a different ICF using a ModifyTask message to modify the delivery destinations.

The IEF shall be disabled by sending the following DeactivateTask message from the LIPF.

Table 5.2.7-3: DeactivateTask message for de-activating an IEF

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 field name | Description | M/C/O |
| XID | Shall be set to the value assigned by the LIPF | M |

The LIPF should send one ActivateTask command to each IEF.

NOTE: The IEF may receive multiple ActivateTask messages conforming to table 5.2.7-1, each of which can be independently deactivated. The IEF shall remain active as long as at least one valid Task remains active.

NEXT CHANGE

### 5.7.2 Usage for realising LI\_HIQR

#### 5.7.2.1 Request structure

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

Table 5.7.2-1: LDTaskObject representation of LI\_HIQR request

|  |  |  |
| --- | --- | --- |
| Field | Value | M/C/O |
| Reference | Reference to the authorization under which the request is made. The format of this field, and any procedures for allocating or validating it, are for national agreement. | M |
| DesiredStatus | Shall be set to "AwaitingDisclosure". | M |
| RequestDetails | Set according to table 5.7.2-2 below. | M |
| DeliveryDetails | Shall be set to indicate the delivery destination for the LI\_HIQR records (see clause 5.7.2.3 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 5.7.2-2: RequestDetails structure

|  |  |  |
| --- | --- | --- |
| Field | Value | M/C/O |
| Type | Shall be set to one of the RequestType values as defined in table 5.7.2-3. | M |
| ObservedTime | When the RequestValues provides a temporary identity, this field shall be set to the observation time of that temporary identity.  When the requestValues provides a permanent identity, this is the time at which the LEA requires that the permanent to temporary association is applicable.  Shall not be present for requests of type "OngoingIdentityAssociation". | C |
| RequestValues | Set to the target identifier plus additional information required (see clause 5.7.2.2). | M |

NOTE: If the observed time is in the past, providing a successful query response is subject to associations still being available in the cache when the query is made to the ICF.

Table 5.7.2-3: RequestType Dictionary for LI\_HIQR

|  |  |
| --- | --- |
| Dictionary Owner | Dictionary Name |
| 3GPP | RequestType |
|  | |
| Defined DictionaryEntries | |
| Value | Meaning |
| IdentityAssociation | A request for a single IdentityResponseDetails response to the query provided. |
| OngoingIdentityAssociation | A request for an ongoing series of IdentityResponseDetails responses matching the query provided. May only be used when the RequestValues contains a permanent identifier. The request shall be terminated by updating the LDTaskObject DesiredStatus to "Disclosed". |

Table 5.7.2-3 is formatted in accordance with ETSI TS 103 120 [6] Annex F.

#### 5.7.2.2 Request parameters

The RequestValues field shall contain one of the following:

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

- SUCI, given as defined in table 5.7.2-4 below.

- 5G-S-TMSI, given as defined in table 5.7.2-4 below.

- 5G-GUTI, given as defined in table 5.7.2-4 below.

If the RequestType is "OngoingIdentityAssociation" (see table 5.7.2-3), SUPI is the only valid identity type in the RequestValues field. If the RequestType is “OngoingIdentityAssociation” and any other identity type is provided, the IQF shall signal the error by setting the LDTaskObject Status to "Invalid" (see ETSI TS 103 120 [6] clause 8.3.3).

If a temporary identity is provided, the following shall also be present as RequestValues:

- CellIdentity, given as defined in Table 5.7.2-4 below.

- TrackingAreaIdentity, given as defined in table 5.7.2-4 below.

The following RequestValue FormatTypes (see ETSI TS 103 120 [6] clause 8.3.5.4) are defined (which are not otherwise defined elsewhere).

Table 5.7.2-4: RequestValue FormatType extensions for LI\_HIQR Requests

| Format Owner | Format Name | Description | Format |
| --- | --- | --- | --- |
| 3GPP | SUCI | Subscription Concealed Identifier as per TS 23.003 [19] clause 2.2B. | TS 29.509 [45] clause 6.1.6.3.2 |
| 3GPP | 5GSTMSI | Shortened form of the 5G-GUTI as defined in TS 23.003 [19] clause 2.11. Given as a hyphen-separated concatenation of:  - The string "5gstmsi".  - The AMF Set ID given as three hexadecimal digits (10 bits).  - The AMF Pointer given as two hexadecimal digits (6 bits).  - The 5G-TMSI given as eight hexadecimal digits (32 bits) | Matches regular expression:  ^(5gstmsi-([0-3][0-9A-Fa-f]{2})-([0-3][0-9A-Fa-f])-([0-9A-Fa-f]{8}))$ |
| 3GPP | 5GGUTI | As defined in TS 23.003 [19] clause 2.10. Given as a hyphen separated concatenation of:  - The string "5gguti".  - MCC given as a three decimal digits.  - MNC given as a two or three digit decimal digits  - AMF Region ID given as two hexadecimal digits (8 bits).  - The AMF Set ID, AMF Pointer and 5G-TMSI as defined above in 5GSTMSI | Matches regular expression:  ^(5gguti-([0-9]{3})-([0-9]{2,3})-([0-9A-Fa-f]{2})-([0-3][0-9A-Fa-f]{2})-([0-3][0-9A-Fa-f])-([0-9A-Fa-f]{8}))$ |
| 3GPP | NRCellIdentity | NR Cell ID (NCI), as defined in TS 23.003 [19] clause 19.6A | TS 29.571 [17] clause 5.4.2 |
| 3GPP | TrackingAreaCode | Tracking area code as defined in TS 23.003 [19] clause 19.4.2.3 | TS 29.571 [17] clause 5.4.2 |

#### 5.7.2.3 Response structure

The LI\_HIQR request is used to generate a request to the ICF over LI\_XQR (see clause 5.8). The response received over LI\_XQR is then transformed into an LI\_HIQR response.

LI\_HIQR responses and updates are represented as XML following the IdentityResponseDetails type definition (see Annex E).

Responses and updates 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).

IdentityResponseDetails contain IdentityAssociation records. The fields of each IdentityAssociationRecord shall be set as follows:

Table 5.7.2-5: IdentityAssociationRecord

|  |  |  |
| --- | --- | --- |
| Field | Value | M/C/O |
| SUPI | SUPI associated with the provided identity. | M |
| SUCI | SUCI associated with the provided identity, if available. | C |
| 5G-GUTI | 5G GUTI associated with the provided identity, provided in the form given in the request (see table 5.7.2-4). | M |
| PEI | PEI associated with the provided identity during the association period, if known. | C |
| AssociationStartTime | The time that the association between the SUPI and the temporary identity became valid. (see NOTE). | M |
| AssociationEndTime | The time that the association between the SUPI and the temporary identity ceased to be valid. Shall be omitted if the association is still valid (see NOTE). | C |
| FiveGSTAIList | List of tracking areas associated with the registration area within which the UE was or is registered in the lifetime of the reported association, if available. See clause 7.6.2.4 for details. | C |
| GPSI | GPSI associated with the provided identity during the association period, if known. | C |
| NOTE: The AssociationStartTime and AssociationEndTime represent the lifespan of the SUPI to 5G-GUTI association. When a SUCI is present, the AssociationStartTime also represents the time of the SUCI's validity. | | |

If no association is found which matches the criteria provided in the LI\_XQR request, then the LI\_XQR response contains zero IdentityAssociationRecords. Similarly, the LI\_HIQR response contains zero IdentityAssociationRecords.

For responses or updates providing a currently valid SUPI to 5G-GUTI identity association, the AssociationEndTime shall be absent. The AssociationStartTime shall indicate when the 5G-GUTI became associated with the SUPI. The SUCI field shall be populated if it was present in the IEF record for the association (see clause 6.2.2A.2.1). The PEI and TAI List fields may be populated as well, see clause 7.6.2.4 for details.

In the case of ongoing updates, the presence of the AssociationEndTime indicates the SUPI to 5G-GUTI identity disassociation. Such updates shall only happen when no new association is replacing the outgoing one.

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 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, using the following Specification Dictionary extension.

Table 5.7.2-6: Specification Dictionary

|  |  |
| --- | --- |
| Dictionary Owner | Dictionary Name |
| 3GPP | ManifestSpecification. |
|  | |
| Defined DictionaryEntries | |
| Value | Meaning |
| LIHIQRResponse | The delivery contains IdentityResponseDetails (see Annex E) |

NEXT CHANGE

## 5.8 Protocols for LI\_XQR

### 5.8.1 General

LI\_XQR requests are realised using ETSI TS 103 221-1 [7] to transport the IdentityAssociationRequest and IdentityAssociationResponse messages (which are derived from the X1RequestMessage and X1ResponseMessage definitions in ETSI TS 103 221-1 [7]) as described in Annex E.

### 5.8.2 Identity association requests

For requests with RequestType "IdentityAssociation" (see table 5.7.2-3), the IQF issues an IdentityAssociationRequest message populated with a RequestDetails structure as follows:

Table 5.8-1: RequestDetails structure for LI\_XQR

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| Type | Shall be set to the RequestType value "IdentityAssociation" as defined in Table 5.7.2-3. | M |
| ObservedTime | Observation time as provided over LI\_HIQR (see clause 5.7.2). | M |
| RequestValues | Set to the target identifier plus additional information specified in the LI\_HIQR request (see clause 5.7.2). | M |

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

LI\_XQR query responses are represented in XML following the IdentityAssociationResponse schema (see Annex E). The fields of the IdentityAssociationResponse record shall be populated as described in Table 5.7.2-5.

### 5.8.3 Ongoing identity association requests

For requests with RequestType "OngoingIdentityAssociation", the IQF shall activate a request for ongoing updates at the ICF by sending it an ActivateOngoingIdentityAssociationUpdates message populated as follows:

Table 5.8-2: ActivateAssociationUpdates message for LI\_XQR

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| OngoingAssociationTaskID | Unique identifier for this request allocated by the IQF. | M |
| SUPI | Permanent identifier for which ongoing identity association updates shall be issued. | M |

The ICF shall acknowledge receipt of the ActivateAssociationUpdates message by responding with a ActivateAssociationUpdatesAcknowledgement response (see Annex E) containing an IdentityAssociationRecord representing the association active at the time ICF receives the ActivateAssociationUpdates message. If no such active association exists, the ActivateAssociationUpdatesAcknowledgement response shall not contain an IdentityAssociationRecord. Error conditions are reported using the normal error reporting mechanisms described in ETSI TS 103 221-1 [7].

When a request with RequestType "OngoingIdentityAssociation" is terminated over LI\_HIQR (see table 5.7.2-3), the IQF shall issue a DeactivateAssociationUpdates message (see Annex E) with the appropriate OngoingAssociationTaskID populated. On termination of the request, the ICF shall respond with a DeactivateAssociationUpdatesAcknowledgement message.

While a request with RequestType "OngoingIdentityAssociation" is active, the ICF shall generate an IdentityAssociationUpdate message every time the ICF receives an IEFAssociationRecord or IEFDeassociationRecord over LI\_IEF for the relevant identifier. The message shall contain an IdentityAssociationRecord as described in table 5.7.2-5, and the relevant OngoingAssociationTaskID. The IdentityAssociationUpdate message is sent to the IQF over LI\_XQR with the ICF becoming the "requester" as defined in ETSI TS 103 221-1 [7] clause 4.2. The IQF shall respond with an IdentityAssociationUpdateAcknowledgement message.

NEXT CHANGE

### 5.10.2 Storage

When an LI function wishes to store LI state in the LISSF, it shall perform the Record Create service operation as described in TS 29.598 [64] clause 5.2.2.3.1. Unless otherwise specified, the recordId shall be a randomly-assigned UUID. The record metadata shall include at least the following information as tag value pairs (see TS 29.598 [64] clause 6.1.6.2.3)

Table 5.10.2-1: Minimum information elements for RecordMeta structure

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| NFInstanceID | The NF instance ID associated with the NF in which the LI function is located, if applicable (see TS 29.571 [17] clause 5.3.2). | C |
| NEID | The LI\_X1 identifier associated with the LI function. | M |
| XID | XID for the task that the state is associated with, if applicable. | C |
| DID | DID for the destination that the state is associated with, if applicable. | C |

Further details on the contents of the Record Blocks is given in the relevant clauses.

The LIPF shall always be able to store records in the LISSF.

NEXT CHANGE

##### 6.2.2.2.2 Registration

The IRI-POI in the AMF shall generate an xIRI containing an AMFRegistration record when the IRI-POI present in the AMF detects that a UE matching one of the target identifiers provided via LI\_X1 has successfully registered to the 5GS via 3GPP NG-RAN or non-3GPP access. Accordingly, the IRI-POI in the AMF generates the xIRI when the following event is detected:

- AMF sends a N1: REGISTRATION ACCEPT message to the target UE and the UE 5G Mobility Management (5GMM) state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF is changed to 5GMM-REGISTERED.

Table 6.2.2-1: Payload for AMFRegistration record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| registrationType | Specifies the type of registration, see TS 24.501 [13] clause 9.11.3.7. This is derived from the information received from the UE in the REGISTRATION REQUEST message. | M |
| registrationResult | Specifies the result of registration, see TS 24.501 [13] clause 9.11.3.6. | M |
| slice | Provide, if available, one or more of the following:  - allowed NSSAI (see TS 24.501 [13] clause 9.11.3.37).  - configured NSSAI (see TS 24.501 [13] clause 9.11.3.37).  - rejected NSSAI (see TS 24.501 [13] clause 9.11.3.46).  This is derived from the information sent to the UE in the REGISTRATION ACCEPT message. | C |
| sUPI | SUPI associated with the registration (see clause 6.2.2.4). | M |
| sUCI | SUCI used in the registration, if available. | C |
| pEI | PEI provided by the UE during the registration, if available. | C |
| gPSI | GPSI obtained in the registration, if available as part of the subscription profile. | C |
| gUTI | 5G-GUTI provided as outcome of initial registration or used in other cases, see TS 24.501 [13] clause 5.5.1.2.2. | M |
| location | Location information determined by the network during the registration, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, TNGF or TWIF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| fiveGSTAIList | List of tracking areas associated with the registration area within which the UE is current registered, see TS 24.501 [13] clause 9.11.3.9 (see NOTE) | C |
| sMSoverNASIndicator | Indicates whether SMS over NAS is supported. Provide, if included in registrationResult, see TS 24.501 [13] clause 9.11.3.6. | C |
| oldGUTI | GUTI or 5G-GUTI, if provided in the REGISTRATION REQUEST message, see TS 24.501 [13] clause 5.5.1.2.2. | C |
| eMM5GRegStatus | UE Status, if provided in the REGISTRATION REQUEST message, see TS 24.501 [13] clause 9.11.3.56. | C |
| nonIMEISVPEI | MACAddress used as UE equipment identity if IMEI or IMEISV based PEI is not available. Provide if known, see TS 24.501 [13] clause 8.2.26.4. | C |
| mACRestIndicator | Indicates whether the non-IMEISV PEI MACAddress can be used as an equipment identifier. Required if non-IMEISVPEI is used, see TS 24.501 [13] clause 9.11.3.4. | C |
| NOTE: List shall be included each time there is a change to the registration area. | | |

NEXT CHANGE

##### 6.2.2.2.3 Deregistration

The IRI-POI in the AMF shall generate an xIRI containing an AMFDeregistration record when the IRI-POI present in the AMF detects that a UE matching one of the target identifiers provided via LI\_X1 has deregistered from the 5GS. Accordingly, the IRI-POI in AMF generates the xIRI when any of the following events is detected:

- For network initiated de-registration, when the AMF receives the N1: DEREGISTRATION ACCEPT message from the target UE or when implicit deregistration timer expires; and in both cases the UE 5GMN state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF is changed to 5GMM-DEREGISTERED.

- For UE initiated de-registration, when the AMF sends the N1: DEREGISTRATION ACCEPT message to the target UE or when the AMF receives the N1: DEREGISTRATION REQUEST message from the target UE with deregistration type value of “switch off”; and in both cases the UE 5GMN state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF is changed to 5GMM-DEREGISTERED.

Table 6.2.2-2: Payload for AMFDeregistration record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| deregistrationDirection | Indicates whether the deregistration was initiated by the network or by the UE. | M |
| accessType | Indicates the access for which the deregistration is handled, see TS 24.501 [13] clause 9.11.3.20. | M |
| sUPI | SUPI associated with the deregistration (see clause 6.2.2.4), if available. | C |
| sUCI | SUCI used in the deregistration, if available (see NOTE). | C |
| pEI | PEI used in the deregistration, if available (see NOTE). | C |
| gPSI | GPSI associated to the deregistration, if available as part of the subscription profile. | C |
| gUTI | 5G-GUTI used in the deregistration, if available, see TS 24.501 [13] clause 5.5.2.2.1 (see NOTE). | C |
| cause | Indicates the 5GMM cause value for network-initiated deregistration, see TS 24.501 [13] clause 9.11.3.2. | C |
| location | Location information determined by the network during the deregistration, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| switchOffIndicator | Indicates whether the deregistration type is normal or switch off, if available, see TS 24.501 [13] clause 9.1.3.20.1. | C |
| reRegRequiredIndicator | Indicates whether UE re-registration is required in the DEREGISTRATION REQUEST message, if available, see TS 24.501 [13] clause 9.1.3.20.1. | C |
| NOTE: At least one among SUCI, PEI and GUTI shall be provided. | | |

NEXT CHANGE

##### 6.2.2.2.4 Location update

The IRI-POI in the AMF shall generate an xIRI containing an AMFLocationUpdate record each time the IRI-POI present in an AMF detects that the target’s UE location is updated due to target’s UE mobility or as a part of an AMF service procedure and the reporting of location information is not restricted by service scoping. The generation of such separate xIRI is not required if the updated UE location information is obtained as a part of a procedure producing some other xIRIs (e.g. mobility registration). In that case the location information is included into the respective xIRI.

The UE mobility events resulting in generation of an AMFLocationUpdate xIRI include the *N2 Path Switch Request* (*Xn based inter NG-RAN handover* procedure described in TS 23.502 [4] clause 4.9.1.2) and the *N2 Handover Notify* (*Inter NG-RAN node N2 based handover* procedure described in TS 23.502 [4] clause 4.9.1.3).

The AMFLocationUpdate xIRI is also generated when the AMF receives an NG-RAN NGAP *PDU Session Resource Modify Indication* message as a result of Dual Connectivity activation/release for the target's UE, as described in TS 37.340 [37] clause 10.

Optionally, based on operator policy, other NG-RAN NGAP messages that do not generate separate xIRI but carry location information (e.g. RRC INACTIVE TRANSITION REPORT) may trigger the generation of an xIRI AMFLocationUpdate record.

Additionally, based on regulatory requirements and operator policy, the location information obtained by AMF from NG-RAN or LMF in the course of some service operation (e.g. emergency services, LCS) may generate xIRI AMFLocationUpdate record. The AMF services providing the location information in these cases include the AMF Location Service (ProvideLocInfo, ProvidePosInfo, NotifiedPosInfo and EventNotify service operations) and the AMF Exposure Service (AmfEventReport with LOCATION\_REPORT) (see TS 29.518 [22]). Additionally, the AMF Communication Service (Namf\_Communication\_N1MessageNotify service operation) may be monitored to capture the location information in the scenarios described in TS 23.273 [42] clause 6.3.1. Also, in the case of Mobile Originated LCS service invoked by the target, the location information may be derived from a Nlmf\_Location\_DetermineLocation Response to AMF (see TS 23.273 [42] clause 6.2).

Table 6.2.2-3: Payload for AMFLocationUpdate record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the location update (see clause 6.2.2.4). | M |
| sUCI | SUCI associated with the location update, if available, see TS 24.501 [13]. | C |
| pEI | PEI associated with the location update, if available. | C |
| gPSI | GPSI associated with the location update, if available as part of the subscription profile. | C |
| gUTI | 5G-GUTI assigned during the location update, if available, see TS 33.501 [11] clause 6.12.3. | C |
| location | Updated location information determined by the network.  Depending on the service or message type from which the location information is extracted, it may be encoded in several forms (Annex A):  1) as a *userLocation* parameter (*location>locationInfo>userLocation*) in the case the information is obtained from an NGAP message, except the LOCATION REPORT message (see TS 38.413 [23]);  2) as a *locationInfo* parameter (*location>locationInfo*) in the case the information is obtained from a **ProvideLocInfo** (TS 29.518 [22] clause 6.4.6.2.6);  3) as a *locationPresenceReport* parameter (*location>locationPresenceReport*) in the case the information is obtained from an **AmfEventReport** (TS 29.518 [22] clause 6.2.6.2.5) with event type **Location-Report** or **Presence-In-AOI-Report;**  4) as a *positionInfo* parameter (*location>positioningInfo>positionInfo*) in the case the information is obtained from a **ProvidePosInfo** (TS 29.518 [22], clause 6.4.6.2.3) or a **NotifiedPosInfo** (TS 29.518 [22] clause 6.4.6.2.4). | M |
| sMSoverNASIndicator | Indicates whether SMS over NAS is supported. Provide, if included in registrationResult, see TS 24.501 [13] clause 9.11.3.6. | C |
| oldGUTI | GUTI or 5G-GUTI, if provided (e.g. in REGISTRATION REQUEST message, when performing S1 to N1 inter-system change), see TS 24.501 [13] clause 8.2.6.12. | C |

NEXT CHANGE

##### 6.2.2.2.5 Start of interception with registered UE

The IRI-POI in the AMF shall generate an xIRI containing an AMFStartOfInterceptionWithRegisteredUE record when the IRI-POI present in the AMF detects that interception is activated on a UE that has already been registered in the 5GS (see clause 6.2.2.4 on identity privacy). A UE is considered already registered to the 5GS when the 5GMM state for the access type (3GPP NG-RAN or non-3GPP access) for that UE is 5GMM-REGISTERED. Therefore, the IRI-POI present in the AMF shall generate the xIRI AMFStartOfInterceptionWithRegisteredUE record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) and the 5G mobility management state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF for that UE is 5GMM-REGISTERED. If the UE is registered over both 3GPP NG-RAN and non-3GPP access, the IRI-POI present in the AMF shall generate an xIRI containing an AMFStartOfInterceptionWithRegisteredUE record for each access type.

Table 6.2.2-4: Payload for AMFStartOfInterceptionWithRegisteredUE record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| registrationResult | Specifies the result of registration, see TS 24.501 [13] clause 9.11.3.6. | M |
| registrationType | Specifies the type of registration, see TS 24.501 [13] clause 9.11.3.7, if available. | C |
| slice | Provide, if available, one or more of the following:  - allowed NSSAI (see TS 24.501 [13] clause 9.11.3.37).  - configured NSSAI (see TS 24.501 [13] clause 9.11.3.37). | C |
| sUPI | SUPI associated with the target UE. | M |
| sUCI | SUCI used in the registration, if available. | C |
| pEI | PEI associated with the target UE, if available. | C |
| gPSI | GPSI associated with the target UE, if available. | C |
| gUTI | Latest 5G-GUTI assigned to the target UE by the AMF. | M |
| location | Location information associated with the access type for the target UE, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, TNGF or TWIF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| timeOfRegistration | Time at which the last registration occurred, if available. This is the time stamp when the REGISTRATION ACCEPT message was sent to the UE or (when applicable) when the REGISTRATION COMPLETE was received from the UE.  Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | C |
| fiveGSTAIList | List of tracking areas associated with the target UE for the access type. | C |
| sMSoverNASIndicator | Indicates whether SMS over NAS is supported. Provide, if included in the UE Context. | C |
| oldGUTI | Latest GUTI or 5G-GUTI received from the target UE if different than the latest GUTI assigned by the AMF and the target UE has not acknowledged the latest GUTI assignment. | C |
| eMM5GRegStatus | UE Status, if this parameter can be derived from information available in the UE Context at the AMF. | C |
| NOTE: The values of the parameters in the table above are derived from the UE Context at the AMF, see TS 23.502 clause 5.2.2.2.2. | | |

The IRI-POI present in the AMF generating an xIRI containing an AMFStartOfInterceptionWithRegisteredUE record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

NEXT CHANGE

##### 6.2.2.2.6 AMF unsuccessful procedure

The IRI-POI in the AMF shall generate an xIRI containing an AMFUnsuccessfulProcedure record when the IRI-POI present in the AMF detects an unsuccessful procedure for a UE matching one of the target identifiers provided via LI\_X1.

Accordingly, the IRI-POI in the AMF generates the xIRI when any of the following events is detected:

- AMF sends a N1: REGISTRATION REJECT message to the target UE and the UE 5G Mobility Management (5GMM) state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF is changed to 5GMM-DEREGISTERED.

- AMF aborts a registration procedure before the UE 5G Mobility Management (5GMM) state for the access type (3GPP NG-RAN or non-3GPP access) within the AMF is changed to 5GMM-REGISTERED.

- AMF sends a SERVICE REJECT message to the target UE including a PDU session establishment reject message type.

- AMF aborts a UE-initiated NAS transport procedure with payload container type IE set to "SMS".

Unsuccessful registration shall be reported only if the target UE has been successfully authenticated.

Table 6.2.2-5: Payload for AMFUnsuccessfulProcedure record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| failedprocedureType | Specifies the procedure which failed at the AMF. | M |
| failureCause | Provides the value of the 5GSM or 5GMM cause, see TS 24.501 [13] clauses 9.11.3.2 and 9.11.4.2. | M |
| requestedSlice | Slice requested for the procedure, if available, given as a NSSAI (a list of S-NSSAI values as described in TS 24.501 [13] clause 9.11.3.37). | C |
| sUPI | SUPI associated with the procedure, if available (see NOTE). | C |
| sUCI | SUCI used in the procedure, if applicable and if available (see NOTE). | C |
| pEI | PEI used in the procedure, if available (see NOTE). | C |
| gPSI | GPSI used in the procedure, if available (see NOTE). | C |
| gUTI | 5G-GUTI used in the procedure, if available, see TS 24.501 [13] clause 9.11.3.4 (see NOTE). | C | |
| location | Location information determined during the procedure, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| NOTE: At least one identity shall be provided, the others shall be provided if available. | | |

NEXT CHANGE

##### 6.2.2.2.7 AMF identifier association

The IRI-POI present in the AMF shall generate an xIRI containing an AMFIdentifierAssociation record when the IRI-POI present in the AMF detects a new identifier association for a UE matching one of the target identifiers provided via LI\_X1. Generation of this record is subject to this record type being enabled for a specific target (see clause 6.2.2.2.1).

Table 6.2.2-6: Payload for AMFIdentifierAssociation record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the procedure (see NOTE 1). | M |
| sUCI | SUCI used in the procedure, if applicable and if available. | C |
| pEI | PEI used in the procedure, if available (see NOTE 1). | C |
| gPSI | GPSI used in the procedure, if available (see NOTE 1). | C |
| gUTI | 5G-GUTI used in the procedure, see TS 24.501 [13] clause 9.11.3.4. | M | |
| location | Location information available when identifier association occurs.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | M |
| fiveGSTAIList | List of tracking areas associated with the registration area within which the UE is current registered, see TS 24.501 [13] clause 9.11.3.9. (see NOTE 2) | C |
| NOTE 1: SUPI shall always be provided, in addition to the warrant target identifier if different to SUPI. Other identifiers shall be provided if available.  NOTE 2: List shall be included each time there is a change to the registration area. | | |

The IRI-POI present in the AMF generating an xIRI containing an AMFIdentifierAssociation record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

NEXT CHANGE

6.2.2A.2.1 Events

The IEF in the AMF shall generate an IEFIdentifierAssociation record whenever the IEF present in the AMF detects a change in association between a SUPI and a 5G-GUTI for any UE registered with the AMF. The IEF shall send the IEFIdentifierAssociation records to the ICF over LI\_XER as defined in clause 5.9.

Accordingly, the IEF in the AMF generates IEFIdentifierAssociation records when any of the following events are detected:

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

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

NOTE1: The de-association of 5G-GUTI from a SUPI event record 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: As SUCIs are single use and only valid for a single authentication, they are only valid at the single point in time when the association event is detected and reported to the ICF by the IEF.

In addition, when an IEF is activated as per clause 6.2.2A.1, the IEF shall generate associations event for all SUPIs which are registered in the AMF, where those identifier associations allocated prior to IEF activation remain current and are still available in the AMF (See NOTE 2).

NOTE 3: Only identifier associations which have been maintained by the AMF as part of normal network operations will be available.

In the case where the IEF in the AMF detects that a REGISTRATION ACCEPT message or a CONFIGURATION UPDATE (5G-GUTI) message as defined in TS 24.501 [13] has been sent by the AMF towards a UE, the IEF shall immediately generate an IEFIdentifierAssociation record. This record shall be generated regardless of whether the CONFIGURATION UPDATE (5G-GUTI) or REGISTRATION ACCEPT procedure is subsequently successfully completed or not.

NEXT CHANGE

##### 6.2.2A.2.2 Association Events

For each association event, the IEF shall create an IEFAssociationRecord, as defined below.

Table 6.2.2A-1: Payload for IEFAssociationRecord

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with detected association event. | M |
| fiveGGUTI | 5G-GUTI shall be provided. Encoded as per TS 24.501 [13] figure 9.11.3.4.1, omitting the first four octets. | M |
| timeStamp | Time at which the identifier association event occurred.  Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | M |
| tAI | Last known TAI associated with the SUPI. Encoded as per TS 24.501 [13] clause 9.11.3.8, omitting the first octet. | M |
| nCGI | Last known nCGI(s) available when identifier association event detected. Given as a sequence of PLMNID (encoded as per TS 38.413 [23] clause 9.3.3.5) and NCI (encoded as per TS 38.413 [23] clause 9.3.1.7). | M |
| nCGITime | ueLocationTimestamp(s) of nCGIs if available in AMF as per TS 29 .571 [17] clause 5.4.4.9.  If ueLocationTimestamp(s) is not available, shall be populated with timeStamp(s) of when last known nCGI(s), were obtained and stored by the AMF. | M |
| sUCI | SUCI shall be provided when event is triggered by association of a SUCI to a SUPI. | C |
| pEI | PEI, (see NOTE 1). | C |
| fiveGSTAIList | List of tracking areas associated with the registration area within which the UE is current registered, see TS 24.501 [13] clause 9.11.3.9. (see NOTE 2) | C |
| gPSI | GPSI, (see NOTE 1). | C |
| NOTE 1: Shall be provided in first association record to ICF after PEI or GPSI is available and following any change of PEI or GPSI.  NOTE 2: As a minimum, list of tracking areas shall be included in the first association event for each SUPI registered (per UE session) with the AMF and additionally whenever the TAI list changes due to a change in registration area. | | |

For each de-association event, the IEF shall create an IEFDeassociationRecord, as defined below.

