**3GPP SA3LI#90 *s3i230403***

**27-30 June 2023, Prague (Czech Republic)**

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  |
| *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:***  |  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** | 9 |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-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)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | In the current version of the TS, there is no explicit parameter to report the other party address of the SMS, which is included in the SMS header (TP-OA, TP-DA), especially when this is provided in alphanumeric format.Based on the current specification, the header of the SMS is reported only in case of IRI+CC interception. |
|  |  |
| ***Summary of change:*** | In case of IRI only interception, only the SMS content in the TP-User-Data is removed from the SMS reported to the LEMF, so ensuring that other parameters are always reported. |
|  |  |
| ***Consequences if not approved:*** | In some scenarios, the TS would not allow reporting of a MT/SM originating address in a standard way, especially in alphanumeric format. |
|  |  |
| ***Clauses affected:*** |  2; 5.2.3; 6.5.1.1; 7.5.0; 15.2.3, Annex B.3, Annex B.3a, Annex B.9, New Annex P |
|  |  |
|  | **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 is associated with the following changes in the Forge:Merge request: [!199](https://forge.3gpp.org/rep/sa3/li/-/merge_requests/199)Commit hash: [ee409808d6c379acc07d031470962fccd6083649](https://forge.3gpp.org/rep/sa3/li/-/merge_requests/199/diffs?commit_id=ee409808d6c379acc07d031470962fccd6083649) |
|  |  |
| ***This CR's revision history:*** | S3i230386 |

### \*\*\* FIRST CHANGE \*\*\*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] ETSI TS 101 331: "Lawful Interception (LI); Requirements of Law Enforcement Agencies".

[2] ETSI ES 201 158: "Telecommunications security; Lawful Interception (LI); Requirements for network functions".

[3] ETSI ETR 330: "Security Techniques Advisory Group (STAG); A guide to legislative and regulatory environment".

[4] 3GPP TS 29.002: "3rd Generation Partnership Project; Technical Specification Group Core Network; Mobile Application Part (MAP) specification".

[5A] ITU‑T Recommendation X.680: "Abstract Syntax Notation One (ASN.1): Specification of Basic Notation".

[5B] ITU‑T Recommendation X.681: "Abstract Syntax Notation One (ASN.1): Information Object Specification".

[5C] ITU‑T Recommendation X.681: "Abstract Syntax Notation One (ASN.1): Constraint Specification".

[5D] ITU‑T Recommendation X.681: "Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 Specifications".

[6] ITU‑T Recommendation X.690: "ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)".

NOTE 1: It is recommended that for [5A], [5B], [5C], [5D] and [6] the 2002 specific versions should be used.

[7] ITU‑T Recommendation X.880: "Information technology - Remote Operations: Concepts, model and notation".

[8] Void.

[9] 3GPP TS 24.008: "3GPP Technical Specification Group Core Network; Mobile radio interface Layer 3 specification, Core network protocol; Stage 3".

[10] - [12] Void.

[13] IETF STD 9 (RFC 0959): "File Transfer Protocol (FTP)".

[14] 3GPP TS 32.215: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication Management; Charging Management; Charging data description for the Packet Switched (PS) domain)".

[15] IETF STD0005 (RFC 0791: "Internet Protocol".

[16] IETF STD0007 (RFC 0793): "Transmission Control Protocol".

[17] 3GPP TS 29.060: "3rd Generation Partnership Project; Technical Specification Group Core Network; General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface".

[18] 3GPP TS 33.106: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Lawful Interception Requirements".

[19] 3GPP TS 33.107: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Lawful interception architecture and functions".

[20] 3GPP TS 23.107: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Quality of Service QoS concepts and architecture".

[21] - [22] Void.

[23] ANSI/J-STD-025-A: "Lawfully Authorized Electronic Surveillance".

[24] ETSI TS 101 671: "Handover Interface for the lawful interception of telecommunications traffic".

[25] 3GPP TS 23.003: "3rd Generation Partnership Project; Technical Specification Group Core Network; Numbering, addressing, and identification".

[26] IETF RFC 3261: "SIP: Session Initiation Protocol".

[27] IETF RFC 1006: "ISO Transport Service on top of the TCP".

[28] IETF RFC 2126: "ISO Transport Service on top of TCP (ITOT)".

[29] ITU‑T Recommendation Q.763: "Signalling System No. 7 - ISDN User Part formats and codes".

[30] ETSI EN 300 356 (all parts): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface".

[31] ETSI EN 300 403-1 (V1.3.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified]".

NOTE 3: Reference [31] is specific, because ASN.1 parameter "release-Reason-Of-Intercepted-Call" has the following comment: "Release cause coded in [31] format". In case later version than the given one indicated for ISDN specification ETSI EN 300 403‑1 has modified format of the "release cause", keeping the reference version specific allows to take proper actions in later versions of this specification.

[32] - [33] Void

[34] ITU-T Recommendation Q.931: "ISDN user-network interface layer 3 specification for basic call control".

[35] Void.

[36] Void.

[37] 3GPP TS 23.032: "3rd Generation Partnership Project; Technical Specification Group Core Network; Universal Geographical Area Description (GAD)".

[38] 3GPP TR 21.905: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Vocabulary for 3GPP Specifications".

[39] ISO 3166-1: "Codes for the representation of names of countries and their subdivisions - Part 1: Country codes".

[40] 3GPP TS 23.228: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; IP Multimedia Subsystem (IMS); Stage 2".

[41] 3GPP TS 29.234: "3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals: 3GPP System to Wireless Local Area Network (WLAN) interworking; Stage 3".

[42] 3GPP TS 23.060: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; General Packet Radio Service (GPRS); Service description".

[43] 3GPP TS 23.234: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3GPP system to Wireless Local Area Network (WLAN) Interworking; System Description".

[44] 3GPP TS 23.401: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[45] 3GPP TS 23.402: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Architecture enhancements for non-3GPP accesses".

[46] 3GPP TS 29.274: "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Access (GPRS) Tunneling Protocol for Control Plane (GTPv2-C); Stage 3".

[47] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3".

[48] 3GPP TS 29.275: "Proxy Mobile IPv6 (PMIPv6) based Mobility and Tunneling protocols; Stage 3".

[49] 3GPP TS 24.303: "Mobility management based on Dual-Stack Mobile IPv6; Stage 3".

[50] (void)

[51] (void)

[52] 3GPP TS 24.147: "3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Conferencing Using the IP Multimedia (IM) Core Network (CN) subsystem 3GPP Stage 3".

[53] 3GPP TS 29.273: "3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Evolved Packet System (EPS); 3GPP EPS AAA interfaces".

[54] 3GPP TS 33.328: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; IP Multimedia Subsystem (IMS) media plane security".

[55] ATIS-0700005 "Lawfully Authorized Electronic Surveillance (LAES) for 3GPP IMS-based VoIP and other Multimedia Services".

[56] 3GPP TS 29.212: "3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Policy and Charging Control(PCC); Reference points".

[57] Void.

[58] IETF RFC 4217: "Securing FTP with TLS".

[59] 3GPP TS 29.272: "3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Evolved Packet System (EPS); Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol".

[60] 3GPP TS 33.310: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Network Domain Security (NDS); Authentication Framework (AF)".

[61] IETF RFC 6043: "MIKEY-TICKET: Ticket-Based Modes of Key Distribution in Multimedia Internet KEYing (MIKEY)", available at [www.ietf.org](http://www.ietf.org/)

[62] 3GPP TS 25.413: "UTRAN Iu interface Radio Access Network Application Part (RANAP) signalling".

[63] 3GPP TS 29.279: "Mobile IPv4 (MIPv4) based mobility protocols; Stage 3".

[64] 3GPP TS 29.118: "Mobility Management Entity (MME) -Visitor Location Register (VLR) SGs interface specification"

[65] ANSI/J-STD-025-B: "Lawfully Authorized Electronic Surveillance", July 17, 2006.

[66] 3GPP TS 24.007: "Mobile Radio Interface Signalling Layer 3; General Aspects".

[67] IETF RFC 3966: "The Tel URIs for Telephone Numbers", December, 2004.

[68] IETF RFC 791: "Internet Protocol"

[69] IETF RFC 2460: "Internet Protocol, Version 6 (IPv6) Specification".

[70] IEFT RFC 3697: "IPv6 Flow Label Specification".

[71] IETF RFC 4776: "Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information".

[72] IETF RFC 5139: "Revised Civic Location Format for Presence Information Data Format Location Object (PIDF-LO)".

[73] ISO.3166-2: International Organization for Standardization, "Codes for the representation of names of countries and their subdivisions - Part 2: Country subdivision code".

[74] UPS SB42-4: Universal Postal Union (UPU), "International Postal Address Components and Templates".

[75] ISO 639-1:2002: "Codes for the representation of names of languages -- Part 1: Alpha-2 code".

[76] 3GPP TS 24.229: "IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3".

[77] 3GPP TS 24.623: "Technical Specification Group Core Network and Terminals; Extensible Markup Language (XML) Configuration Access Protocol (XCAP) over the Ut interface for Manipulating Supplementary Services".

[78] 3GPP TS 22.173: "IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1".

[79] 3GPP TS 24.109: "Universal Mobile Telecommunications System (UMTS); Bootstrapping interface (Ub) and network application function interface (Ua); Protocol details".

[80] IETF RFC 4825:"The Extensible Markup Language (XML) Configuration Access Protocol (XCAP)".

[81] IETF RFC 7254: "A Uniform Resource Name Namespace for the Global System for Mobile Communications Association (GSMA) and the International Mobile station Equipment Identity (IMEI)"

[82] IETF RFC 7255: "Using the International Mobile station Equipment Identity (IMEI) Uniform Resource Name (URN) as an Instance ID".

[83] 3GPP TS 22.468: "Group Communication System Enablers for LTE (GCSE\_LTE)".

[84] 3GPP TS 23.468: "Group Communication System Enablers for LTE (GCSE\_LTE); Stage 2".

[85] 3GPP TS 25.321: "Medium Access Control (MAC) protocol specification".

[86] 3GPP TS 24.371: " Web Real-Time Communications (WebRTC) access to the IP Multimedia (IM) Core Network (CN) subsystem (IMS); Stage 3".

[87] ITU-T Recommendation E.212: "The international identification plan for public networks and subscriptions".

[88] OMA MLP TS: "Mobile Location Protocol", OMA-TS-MLP-V3\_5-20181211-C.

[89] MMS Architecture OMA-AD-MMS-V1\_3-20110913-A.

[90] Multimedia Messaging Service Encapsulation Protocol OMA-TS-MMS\_ENC-V1\_3-20110913-A.

[91] 3GPP TS 22.140: "Multimedia Messaging Service (MMS); Stage 1".

[92] IETF RFC 2822: "Internet Message Format".

[93] IETF RFC 3551: "RTP Profile for Audio and Video Conferences with Minimal Control".

[94] IETF RFC 4566: "Session Description Protocol".

[95] IETF RFC 3550: "Realtime Transport Protocol".

[96] 3GPP TS 29.229: "Cx and Dx interfaces based on the Diameter protocol; Protocol details".

[97] OMA-AD-PoC-V2\_1-20110802-A, Architecture Document.

[98] OMA-TS-PoC\_User Plane-V2\_1-20110802-A.

[99] 3GPP TS 37.340: "Evolved Universal Radio Access (E-UTRA) and NR-Multi-connectivity; Stage 2".

[100] 3GPP TS 36.413: "E-UTRAN – S1 Application Protocol (S1AP)".

[101] 3GPP TS 29.336: "Home Subscriber Server (HSS) diameter interfaces for interworking with packet data networks and applications".

[102] IETF RFC 3588: "Diameter Base Protocol".

[103] IETF RFC 4282: "The Network Access Identifier".

[104] ETSI TS 102 232-1: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 1: Handover specification for IP delivery".

[105] ETSI TS 102 232-7: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 7: Service-specific details for Mobile Services".

[106] 3GPP TS 33.126: " Lawful interception requirements ".

[XX] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[YY] 3GPP TS 23.038: "Alphabets and language-specific information".

###

### \*\*\* NEXT CHANGE \*\*\*

### 5.2.3 Delivery of IRI

The events defined in TS 33.107 [19] are used to generate Records for the delivery via HI2. The LALS reports defined in TS 33.107 [19] are delivered via HI2, as well.

There are thirteen different events type received at DF2 level. According to each event, a Record is sent to the LEMF if this is required. In the case of LALS reports, which are not associated with an event, a Record is sent to the LEMF without the event parameter.

The following table gives the mapping between event type received at DF2 level and record type sent to the LEMF.

It is an implementation option if the redundant information will be sent for each further event.

Table 5.4: Structure of the records for UMTS (CS)

|  |  |
| --- | --- |
| Event | IRI Record Type |
| Call establishment | BEGIN |
| Answer | CONTINUE |
| Supplementary service | CONTINUE |
| Handover | CONTINUE |
| Release | END |
| Location update | REPORT |
| Subscriber controlled input | REPORT |
| SMS | REPORT |
| Serving system | REPORT |
| HLR subscriber record change | REPORT |
| Cancel location | REPORT |
| Register location | REPORT |
| Location information request | REPORT |

The LALS report records are sent to the LEMF with the REPORT IRI Record Type.

NOTE 1: Void.

A set of information is used to generate the records. The records used transmit the information from mediation function to LEMF. This set of information can be extended in 3G MSC server or 3G GMSC server or DF2/MF, if this is necessary in a specific country. The following table gives the mapping between information received per event or report and information sent in records.