**Table 6.2.2A-2: Payload for IEFDeassociationRecord**

|  |  |  |
| --- | --- | --- |
| **Field name** | **Description** | **M/C/O** |
| sUPI | SUPI associated with detected de-association event. | M |
| fiveGGUTI | 5G-GUTI shall be provided. Encoded as per TS 24.501 [13] figure 9.11.3.4.1, omitting the first four octets. | M |
| timeStamp | Time at which the identifier de-association event occurred.  Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | M |
| nCGI | Last known nCGI(s) available when identifier de-association event detected. Given as a sequence of PLMNID (encoded as per TS 38.413 [23] clause 9.3.3.5) and NCI (encoded as per TS 38.413 [23] clause 9.3.1.7). | M |
| nCGITime | ueLocationTimestamp(s) of nCGIs if available in AMF as per TS 29 .571 [17] clause 5.4.4.9.  If ueLocationTimestamp(s) is not available, shall be populated with timeStamp(s) of when last known nCGI(s), were obtained and stored by the AMF. | M |

NEXT CHANGE

##### 6.2.2A.2.3 Transmission to the ICF

When activated (see clause 5.2.7), the IEF shall establish a TLS connection to the ICF as given over LI\_XEM1. If the IEF fails to establish a TLS connection, it shall report an error over LI\_XEM1 using the error reporting mechanisms described in ETSI TS 103 221-1 [7] and attempt to reconnect after a configurable period of time.

When a record has been generated as described in clause 6.2.2A.2.2, the IEF shall encode the IEFAssociationRecord or IEFDeassociationRecord as a BER-encoded IEFMessage structure, following the ASN.1 schema given in Annex F, and transmit it to the ICF over the established TLS connection.

The IEF may transmit a keepalive request using the keepalive record defined in Annex F. Upon receiving a keepalive request, the ICF shall respond with a keepaliveResponse record containing the same sequence number used in the request. The circumstances under which the IEF transmits keepalive requests is out of scope of the present document.

NEXT CHANGE

##### 6.2.3.1.3 Provisioning of the MDF2

The MDF2 listed as the delivery endpoint for xIRI generated by the IRI-POI in the SMF or the IRI-POI in the UPF shall be provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2. Table 6.2.3-0B shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF2.

The MDF2 shall support the following target identifier formats in the ETSI TS 103 221-1 [7] messages (or equivalent if ETSI TS 103 221-1 [7] is not used):

- SUPIIMSI.

- SUPINAI.

- PEIIMEI.

- PEIIMEISV.

- GPSIMSISDN.

- GPSINAI.

Table 6.2.3-0B: ActivateTask message for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. | M |
| TargetIdentifiers | One or more of the target identifiers listed in the paragraph above. | M |
| DeliveryType | Set to “X2Only”, “X3Only” or “X2andX3” as needed to meet the requirements of the warrant. (Ignored by the MDF2). | M |
| TaskDetailsExtensions/  HeaderReporting | Header reporting-specific tag to be carried in the *TaskDetailsExtensions* field of ETSI TS 103 221-1 [7]. See table 6.2.3.9.2-1. Unless there is a CSP/LEA agreement to not report packet header information, this field shall be present to enable packet header information reporting. | C |
| ListOfDIDs | Delivery endpoints of LI\_HI2. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfMediationDetails | Sequence of Mediation Details, See table 6.2.3-0C. | M |

Table 6.2.3-0C: Mediation Details for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Intercept ID associated with the task. | M |
| DeliveryType | Set to "HI2Only". | M |
| ListOfDIDs | Details of where to send the IRI for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations authorised by the ListOfDIDs field in the ActivateTask Message. | C |
| ServiceScoping | Shall be included to Identify the service(s) and associated service-related delivery settings for this LIID. May include more than one instance of this parameter to allow for different combinations of subparameters associated with a single LIID. This parameter is defined in ETSI TS 103 221-1 [7] Annex C table C.2. | C |
| MediationDetailsExtensions/  HeaderReporting | Header reporting-specific tag to be carried in the MediationDetailsExtensions field of ETSI TS 103 221-1 [7]. See table 6.2.3.9.2-1. This field shall be included if deviation from the taskDetails HeaderReporting TaskDetailsExtensions is required. If included, the details shall be used instead of the HeaderReporting instructions specified in the HeaderReporting field in the TaskDetails structure. | C |

NEXT CHANGE

##### 6.2.3.1.4 Provisioning of the MDF3

The MDF3 listed as the delivery endpoint for the xCC generated by the CC-POI in the UPF shall be provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2. Table 6.2.3-0D shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF3. If packet header information reporting is authorised and approach 2 described in clause 6.2.3.9.1 is used, the endpoint for the MDF3 shall be the MDF2 over LI\_MDF.

The MDF3 shall support the following target identifier formats in the ETSI TS 103 221-1 [7] messages (or equivalent if ETSI TS 103 221-1 [7] is not used):

- SUPIIMSI.

- SUPINAI.

- PEIIMEI.

- PEIIMEISV.

- GPSIMSISDN.

- GPSINAI.

Table 6.2.3-0D: ActivateTask message for MDF3

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. | M |
| TargetIdentifiers | One or more of the target identifiers listed in the paragraph above. | M |
| DeliveryType | Set to “X2Only”, “X3Only” or “X2andX3” as needed to meet the requirements of the warrant. | M |
| TaskDetailsExtensions/  HeaderReporting | Header reporting-specific tag to be carried in the *TaskDetailsExtensions* field of ETSI TS 103 221-1 [7]. See table 6.2.3.9.2-1. Unless there is a CSP/LEA agreement to not report packet header information, this field shall be present to enable packet header information reporting is. | C |
| ListOfDIDs | Delivery endpoints of LI\_HI3 or LI\_MDF. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfMediationDetails | Sequence of Mediation Details, see table 6.2.3-0E. | M |

Table 6.2.3-0E: Mediation Details for MDF3

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Intercept ID associated with the task. | M |
| DeliveryType | Set to "HI3Only". | M |
| ListOfDIDs | Details of where to send the CC for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations authorised by the ListOfDIDs field in the ActivateTask Message. | C |
| ServiceScoping | Shall be included to Identify the service(s) and associated service-related delivery settings for this LIID. May include more than one instance of this parameter to allow for different combinations of subparameters associated with a single LIID. This parameter is defined in ETSI TS 103 221-1 [7] Annex C table C.2. | C |
| MediationDetailsExtensions/  HeaderReporting | Header reporting-specific tag to be carried in the MediationDetailsExtensions field of ETSI TS 103 221-1 [7]. See table 6.2.3.9.2-1. This field shall be included if deviation from the taskDetails HeaderReporting TaskDetailsExtensions is required. If included, the details shall be used instead of the HeaderReporting instructions specified in the HeaderReporting field in the TaskDetails structure. | C |

NEXT CHANGE

##### 6.2.3.2.2 PDU session establishment

The IRI-POI in the SMF, or in the case of interworking, the IRI-POI in the SMF+PGW-C, shall generate an xIRI containing an SMFPDUSessionEstablishment record when the IRI-POI present in the SMF detects that a PDU session has been established for the target UE. The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), sends the N1 NAS message (via AMF) PDU SESSION ESTABLISHMENT ACCEPT to the UE and the 5G Session Management (5GSM) state within the SMF is changed to PDU SESSION ACTIVE (see TS 24.501 [13]).

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) sends the N16: Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]).

Table 6.2.3-1: Payload for SMFPDUSessionEstablishment record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions (see NOTE). | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available (see NOTE). | C |
| gPSI | GPSI associated with the PDU session if available (see NOTE). | C |
| pDUSessionID | PDU Session ID See TS 24.501 [13] clause 9.4. | M |
| gTPTunnelID | Contains the F-TEID identifying the GTP tunnel used to encapsulate the traffic, as defined in TS 29.244 [15] clause 8.2.3. Non-GTP encapsulation is for further study. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| sNSSAI | Slice identifiers associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, TNGF or TWIF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| location | Location information provided by the AMF, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003[19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1 if available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. In the case where the network does not support Multi Access (MA) PDU sessions, but receives a MA PDU session request, a request type of “Initial request” shall be reported. | C |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C |
| rATType | RAT Type associated with the access if provided by the AMF as part of session establishment (see TS 23.502 [4] clause 4.3.2). Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| sMPDUDNRequest | Contents of the SM PDU DN Request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| uEEPSPDNConnection | This IE shall be present, if available, during an EPS to 5GS Idle mode mobility or handover using the N26 interface. If present, it shall contain the EPS bearer context(s) information present in the uEEPSPDNConnection parameter of the intercepted SmContextCreateData message. (see TS 29.502 [16] clause 6.1.6.2.2). | C |
| ePS5GSComboInfo | Provides detailed information about PDN Connections. Shall be included if the AMF has selected a SMF+PGW-C to serve the PDU session. This parameter shall include the additional IEs in Table 6.2.3-1A, if present. | C |
| NOTE: At least one of the SUPI, PEI or GPSI fields shall be present. | | |

Table 6.2.3-1A: Payload for ePS5GSComboInfo

|  |  |  |
| --- | --- | --- |
| ePSInterworkingIndication | Indication that the AMF has selected a SMF+PGW-C to serve the PDU session. See TS 29.502 [16] clause 6.1.6.3.11. | M |
| ePSSubscriberIDs | Includes the Subscriber Identities associated with the EPS PDN Connection in the UE Context sent from the MME to the AMF. See TS 29.274 clause 7.2.1 and TS 23.502 [4] clause 4.11.1. | M |
| ePSPdnCnxInfo | Indicates that the PDU Session may be moved to EPS During its lifetime. See TS 29.502 [16] clause 6.1.6.2.31. | C |
| ePSBearerInfo | Includes the EPS Bearer context(s) successfully setup in EPS for the PDU Session. See TS 29.502 [16] clause 6.1.6.2.4. | C |

NEXT CHANGE

##### 6.2.3.2.4 PDU session release

The IRI-POI in the SMF shall generate an xIRI containing an SMFPDUSessionRelease record when the IRI-POI present in the SMF detects that a PDU session has been released. The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), receives the N1 NAS message (via AMF) PDU SESSION RELEASE COMMAND COMPLETE from the UE and the 5GSM state within the SMF is changed to PDU SESSION INACTIVE (see TS 24.501 [13]). This applies to the following two cases:

- UE initiated PDU session release.

- Network initiated PDU session release.

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), receives the N1 NAS message (via AMF) PDU SESSION MODIFICATION COMMAND REJECT from the UE with the cause value #43 indicating an invalid PDU Session ID and the 5GSM state within the SMF is changed to PDU SESSION INACTIVE (see TS 24.501 [13]). This applies to the case where the UE rejects a PDU SESSION MODIFICATION COMMAND as it finds that the indicated PDU session ID is invalid. The 5GSM state is changed to PDU SESSION INACTIVE within the SMF.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) receives the N16: Nsmf\_PDU\_Session\_Update response message with n1SmInfoFromUe IE containing the PDU SESSION RELEASE COMMAND COMPLETE (see TS 29.502 [16]) from the V-SMF. This applies to the following three cases:

- UE initiated PDU session release.

- Network (VPLMN) initiated PDU session release.

- Network (HPLMN) initiated PDU session release.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) receives the N16: Nsmf\_PDU\_Session\_Update response message with n1SmInfoFromUe IE containing the PDU SESSION MODIFICATION COMMAND REJECT (see TS 29.502 [16]) from the V-SMF with the cause value #43 indicating an Invalid PDU Session ID.

Table 6.2.3-3: Payload for SMFPDUSessionRelease record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session. | M |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| pDUSessionID | PDU Session ID as assigned by the AMF. | M |
| timeOfFirstPacket | Time of first packet for the PDU session. | C |
| timeOfLastPacket | Time of last packet for the PDU session. | C |
| uplinkVolume | Number of uplink octets for the PDU session. | C |
| downlinkVolume | Number of downlink octets for the PDU session. | C |
| location | Location information, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| cause | Indicates the NF Service Consumer cause for the requested PDU session release (see TS 29.502 [16] clause 6.1.6.3.8 for enumerated cause information). Include if known. | C |
| ePS5GSComboInfo | Provides detailed information about PDN Connections. Shall be included when the AMF has selected a SMF+PGW-C to serve the PDU session. This parameter may include the additional IEs in Table 6.2.3-1A, when available. | C |

NEXT CHANGE

##### 6.2.3.2.5 Start of interception with an established PDU session

The IRI-POI in the SMF shall generate an xIRI containing an SMFStartOfInterceptionWithEstablishedPDUSession record when the IRI-POI present in the SMF detects that a PDU session has already been established for the target UE when interception starts.

In a non-roaming scenario, the IRI-POI in the SMF (or in a roaming scenario, the IRI-POI in the V-SMF in the VPLMN) shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case:

- The 5GSM state within the SMF for that UE is 5GSM: PDU SESSION ACTIVE or PDU SESSION MODIFICATION PENDING.

NOTE: The above trigger happens when the SMF (V-SMF in VPLMN) had not sent an N1 NAS message PDU SESSION RELEASE COMMAND to the UE for a PDU session and the SMF (V-SMF in the VPLMN) had previously sent an N1 NAS message PDU SESSION ESTABLISHMENT ACCEPT to that UE for the same PDU session.

In a home-routed roaming scenario, the IRI-POI in the H-SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case:

- The H-SMF had not sent a Nsmf\_PDU\_Session\_Update Request (n1SmInfoToUe: PDU SESSION RELEASE COMMAND) to the V-SMF for a PDU session and H-SMF had previously sent a Nsmf\_PDU\_Session\_Create response (n1SmInfoToUE: PDU SESSION ESTABLISHMENT ACCEPT) to the V-SMF for that PDU session.

The IRI-POI in the SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedPDUSession record for each of the PDU sessions (that meets the above criteria) associated with the newly identified target UEs.

Table 6.2.3-4: Payload for SMFStartOfInterceptionWithEstablishedPDUSession record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| pDUSessionID | PDU Session ID as assigned by the AMF, as defined in TS 24.007 [14] clause 11.2.3.1b. | M |
| gTPTunnelID | Contains the F-TEID identifying the tunnel used to encapsulate the traffic, as defined in TS 29.244 [15] clause 8.2.3. Non-GTP encapsulation is for further study. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). MAC addresses are given as 6 octets with the most significant octet first. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, TNGF or TWIF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| location | Location information provided by the AMF at session establishment, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003 [19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1, if available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C |
| rATType | RAT type associated with the access if provided by the AMF as part of session establishment (see TS 23.502 [4] clause 4.3.2). Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| sMPDUDNRequest | Contents of the SM PDU DN request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| timeOfSessionEstablishment | Time at which the session establishment occurred, if available. Shall be given qualified with time zone information (i.e. as UTC or offset from UTC, not as local time). | C |
| ePS5GSComboInfo | Provides detailed information about PDN Connections. Shall be included when the AMF has selected a SMF+PGW-C to serve the PDU session. This parameter may include the additional IEs in table 6.2.3-1A, when available. | C |

The IRI-POI present in the SMF generating an xIRI containing a SMFStartOfInterceptionWithEstablishedPDUSession record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

NEXT CHANGE

##### 6.2.3.2.6 SMF unsuccessful procedure

The IRI-POI in the SMF shall generate an xIRI containing an SMFUnsuccessfulProcedure record when the IRI-POI present in the SMF detects an unsuccessful procedure or error condition for a UE matching one of the target identifiers provided via LI\_X1.

Accordingly, the IRI-POI in the SMF generates the xIRI when one of the following events are detected:

- SMF sends a PDU SESSION ESTABLISHMENT REJECT message to the target UE.

- SMF sends a PDU SESSION MODIFICATION REJECT message to the target UE.

- SMF sends a PDU SESSION RELEASE REJECT message to the target UE.

- SMF receives a PDU SESSION MODIFICATION COMMAND REJECT message from the target UE.

- An ongoing SM procedure is aborted at the SMF, due to e.g. a 5GSM STATUS message sent from or received by the SMF.

Table 6.2.3-5: Payload for SMFUnsuccessfulProcedure record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| failedProcedureType | Specifies the procedure which failed or is aborted at the SMF. | M |
| failureCause | Provides the value of the 5GSM cause, see TS 24.501 [13] clause 9.11.4.2. In case the procedure is aborted due to a 5GSM STATUS message, the 5GSM cause is the one included in the 5GSM status message. | M |
| requestedSlice | Slice requested for the procedure, if available, given as a NSSAI (a list of S-NSSAI values as described in TS 24.501 [13] clause 9.11.3.37). | C |
| initiator | Specifies whether the network (SMF) or the UE is initiating the rejection or indicating the failure. | M |
| sUPI | SUPI associated with the procedure, if available (see NOTE). | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI used in the procedure, if available (see NOTE). | C |
| gPSI | GPSI used in the procedure, if available (see NOTE). | C |
| pDUSessionID | PDU Session ID See clause 9.4 of TS 24.501 [13], if available. | C | |
| uEEndpoint | UE endpoint address(es) if available. | C | |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, TNGF or TWIF, if available. | C | |
| location | Location information provided by the AMF, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C | |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003 [19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2, if available. | C | |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1 when available. | C | |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C | |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C | |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C | |
| rATType | RAT Type associated with the access if provided by the AMF as part of session establishment (see TS 23.502 [4] clause 4.3.2). Values given as per TS 29.571 [17] clause 5.4.3.2. | C | |
| sMPDUDNRequest | Contents of the SM PDU DN Request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C | |
| NOTE: At least one identity shall be provided, the others shall be provided if available. | | | |

NEXT CHANGE

6.2.3.2.7.2 MA PDU session establishment

The IRI-POI in the SMF shall generate an xIRI containing an SMFMAPDUSessionEstablishment record when the IRI-POI present in the SMF detects that a PDU session has been established for the target UE that is an MA PDU session (Request Type set to MA PDU session or upgraded at establishment), or where the upgrade allowed parameter is set to upgrade allowed and session is established as an ordinary PDU session (not upgraded at establishment, but may occur later on). The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario , the SMF sends the N1 NAS message (via AMF) PDU Session Establishment Accept to the UE for a new PDU session and the 5G Session Management (5GSM) state within the SMF is changed to PDU SESSION ACTIVE (see TS 24.501 [13]) in response to a PDU Session Establishment request received along with:

- PDU Session ID which does not identify an existing PDU session, and

- Request Type = MA PDU request, or

- Request Type = initial request and MA PDU session information set to "MA PDU session network upgrade is allowed", with either upgrade occuring at establishment or upgrade does not occur at establishment but may occur later.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) sends the N16: Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]) for a new PDU session in response to a PDU Session Establishment request received along with:

- PDU Session ID which does not identify an existing PDU session, and

- Request Type = MA PDU request, or

- Request Type = initial request and MA PDU session information set to "MA PDU session network upgrade is allowed", with either upgrade occuring at establishment or upgrade does not occur at establishment but may occur later.

Table 6.2.3-5A: Payload for SMFMAPDUSessionEstablishment record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions (see NOTE). | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available (see NOTE). | C |
| gPSI | GPSI associated with the PDU session if available (see NOTE). | C |
| pDUSessionID | PDU Session ID See clause 9.4 of TS 24.501 [13]. Identifies a new PDU session. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| accessInfo | Identifies the access(es) associated with the PDU session including the information for each specific access (see table 6.2.3-5B) | M |
| sNSSAI | Slice identifiers associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. | C |
| location | Location information provided by the AMF, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003[19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1 when available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C |
| sMPDUDNRequest | Contents of the SM PDU DN Request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| servingNetwork | PLMN ID of the serving core network operator, and, for a Non-Public Network (NPN), the NID that together with the PLMN ID identifies the NPN. | M |
| oldPDUSessionID | The old PDU Session ID received from the UE. See TS 23.502 [4] clauses 4.3.2.2.1 and 4.3.5.2 and TS 24.501 [13] clause 6.4.1.2. Include if known. | C |
| mAUpgradeIndication | Indicates whether the PDU session is allowed to be upgraded to MA-Confirmed MA PDU session (see TS 23.502 [4] clause 4.22.3). Include if known. | C |
| ePSPDNCnxInfo | Indicates if the PDU session may be moved to EPS during its lifetime (see TS 29.502 [16] clause 6.1.6.2.31). Include if known. | C |
| mAAcceptedIndication | Indicates that a request to establish an MA PDU session was accepted or if a single access PDU session request was upgraded into a MA PDU session (see TS 23.502 [4] clauses 4.22.2 and 4.22.3).  It shall be set as follows:  - true: MA-Confirmed MA PDU session was established  - false: single access MA-Upgrade-Allowed MA PDU session was established that may be upgraded to an MA-Confirmed MA PDU session. | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See TS 24.501[13] clause 9.11.4.22. | C |
| NOTE: At least one of the SUPI, PEI or GPSI fields shall be present. | | |

Table 6.2.3-5B: Contents of Access Info parameter

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) as provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | M |
| rATType | RAT Type associated with the access as provided by the AMF as part of session establishment (see TS 23.502 [4] clause 4.3.2). Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| gTPTunnelID | Contains the F-TEID identifying the GTP tunnel used to encapsulate the traffic, as defined in TS 29.244 [15] clause 8.2.3. Non-GTP encapsulation is for further study. | M |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, TNGF or TWIF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| establishmentStatus | Indicates whether the access type is established or released. | M |
| aNTypeToReactivate | Indicates the Access Network Type for which the UP connection is requested to be re-activated, for an MA PDU session. Applicable to session modification reporting. | C |

NEXT CHANGE

6.2.3.2.7.3 MA PDU session modification

The IRI-POI in the SMF shall generate an xIRI containing an SMFMAPDUSessionModification record when the IRI-POI present in the SMF detects that an MA PDU session has been modified for the target UE. The IRI-POI present in the SMF shall generate the xIRI for the following events:

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), receives the N1 NAS message (via AMF) PDU SESSION MODIFICATION COMMAND COMPLETE from the UE and the 5GSM state within the SMF is returned to PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following cases for an MA-Upgrade-Allowed PDU session:

- UE initiated PDU session modification.

- Network (VPLMN) initiated PDU session modification.

- Upgrade to an MA PDU session.

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), receives the N1 NAS message (via AMF) PDU SESSION RELEASE COMPLETE from the UE in response to a PDU SESSION RELEASE COMMAND message containing an Access type IE identifying a single access to be released of an MA PDU session which was established over both accesses and the 5GSM state within the SMF remains in the PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following case:

- A single access type is released from an MA PDU session, but the MA PDU session continues.

- For a non-roaming scenario, the SMF (or for a roaming scenario, V-SMF in the VPLMN), sends the N1 NAS message (via AMF) PDU SESSION ESTABLISHMENT ACCEPT to the UE and the 5GSM state within the SMF remains in the PDU SESSION ACTIVE (see TS 24.501 [13]). This applies to the following cases:

- Handover from one access type to another access type happens (e.g. 3GPP to non-3GPP) for an MA-Upgrade-Allowed MA PDU session.

- MA PDU Session establishment over second access type.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) receives the N16: Nsmf\_PDU\_Session\_Update response message with n1SmInfoFromUe IE containing the PDU SESSION MODIFICATION COMMAND COMPLETE (see TS 29.502 [16]). This applies to the following cases for an MA-Upgrade-Allowed PDU session:

- UE initiated PDU session modification.

- Network (VPLMN) initiated PDU session modification.

- Network (HPLMN) initiated PDU session modification.

- Upgrade to an MA PDU session.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) receives the N16: Nsmf\_PDU\_Session\_Update response message with n1SmInfoFromUe IE containing the PDU SESSION RELEASE COMPLETE message, a response to a PDU SESSION RELEASE COMMAND message containing an Access type IE identifying a single access to be released of an MA PDU session which was established over both accesses and the 5GSM state within the SMF remains in the PDU SESSION ACTIVE (see TS 29.502 [16]). This applies to the following cases:

- A single access type is released from an MA PDU session, but the MA PDU session continues.

- For a home-routed roaming scenario, the SMF in the HPLMN (i.e. H-SMF) sends the N16: Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]) while it had received an N16 Nsmf\_PDU\_Session\_Create request message with an existing PDU Session Id with access type being changed. This applies to the following cases:

- Handover from one access type to another access type happens (e.g. 3GPP to non-3GPP) for an MA-Upgrade-Allowed PDU session.

- MA PDU Session establishment over second access type.

Table 6.2.3-5C: Payload for SMFMAPDUSessionModification record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message, and set to “true” if the SUPI was not authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| pDUSessionID | PDU Session ID, see TS 24.501 [13] clause 9.4. | M |
| accessInfo | Identifies the access(es) associated with the PDU session including the information for each specific access (see table 6.2.3-5B) being modified. | C |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| location | Location information provided by the AMF, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C |
| servingNetwork | PLMN ID of the serving core network operator, and, for a Non-Public Network (NPN), the NID that together with the PLMN ID identifies the NPN. | M |
| oldPDUSessionID | The old PDU Session ID received from the UE. See TS 23.502 [4] clauses 4.3.2.2.1 and 4.3.5.2 and TS 24.501 [13] clause 6.4.1.2. Include if known. | C |
| mAUpgradeIndication | Indicates whether the PDU session is allowed to be upgraded to MA PDU session (see TS 23.502 [4] clause 4.22.3 of). Include if known. | C |
| ePSPDNCnxInfo | Indicates if the PDU session may be moved to EPS during its lifetime (see TS 29.502 [16] clause 6.1.6.2.31). Include if known. | C |
| mAAcceptedIndication | Indicates that a request to establish an MA PDU session was accepted or if a single access PDU session request was upgraded into a MA PDU session (see clauses 4.22.2 and 4.22.3 of TS 23.502 [4]).  It shall be set as follows:  - true: MA-Confirmed MA PDU session was established  - false: single access MA-Upgrade-Allowed MA PDU session was established that may be upgraded to an MA-Confirmed MA PDU session. | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See clause 9.11.4.22 of TS 24.501 [13]. | C |

NEXT CHANGE

6.2.3.2.7.5 Start of interception with an established MA PDU session

The IRI-POI in the SMF shall generate an xIRI containing an SMFStartOfInterceptionWithEstablishedMAPDUSession record when the IRI-POI present in the SMF detects that a MA PDU session has already been established for the target UE when interception starts.

In a non-roaming scenario, the IRI-POI in the SMF (or in a roaming scenario, the IRI-POI in the V-SMF in the VPLMN) shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedMAPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case for an MA PDU session that is either MA-Confirmed or MA-Upgrade-Allowed:

- The 5GSM state within the SMF for that UE is 5GSM: PDU SESSION ACTIVE or PDU SESSION MODIFICATION PENDING.

NOTE: The above trigger happens when the SMF (V-SMF in VPLMN) had not sent an N1 NAS message PDU SESSION RELEASE COMMAND to the UE to release the entire MA PDU session and the SMF (V-SMF in the VPLMN) had previously sent an N1 NAS message PDU SESSION ESTABLISHMENT ACCEPT to that UE for the same MA PDU session.

In a home-routed roaming scenario, the IRI-POI in the H-SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedMAPDUSession record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) for the following case for an MA PDU session that is either MA-Confirmed or MA-Upgrade-Allowed:

- The H-SMF had not sent an Nsmf\_PDU\_Session\_Update Request (n1SmInfoToUe: PDU SESSION RELEASE COMMAND to release the entire MA PDU session) to the V-SMF for a PDU session and H-SMF had previously sent an Nsmf\_PDU\_Session\_Create response (n1SmInfoToUE: PDU SESSION ESTABLISHMENT ACCEPT) to the V-SMF for that PDU session.

The IRI-POI in the SMF shall generate the xIRI containing the SMFStartOfInterceptionWithEstablishedMAPDUSession record for each of the MA PDU sessions (that meets the above criteria) associated with the newly identified target UEs.

Table 6.2.3-5E: Payload for SMFStartOfInterceptionWithEstablishedMAPDUSession record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| pDUSessionID | PDU Session ID as assigned by the AMF, as defined in TS 24.007 [14] clause 11.2.3.1b. | M |
| pDUSessionType | Identifies selected PDU session type, see TS 24.501 [13] clause 9.11.4.11. | M |
| accessInfo | Identifies the access(es) associated with the PDU session including the information for each specific access (see table 6.2.3-5B). | M |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| uEEndpoint | UE endpoint address(es) if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). MAC addresses are given as 6 octets with the most significant octet first. | C |
| location | Location information provided by the AMF at session establishment, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003 [19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | M |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1, if available. | C |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C |
| sMPDUDNRequest | Contents of the SM PDU DN request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C |
| servingNetwork | PLMN ID of the serving core network operator, and, for a Non-Public Network (NPN), the NID that together with the PLMN ID identifies the NPN. | M |
| oldPDUSessionID | The old PDU Session ID received from the UE. See TS 23.502 [4] clauses 4.3.2.2.1 and 4.3.5.2 and TS 24.501 [13] clause 6.4.1.2. Include if known. | C |
| mAUpgradeIndication | Indicates whether the PDU session is allowed to be upgraded to MA PDU session (see TS 23.502 [4] clause 4.22.3). Include if known. | C |
| ePSPDNCnxInfo | Indicates if the PDU session may be moved to EPS during its lifetime (see TS 29.502 [16] clause 6.1.6.2.31). Include if known. | C |
| mAAcceptedIndication | Indicates that a request to establish an MA PDU session was accepted or if a single access PDU session request was upgraded into an MA PDU session (see TS 23.502 [4] clauses 4.22.2 and 4.22.3).  It shall be set as follows:  - true: MA-Confirmed MA PDU session was established.  - false: single access MA-Upgrade-Allowed MA PDU session was established that may be upgraded to an MA-Confirmed MA PDU session. | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See TS 24.501 [13] clause 9.11.4.22. | C |

The IRI-POI present in the SMF generating an xIRI containing a SMFStartOfInterceptionWithEstablishedMAPDUSession record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

NEXT CHANGE

6.2.3.2.7.6 SMF MA unsuccessful procedure

The IRI-POI in the SMF shall generate an xIRI containing an SMFMAUnsuccessfulProcedure record when the IRI-POI present in the SMF detects an unsuccessful procedure or error condition for a UE matching one of the target identifiers provided via LI\_X1.