Table 5.5: Description of parameters

| Parameter | Definition | ASN.1 parameter |
| --- | --- | --- |
| Observed MSISDN | Target Identifier with the MSISDN of the target | PartyInformation/msISDN |
| Observed IMSI | Target Identifier with the IMSI of the target | PartyInformation/imsi |
| Observed IMEI | Target Identifier with the IMEI of the target, it has to be checked for each call over the radio interface | PartyInformation/imei |
| Observed Non-Local ID | Target Identifier with the E.164 number of Non-Local ID target | Partyinformation/e164-Format |
| New observed MSISDN | New target identifier with MSISDN of the target, when available | PartyInformation/msISDN |
| New observed IMSI | New target identifier with IMSI of the target, when available | PartyInformation/imsi |
| New observed IMEI | New target identifier with IMEI of the target, when available | PartyInformation/imei |
| Event type | Description of which type of event is delivered: Establishment, Answer, Supplementary service, Handover, Release, SMS, Location update, Subscriber controlled input, HLR subscriber record change, Serving system, Cancel location, Register location, Location information request | umts-CS-Event. In case this parameter is not sent over the HI2 interface, the presence of other parameters on HI2 indicates the event type (e.g. sMS or sciData parameter presence) |
| Event date | Date of the event generation in the 3G MSC server or 3G GMSC server or in the HLR | timeStamp |
| Event time | Time of the event generation in the 3G MSC server or 3G GMSC server or in the HLR |
| Dialled number | Dialled number before digit modification, IN‑modification, etc. | PartyInformation (= originating)/DSS1-parameters/calledpartynumber |
| Connected number | Number of the answering party | PartyInformation/supplementary-Services-Info |
| Other party address | Directory number of the other party for originating callsCalling party for terminating calls(See NOTE 2) | PartyInformation (= terminating)/calledpartynumberPartyInformation/callingpartynumber |
| Call direction | Information if the target is calling or called e.g. MOC/MTC or originating/terminating in or/out | intercepted-Call-Direct |
| CID | Unique number for each call sent to the DF, to help the LEA, to have a correlation between each call and the IRI (combination of Interception Node ID and the correlation number) | communicationIdentifier |
| Lawful interception identifier | Unique number for each surveillance lawful authorization | lawfulInterceptionIdentifier |
| CGI/SAI | CGI or SAI of the target; for the location information | locationOfTheTarget |
| Location area code | Location-area-code of the target defines the Location Area in a PLMN |
| Location Information | LALS location information |
| Time of Location | Date/Time of location. The time when location was obtained by the location source node. |
| Serving system identifier | VPLMN ID of the serving system or of the third party network interworking with the HLR | serving-System-Identifier |
| Basic service | Information about Tele service or bearer service | PartyInformation/DSS1-parameters-codeset-0 |
| Supplementary service | Supplementary services used by the target e.g. Call forwarding, CW, ECT | PartyInformation/Supplementary-Services |
| Forwarded to number | Forwarded to number at call forwarding | PartyInformation/calledPartyNumber(party-Qualifier indicating forwarded-to-party) |
| Call release reason | Call release reason of the target call | release-Reason-Of-intercepted-Call |
| SMS | The SMS content with header which is sent with the SMS-service (see NOTE 3) | sMS |
| SCI | Non-call related Subscriber Controlled Input (SCI) which the 3G MSC server receives from the ME | PartyInformation/sciData |
| Other update | Carrier specific information related to its implementation or subscription process on its HLR | carrierSpecificData |
| Changed (old/new) IMSI or MSISDN or IMEI | Provides the identity changes in Subscriber Record Change Event. | change-Of-Target-Identity |
| Previous serving system identifier | Previous VPLMN Id of the target | current-Previous-Systems/previous-Serving-System-Identifier |
| Previous serving MSC-number | An E.164 number of the previous serving MSC included in the intercepted MAP message | current-Previous-Systems/previous-Serving-MSC-Number |
| Previous serving MSC-address | An IP address of the previous serving MSC, included in the intercepted MAP message | current-Previous-Systems/previous-Serving-MSC- Address |
| NOTE 1: LIID parameter has to be present in each record sent to the LEMF. |
| NOTE 2: In case of SMS, the information about the other party is included in the SMS TPDU (TS 23.040 [XX] clause 9.2); in such case, the use of this parameter is implementation dependent. In the case of alphanumeric format, this parameter shall not be used to carry information about the other party. |
| NOTE 3: In case of SMS IRI only interception, the procedure in Annex P shall be performed. |

Table 5.5A: Serving System REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| event type | C | Provide Serving System event type. |
| event date | M | Provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| serving system identifier | C | Provide the VPLMN id (Mobile Country Code and Mobile Network Country, E. 212 number [87]). |

Table 5.5B: HLR subscriber record change REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| new observed MSISDN | C | Provide at least one and others when available. |
| new observed IMSI |
| New observed IMEI |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |
| observed IMEI |
| event type | C | Provide HLR subscriber record change event type. |
| event date | M | Provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Network identifier of the HLR reporting the event (Network element identifier included). |
| changed (old/new) IMSI or MSISDN or IMEI | M | Shall provide what was changed (old/new MSISDN, old/new IMSI or old/new IMEI) |
| lawful intercept identifier | M | Shall be provided. |
| carrier specific data | C | Provide to raw data of this specific update related to HLR. |

Table 5.5C: Cancel location REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |  |  |
| event type | C | Provide cancel Location change event type. (purge from HLR sent to SGSN included). |
| event date | M | Provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| previous serving system identifier | C | Provide the previous VPLMN id (Mobile Country Code and Mobile Network Country, defined in E212 [87])). |
| previous serving MSC-number | C | Provide to identify the E.164 number of the previous serving MSC. |
| previous serving MSC-address | C | Provide to identify the IP address of the previous serving MSC. |

Table 5.5D: Register location REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |  |  |
| event type | C | Provide register location event type. |
| event date | M | Provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| previous serving system identifier | C | Provide the previous VPLMN id (Mobile Country Code and Mobile Network Country; defined in E212 [87]) ). |
| previous serving MSC number | C | Provide to identify the E.164 number of the previous serving MSC. |
| previous serving MSC address | C | Provide to identify the IP address of the previous serving MSC. |
| current serving system identifier | C | Provide the previous VPLMN id (Mobile Country Code and Mobile Network Country, defined in E212 [87])). |
| current serving MSC number | C | Provide to identify the E.164 number of the current serving MSC. |
| current serving MSC address | C | Provide to identify the IP address of the current serving MSC. |

Table 5.5E: Location information request REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |  |  |
| event type | C | Provide location information request event type. |
| event date | M | Provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| requesting network identifier | C | Provide the requesting network identifier PLMN id (Mobile Country Code and Mobile Network Country, defined in E212 [87]). |
| requesting node type | C | Provide the requesting node type (GMSC; SMS Centre; GMLC, MME, SGSN). |

Table 5.5F: LALS Target Positioning REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |
| event date | M | Provide the date and time the LCS Report is available at LI LCS Client. |
| event time |  |  |
| network identifier | M | Network identifier of the LI LCS Client (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| location information | C | Provide the LALS location information, if the positioning is successful |
| extended location parameters | O | If available, additional location information and associated QoS information. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| LALS error code | C | Provide the error identification code if the positioning is not successful. |

Table 5.5G: LALS Enhanced Location for IRI REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |
| event date | M | Provide the date and time the LCS Report is available at LI LCS Client. |
| event time |  |  |
| network identifier | M | Network identifier of the LI LCS Client (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| communication identity number | C | Provided for correlation with the IRI records of the call, if available in the corresponding LALS triggering event. |
| location information | C | Provide the LALS location information, if the positioning is successful. |
| extended location parameters | O | If available, additional location information and associated QoS information. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| LALS error code | C | Provide the error identification code if the positioning is not successful. |

NOTE 2: See the TS 33.107 [19] for a detailed description of LALS. See Annex O for information on using of the CS ASN.1 information object for the LALS reporting.

NOTE 3: In some specific scenarios the amount of Enhanced Location for IRI reports data may overload the X2 and/or HI2 interfaces. To prevent the overload, a flow control for Enhanced Location for IRI Reports may be implemented, e.g. by limiting the frequency of the reports for individual target.

### \*\*\* NEXT CHANGE \*\*\*

#### 6.5.1.1 REPORT record information

The REPORT record is used to report non-communication related subscriber actions (events) and for reporting unsuccessful packet-mode communication attempts.

The REPORT record is also used for the PS LALS reports.

The REPORT record shall be triggered when:

- the target's mobile station performs a GPRS attach procedure (successful or unsuccessful);

- the target's mobile station performs a GPRS detach procedure;

- the target's mobile station is unsuccessful at performing a PDP context activation procedure;

- the target's mobile station performs a cell, routing area, or combined cell and routing area update;

- the interception is activated after target's mobile station has successfully performed GPRS attach procedure;

- optionally when the target's mobile station leaves the old SGSN;

- optionally when the target's mobile station enters or leaves IA;

- the target's mobile station sends an SMS-Mobile Originated (MO) communication. Dependent on national requirements, the triggering for the REPORT record event shall occur either when the 3G SGSN receives the SMS from the target MS or, when the 3G SGSN receives notification that the SMS-Centre successfully received the SMS;

 a mobile station sends an SMS-Mobile Originated (MO) communication to a Non-Local ID target. Dependent on national requirements, the triggering event for the REPORT record shall occur either when the 3G SGSN receives the SMS from a MS for a Non-Local ID target or, when the 3G SGSN receives notification that the SMS-Centre successfully received the SMS for the Non-Local ID target;

- the target's mobile station receives a SMS Mobile-Terminated (MT) communication. Dependent on national requirements, the triggering event for the REPORT record shall occur either when the 3G SGSN receives the SMS from the SMS-Centre or, when the 3G SGSN receives notification that the target MS successfully received the SMS;

 a mobile station receives a SMS Mobile-Terminated (MT) communication from a Non-Local ID target. Dependent on national requirements, the triggering event for the REPORT record shall occur either when the 3G SGSN receives the SMS from the SMS-Centre originating from a Non-Local ID target or, when the 3G SGSN receives notification that the MS successfully received the SMS originating from a Non-Local ID target;

- as a national option, a mobile terminal is authorized for service with another network operator or service provider; in that case, other related events are required as cancel location, register location, location information request from a third party's node;

- as a national option, a REPORT record have to be generated when there is a HLR subscriber record change of IMSI or of MSISDN triggered by a messages to or from the HLR;

- packet data header reporting is performed on an individual intercepted packet basis and a packet is detected as it is sent or received by the target for a packet-data communication PDP Context.;

- when packet data summary reporting is performed on a summary basis for a packet-data communication PDP Context.associated with a particular packet flow (defined as the combination of source IP address, destination IP address, source port, destination port, and protocol and for IPv6 also include the flow label) and:

- the packet flow starts,

- an interim packet summary report is to be provided, or

- packet flow ends including the case where PDP Context is deactivated.

An interim packet data summary report is triggered if:

- the expiration of a configurable Summary Timer per intercept occurs. The Summary Timer is configurable in units of seconds. Or

- a per-intercept configurable count threshold is reached.

- when a LALS report information is received from the LI LCS Client.

Packet Data Header Information is reported either on a per-packet (i.e. non-summarised) basis or in a summary report. These reports provide IRI associated with the packets detected. The packet data header information related REPORT record is used to convey packet data header information during an active packet-data communication PDP Context.

NOTE: In the case of IP Fragments, Packet Data Header Information on a 6-tuple basis may only be available on the first packet and subsequent packets may not include such information and therefore may not be reported.

Table 6.3: GPRS Attach REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| event type | M | Shall provide GPRS Attach event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall be provided. |
| lawful intercept identifier | M | Shall be provided. |
| location information | C | Provide, when authorized, to identify location information for the target's MS. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| failed attach reason | C | For failed attach attempts of the target, provide information about the reason for the failed attach attempt. |

Table 6.4: GPRS Detach REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| event type | M | Shall provide GPRS Detach event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall be provided. |
| lawful intercept identifier | M | Shall be provided. |
| location information | C | Provide, when authorized, to identify location information for the target's MS. |
| Time of Location | C | Date/Time of Location. (if target location provided). |

Table 6.5: PDP Context Activation (unsuccessful) REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| observed PDP address | C | When a:- static address requested by the target's MS in association with a target-initiated PDP context activation request is unsuccessful; or- address offered by the network in association with a network-initiated PDP context activation request and the target's MS rejects the network-initiated PDP context activation,The address requested or offered shall be reported. |
| iP assignment | C | When an observed PDP address is reported, shall provide to indicate observed PDP address is statically or dynamically assigned. |
| event type | M | Shall provide PDP Context Activation event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| access point name | C | If available (i.e., provided by the UE) shall identify either the:- packet data network to which the target requested to be connected when the target's mobile station is unsuccessful at performing a PDP context activation procedure (MS to Network); or- access point of the packet data network that requested to be connected to the MS when the target's mobile station rejects a network-initiated PDP context activation (Network to MS). |
| PDP type | C | When an observed PDP address is reported, provide to describe the PDP type of the observed PDP address. The PDP Type defines the end user protocol to be used between the external packet data network and the MS. |
| initiator | M | Shall be provided to indicate whether the PDP context activation is network-initiated, target-initiated, or not available. |
| network identifier | M | Shall be provided.  |
| lawful intercept identifier | M | Shall be provided. |
| location information | C | Provide, when authorized, to identify location information for the target's MS. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| failed context activation reason | M | Information about the reason for failed context activation attempts of the target shall be provided. |
| umts QOS | C | Provide to identify the QOS parameters. |

Table 6.6: Location Information Update REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| event type | M | Shall provide Location Information Update event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall be provided. |
| lawful intercept identifier | M | Shall be provided. |
| location information | C | Provide, when authorized, to identify location information for the target's MS. This parameter, in case of inter-SGSN RAU, will be sent only by the new SGSN. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| old location information | O | Provide (only by the old SGSN), when authorized and if available, to identify the old location information for the target's MS. |
| ldi event | O | Provide, when authorized, to indicate whether the target is entering or leaving the interception area (only applicable for location dependant interception). |

Location Information Update REPORT Record shall be sent in the following cases:

- when the target's mobile station moves to the new SGSN;

- optionally when the target's mobile station leaves the old SGSN.