Accordingly, the IRI-POI in the SMF generates the xIRI when one of the following events are detected:

- SMF sends a PDU SESSION ESTABLISHMENT REJECT message to the target UE for MA-Confirmed and MA-Upgrade-Allowed MA PDU sessions.

- SMF sends a PDU SESSION MODIFICATION REJECT message to the target UE for MA-Confirmed and MA-Upgrade-Allowed MA PDU sessions.

- SMF sends a PDU SESSION RELEASE REJECT message to the target UE for MA-Confirmed and MA-Upgrade-Allowed MA PDU sessions.

- SMF receives a PDU SESSION MODIFICATION COMMAND REJECT message from the target UE for MA-Confirmed and MA-Upgrade-Allowed MA PDU sessions.

- An ongoing SM procedure is aborted at the SMF, due to e.g. a 5GSM STATUS message sent from or received by the SMF for MA-Confirmed and MA-Upgrade-Allowed MA PDU sessions.

Table 6.2.3-5F: Payload for SMFMAUnsuccessfulProcedure record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| failedProcedureType | Specifies the procedure which failed or is aborted at the SMF. | M |
| failureCause | Provides the value of the 5GSM cause, see TS 24.501 [13], clause 9.11.4.2. In case the procedure is aborted due to a 5GSM STATUS message, the 5GSM cause is the one included in the 5GSM status message. | M |
| requestedSlice | Slice requested for the procedure, if available, given as a NSSAI (a list of S-NSSAI values as described in TS 24.501 [13] clause 9.11.3.37). | C |
| initiator | Specifies whether the network (SMF) or the UE is initiating the rejection or indicating the failure. | M |
| sUPI | SUPI associated with the procedure, if available (see NOTE). | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to “true” if the SUPI has not been authenticated, or “false” if it has been authenticated. | C |
| pEI | PEI used in the procedure, if available (see NOTE). | C |
| gPSI | GPSI used in the procedure, if available (see NOTE). | C |
| pDUSessionID | PDU Session ID, see TS 24.501 [13] clause 9.4, if available. | C | |
| accessInfo | Identifies the access(es) associated with the PDU session including the information for each specific access (see table 6.2.3-5B). | M | |
| uEEndpoint | UE endpoint address(es) if available. | C | |
| location | Location information provided by the AMF, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C | |
| dNN | Data Network Name associated with the target traffic, as defined in TS 23.003 [19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2, if available. | C | |
| aMFID | Identifier of the AMF associated with the target UE, as defined in TS 23.003 [19] clause 2.10.1 when available. | C | |
| hSMFURI | URI of the Nsmf\_PDUSession service of the selected H-SMF, if available. See TS 29.502 [16] clause 6.1.6.2.2. | C | |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47 if available. | C | |
| sMPDUDNRequest | Contents of the SM PDU DN Request container, if available, as described in TS 24.501 [13] clause 9.11.4.15. | C | |
| NOTE: At least one identity shall be provided, the others shall be provided if available. | | | |

NEXT CHANGE

##### 6.2.3.2.8 PDU to MA PDU session modification

The IRI-POI in the SMF shall generate an xIRI containing an SMFPDUtoMAPDUSessionModification record when the IRI-POI present in the SMF detects that an existing PDU session for the target UE has been successfully modified to an MA PDU session using the PDU session modification procedures as described in TS 24.501 [13]. A PDU session is considered to be successfully modified to a MA PDU session, when all of the following are true:

1. The UE is registered to both 3GPP access and non-3GPP access:

- In the same PLMN (non-roaming UE).

- In the different PLMNs (roaming UE).

2. SMF receives the PDU SESSION MODIFICATION REQUEST from the UE (TS 24.501 [13] clause 8.2.10) that includes one of the following:

- *modification request* and includes MA PDU session information IE set to *MA PDU session network upgrade allowed*.

- *MA PDU request*.

3. SMF sends a PDU SESSION MODIFICATION COMMAND to the UE that includes the ATSSS IE (TS 24.501 [13] clause 6.4.2.3).

4. SMF receives the PDU SESSION MODIFICATION COMPLETE from the UE (TS 24.501 [13] clause 8.3.10.1).

5. The 5GSM state within the SMF is PDU Session Active.

Once the SMFPDUtoMAPDUSessionModification record has been generated by the IRI-POI in the SMF, the IRI-POI shall follow clause 6.2.3.2.7 of the present document for further reporting for this MA PDU session.

Table 6.2.3-5G: Payload for SMFPDUtoMAPDUSessionModification record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU\_Session\_CreateSMContext service operation). Shall be present except for PEI-only unauthenticated emergency sessions. | C |
| sUPIUnauthenticated | Shall be present if a SUPI is present in the message and set to *true* if the SUPI was not authenticated, or *false* if it has been authenticated. | C |
| pEI | PEI associated with the PDU session if available. | C |
| gPSI | GPSI associated with the PDU session if available. | C |
| sNSSAI | Slice identifier associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.15.2. | C |
| non3GPPAccessEndpoint | UE's local IP address used to reach the N3IWF, TNGF or TWIF, if available. IP addresses are given as 4 octets (for IPv4) or 16 octets (for IPv6) with the most significant octet first (network byte order). | C |
| location | Location information provided by the AMF, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| requestType | Type of request as described in TS 24.501 [13] clause 9.11.3.47. | M |
| accessType | Access type associated with the session (i.e. 3GPP or non-3GPP access) if provided by the AMF (see TS 24.501 [13] clause 9.11.2.1A). | C |
| rATType | RAT type associated with the access, if available. Values given as per TS 29.571 [17] clause 5.4.3.2. | C |
| pDUSessionID | PDU Session ID, see TS 24.501 [13] clause 9.4. | M |
| requestIndication | Indicates the request type for PDU session modification as indicated by the requestIndication sent in the PDU SESSION MODIFICATION REQUEST (see TS 29.502 [16] clause 6.1.6.3.6). | M |
| aTSSSContainer | Identifies the steering, switching, and splitting features for the MA-Confirmed MA PDU session. Also indicates whether MPTCP or ATSSS-LL is to be used for ATSSS. See TS 24.501 [13] clause 9.11.4.22. | M |

NEXT CHANGE

##### 6.2.3.3.1 LI\_T3 interface specifics

When interception of communication contents is authorised or the delivery of packet header information is authorised and approach 2 described in clause 6.2.3.5 is used, the CC-TF present in the SMF sends a trigger to the CC-POI present in the UPF over the LI\_T3 interface.

When the CC-TF in the SMF detects that a PDU session is being established for a target UE (i.e. when the SMF sends the N4: Session Establishment Request), it shall send an activation message to the CC-POI in the UPF over the LI\_T3 interface. The activation message shall contain the correlation identifiers that the CC-POI in the UPF shall use with the xCC. This can be achieved by sending an ActivateTask message as defined in ETSI TS 103 221-1 [7] clause 6.2.1 with the following details.

Table 6.2.3-6: ActivateTask message for triggering the CC-POI in the UPF

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | Allocated by the CC-TF as per ETSI TS 103 221-1 [7]. | M |
| TargetIdentifiers | Packet detection criteria as determined by the CC-TF in the SMF, which enables the UPF to isolate target traffic. The CC-POI in the UPF shall support at least the identifier types given in table 6.2.3-7.  NOTE: This value is the target identifier for the CC-POI in the UPF and may be different from the target identifier specified in the warrant. | M |
| DeliveryType | Set to “X3Only”. | M |
| ListOfDIDs | Delivery endpoints for LI\_X3. These delivery endpoints shall be configured by the CC-TF in the SMF using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| CorrelationID | Correlation ID to assign to X3 PDUs generated by the CC-POI in the UPF. This field is populated with the same CorrelationID the IRI-POI in the SMF uses for the associated xIRI. | M |
| ProductID | Shall be set to the XID of the Task Object associated with the interception at the CC-TF. This value shall be used by the CC-POI in the UPF to fill the XID of X3 PDUs. | M |

Table 6.2.3-7: Target Identifier Types for LI\_T3

|  |  |  |  |
| --- | --- | --- | --- |
| Identifier type | Owner | ETSI TS 103 221-1 [7] TargetIdentifier type | Definition |
| GTP Tunnel ID | 3GPP | gtpuTunnelId | F-TEID (see XSD schema) |
| UE IP Address | ETSI | ipAddress | See ETSI TS 103 221-1 [7] |
| UE IP Address and port | ETSI | ipAddressPort | See ETSI TS 103 221-1 [7] |
| PFCP Session ID | 3GPP | TargetIdentifierExtension / FSEID | F-SEID (see XSD schema) |
| PDR ID | 3GPP | TargetIdentifierExtension / PDRID | 32 bit unsigned integer (see XSD schema) |
| QER ID | 3GPP | TargetIdentifierExtension / QERID | 32 bit unsigned integer (see XSD schema) |
| Network Instance | 3GPP | TargetIdentifierExtension / NetworkInstance | Octet string (see XSD schema) |
| GTP Tunnel Direction | 3GPP | TargetIdentifierExtension / GTPTunnelDirection | Enumeration (see XSD schema) |

When the CC-TF in the SMF detects that a targeted PDU session is changing (i.e. when the SMF sends the N4 Session Modification Request to the UPF) in a way that requires changes to the interception already activated by the CC-POI in the UPF, the CC-TF shall modify the interception at the CC-POI in the UPF over the LI\_T3 interface. This is achieved by sending a ModifyTask message as defined in ETSI TS 103 221-1 [7] clause 6.2.2. The ModifyTask message contains the same details as the ActivateTask message with the following fields updated as appropriate.

Table 6.2.3-8: Parameters that may be changed in a ModifyTask message when updating interception at the CC-POI in the UPF

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| TargetIdentifiers | Updated packet detection criteria as determined by the CC-TF in the SMF.  NOTE: See notes on TargetIdentifiers in table 6.2.3-6. | M |

When the CC-TF in the SMF detects that a targeted PDU session is changing (i.e. when the SMF sends the N4 Session Modification Request to the UPF) for which the interception had not been previously activated in the CC-POI in the UPF (e.g. in case of previous unsuccessful LI activation at the CC-POI in the UPF by the CC-TF in the SMF), the CC-TF shall send an activation message to the CC-POI in the UPF over the LI\_T3 interface. The activation message shall contain the correlation identifiers that the CC-POI in the UPF shall use with the xCC. This can be achieved by sending an ActivateTask message as defined in ETSI TS 103 221-1 [7] clause 6.2.1 with the details provided by Table 6.2.3-6.

When the CC-TF in the SMF detects that the PDU session has been released (i.e. when the SMF sends the N4: Session Release Request to the UPF) for a target UE, it shall send a deactivation message to the CC-POI in the UPF over the LI\_T3 interface. When using ETSI TS 103 221-1 [7] this is achieved by sending a DeactivateTask message with the XID field set to the XID associated with the interception, as described in ETSI TS 103 221-1 [7] clause 6.2.3.

By default, interception shall occur at the anchor UPF as described in clause 6.2.3.3.3.

When a warrant that includes the service scoping of CC is activated for a target UE with an established PDU session and when the IRI-POI present in the SMF generates the xIRI containing an SMFStartOfInterceptionWithEstablishedPDUSession record (see clause 6.2.3.2.5), the CC-TF present in the SMF shall send an activation message to the CC-POI present in the UPF to generate the xCC.

NEXT CHANGE

#### 6.2.3.4 IRI-POI in UPF triggering over LI\_T2

When interception of packet header information is authorised, if approach 1 described in clause 6.2.3.9.1 is used for packet header information reporting, the IRI-TF in the SMF shall send a trigger to the IRI-POI in the UPF over the LI\_T2 interface when the IRI-TF in the SMF detects that a PDU session has been established for a target UE. The activation message shall contain the correlation ID that the IRI-POI in the UPF shall use when generating xIRI. This shall be achieved by sending an ActivateTask message as defined in TS 103 221-1 [7] clause 6.2.1 with the following details.

Table 6.2.3-9: ActivateTask message for triggering the UPF IRI-POI

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | Allocated by the IRI-TF as per ETSI TS 103 221-1 [7]. | M |
| TargetIdentifiers | Packet detection criteria as determined by the IRI-TF in the SMF, which enable the UPF IRI-POI to isolate target traffic. The IRI-POI in the UPF shall support at least the identifier types given in table 6.2.3-7.  NOTE: This value is the target identifier for the IRI-POI in the UPF and may be different from the target identifier specified in the warrant. | M |
| DeliveryType | Set to “X2Only”. | M |
| TaskDetailsExtensions/  HeaderReporting | Header reporting-specific tag to be carried in the *TaskDetailsExtensions* field of ETSI TS 103 221-1 [7]. See table 6.2.3.9.2-1. | M |
| ListOfDIDs | Delivery endpoints of LI\_X2. These delivery endpoints shall be configured by the IRI-TF in the SMF using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| CorrelationID | Correlation ID to assign for xIRI generated by the IRI-POI in the UPF. This field is populated with the same CorrelationID the IRI-POI in the SMF uses for the associated xIRI. | M |
| ProductID | Shall be set to the XID of the Task Object associated with the interception at the IRI-TF. This value shall be used by the IRI-POI in the UPF to fill the XID of X2 PDUs. | M |

Table 6.2.3-10: Void

When the IRI-TF in the SMF detects that a targeted PDU session has changed in a way which requires changes to the interception by the IRI-POI in the UPF, the IRI-TF in the SMF shall modify the interception at the IRI-POI in the UPF over the LI\_T2 interface. This is achieved by sending a ModifyTask message as defined in ETSI TS 103 221-1 [7] clause 6.2.2. The ModifyTask message contains the same details as the ActivateTask message with the following fields updated as appropriate.

Table 6.2.3-11: Parameters that may be changed in a ModifyTask message when updating interception at the IRI-POI in the UPF

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| TargetIdentifiers | Updated packet detection criteria as determined by the IRI-TF in the SMF.  NOTE: See notes on TargetIdentifiers in table 6.2.3-6. | M |

When the IRI-TF in the SMF detects that the PDU session has been released for a target UE, it shall send a deactivation message to the IRI-POI in the UPF over the LI\_T2 interface. When using ETSI TS 103 221-1 [7] this is achieved by sending a DeactivateTask message with the XID field set to the XID associated with the interception, as described in ETSI TS 103 221-1 [7] clause 6.2.3.

When a PDU session involves multiple UPFs, the selection of UPF to provide the IRI-POI functions shall be done in the same way an UPF is selected to provide the CC-POI functions as described in clauses 6.2.3.3.2 and 6.2.3.3.3.

When interception of packet header information is authorised for a target UE, if approach 1 described in clause 6.2.3.9.1 is used for packet header information reporting, the IRI-TF present in the SMF shall send an activation message to the IRI-POI present in the UPF when the IRI-POI present in the SMF generates the xIRI containing an SMFStartOfInterceptionWithEstablishedPDUSession record to generate the packet header information reporting related xIRIs from the user plane packets of that PDU session.

NEXT CHANGE

##### 6.2.3.5.1 Packet data header reporting

When packet header information reporting is authorised, packet header information reports are generated either by the IRI-POI in the UPF (if approach 1 from clause 7.12.2.3 of TS 33.127 [5] is used) or by the MDF2 (if approach 2 from clause 7.12.2.3 of TS 33.127 [5] is used). Depending on the requirements of the warrant, the packet header information reports can be in per-packet form, as Packet Data Header Reports (PDHRs), or in summary form, as Packet Data Header Summary Reports (PDSRs).

NEXT CHANGE

##### 6.2.3.5.3 Packet Data Header Report (PDHR)

If the per-packet form of packet header information reporting, i.e. PDHR, is authorised, the PDHeaderReport xIRI shall be generated as described in clause 6.2.3.9.3.

Table 6.2.3-12: PDHeaderReport record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pDUSessionID | The PDU Session ID value 255 shall be used by the sender; the receiver shall ignore the parameter (see NOTE). | M |
| sourceIPAddress | Shall contain the source address of the packet from the 32-bit *“Source Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Source Address”* field in IPv6, as defined in IETF RFC 2460 [27]. | M |
| sourcePort | Shall contain the *“Source Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  a) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  b) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768[29].  c) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  d) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; see IETF RFC 4960 [31].  For further details on Layer four protocols, see IANA[32]. | C |
| destinationIPAddress | Shall contain the destination address of the packet from the 32-bit *“Destination Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Destination Address”* field, as defined in IETF RFC 2460 [27]. | M |
| destinationPort | Shall contain the *“Destination Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  e) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  f) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768 [29].  g) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  h) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; see IETF RFC 4960 [31].  For further details on Layer four protocols, see IANA[32]. | C |
| nextLayerProtocol | Shall contain the contents of the IP *“Protocol”* field as defined in IETF RFC 791 [34] (bits 72...79 in the IP header), and is one of the assigned Internet protocol numbers defined in IANA[32]. | M |
| iPv6flowLabel | If the IP addresses in the report are IPv6, this field shall contain the 20-bit IPv6 “Flow Label” as defined in:  - IPv6 IETF RFC 2460 [27], and  - IPV6 Flow Label Specification IETF RFC 6437 [33]. | C |
| direction | Shall contain the direction of the intercepted packet, and it indicates either “from target” or “to target.” | M |
| packetSize | Shall contain the value of the *“Total Length*” IP header field if IPv4 is used, as defined in IETF RFC 791 [34], or the value of the “*Payload Length*” field if IPv6 is used, as defined in IETF RFC 2460 [27]. | M |
| NOTE: This is a placeholder value used to fill the pDUSessionID field, given that the UPF does not receive the PDU Session ID used for the session by the SMF, so this information is not available at the UPF. The PDU Session ID can be retrieved by the LEMF from the IRIs generated by the IRI-POI at the SMF and delivered by the MDF2. | | |

NEXT CHANGE

##### 6.2.3.5.4 Packet Data Summary Report (PDSR)

If the summary form of the packet header information reporting, i.e. PDSR, is authorised, the PDSummaryReport xIRI shall be generated as described in clause 6.2.3.9.4.

Table 6.2.3-13: PDSummaryReport record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pDUSessionID | The PDU Session ID value 255 shall be used; the receiver shall ignore the parameter (see NOTE). | M |
| sourceIPAddress | Shall contain the source address of the packet from the 32-bit *“Source Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Source Address”* field in IPv6, as defined in IETF RFC 2460 [27]. | M |
| sourcePort | Shall contain the *“Source Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  a) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  b) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768[29].  c) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  d) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; Stream Control Transmission Protocol [31].  For further details on Layer four protocols, see IANA [32]. | C |
| destinationIPAddress | Shall contain the destination address of the packet from the 32-bit *“Destination Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Destination Address”* field, as defined in IETF RFC 2460 [27]. | M |
| destinationPort | Shall contain the *“Destination Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  a) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  b) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768 [29].  c) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  d) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; Stream Control Transmission Protocol [31].  For further details on Layer four protocols, see IANA[32]. | C |
| nextLayerProtocol | Shall contain the contents of the IP *“Protocol”* field as defined in IETF RFC 791 [34] (bits 72..79 in the IP header), and is one of the assigned Internet protocol numbers defined in IANA[32]. | M |
| iPv6flowLabel | If the IP addresses in the report are IPv6, this field shall contain the 20-bit IPv6 “Flow Label” as defined in IPv6 IETF RFC 2460 [27] and the *IPV6 Flow Label Specification* IETF RFC 6437 [33]. | C |
| direction | Shall contain the direction of the intercepted packet, and it indicates either “from target” or “to target.” | M |
| pDSRSummaryTrigger | Shall contain the trigger that caused the summary report to be generated, which is one of the following:  a) timer expiry.  b) packet count.  c) byte count.  d) start of a flow.  e) end of a flow. | M |
| firstPacketTimestamp | Shall contain the timestamp that represents the time that the IRI-POI in the UPF detected the first packet in the set represented by this summary. | M |
| lastPacketTimestamp | Shall contain the timestamp that represents the time that the IRI-POI in the UPF detected the last packet in the set represented by this summary. | M |
| packetCount | Shall contain the number of packets detected during the creation of this summary. | M |
| byteCount | Shall contain the number of bytes summed across all packets that belong to this summary. For IPv4 it is the sum of the *“Total Length”* fields across all packets in the summary as defined in *Internet Protocol* IETF RFC 791 [34], while for IPv6 it is the sum of the *“Payload Length*” fields across all packets in the summary as defined in *Internet Protocol, Version 6 (IPv6) Specification*, IETF RFC 2460 [27]. | M |
| NOTE: This is a placeholder value used to fill the pDUSessionID field, given that the UPF does not receive the PDU Session ID used for the session by the SMF, so this information is not available at the UPF. The PDU Session ID can be retrieved by the LEMF from the IRIs generated by the IRI-POI at the SMF and delivered by the MDF2. | | |

NEXT CHANGE

#### 6.2.3.6 Generation of xCC at CC-POI in the UPF over LI\_X3

The CC-POI present in the UPF shall send xCC over LI\_X3 for each IP packet matching the criteria specified in the Triggering message (i.e. ActivateTask message) received over LI\_T3 from the CC-TF in the SMF.

NOTE: Implementers are reminded of the completeness and non-duplication requirements (see TS 33.127 [5]).

Each X3 PDU shall contain the contents of the user plane packet given using the GTP-U, IP or Ethernet payload format.

The CC-POI present in the UPF shall set the payload format to indicate the appropriate payload type (5 for IPv4 Packet, 6 for IPv6 Packet, 7 for Ethernet frame or 12 for GTP-U Packet as described in ETSI TS 103 221-2 [8] clauses 5.4 and 5.4.13.

If handover of the entire GTP-U packet is required over LI\_HI3 (see clause 6.2.3.8), then consideration shall be made of the correct choice of LI\_X3 payload type to ensure that the MDF3 has the necessary CC information. Support for delivery of LI\_X3 as payload type 12 (GTP-U packet) is mandatory.

The CC-POI present in the UPF may use the Additional XID Related Information attributes to facilitate efficient delivery of xCC, as specified in ETSI TS 103 221-2 [8] clause 5.3.22.

NEXT CHANGE

#### 6.2.3.7 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the SMF or the IRI-POI in the UPF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the SMF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 6.2.3-14.

Table 6.2.3-14: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| SMFPDUSessionEstablishment | BEGIN |
| SMFPDUSessionRelease | END |
| SMFPDUSessionModification | CONTINUE |
| SMFStartOfInterceptionWithEstablishedPDUSession | BEGIN |
| SMFUnsuccessfulProcedure | REPORT |
| SMFMAPDUSessionEstablishment | BEGIN |
| SMFMAPDUSessionRelease | END |
| SMFMAPDUSessionModification | CONTINUE |
| SMFStartOfInterceptionWithEstablishedMAPDUSession | BEGIN |
| SMFMAUnsuccessfulProcedure | REPORT |
| PDHeaderReport | REPORT |
| PDSummaryReport | REPORT |

IRI messages associated with the same PDU Session shall be assigned the same CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

The threeGPP33128DefinedIRI field (see ETSI TS 102 232-7 [10] clause 15) shall be populated with the BER-encoded IRIPayload.

When an additional warrant is activated on a target UE and the LIPF uses the same XID for the additional warrant, the MDF2 shall be able to generate and deliver the IRI message containing the SMFStartOfInterceptionWithEstablishedPDUSession record and the SMFStartOfInterceptionWithEstablishedMAPDUSession record to the LEMF associated with the additional warrant without receiving a corresponding xIRI. The payload of the SMFStartOfInterceptionWithEstablishedPDUSession record is specified in table 6.2.3-4, while the payload of the SMFStartOfInterceptionWithEstablishedMAPDUSession record is specified in table 6.2.3-9. The MDF2 shall generate and deliver the IRI message containing the SMFStartOfInterceptionWithEstablishedPDUSession record for each of the established PDU sessions to the LEMF associated with the new warrant. The MDF2 shall generate and deliver the IRI message containing the SMFStartOfInterceptionWithEstablishedMAPDUSession record for each of the established MA PDU sessions to the LEMF associated with the new warrant.

When the delivery of packet header information is authorised and approach 2 described in clause 6.2.3.9.1 is used, the MDF2 shall generate the IRI message and send it over LI\_HI2 without undue delay when xCC is received over LI\_MDF from the MDF3. The MDF2 shall generate packet header information reporting as described in clause 6.2.3.5.

NEXT CHANGE

#### 6.2.3.8 Generation of CC over LI\_HI3

When the xCC is received over LI\_X3, the MDF3 shall emit the CC over LI\_HI3 without undue delay.

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time that the UPF observed the data (i.e. the timestamp field of the xCC). The LIID and CID fields shall correctly reflect the target identity and communication session to which the CC belongs.

The MDF3 shall populate the threeGPP33128DefinedCC field (see clause 5.5.3 of the present document) with a BER-encoded CCPayload structure containing either:

1. The uPFCCPDU field containing the GTP-U packet received over LI\_X3. It shall only be used if the content of the GTP-U packet is an IPv4 or IPv6 packet.

2. The extendedUPFCCPDU field as described in table 6.2.3-15.

The MDF3 shall support delivery using either option.

Table 6.2.3-15: ExtendedUPFCCPDU structure

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| payload | Payload of the GTP-U packet without GTP-U encapsulation. Content shall be supplied according to table 6.2.3-16. | M |
| qFI | Shall be populated with the QoS Flow Identifier value from the GTP-U header extension (see TS 38.415 [41] clause 5.5.3.3) if present over LI\_X3. | C |

Table 6.2.3-16: UPFCCPDUPayload structure

|  |  |
| --- | --- |
| Field name | Description |
| uPFIPCC | Contains an IPv4 or IPv6 packet |
| uPFEthernetCC | Contains an Ethernet frame |
| uPFUnstructuredCC | Contains an unstructured packet |

NEXT CHANGE

##### 6.2.3.9.3 PDHeaderReport record

If the per-packet form of packet header information reporting, i.e. PDHR, is used, the LI function responsible for generating the xIRI extracts the information shown in table 6.2.3.9.3-1 from each packet.

Table 6.2.3.9.3-1: PDHeaderReport record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pDUSessionID | The PDU Session ID value 255 shall be used by the sender; the receiver shall ignore the parameter (see NOTE). | M |
| sourceIPAddress | Shall contain the source address of the packet from the 32-bit *“Source Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Source Address”* field in IPv6, as defined in IETF RFC 2460 [27]. | M |
| sourcePort | Shall contain the *“Source Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  a) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  b) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768[29].  c) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  d) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; see IETF RFC 4960 [31].  For further details on Layer four protocols, see IANA[32]. | C |
| destinationIPAddress | Shall contain the destination address of the packet from the 32-bit *“Destination Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Destination Address”* field, as defined in IETF RFC 2460 [27]. | M |
| destinationPort | Shall contain the *“Destination Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  e) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  f) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768 [29].  g) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  h) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; see IETF RFC 4960 [31].  For further details on Layer four protocols, see IANA[32]. | C |
| nextLayerProtocol | Shall contain the contents of the IP *“Protocol”* field as defined in IETF RFC 791 [34] (bits 72...79 in the IP header), and is one of the assigned Internet protocol numbers defined in IANA[32]. | M |
| iPv6flowLabel | If the IP addresses in the report are IPv6, this field shall contain the 20-bit IPv6 “Flow Label” as defined in:  - IPv6 IETF RFC 2460 [27], and  - IPV6 Flow Label Specification IETF RFC 6437 [33]. | C |
| direction | Shall contain the direction of the intercepted packet, and it indicates either “from target” or “to target.” | M |
| packetSize | Shall contain the value of the *“Total Length*” IP header field if IPv4 is used, as defined in IETF RFC 791 [34], or the value of the “*Payload Length*” field if IPv6 is used, as defined in IETF RFC 2460 [27]. | M |
| NOTE: This is a placeholder value used to fill the pDUSessionID field, given that the UPF does not receive the PDU Session ID used for the session by the SMF, so this information is not available at the UPF. The PDU Session ID can be retrieved by the LEMF from the IRIs generated by the IRI-POI at the SMF and delivered by the MDF2. | | |

NEXT CHANGE

##### 6.2.3.9.4 PDSummaryReport record

If the summary form of the packet header reporting, i.e. PDSR, is used, the LI function responsible for generating the xIRI extracts the information shown in table 6.2.3.9.4-1 from each packet and aggregates it in summaries according to the pDSRType field defined in the PDHRReportingExtensions parameters of the ActivateTask message used to provision the LI function. In addition, the current summary is sent when the LI function responsible for generating the xIRI receives a DeactivateTask message for the Task that generated the PDSR regardless of whether the trigger in the pDSRType field of the ActivateTask message was met. In this case, the pDSRSummaryTrigger field of the PDSR record shall be set to endOfFlow.