Table 6.7: SMS-MO and SMS-MT Communication REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| observed Non-Local ID |  |  |
| event type | M | Shall provide SMS event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall be provided. |
| lawful intercept identifier | M | Shall be provided. |
| SMS originating address | O | Provide to identify the originating and destination address of the |
| SMS destination address |  | SMS message |
| location information | C | Provide, when authorized, to identify location information for the target's MS. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| SMS | C | Shall be provided to deliver the SMS TPDU (TS 23.040 [XX] clause 9.2).In case of SMS IRI only interception, the procedure in Annex P shall be performed.The information about the other party involved in the SMS is included in the SMS TPDU.The parameter is conditional for backward compatibility reasons. |
| service centre address | C | If SMS content is not provided, shall be provided to identify the address of the relevant SMS-C server. If SMS content is provided, this parameter is optional. |
| SMS initiator | M | Shall be provided to indicate whether the SMS is MO, MT, or Undefined. |
| SMS content removed indicator | C | Shall be set to TRUE if the SMS content has been removed according to Annex P. Shall be set to FALSE if the SMS content has not been removed.The parameter is conditional for backward compatibility reasons. |

Table 6.8: Serving System REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |
| observed IMEI |
| event type | M | Shall provide Serving System event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| serving system identifier | M | Shall provide the VPLMN id (Mobile Country Code and Mobile Network Country, E. 212 number [87]). |

Table 6.9: Start Of Interception with mobile station attached REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| event type | M | Shall provide Start Of Interception with mobile station attached event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall be provided. |
| lawful intercept identifier | M | Shall be provided. |
| location information | C | Provide, when authorized, to identify location information for the target's MS. |
| Time of Location | C | Date/Time of Location. (if target location provided). |

Start Of Interception with mobile station attached REPORT Record shall be sent in the following case:

- the interception is activated any time after target's mobile station has successfully performed GPRS attach procedure.

When the ICE (i.e. SGSN, GGSN) is not aware of the activation of multiple lawfully authorized intercepts when the mobile station has already completed the GPRS attach procedures, the MF/DF shall generate the Start of Interception with mobile station attached REPORT record on its own using information that it has retained.

When the REPORT-record is used to convey the start of interception with mobile station attached, the DF2 shall not send the Start of Interception with mobile station attached REPORT record to the LEMFs that were already intercepting the target due previous LI activation on the same target.

Table 6.9A: Packet Data Header Information REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| observed PDP address | C | If available, shall be provided in the following cases to identify the:- static address requested by the target's MS, and allocated by the Network for a successful PDP context activation.- address allocated dynamically by the network to the target MS in association with a PDP context activation (i.e. address is sent by the Network in an Activate PDP Context Accept) for a successful PDP context activation procedure when the PDP Context activation request does not contain a static PDP address.- address offered by the network in association with a network-initiated PDP context activation request when the target's MS accepts the network-initiated PDP context activation request. |
| event type | M | Shall provide the Packet Data Header Information event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| access point name | C | If available, shall be provided to identify the packet data network to which the target is connected. |
| PDP type | C | When a PDP address is provided, shall provide the PDP type of the observed PDP address. The PDP Type defines the end user protocol to be used between the external packet data network and the MS. |
| network identifier | M | Shall be provided. |
| correlation number | M | Shall provide to uniquely identify the PDP context delivered to the LEMF used to correlate IRI records with CC. |
| lawful intercept identifier | M | Shall be provided. |
| packet data header information | M | Shall be provided to identify the packet header information to be reported on a per-packet basis as defined in Table 6.9B or on a summary basis. For summary reporting includes one or more packet flow summaries where each packet flow summary is associated with a particular packet flow as defined in Table 6.9C.  |
| NSAPI | O | Provided for additional information. |

Table 6.9B: Contents of per-packet, packet data header information parameter

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| source IP address | C | Provide when mapping packet header information to identify the source IP address for a particular packet flow. |
| source port number | C | Provide when mapping packet header information to report the source port number for a particular packet flow when the transport protocol supports port numbers. |
| destination IP address | C | Provide when mapping packet header information to Identify the destination IP address for a particular packet flow. |
| destination port number | C | Provide when mapping packet header information to report the destination port number for a particular packet flow when the transport protocol supports port numbers. |
| transport protocol | C | Provide when mapping packet header information to identify the transport protocol (e.g. TCP) for a particular packet flow. |
| flow label | C | Provide when mapping packet header information for IPv6 only for a particular packet flow. |
| direction | M | Shall be provided. Identifies the direction of the packet (from target or to target).  |
| packet size | O | Provide when mapping packet header information to convey the value contained in Total Length Fields of the IPv4 packets or the value contained in the Payload Length fields of the IPv6 packets. |
| packet data header copy | C | Provide when reporting a copy of the entire packet header information rather than mapping individual information and so it is alternative to the individual information.  |

Table 6.9C: Contents of a single summary flow packet data header information parameter

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| source IP address | M | Shall be provided. Identifies the source IP address for a particular packet flow. |
| source port number | C | Provide to report the source port number for a particular packet flow when the transport protocol supports port numbers. |
| destination IP address | M | Shall be provided. Identifies the destination IP address for a particular packet flow. |
| destination port number | C | Provide to report the destination port number for a particular packet flow when the transport protocol supports port numbers. |
| transport protocol | M | Identifies the transport protocol (e.g. TCP) for a particular packet flow. |
| flow label | C | Provide for IPv6 only for a particular packet flow. |
| summary period | M | Shall provide the period of time during which the packets of a particular packet flow of the summary report were sent or received by the target and defined by specifying the time when the first packet and the last packet of the reporting period were detected.  |
| packet count | M | Shall provide the number of packets detected for a particular packet flow. |
| sum of packet sizes | O | Provides the sum of values contained in Total Length Fields of the IPv4 packets or the sum of the values contained in the Payload Length fields of the IPv6 packets. |
| packet data summary reason | M | Shall provide the reason for the report being delivered to the LEMF (i.e. timeout, count limit, end of session). |

Table 6.9D: HLR subscriber record change REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| new observed MSISDN | C | Provide at least one and others when available. |
| new observed IMSI |  |  |
| new Observed IMEI |  |  |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |  |  |
| observed IMEI |  |  |
| event type | M | Shall provide HLR subscriber record change event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall provide the network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| changed (old/new) IMSI or MSISDN or IMEI | M | Shall provide what was changed (old/new MSISDN, old/new IMSI or old/new IMEI) |
| carrier Specific Data | O | Provide raw data of this specific update. |

Table 6.9E: Cancel location REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |  |  |
| event type | M | Shall provide cancel Location change event type. (purge from HLR sent to SGSN included). |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall provide the network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| previous serving system identifier | C | If available, shall provide the previous VPLMN id (Mobile Country Code and Mobile Network Country, defined in E.212 [87]). |
| previous serving SGSN-Number | C | Provide the E.164 number of the previous serving SGSN, if available. |
| previous serving SGSN-Address | C | Provide the IP address of the previous serving SGSN, if available. |
| previous serving S4-SGSN-address | C | Provide the Diameter Origin-Host and Origin-Realm of the previous serving S4‑SGSN, if available. |

Table 6.9F: Register location REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |  |  |
| event type | M | Shall provide register location event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall provide the network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| previous serving system identifier | C | If available, shall provide the previous VPLMN id (Mobile Country Code and Mobile Network Country; defined in E.212 [87]). |
| previous serving SGSN-Number | C | Provide the E.164 number of the previous serving SGSN, if available. |
| previous serving SGSN-Address | C | Provide the IP address of the previous serving SGSN, if available. |
| previous serving S4-SGSN-address | C | Provide the Diameter Origin-Host and Origin-Realm of the previous serving S4‑SGSN, if available. |
| current serving system identifier | M | Shall provide the current VPLMN id (Mobile Country Code and Mobile Network Country, defined in E.212 [87]). |
| current serving SGSN-Number | C | Provide the E.164 number of the current serving SGSN, if available. |
| current serving SGSN-Address | C | Provide the IP address of the current serving SGSN, if available. |
| current serving S4-SGSN-address | C | Provide the Diameter Origin-Host and Origin-Realm of the current serving S4‑SGSN, if available. |

Table 6.9G: Location information request REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed MSISDN | C | Provide at least one and others when available. |
| observed IMSI |  |  |
| event type | M | Shall provide location information request event type. |
| event date | M | Shall provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall provide the network identifier of the HLR reporting the event (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| requesting network identifier | C | Provide the requesting network identifier PLMN id (Mobile Country Code and Mobile Network Country, defined in E.212 [87]).Editor's Note: The specific condition for this parameter needs clarification and consideration can be given to reporting whatever requesting network identifier is observed regardless of whether that identifier is a PLMN id in accordance with E212. |
| requesting node type | C | For GMSC; SMS Centre; GMLC, MME, SGSN, shall provide the requesting node type (GMSC; SMS Centre; GMLC, MME, SGSN) |

Table 6.9H: LALS Target Positioning REPORT Record

| **Parameter** | **MOC** | **Description/Conditions** |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI | C | Provide at least one and others when available. |
| observed IMEI |  |  |
| event date | M | Shall provide the date and time the report is created. |
| event time |  |  |
| network identifier | M | Network identifier of the LI LCS Client (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| location information | C | Provide the LALS location information, if the positioning is successful. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| extended location parameters | O | If available, additional location information and associated QoS information. |
| LALS error code | C | Provide the error identification code, if the positioning is not successful. |

**Table 6.9I: LALS Enhanced Location for IRI REPORT Record**

| **Parameter** | **MOC** | **Description/Conditions** |
| --- | --- | --- |
| observed MSISDN |  |  |
| observed IMSI  | C | Provide at least one and others when available. |
| observed IMEI |
| event date | M | Provide the date and time the LCS Report is available at LI LCS Client. |
| event time |  |  |
| network identifier | M | Network identifier of the LI LCS Client (Network element identifier included). |
| lawful intercept identifier | M | Shall be provided. |
| correlation number | C | Provided for correlation with the IRI records of the call, if available in the corresponding LALS triggering event. |
| location information | C | Provide the LALS location information, if the positioning is successful. |
| Time of Location | C | Date/Time of Location. (if target location provided). |
| extended location parameters | O | If available, additional location information and associated QoS information. |
| LALS error code | C | Provide the error identification code if the positioning is not successful. |

In the present document, the LALS Target Positioning reports are only sent when the target is successfully located. If the location information is not available, e.g. when the target is not attached to the network, no record is sent to the LEMF.

NOTE 1: See the TS 33.107 [19] for a detailed description of LALS. See Annex O for information on using of the PS ASN.1 information object for the LALS reporting.

NOTE 2: In some specific scenarios the amount of Enhanced Location for IRI reports data may overload the X2 and/or HI2 interfaces. To prevent the overload, a flow control for Enhanced Location for IRI Reports may be implemented, e.g. by limiting the frequency of the reports for individual target.

### \*\*\* NEXT CHANGE \*\*\*

### 7.5.0 Introduction

In addition, information on non-transmission related actions of a target constitute IRI and is sent via HI2, e.g. information on SIP message with call forwarding configuration information.

The IRI may be subdivided into the following categories:

1. Control information for HI2 (e.g. correlation information).

2.Basic data context information, for standard data transmission between two parties (e.g. SIP- or XCAP-message).

3. Information needed to decrypt media traffic between the parties.

For each event, a Record is sent to the LEMF, if this is required. The following table gives the mapping between event type received at DF2 level and record type sent to the LEMF.

Table 7.1: Mapping between IMS Events and HI2 Records Type

|  |  |
| --- | --- |
| Event | IRI Record Type |
| SIP-message | REPORT |
| XCAP-request | REPORT |
| XCAP response | REPORT |
| Media decryption keys available | REPORT |
| Start of interception for already established IMS session  | REPORT |
| Serving System | REPORT |
| Subscriber record change | REPORT |
| Registration Termination | REPORT |
| Location Information Request | REPORT |

A set of information is used to generate the record. The records used transmit the information from mediation function to LEMF. This set of information can be extended in the CSCF or DF2 MF, if new IEs are available and if this is necessary in a specific country. The following table gives the mapping between information received per event and information sent in records.

Once IRI only interception is underway, LEMF receives IMS specific IRI only (SIP IRI) from CSCF or IRI only (XCAP Message IRI) from the XCAP server managing the XCAP resource associated with the IMS supplementary service setting, or IRI only from the HSS. LEMF does not receive CC, and therefore it is not possible to correlate IMS specific IRI with CC.

Once IRI and CC interception is underway, LEMF receives IMS specific IRI both from a GSN and from a CSCF. LEMF receives SIP messages also from a GSN within CC. LEMF receives IRI of XCAP events from functions such as XCAP authentication and resource management function. In certain cases, however, SIP messages may be encrypted between UE and CSCF. XCAP message between the UE and the AS managing the target's IMS supplementary service settings may be encrypted. In these cases LEMF needs to receive unencrypted SIP or XCAP messages in IMS specific IRI provided from CSCF, or from the XCAP server managing the target's IMS supplementary service settings. The LI service delivery of XCAP events related to XCAP authentication process is for further study.

In some cases the CC is encrypted according to one of the IMS media security solutions specified in TS 33.328 [54]. In these cases the LEMF receives encrypted CC and decrypts it based on the decryption information received over the HI2 interface.

NOTE 0: CC interception is not applicable at the HSS.

When the InstanceID is present in IMS signalling TS 24.229 [76], and contains an IMEI URN [81], [82], the IMEI shall be extracted and converted to the reporting format defined for partyInformation (imei).

NOTE 1: Delivery of decrypted CC in the above scenario is FFS.

NOTE 1a: GSN has no possibility to decrypt SIP messages based on the IMS security architecture.

NOTE 2: Security mechanisms for protecting delivery of key material over the HI2 in line with TS 33.328 [54] are FFS.

NOTE 2a: When the CSCF is not aware of the activation of multiple lawfully authorized intercepts on a single target, the MF/DF needs to generate the REPORT with *Start of Interception on an already established IMS session* on its own using information that it has retained.

The DF2 shall not send the REPORT with Start of Interception with an already established IMS session to the LEMFs that were already intercepting the session due to a previous LI activation on the same target.