Table 6.2.3.9.4-1: PDSummaryReport record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pDUSessionID | The PDU Session ID value 255 shall be used; the receiver shall ignore the parameter (see NOTE). | M |
| sourceIPAddress | Shall contain the source address of the packet from the 32-bit *“Source Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Source Address”* field in IPv6, as defined in IETF RFC 2460 [27]. | M |
| sourcePort | Shall contain the *“Source Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  a) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  b) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768[29].  c) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  d) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; Stream Control Transmission Protocol [31].  For further details on Layer four protocols, see IANA [32]. | C |
| destinationIPAddress | Shall contain the destination address of the packet from the 32-bit *“Destination Address”* field in IPv4, as defined in IETF RFC 791 [34], or from the 128-bit *“Destination Address”* field, as defined in IETF RFC 2460 [27]. | M |
| destinationPort | Shall contain the *“Destination Port*” number that indicates an application or service running on top of the transport, if the *“Protocol”* IP field (see the *nextLayerProtocol* field below in this table) is one of:  a) Transmission Control Protocol (**TCP**), IP “Protocol” field decimal “6”; see IETF RFC 793[28].  b) User Datagram Protocol (**UDP**), IP “Protocol” field decimal “17”; see IETF RFC 768 [29].  c) Datagram Congestion Control Protocol (**DCCP**), IP “Protocol” field decimal “33”; see IETF RFC 4340[30].  d) Stream Control Transmission Protocol (**SCTP**), IP “Protocol” field decimal “132”; Stream Control Transmission Protocol [31].  For further details on Layer four protocols, see IANA[32]. | C |
| nextLayerProtocol | Shall contain the contents of the IP *“Protocol”* field as defined in IETF RFC 791 [34] (bits 72..79 in the IP header), and is one of the assigned Internet protocol numbers defined in IANA[32]. | M |
| iPv6flowLabel | If the IP addresses in the report are IPv6, this field shall contain the 20-bit IPv6 “Flow Label” as defined in IPv6 IETF RFC 2460 [27] and the *IPV6 Flow Label Specification* IETF RFC 6437 [33]. | C |
| direction | Shall contain the direction of the intercepted packet, and it indicates either “from target” or “to target.” | M |
| pDSRSummaryTrigger | Shall contain the trigger that caused the summary report to be generated, which is one of the following:  a) timer expiry.  b) packet count.  c) byte count.  d) start of a flow.  e) end of a flow. | M |
| firstPacketTimestamp | Shall contain the timestamp that represents the time that the IRI-POI in the UPF detected the first packet in the set represented by this summary. | M |
| lastPacketTimestamp | Shall contain the timestamp that represents the time that the IRI-POI in the UPF detected the last packet in the set represented by this summary. | M |
| packetCount | Shall contain the number of packets detected during the creation of this summary. | M |
| byteCount | Shall contain the number of bytes summed across all packets that belong to this summary. For IPv4 it is the sum of the *“Total Length”* fields across all packets in the summary as defined in *Internet Protocol* IETF RFC 791 [34], while for IPv6 it is the sum of the *“Payload Length*” fields across all packets in the summary as defined in *Internet Protocol, Version 6 (IPv6) Specification*, IETF RFC 2460 [27]. | M |
| NOTE: This is a placeholder value used to fill the pDUSessionID field, given that the UPF does not receive the PDU Session ID used for the session by the SMF, so this information is not available at the UPF. The PDU Session ID can be retrieved by the LEMF from the IRIs generated by the IRI-POI at the SMF and delivered by the MDF2. | | |

NEXT CHANGE

##### 6.2.3.10.2 Storing LI state

The TF in the SMF shall store the LI state (related to a task active in the UPF POI) in the LISSF whenever the parent SMF stores session state for the relevant PDU session in the UDSF and whenever the parent SMF sends session state for the relevant PDU session to another SMF.

The POI in the SMF shall store the LI state (related to a task active in the SMF POI) in the LISSF whenever the parent SMF stores session state for the relevant PDU session in the UDSF and whenever the parent SMF sends session state for the relevant PDU session to another SMF.

When storing state, the LI function in the SMF shall use the state storage procedure specified in clause 5.10.2. During this procedure, the LI function shall add the metadata shown in table 6.2.3.10.2-1 to the RecordMeta for the record.

Table 6.2.3.10.2-1: Additional metadata for the RecordMeta

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| PDUSessionID | Identifier for the PDU session related to task. | M |
| UDSFRecordID | The recordID used by the parent SMF to store the associated SMF session information in the UDSF. | M |
| LIStateRecordType | Identifier for the record type which can be "TFLIState" or "POILIState". | M |

The TF shall store the following information as the first record block (see TS 29.598 [64] clause 6.1.3.3.3.2), encoded as XML following the XSD schema given in Annex H.

Table 6.2.3.10.2-2: TFLIState structure for storing TF state information in the LISSF

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| PDUSessionID | Identifier for the PDU session related to task. | M |
| XID | XID of the task object associated with the interception at the TF in SMF. | M |
| CorrelationID | Correlation ID to assign to interception product generated by the POI in the UPF. | M |
| TriggeredTasks | Collection of information about tasks that the TF in SMF has activated in triggered POIs in UPF due to interception for this PDU session. As a list of TriggeredTask, see table 6.2.3.10.2-3 below. | M |

Table 6.2.3.10.2-3: TriggeredTask

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| XID | XID of the task object associated with the interception at the triggered. | M |
| NEID | NEID used in LI\_T2/LI\_T3 communication by the triggered POI in UPF. | M |

The TF shall 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 SMF POI shall store the information shown in table 6.2.3.10.2-4 as the first record block (see TS 29.598 [64] clause 6.1.3.3.3.2), encoded as XML following the XSD schema given in Annex H.

Table 6.2.3.10.2-4: POILIState structure for storing POI state information in the LISSF

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| PDUSessionID | Identifier for the PDU session related to task. | M |
| XID | XID of the task object associated with the interception at the POI in SMF. | M |
| SequenceNumber | Last sequence number used in the generation of xIRI/xCC. | M |
| CorrelationID | Correlation ID to assign to interception product generated by the POI in the SMF. | M |

NEXT CHANGE

#### 6.2.5.1 Provisioning over LI\_X1

The IRI-POI present in the SMSF is provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2.

The IRI-POI in the SMSF shall support the following target identifier formats in the ETSI TS 103 221-1 [7] messages:

- SUPIIMSI.

- SUPINAI.

- PEIIMEI.

- PEIIMEISV.

- GPSIMSISDN.

- GPSINAI.

Table 6.2.5-1 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the IRI-POI in the SMSF.

Table 6.2.5-1: ActivateTask message for the IRI-POI in the SMSF

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. | M |
| TargetIdentifiers | One of the target identifiers listed in the paragraph above. | M |
| DeliveryType | Set to “X2Only”. | M |
| ListOfDIDs | Delivery endpoints for LI\_X2 for the IRI-POI in the SMSF. These delivery endpoints are configured using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to the task activation. | M |
| TaskDetailsExtensions/  SMSFExtensions | This field shall be included if the delivery of the full TPDU is not authorised. See table 6.2.5-2. | C |

Table 6.2.5-2: TruncateTPUserData Parameters

|  |  |  |
| --- | --- | --- |
| Field Name | Description | M/C/O |
| TruncateTPUserData | If included, the truncatedSMSTPDU field of the sMSTPDUData (as described in table 6.2.5-7) structure shall be used when applicable (see text below table). If absent, the sMSTPDU field of the sMSTPDUData structure shall be used. | C |

If the TruncateTPUserData field of the LI\_X1 ActivateTask message is included, the IRI-POI in the SMSF shall use the truncatedSMSTPDU field in xIRI generated at the IRI-POI in the SMSF for SMS-SUBMIT and SMS-DELIVER TPDUs, otherwise, the sMSTPDU field shall be used.

The MDF2 listed as the delivery endpoint for the LI\_X2 generated by the IRI-POI in the SMSF shall be provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2. If SMS Content delivery is not authorized, the MDF2 shall be provisioned with the TruncateTPUserData included, otherwise it shall be be left absent.

Table 6.2.5-3 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF2.

Table 6.2.5-3: ActivateTask message for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. | M |
| TargetIdentifiers | One of the target identifiers listed in clause 6.2.5.1. | M |
| DeliveryType | Set to “X2Only”. (Ignored by the MDF2). | M |
| ListOfDIDs | Delivery endpoints for LI\_X2 for the IRI-POI in the SMSF. These delivery endpoints are configured using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to the task activation. | M |
| ListOfMediationDetails | Sequence of Mediation Details, see table 6.2.5-4. | M |
| TaskDetailsExtensions/  SMSFExtensions | This field shall be included if the delivery of the full TPDU is not authorised. See table 6.2.5-2. | C |

Table 6.2.5-4: Mediation Details for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Interception ID associated with the task. | M |
| DeliveryType | Set to "HI2Only". | M |
| ListOfDIDs | Details of where to send the IRI for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations specified in the ListOfDIDs field in the ActivateTask Message. | C |
| ServiceScoping | Shall be included to Identify the service(s) and associated service-related delivery settings for this LIID. May include more than one instance of this parameter to allow for different combinations of sub-parameters associated with a single LIID. This parameter is defined in ETSI TS 103 221-1 [7] Annex C table C.2. | C |

NEXT CHANGE

#### 6.2.5.3 SMS Message

The IRI-POI in the SMSF shall generate an xIRI containing an SMSMessage record for the following cases:

SMS-MO case:

- When a target UE originates an SMS message or when any UE originates an SMS message destined to a target non-local ID.

SMS-MT case:

- When an SMS message delivery to a target UE is attempted or when an SMS message delivery originated from a target non-local ID is attempted to any UE.

- When an SMS message is successfully delivered to a target UE or when an SMS message originated from a target non-local ID is successfully delivered to any UE.

The SMS-MT case can also apply to the scenario when a receipt of SMS delivery from the far end is delivered successfully to the target UE or when a receipt of SMS delivery from a target non-Local ID is successfully delivered to the originating UE.

The IRI-POI present in the SMSF shall generate the xIRI containing the SMSMessage record when it detects following events:

- The SMSF receives an SMCP message CP-DATA\_RP-DATA [SMS-SUBMIT, SMS-COMMAND] (via AMF in Nsmsf\_SMService\_UplinkSMS message) from a target UE.

- The SMSF receives an SMCP message CP-DATA\_RP-DATA [SMS-SUBMIT] (via AMF in Nsmsf\_SMService\_UplinkSMS message) from any UE with TP-DA field within the SMS-SUBMIT containing a target non-Local ID and SMSF returns the SMCP: CP-ACK to that originating UE.

- The SMSF receives an SMCP message CP-DATA\_RP-DATA [SMS-COMMAND] (via AMF in Nsmsf\_SMService\_UplinkSMS message) from any UE with TP-DA field within the SMS-COMMAND containing a target non-Local ID and SMSF returns the SMCP: CP-ACK to that originating UE.

- The SMSF receives a TCAP message MAP MT-FORWARD-SHORT-MESSAGE Request [SMS-DELIVER, SMS-STATUS-REPORT] destined to a target UE.

- The SMSF receives a TCAP message MAP MT-FORWARD-SHORT-MESSAGE Request [SMS-DELIVER] destined to any UE with the TP-OA field within the SMS-DELIVER containing a target non-Local ID.

- The SMSF receives a TCAP message MAP MT-FORWARD-SHORT-MESSAGE Request [SMS-STATUS-REPORT] destined to any UE with the TP-RA field within the SMS-STATUS-REPORT containing a target non-Local ID.

The IRI-POI present in the SMSF shall generate the xIRI containing the SMSReport record when it detects following events:

- The SMSF sends a SMCP message CP-DATA\_RP-ACK [SMS-SUBMIT-REPORT] (via AMF in Namf\_ Communication\_N1N2MessageTransfer message) in response to a previously intercepted CP-DATA\_RP-DATA.

- The SMSF sends a SMCP message CP-DATA\_RP-ERROR [SMS-SUBMIT-REPORT] (via AMF in Namf\_ Communication\_N1N2MessageTransfer message) in response to a previously intercepted CP-DATA\_RP-DATA.

- The SMSF sends a TCAP message MAP MT-FORWARD-SHORT-MESSAGE Response [SMS-DELIVER-REPORT] in response to a previously intercepted MAP MT-FORWARD-SHORT-MESSAGE Request.

NOTE 1: In the above-mentioned descriptions, the requirements of target Non-Local ID do not apply when both originating and terminating users of an SMS message are served by the same CSP. The method used to identify a target non-Local ID is different from the method used to identify a local target ID.

If the IRI-POI is provisioned with the TruncateTPUserData parameter included and the IRI-POI is generating xIRI for the SMS-SUBMIT type (TS 23.040 [18] clause 9.2.2.2) or SMS-DELIVER type (TS 23.040 [18] clause 9.2.2.1) TPDUs, the IRI-POI shall use the truncatedSMSTPDU (as described in table 6.2.5-7), otherwise, the IRI-POI shall use the sMSTPDU.

Table 6.2.5-5: Payload for SMSMessage record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| originatingSMSParty | Identity of the originating SMS party. See NOTE 2. | M |
| terminatingSMSParty | Identity of the terminating SMS party. See NOTE 3. | M |
| direction | Direction of the SMS with respect to the target. See NOTE 4. | M |
| linkTransferStatus | Indicates whether the SMSF sent the TPDU to the next network element. See NOTE 5. | M |
| otherMessage | In the event of a server-initiated transfer, indicates whether the server will send another SMS. May be omitted if the transfer is target-initiated. See NOTE 6. | C |
| location | Location information associated with the target sending or receiving the SMS, if available and authorised. See NOTE 7.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| peerNFAddress | Address of the other network function (SMS-GMSC/IWMSC/SMS-Router) involved in the communication of the SMS, if available. | C |
| peerNFType | Type of the other network function (SMS-GMSC/IWMSC/SMS-Router) involved in the communication of the SMS, if available. | C |
| sMSTPDUData | See table 6.2.5-7. This is conditional only for backwards compatibility. | C |
| messageType | See table 6.2.5-8. This is conditional only for backwards compatibility. | C |
| rPMessageReference | The SM-RL Message Reference of the message per TS 24.011 [46] clause 7.3. This is conditional only for backwards compatibility. | C |

The sMSTPDU field shall always be used for the sMSTPDUData field of the SMSReport record.

Table 6.2.5-6: Payload for SMSReport record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| location | Location information associated with the target sending or receiving the SMS, if available and authorised. See NOTE 7. | C |
| sMSTPDUData | SMS TPDU, encoded as per TS 23.040 [18] clause 9. | M |
| messageType | See table 6.2.5-8. | M |
| rPMessageReference | The SM-RL Message Reference of the message per TS 24.011 [46] clause 7.3. | M |

Table 6.2.5-7: SMSTPDUData field

|  |  |
| --- | --- |
| Field name | Description |
| sMSTPDU | SM-TL PDU encoded per the PDUs defined in TS 23.040 [18] clause 9.2.2. Shall be chosen if the TruncateTPUserData Parameter is absent. |
| truncatedSMSTPDU | SM-TL PDU encoded per the PDUs defined in TS 23.040 [18] clause 9.2.2 but truncated to remove TP-User-Data (TS 23.040 [18] clause 9.2.3.24). Shall be chosen if the TruncateTPUserData Parameter is set. |

Table 6.2.5-8: SMSMessageType values

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| messageType value | RP MTI Value | RP Message Type | TP-MTI Value | SMS TPDU Message Type |
| deliver | 001 | RP-DATA (network🡪UE) | 00 | SMS-DELIVER |
| deliverReportAck | 010 | RP-ACK (UE🡪network) | 00 | SMS-DELIVER-REPORT |
| deliverReportError | 100 | RP-ERROR (UE🡪network) | 00 | SMS-DELIVER-REPORT |
| statusReport | 001 | RP-DATA (network🡪UE) | 10 | SMS-STATUS-REPORT |
| command | 000 | RP-DATA (UE🡪network) | 10 | SMS-COMMAND |
| submit | 000 | RP-DATA (UE🡪network) | 01 | SMS-SUBMIT |
| submitReportAck | 011 | RP-ACK (network🡪UE) | 01 | SMS-SUBMIT-REPORT |
| submitReportError | 101 | RP-ERROR (network🡪UE) | 01 | SMS-SUBMIT-REPORT |
| reserved |  | Reserved | 11 | Reserved |

The IRI-POI in the SMSF shall populate the messageType field with the values listed in table 6.2.5-8 based on the SMS TPDU message type (see TS 23.040 [18] clause 9.2.2) and the RP Message Type (see TS 24.011 [46] clause 8.2.2) that triggered the generation of the xIRI. The SMS TPDU Message Type is indicated by the value of the TP-Message Type Indicator (TP-MTI) (see TS 23.040 [18] clause 9.2.3.1) as described in TS 23.040 [18] clause 9.2.3.1. The RP Message Type is indicated by the value of the RP MTI (See TS 24.011 [46] clause 8.2.2).

NOTE 2: For the SMS-MO case, the originating party is the address of the UE from which the SMSF receives the CP-DATA\_RP-DATA [SMS-SUBMIT, SMS-COMMAND] message (via AMF in the Nsmsf\_SMService\_UplinkSMS). The GPSI is one of the data fields used in the Nsmsf related messages (see TS 29.540 [21]). Alternatively, the SMSF may find the originating party address in the same way it finds the address when generating charging records. For SMS-MT case, this is derived from TP-OA field (TS 23.040 [18]) for SMS-DELIVER TPDUs or the TP-RA field (TS 23.040 [18]) for SMS-STATUS-REPORT TPDUs. In cases where the originatingSMSParty is not a GPSI, PEI, or SUPI, the sMSAddress parameter is populated with the octets received in the field used to derive the address (as per TS 23.040 [18] clause 9.1.2.5).

NOTE 3: For SMS-MT case, the terminating party is the address of the UE to which the SMSF sends the CP-DATA\_RP-DATA [SMS-DELIVER, SMS-STATUS-REPORT] message (via AMF in Namf\_Communications\_N1N2MessageTransfer). The GPSI is one of the data fields used in the Namf related messages (TS 29.518 [22]). Alternatively, the SMSF may find the terminating party address in the same way it finds the address when generating charging records. For SMS-MO case, this is derived from the TP-DA field (TS 23.040 [18]). In cases where the terminatingSMSParty is not a GPSI, PEI, or SUPI, the sMSAddress parameter is populated with the octets received in the field used to derive the address (as per TS 23.040 [18] clause 9.1.2.5).

NOTE 4: For the SMS-MO case, for SMS originated from the target UE, the value fromTarget is used and for SMS destined to target Non-local ID, the toTarget is used. For SMS-MT case, for SMS terminated to the target UE, the value toTarget is used and for SMS originated from a target Non-local ID, the fromTarget is used.

NOTE 5: This field is set to transferSucceeded or transferFailed as follows:

- SMS-MO case:

- To transferSucceeded: when the IRI-POI in the SMSF detects that SMSF sends the MO-FORWARD-SHORT-MESSAGE-Request [SMS-SUBMIT] message to the SMS-IWMSC.

- To transferFailed: when the IRI-POI in SMSF detects the scenarios where SMSF cannot send the MO-FORWARD-SHORT-MESSAGE-Request [SMS-SUBMIT] to the SMS-IWMSC, but still generates an xIRI containing the SMSMessage record.

- SMS-MT case:

- To transferSucceeded: when the IRI-POI in the SMSF detects that SMSF sends the MT-FORWARD-SHORT-MESSAGE-Response [SMS-DELIVER-REPORT] message to the SMS-GMSC.

- To transferFailed: when the IRI-POI in SMSF detects the scenarios where SMSF cannot send the MT-FORWARD-SHORT-MESSAGE-Response [SMS-DELIVER-REPORT] to the SMS-GMSC, but an xIRI containing the SMSMessage record is still generated.

NOTE 6: This is only applicable to the SMS-MT case and can be derived from the TP-MMS (More Message to Send) field present in the SMS-DELIVER sent to the UE (via AMF in the Namf\_Communications\_N1N2MessageTransfer).

NOTE 7: This is derived from the ueLocation field of SmsRecord IE received from the AMF in the Nsmsf\_SMService\_UplinkSMS message (TS 29.540 [21]). For the SMSMessage record, the SMCP message is CP-DATA\_RP-DATA [SMS-SUBMIT, SMS-COMMAND] and for the SMSReport record, the SMCP message is CP-DATA-RP-ACK [SMS-DELIVER-REPORT]. This value is encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A.

NEXT CHANGE

### 6.3.1 General

The present document allows three options for EPC LI stage 3 interfaces for 4G / LTE:

- Option A: Use LI\_X1, LI\_X2 and LI\_X3 interfaces specified below in in clause 6.3.2 and 6.3.3 for the events listed in TS 33.127 [5] clause 6.3.2.3, the events related to SMS over NAS as specified in TS 33.107 [36] clause 18.2.4 and the events listed in TS 33.107 [36] clause 12.2.1.2 for the SGW/PGW and ePDG.

- Option B: Use LI\_X1, LI\_X2 and LI\_X3 interfaces as specified in clause 6.3.2 and 6.3.3 for the events listed in TS 33.107 [36] clause 12.2.1.2 and for the events related to the MMEIdentifierAssociation record described in clause 6.3.2.2.2.

- Option C: Use TS 33.107 [36] clause 12 natively as defined in that document.

For implementations that include EPS/5GS interworking, Option A shall be used.

In all cases, the present document specifies the stage 3 for the LI\_HI1, LI\_HI2 and LI\_HI3 interfaces.

NEXT CHANGE

##### 6.3.2.2.1 General

If the MME receives one or more cell IDs in an S1 message (as specified in TS 36.413 [38]), the POI associated with the MME shall report all of them.

The IRI-POI in the MME shall only generate xIRI containing the MMEIdentifierAssociation record in the following scenarios:

- IdentifierAssociation: MMEIdentifierAssociation and Tracking Area/EPS Location Update (see TS 33.107 [36] clause 12.2.1.2) records shall be generated. No other record types shall be generated for that target.

- All: All MME record types shall be generated.

When Option A specified in clause 6.3.1 is used:

- The IRI-POI present in the MME shall send the xIRIs over LI\_X2 for each of the events listed in TS 33.127 [5] clause 6.3.2.3, the details of which are described in the following clauses.

- In addition to the xIRI events listed in TS 33.127 [5] clause 6.3.2.3, the MME shall support xIRI generation in case of SMS over NAS as specified in TS 33.107 [36] clause 18.2.4. For records related to SMS over NAS in EPS:

- The IRI-POI present in the MME shall set the payload format to EpsHI2Operations.EpsIRIContent (value 14), see clause 5.3 and ETSI TS 103 221-2 [8] clause 5.4. The payload field shall contain an EpsHI2Operations.EpsIRIContent structure encoded according to TS 33.108 [12] clauses 10.5, 15.2 and B.9.

- As the LIID may be not available at the MME but is mandatory in EpsHI2Operations.EpsIRIContent according to TS 33.108 [12] Annex B.9, its value in the lawfulInterceptionIdentifier field of the encoded PDU shall be set to the fixed string "LIIDNotPresent".

When Option B specified in clause 6.3.1 is used:

- The IRI-POI present in the MME shall send the xIRIs over LI\_X2 for each of the events listed in TS 33.107 [36] clause 12.2.1.1, the details of which are specified in clause 12.2.3 of the same TS, and in case of SMS over NAS as specified in TS 33.107 [36] clause 18.2.4.

- For all records except MMEIdentifierAssociation (see clause 6.3.2.2.2), the IRI-POI present in the MME shall set the payload format to EpsHI2Operations.EpsIRIContent (value 14), see clause 5.3 and ETSI TS 103 221-2 [8] clause 5.4. The payload field shall contain an EpsHI2Operations.EpsIRIContent structure encoded according to TS 33.108 [12] clauses 10.5, 15.2 and B.9.

- As the LIID may be not available at the MME but is mandatory in EpsHI2Operations.EpsIRIContent according to TS 33.108 [12] Annex B.9, its value in the lawfulInterceptionIdentifier field of the encoded PDU shall be set to the fixed string "LIIDNotPresent".

- In addition to the xIRI events listed in TS 33.107 [36], the MME shall support xIRI containing the MMEIdentiferAssociation record in clause 6.3.2.2.2.

NEXT CHANGE

##### 6.3.2.2.2 MME identifier association

The IRI-POI present in the MME shall generate an xIRI containing an MMEIdentifierAssociation record when the IRI-POI present in the MME detects a new identifier association for a UE matching one of the target identifiers provided via LI\_X1. Generation of this record is subject to this record type being enabled for a specific target (see clause 6.3.2.2.1).

Table 6.3.2-1: Payload for MMEIdentifierAssociation record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| iMSI | IMSI associated with the procedure. (see NOTE 1). | M |
| iMEI | IMEI used in the procedure, if available (see NOTE 1). | C |
| mSISDN | MSISDN used in the procedure, if available (see NOTE 1). | C |
| gUTI | LTE GUTI used in the procedure. | M | |
| location | Location information available when identifier association occurs.  Encoded as a *userLocation* parameter (*location>locationInfo> userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | M |
| tAIList | List of tracking areas associated with the registration area within which the UE is current registered. (see NOTE 2). | C |
| NOTE 1: IMSI shall always be provided, in addition to the warrant target identifier if different to IMSI. Other identifiers shall be provided if available.  NOTE 2: List shall be included each time there is a change to the registration area. | | |

The IRI-POI present in the MME generating an xIRI containing an MMEIdentifierAssociation record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

When transmitting the xIRI, the IRI-POI present in the MME shall set the payload format to 2, and provide the payload as a BER-encoded TS33128Payloads.XIRIPayloads structure.

NEXT CHANGE

##### 6.3.2.2.3 Attach

The IRI-POI in the MME shall generate an xIRI containing an MMEAttach record when the IRI-POI present in the MME detects that a UE matching one of the target identifiers provided via LI\_X1 has successfully attached to EPS. Accordingly, the IRI-POI in the MME generates the xIRI when the following event is detected:

- MME sends an S1: ATTACH ACCEPT message to the target UE and the UE EPS Mobility Management (EMM) state within the MME is changed to EMM-REGISTERED.

Table 6.3.2-2: Payload for MMEAttach record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| attachType | Specifies the type of EPS Attach, see TS 24.301 [51] clause 9.9.3.11. This is derived from the information received from the UE in the Attach Request message. | M |
| attachResult | Specifies the result of the attach procedure, see TS 24.301 [51] clause 9.9.3.10. | M |
| iMSI | IMSI associated with the registration. | M |
| iMEI | IMEI associated with the registration, if available. | C |
| mSISDN | mSISDN associated with the registration, if available. | C |
| gUTI | GUTI provided as outcome of initial attach or used in other cases, see TS 24.301 [51] clause 5.5.1.2.4. | M |
| location | Location information determined by the network during the registration, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | C |
| ePSTAIList | List of tracking areas associated with the registration area within which the UE is currently registered, see TS 24.301 [51] clause 9.9.3.33. (see NOTE) | C |
| sMSServiceStatus | Indicates the availability of SMS Services. Shall be provided if present in the ATTACH ACCEPT. | C |
| oldGUTI | Old GUTI used in the registration, if available. | C |
| eMM5GRegStatus | UE Status, if provided in the REGISTRATION REQUEST message, see TS 24.501 [13] clause 9.11.3.56. | C |
| NOTE: List shall be included each time there is a change to the registration area. | | |

NEXT CHANGE

##### 6.3.2.2.4 Detach

The IRI-POI in the MME shall generate an xIRI containing an MMEDetach record when the IRI-POI present in the MME detects that a UE matching one of the target identifiers provided via LI\_X1 has deregistered from the EPS. Accordingly, the IRI-POI in the MME generates the xIRI when any of the following events is detected:

- For network initiated de-registration, when the MME receives the S1: DETACH ACCEPT message from the target UE, when the MME receives an S3: DETACH NOTIFICATION about the target UE from the SGSN or when implicit deregistration timer expires; and in all cases the UE EMM state within the MME is changed to EMM-DEREGISTERED.

- For UE initiated de-registration, when the MME sends the S1: DETACH ACCEPT message to the target UE or when the MME receives the S1: DETACH REQUEST message from the target UE with deregistration type value of “switch off”; and in both cases the UE EMM state within the MME is changed to EMM-DEREGISTERED.

Table 6.3.2-3: Payload for MMEDetach record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| deregistrationDirection | Indicates whether the deregistration was initiated by the network or by the UE. | M |
| detachType | Indicates the type of detach as determined by the direction of the detach request and the value of the DetachType information element, see table 6.3.2-4. | M |
| iMSI | IMSI associated with the detach. | M |
| iMEI | IMEI associated with the detach, if available. | C |
| mSISDN | mSISDN associated with the detach, if available. | C |
| gUTI | GUTI associated with the detach, if available. | C |
| cause | Indicates the EMM cause value for network-initiated detach, see TS 24.301 [51] clause 9.9.3.9. | C |
| location | Location information determined by the network during the deregistration, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| switchOffIndicator | If Bit 4 of the Detach type information element sent in the Detach Request is set to 0, this parameter shall be set to “normalDetach”. If Bit 4 of the Detach type information element sent in the Detach Request is set to 1, this parameter shall be set to “switchOff”. See TS 24.301 [51] clause 9.9.3.7. This parameter is conditional only for backwards compatibility. | C |

Table 6.3.2-4: detachType values

|  |  |  |
| --- | --- | --- |
| Type of detach value | Direction | detachType value |
| 001 | UE🡪network | ePSDetach |
| 010 | UE🡪network | iMSIDetach |
| 011 | UE🡪network | combinedEPSIMSIDetach |
| 110 | UE🡪network | reserved |
| 111 | UE🡪network | reserved |
| Any Other | UE🡪network | combinedEPSIMSIDetach |
| 001 | network🡪UE | reAttachRequired |
| 010 | network🡪UE | reAttachNotRequired |
| 011 | network🡪UE | iMSIDetach |
| 110 | network🡪UE | reserved |
| 111 | network🡪UE | reserved |
| Any Other | network🡪UE | reAttachNotRequired |

The IRI-POI in the MME shall populate the ePSDetachType field with the values listed in table 6.3.2-4 based on the Detach Type sent in the Detach Request message (see TS 24.301 [51] clause 9.9.3.7) and the direction of the Detach Request associated to the event that triggered the generation of the xIRI.

If the Detach Request message associated to the event that triggered the generation of the xIRI has the EMM Cause field populated, the IRI-POI in the MME shall set the value of the cause field of the MMEDetach record to the integer value of the EMM Cause, see TS 24.301 [51] clause 9.9.3.9.

NEXT CHANGE

##### 6.3.2.2.5 Tracking Area/EPS Location update

When the reporting of location information is authorised, the IRI-POI in the MME shall generate an xIRI containing an MMELocationUpdate record each time the IRI-POI present in an MME detects that the target’s UE location is updated due to target’s UE mobility or as a part of an MME service procedure. The generation of such separate xIRI is not required if the updated UE location information is obtained as a part of a procedure producing some other xIRIs (e.g. mobility registration). In that case the location information is included into the respective xIRI.

The UE mobility events resulting in generation of an MMELocationUpdate xIRI include the *S1 Path Switch Request* (*intra E-UTRAN handover* *X2 based handover* procedure described in TS 23.401 [50] clause 5.5.1.1) and the *S1 Handover Notify* (*Intra E-UTRAN S1 based handover* procedure described in TS 23.401 [50] clause 5.5.1.2).

The MMELocationUpdate xIRI is also generated when the MME receives an E-UTRAN S1AP *ERAB Modification Indication* message as a result of Dual Connectivity activation/release for the target's UE, as described in TS 37.340 [37] clause 10.

Based on regulatory requirements and operator policy, the location information obtained by the MME from E-UTRAN or the LCS in the course of some service operations may result in the generation of the MMELocationUpdate xIRI record. Additionally, the IRI-POI in the MME shall capture the location information in the scenarios described in TS 23.271 [52] clause 4.4.2. Also, in the case of Mobile Originated LCS service invoked by the target, the location information may be derived from the Location Service Response sent to the UE via the MME (see TS 23.271 [52] clause 9.2.6).

Optionally, based on regulatory and operator policy, other MME messages that do not generate separate xIRI but carry location information such as emergency services or LCS may trigger the generation of an MMELocationUpdate xIRI record.

Table 6.3.2-5: Payload for MMELocationUpdate record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| iMSI | iMSI associated with the location update. | M |
| iMEI | iMEI associated with the location update, if available. | C |
| mSISDN | mSISDN associated with the location update, if available as part of the subscription profile. | C |
| gUTI | GUTI assigned during the location update, if available, see TS 24.301 [50]. | C |
| location | Updated location information determined by the network. Depending on the service or message type from which the location information is extracted, it may be encoded in several forms (Annex A). | M |
| oldGUTI | GUTI used to initiate the location update, if available, see TS 24.301 [50]. | C |
| sMSServiceStatus | Indicates the availability of SMS Services. Shall be provided if present in the TRACKING AREA UPDATE ACCEPT. |  |

NEXT CHANGE

##### 6.3.2.2.6 Start of interception with EPS attached UE

The IRI-POI in the MME shall generate an xIRI containing an MMEStartOfInterceptionWithEPSAttachedUE record when the IRI-POI present in the MME detects that interception is activated on a UE that has already attached to the EPS. A UE is considered already attached to the EPS when the EMM state for that UE is EMM-REGISTERED. Therefore, the IRI-POI present in the MME shall generate the xIRI MMEStartOfInterceptionWithEPSAttachedUE record when it detects that a new interception for a UE is activated (i.e. provisioned by the LIPF) and the EPS mobility management state within the MME for that UE is EMM-REGISTERED.

Table 6.3.2-6: Payload for MMEStartOfInterceptionWithEPSAttachedUE record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| attachType | Specifies the type of EPS Attach, see TS 24.301 [51] clause 9.9.3.11. This is derived from the information stored in the UE Context at the MME, see TS 23.401 [50] clause 5.7.2. | M |
| attachResult | Specifies the result of the attach procedure, see TS 24.301 [51] clause 9.9.3.10. This is derived from the information stored in the UE Context at the MME, see TS 23.401 [50] clause 5.7.2. | M |
| iMSI | IMSI associated with the target UE Context at the MME, see TS 23.401 [50] clause 5.7.2. | M |
| iMEI | IMEI associated with the target UE Context at the MME, if available, see TS 23.401 [50] clause 5.7.2. | C |
| mSISDN | mSISDN associated with the target UE Context at the MME, if available. | C |
| gUTI | Current GUTI associated with the target UE context at the MME, if available, see TS 23.401 [50] clause 5.7.2. | C |
| location | Location information stored in the UE Context at the MME, if available, see TS 23.401 [50] clause 5.7.2.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*) and, when Dual Connectivity is activated, as an *additionalCellIDs* parameter (*location>locationInfo>additionalCellIDs*), see Annex A. | C |
| ePSTAIList | List of tracking areas associated with the registration area within which the UE is currently registered, see TS 24.301 [51], clause 9.9.3.33 and TS 23.401 [50] clause 5.7.2. | C |
| sMSServiceStatus | Indicates the availability of SMS Services. Shall be provided if present in the UE Context at the MME, see TS 23.401 [50] clause 5.7.2. | C |
| eMM5GRegStatus | UE Status, if present in the UE Context at the MME, see TS 24.501 [13] clause 9.11.3.56. | C |

The IRI-POI present in the MME generating an xIRI containing an MMEStartOfInterceptionWithEPSAttachedUE record shall set the Payload Direction field in the PDU header to *not applicable* (see ETSI TS 103 221-2 [8] clause 5.2.6).

NEXT CHANGE

##### 6.3.2.2.7 MME unsuccessful procedure

The IRI-POI in the MME shall generate an xIRI containing an MMEUnsuccessfulProcedure record when the IRI-POI present in the MME detects an unsuccessful procedure for a UE matching one of the target identifiers provided via LI\_X1.

Accordingly, the IRI-POI in the MME generates the xIRI when any of the following events is detected:

- MME sends a reject to any EMM request message to the target UE and the UE EPS Mobility Management (EMM) within the MME is changed to EMM-DEREGISTERED.

- MME aborts a registration procedure before the UE EPS Mobility Management (EMM) state within the MME is changed to EMM-REGISTERED.

- MME sends a reject to any ESM request message to the target UE.

Unsuccessful attach attempts shall be reported only if the target UE has been successfully authenticated.

Table 6.3.2-7: Payload for MMEUnsuccessfulProcedure record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| failedprocedureType | Specifies the procedure which failed at the MME. | M |
| failureCause | Provides the value of the ESM or EMM cause, see TS 24.301 [51] clauses 9.9.3.9 and 9.9.4.4. | M |
| iMSI | IMSI associated with the procedure, if available (see NOTE). | C |
| iMEI | IMEI associated with the procedure, if available. | C |
| mSISDN | mSISDN associated with the procedure, if available. | C |
| gUTI | GUTI provided used in the procedure, if available. | C | |
| location | Location information determined by the network during the procedure, if available.  Encoded as a *userLocation* parameter (*location>locationInfo>userLocation*), see Annex A. | C |
| NOTE: At least one identity shall be provided, the others shall be provided if available. | | |

NEXT CHANGE

#### 6.3.2.3 Generation of IRI over LI\_HI2

##### 6.3.2.3.1 General

When Option A or Option B specified in clause 6.3.1 are used and an xIRI is received over LI\_X2 from the IRI-POI in the MME, the MDF2 shall generate the corresponding IRI message and deliver it over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received in the xIRI over LI\_X2.

When Option C specified in clause 6.3.1 is used the MDF2 shall generate IRI messages based on the proprietary information received from the MME and provide it over LI\_HI2 without undue delay.

The IRI record may be enriched with any additional information available at the MDF (e.g. additional location information).

The IRI messages shall be delivered over LI\_HI2 according to ETSI TS 102 232-7 [10] clause 10. When Option A specified in clause 6.3.1 is used, LI\_HI2 shall be realised as described in clause 6.3.2.3.2.

When Option B or Option C specified in clause 6.3.1 is used, LI\_HI2 shall be realised as described in clause 6.3.2.3.3.

##### 6.3.2.3.2 Option A

The IRI message the MDF2 generates shall contain a copy of the relevant record received in the xIRI over LI\_X2 and provide it over LI\_HI2 without undue delay.

The timestamp field of the psHeader structure shall be set to the time at which the MME event was observed (i.e. the timestamp field of the X2 PDU).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 6.3.2-8.

Table 6.3.2-8: IRI type for IRI messages

|  |  |
| --- | --- |
| IRI message | IRI type |
| MMEAttach | REPORT |
| MMEDetach | REPORT |
| MMELocationUpdate | REPORT |
| MMEStartOfInterceptionWithEPSAttachedUE | REPORT |
| MMEUnsuccessfulProcedure | REPORT |
| MMEIdentifierAssociation | REPORT |

These IRI messages shall omit the CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

The threeGPP33128DefinedIRI field in ETSI TS 102 232-7 [10] clause 15 shall be populated with the BER-encoded IRIPayload.

When an additional warrant is activated on a target UE and the LIPF uses the same XID for the additional warrant, the MDF2 shall be able to generate and deliver the IRI message containing the MMEStartOfInterceptionWithEPSAttachedUE record to the LEMF associated with the additional warrant without receiving a corresponding xIRI. The payload of the MMEStartOfInterceptionWithEPSAttachedUE record is specified in table 6.3.2-6.

For records related to SMS over NAS in EPS, the process detailed in clause 6.3.2.3.3 shall be used.

##### 6.3.2.3.3 Option B and Option C

For all messages except MMEIdentifierAssociation, the IRI messages shall include an IRI payload encoded according to TS 33.108 [12] Annex B.9.

The MDF2 shall encode the correct value of LIID in the IRI message, replacing the value "LIIDNotPresent" given in the xIRI (see clause 6.3.2.2).

For MMEIdentifierAssociation messages, the IRI message shall be encoded as an IRIEvent structure according to Annex B and used to populate the threeGPP33128DefinedIRI field in ETSI TS 102 232-7 [10] clause 15.

NEXT CHANGE

#### 6.3.3.2 Generation of xIRI over LI\_X2

The IRI-POI present in the SGW/PGW and ePDG shall send the xIRIs over LI\_X2 for each of the events listed in TS 33.107 [36] clause 12.2.1.2, the details of which are specified in clause 12.2.3 of the same TS.

The IRI-POI present in the SGW/PGW and ePDG shall set the payload format to EpsHI2Operations.EpsIRIContent (value 14), see clause 5.3 and ETSI TS 103 221-2 [8] clause 5.4. The payload field shall contain an EpsHI2Operations.EpsIRIContent structure encoded according to TS 33.108 [12] clauses 10.5 and B.9.

As the LIID may not be available at the SGW/PGW and ePDG but is mandatory in EpsHI2Operations.EpsIRIContent according to TS 33.108 [12] Annex B.9, its value in the lawfulInterceptionIdentifier field of the encoded PDU shall be set to the fixed string "LIIDNotPresent".

NEXT CHANGE

#### 6.3.3.4 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the SGW/PGW or ePDG, the MDF2 shall generate the corresponding IRI message and deliver it over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received in the xIRI over LI\_X2.

When option 2 specified in clause 6.3.1 is used, the MDF2 shall generate IRI messages based on the proprietary information received from the SGW/PGW or ePDG and provide it over LI\_HI2 without undue delay.

The IRI messages shall include an IRI payload encoded according to clause 10.5 and TS 33.108 [12] Annex B.9. The MDF2 shall encode the correct value of LIID in the IRI message, replacing the value "LIIDNotPresent" given in the xIRI (see clause 6.3.2.2).

The IRI messages shall be delivered over LI\_HI2 according to ETSI TS 102 232-7 [10] clause 10.

NEXT CHANGE

#### 6.3.3.5 Generation of CC over LI\_HI3

When xCC is received over LI\_X3 from the CC-POI in the SGW/PGW or ePDG, the MDF3 shall generate the corresponding CC and deliver it over LI\_HI3 without undue delay. The CC message shall contain a copy of the relevant xCC received over LI\_X3.

When option 2 specified in clause 6.3.1 is used, the MDF3 shall generate CC based on the proprietary information received from the SGW/PGW or ePDG and provide it over LI\_HI3 without undue delay.

The CC shall include a CC payload encoded according to TS 33.108 [12] Annex B.10.

The CC shall be delivered over LI\_HI3 according to ETSI TS 102 232-7 [10] clause 10.

NEXT CHANGE

##### 7.2.2.3.2 Serving system

The IRI-POI in the UDM shall generate an xIRI containing the UDMServingSystemMessage record when it detects the following events:

- When the UDM receives the amf3GPPAccessRegistration from the AMF as part of the Nudm\_UEContextManagement\_Registration service operation (see TS 29.503 [25] clause 5.3.2.2.2).

- When the UDM receives the amfNon3GPPAccessRegistration from the AMF as part of the Nudm\_UEContextManagement\_Registration service operation (see TS 29.503 [25] clause 5.3.2.2.3).

When a target UE registers to both 3GPP and non-3GPP access, two separate xIRIs each containing the UDMServingSystemMessage record may be generated by the IRI-POI in the UDM.

Table 7.2.2.3-1: Payload for UDMServingSystemMessage record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the target UE, see TS 29.571 [17]. | M |
| pEI | PEI associated with the target UE, when known, see TS 29.571 17]. | C |
| gPSI | GPSI associated with the target UE, when known, see TS 29.571 [17]. | C |
| gUAMI | Serving AMF’s GUAMI, when known. See NOTE 1. | C |
| gUMMEI | Serving MME’s GUMMEI, see NOTE 2. | C |
| pLMNID | Serving PLMN Id. See TS 29.571 [17]. See NOTE 3. | C |
| servingSystemMethod | Identifies method used to access the serving system, see NOTE 4. | M |
| serviceID | Identifies the target UE’s 5G service identifiers (e.g. SNSSAI, CAGID) when the AMF Registration is executed, when known, see TS 29.571 [17]. | C |

NOTE 1: GUAMI is the global unique identifier of an AMF [2] and its format is defined in TS 29.571 [17]. As defined in TS 23.501 [2] clause 5.9.4, GUAMI consists of <MCC> <MNC> <AMF Region ID> <AMF Set ID> <AMF Pointer>. The GUAMI is reported if the UDM receives the same from the AMF.

NOTE 2: GUMMEI is the global unique identifier of an MME and its format is defined in TS 23.003 [19]. As defined in TS 23.003 [19] clause 2.8.1, GUMMEI consists of <MCC> <MNC> <MME Identifier>. The GUMMEI is reported if the UDM has this information (e.g. in a combined UDM/HSS).

NOTE 3: PLMN Id provides the VPLMN Id when the target UE is roaming.

NOTE 4: This identifies whether the xIRI containing the UDMServingSystemMessage record is generated due to the reception of an amf3GPPAccessRegistration, or an amfNon3GPPAccessRegistration. See TS 29.503 [25].

TS 29.571 [17] requires that the encoding of 3GPP defined identifiers (e.g. IMSI, NAI) shall be prefixed with its corresponding prefix (e.g. with reference to SUPI it requires 'imsi-','nai-'). However, identifiers and parameters shall be coded over the LI\_X2 and LI\_HI2 according to Annex A of the present document, so without the prefix specified in TS 29.571 [17].

The IRI-POI present in the UDM generating an xIRI containing an UDMServingSystemMessage record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

NEXT CHANGE

##### 7.2.2.3.3 Subscriber record change

The IRI-POI in the UDM shall generate an xIRI containing the UDMSubscriberRecordChangeMessage record when it detects the following events:

- When the UDM receives the Amf3GppAccessRegistration from the AMF as part of the Nudm\_UEContextManagement Registration service operation (see TS 29.503 [25] clause 5.3.2.2.2) and detects a change in the SUPI/GPSI/PEI association for a target.

- When the UDM receives the AmfNon3GppAccessRegistration from the AMF as part of the Nudm\_UEContextManagement Registration service operation (see TS 29.503 [25] clause 5.3.2.2.3) and detects a change in the SUPI/GPSI/PEI association for a target.

- When the UDM receives the Amf3GppAccessRegistrationModification from the AMF as part of Nudm\_UEContextManagement Update service operation (see TS 29.503 [25] clause 5.3.2.6.2) and detects a change in the SUPI/GPSI/PEI association for a target.

- When the UDM receives the AmfNon3GppAccessRegistrationModification from the AMF as part of Nudm\_UEContextManagement Update service operation (see TS 29.503 [25] clause 5.3.2.6.3) and detects a change in the SUPI/GPSI/PEI association for a target.

- When the UDM receives the PeiUpdateInfo from the HSS as part of the Nudm\_UEContextManagement PEI Update service operation (see TS 29.503 [25] clause 5.3.2.10.2) and detects a change in the SUPI/GPSI/PEI association for a target.

- Upon detection of modification between SUPI and GPSI association (if UDR is deployed, when UDM receives the DataChangeNotify from the UDR including the modified GPSI as part of the Nudr\_DataRepository Notification service operation (see TS 29.504 [48] clause 5.2.2.8.3 and TS 29.505 [49] clause 5.4.2.6); if UDR is not deployed, when the modification is detected as result of UDM provisioning).

- Upon UE de-provisioning (if UDR is deployed, when UDM receives the DataChangeNotify from the UDR including the deleted SUPI as part of the Nudr\_DataRepository Notification service operation (see TS 29.504 [48] clause 5.2.2.8.3 and TS 29.505 [49] clause 5.4.2.6); if UDR is not deployed, when the modification is detected as result of UDM deprovisioning).

- When a new SUPI is provisioned (if UDR is deployed, when UDM receives the DataChangeNotify from the UDR including the new and the old SUPI as part of the Nudr\_DataRepository Notification service operation (see TS 29.504 [48] clause 5.2.2.8.3 and TS 29.505 [49] clause 5.4.2.6); if UDR is not deployed, when the modification is detected as result of UDM provisioning).

- When the UDM receives the Amf3GppAccessRegistrationModification from the AMF as part of Nudm\_UEContextManagement Update service operation (see TS 29.503 [25] clause 5.3.2.2.2) and detects a change in the ServiceID association for a target.

- Upon detection of modification in the Service ID association (if UDR is deployed, when UDM receives the DataChangeNotify from the UDR including the modified Service ID as part of the Nudr\_DataRepository Notification service operation (see TS 29.504 [48] clause 5.2.2.8.3 and TS 29.505 [49] clause 5.4.2.6); if UDR is not deployed, when the modification is detected as a result of UDM provisioning.

When a target UE registers to both 3GPP and non-3GPP access, two separate xIRIs each containing the UDMSubscriberRecordChangeMessage report record may be generated by the IRI-POI in the UDM.

Table 7.2.2.3-2: Payload for UDMSubscriberRecordChangeMessage record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI currently associated with the target UE, see TS 29.571 [17], see NOTE 1 | C |
| pEI | PEI currently associated with the target UE, when known, see TS 29.571 [17]. | C |
| gPSI | GPSI currently associated with the target UE, when known, see TS 29.571 [17]. | C |
| oldSUPI | Old SUPI associated with the target UE, when known. | C |
| oldServiceID | Identifies the target UE’s old service identifiers (e.g. SNSSAI, CAGID), when known, see TS 29.571 [17]. | C |
| oldPEI | Old PEI associated with the target UE, when known. | C |
| oldGPSI | Old GPSI associated with the target UE, when known. | C |
| subscriberRecordChangeMethod | Identifies the trigger of Subscriber Record Change operation, see NOTE 2. | M |
| serviceID | Identifies the target UE’s 5G service identifiers that have been modified (e.g. SNSSAI, CAGID), when known, see TS 29.571 [17]. | C |

NOTE 1: When an identity is changed, both the old one and the current one are reported; the target identity is always reported either as current identity or old identity depending on the change, together with the other current identities (e.g. ServiceIDs), if available. If the target identity is changed, the old identity represents the target otherwise the current identity represents the target (as examples, when SUPI is the target and PEI is changing, SUPI (target), PEI and old PEI, along with GPSI, if available, are reported; when SUPI is the target and SUPI is changed, SUPI and oldSUPI (target), along with PEI and GPSI, if available, are reported).

NOTE 2: This identifies whether the xIRI containing the UDMSubscriberRecordChangeMessage record is generated due to a PEI change, a GPSI, a SUPI modification or ServiceID change, or a UE de-provisioning.

The IRI-POI present in the UDM generating an xIRI containing an UDMSubscriberRecordChangeMessage record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

TS 29.571 [17] requires that the encoding of 3GPP defined identifiers (e.g. IMSI, NAI) shall be prefixed with its corresponding prefix (e.g. with reference to SUPI it requires 'imsi-','nai-'). However, identifiers and parameters shall be coded over the LI\_X2 and LI\_HI2 according to Annex A of the present document, so without the prefix specified in TS 29.571 [17].

NEXT CHANGE

##### 7.2.2.3.4 Cancel location

The IRI-POI in the UDM shall generate an xIRI containing the UDMCancelLocation record when it detects the following events:

- When the UDM sends DeregistrationData to AMF as part of the Nudm\_UEContextManagement DeregistrationNotification service operation (see TS 29.503 [25] clause 5.3.2.3.2).

- When the UDM receives the Amf3GppAccessRegistrationModification with PurgeFlag set from the AMF as part of Nudm\_UEContextManagement Deregistration service operation (see TS 29.503 [25] clause 5.3.2.4.2).

- When UDM receives the AmfNon3GppAccessRegistrationModification with PurgeFlag set from the AMF as part of Nudm\_UEContextManagement Deregistration service operation (see TS 29.503 [25] clause 5.3.2.4.3).

When a target UE deregisters from both 3GPP and non-3GPP access, two separate xIRIs each containing the UDMCancelLocation report record may be generated by the IRI-POI in the UDM.

Table 7.2.2.3.4-1: Payload for UDMCancelLocationMessage record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the target UE, see TS 29.571 [17]. | M |
| pEI | PEI associated with the target UE, when known, see TS 29.571 [17]. | C |
| gPSI | GPSI associated with the target UE, when known, see TS 29.571 [17]. | C |
| gUAMI | Previous serving AMF’s GUAMI, when known. See NOTE 1. | C |
| pLMNID | Previous serving PLMN ID. See TS 29.571 [17]. See NOTE 2. | C |
| cancelLocationMethod | Identifies method used to access the serving system, see NOTE 3. | M |

NOTE 1: GUAMI is the global unique identifier of an AMF [2] and its format is defined in TS 29.571 [17]. As defined in TS 23.501 [2] clause 5.9.4, GUAMI consists of <MCC> <MNC> <AMF Region ID> <AMF Set ID> <AMF Pointer>. The GUAMI is reported if the UDM receives the same from the AMF.

NOTE 2: PLMN ID provides the vPLMN ID when the target UE is roaming.

NOTE 3: This identifies whether the xIRI containing the UDMCancelLocationMessage record is generated due to the reception of a UDM deregistration, and AMF 3GPP Access deregistration, or an AMF Non 3GPP access deregistration.

The IRI-POI present in the UDM generating an xIRI containing an UDMCancelLocationMessage record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

TS 29.571 [17] requires that the encoding of 3GPP defined identifiers (e.g. IMSI, NAI) shall be prefixed with its corresponding prefix (e.g. with reference to SUPI it requires 'imsi-','nai-'). However, identifiers and parameters shall be coded over the LI\_X2 and LI\_HI2 according to Annex A of the present document, so without the prefix specified in TS 29.571 [17].

NEXT CHANGE

#### 7.2.2.4 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in UDM, the MDF2 shall send an IRI message over LI\_HI2 without undue delay.

The timestamp field of the psHeader structure shall be set to the time that the UDM event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.2.2-4.

Table 7.2.2-4: IRI type for IRI messages

|  |  |
| --- | --- |
| IRI message | IRI type |
| UDMServingSystem | REPORT |
| UDMSubscriberRecordChange | REPORT |
| UDMCancelLocation | REPORT |

These IRI messages shall omit the CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

NEXT CHANGE

#### 7.2.3.3 Generation of xIRI over LI\_X2

The IRI-POI present in the HSS shall send the xIRIs over LI\_X2 for each of the events listed in TS 33.107 [36], the details of which are also specified in TS 33.107 [36].

The IRI-POI present in the HSS shall set the payload format to EpsHI2Operations.EpsIRIContent (value 14), see clause 5.3 of the present document and ETSI TS 103 221-2 [8] clause 5.4. The payload field shall contain an EpsHI2Operations.EpsIRIContent structure encoded according to TS 33.108 [12] clause B.9.

As the LIID may be not available at the HSS but is mandatory in EpsHI2Operations.EpsIRIContent according to TS 33.108 [12] clause B.9, its value in the lawfulInterceptionIdentifier field of the encoded PDU shall be set to the fixed string "LIIDNotPresent".

NEXT CHANGE

#### 7.2.3.4 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the HSS, the MDF2 shall generate the corresponding IRI message and deliver it over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received in the xIRI over LI\_X2.

When Option 2 specified in clause 7.2.3.1 above is used, the MDF2 shall generate IRI messages based on the proprietary information received from the HSS and provide it over LI\_HI2 without undue delay.

The IRI messages shall include an IRI payload encoded according to TS 33.108 [12] clause B.9. The MDF2 shall encode the correct value of LIID in the IRI message, replacing the value "LIIDNotPresent" given in the xIRI (see clause 7.2.3.3 above).

The IRI messages shall omit the CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

The IRI messages shall be delivered over LI\_HI2 according to ETSI TS 102 232-7 [10] clause 10.

NEXT CHANGE

#### 7.3.1.1 General description

The LALS architecture and functionality is specified in TS 33.127 [5] clause 7.3.3.

NEXT CHANGE

#### 7.3.1.2.1 Target positioning service

For the LALS target positioning service (TS 33.127 [5] clause 7.3.3.2) the IRI-POI provided by the LI-LCS Client is directly provisioned over LI\_X1 by the LIPF using the LI\_X1 protocol as described in clause 5.2.2 with the TaskDetailsExtensions field of the ActivateTask message specifying the type of the target positioning request, immediate vs. periodic, and, in the latter case, the periodicity of the positioning requests.

Based on national regulatory requirements and CSP policy, the TaskDetailsExtensions may also include the QoS parameters (specified in OMA-TS-MLP-V3\_5-20181211-C [20]) for the use on the Le interface towards the LCS Server/GMLC. Alternatively, the QoS parameters may be statically configured in the LI-LCS Client.

Table 7.3.1.2-1 shows the details of the LI\_X1 ActivateTask message used for the LI-LCS Client provisioning for the target positioning service.

The LI\_X1 DeactivateTask shall be issued by the LIPF to terminate the target positioning service and withdraw the associated provisioning data, except for the Immediate target positioning service in which case the LI\_X1 DeactivateTask is not used.

Table 7.3.1.2-1: ActivateTask message for LI-LCS Client target positioning provisioning

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 field name | Description | M/C/O |
| XID | XID assigned by LIPF. | M |
| TargetIdentifiers | One of the following (see ETSI TS 103 221-1 [7]):  - SUPIIMSI.  - SUPINAI.  - GPSIMSISDN.  - GPSINAI.  - IMSI.  - MSISDN (E164Number target ID format, per ETSI TS 103 221-1 [7]).  - IMPU. | M |
| DeliveryType | Set to “X2Only”. | M |
| ListOfDIDs | Delivery endpoints of LI\_X2 interface. These delivery endpoints are configured in LI-LCS Client using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to the task activation. | M |
| TaskDetailsExtensions/  PositioningServiceType | “Immediate” or “Periodic”. | M |
| TaskDetailsExtensions/  PositioningPeriodicity | Time interval between the positioning requests in case of Periodic positioning, in seconds. | C |
| TaskDetailsExtensions/  PositioningParameters | Set of optional parameters for MLP SLIR message, per OMA-TS-MLP-V3\_5-20181211-C [20]:  - requested location type (clause 5.3.60).  - requested response type (clause 5.3.112.1).  - max location age (clause 5.3.65).  - response timing required (clause 5.3.106).  - response timer (clause 5.3.107).  - horizontal accuracy with QoS class (clause 5.3.44).  - altitude accuracy with QoS class (clause 5.3.6).  - motion state request (clause 5.3.70). | O |

NEXT CHANGE

#### 7.3.1.2.2 Triggered location service

For the LALS triggered location service (TS 33.127 [5] clause 7.3.3.3) the LTF, as an IRI-TF, is provisioned by the LIPF using the LI\_X1 protocol as described in clause 5.2.2. The “TaskDetailsExtensions” parameter of the ActivateTask message in this case will carry the address of LI-LCS Client to be used for the service and, optionally, the positioning parameters for use on the Le interface, similar to the target positioning provisioning.

Prior to issuing one or more "ActivateTask" requests towards an LTF, the LIPF shall provision the LTF with the LI\_X2 destinations by using the "CreateDestination" operation(s), as per clause 5.2.2.

Table 7.3.1.2-2 defines the details of the LI\_X1 ActivateTask message used for the LTF provisioning for the Triggered Location service.