Table 7.2: Mapping between IMS Events Information and IRI Information

| Parameter | Description | HI2 ASN.1 parameter |
| --- | --- | --- |
| Observed SIP URI | Observed SIP URI | partyInformation (partyIdentity(sip-uri)) |
| Observed TEL URI | Observed TEL URI | partyInformation (partyIdentity(tel-uri)) |
| Observed IMEI | Observed IMEI | partyInformation (partyIdentity(imei)) |
| Observed IMPI | Observed IMPI (NOTE 12) | partyInformation (partyIdentity(impi)) |
| Observed IMSI | Observed IMSI (NOTE 12) | partyInformation partyIdentity( (imsi)) |
| Observed MSISDN | Observed MSISDN (NOTE 12) | partyInformation (partyIdentity(msISDN)) |
| Event type | IMS EventIt indicates whether the IRI contains a CC unfiltered SIP message, a CC filtered SIP message, an XCAP request, an XCAP response, or the media decryption keys.For interception at the HSS, it indicates whether the IRI contains a Serving system, a Subscriber Record Change, a Registration Termination or a Location Information Request. | iMSevent |
| Event date | Date of the event generation in the CSCF or in the XCAP server managing the target's IMS supplementary service setting(s). | timeStamp |
| Event time | Time of the event generation in the CSCF or in the XCAP server managing the target's IMS supplementary service setting(s). |  |
| Network identifier | Unique number of the intercepting CSCF or the XCAP server managing the target's IMS supplementary service setting(s). | networkIdentifier |
| Correlation number | Unique number for each PDP context/Bearer delivered to the LEMF, to help the LEA, to have a correlation between each PDP Context/Bearer and the IRI. | gPRSCorrelationNumber |
| Correlation | Correlation number; unique number for each PDP context/Bearer delivered to the LEMF, to help the LEA, to have a correlation between each PDP Context/Bearer and the IRI.ASN.1 as: iri-to-CCSignalling PDP context/Bearer correlation number; unique number for signalling PDP context/Bearer delivered to the LEMF, to help the LEA, to have a correlation between each PDP Context/Bearer and the IRI.Used in the case two PDP contexts/Bearers are used.ASN.1 as: iri-to-CCSIP correlation number; either Call-id or some implementation dependent number that uniquely identify SIP messages of the same SIP session.ASN.1 as: iri-to-iriXCAP transaction correlation number: It correlates the XCAP request and reponse. | correlation |
| Lawful interception identifier | Unique number for each lawful authorization. | lawfulInterceptionIdentifier |
| SIP message | Either whole SIP message, or SIP message header (plus SDP body, if any). SIP message header (plus SIP message body part conveying IRI such as SDP) is used if warrant requires only IRI. In such cases, specific content in the SIP Message (e.g. 'Message', etc.) has to be deleted; unknown headers shall not be deleted. For intercepts requiring IRI only delivery, depending on national regulations, SMS content may be excluded by performing the procedure in Annex P, while SMS headers (which convey information including originating and destination addresses, SMS centre address) are included, if available. Location information that the service provider is aware of (e.g. location in PANI header) is removed when delivery of such information is not lawfully authorized. | sIPMessage |
| Media-decryption-info | Session keys and additional info for the decryption of the CC streams belonging to the intercepted session.This field is present if available at the DF/MF | mediaDecryption-infoContain for each key the follow triplet: cCCSID, cCDecKey, cCSalt (optionally) |
| SIP message header offer | Header of the SIP message carrying the SDP offer (NOTE 10). | sipMessageHeaderOffer |
| SIP message header answer | Header of the SIP message carrying the SDP answer (NOTE 10). | sipMessageHeaderAnswer |
| SDP offer | SDP offer used for the establishment of the IMS session (NOTE 10). | sdpOffer |
| SDP answer | SDP answer used for the establishment of the IMS session (NOTE 10). | sdpAnswer |
| MediaSec key retrieval failure indication  | Provides the information that the procedure to get encryption keys from the KMS failed. | mediaSecFailureIndication |
| PANI header information | Elements of P-Access-Network-Info headers in SIP message; defined in TS 24.229 [76] §7.2A.4. | pANI-Header-Info |
| XCAP message | XCAP message (i.e. to report separately the XCAP request and XCAP response between the UE and the XCAP server managing the XCAP resources of the target's IMS supplementary service setting(s); based on TS 24.623 [77]). | xCAPMessage |
| VoIP Roaming Indication | Applicable to IMS events related to VoLTE only.Indicates the roaming architecture in the VPLMN: Local Breakout (LBO) or S8HR (S8-reference point based home routing).  | roamingIndication |
| Changed (old/new) IMSI or MSISDN/TEL URI/SIP URI/IMPI or IMEI | Provides the identity changes in Subscriber Record Change Event. | change-Of-Target-Identity |
| Other User Identities | Provides other IMPU or IMPI that was allocated to the Target being deregistered in HSS. | otherIdentities |
| Deregistration Reason | Provides the reason of de-registration in HSSCoded according to 3GPP TS 29.229 [96], values would be coded according to Reason-Code AVP when deregistration is initiated by HSS, and to Server-Assignment-Type AVP when indicated by SCSF. | deregistrationReason |
| Previous serving system identifier | Provides an identifier as defined in 3GPP TS 29.229 [96] that allows the home network to identify the previous visited network when deregistration is done. | visitedNetworkId |
| Current Serving System Identifier | Provides an identifier as defined in 3GPP TS 29.229 [96] that allows the home network to identify the current visited network. | visitedNetworkId |
| Other update | Carrier specific information related to implementation or subscription process on HSS. Raw data will be provided. CSP will provide to LEMF elements to understand such data. | carrierSpecificData |
| Requesting network identifier | The requesting network identifier PLMN id (Mobile Country Code and Mobile Network Code, defined in E.212 [87]). | requesting-Network-Identifier |
| Requesting node identifier | The requesting node identifier | requesting-Node-Identifier |
| Requesting node type | Type of requesting node such as MSC, SMS Centre, GMLC, MME, SGSN. | requesting-Node-Type |
| Location information | In case of S8HR, this parameter carries the UE location information that the LMISF receives from the MME through the S-GW/BBIFF. | ePSlocationOfTheTarget |
| Time of Location | Date/Time of location. The time when location was obtained by the location source node. | ePSlocationOfTheTarget |

NOTE 3: Void.

NOTE 4: Void.

NOTE 5: Void.

NOTE 6: Void.

NOTE 7: LIID parameter has to be present in each record sent to the LEMF.

NOTE 8: Details for the parameter SIP message. If the warrant requires only signaling information, specific content in the parameter 'SIP message' like IMS (Immediate Messaging) has to be deleted/filtered. It should be noted that SDP content within SIP messages is reported even for warrants requiring only IRI.

NOTE 9: In case of IMS event reporting involving the correlation number parameter, the gPRSCorrelationNumber HI2 ASN.1 parameter, which is also used in the IRIs coming from UMTS PS nodes, is used as container.

NOTE 10: This parameter is applicable only in case of start of interception for an already established IMS session.

NOTE 11: For separated IMS VoIP, the imsVoIP (as defined in clause 12) may be used instead of Correlation Number or Correlation shown in table 7.2.

NOTE 12: Applicable to HSS only.

pANI-header-info parameter includes elements present in the P-Access-Network-Info (PANI) header in intercepted SIP messages originated by the target's UE and handled by the CSCFs. The mediation function shall parse these intercepted SIP messages and copy from the PANI header the type/class of access and, if required by the warrant, location information in the related parameters specified in Annexes B.3 and B.9. In such case, the SIP messages carrying the PANI header shall also be sent to the LEMF unmodified.

In case the warrant does not require providing target's location information, any location information shall be filtered from the intercepted raw SIP messages, prior that these are delivered to the LEMF. In such case, as an implementation option, location information may be masked (e.g. filled with blanks or other characters) instead of filtered.

### \*\*\* NEXT CHANGE \*\*\*

### 15.2.3 SMS over IMS

For separate delivery of SMS when SMS over IMS (using IMS SIP signalling handled by the core network) is used, the following REPORT Records shall be reported by DF2 to the LEMF:

1) SMS over IP REPORT Record (see Table 15.2.3.1).

2) HSS related REPORT Records:

a. Serving System (6.5.1.1) or Serving Evolved Packet System (10.5.1.1) for use when roaming

b. Registration termination or Cancel Location (6.1.1.1 or 10.5.1.1);

c. Register location REPORT Record (6.5.1.1 or 10.5.1.1);

d. Location information request REPORT Record (6.5.1.1. or 10.5.1.1).

The above REPORT Records shall be able to be reported from DF2 to the LEMF independent of any other services that may or may not be intercepted.

Table 15.2.3.1: SMS over IMS REPORT Record

| Parameter | MOC | Description/Conditions |
| --- | --- | --- |
| observed SIP-URI | C | SIP URI of the target (if available). |
| observed TEL-URI | C | TEL URI of the target (if available). |
| observed IMEI  | C | IMEI of the target (if available). |
| event type | M | Provide SMS over IP event type. |
| event date | M | Provide the date and time the event is detected. |
| event time |  |  |
| network identifier | M | Shall be provided. |
| lawful intercept identifier | M | Shall be provided. |
| PANI header information | C | Elements of P-Access-Network-Info header information in SIP messages; described in TS 24.229 [76] §7.2A.4. Provided if available and applicable. |
| SMS originating address | M | Shall be provided to identify the origination address for the SMS. |
| SMS destination address | M | Shall be provided to identify the destination address for the SMS. |
| SMS | C | Shall be provided to deliver the SMS TPDU (TS 23.040 [XX] clause 9.2).In case of SMS IRI only interception, the procedure in Annex P shall be performed.The information about the other party involved in the SMS is included in the SMS TPDU.The parameter is conditional for backward compatibility reasons. |
| service centre address | M | Shall be provided. |
| SMS Initiator | M | Shall be provided to indicate whether the SMS is MO, MT, or Undefined. |
| location information | C | Provide, when authorized, to identify location information for the target's MS. |
| Time of Location | C | Date/Time of UE Location (if target location provided). |
| SMS content removed indicator | C | Shall be set to TRUE if the SMS content has been removed according to Annex P. Shall be set to FALSE if the SMS content has not been removed.The parameter is conditional for backward compatibility reasons. |

### \*\*\* NEXT CHANGE \*\*\*

# B.3 Intercept related information (HI2 PS and IMS)

ASN1 description of IRI (HI2 interface)

UmtsHI2Operations {itu-t(0) identified-organization(4) etsi(0) securityDomain(2) lawfulintercept(2) threeGPP(4) hi2(1) r17 (17) version-0 (0)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

IMPORTS

 LawfulInterceptionIdentifier,

 TimeStamp,

 Network-Identifier,

 National-Parameters,

 National-HI2-ASN1parameters,

 DataNodeAddress,

 IPAddress,

 IP-value,

 X25Address

 FROM HI2Operations

 {itu-t(0) identified-organization(4) etsi(0) securityDomain(2)

 lawfulIntercept(2) hi2(1) version18(18)}; -- Imported from TS 101 671 v3.14.1

-- Object Identifier Definitions

-- Security DomainId

lawfulInterceptDomainId OBJECT IDENTIFIER ::= {itu-t(0) identified-organization(4) etsi(0)

securityDomain(2) lawfulIntercept(2)}

-- Security Subdomains

threeGPPSUBDomainId OBJECT IDENTIFIER ::= {lawfulInterceptDomainId threeGPP(4)}

hi2DomainId OBJECT IDENTIFIER ::= {threeGPPSUBDomainId hi2(1) r17 (17) version-0 (0)}

UmtsIRIsContent ::= CHOICE

{

 umtsiRIContent UmtsIRIContent,

 umtsIRISequence UmtsIRISequence

}

UmtsIRISequence ::= SEQUENCE OF UmtsIRIContent

-- Aggregation of UmtsIRIContent is an optional feature.

-- It may be applied in cases when at a given point in time

-- several IRI records are available for delivery to the same LEA destination.

-- As a general rule, records created at any event shall be sent

-- immediately and not withheld in the DF or MF in order to

-- apply aggragation.

-- When aggregation is not to be applied,

-- UmtsIRIContent needs to be chosen.

UmtsIRIContent ::= CHOICE

{

 iRI-Begin-record [1] IRI-Parameters, -- include at least one optional parameter

 iRI-End-record [2] IRI-Parameters,

 iRI-Continue-record [3] IRI-Parameters, -- include at least one optional parameter

 iRI-Report-record [4] IRI-Parameters -- include at least one optional parameter

}

-- Parameters having the same tag numbers have to be identical in Rel-5 and onwards modules.

IRI-Parameters ::= SEQUENCE

{

 hi2DomainId [0] OBJECT IDENTIFIER, -- 3GPP HI2 domain

 iRIversion [23] ENUMERATED

 {

 version2 (2),

 ...,

 version3 (3),

 version4 (4),

 -- note that version5 (5) cannot be used as it was missed in the version 5 of this

 -- ASN.1 module.

 version6 (6),

 -- vesion7(7) was ommited to align with ETSI TS 101 671.

 lastVersion (8) } OPTIONAL,

 -- Optional parameter "iRIversion" (tag 23) was always redundant in 33.108, because

 -- the object identifier "hi2DomainId" was introduced into "IRI Parameters" in the

 -- initial version of 33.108v5.0.0. In order to keep backward compatibility, even when

 -- the version of the "hi2DomainId" parameter will be incremented it is recommended

 -- to always send to LEMF the same: enumeration value "lastVersion(8)".

 -- if not present, it means version 1 is handled

 lawfulInterceptionIdentifier [1] LawfulInterceptionIdentifier,

 -- This identifier is associated to the target.

 timeStamp [3] TimeStamp,

 -- date and time of the event triggering the report.)

 initiator [4] ENUMERATED

 {

 not-Available (0),

 originating-Target (1),

 -- in case of GPRS, this indicates that the PDP context activation, modification

 -- or deactivation is MS requested

 terminating-Target (2),

 -- in case of GPRS, this indicates that the PDP context activation, modification or

 -- deactivation is network initiated

 ...