Table 7.3.1.2-2: ActivateTask message for LTF triggered location service provisioning

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 field name | Description | M/C/O |
| XID | XID assigned by LIPF. | M |
| TargetIdentifiers | One or more of the following (see ETSI TS 103 221-1 [7]):  - SUPIIMSI.  - SUPINAI.  - GPSIMSISDN.  - GPSINAI.  - IMSI.  - MSISDN (E164Number target ID format, per ETSI TS 103 221-1 [7]).  - IMPU.  NOTE: An ActivateTask for an LTF may be issued by the LIPF if and only if at least one of the identifiers in the above list was specified in the warrant. | M |
| DeliveryType | Set to “X2Only”. | M |
| ListOfDIDs | Delivery endpoints for LI-LCS Client LI\_X2. These delivery endpoints are configured in LTF using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to the task activation. | M |
| TaskDetailsExtensions/  LI-LCSClientAddress | The IP address of the LI-LCS Client for triggering. | M |
| TaskDetailsExtensions/  PositioningParameters | Set of optional parameters for MLP SLIR message, per OMA-TS-MLP-V3\_5-20181211-C [20]:  - requested location type (clause 5.3.60).  - requested response type (clause 5.3.112.1).  - max location age (clause 5.3.65).  - response timing required (clause 5.3.106).  - response timer (clause 5.3.107).  - horizontal accuracy with QoS class (clause 5.3.44).  - altitude accuracy with QoS class (clause 5.3.6).  - motion state request (clause 5.3.70). | O |

NEXT CHANGE

#### 7.3.1.4 Generation of xIRI over LI\_X2

The IRI-POI provided by the LI-LCS client shall deliver the target location reports to respective MDF(s) as xIRI over the LI\_X2 interface.

Table 7.3.1.4-1: LALSReport record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI of the target, if used for the service (see NOTE). | C |
| gPSI | GPSI of the target, if used for the service (see NOTE). | C |
| iMSI | IMSI of the target, if used for the service (see NOTE). | C |
| mSISDN | MSISDN of the target, if used for the service (see NOTE). | C |
| iMPU | IMPU of the target, if used for the service (see NOTE). | C |
| location | Location of the target, if obtained successfully.  Encoded as a *positioningInfo* parameter (*location>positioningInfo*). Boththe *positionInfo* (*location>positioningInfo>positionInfo*)and the *mLPPositionData* (*location>positioningInfo>rawMLPResponse>mLPPositionData*) are present in the case of successful positioning. In the case of positioning failure only the *mLPErrorCode (location>positioningInfo>rawMLPResponse>mLPErrorCode)* is present. See Annex A. | C |
| NOTE: One and only one of SUPI, GPSI, IMSI, MSISDN, IMPU shall be present and it shall correspond to the target identifier included in the respective ActivateTask message for the LI-LCS Client. | | |

The LI-LCS Client generating an xIRI containing an LALSReport record shall set the Payload Direction field in the PDU header to *not applicable* (Direction Value 5, see ETSI TS 103 221-2 [8] clause 5.2.6).

The LI\_X2 header (as per clause 5.3.2) of the LALSReport record presented in table 7.3.1.4-1 shall contain the correlation ID (if provided) from a respective LI\_T2 ActivationTask message.

NEXT CHANGE

#### 7.3.3.1 General description

The *Location* structure is used to convey geolocation information.

When the reference datum used for a latitude and longitude given in the *GeographicalCoordinates* structure is known by the operator, the reference datum shall be identified in the *mapDatumInformation* field. The reference datum identity shall be specified as an Open Geospatial Consortium URN, as defined in OGC 05-010 [35].

NEXT CHANGE

#### 7.4.2.2 Generation of xIRI over LI\_X2

The IRI-POI present in the MMS Proxy-Relay shall send xIRI over LI\_X2 for the events listed in TS 33.127 [5] clause 7.5.2.3, which is further expanded in the present document in clause 7.4.2.4 below.

NEXT CHANGE

#### 7.4.2.3 Generation of xCC over LI\_X3

The CC-POI present in the MMS Proxy-Relay shall send xCC over LI\_X3 for any MMS event where CC is available and authorized for reporting for the events listed in TS 33.127 [5] clause 7.5.2.3.

The xCC payload shall consist of the MMS contents given as a MIME encoded document (RFC 2045) according to OMA-TS-MMS\_ENC [39]. The payload format shall be set to "MIME document" (value 15).

NEXT CHANGE

#### 7.4.2.4 MMS Record Generation Cases

The triggers for MMS record generation are detailed in each of clauses 7.4.3.1 through 7.4.3.20. All triggers are defined by the detection of messages at the local MMS Proxy-Relay. They belong to one of two following high-level categories:

- at the local MMS Proxy-Relay, the sending or arrival of a message, either to or from the local target UE, using OMA-TS-MMS\_ENC [39] definitions, or

- at the local MMS Proxy-Relay, the sending or arrival of a message to or from a non-local MMS Proxy-Relay, pertaining to messages either to or from a non-local target UE served by that non-local MMS Proxy-Relay, using the inter-proxy MM4 reference point, TS 23.140 [40] clause 8.4 definitions.

The present document assumes that the intercepted MMS complies with version 1.3 of OMA-TS-MMS\_ENC [39]. If the intercepted messages do not comply fully, or the version is other than 1.3, parameters are required to be provided only if available.

In the following tables, the acronym Multimedia Message (MM) refers to a message in particular, while Multimedia Message Service (MMS) refers to the service in general.

NEXT CHANGE

#### 7.4.3.5 MMSNotificationResponse

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSNotificationResponse record when the MMS Proxy-Relay receives a *m-notifyresp-ind* (as defined in OMA-TS-MMS\_ENC [39] clause 6.2, table 4) from the MMS client in the target UE for the deferred retrieval case only. The immediate retrieval trigger on *m-notifyresp-ind* is in clause 7.4.3.7.

The following table contains parameters generated by the IRI-POI, along with parameters derived from the *m-notifyresp-ind*message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-5: Payload for MMSNotificationResponse

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target” | M |
| status | Provides a MM status. A status of "retrieved" is only signalled by the retrieving UE after retrieval of the MM. | M |
| reportAllowed | Indication whether or not the sending of delivery report is allowed by the recipient MMS Client. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.47 shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.7 MMSDeliveryAck

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSDeliveryAck record when:

- the MMS Proxy-Relay receives an m-acknowledge-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.4) from the MMS client in the target UE (for deferred retrieval), or

- the MMS Proxy-Relay receives an m-notifyresp-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.4) from the MMS client in the target UE (for immediate retrieval).

Table 7.4.3-7 contains parameters generated by the IRI-POI, along with parameters derived from the *m-acknowledge-ind* message (from the local target UE to the MMS Proxy-Relay), and the *m-notifyresp-ind* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-7: Payload for MMSDeliveryAck

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| reportAllowed | Indicates whether the target allows sending of a delivery report. Encoded as "Yes" = True, "No" = False. Include if received by the MMS Proxy-Relay. | C |
| status | Provides a MM status. A status of "retrieved" is only signalled by the retrieving UE after retrieval of the MM. Include if received by the MMS Proxy-Relay and if generated from a ***m-notifyresp-ind***. | C |
| direction | Indicates the direction of the MM. This shall be encoded as “to target.” | M |

NEXT CHANGE

#### 7.4.3.9 MMSDeleteFromRelay

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSDeleteFromRelay record when the MMS Proxy-Relay sends a *m-delete-conf* (defined in OMA-TS-MMS\_ENC [39]) to the MMS client in the target UE.

Table 7.4.3-9 contains parameters generated by the IRI-POI, along with parameters derived from the *m-delete-req* message (from the local target UE to the MMS Proxy-Relay), and the *m-delete-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-9: Payload for MMSDeleteFromRelay

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target,” or "fromTarget," as appropriate. | M |
| contentLocationReq | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-delete-conf,* as defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent to the MMS Proxy-Relay. | M |
| contentLocationConf | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-delete-conf*, as defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| deleteResponseStatus | The delete response, as defined in OMA-TS-MMS\_ENC [39] clause 7.3.48. | M |
| deleteResponseText | The delete response, as defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. Include if sent by the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.10 MMSMBoxStore

The IRI-POI in the MMS Proxy-Relay shall generate an xIRI containing an MMSMBoxStore record when the MMS Proxy-Relay sends a m-mbox-store-conf (defined in OMA-TS-MMS\_ENC [39] clause 6.8) to the MMS client in the target UE.

Table 7.4.3-10 contains parameters generated by the IRI-POI, along with parameters derived from the m-mbox-store-req message (from the local target UE to the MMS Proxy-Relay), and from the *m-mbox-store-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-10: Payload for MMSMBoxStore

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target.” | M |
| contentLocationReq | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-store-req*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | M |
| state | Identifies the value of the MM State associated with a MM to be stored or stored MM. Sets the state for the forwarded MM when it is stored. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent by the MMS Proxy-Relay. | C |
| contentLocationConf | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-store-conf*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| storeStatus | Indicates if the MM was successfully stored in the MMBox. | M |
| storeStatusText | Text that qualifies the Store Status. Include if sent to the target. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.59. Include if sent by the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.11 MMSMBoxUpload

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSMBoxUpload record when the MMS Proxy-Relay sends a *m-mbox-upload-conf* (defined in OMA-TS-MMS\_ENC [39] clause 6.10) to the MMS client in the target UE.

Table 7.4.3-11 contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-upload-req* message (from the local target UE to the MMS Proxy-Relay), and from the *m-mbox-upload-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-11: Payload for MMSMBoxUpload

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target,” or "fromTarget," as appropriate. | M |
| state | Identifies the value of the MM State associated with a MM to be stored or stored MM. Sets the state for the forwarded MM when it is stored. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Identifies a keyword to add or remove from the list of keywords associated with a stored MM. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent by the MMS Proxy-Relay. | C |
| contentType | The content type of the MM. See OMA-TS-MMS\_ENC [39] clause 7.3.11 | M |
| contentLocation | The *content-location-value* field defines the URL for the MMS server location of the MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| storeStatus | Indicates if the MM was successfully stored in the MMBox. | M |
| storeStatusText | Text that qualifies the Store Status. Include if sent to the target. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.59. Include if sent by the MMS Proxy-Relay. | C |
| mMBoxDescription | The MMBox description PDU as defined in 7.4.3.20 corresponds to the particular MM. include if sent by the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.12 MMSMBoxDelete

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSMBoxDelete record when the MMS Proxy-Relay sends a *m-mbox-delete.conf* (defined in OMA-TS-MMS\_ENC [39]) to the MMS client in the target UE.

Table 7.4.3-12 contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-delete-req* message (from the local target UE to the MMS Proxy-Relay), and from the *m-mbox-delete-conf* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-12: Payload for MMSMBoxDelete

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| direction | Indicates the direction of the MM. This shall be encoded as “to target,” or "fromTarget," as appropriate. | M |
| contentLocationReq | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-delete-req*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. | M |
| contentLocationConf | The *content-location-value* field defines the URL for the MMS server location of the MM as it appears in the *m-mbox-delete-conf*. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| responseStatus | MMS specific status. | M |
| responseStatusText | Text that qualifies the Response Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. | C |

NEXT CHANGE

#### 7.4.3.13 MMSDeliveryReport

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSDeliveryReport record when the MMS Proxy-Relay sends an *m-delivery-ind* (as defined in OMA-TS-MMS\_ENC [39] clause 6.11) to the MMS client in the target UE.

Table 7.4.3-13 contains parameters generated by the IRI-POI, along with parameters derived from the *m-delivery-ind* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-13: Payload for MMSDeliveryReport

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. Include if sent by the MMS Proxy-Relay. | M |
| terminatingMMSParty | ID(s) of the terminating party of the original message this Delivery Report refers to, in one or more of the formats described in 7.4.2.1  When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded). Include if sent by the MMS Proxy-Relay. | M |
| responseStatus | MMS specific status. | M |
| responseStatusText | Text that qualifies the Response Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. Include if sent by the MMS Proxy-Relay. | C |
| applicID | Identification of the originating application of the original MM. Sent by the target to identify the destination application as defined in OMA-TS-MMS\_ENC [39] clause 7.3.2. Include if sent by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Sent by the target to identify the application to which replies, delivery reports, and read reports are addressed as defined in OMA-TS-MMS\_ENC [39] clause 7.3.42. Include if sent by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent by the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.15 MMSReadReport

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSReadReport record when the MMS Proxy-Relay:

- sends a m-read-orig-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.7.2) to the MMS client in the target UE, or

- receives a m-read-rec-ind (as defined in OMA-TS-MMS\_ENC [39] clause 6.7.2) from the MMS client in the target UE.

Table 7.4.3-15 contains parameters generated by the IRI-POI, along with parameters derived from the *m-read-orig-ind* message (from the MMS Proxy-Relay to the local target UE), and from the *m-read-rec-ind* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-15: Payload for MMSReadReport

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.29. | M |
| terminatingMMSParty | ID(s) of the terminating party (i.e. the intended recipient of the read report or the originator of the initial MM message to which the read report applies) in one or more of the formats described in 7.4.2.1  When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| originatingMMSParty | ID(s) of the originating party (i.e. the originator of the read report or the recipient the initial MM message to which the read report applies) in one or more of the formats described in 7.4.2.1  When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| direction | Indicates the direction of the original MM (**not** of this message). This shall be encoded either as "from target," or “to target,” as appropriate. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded). Include if sent to/by the MMS Proxy-Relay. | C |
| readStatus | Status of the MMS (e.g.read or deleted without reading.) | M |
| applicID | Identification of the originating application of the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.2. Include if sent to/by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.42. Include if sent to/by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent to/by the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.16 MMSReadReportNonLocalTarget

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSReadReportNonLocalTarget record when the MMS Proxy-Relay:

- sends a MM4\_read\_reply\_report.REQ (as defined in TS 23.140 [40] clause 8.4.3), that contains a non-local target ID, to the non-local MMS Proxy-Relay, or

- receives a MM4\_read\_reply\_report.REQ (as defined in TS 23.140 [40] clause 8.4.3), that contains a non-local target ID, from the non-local MMS Proxy-Relay.

Table 7.4.3-16 contains parameters generated by the IRI-POI, along with parameters derived from the ***MM4\_read\_reply\_report.REQ*** message (from the local MMS Proxy-Relay to the non-local MMS Proxy-Relay, or inversely).

Table 7.4.3-16: Payload for MMSReadReportNonLocalTarget

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| transactionID | An ID used to correlate an MMS request and response between the proxies. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| terminatingMMSParty | ID(s) of the terminating party in one or more of the formats described in 7.4.2.1  When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| originatingMMSParty | ID(s) of the originating party in one or more of the formats described in 7.4.2.1  When address translation occurs (such as the case of a token sent by the client and replaced with a proper address by the MMS Proxy-Relay), both the pre and post translated addresses (with appropriate correlation) are included. | M |
| direction | Indicates the direction of the original MM (**not** of this message). This shall be encoded either as "from target" = True, or “to target” = False. | M |
| messageID | An ID assigned by the MMS Proxy-Relay to uniquely identify an MM. As defined in TS 23.140 [40] clause 8.4.1.4. | M |
| dateTime | Date and Time when the MM was last handled (either originated or forwarded). | M |
| readStatus | Status of the MMS (e.g.read or deleted without reading.) | M |
| readStatusText | Text explanation corresponding to the Read Status. Include if sent to/by the MMS Proxy-Relay. | C |
| applicID | Identification of the originating application of the original MM. Identifies the destination application as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to/by the MMS Proxy-Relay. | C |
| replyApplicID | Identification of an application to which replies, delivery reports, and read reports are addressed. Identifies the application to which replies, delivery reports, and read reports are addressed, as defined in TS 23.140 [40] clause 8.4.1.4. Include if sent to/by the MMS Proxy-Relay. | C |
| auxApplicInfo | Auxiliary application addressing information as indicated in the original MM. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.4. Include if sent to/by the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.17 MMSCancel

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSCancel record when the MMS Proxy-Relay sends a *m-cancel-req* (as defined in OMA-TS-MMS\_ENC [39] clause 6.13) to the MMS client in the target UE.

Table 7.4.3-17 contains parameters generated by the IRI-POI, along with parameters derived from the *m-cancel-req* message (from the MMS Proxy-Relay to the local target UE).

Table 7.4.3-17: Payload for MMSCancel

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| cancelID | This field includes the Message ID identifying the message to be cancelled. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.6. | M |
| direction | Indicates the direction of the original MM. This shall be encoded as “to target." | M |

NEXT CHANGE

#### 7.4.3.18 MMSMBoxViewRequest

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSViewRequest record when the MMS Proxy-Relay receives a *m-mbox-view-req* (as defined in OMA-TS-MMS\_ENC [39] clause 6.9) from the MMS client in the target UE.

Table 7.4.3-18 contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-vew-req* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-18: Payload for MMSMBoxViewRequest

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| transactionID | An ID used to correlate an MMS request and response between the target and the MMS Proxy-Relay. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.63. | M |
| version | The version of MM, to include major and minor version. | M |
| contentLocation | The *content-location-value* field defines the URL for the MMS Proxy-Relay location of the content to be retrieved. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent to the MMS Proxy-Relay. | C |
| state | Specifies a MM State value to use in selecting the messages to return. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent to the MMS Proxy-Relay. | C |
| flags | Specifies a MM Flags keyword to use in selecting the messages to return in the response. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent to the MMS Proxy-Relay. | C |
| start | A number, indicating the index of the first MM of those selected to have information returned in the response. Include if sent to the MMS Proxy-Relay. | C |
| limit | A number indicating the maximum number of selected MMs whose information are to be returned in the response.  If this is absent, information elements from all remaining MMs are to be returned. If this is zero, then no MM-related information are to be returned. Include if sent to the MMS Proxy-Relay. | C |
| mMSAttributes | A list of information elements that should appear in the view for each selected message. Include if sent to the MMS Proxy-Relay. | C |
| mMSTotals | Indicates a request for or the actual count of messages currently stored in the MMBox. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.62. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |
| mMSQuotas | Indicates a request for or the actual quotas for the user's MMBox in messages or bytes. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.36. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent to the MMS Proxy-Relay. | C |

NEXT CHANGE

#### 7.4.3.19 MMSMBoxViewResponse

The IRI-POI present in the MMS Proxy-Relay shall generate an xIRI containing an MMSViewConfirm record when the MMS Proxy-Relay sends a *m-mbox-view.conf* (as defined in OMA-TS-MMS\_ENC [39] clause 6.9) to the MMS client in the target UE.

Table 7.4.3-19 contains parameters generated by the IRI-POI, along with parameters derived from the *m-mbox-vew-conf* message (from the local target UE to the MMS Proxy-Relay).

Table 7.4.3-19: Payload for MMSMBoxViewResponse

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| version | The version of MM, to include major and minor version. | M |
| responseStatus | MMS specific status. | M |
| responseStatusText | Text that qualifies the Response Status. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.49. | C |
| contentLocation | The *content-location-value* field defines the URL for the MMS server location of the content to be retrieved. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.10. Include if sent by the MMS Proxy-Relay. | C |
| state | Specifies a MM State value to use in selecting the messages to return. As defined in OMA-TS-MMS\_ENC [39] clause 7.3.33. Include if sent by the MMS Proxy-Relay. | C |
| flags | Specifies a MM Flags keyword to use in selecting the messages to return in the response. See OMA-TS-MMS\_ENC [39] clause 7.3.32. Include if sent by the MMS Proxy-Relay. | C |
| start | A number, indicating the index of the first MM of those selected to have information returned in the response. Include if sent by the MMS Proxy-Relay. | C |
| limit | A number indicating the maximum number of selected MMs whose information are to be returned in the response.  If this is absent, information elements from all remaining MMs are to be returned. If this is zero then no MM-related information are to be returned. Include if sent by the MMS Proxy-Relay. | C |
| mMSAttributes | A list of information elements that should appear in the view for each selected message. Include if sent by the MMS Proxy-Relay. | C |
| mMSTotals | Indicates a request for or the actual count of messages currently stored in the MMBox. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.62. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| mMSQuotas | Indicates a request for or the actual quotas for the user's MMBox in messages or bytes. The values given in OMA-TS-MMS\_ENC [39] clause 7.3.36. shall be encoded as follows: “Yes” = True, “No” = False. Include if sent by the MMS Proxy-Relay. | C |
| mMBoxDescription | The MMBox description PDU as defined in 7.4.3.20 corresponds to the particular MM. | M |

NEXT CHANGE

### 7.5.1 Introduction

The Stage 3 intercept capabilities defined in this clause for the Push to Talk over Cellular (PTC) service apply when supported by a CSP. The term PTC represents either a Push to Talk over Cellular (PoC) or Mission Critical Push to Talk (MCPTT) type service. The use of the term PTC server represents either a MCPTT function or PoC server.

#### 7.5.1.1 Provisioning over LI\_X1

The IRI-POI present in the PTC server is provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2 of the present document.

The POI in the PTC Server shall support the identifier types given in table 7.5.1-1.

Table 7.5.1-1: TargetIdentifier Types for PTC service

|  |  |  |  |
| --- | --- | --- | --- |
| Identifier | Owner | ETSI TS 103 221-1 [7] TargetIdentifier type | Definition |
| iMPU | ETSI | IMPU | See ETSI TS 103 221-1 [7] |
| iMPI | ETSI | IMPI | See ETSI TS 103 221-1 [7] |
| mCPTTID | ETSI | TargetIdentifierExtension | See XSD schema |
| instanceIdentifierURN | 3GPP | TargetIdentifierExtension | See XSD schema |
| pTCChatGroupID | 3GPP | TargetIdentifierExtension | See XSD schema |

#### 7.5.1.2 Generating xIRI over LI\_X2

The IRI-POI present in the PTC server shall send xIRI over LI\_X2 for each of the events listed in TS 33.127 [5] clause 7.6.3, each of which is described in the following clauses. The IRI events are based on the use of 3GPP MCPTT features as defined in TS 24.379 [55] and OMA PoC features as defined in OMA-TS-PoC\_System\_Description-V2\_1-20110802-A [56].

#### 7.5.1.3 Generation of xCC over LI\_X3

The CC-POI present in the PTC server shall send xCC over LI\_X3.

The CC-POI shall set the payload format to indicate the appropriate payload type (5 for IPv4 Packet, 6 for IPv6 Packet) per clause 6.2.3.6 of the present document.

NEXT CHANGE

#### 7.5.2.3 PTC session abandon attempt

The IRI-POI present in the PTC server shall generate an xIRI containing a PTCSessionAbandon record when the IRI-POI present in the PTC server detects that the PTC Session is not established and the request is abandoned before the PTC session starts. Accordingly, the IRI-POI in the PTC server generates the xIRI when the following events are detected:

- when the PTC server serving the PTC target receives a SIP CANCEL from the PTC target or sends a SIP CANCEL to the PTC target.

Table 7.5.2-3: Payload for PTCSessionAbandonAttempt record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pTCTargetInformation | Provide PTC target identity. At least one among MCPTT ID, IMPU, IMPI, InstanceIdentifierURN and PTCChatGroupID shall be provided for PTCTargetInformation. | M |
| pTCDirection | Indicates the direction of the session relative to the target: "toTarget" or "fromTarget." | M |
| pTCSessionInfo | Shall provide PTC session information such as PTC Session URI and PTC Session type (e.g. on-demand, pre-established, ad-hoc, pre-arranged, group session). | M |
| location | Shall include the PTC target’s location when reporting of the PTC target’s location information is authorized and available. | C |
| pTCAbandonCause | Shall identify the reason for the abandoned PTC session based on the warning header field code provided in a response to a SIP INVITE per TS 24.379 [55] clause 4.4.2. | M |

NEXT CHANGE

#### 7.7.2.2 Generation of xCC at CC-POI in NEF over LI\_X3

The CC-POI present in the NEF shall send xCC over LI\_X3 for each NIDD packet.

Each X3 PDU shall contain the contents of the user plane packet (i.e. NIDD) using an unstructured payload format.

The CC-POI present in the NEF shall set the payload format to indicate the appropriate payload type (i.e. unstructured payload) as described in ETSI TS 103 221-2 [8] clause 5.4.

NEXT CHANGE

#### 7.7.2.3 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the NEF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the NEF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.7.2-6.

Table 7.7.2-6: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| NEFPDUSessionEstablishment | BEGIN |
| NEFPDUSessionRelease | END |
| NEFPDUSessionModification | CONTINUE |
| NEFStartOfInterceptionWithEstablishedPDUSession | BEGIN |
| NEFUnsuccessfulProcedure | REPORT or CONTINUE |

IRI messages associated with the same PDU Session shall be assigned the same CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

The threeGPP33128DefinedIRI field (see ETSI TS 102 232-7 [10] clause 15) shall be populated with the BER-encoded IRIPayload.

NEXT CHANGE

##### 7.7.3.1.4 Device trigger cancellation

The IRI-POI in the NEF shall generate an xIRI containing a NEFDeviceTriggerCancellation record when the IRI-POI present in the NEF detects that an AF has sent a Device trigger cancellation for a previously sent Device trigger to a UE matching one of the target identifiers provided via LI\_X1 to the IRI-POI in the NEF. It cancels previously submitted Device trigger message which has not yet been delivered to the target UE.

Accordingly, the IRI-POI in the NEF generates the xIRI when any of the following events is detected:

- NEF receives a Nnef\_Trigger\_Delivery Request (for a device trigger cancellation) with GPSI matching the target identifier as described in TS 29.522 [58] clause 4.4.3.

- NEF sends a T4 Device-Trigger-Request (DTR) to SMS-SC with Trigger-Action AVP set to RECALL and User-Identifier AVP matching the SUPI of the target UE as specified in TS 29.337 [60] clause 5.2.1.

Table 7.7.3-3: NEFDeviceTriggerCancellation record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| sUPI | SUPI associated with the target UE | M |
| gPSI | GPSI used with the target UE | M |
| triggerId | Identity of the corresponding device trigger to be cancelled | M |

NEXT CHANGE

#### 7.7.3.2 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the NEF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the NEF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.7.3-5.

Table 7.7.3-5: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| NEFDeviceTrigger | REPORT |
| NEFDeviceTriggerReplace | REPORT |
| NEFDeviceTriggerCancellation | REPORT |
| NEFDeviceTriggerReportNotify | REPORT |

NEXT CHANGE

#### 7.7.4.2 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the NEF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the NEF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.7.4-2.

Table 7.7.4-2: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| NEFMSISDNLessMOSMS | REPORT |

NEXT CHANGE

##### 7.7.5.1.2 Expected UE behavior update

The IRI-POI in the NEF shall generate an xIRI containing an NEFExpectedUEBehaviorUpdate record when the IRI-POI present in the NEF detects that an AF has updated the UE Expected behavior data.

Accordingly, the IRI-POI in the NEF generates the xIRI when any of the following events is detected (see TS 29.503 [25] clauses 5.6.2.1 and 6.1.6.2.49):

- NEF receives a NEF\_ParameterProvision\_Create Request or NEF\_ParameterProvision\_Update Request from an AF, related to the target UE.

- NEF receives a NEF\_ParameterProvision\_Delete Request from an AF to delete the existing UE Expected Behaviour parameters related to the target UE.

- NEF returns a NEF\_ParameterProvision\_Get Response containing the UE Expected Behavior of the target UE to the querying AF.

Table 7.7-5-1: NEFExpectedUEBehaviorUpdate record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| gPSI | GPSI of the target UE to which the expected UE behavior applies. | M |
| expectedUEMovingTrajectory | Identifies the UE's expected geographical movement. | O |
| stationaryIndication | Identifies whether the UE is stationary or mobile. | O |
| communicationDurationTime | Indicates for how long the UE will normally stay in CM-Connected for data transmission expressed in seconds. | O |
| periodicTime | Interval Time of periodic communication in seconds. | O |
| scheduledCommunicationTime | Time and day of the week when the UE is available for communication, as defined in TS 29.571 [17]. | O |
| batteryIndication | Identifies power consumption criticality for the UE: if the  UE is battery powered but the battery is not rechargeable/not  replaceable, battery powered with  rechargeable/replaceable battery, or not battery powered. | O |
| trafficProfile | Identifies the type of data transmission: single packet transmission (UL or DL), dual packet transmission (UL with subsequent DL or DL with subsequent UL), multiple packets transmission. | O |
| scheduledCommunicationType | Indicates that the Scheduled Communication Type is Downlink only or Uplink only or Bi-directional. | O |
| expectedTimeAndDayOfWeekInTrajectory | Identifies the time and day of week when the UE is expected to be at each location included in the Expected UE Moving Trajectory. | O |
| aFID | AF identity requesting expected UE behavior update. | M |
| validityTime | Identifies when the expected UE behavior parameter set expires and shall be deleted. If absent, it indicates that there is no expiration time for this parameter set. | O |

NEXT CHANGE

#### 7.7.5.2 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the NEF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the NEF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.7.4-2.

Table 7.7.5-2: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| NEFExpectedUEBehaviorUpdate | REPORT |

NEXT CHANGE

#### 7.8.1.2 Provisioning of the IRI-POI and CC-POI in SCEF

The IRI-POI and CC-POI present in the SCEF are provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2.

The POI in the SCEF shall support the following target identifier formats in the ETSI TS 103 221-1 [7] messages (or equivalent if ETSI TS 103 221-1 [7] is not used):

- IMSI.

- MSISDN.

- External Identifier.

NOTE: For Parameter Provisioning, only MSISDN and External Identifier are applicable.

NEXT CHANGE

##### 7.8.2.1.3 PDN connection update

The IRI-POI in the SCEF/IWK-SCEF shall generate an xIRI containing an SCEFPDNConnectionUpdate record when the IRI-POI present in the SCEF/IWK-SCF detects that a Non-IP PDN Connection has been updated for the target UE. The IRI-POI present in the SCEF/IWK-SCEF shall generate the xIRI for the following events:

- SCEF/IWK-SCEF sends a T6a/T6ai Connection Management Answer to confirm the T6a/T6ai Connection Management Request received with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and with Connection-Action AVP set to CONNECTION\_UPDATE as described in TS 29.128 [62] clause 5.7.

- SCEF/IWK-SCEF receives a T6a/T6ai Connection Management Answer from MME which confirms the T6a/T6ai Connection Management Request sent by SCEF/IWK-SCEF with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and with Connection-Action AVP set to CONNECTION\_UPDATE as described in TS 29.128 [62] clause 5.8.

- in roaming situation SCEF sends a T7 Connection Management Answer to IWK-SCEF to confirm the T7 Connection Management Request received with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and with Connection-Action AVP set to CONNECTION\_UPDATE as described in TS 29.128 [62] clause 5.7.