 } OPTIONAL,

 locationOfTheTarget [8] Location OPTIONAL,

 -- location of the target

 -- or cell site location

 partyInformation [9] SET SIZE (1..10) OF PartyInformation OPTIONAL,

 -- This parameter provides the concerned party, the identiy(ies) of the party

 --)and all the information provided by the party.

 serviceCenterAddress [13] PartyInformation OPTIONAL,

 -- e.g. in case of SMS message this parameter provides the address of the relevant

 -- server

 sMS [14] SMS-report OPTIONAL,

 -- this parameter provides the SMS content and associated information

 national-Parameters [16] National-Parameters OPTIONAL,

 gPRSCorrelationNumber [18] GPRSCorrelationNumber OPTIONAL,

 gPRSevent [20] GPRSEvent OPTIONAL,

 -- This information is used to provide particular action of the target

 -- such as attach/detach

 sgsnAddress [21] DataNodeAddress OPTIONAL,

 gPRSOperationErrorCode [22] GPRSOperationErrorCode OPTIONAL,

 ggsnAddress [24] DataNodeAddress OPTIONAL,

 qOS [25] UmtsQos OPTIONAL,

 networkIdentifier [26] Network-Identifier OPTIONAL,

 sMSOriginatingAddress [27] DataNodeAddress OPTIONAL,

 sMSTerminatingAddress [28] DataNodeAddress OPTIONAL,

 iMSevent [29] IMSevent OPTIONAL,

 sIPMessage [30] OCTET STRING OPTIONAL,

 servingSGSN-number [31] OCTET STRING (SIZE (1..20)) OPTIONAL,

 -- Coded according to 3GPP TS 29.002 [4] and 3GPP TS 23.003 25].

 servingSGSN-address [32] OCTET STRING (SIZE (5..17)) OPTIONAL,

 -- Octets are coded according to 3GPP TS 23.003 [25]

 ...,

 -- Tag [33] was taken into use by ETSI module in TS 101 671v2.13.1

 ldiEvent [34] LDIevent OPTIONAL,

 correlation [35] CorrelationValues OPTIONAL,

 mediaDecryption-info [36] MediaDecryption-info OPTIONAL,

 servingS4-SGSN-address [37] OCTET STRING OPTIONAL,

 -- Diameter Origin-Host and Origin-Realm of the S4-SGSN based on the TS 29.272 [59].

 -- Only the data fields from the Diameter AVPs are provided concatenated

 -- with a semicolon to populate this field.

 sipMessageHeaderOffer [38] OCTET STRING OPTIONAL,

 sipMessageHeaderAnswer [39] OCTET STRING OPTIONAL,

 sdpOffer [40] OCTET STRING OPTIONAL,

 sdpAnswer [41] OCTET STRING OPTIONAL,

 uLITimestamp [42] OCTET STRING (SIZE (8)) OPTIONAL,

 -- Coded according to 3GPP TS 29.060 [17]; The upper 4 octets shall carry the ULI Timestamp

 -- value; The lower 4 octets are undefined and shall be ignored by the receiver

 packetDataHeaderInformation [43] PacketDataHeaderInformation OPTIONAL,

 mediaSecFailureIndication [44] MediaSecFailureIndication OPTIONAL,

 pANI-Header-Info [45] SEQUENCE OF PANI-Header-Info OPTIONAL,

 -- information extracted from P-Access-Network-Info headers of SIP message;

 -- described in TS 24.229 §7.2A.4 [76]

 imsVoIP [46] IMS-VoIP-Correlation OPTIONAL,

 xCAPmessage [47] OCTET STRING OPTIONAL,

 -- The entire HTTP contents of any of the target's IMS supplementary service setting

 -- management or manipulation XCAP messages, mainly made through the Ut

 -- interface defined in the 3GPP TS 24 623 [77].

 ccUnavailableReason [48] PrintableString OPTIONAL,

 carrierSpecificData [49] OCTET STRING OPTIONAL,

 -- Copy of raw data specified by the CSP or his vendor related to HSS.

 current-Previous-Systems [50] Current-Previous-Systems OPTIONAL,

 change-Of-Target-Identity [51] Change-Of-Target-Identity OPTIONAL,

 requesting-Network-Identifier [52] OCTET STRING OPTIONAL,

 -- the requesting network identifier PLMN id (Mobile Country Code and Mobile Network Country,

 -- defined in E212 [87]).

 requesting-Node-Type [53] Requesting-Node-Type OPTIONAL,

 serving-System-Identifier [54] OCTET STRING OPTIONAL,

 -- the requesting network identifier (Mobile Country Code and Mobile Network Country,

 -- defined in E212 [87]).

 extendedLocParameters [55] ExtendedLocParameters OPTIONAL, -- LALS extended parameters

 locationErrorCode [56] LocationErrorCode OPTIONAL, -- LALS error code

 cSREvent [57] CSREvent OPTIONAL,

 ptc [58] PTC OPTIONAL, -- PTC Events

 ptcEncryption [59] PTCEncryptionInfo OPTIONAL,

 -- PTC Security Information

 national-HI2-ASN1parameters [255] National-HI2-ASN1parameters OPTIONAL

}

-- Parameters having the same tag numbers have to be identical in Rel-5 and onwards modules

-- PARAMETERS FORMATS

PANI-Header-Info::= SEQUENCE

{

 access-Type [1] OCTET STRING OPTIONAL,

 -- ASCII chain '3GPP-GERAN',... : see TS 24.229 §7.2A.4 [76]

 access-Class [2] OCTET STRING OPTIONAL,

 -- ASCII chain'3GPP-GERAN',... : see TS 24.229 §7.2A.4 [76]

 network-Provided [3] NULL OPTIONAL,

 -- present if provided by the network

 pANI-Location [4] PANI-Location OPTIONAL,

 ...

}

PANI-Location  ::= SEQUENCE

{

    raw-Location     [1] OCTET STRING OPTIONAL,

    -- raw copy of the location string from the P-Access-Network-Info header

    location          [2] Location      OPTIONAL,

    ...

}

PartyInformation ::= SEQUENCE

{

 party-Qualifier [0] ENUMERATED

 {

 gPRS-Target(3),

 ...

 },

 partyIdentity [1] SEQUENCE

 {

 imei [1] OCTET STRING (SIZE (8)) OPTIONAL,

 -- See MAP format [4]

 imsi [3] OCTET STRING (SIZE (3..8)) OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 msISDN [6] OCTET STRING (SIZE (1..9)) OPTIONAL,

 -- MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 e164-Format [7] OCTET STRING (SIZE (1 .. 25)) OPTIONAL,

 -- E164 address of the node in international format. Coded in the same format as

 -- the calling party number parameter of the ISUP (parameter part:[29])

 sip-uri [8] OCTET STRING OPTIONAL,

 -- See [26]

 ...,

 tel-uri [9] OCTET STRING OPTIONAL,

 -- See [67]

 x-3GPP-Asserted-Identity [10] OCTET STRING OPTIONAL,

 -- X-3GPP-Asserted-Identity header (3GPP TS 24.109 [79]) of the target, used in

 -- some XCAP transactions. This information complement SIP URI or Tel URI of the target.

 xUI [11] OCTET STRING OPTIONAL

 -- XCAP User Identifier (XUI)is a string, valid as a path element in an XCAP URI, that

 -- may be associated with each user served by a XCAP resource server. Defined in IETF

 -- RFC 4825[80]. This information may complement SIP URI or Tel URI of the target.

 },

 services-Data-Information [4] Services-Data-Information OPTIONAL,

 -- This parameter is used to transmit all the information concerning the

 -- complementary information associated to the basic data call

 ...

}

Location ::= SEQUENCE

{

 e164-Number [1] OCTET STRING (SIZE (1..25)) OPTIONAL,
 -- Coded in the same format as the ISUP location number (parameter
 -- field) of the ISUP (see EN 300 356 [30]).
 globalCellID [2] GlobalCellID OPTIONAL,

 --see MAP format (see [4])

 rAI [4] Rai OPTIONAL,

 -- the Routeing Area Identifier in the current SGSN is coded in accordance with the

 -- § 10.5.5.15 of document [9] without the Routing Area Identification IEI

 -- (only the last 6 octets are used)

 gsmLocation [5] GSMLocation OPTIONAL,

 umtsLocation [6] UMTSLocation OPTIONAL,

 sAI [7] Sai OPTIONAL,

 -- format: PLMN-ID 3 octets (no. 1 - 3)

 -- LAC 2 octets (no. 4 - 5)

 -- SAC 2 octets (no. 6 - 7)

 -- (according to 3GPP TS 25.413 [62])

 ...,

 oldRAI [8] Rai OPTIONAL,

 -- the Routeing Area Identifier in the old SGSN is coded in accordance with the

 -- § 10.5.5.15 of document [9] without the Routing Area Identification IEI

 -- (only the last 6 octets are used).

 tAI [9] OCTET STRING (SIZE (6)) OPTIONAL,

 -- The TAI is coded according to the TS 29.118 [64] without the TAI IEI.

 -- The tAI parameter is applicable only to the CS traffic cases where

 -- the available location information is the one received from the the MME.

 eCGI [10] OCTET STRING (SIZE (8)) OPTIONAL,

 -- the ECGI is coded according to the TS 29.118 [64] without the ECGI IEI.

 -- The eCGI parameter is applicable only to the CS traffic cases where

 -- the available location information is the one received from the the MME.

 civicAddress [11] CivicAddress OPTIONAL,

 -- Every elements that describe civicAddress are based on IETF RFC 4776 or IETF

 -- 5139, ISO.3166-1 and -2, ISO 639-1, UPU SB42-4 ([71]to [75]) Such element is to

 -- enrich IRI

 -- Messages to LEMF by civic elements on the location of a H(e)NodeB or a WLAN hotspot,

 -- instead of geographical location of the target or any geo-coordinates. Please, look

 -- at the §5.11 location information of TS 33.106 and §4 functional architecture of TS

 -- 33.107 on how such element can be used.

 operatorSpecificInfo [12] OCTET STRING OPTIONAL,

 -- other CSP specific information.

 uELocationTimestamp [13] CHOICE

 {

 timestamp [0] TimeStamp,

 timestampUnknown [1] NULL,

 ...

 } OPTIONAL

 -- Date/time of the UE location

}

GlobalCellID ::= OCTET STRING (SIZE (5..7))

Rai ::= OCTET STRING (SIZE (6))

Sai ::= OCTET STRING (SIZE (7))

GSMLocation ::= CHOICE

{

 geoCoordinates [1] SEQUENCE

 {

 latitude [1] PrintableString (SIZE(7..10)),

 -- format : XDDMMSS.SS

 longitude [2] PrintableString (SIZE(8..11)),

 -- format : XDDDMMSS.SS

 mapDatum [3] MapDatum DEFAULT wGS84,

 ...,

 azimuth [4] INTEGER (0..359) OPTIONAL

 -- The azimuth is the bearing, relative to true north.

 },

 -- format : XDDDMMSS.SS

 -- X : N(orth), S(outh), E(ast), W(est)

 -- DD or DDD : degrees (numeric characters)

 -- MM : minutes (numeric characters)

 -- SS.SS : seconds, the second part (.SS) is optionnal

 -- Example :

 -- latitude short form N502312

 -- longitude long form E1122312.18

 utmCoordinates [2] SEQUENCE

 {

 utm-East [1] PrintableString (SIZE(10)),

 utm-North [2] PrintableString (SIZE(7)),

 -- example utm-East 32U0439955

 -- utm-North 5540736

 mapDatum [3] MapDatum DEFAULT wGS84,

 ...,

 azimuth [4] INTEGER (0..359) OPTIONAL

 -- The azimuth is the bearing, relative to true north.

 },

 utmRefCoordinates [3] SEQUENCE

 {

 utmref-string PrintableString (SIZE(13)),

 mapDatum MapDatum DEFAULT wGS84,

 ...

 },

 -- example 32UPU91294045

 wGS84Coordinates [4] OCTET STRING

 -- format is as defined in [37].

}

MapDatum ::= ENUMERATED

{

 wGS84,

 wGS72,

 eD50, -- European Datum 50

 ...

}

UMTSLocation ::= CHOICE {

 point [1] GA-Point,

 pointWithUnCertainty [2] GA-PointWithUnCertainty,

 polygon [3] GA-Polygon

}

GeographicalCoordinates ::= SEQUENCE {

 latitudeSign ENUMERATED { north, south },

 latitude INTEGER (0..8388607),

 longitude INTEGER (-8388608..8388607),

 ...

}

GA-Point ::= SEQUENCE {

 geographicalCoordinates GeographicalCoordinates,

 ...

}

GA-PointWithUnCertainty ::=SEQUENCE {

 geographicalCoordinates GeographicalCoordinates,

 uncertaintyCode INTEGER (0..127)

}

maxNrOfPoints INTEGER ::= 15

GA-Polygon ::= SEQUENCE (SIZE (1..maxNrOfPoints)) OF

 SEQUENCE {

 geographicalCoordinates GeographicalCoordinates,

 ...

 }

CivicAddress ::= CHOICE {

 detailedCivicAddress SET OF DetailedCivicAddress,

 xmlCivicAddress XmlCivicAddress,

 ...

}

XmlCivicAddress ::= UTF8String

 -- Must conform to the February 2008 version of the XML format on the representation of

 -- civic location described in IETF RFC 5139[72].