- in roaming situation SCEF receives a T7 Connection Management Answer from IWK-SCEF which confirms the T7 Connection Management Request with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and with Connection-Action AVP set to CONNECTION\_UPDATE as described in TS 29.128 [62] clause 5.8.

- SCEF returns a RDS MANAGE PORT Response to a UE with a "Status" field set to "Success" in response to a RDS MANAGE PORT command sent by UE with an "Action" field set to "Reserve port" to confirm the reservation of a combination of source and destination port numbers for use for a traffic to be sent by the UE to a specific application on an SCS/AS (see TS 24.250 [61] clause 5.4.2.6.2).

- SCEF receives a RDS MANAGE PORT Response from a UE with a "Status" field set to "Success" in response to a RDS MANAGE PORT command sent by the SCEF with an "Action" field set to "Reserve port" to confirm the reservation of a combination of source and destination port numbers for use for a traffic to be sent by an SCS/AS to a specific application on the UE (see TS 24.250 [61] clause 5.4.2.6.2).

- SCEF returns a RDS MANAGE PORT Response to a UE with a "Status" field set to "Success" in response to a RDS MANAGE PORT command sent by UE with an "Action" field set to "Release port" to confirm the release of a combination of source and destination port numbers for an application on an SCS/AS (see TS 24.250 [61] clause 5.4.2.6.3).

- SCEF receives a RDS MANAGE PORT Response from a UE with a "Status" field set to "Success" in response to a RDS MANAGE PORT command sent by the SCEF with an "Action" field set to "Release port" to confirm the release of a combination of source and destination port numbers for an application on the UE (see TS 24.250 [61] clause 5.4.2.6.3).

Table 7.8.2-2: SCEFPDNConnectionUpdate record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| iMSI | IMSI associated with the Non-IP PDN Connection of the target UE (e.g. as provided by the MME in the associated Connection Management Request) | C |
| mSISDN | MSISDN associated with the PDN Connection if available | C |
| externalIdentifier | External Identifier associated with the PDN Connection if available, defined as NAI in ASN.1 | C |
| initiator | Initiator of the modification of the PDN Connection, UE, MME or SCEF | M |
| rDSSourcePortNumber | RDS source port number | C |
| rDSDestinationPortNumber | RDS destination port number | C |
| applicationID | Application identifier on the UE or on the SCS/AS if RDS is used | C |
| sCSASID | Identifier of the SCS/AS if RDS is used | C |
| rDSAction | Action if RDS is used. Possible values: “ReservePort”, “ReleasePort” | C |
| serializationFormat | Data format exchanged between UE and SCS/AS if RDS is used | C |

NEXT CHANGE

##### 7.8.2.1.4 PDN connection release

The IRI-POI in the SCEF/IWK-SCEF shall generate an xIRI containing an SCEFPDNConnectionRelease record when the IRI-POI present in the SCEF/IWK-SCEF detects that a Non-IP PDN Connection needs to be released for the target UE. The IRI-POI present in the SCEF/IWK-SCEF shall generate the xIRI for the following events:

- SCEF/IWK-SCEF informs MME that the Non-IP PDN Connection for NIDD is no longer valid using T6a Connection Management Request with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and Connection-Action AVP set to CONNECTION\_RELEASE. SCEF initiates the release of the Non-IP PDN connection when it is notified by the HSS about the end of NIDD authorization for the target UE (see TS 29.128 [62] clause 5.8).

- SCEF sends a T6a Connection Management Answer to MME to confirm the T6a Connection Management Request received with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and with Action-Action AVP set to CONNECTION\_RELEASE (see TS 29.128 [62] clause 5.7).

- SCEF informs IWK-SCEF that the Non-IP PDN Connection for NIDD is no longer valid using T6a Connection Management Request with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and Connection-Action AVP set to CONNECTION\_RELEASE (see TS 29.128 [62] clause 5.8).

- SCEF sends a T7 Connection Management Answer to IWK-SCEF to confirm the T7 Connection Management Request with User-Identifier AVP including the set of identities of the UE, i.e. IMSI/MSISDN/External Identifier matching the target Identifier and with Action AVP set to CONNECTION\_RELEASE (see TS 29.128 [62] clause 5.7).

Table 7.8.2-3: SCEFPDNConnectionRelease record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| iMSI | IMSI associated with the Non-IP PDN Connection of the target UE (e.g. as provided by the MME in the associated Connection Management Request) | C |
| mSISDN | MSISDN associated with the PDN Connection if available | C |
| externalIdentifier | External Identifier associated with the PDN Connection if available, defined as NAI in ASN.1 | C |
| ePSBearerID | Identity of the EPS bearer that MME allocates to the Non-IP PDN Connection | M |
| timeOfFirstPacket | Time of first packet for the PDN Connection | C |
| timeOfLastPacket | Time of last packet for the PDN Connection | C |
| uplinkVolume | Number of uplink octets for the PDN Connection | C |
| downlinkVolume | Number of downlink octets for the PDN Connection | C |
| releaseCause | Reason for PDN Connection release | M |

NEXT CHANGE

#### 7.8.2.2 Generation of xCC at CC-POI in SCEF over LI\_X3

The CC-POI present in the SCEF shall send xCC over LI\_X3 for each NIDD packet.

Each X3 PDU shall contain the contents of the user plane packet (i.e. NIDD) using an unstructured payload.

The CC-POI present in the SCEF shall set the payload format to indicate the appropriate payload type (i.e. unstructured payload) as described in ETSI TS 103 221-2 [8] clause 5.4.

NEXT CHANGE

#### 7.8.2.3 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the SCEF/IWK-SCEF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the SCEF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.8.2-6.

Table 7.8.2-6: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| SCEFPDNConnectionEstablishment | BEGIN |
| SCEFPDNConnectionRelease | END |
| SCEFPDNConnectionUpdate | CONTINUE |
| SCEFStartOfInterceptionWithEstablishedPDNConnection | BEGIN |
| SCEFUnsuccessfulProcedure | REPORT |

IRI messages associated with the same PDU Session shall be assigned the same CIN (see ETSI TS 102 232-1 [9] clause 5.2.4).

The threeGPP33128DefinedIRI field (see ETSI TS 102 232-7 [10] clause 15) shall be populated with the BER-encoded IRIPayload.

NEXT CHANGE

##### 7.8.3.1.3 Device trigger replacement

The IRI-POI in the SCEF shall generate an xIRI containing a SCEFDeviceTriggerReplace record when the IRI-POI present in the SCEF detects that an SCS/AS has sent a Device triggering replacement for a previously sent Device triggering request to a UE matching one of the target identifiers provided via LI\_X1 to the IRI POI in the SCEF. It replaces a previously submitted Device triggering request which has not yet been delivered to the UE.

Accordingly, the IRI-POI in the SCEF generates the xIRI when any of the following events is detected:

- SCEF receives a Device triggering request (for a Device trigger replacement) from an SCS/AS with MSISDN or External Identifier matching the target identifier (See TS 29.122 [63] clause 5.7).

- SCEF sends a T4 Device-Trigger-Request (DTR) to SMS-SC with Trigger-Action AVP set to REPLACE and User-Identifier AVP matching the IMSI of the target UE as specified in TS 29.337 [60] clause 5.2.1.

Table7.8.3-2: SCEFDeviceTriggerReplace record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| iMSI | IMSI associated with the target UE | C |
| mSISDN | MSISDN used with the taget UE | C |
| externalIdentifier | External Identifier used with the taget UE | C |
| triggerId | Identity of the corresponding Device trigger to be replaced | M |
| sCSASID | Identity of the SCS/AS replacing an existing Device trigger which has not been delivered yet to the device (e.g. because the device is unreachable) by a new Device trigger | M |
| triggerPayload | The device triggering payload | C |
| validityPeriod | The validity time in seconds for the specific action requested | C |
| priorityDT | The priority of the device trigger | C |
| sourcePortId | Port on the SCSAS which delivers the device trigger | C |
| destinationPortId | Port on the device which is the recipient of the device trigger | C |

NEXT CHANGE

#### 7.8.4.2 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the SCEF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the SCEF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.8.4-2.

Table 7.8.4-2: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| SCEFMSISDNLessMOSMS | REPORT |

NEXT CHANGE

##### 7.8.5.1.2 Communication pattern update

The IRI-POI in the SCEF shall generate an xIRI containing an SCEFCommunicationPatternUpdate record when the IRI-POI present in the SCEF detects that an SCS/AS has updated the Communication pattern data.

Accordingly, the IRI-POI in the SCEF generates the xIRI when any of the following events is detected (See TS 29.122 [63] clause 5.10):

- SCEF receives a request to provision the communication pattern parameters from an SCS/AS related to the target UE (PUT).

- SCEF receives a request to delete the existing communication patterns parameters from an SCS/AS related to the target UE (DELETE).

- SCEF returns a response (200 OK) containing the communication pattern parameters of the target UE to the querying SCS/AS (GET).

Table 7.8.5-1: SCEFCommunicationPatternUpdate record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| mSISDN | MSISDN of the target UE the communication pattern applies to | C |
| externalIdentifier | External Identifier of the target UE the communication pattern applies to | C |
| periodicCommunicationIndicator | Identifies whether UE communicates periodically or on demand | O |
| communicationDurationTime | Indicates for how long the UE will normally stay in CM-Connected for data transmission expressed in seconds | O |
| periodicTime | Interval Time of periodic communication in seconds | O |
| scheduledCommunication  Time | Time and day of the week when the UE is available for communication, as defined in TS 29.571 | O |
| scheduledCommunicationType | Indicates that the Scheduled Communication Type is Downlink only or Uplink only or Bi-directional | O |
| stationaryIndication | Identifies whether the UE is stationary or mobile | O |
| batteryIndication | Identifies power consumption criticality for the UE: if the  UE is battery powered but the battery is not rechargeable/not  replaceable, battery powered with  rechargeable/replaceable battery, or not battery powered. | O |
| trafficProfile | Identifies the type of data transmission: single packet transmission (UL or DL), dual packet transmission (UL with subsequent DL or DL with subsequent UL), multiple packets transmission | O |
| expectedUEMovingTrajectory | Identifies the UE’s expected geographical movement | O |
| expectedTimeAndDayOfWeekInTrajectory | Identifies the time and day of week when the UE is expected to be at each location included in the Expected UE Moving Trajectory | O |
| sCSASID | SCS/AS identity requesting communication pattern update | M |
| validityTime | Identifies when the expected UE behavior parameter set expires and shall be deleted. If absent, it indicates that there is no expiration time for this parameter set | O |

NEXT CHANGE

#### 7.8.5.2 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the SCEF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF (e.g. additional location information).

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the SCEF event was observed (i.e. the timestamp field of the xIRI).

The IRI type parameter (see ETSI TS 102 232-1 [9] clause 5.2.10) shall be included and coded according to table 7.8.5-2.

Table 7.8.5-2: IRI type for IRI messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| SCEFCommunicationPatternUpdate | REPORT |

NEXT CHANGE

#### 7.9.1.1 General

This clause describes basic IRI-intercept for a generic, encrypted service between a target UE and an application in the CSP network, making use of AKMA-provided cryptographic keys according to TS 33.535 [65].

NEXT CHANGE

##### 7.9.1.3.2 AAnF Anchor Key Register

The IRI-POI in the AAnF shall generate an xIRI containing an AAnFAnchorKeyRegister record when the IRI-POI present in the AAnF detects reception of an AKMA-context, i.e. an (A-KID, KAKMA)-pair associated with a target, from the AUSF, see TS 33.535 [65] clause 7.1.2.

Table 7.9.1.3-1: AAnFAnchorKeyRegister record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| aKID | AKMA Anchor Key Identifier (see TS 33.535 [65] clause 4.4.2). | M |
| SUPI | SUPI associated with the A-KID. | M |
| kAKMA | AKMA Anchor Key (see TS 33.535 [65] clause 5.1), Shall be included if available  NOTE: Whether kAKMA is included could also depend on whether provisioning is general or service specific. | C |

NEXT CHANGE

##### 7.9.1.3.3 AAnF AKMA application key get

The IRI-POI in the AAnF shall generate an xIRI containing an AAnFAKMAApplicationKeyGet record when the IRI-POI present in the AAnF detects an AKMA application key get from an AF (directly or via NEF), see TS 33.535 [65] clauses 7.1.3 and 7.3.1.

Table 7.9.1.3-2: AAnFKAKMAApplicationKeyGet record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| Type | Indicates whether the AF requesting the key is internal to the network or external. | M |
| aKID | AKMA Anchor Key Identifier. | M |
| keyInfo | Key information for the requested derived AF-specific key (see table 7.9.1.3-3). | M |

Table 7.9.1.3-3: AFKeyInfo structure

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| aFID | AKMA AF identifier of the AF associated with the derived AF-specific key. | M |
| kAF | Derived AF-specific key (see TS 33.535 [65] clauses 5.1 and A.4). | M |
| kAFExpTime | Expiry time associated with the derived AF-specific key. | M |

NEXT CHANGE

##### 7.9.1.3.5 AAnF AKMA context removal

The IRI-POI in the AAnF shall generate an xIRI containing an AAnFAKMAContextRemovalRecord when the IRI-POI present in the AAnF receives a request from an NF to delete AKMA context, see TS 33.535 [65] clause 7.1.4.

Table 7.9.1.3-5: AAnFAKMAContextRemovalRecord record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| aKID | AKMA Anchor Key Identifier. | M |
| nFInstanceID | Identity of NF originating the request encoded as per TS 29.571 [17] clause 5.3.2. | M |

NEXT CHANGE

##### 7.9.1.4.2 AF Application key refresh

The IRI-POI in the AF shall generate an xIRI containing an AFAKMApplicationKeyRefresh record when the IRI-POI present in the AF detects that a KAF-key previously obtained from an AAnF is being locally refreshed by the Ua\* security protocol in use, see TS 33.535 [65] clause 6.4.3.

Table 7.9.1.4-1: AFAKMAApplicationKeyRefresh record

|  |  |  |
| --- | --- | --- |
| Field name | Value | M/C/O |
| aFID | AKMA AF identifier. | M |
| aKID | AKMA Anchor Key Identifier. | M |
| kAF | New value of the AF-specific key, after refresh. | M |
| uaStarParams | Set of new Ua\* security protocol parameters associated with kAF, if updated. | C |

NEXT CHANGE

#### 7.9.1.5 Generation of IRI over LI\_HI2

When an xIRI is received over LI\_X2 from the IRI-POI in the AAnF or AF, the MDF2 shall send the IRI message over LI\_HI2 without undue delay. The IRI message shall contain a copy of the relevant record received from LI\_X2. The record may be enriched by other information available at the MDF.

The timestamp field of the ETSI TS 102 232-1 [9] PSHeader structure shall be set to the time at which the AAnF/AF event was observed (i.e. the timestamp field of the xIRI).

Table 7.9.1.5-1 shows the IRI type (see ETSI TS 102 232-1 [9] clause 5.2.10) to be used for each record type.

Table 7.9.1.5-1: IRI type for AAnF originated messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| AAnFAnchorKeyRegister | BEGIN |
| AAnFKAKMAApplicationKeyGet | CONTINUE |
| AAnFStartOfInterceptWithEstablishedAKMAKeyMaterial | BEGIN |
| AAnFAKMAContextRemovalRecord | END |

IRI messages associated with the same AKID from the same AAnF shall be assigned the same CIN.

Table 7.9.1.5-2: IRI type for AF originated messages

|  |  |
| --- | --- |
| Record type | IRI Type |
| AFAKMAApplicationKeyGet | BEGIN |
| AFAKMAApplicationKeyRefresh | CONTINUE |
| AFStartOfInterceptWithEstablishedAKMAApplicationKey | BEGIN |
| AFAuxiliarySecurityParameterEstablishment | CONTINUE |
| AFApplicationKeyRemoval | END |

IRI messages associated with the same AKID from the same AF shall be assigned the same CIN.

NEXT CHANGE

#### 7.10.3.1 Overview

The Phase-1 of HR LI that applies to all inbound roaming UEs with home-routed roaming using the IMS-based services include the functions that revolve around the following interfaces (see TS 33.127 [5]):

- LI\_X1: Used by the LIPF to provision the BBIFF-C/BBIFF and optionally, the LMISF-IRI to enable the same for HR LI (aka initial configuration of HR LI).

- LI\_T3: Used by the BBIFF-C to instruct the BBIFF-U to capture and deliver the IMS signaling related user plane packets of inbound roaming UEs to the LMISF-IRI.

- LI\_X2\_LITE: Used by the BBIFF-C/BBIFF to carry the control plane information (e.g. packet data connection related notifications, UE location) to LMISF-IRI for inbound roaming UEs.

- LI\_X3\_LITE\_S: Used by the BBIFF-U/BBIFF to forward the IMS signalling related user plane packets of inbound roaming UEs to the LMISF-IRI.

The triggering interface LI\_T3 is not used in the case of BBIFF in SGW. The LI\_X3\_LITE\_S is also used in HR LI Phase-2.

NEXT CHANGE

##### 7.10.3.3.2 N9HR LI

The BBIFF-C present in the SMF shall generate the following xIRI when the prior conditions defined in clause 7.10.3.3.1 are met:

- N9HRPDUSessionInfo.

The main purpose of the xIRI is to report the UE location, PDU session ID and the SMF identity. The scenarios that result in the above xIRI are listed below and apply to all inbound roaming UEs with home-routed roaming and using IMS services:

- PDU session is established with the creation of a default QoS flow for IMS signaling.

- PDU session is modified with the creation of a dedicated QoS flow used for IMS media.

- PDU session is modified with the updates to the QoS flow.

- PDU session is modified with the deleting of dedicated QoS flow used for IMS media.

- PDU session is deleted.

- MA PDU session is created, modified or deleted.

- SMF relocation.

- New UE location due to UE requested or network initiated service request.

- New UE location due to hand-over situations including EPS to 5GS handover.

- New UE location due to tracking area updates or routing area updates.

- New SMF from the SMF set is taking over the PDU session.

- HR LI is enabled with an established PDU session.

The exact trigger for the xIRI is subject to implementation, however, the following can be used as a general guidance along with observing the prior conditions listed in clause 7.10.3.3.1:

- SMF receives the Nsmf\_PDU\_Session\_Create response message with n1SmInfoToUe IE containing the PDU SESSION ESTABLISHMENT ACCEPT (see TS 29.502 [16]) from the H-SMF and sends the NAS message (via AMF) PDU SESSION ESTABLISHMENT ACCEPT to the UE as a part of PDU session establishment procedures. This may also happen with MA PDU session establishment procedures, or during handover procedures with access type change, or as a part of SMF relocation procedures.

- SMF receives an Nsmf\_PDUSession\_UpdateSMContext request from the AMF with a new UE location. This may happen whenever a PDU session or a MA PDU session is modified with the addition, modification or deletion of a dedicated QoS flow. This may also happen for UE-initiated or network-initiated service request procedures, or as a part of the handover procedures, or as a part of the tracking area update procedures.

- When a new SMF (e.g. in the SMF set) takes over the control for the PDU session.

- When an ActivateTask is received from the LIPF over LI\_X1 (see clause 7.10.3.2.2) to enable the HR LI, the BBIFF-C present in the SMF detects that a PDU session for IMS services is already established for an inbound roaming UE with home-routed roaming.

NOTE: The sending of xIRI for each already established PDU session may result in a significant number of xIRI messages from the BBIFF-C to the LMISF-IRI.

The contents of xIRI N9HRPDUSessionInfo record is shown in table 7.10.3.3-1 below.

Table 7.10.3.3-1: Payload of N9HRPDUSessionInfo record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| sUPI | SUPI associated with the PDU session (e.g. as provided by the AMF in the associated Nsmf\_PDU Session\_CreateSMContext service operation). | M |
| pEI | PEI associated with the PDU session, if available. | C |
| pDUSessionID | PDU Session ID. See TS 24.501 [13] clause 9.4. | M |
| location | UE location information provided by the AMF. | C |
| sNSSAI | Slice identifiers associated with the PDU session, if available. See TS 23.003 [19] clause 28.4.2 and TS 23.501 [2] clause 5.12.2.2. | C |
| dNN | Data Network Name associated with the UE traffic, as defined in TS 23.003[19] clause 9A and described in TS 23.501 [2] clause 4.3.2.2. | C |
| messageCause | Included to indicate why the xIRI is generated (see table 7.10.3.3-2). | M |

Table 7.10.3.3-2: messageCause details

|  |  |
| --- | --- |
| Field name | Description |
| pDUSessionEstablished | Indicates that the PDU session is established. |
| pDUSessionModified | Indicates that the PDU session is being modified. |
| pDUReleased | Indicates that the PDU session is being released. |
| updatedLocationAvailable | Indicates that an updated UE location is available |
| sMFChanged | Indicates that the SMF that is handling the PDU session is changed. |
| other | Indicates that cause is other than those listed elsewhere in this table. |
| hRLIEnabled | Indicates that the HR LI is enabled after the PDU session for IMS services is established. |

The xIRIs shall include the Network Function ID (NFID), a conditional attribute field as defined in ETSI TS 103 221-2 [8], with the V-SMF identity.

Handling of this xIRI within the LMISF-IRI is described in clause 7.10.3.4.

NEXT CHANGE

##### 7.10.3.5.2 N9HR LI

When the BBIFF-C present in the SMF detects that a PDU session is established with IMS signaling related QoS Flow for an inbound roaming UE with home-routed roaming, it shall send an activation message to the BBIFF-U present in the UPF over the LI\_T3 interface with the associated QFI value.

The exact point at which the trigger is sent is left to the implementation (preferably, when the SMF receives the N4: Session Establishment/Modification Response from the UPF), however, the BBIFF-C can send the trigger only when the following conditions are met:

- ActivateTask with target identity "HR" and "IMSSignaling" is received with X3 being included in the delivery type.

- The MCC + MNC of the Operator Identifier field of the DNN is different from the MCC+MNC configured in the SMF - see TS 29.502[16] clause 6.1.6.2.2 and 23.203 [19] clause 9.1.2.

- The Network Identifier field of DNN contains "IMS" (IMS services) - see GSMA IR.88 [67].

- The 5QI value associated with the QoS Flow is 5 – see GSMA NG.114 [68].

The first point is indicating that N9HR LI is enabled (see clause 7.10.3.3.1) with a need to capture and deliver the IMS signaling related user plane packets. The second point is telling that the UE is an inbound roamer with Home Routed based roaming. The third point is telling that the PDU session is established for IMS services. The fourth point is telling that the IMS signaling related QoS Flow is established.

If the PDU session for IMS services is already established for an inbound roaming UE with Home-Routed based roaming when the above indicated ActivateTask is received, then the BBIFF-C shall send the trigger at the time Activation Task is received from the LIPF.

The details of ActivateTask sent to the BBIFF-U are shown in table 7.10.3.5-1.

Table 7.10.3.5-1: ActivateTask message for triggering the BBIFF-U in the UPF

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | Shall be set to the XID of the Task Object associated with the interception at the BBIFF-C. | M |
| TargetIdentifiers | Packet detection criteria as determined by the BBIFF-C in the SMF, which enables the BBIFF-U to isolate user-plane packets. The BBIFF-U in the UPF shall support the identifier types given in table 6.2.3-7. The target identity type of PDR ID shall be mandatory. The BBIFF-C in SMF shall use the QFI associated with the IMS signaling (5QI = 5) related QoS flow to populate the QFI field within the PDI of PDR ID. | M |
| DeliveryType | Set to "X3Only". | M |
| ListOfDIDs | Shall give the DID of the LMISF-IRI to which the xCC should be delivered. The delivery endpoint is configured using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to the task activation. | M |
| CorrelationID | Correlation ID to assign to X3 PDUs generated by the BBIFF-U in the UPF. This field is populated with the same CorrelationID the BBIFF-C in the SMF uses for the associated xIRI. | M |

When the BBIFF-C present in the SMF detects that the PDU session is released (e.g. when SMF receives the N4: Session Release Response from the UPF), it shall send a deactivation message to the BBIFF-U present in the UPF over the LI\_T3 interface, if the task is still active in the BBIFF-U.

The BBIFF-C shall also send the deactivation message to the BBIFF-U when a DeactivateTask is received from the LIPF for the XID if the task is still active in the BBIFF-U.

NEXT CHANGE

##### 7.10.3.5.3 S8HR LI

When the BBIFF-C present in the SGW-C detects that the default bearer used for IMS signaling is activated on the PDN connection for an inbound roaming UE with home-routed roaming, it shall send an activation message to the BBIFF-U present in the SGW-U over the LI\_T3 interface.

The exact point at which the trigger is sent is left to the implementation (preferably, when the SGW-C receives the Sx: Session Establishment/Modification Response from the SGW-U). However, the BBIFF-C can send the trigger only when the following conditions are met:

- ActivateTask with target identity "HR" and "IMSSignaling" is received with X3 being included in the delivery type.

- The MCC + MNC of the Operator Identifier field of the APN is different from the MCC+MNC configured in the SGW/SGW-C - see TS 29.502 [16] clause 6.1.6.2.2 and 23.203 [19] clause 9.1.2.

- The Network Identifier field of APN contains "IMS" (IMS services) - see GSMA IR.88 [67].

- The QCI value associated with the default bearer is 5 – see GSMA NG.114 [68].

The first point is indicating that S8HR LI is enabled (see clause 7.10.3.3.1) with a need to capture and deliver the IMS signaling related user plane packets. The second point is telling that the UE is an inbound roamer with Home Routed based roaming. The third point is telling that the PDN connection is established for IMS services. The fourth point is telling that the IMS signaling bearer is activated.

If the default bearer (for IMS signaling bearer) on the PDN connection is already established for an inbound roaming UE with Home-Routed based roaming when the above indicated ActivateTask is received, then the BBIFF-C shall send the trigger at the time Activation Task is received from the LIPF.

The details of ActivateTask sent to the BBIFF-U present in the SGW-U are shown in table 7.10.3.5-2.

Table 7.10.3.5-2: ActivateTask message for triggering the BBIFF-U in the SGW-U

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | Shall be set to the XID of the Task Object associated with the interception at the BBIFF-C. | M |
| TargetIdentifiers | Packet detection criteria as determined by the BBIFF-C in the SGW-C, which enables the BBIFF-U in SGW-U to isolate user-plane packets. The BBIFF-U in the SGW-U shall support the identifier types given in table 6.2.3-7. The target identity type of PDR ID shall be mandatory. The BBIFF-C in SGW-C shall use the F-TIEDs associated with the IMS signaling (QCI = 5) related default bearer to populate the F-TEID field within the PDI of PDR ID. | M |
| DeliveryType | Set to "X3Only". | M |
| ListOfDIDs | Shall give the DID of the LMISF-IRI to which the xCC should be delivered. The delivery endpoint is configured using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to the task activation. | M |
| CorrelationID | Correlation ID to assign to X3 PDUs generated by the BBIFF-U in the SGW-U. This field is populated with the same CorrelationID the BBIFF-C in the SGW-C uses for the associated xIRI. | M |

When the BBIFF-C present in the SGW-C detects that the PDN connection is released (e.g. when SGW-C receives the Sx: Session Release Response from the SGW-U), it shall send a deactivation message to the BBIFF-U present in the SGW-U over the LI\_T3 interface, if the task is still active in the BBIFF-U.

The BBIFF-C present in the SGW-C shall also send the deactivation message to the BBIFF-U present in the SGW-U when a DeactivateTask is received from the LIPF for the XID if the task is still active in the BBIFF-U.

NEXT CHANGE

##### 7.10.4.2.2 Provisioning of LMISF-IRI

The LMISF-IRI shall be provisioned over LI\_X1 by the LIPF for target based interception of IMS services in the VPLMN with home-routed roaming.

The target identities listed in clause 7.10.4.2.1 shall apply for the provisioning of LMISF-IRI with LMISF-IRI playing the combined role of IRI-POI and CC-TF for the interception of IMS-based services in the VPLMN with home-routed roaming.

The LMISF-IRI shall support the following service scoping from the structure defined in ETSI TS 103 221-1 [7]:

- The enumerated value of "voice" or "messaging" in the service type field.

- When location reporting is required, one or both of "reportBeginingAndEnd", "reportUponChange".

- "SuspendOnOutboundInternationalRoaming".

Table 7.10.4.2-1 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the LMISF-IRI for Phase-2.

Table 7.10.4.2-1: ActivateTask message for activating LMISF-IRI for Phase-2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. The value used here is different from the value used in ActivateTask shown in table 7.10.3.2-4. | M |
| TargetIdentifiers | One or more of the target identifiers listed in clause 7.10.4.2.1. | M |
| DeliveryType | Set to “X2Only”, “X3Only” or “X2andX3” as needed to meet the requirements of the warrant. | M |
| ListOfDIDs | Delivery endpoints of LI\_X2 or LI\_X3. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ServiceScoping | Using the format defined in ETS TS 103 221 [7] based on the service scoping listed above the table. When multiple intercepts are activated on a target identifier, the service scoping shall be the union of all of them. | C |

NEXT CHANGE

#### 7.10.4.8 Correlation identifier

The xIRIs generated at the LMISF-IRI shall be correlated using the correlation identifier field defined ETSI TS 103 221-2 [8]. This correlation identifier value can be independent of the correlation identifier value received in the xCC from the BBIFF-U/BBIFF over the LI\_X3\_LITE\_S interface.

Furthermore, the xIRIs generated at the LMISF\_IRI shall include the correlation identifier value used in the xCC generated at the LMISF-CC. Any intra-LMISF interactions required to associate the correlation identifier values used by the LMISF-IRI and LMISF-CC are outside the scope of the present document.

Each session-leg of an IMS session may have to be correlated separately. This is accomplished using the RTP/RTCP port numbers present in the SDP of IMS signaling message and the UDP port numbers present in the IMS voice media related RTP as illustrated in figure 7.10.4.8-1 below.