DetailedCivicAddress ::= SEQUENCE {

 building [1] UTF8String OPTIONAL,

 -- Building (structure), for example Hope Theatre

 room [2] UTF8String OPTIONAL,

 -- Unit (apartment, suite), for example 12a

 placeType [3] UTF8String OPTIONAL,

 -- Place-type, for example office

 postalCommunityName [4] UTF8String OPTIONAL,

 -- Postal Community Name, for example Leonia

 additionalCode [5] UTF8String OPTIONAL,

 -- Additional Code, for example 13203000003

 seat [6] UTF8String OPTIONAL,

 -- Seat, desk, or cubicle, workstation, for example WS 181

 primaryRoad [7] UTF8String OPTIONAL,

 -- RD is the primary road name, for example Broadway

 primaryRoadDirection [8] UTF8String OPTIONAL,

 -- PRD is the leading road direction, for example N or North

 trailingStreetSuffix [9] UTF8String OPTIONAL,

 -- POD or trailing street suffix, for example SW or South West

 streetSuffix [10] UTF8String OPTIONAL,

 -- Street suffix or type, for example Avenue or Platz or Road

 houseNumber [11] UTF8String OPTIONAL,

 -- House number, for example 123

 houseNumberSuffix [12] UTF8String OPTIONAL,

 -- House number suffix, for example A or Ter

 landmarkAddress [13] UTF8String OPTIONAL,

 -- Landmark or vanity address, for example Columbia University

 additionalLocation [114] UTF8String OPTIONAL,

 -- Additional location, for example South Wing

 name [15] UTF8String OPTIONAL,

 -- Residence and office occupant, for example Joe's Barbershop

 floor [16] UTF8String OPTIONAL,

 -- Floor, for example 4th floor

 primaryStreet [17] UTF8String OPTIONAL,

 -- Primary street name, for example Broadway

 primaryStreetDirection [18] UTF8String OPTIONAL,

 -- PSD is the leading street direction, for example N or North

 roadSection [19] UTF8String OPTIONAL,

 -- Road section, for example 14

 roadBranch [20] UTF8String OPTIONAL,

 -- Road branch, for example Lane 7

 roadSubBranch [21] UTF8String OPTIONAL,

 -- Road sub-branch, for example Alley 8

 roadPreModifier [22] UTF8String OPTIONAL,

 -- Road pre-modifier, for example Old

 roadPostModifier [23] UTF8String OPTIONAL,

 -- Road post-modifier, for example Extended

 postalCode [24]UTF8String OPTIONAL,

 -- Postal/zip code, for example 10027-1234

 town [25] UTF8String OPTIONAL,

 county [26] UTF8String OPTIONAL,

 -- An administrative sub-section, often defined in ISO.3166-2[74] International

 -- Organization for Standardization, "Codes for the representation of names of

 -- countries and their subdivisions - Part 2: Country subdivision code"

 country [27] UTF8String,

 -- Defined in ISO.3166-1 [39] International Organization for Standardization, "Codes for

 -- the representation of names of countries and their subdivisions - Part 1: Country

 -- codes". Such definition is not optional in case of civic address. It is the

 -- minimum information needed to qualify and describe a civic address, when a

 -- regulation of a specific country requires such information

 language [28] UTF8String,

 -- Language defined in the IANA registry according to the assignments found

 -- in the standard ISO 639 Part 1, "ISO 639-1:2002[75], Codes for the representation of

 -- names of languages - Part 1: Alpha-2 code" or using assignments subsequently made

 -- by the ISO 639 Part 1 maintenance agency

 ...

}

SMS-report ::= SEQUENCE

{

 sMS-Contents [3] SEQUENCE

 {

 sms-initiator [1] ENUMERATED -- party which sent the SMS

 {

 target (0),

 server (1),

 undefined-party (2),

 ...

 },

 transfer-status [2] ENUMERATED

 {

 succeed-transfer (0), -- the transfer of the SMS message succeeds

 not-succeed-transfer(1),

 undefined (2),

 ...

 } OPTIONAL,

 other-message [3] ENUMERATED -- in case of terminating call, indicates if

 -- the server will send other SMS

 {

 yes (0),

 no (1),

 undefined (2),

 ...

 } OPTIONAL,

 content [4] OCTET STRING (SIZE (1 .. 270)) OPTIONAL,

 -- Encoded in the format defined for the SMS mobile

 ...,

 sMSContentRemovedIndicator [5] BOOLEAN OPTIONAL

 }

}

GPRSCorrelationNumber ::= OCTET STRING (SIZE(8..20))

CorrelationValues ::= CHOICE {

 iri-to-CC [0] IRI-to-CC-Correlation, -- correlates IRI to Content(s)

 iri-to-iri [1] IRI-to-IRI-Correlation, -- correlates IRI to IRI

 both-IRI-CC [2] SEQUENCE { -- correlates IRI to IRI and IRI to Content(s)

 iri-CC [0] IRI-to-CC-Correlation,

 iri-IRI [1] IRI-to-IRI-Correlation}

}

IMS-VoIP-Correlation ::= SET OF SEQUENCE {

 ims-iri [0] IRI-to-IRI-Correlation,

 ims-cc [1] IRI-to-CC-Correlation OPTIONAL

}

IRI-to-CC-Correlation ::= SEQUENCE { -- correlates IRI to Content

 cc [0] SET OF OCTET STRING,-- correlates IRI to multiple CCs

 iri [1] OCTET STRING OPTIONAL

 -- correlates IRI to CC with signaling

}

IRI-to-IRI-Correlation ::= OCTET STRING -- correlates IRI to IRI

GPRSEvent ::= ENUMERATED

{

 pDPContextActivation (1),

 startOfInterceptionWithPDPContextActive (2),

 pDPContextDeactivation (4),

 gPRSAttach (5),

 gPRSDetach (6),

 locationInfoUpdate (10),

 sMS (11),

 pDPContextModification (13),

 servingSystem (14),

 ... ,

 startOfInterceptionWithMSAttached (15),

 packetDataHeaderInformation (16) , hSS-Subscriber-Record-Change (17),

 registration-Termination (18),

 -- FFS

 location-Up-Date (19),

 -- FFS

 cancel-Location (20),

 register-Location (21),

 location-Information-Request (22)

}

-- see [19]

CSREvent ::= ENUMERATED

{

 cSREventMessage (1),

...

}

IMSevent ::= ENUMERATED

{

 unfilteredSIPmessage (1),

 -- This value indicates to LEMF that the whole SIP message is sent , i.e. without filtering

 -- CC; location information is removed by the DF2/MF if not required to be sent.

 ...,

 sIPheaderOnly (2),

 -- If warrant requires only IRI then specific content in a 'sIPMessage'

 -- (e.g. 'Message', etc.) has been deleted before sending it to LEMF.

 decryptionKeysAvailable (3) ,

 -- This value indicates to LEMF that the IRI carries CC decryption keys for the session

 -- under interception.

 startOfInterceptionForIMSEstablishedSession (4) ,

 -- This value indicates to LEMF that the IRI carries information related to

 -- interception started on an already established IMS session.

 xCAPRequest (5),

 -- This value indicates to LEMF that the XCAP request is sent.

 xCAPResponse (6) ,

 -- This value indicates to LEMF that the XCAP response is sent.

 ccUnavailable (7)

 -- This value indicates to LEMF that the media is not available for interception for intercept

 -- orders that requires media interception.

}

Current-Previous-Systems ::= SEQUENCE

{

 serving-System-Identifier [1] OCTET STRING OPTIONAL,

 -- VPLMN id (Mobile Country Code and Mobile Network Country, E. 212 number [87]).

 current-Serving-SGSN-Number [2] OCTET STRING OPTIONAL,

 -- E.164 number of the current serving SGSN.

 current-Serving-SGSN-Address [3] OCTET STRING OPTIONAL,

 -- The IP address of the current serving SGSN or its Diameter Origin-Host and Origin-Realm.

 current-Serving-S4-SGSN-Address [4]OCTET STRING OPTIONAL,

 -- The Diameter Origin-Host and Origin-Realm of the current serving S4 SGSN.

 previous-Serving-System-Identifier [5] OCTET STRING OPTIONAL,

 -- VPLMN id (Mobile Country Code and Mobile Network Country, defined in E212 [87]).

 previous-Serving-SGSN-Number [6] OCTET STRING OPTIONAL,

 -- The E.164 number of the previous serving SGCN.

 previous-Serving-SGSN-Address [7] OCTET STRING OPTIONAL,

 -- The IP address of the previous serving SGCN or its Diameter Origin-Host and Origin-Realm.

 previous-Serving-S4-SGSN-Address [8]OCTET STRING OPTIONAL,

 -- The Diameter Origin-Host and Origin-Realm of the previous serving S4 SGSN.

...

}

Change-Of-Target-Identity ::= SEQUENCE

{

 new-MSISDN [1] PartyInformation OPTIONAL,

 -- new MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 old-MSISDN [2] PartyInformation OPTIONAL,

 -- new MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 new-IMSI [3] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 old-IMSI [4] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 new-IMEI [5] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Equipement Identity defined in MAP format document TS 29.002 [4]

 old-IMEI [6] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Equipement Identity defined in MAP format document TS 29.002 [4]

...,

 new-IMPI [7] PartyInformation OPTIONAL,

 old-IMPI [8] PartyInformation OPTIONAL,

 new-SIP-URI [9] PartyInformation OPTIONAL,

 old-SIP-URI [10] PartyInformation OPTIONAL,

 new-TEL-URI [11] PartyInformation OPTIONAL,

 old-TEL-URI [12] PartyInformation OPTIONAL

}

Requesting-Node-Type ::= ENUMERATED

{

 mSC (1),

 sMS-Centre (2),

 gMLC (3),

 mME (4),

 sGSN (5),

 ...

}

Services-Data-Information ::= SEQUENCE

{

 gPRS-parameters [1] GPRS-parameters OPTIONAL,

 ...

}

GPRS-parameters ::= SEQUENCE

{

 pDP-address-allocated-to-the-target [1] DataNodeAddress OPTIONAL,

 aPN [2] OCTET STRING (SIZE(1..100)) OPTIONAL,

 -- The Access Point Name (APN) is coded in accordance with

 -- 3GPP TS 24.008 [9] without the APN IEI (only the last 100 octets are used).

 -- Octets are coded according to 3GPP TS 23.003 [25].

 pDP-type [3] OCTET STRING (SIZE(2)) OPTIONAL,

 -- Include either Octets 3 and 4 of the Packet Data Protocol Address information element of

 -- 3GPP TS 24.008 [9]or Octets 4 and 5 of the End User Address IE of 3GPP TS 29.060 [17].

 -- when PDP-type is IPv4 or IPv6, the IP address is carried by parameter

 -- pDP-address-allocated-to-the-target

 -- when PDP-type is IPv4v6, the additional IP address is carried by parameter

 -- additionalIPaddress

 ...,

 nSAPI [4] OCTET STRING (SIZE (1)) OPTIONAL,

 -- Include either Octet 2 of the NSAPI IE of 3GPP TS 24.008 [9] or Octet 2 of the NSAPI IE of

 -- 3GPP TS 29.060 [17].

 additionalIPaddress [5] DataNodeAddress OPTIONAL

}

GPRSOperationErrorCode ::= OCTET STRING

-- The parameter shall carry the GMM cause value or the SM cause value, as defined in the

-- standard [9], without the IEI.

LDIevent ::= ENUMERATED

{

 targetEntersIA (1),

 targetLeavesIA (2),

 ...

}

UmtsQos ::= CHOICE

{

 qosMobileRadio [1] OCTET STRING,

 -- The qosMobileRadio parameter shall be coded in accordance with the § 10.5.6.5 of

 -- document [9] without the Quality of service IEI and Length of

 -- quality of service IE (. That is, first

 -- two octets carrying 'Quality of service IEI' and 'Length of quality of service

 -- IE' shall be excluded).

 qosGn [2] OCTET STRING

 -- qosGn parameter shall be coded in accordance with § 7.7.34 of document [17]

}

MediaDecryption-info ::= SEQUENCE OF CCKeyInfo

 -- One or more key can be available for decryption, one for each media streams of the

 -- intercepted session.

CCKeyInfo ::= SEQUENCE

{

 cCCSID [1] OCTET STRING,

 -- the parameter uniquely mapping the key to the encrypted stream.

 cCDecKey [2] OCTET STRING,

 cCSalt [3] OCTET STRING OPTIONAL,

 -- The field reports the value from the CS\_ID field in the ticket exchange headers as
 -- defined in IETF RFC 6043 [61].

 ...

}

MediaSecFailureIndication ::= ENUMERATED

{

 genericFailure (0),

 ...

}

PacketDataHeaderInformation ::= CHOICE

{

 packetDataHeader [1] PacketDataHeaderReport,

 packetDataSummary [2] PacketDataSummaryReport,

...

}

PacketDataHeaderReport ::= CHOICE

{

 packetDataHeaderMapped [1] PacketDataHeaderMapped,

 packetDataHeaderCopy [2] PacketDataHeaderCopy,

...

}

PacketDataHeaderMapped ::= SEQUENCE

{

 sourceIPAddress [1] IPAddress,

 sourcePortNumber [2] INTEGER (0..65535) OPTIONAL,

 destinationIPAddress [3] IPAddress,

 destinationPortNumber [4] INTEGER (0..65535) OPTIONAL,

 transportProtocol [5] INTEGER,

 -- For IPv4, report the "Protocol" field and for IPv6 report "Next Header" field.

 -- Assigned Internet Protocol Numbers can be found at

 -- http://www.iana.org/assignments/protocol-numbers/protocol-numbers.xml

 packetsize [6] INTEGER OPTIONAL,

 flowLabel [7] INTEGER OPTIONAL,

 packetCount [8] INTEGER OPTIONAL,

 direction [9] TPDU-direction,

...

}

TPDU-direction ::= ENUMERATED

{

 from-target (1),

 to-target (2),

 unknown (3)

}

PacketDataHeaderCopy ::= SEQUENCE

{

 direction [1] TPDU-direction,

 headerCopy [2] OCTET STRING, -- includes a copy of the packet header at the IP

 -- network layer and above including extension headers, but excluding contents.

...

}

PacketDataSummaryReport ::= SEQUENCE OF PacketFlowSummary

PacketFlowSummary ::= SEQUENCE

{

 sourceIPAddress [1] IPAddress,

 sourcePortNumber [2] INTEGER (0..65535) OPTIONAL,

 destinationIPAddress [3] IPAddress,

 destinationPortNumber [4] INTEGER (0..65535) OPTIONAL,

 transportProtocol [5] INTEGER,

 -- For IPv4, report the "Protocol" field and for IPv6 report "Next Header" field.

 -- Assigned Internet Protocol Numbers can be found at

 -- http://www.iana.org/assignments/protocol-numbers/protocol-numbers.xml

 flowLabel [6] INTEGER OPTIONAL,

 summaryPeriod [7] ReportInterval,

 packetCount [8] INTEGER,

 sumOfPacketSizes [9] INTEGER,

 packetDataSummaryReason [10] ReportReason,

...

}

ReportReason ::= ENUMERATED

{

 timerExpired (0),

 countThresholdHit (1),

 pDPComtextDeactivated (2),

 pDPContextModification (3),

 otherOrUnknown (4),

 ...

}

ReportInterval ::= SEQUENCE

{

 firstPacketTimeStamp [0] TimeStamp,

 lastPacketTimeStamp [1] TimeStamp,

 ...

}

-- LALS extended location parameters are mapped from the MLP pos element parameters

-- and attributes defined in [88]. For details see specific [88] clauses refered below.

ExtendedLocParameters ::= SEQUENCE

{

 posMethod [0] PrintableString OPTIONAL, -- clause 5.3.93.1

 mapData [1] -- clause 5.2.2.3

 CHOICE {base64Map [0] PrintableString, -- clause 5.3.12

 url [1] PrintableString -- clause 5.3.138

 } OPTIONAL,

 altitude [2]

 SEQUENCE {alt PrintableString, -- clause 5.3.5

 alt-uncertainty PrintableString OPTIONAL -- clause 5.3.7

 } OPTIONAL,

 speed [3] PrintableString OPTIONAL, -- clause 5.3.119

 direction [4] PrintableString OPTIONAL, -- clause 5.3.26

 level-conf [5] PrintableString OPTIONAL, -- clause 5.3.24

 qOS-not-met [6] BOOLEAN OPTIONAL, -- clause 5.3.97

 motionStateList [7] -- clause 5.2.2.3

 SEQUENCE {primaryMotionState [0] PrintableString, -- clause 5.3.69

 secondaryMotionState [1] SEQUENCE OF PrintableString OPTIONAL,

 confidence [2] PrintableString -- clause 5.3.24

 } OPTIONAL,

 floor [8]

 SEQUENCE {floor-number PrintableString, -- clause 5.3.39

 floor-number-uncertainty PrintableString OPTIONAL

 -- clause 5.3.40

 } OPTIONAL,

 additional-info [9] PrintableString OPTIONAL, -- clause 5.3.1

-- The following parameter contains a copy of the unparsed XML code of

-- MLP response message, i.e. the entire XML document containing

-- a <slia> (described in [88], clause 5.2.3.2.2) or

-- a <slirep> (described in [88], clause 5.2.3.2.3) MLP message.

-- This parameter is present when the LI-LCS client cannot fully map

-- the MLP response message into an ASN.1 Location object.

 lALS-rawMLPPosData [10] UTF8String OPTIONAL,

 ...

}

LocationErrorCode ::= INTEGER (1..699)

-- LALS location error codes are the OMA MLP result identifiers defined in [88], Clause 5.4

PTCEncryptionInfo ::= SEQUENCE {

 cipher [1] UTF8String,

 cryptoContext [2] UTF8String OPTIONAL,

 key [3] UTF8String,

 keyEncoding [4] UTF8String,

 salt [5] UTF8String OPTIONAL,

 pTCOther [6] UTF8String OPTIONAL,

 ...

}

PTC ::= SEQUENCE {

 abandonCause [1] UTF8String OPTIONAL,

 accessPolicyFailure [2] UTF8String OPTIONAL,

 accessPolicyType [3] AccessPolicyType OPTIONAL,

 alertIndicator [5] AlertIndicator OPTIONAL,

 associatePresenceStatus [6] AssociatePresenceStatus OPTIONAL,

 bearer-capability [7] UTF8String OPTIONAL,

 -- identifies the Bearer capability information element (value part)

 broadcastIndicator [8] BOOLEAN OPTIONAL,

 -- default False, true indicates this is a braodcast to a group

 contactID [9] UTF8String OPTIONAL,

 emergency [10] Emergency OPTIONAL,

 emergencyGroupState [11] EmergencyGroupState OPTIONAL,

 timeStamp [12] TimeStamp,

 pTCType [13] PTCType OPTIONAL,

 failureCode [14] UTF8String OPTIONAL,

 floorActivity [15] FloorActivity OPTIONAL,

 floorSpeakerID [16] PTCAddress OPTIONAL,

 groupAdSender [17] UTF8String OPTIONAL,

 -- Identifies the group administrator who was the originator of the group call.

 -- tag [18] was used in r15 (15) version-4 (4)

 groupAuthRule [19] GroupAuthRule OPTIONAL,

 groupCharacteristics [20] UTF8String OPTIONAL,

 holdRetrieveInd [21] BOOLEAN OPTIONAL,

 -- true indicates target is placed on hold, false indicates target was retrived from hold.

 -- tag [22] was used in r15 (15) version-4 (4)

 imminentPerilInd [23] ImminentPerilInd OPTIONAL,

 implicitFloorReq [24] ImplicitFloorReq OPTIONAL,

 initiationCause [25] InitiationCause OPTIONAL,

 invitationCause [26] UTF8String OPTIONAL,

 iPAPartyID [27] UTF8String OPTIONAL,

 iPADirection [28] IPADirection OPTIONAL,

 listManagementAction [29] ListManagementAction OPTIONAL,

 listManagementFailure [30] UTF8String OPTIONAL,

 listManagementType [31] ListManagementType OPTIONAL,

 maxTBTime [32] UTF8String OPTIONAL, -- defined in seconds.

 mCPTTGroupID [33] UTF8String OPTIONAL,

 mCPTTID [34] UTF8String OPTIONAL,

 mCPTTInd [35] BOOLEAN OPTIONAL,

 -- default False indicates to associate from target, true indicates to the target.

 location [36] Location OPTIONAL,

 mCPTTOrganizationName [37] UTF8String OPTIONAL,

 mediaStreamAvail [38] BOOLEAN OPTIONAL,

 -- True indicates available for media, false indicates not able to accept media.

 priority-Level [40] Priority-Level OPTIONAL,

 preEstSessionID [41] UTF8String OPTIONAL,

 preEstStatus [42] PreEstStatus OPTIONAL,

 pTCGroupID [43] UTF8String OPTIONAL,

 pTCIDList [44] UTF8String OPTIONAL,

 pTCMediaCapability [45] UTF8String OPTIONAL,

 pTCOriginatingId [46] UTF8String OPTIONAL,

 pTCOther [47] UTF8String OPTIONAL,

 pTCParticipants [48] UTF8String OPTIONAL,

 pTCParty [49] UTF8String OPTIONAL,

 pTCPartyDrop [50] UTF8String OPTIONAL,

 pTCSessionInfo [51] UTF8String OPTIONAL,

 pTCServerURI [52] UTF8String OPTIONAL,

 pTCUserAccessPolicy [53] UTF8String OPTIONAL,

 pTCAddress [54] PTCAddress OPTIONAL,

 queuedFloorControl [55] BOOLEAN OPTIONAL,

 --Default FALSE,send TRUE if Queued floor control is used.

 queuedPosition [56] UTF8String OPTIONAL,

 -- indicates the queued position of the Speaker (Target or associate) who has the

 -- right to speak.

 registrationRequest [57] RegistrationRequest OPTIONAL,

 registrationOutcome [58] RegistrationOutcome OPTIONAL,

 retrieveID [59] UTF8String OPTIONAL,

 rTPSetting [60] RTPSetting OPTIONAL,

 talkBurstPriority [61] Priority-Level OPTIONAL,

 talkBurstReason [62] Talk-burst-reason-code OPTIONAL,

 -- Talk-burst-reason-code Defined according to the rules and procedures

 -- in (OMA-PoC-AD [97])

 talkburstControlSetting [63] TalkburstControlSetting OPTIONAL,

 targetPresenceStatus [64] UTF8String OPTIONAL,

 port-Number [65] INTEGER (0..65535) OPTIONAL,

 ...

}

AccessPolicyType ::= SEQUENCE

{

 userAccessPolicyAttempt [1] BOOLEAN,

 -- default False, true indicates Target has accessed.

 groupAuthorizationRulesAttempt [2] BOOLEAN,

 -- default False, true indicates Target has accessed.

 userAccessPolicyQuery [3] BOOLEAN,

 -- default False, true indicates Target has accessed.

 groupAuthorizationRulesQuery [4] BOOLEAN,

 -- default False, true indicates Target has accessed.

 userAccessPolicyResult [5] UTF8String,

 groupAuthorizationRulesResult [6] UTF8String,

 ...

}

AlertIndicator ::= ENUMERATED

{

 -- indicates the group call alert condition.

 sent (1),

 received (2),

 cancelled (3),

 ...

 }

AssociatePresenceStatus ::= SEQUENCE

{

 presenceID [1] UTF8String,

 -- identity of PTC Client(s)or the PTC group

 presenceType [2] PresenceType,

 presenceStatus [3] BOOLEAN,

 -- default false, true indicates connected.

...

}

PresenceType ::= ENUMERATED

{

 pTCClient (1),

 pTCGroup (2),

 -- identifies the type of presenceID given [PTC Client(s) or PTC group].

 ...

}

Emergency ::= ENUMERATED

{

 -- MCPTT services indication of peril condition.

 imminent (1),

 peril (2),

 cancel (3),

 ...

}

EmergencyGroupState ::= SEQUENCE

{

 -- indicates the state of the call, at least one of these information

 -- elements shall be present.

 clientEmergencyState [1] ENUMERATED

{

 -- in case of MCPTT call, indicates the response for the client

 inform (1),

 response (2),

 cancelInform (3),

 cancelResponse (4),

 ...

} OPTIONAL,

 groupEmergencyState [2] ENUMERATED

{

 -- in case of MCPTT group call, indicates if there is a group emergency or

 -- a response from the Target to indicate current Client state of emergency.

 inForm (1),

 reSponse (2),

 cancelInform (3),

 cancelResponse (4),

 ...

 },

 ...

}

PTCType ::= ENUMERATED

{

 pTCStartofInterception (1),

 pTCServinSystem (2),

 pTCSessionInitiation (3),

 pTCSessionAbandonEndRecord (4),

 pTCSessionStartContinueRecord (5),

 pTCSessionEndRecord (6),

 pTCPre-EstablishedSessionSessionRecord (7),

 pTCInstantPersonalAlert (8),

 pTCPartyJoin (9),

 pTCPartyDrop (10),

 pTCPartyHold-RetrieveRecord (11),

 pTCMediaModification (12),

 pTCGroupAdvertizement (13),

 pTCFloorConttrol (14),

 pTCTargetPressence (15),

 pTCAssociatePressence (16),

 pTCListManagementEvents (17),

 pTCAccessPolicyEvents (18),

 pTCMediaTypeNotification (19),

 pTCGroupCallRequest (20),

 pTCGroupCallCancel (21),

 pTCGroupCallResponse (22),

 pTCGroupCallInterrogate (23),

 pTCMCPTTImminentGroupCall (24),

 pTCCC (25),

 pTCRegistration (26),

 pTCEncryption (27),

 ...

}

FloorActivity ::= SEQUENCE

{

 tBCP-Request [1] BOOLEAN,

 -- default False, true indicates Granted.

 tBCP-Granted [2] BOOLEAN,

 -- default False, true indicates Granted permission to talk.

 tBCP-Deny [3] BOOLEAN,

 -- default True, False indicates permission granted.

 tBCP-Queued [4] BOOLEAN,

 -- default False, true indicates the request to talk is in queue.

 tBCP-Release [5] BOOLEAN,

 -- default True, true indicates the Request to talk is completed,

 -- False indicates PTC Client has the request to talk.

 tBCP-Revoke [6] BOOLEAN,

 -- default False, true indicates the privilege to talk is canceld from the

 -- PTC server.

 tBCP-Taken [7] BOOLEAN,

 -- default True, false indicates another PTC Client has the permission to talk.

 tBCP-Idle [8] BOOLEAN,

 -- default True, False indicates the Talk Burst Protocol is taken.

...

}

GroupAuthRule ::= ENUMERATED

{

 allow-Initiating-PtcSession (0),

 block-Initiating-PtcSession (1),

 allow-Joining-PtcSession (2),

 block-Joining-PtcSession (3),

 allow-Add-Participants (4),

 block-Add-Participants (5),

 allow-Subscription-PtcSession-State (6),

 block-Subscription-PtcSession-State (7),

 allow-Anonymity (8),

 forbid-Anonymity (9),

...

}

ImminentPerilInd ::= ENUMERATED

{

 request (1),

 response (2),

 cancel (3),

 -- when the MCPTT Imminent Peril Group Call Request, Response or Cancel is detected

...

}

ImplicitFloorReq ::= ENUMERATED

{

 join (1),

 rejoin (2),

 release (3),

 -- group Call request to join, rejoin, or release of the group call

...

}

InitiationCause ::= ENUMERATED

{

 requests (1),

 received (2),

 pTCOriginatingId (3),

 -- requests or receives a session initiation from the network or another

 -- party to initiate a PTC session. Identify the originating PTC party, if known.

...

}

IPADirection ::= ENUMERATED

{

 toTarget (0),

 fromTarget (1),

...

}

ListManagementAction ::= ENUMERATED

{

 create (1),

 modify (2),

 retrieve (3),

 delete (4),

 notify (5),

...

}

ListManagementType ::= ENUMERATED

{

 contactListManagementAttempt (1),

 groupListManagementAttempt (2),

 contactListManagementResult (3),

 groupListManagementResult (4),

 requestSuccessful (5),

...

}

Priority-Level ::= ENUMERATED

{

 pre-emptive (0),

 high-priority (1),

 normal-priority (2),

 listen-only (3),

...

}

PreEstStatus ::= ENUMERATED

{

 established (1),

 modify (2),

 released (3),

...

}

PTCAddress ::= SEQUENCE

{

 uri [0] UTF8String,

 -- The set of URIs defined in [RFC3261] and related SIP RFCs.

 privacy-setting [1] BOOLEAN,

 -- Default FALSE, send TRUE if privacy is used.

 privacy-alias [2] VisibleString OPTIONAL,

 -- if privacy is used, the PTC Server creates an anonymous PTC Address of the form

 -- <sip:anonymous@anonymous.invalid>. In addition to anonymity, the anonymous PTC

 -- Addresses SHALL be unique within a PTC Session. In case more than one anonymous

 -- PTC Addresses are used in the same PTC Session, for the second Anonymous PTC

 -- Session and thereafter, the PTC Server SHOULD use the form

 -- sip:anonymous-n@anonymous.invalid where n is an integer number.

 nickname [3] UTF8String OPTIONAL,

...

}

RegistrationRequest ::= ENUMERATED

{

 register (1),

 re-register (2),

 de-register (3),

...

}

RegistrationOutcome ::= ENUMERATED

{

 success (0),

 failure (1),

...

}

RTPSetting ::= SEQUENCE

{

 ip-address [0] IPAddress,

 port-number [1] Port-Number,

 -- the IP address and port number at the PTC Server for the RTP Session

...

}

Port-Number ::= INTEGER (0..65535)

TalkburstControlSetting ::= SEQUENCE

{

 talk-BurstControlProtocol [1] UTF8String,

 talk-Burst-parameters [2] SET OF VisibleString,

 -- selected by the PTC Server from those contained in the original SDP offer in the

 -- incoming SIP INVITE request from the PTC Client

 tBCP-PortNumber [3] INTEGER (0..65535),

 -- PTC Server's port number to be used for the Talk Burst Control Protocol

 ...