Figure 7.10.4.8-1: Correlation at the session-leg level (an illustration)

Figure 7.10.4.8-1 illustrates an example where an IMS session includes two session-legs.

Session-leg 1:

- Source IP address: 192.2.0.10 and source port number: 24000 (RTP), 24001 (RTCP).

- Destination IP address: 198.51.100.1 and destination port number: 32000 (RTP), 32001 (RTCP).

Session-leg 2:

- Source IP address: 192.2.0.10 and source port number: 26000 (RTP), 26001 (RTCP).

- Destination IP address: 198.51.100.1 and destination port number: 36000 (RTP), 36001 (RTCP).

The IP address of the two end-points happen to be the same for the two session legs. The RTP port numbers present in the SDP of IMS signaling message and the UDP port numbers of the associated with the IMS voice-media related RTP happen to be the same for a session-leg.

Therefore, in general, multiple session-legs can be identified using the RTP port numbers present in the SDP of IMS signaling message and the UDP port numbers associated with the IMS voice-media related RTP.

NEXT CHANGE

#### 7.10.4.10 Generation of IRI over LI\_HI3

When the xCC is received over LI\_X3 from the LMISF-CC, the MDF3 shall deliver the CC over LI\_HI3 without undue delay.

The CC delivered over the LI\_HI3 for HR LI is the same as the CC delivered over the LI\_HI3 for LI IMS-based voice services. Further details of this are outside the scope of the present document.

NEXT CHANGE

#### 7.11.1.3 Provisioning of the MDF2

This clause is applicable when the MDF2 is not provisioned for IMS-based interception.

The MDF2 listed as the delivery endpoint for xIRI generated by the IRI-POI in the IMS Network Functions for STIR/SHAKEN and RCD/eCNAM shall be provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2. Table 7.11.1.3-1 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF2.

The MDF2 shall support the following target identifier formats in the ETSI TS 103 221-1 [7] messages (or equivalent if ETSI TS 103 221-1 [7] is not used):

- IMPU.

Table 7.11.1.3-1: ActivateTask message for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. | M |
| TargetIdentifiers | The target identifier listed in the paragraph above. | M |
| DeliveryType | Set to “X2Only". (Ignored by the MDF2). | M |
| ListOfDIDs | Delivery endpoints of LI\_HI2. These delivery endpoints shall be configured using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfMediationDetails | Sequence of Mediation Details, see table 7.11.1.3-2. | M |

Table 7.11.1.3-2: Mediation Details for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Intercept ID associated with the task. | M |
| DeliveryType | Set to "HI2Only". | M |
| ListOfDIDs | Details of where to send the IRI for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations authorised by the ListOfDIDs field in the ActivateTask Message. | C |

NEXT CHANGE

#### 7.11.2.2 Signature generation

The IRI-POI present in the Telephony AS or IBCF, shall generate an xIRI containing a STIRSHAKENSignatureGeneration record when the following conditions are met:

- Telephony AS or IBCF is interacting with the SIGNING AS. Whether it is the Telephony AS or IBCF for sessions is based on network configuration and local policy of the CSP. Whether it is IBCF for MSISDN-less SMS is based on network configuration and local policy of the CSP.

- P-Asserted Identity or From header of SIP INVITE or SIP MESSAGE request received from S-CSCF is a target identity.

- A PASSporT is received from the SIGNING AS and is included in an outgoing SIP INVITE or SIP MESSAGE request in a SIP Identity header.

- Based on RFC 8946 [76], SIP retargeting creates a new Identity header signed by the SIGNING AS and containing the "div" claim to attach to the session.

The following table contains parameters, with IRITargetIdentifier, generated by the IRI-POI.

Table 7.11.2.2-1: Payload for STIRSHAKENSignatureGeneration record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pASSporTs | Identifies the content of the SIP Identity headers added by the originating network and transit networks. See table 7.11.2.2-2. | M |

Table 7.11.22-2: Details for identityTokens parameter

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pASSporTHeader | PASSporT Header as defined in RFC 8224 [70] clause 4 and in 3GPP TS 24.229 [74]. See table 7.11.2.2-3. | M |
| pASSporTPayload | PASSporT Payload as defined in RFC 8224 [70] clause 4 and in 3GPP TS 24.229 [74]. See table 7.11.2.2-4. | M |
| pASSporTSignature | PASSporT Signature as defined in RFC 8224 [70] clause 4 and in 3GPP TS 24.229 [74]. | M |

Table 7.11.2.2-3: Details for identityTokenHeader parameter

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| type | Shall be populated with the type contained in the PASSporT Header as defined in RFC 8225 [69] clause 4.1. | M |
| algorithm | Shall be derived from the value of the 'alg' parameter of the PASSporT Header as defined in RFC 8225 [69] clause 4.2. | M |
| ppt | Shall be derived from the value of the 'ppt' parameter of the PASSporT Header as defined in RFC 8225 [69] clause 8.1 if the PASSporT Header contains a ppt parameter. | C |
| x5u | Shall be populated with the URI contained in the 'x5u' parameter of the PASSporT Header as defined in RFC 8225 [69] clause 4.3. | M |

Table 7.11.2.2-4: Details for identityTokenPayload parameter

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| issuedAtTime | Shall be populated with the GenrealizedTime format timestamp converted from the NumericDate contained in the 'iat' parameter of the PASSporT Payload as defined in RFC 8225 [69] clause 5.1.1. | M |
| originator | Shall be populated with the value of the 'orig' parameter of the PASSporT Payload as defined in RFC 8225 [69] clause 5.2.1. | M |
| destination | Shall contain the list of destinations contained in the dest field of the PASSporT Payload as defined in RFC 8225 [69] clause 5.2.1. | M |
| diversion | Shall contain the original identifier of the destination in case of session diversion. | C |
| attestation | Indicates the attestation level as defined in RFC 8588 [71] clause 4. The different value of level are A = Full Attestation, B= Partial Attestation, C = Gateway Attestation. | M |
| origID | Shall be populated with the value of the origID contained in the 'origid' parameter of the PASSporT Payload as defined in RFC 8588 [71] clause 5. | M |

NEXT CHANGE

#### 7.11.2.3 Signature validation

The IRI-POI present in the Telephony AS or IBCF, shall generate an xIRI containing a STIRSHAKENSignatureValidation record when the following conditions are met:

- Either IBCF or Telephony AS, is interacting with the VERIFICATION AS. Whether it is the Telephony AS or IBCF for sessions is based on network configuration and local policy of the CSP. IBCF for MSISDN-less SMS, is based on network configuration and local policy of the CSP.

- Request URI and To Headers of SIP INVITE or SIP MESSAGE request received from S-CSCF (in the case of Telephony AS) or from the previous IP network (in the case of IBCF) is a target identity.

- If a PASSporT is received in the SIP INVITE or SIP MESSAGE request, it is submitted by the Telephony AS or IBCF to the VERIFICATION AS for validation and the result is included in an outgoing SIP INVITE or SIP MESSAGE request together with possible RCD data or eCNAM data as Call-Info headers.

- If a PASSporT is not received in the SIP INVITE or SIP MESSAGE request, a result is included in an outgoing SIP INVITE or SIP MESSAGE request indicating that no validation occured.

The IRI-POI present in the LMISF-IRI or P-CSCF shall generate an xIRI containing a STIRSHAKENSignatureValidation record when the following conditions are met:

- Request URI or To header of SIP INVITE or SIP MESSAGE request sent to the UE is a target identity.

- SIP INVITE or SIP MESSAGE request sent to the UE includes SIP Call-Info headers containing possible RCD data or eCNAM data, and the result of the PASSporT verification.

The following table contains parameters, with IRITargetIdentifier, generated by the IRI-POI.

Table 7.11.2.3-1: Payload for STIRSHAKENSignatureValidation record

|  |  |  |
| --- | --- | --- |
| Field name | Description | M/C/O |
| pASSporTs | Identifies the content of the SIP Identity headers added by the originating network and transit networks. See 3GPP TS 24.229 [74] and RFC 8224 [70]. | C |
| rCDTerminalDisplayInfo | RCD display information when applicable. See IETF draft-ietf-stir-passport-rcd-12 [73]. | C |
| eCNAMTerminalDisplayInfo | eCNAM display information when applicable. See 3GPP TS 24.196 [72]. | C |
| sHAKENValidationResult | SHAKEN verification result: TN-Validation-Passed, TN-Validation-Failed, No-TN-Validation. See 3GPP TS 24.229 [74] and IETF RFC 8588 [71]. | M |
| sHAKENFailureStatusCode | SHAKEN status code when validation fails in the terminating network. See IETF RFC 8224 [70]. | C |

When the termination network performs SHAKEN verification, one of the following values shall be assigned to the SHAKEN validation result parameter as part of the display information: "TN-Validation-Passed", "TN-Validation-Failed", or "No-TN-Validation". In case of TN-Validation-Failed, the SHAKEN failure status code shall be present and coded as an integer. The SHAKEN failure status codes are at least, according to RFC 8224 and to IANA Session Initiation Protocol (SIP) Parameters [75]:

- 403 "Stale Date" response code is sent when the verification service receives a request with a Date header field value that is older than the local policy of the CSP for freshness permits. The same response may be used when the "iat" has a value older than the local policy of the CSP for freshness permits.

- 428 "Use Identity Header" response code is sent when the verification service receives a SIP request that lacks an Identity header. This is to indicate that the request should be re-sent with an Identity header.

- 436 "Bad Identity-Info" response code is used to indicate an inability to acquire the credentials needed by the verification service for validating the signature in an Identity header field.

- 437 "Unsupported Credential" response code is used when the verification service cannot validate the certificate referenced by the URI of the Identity-Info header, for reasons such as failing to trust the issuing certification authority (CA) or failing to support the algorithm with which the credential was signed.

- 438 "Invalid Identity Header" response code is used to indicate that of the set of Identity header fields in a request, no header field with a valid and supported Identity token has been received.

NEXT CHANGE

#### 7.12.2.1 General

This clause defines protocol and procedures to support the LI for IMS-based services. The scope of LI functions defined here are based on the IMS LI architecture defined in TS 33.127 [5] that includes:

- Target type – local ID, non-local ID.

- Roaming considerations – local break-out (LBO), home-routed (HR).

- Service specific aspects - normal sessions, redirected sessions, conferencing, STIR/SHAKEN, RCD/eCNAM.

- Location reporting.

The IMS LI shall apply to all IMS-based services unless restricted by the service scoping as defined in clause 4.4 of the present document. When restricted by the service scoping, the IMS LI applies only to service types listed in table C.2 of ETSI TS 103 221-1 [7]). Clause 7.12.2.5 provides further details of IMS LI with service scoping.

As defined in TS 33.127 [5], the NFs that provide the IRI-POI and CC-TF are in the IMS signaling functions that handle the SIP messages and the NFs that provide the CC-POI are in the IMS media functions. The media interception in the packet core network (EPC or 5GC) is outside the scope of the present document.

For some of the services listed above, an alternate deployment option in addition to the default option is also specified in TS 33.127 [5]. The NFs that provide the IRI-POI, CC-TF and CC-POI in the alternate deployment option can be different.

The LIPF provisioning scenarios for IMS LI is illustrated in Annex G LIPF Logic of the present document.

NEXT CHANGE

##### 7.12.2.4.3 LI for redirected sessions

This includes LI for the incoming IMS sessions that are redirected.

LI for redirected sessions applies when a terminating session to a target is redirected to (or forwarded to) another user. Either the target (i.e. redirecting party) or the redirected-to party can be outbound roaming (LBO or HR).

The redirected-to party can be in the same CSP domain as that of initial terminating party (i.e. redirecting party) or can be a another CSP domain. In the latter case, the other CSP can be CS-based or IP-based. The LI for redirected sessions in the VPLMN are handed as LI for session terminations.

NEXT CHANGE

##### 7.12.3.2.2 Session-independent IMS services

Table 7.12.3.2-3 below shows the applicability of NFs in which the IRI-POIs are provisioned with the target identifiers listed in clause 7.12.2.2 for session independent services (e.g. SMS over IP). See TS 33.127 [5] and Annex G.

When the service scoping is applicable, the IRI-POIs in the NFs shown in table 7.12.3.2-3 are provisioned only when the service type is messaging (i.e. SMS over IP).

Table 7.12.3.2-3: IRI-POIs in the NFs that need to be provisioned for session-independent IMS-based service

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| NF  (IMS signaling function) | Not a target non-local ID | | | Target non-local ID | | | | Reference | |
| Default | Alternate option | | Default | | Alternate option | |
| P-CSCF | YES | YES | | YES | | YES | | In this clause | |
| S-CSCF | YES | NO | YES | | NO | | In this clause | |
| E-CSCF | YES | NO | | NO | | NO | | In this clause | |
| IBCF | NO | YES | | NO | | YES | | In this clause | |
| MGCF | NO | NO | | NO | | NO | | In this clause | |
| AS | NO | NO | | NO | | NO | | In this clause | |
| HSS | YES | YES | | NO | | NO | | 7.2.3 | |

Table 7.12.3.2-4 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the IRI-POIs in the NFs listed in table 7.12.3.2-3 for session independent IMS-based voice services.

Table 7.12.3.2-4: ActivateTask message for activating IRI-POI for session independent IMS-based service

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. The value used here shall be the same when IRI-POIs in multiple NFs are provisioned for a warrant. | M |
| TargetIdentifiers | One or more of the target identifiers listed in the clause 7.12.2.2 with the embedded conditions implied. | M |
| DeliveryType | Set to “X2Only. | M |
| ListOfDIDs | Delivery endpoints of LI\_X2. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfServiceTypes | Present if interception of one or more listed service types is required. Using the format defined in ETS TS 103 221 [7] based on the service scoping listed below this table. When multiple intercepts are activated on a target identifier, the service scoping shall be the union of all of them. | C |

When service scoping is required, the IRI-POIs present in the NFs listed in table 7.12.3.2-3 shall support the following service types from the structure defined in ETSI TS 103 221-1 [7]:

- The enumerated value of "messaging" in the service type field.

The ModifyTask and DeactivateTask messages that the LIPF may send to the IRI-POIs present in the NFs listed in table 7.12.3.2-3 shall include the XID of the Task created by the above ActivateTask message.

NEXT CHANGE

#### 7.12.3.4 Provisioning of the MDF2

The MDF2 listed as the delivery endpoint over LI\_X2 for xIRI generated by the IRI-POIs shall be provisioned over LI\_X1 by the LIPF.

Table 7.12.3.4-1 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF2.

Table 7.12.3.4-1 ActivateTask message for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. The value used here shall also be same as the value used for provisioning the IRI-POIs, CC-TFs, and and MDF3 (see table 7.12.3.5-1). | M |
| TargetIdentifiers | One or more of the target identifiers listed in the clause 7.12.2.2 with the embedded conditions implied. | M |
| DeliveryType | Not used. | M |
| ListOfDIDs | Delivery endpoints of LI\_HI2. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfMediationDetails | Sequence of Mediation Details, see table 7.12.3.4-2. | M |

Table 7.12.3.4-2: Mediation Details for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Intercept ID associated with the task. | M |
| DeliveryType | Set to "HI2Only". | M |
| ListOfDIDs | Details of where to send the IRI for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations authorised by the ListOfDIDs field in the ActivateTask Message. | C |
| ServiceScoping | Present if service scoping is required. Using the format defined in ETS TS 103 221 [7] include the service scoping as applicable to this LIID based on the service scoping listed below the table. | C |

The MDF2 shall support the following service scoping from the structure defined in ETSI TS 103 221-1 [7]:

- The enumerated value of "voice" or "messaging" in the service type field.

- When location reporting is required, one or both of "reportBeginingAndEnd", "reportUponChange".

The ModifyTask and DeactivateTask messages that the LIPF may send to the MDF2 present in the NFs listed in table 7.12.3.4-1 shall include the XID of the Task created by the above ActivateTask message.

NEXT CHANGE

#### 7.12.3.5 Provisioning of the MDF3

The MDF3 listed as the delivery endpoint over LI\_X3 for xCC generated by the IRI-POIs shall be provisioned over LI\_X1 by the LIPF.

Table 7.12.3.5-1 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF3.

Table 7.12.3.5-1 ActivateTask message for MDF3

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. The value used here shall also be same as the value used for provisioning the IRI-POIs, CC-TFs, and MDF2 (see table 7.12.3.4-1). | M |
| TargetIdentifiers | One or more of the target identifiers listed in the clause 7.12.2.2 with the embedded conditions implied. | M |
| DeliveryType | Not used. | M |
| ListOfDIDs | Delivery endpoints of LI\_HI3. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfMediationDetails | Sequence of Mediation Details, See table 7.12.3.5-2. | M |

Table 7.12.3.5-2: Mediation Details for MDF3

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Intercept ID associated with the task. | M |
| DeliveryType | Set to "HI3Only". | M |
| ListOfDIDs | Details of where to send the CCI for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations authorised by the ListOfDIDs field in the ActivateTask Message. | C |
| ServiceScoping | Present if service scoping is required. Using the format defined in ETS TS 103 221 [7] include the service scoping as applicable to this LIID based on the service scoping listed below the table. | C |

When service scoping is required, the MDF3 shall support the following service scoping from the structure defined in ETSI TS 103 221-1 [7]:

- The enumerated value of "voice" or "messaging" in the service type field.

The ModifyTask and DeactivateTask messages that the LIPF may send to the MDF3shall include the XID of the Task created by the above ActivateTask message.

NEXT CHANGE

#### 7.13.1.3 Provisioning of the MDF2

The MDF2 listed as the delivery endpoint for xIRI generated by the IRI-POI in the RCS Servers, the IRI-POI in the HTTP Content Server, or the IRI-POI in the S-CSCF shall be provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2. Table 7.13.1.3-1 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF2.

The MDF2 shall support the following target identifier formats in the ETSI TS 103 221-1 [7] messages (or equivalent if ETSI TS 103 221-1 [7] is not used):

- IMPU.

- IMPI.

- IMEI.

- GPSIMSISDN.

- GPSINAI.

- IMSI.

- SUPIIMSI.

- SUPINAI.

- Email Address.

Table 7.13.1.3-1: ActivateTask message for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | Same XID used by the LIPF for provisioning the LI functions of the RCS Servers, the S-CSCF and the HTTP Content Servers for this intercept. | M |
| TargetIdentifiers | One or more of the target identifiers listed in the paragraph above. | M |
| DeliveryType | Set to “X2Only”, “X3Only” or “X2andX3” as needed to meet the requirements of the warrant. (Ignored by the MDF2). | M |
| ListOfDIDs | Delivery endpoints of LI\_HI2. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfMediationDetails | Sequence of Mediation Details, see table 7.13.1.3-2. | M |

Table 7.13.1.3-2: Mediation Details for MDF2

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Intercept ID associated with the task. | M |
| DeliveryType | Set to "HI2Only". | M |
| ListOfDIDs | Details of where to send the IRI for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations authorised by the ListOfDIDs field in the ActivateTask Message. | C |
| ServiceScoping | Shall be included to Identify the service(s) and associated service-related delivery settings for this LIID. May include more than one instance of this parameter to allow for different combinations of subparameters associated with a single LIID. This parameter is defined in ETSI TS 103 221-1 [7] Annex C table C.2. | C |

NEXT CHANGE

#### 7.13.1.4 Provisioning of the MDF3

The MDF3 listed as the delivery endpoint for the xCC generated by the CC-POI in the RCS Servers, the CC-POI in the HTTP Content Servers and the CC-POI in the S-CSCF shall be provisioned over LI\_X1 by the LIPF using the X1 protocol as described in clause 5.2.2. Table 7.13.1.4-1 shows the minimum details of the LI\_X1 ActivateTask message used for provisioning the MDF3.

The MDF3 shall support the following target identifier formats in the ETSI TS 103 221-1 [7] messages (or equivalent if ETSI TS 103 221-1 [7] is not used):

- IMPU.

- IMPI.

- IMEI.

- GPSIMSISDN.

- GPSINAI.

- IMSI.

- SUPIIMSI.

- SUPINAI.

- EmailAddress.

Table 7.13.1.4-1: ActivateTask message for MDF3

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | Same XID used by the LIPF for provisioning the POIs, TFs of the RCS Servers and the POIs of the HTTP Content Servers and the S-CSCF. | M |
| TargetIdentifiers | One or more of the target identifiers listed in the paragraph above. | M |
| DeliveryType | Set to “X2Only”, “X3Only” or “X2andX3” as needed to meet the requirements of the warrant (Ignored by the MDF3). | M |
| ListOfDIDs | Delivery endpoints of LI\_HI3 or LI\_MDF. These delivery endpoints shall be configured using the *CreateDestination* message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| ListOfMediationDetails | Sequence of Mediation Details, see table 7.13.1.4-2. | M |

Table 7.13.1.4-2: Mediation Details for MDF3

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| LIID | Lawful Intercept ID associated with the task. | M |
| DeliveryType | Set to "HI3Only". | M |
| ListOfDIDs | Details of where to send the CC for this LIID. Shall be included if deviation from the ListofDIDs in the ActivateTask message is necessary. If included, the ListOfDIDs in the Mediation Details shall be used instead of any delivery destinations authorised by the ListOfDIDs field in the ActivateTask Message. | C |
| ServiceScoping | Shall be included to Identify the service(s) and associated service-related delivery settings for this LIID. May include more than one instance of this parameter to allow for different combinations of subparameters associated with a single LIID. This parameter is defined in ETSI TS 103 221-1 [7] Annex C table C.2. | C |

NEXT CHANGE

##### 7.13.2.2.1 LI\_T2 interface Specifics

In order to allow the IRI-POI in the HTTP content server to detect all events related to files uploaded or downloaded by a target, the IRI-TF in the RCS Server sends a trigger to the IRI-POI present in the HTTP Content Server with the necessary information over the LI\_T2 interface.

When the IRI-TF in the RCS Server detects that a file is being uploaded or downloaded by a target UE it shall send an activation message to the IRI-POI in the HTTP Content Server over the LI\_T2 interface. The activation message shall contain the correlation identifiers that the IRI-POI in the HTTP Content Server shall use with the xIRI. This can be achieved by sending an ActivateTask message as defined in ETSI TS 103 221-1 [7] clause 6.2.1 with the following details.

Table 7.13.2.2-1: ActivateTask message from the IRI-TF in the RCS Server for the IRI-POI in the HTTP Content Server

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. If the CC-TF or IRI-TF is also being tasked for the same interception, the same XID shall be used. The same XID shall be used at the RCS Servers, the S-CSCF and the HTTP Content Server for the same interception. | M |
| TargetIdentifiers | File detection criteria as determined by the IRI-TF in the RCS Server, which enables the IRI-POI in the HTTP Content Server to isolate target files. The IRI-POI in the HTTP Content Server shall support the identifier types given in table 7.13.2.2-2.  NOTE: This value is the target identifier for the IRI-POI in the HTTP Content Server and may be different from the target identifier specified in the warrant. | M |
| DeliveryType | Set to "X2Only". | M |
| ListOfDIDs | Delivery endpoints for LI\_X2. These delivery endpoints shall be configured by the IRI-TF in the RCS Server using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| CorrelationID | Correlation ID to assign to xIRI generated by the IRI-POI in the HTTP Content Server. This field is populated with the same CorrelationID the IRI-POI in the RCS Server uses for the associated xIRI. | M |
| ProductID | Shall be set to the XID of the Task Object associated with the interception at the IRI-TF. This value shall be used by the IRI-POI in the HTTP Content Server to fill the XID of X2 messages. | M |

Table 7.13.2.2-2: Target Identifier Types for LI\_T2

|  |  |  |  |
| --- | --- | --- | --- |
| Identifier type | Owner | ETSI TS 103 221-1 [7] TargetIdentifier type | Definition |
| RCS Content URI (See Note) | 3GPP | TargetIdentifierExtension / RCSContentURI | RCSContentURI (see XSD schema) |
| NOTE: If the TargetIdentifier used is an RCS Content URI, only one RCS Content URI shall be included per ActivateTask message. | | | |

NEXT CHANGE

##### 7.13.2.3.1 LI\_T3 interface Specifics

To support the use-cases where the IRI-POI in the HTTP Content Server does not get the identity of the user involved in the file-transfer (and therefore, the CC-POI in the HTTP Content Server cannot perform the intereption based on the target identity provisioned by the LIPF), the CC-TF present in the RCS Server sends a trigger to the CC-POI present in the HTTP Content Server. When the CC-TF in the RCS Server detects that a file is being uploaded or downloaded by a target UE, it shall send an activation message to the CC-POI in the HTTP Content Server over the LI\_T3 interface. The activation message shall contain the correlation identifiers that the CC-POI in the HTTP Content Server shall use with the xCC. This can be achieved by sending an ActivateTask message as defined in ETSI TS 103 221-1 [7] clause 6.2.1 with the following details.

Table 7.13.2.3-1: ActivateTask message from the CC-TF in the RCS Server for the CC-POI in the HTTP Content Server

|  |  |  |
| --- | --- | --- |
| ETSI TS 103 221-1 [7] field name | Description | M/C/O |
| XID | XID assigned by LIPF. If the CC-TF or IRI-TF is also being tasked for the same interception, the same XID shall be used. The same XID shall be used at the RCS Servers, the S-CSCF and the HTTP Content Server for the same interception. | M |
| TargetIdentifiers | File detection criteria as determined by the CC-TF in the RCS Server, which enables the CC-POI in the HTTP Content Server to isolate target files. The CC-POI in the HTTP Content Server shall support the identifier types given in table 7.13.2.2-2. | M |
| DeliveryType | Set to “X3Only”. | M |
| ListOfDIDs | Delivery endpoints for LI\_X3. These delivery endpoints shall be configured by the CC-TF in the RCS Server using the CreateDestination message as described in ETSI TS 103 221-1 [7] clause 6.3.1 prior to first use. | M |
| CorrelationID | Correlation ID to assign to xCC generated by the CC-POI in the HTTP Content Server. This field is populated with the same CorrelationID the IRI-POI in the RCS Server uses for the associated xIRI. | M |
| ProductID | Shall be set to the XID of the Task Object associated with the interception at the CC-TF. This value shall be used by the CC-POI in the HTTP Content Server to fill the XID of X3 messages. | M |

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#### 7.13.3.2 Registration

The xIRI containing an RCSRegistration record shall be generated when the IRI-POI in the S-CSCF or in an RCS Server detects that an RCS target matching one of the RCS identifiers, provided via LI\_X1 has registered, re-registered or de-registered for RCS services. Accordingly, the IRI-POI in the RCS Server generates the xIRI when the following event is detected:

- When the IRI-POI is located in the S-CSCF:

- If the S-CSCF uses third-party registrations to notify the RCS Server when a UE registers, when the S-CSCF receives a 200 OK from the RCS Server in response to a third-party SIP REGISTER request registering, re-registering or de-registering a target with the RCS Server.

- If the S-CSCF is the NF responsible for handling RCS Registrations:

- When the S-CSCF sends a 200 OK to a target in response to a SIP REGISTER request that includes any of the service feature tags listed in GSMA RCC.07 [78] clause 2.4.4.1 table 3.

- When the S-CSCF sends a 200 OK to a target in response to a SIP REGISTER request for de-registration when the service features supported by the target include any of the service features listed in GSMA RCC.07 [78] clause 2.4.4.1 table 3.

- When the IRI-POI is located in the RCS Server:

- When the RCS Server sends a 200 OK to a target in response to a SIP REGISTER request that includes any of the service feature tags listed in GSMA RCC.07 [78] clause 2.4.4.1 table 3.

- When the RCS Server sends a 200 OK to a target in response to a SIP REGISTER request for de-registration when the service features supported by the target include any of the service features listed in GSMA RCC.07 [78] clause 2.4.4.1 table 3.

NEXT CHANGE

# G.1 Background

According to TS 33.126 [3] clause 6.4, the CSP is expected to only deliver Interception Product relating to specific CSP services which are specified implicitly or explicitly in the warrant. In other words, the CSP is expected to perform the interception only for the services indicated in the warrant.

NOTE: The term "interception" used in this annex refers to the step that involves actual capturing and then delivery of the Intercept Product to the LEMF.

This annex considers the following possibilities in the analysis:

- The intended target may have subscribed to only a specific service and in this case, by default, the interception would apply only to such service when specified in the warrant. The CSP network would provide the interception as and when the service is accessed by the target.

- The intended target may have subscribed to multiple services and in this case, the interception would have to be done based on the service type(s) specified in the warrant as and when CSP network detects that such services are accessed by the target.

- A NF may be involved in providing only a particular service and in this case, by default, the interception performed by the POI present in that NF would apply to such service when specified in the warrant.

- A NF may be involved in providing multiple services and in this case, the interception performed by the POI present in that NF would have to be based on the service type applicable to the warrant.

- There may be multiple warrants with differing service types active on a target, in this case, all applicable services would have to be intercepted at the POIs, and the MDFs would have to then deliver Interception Product based on the service type (s) applicable to the warrant.

In supporting the above scenarios, as per clause 4.4 (of the present document), the LIPF will have to provision the POIs, TFs and the MDF2/MDF3 according to the CSP service type(s) applicable to a warrant.

To cover all the scenarios mentioned above, the service type may have to be part of LI provisioning data sent to the MDFs. Whether a service type will have to be provisioned to the POIs and TFs as an indication will depend on the services provided by the NFs that have such POIs and TFs.

In addition to the CSP service type, a few other factors present in the warrant may influence the LIPF logic in provisioning the POIs, TFs and MDF2/MDF3. Few examples are:

- Delivery type.

- LALS triggering.

- CSP deployment options.

- The target type (local Vs non-local ID).

For the target non-local ID, Voice and Messaging type of services are supported in the present document. In this case, the other party communicating with the target non-local ID happens to access the service provided by the CSP.

This annex illustrates the LIPF logic through a series of flow-charts in provisioning the POIs and the TFs. The provisioning aspect of MDF2/MDF3 are not shown.

END OF CHANGES