}

Talk-burst-reason-code ::= VisibleString

END -- OF UmtsHI2Operations

### \*\*\* NEXT CHANGE \*\*\*

# B.3a Interception related information (HI2 CS)

**For North America, the use of J-STD-25 A [23] is recommended.**

**ASN1 description of IRI (HI2 CS interface)**

UmtsCS-HI2Operations

{itu-t (0) identified-organization (4) etsi (0) securityDomain (2) lawfulIntercept (2) threeGPP(4) hi2CS (3) r17 (17) version-0 (0)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

IMPORTS

 LawfulInterceptionIdentifier,

 TimeStamp,

 Intercepted-Call-State,

 PartyInformation,

 CallContentLinkCharacteristics,

 CommunicationIdentifier,

 CC-Link-Identifier,

 National-Parameters,

 National-HI2-ASN1parameters

 FROM HI2Operations

 {itu-t(0) identified-organization(4) etsi(0) securityDomain(2)

 lawfulIntercept(2) hi2(1) version9(9)} -- Imported from TS 101 671 v2.13.1

 Location,

 SMS-report,

 ExtendedLocParameters,

 LocationErrorCode

 FROM UmtsHI2Operations

 {itu-t(0) identified-organization(4) etsi(0) securityDomain(2)

 lawfulintercept(2) threeGPP(4) hi2(1) r17 (17) version-0(0)};

-- Object Identifier Definitions

-- Security DomainId

lawfulInterceptDomainId OBJECT IDENTIFIER ::= {itu-t(0) identified-organization(4) etsi(0)

securityDomain(2) lawfulIntercept(2)}

-- Security Subdomains

threeGPPSUBDomainId OBJECT IDENTIFIER ::= {lawfulInterceptDomainId threeGPP(4)}

hi2CSDomainId OBJECT IDENTIFIER ::= {threeGPPSUBDomainId hi2CS(3) r17 (17) version-0 (0)}

UmtsCS-IRIsContent ::= CHOICE

{

 iRIContent UmtsCS-IRIContent,

 iRISequence UmtsCS-IRISequence

}

UmtsCS-IRISequence ::= SEQUENCE OF UmtsCS-IRIContent

 -- Aggregation of UmtsCS-IRIContent is an optional feature.

 -- It may be applied in cases when at a given point in time several IRI records are

 -- available for delivery to the same LEA destination.

 -- As a general rule, records created at any event shall be sent immediately and shall

 -- not held in the DF or MF in order to apply aggregation.

-- When aggregation is not to be applied, UmtsCS-IRIContent needs to be chosen.

UmtsCS-IRIContent ::= CHOICE

{

 iRI-Begin-record [1] IRI-Parameters,

 --at least one optional parameter has to be included within the iRI-Begin-Record

 iRI-End-record [2] IRI-Parameters,

 iRI-Continue-record [3] IRI-Parameters,

 --at least one optional parameter has to be included within the iRI-Continue-Record

 iRI-Report-record [4] IRI-Parameters,

 --at least one optional parameter has to be included within the iRI-Report-Record

 ...

}

IRI-Parameters ::= SEQUENCE

{

 hi2CSDomainId [0] OBJECT IDENTIFIER, -- 3GPP HI2 CS domain

 iRIversion [23] ENUMERATED

 {

 version1(1),

 ...,

 version2(2),

 version3(3),

 -- versions 4-7 were ommited to align with UmtsHI2Operations.

 lastVersion(8)

 } OPTIONAL,

 -- Optional parameter "iRIversion" (tag 23) was always redundant in 33.108, because

 -- the object identifier "hi2CSDomainId" was introduced into "IRI Parameters" with the

 -- initial HI2 CS domain module in 33.108v6.1.0. In order to keep backward compatibility,

 -- even when the version of the "hi2CSDomainId" parameter will be incremented it is

 -- recommended to always send to LEMF the same: enumeration value "lastVersion(8)".

 -- if not present, it means version 1 is handled

 lawfulInterceptionIdentifier [1] LawfulInterceptionIdentifier,

 -- This identifier is associated to the target.

 communicationIdentifier [2] CommunicationIdentifier,

 -- used to uniquely identify an intercepted call.

 timeStamp [3] TimeStamp,

 -- date and time of the event triggering the report.

 intercepted-Call-Direct [4] ENUMERATED

 {

 not-Available(0),

 originating-Target(1),

 terminating-Target(2),

 ...

 } OPTIONAL,

 intercepted-Call-State [5] Intercepted-Call-State OPTIONAL,

 -- Not required for UMTS. May be included for backwards compatibility to GSM

 ringingDuration [6] OCTET STRING (SIZE (3)) OPTIONAL,

 -- Duration in seconds. BCD coded : HHMMSS

 -- Not required for UMTS. May be included for backwards compatibility to GSM

 conversationDuration [7] OCTET STRING (SIZE (3)) OPTIONAL,

 -- Duration in seconds. BCD coded : HHMMSS

 -- Not required for UMTS. May be included for backwards compatibility to GSM

 locationOfTheTarget [8] Location OPTIONAL,

 -- location of the target

 partyInformation [9] SET SIZE (1..10) OF PartyInformation OPTIONAL,

 -- This parameter provides the concerned party (Originating, Terminating or forwarded

 -- party), the identity(ies) of the party and all the information provided by the party.

 callContentLinkInformation [10] SEQUENCE

 {

 cCLink1Characteristics [1] CallContentLinkCharacteristics OPTIONAL,

 -- information concerning the Content of Communication Link Tx channel established

 -- toward the LEMF (or the sum signal channel, in case of mono mode).

 cCLink2Characteristics [2] CallContentLinkCharacteristics OPTIONAL,

 -- information concerning the Content of Communication Link Rx channel established

 -- toward the LEMF.

 ...

 } OPTIONAL,

 release-Reason-Of-Intercepted-Call [11] OCTET STRING (SIZE (2)) OPTIONAL,

 -- Release cause coded in [31] format.

 -- This parameter indicates the reason why the

 -- intercepted call cannot be established or why the intercepted call has been

 -- released after the active phase.

 nature-Of-The-intercepted-call [12] ENUMERATED

 {

 --Not required for UMTS. May be included for backwards compatibility to GSM

 --Nature of the intercepted "call":

 gSM-ISDN-PSTN-circuit-call(0),

 -- the possible UUS content is sent through the HI2 or HI3 "data" interface

 -- the possible call content call is established through the HI3 „circuit„ interface

 gSM-SMS-Message(1),

 -- the SMS content is sent through the HI2 or HI3 "data" interface

 uUS4-Messages(2),

 -- the UUS content is sent through the HI2 or HI3 "data" interface

 tETRA-circuit-call(3),

 -- the possible call content call is established through the HI3 "circuit" interface

 -- the possible data are sent through the HI3 "data" interface

 teTRA-Packet-Data(4),

 -- the data are sent through the HI3 "data" interface

 gPRS-Packet-Data(5),

 -- the data are sent through the HI3 "data" interface

 ...

 } OPTIONAL,

 serviceCenterAddress [13] PartyInformation OPTIONAL,

 -- e.g. in case of SMS message this parameter provides the address of the relevant

 -- server within the calling (if server is originating) or called

 -- (if server is terminating) party address parameters

 sMS [14] SMS-report OPTIONAL,

 -- this parameter provides the SMS content and associated information

 cC-Link-Identifier [15] CC-Link-Identifier OPTIONAL,

 -- Depending on a network option, this parameter may be used to identify a CC link

 -- in case of multiparty calls.

 national-Parameters [16] National-Parameters OPTIONAL,

 ...,

 umts-Cs-Event [33] Umts-Cs-Event OPTIONAL,

 -- Care should be taken to ensure additional parameter numbering does not conflict with

 -- ETSI TS 101 671 or Annex B.3 of this document (PS HI2).

 serving-System-Identifier [34] OCTET STRING OPTIONAL,

 -- the serving network identifier PLMN id (MNC, Mobile Country Code and MNC, Mobile Network

 -- Country, defined in E212 [87]) and 3GPP TR 21.905 [38].

 carrierSpecificData [35] OCTET STRING OPTIONAL,

 -- Copy of raw data specified by the CSP or his vendor related to HLR.

 current-Previous-Systems [36] Current-Previous-Systems OPTIONAL,

 change-Of-Target-Identity [37] Change-Of-Target-Identity OPTIONAL,

 requesting-Network-Identifier [38] OCTET STRING OPTIONAL,

 -- the requesting network identifier PLMN id (Mobile Country Code and Mobile Network Country,

 -- defined in E212 [87]).

 requesting-Node-Type [39] Requesting-Node-Type OPTIONAL,

 extendedLocParameters [40] ExtendedLocParameters OPTIONAL, -- LALS extended parameters

 locationErrorCode [41] LocationErrorCode OPTIONAL, -- LALS error code

 national-HI2-ASN1parameters [255] National-HI2-ASN1parameters OPTIONAL

}

Umts-Cs-Event ::= ENUMERATED

{

 call-establishment (1),

 answer (2),

 supplementary-Service (3),

 handover (4),

 release (5),

 sMS (6),

 location-update (7),

 subscriber-Controlled-Input (8),

 ...,

 hLR-Subscriber-Record-Change (9),

 serving-System (10),

 cancel-Location (11),

 register-Location (12),

 location-Information-Request (13)

}

Requesting-Node-Type ::= ENUMERATED

{

 mSC (1),

 sMS-Centre (2),

 gMLC (3),

 mME (4),

 sGSN (5),

 ...

}

Change-Of-Target-Identity ::= SEQUENCE

{

 new-MSISDN [1] PartyInformation OPTIONAL,

 -- new MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 old-MSISDN [2] PartyInformation OPTIONAL,

 -- new MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 new-IMSI [3] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 old-IMSI [4] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 ...,

 new-IMEI [5] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Equipement Identity defined in MAP format document TS 29.002 [4]

 old-IMEI [6] PartyInformation OPTIONAL

 -- See MAP format [4] International Mobile

 -- Equipement Identity defined in MAP format document TS 29.002 [4]

}

Current-Previous-Systems ::= SEQUENCE

{

 current-Serving-System-Identifier [1] OCTET STRING OPTIONAL,

 -- VPLMN id (Mobile Country Code and Mobile Network Country, E. 212 number [87]).

 current-Serving-MSC-Number [2] OCTET STRING OPTIONAL,

 -- E.164 number of the serving MSC.

 current-Serving-MSC-Address [3] OCTET STRING OPTIONAL,

 -- The IP address of the serving MSC or its Diameter Origin-Host and Origin-Realm. previous-

 previous-Serving-System-Identifier [4] OCTET STRING OPTIONAL,

 -- VPLMN id (Mobile Country Code and Mobile Network Country, defined in E212 [87]).

 previous-Serving-MSC-Number [5] OCTET STRING OPTIONAL,

 -- The E.164 number of the previous serving MSC.

 previous-Serving-MSC-Address [6] OCTET STRING OPTIONAL,

 -- The IP address of the previous serving MSC or its Diameter Origin-Host and Origin-Realm.

...

}

END -- OF UmtsCS-HI2Operations

### \*\*\* NEXT CHANGE \*\*\*

# B.9 Intercept related information (HI2 SAE/EPS and IMS)

ASN1 description of IRI (HI2 interface)

EpsHI2Operations {itu-t(0) identified-organization(4) etsi(0) securityDomain(2) lawfulintercept(2) threeGPP(4) hi2eps(8) r17 (17) version-0 (0)}

DEFINITIONS IMPLICIT TAGS ::=

BEGIN

IMPORTS

 LawfulInterceptionIdentifier,

 TimeStamp,

 Network-Identifier,

 National-Parameters,

 National-HI2-ASN1parameters,

 DataNodeAddress,

 IPAddress,

 IP-value,

 X25Address

 FROM HI2Operations

 {itu-t(0) identified-organization(4) etsi(0) securityDomain(2)

 lawfulIntercept(2) hi2(1) version18(18)} -- Imported from TS 101 671 v3.14.1

 CivicAddress,

 ExtendedLocParameters,

 LocationErrorCode

 FROM UmtsHI2Operations

 {itu-t(0) identified-organization(4) etsi(0) securityDomain(2)

 lawfulintercept(2) threeGPP(4) hi2(1) r16 (16) version-0 (0)};

 -- Imported from 3GPP TS 33.108, UMTS PS HI2

-- Object Identifier Definitions

-- Security DomainId

lawfulInterceptDomainId OBJECT IDENTIFIER ::= {itu-t(0) identified-organization(4) etsi(0)

securityDomain(2) lawfulIntercept(2)}

-- Security Subdomains

threeGPPSUBDomainId OBJECT IDENTIFIER ::= {lawfulInterceptDomainId threeGPP(4)}

hi2epsDomainId OBJECT IDENTIFIER ::= {threeGPPSUBDomainId hi2eps(8) r17(17) version-0 (0)}

EpsIRIsContent ::= CHOICE

{

 epsiRIContent EpsIRIContent,

 epsIRISequence EpsIRISequence

}

EpsIRISequence ::= SEQUENCE OF EpsIRIContent

-- Aggregation of EpsIRIContent is an optional feature.

-- It may be applied in cases when at a given point in time

-- several IRI records are available for delivery to the same LEA destination.

-- As a general rule, records created at any event shall be sent

-- immediately and not withheld in the DF or MF in order to

-- apply aggragation.

-- When aggregation is not to be applied,

-- EpsIRIContent needs to be chosen.

-- EpsIRIContent includes events that correspond to EPS and UMTS/GPRS.

EpsIRIContent ::= CHOICE

{

 iRI-Begin-record [1] IRI-Parameters, -- include at least one optional parameter

 iRI-End-record [2] IRI-Parameters,

 iRI-Continue-record [3] IRI-Parameters, -- include at least one optional parameter

 iRI-Report-record [4] IRI-Parameters -- include at least one optional parameter

}

-- the EpsIRIContent may provide events that correspond to UMTS/GPRS as well.

-- Parameters having the same tag numbers have to be identical in Rel-5 and onwards modules.

IRI-Parameters ::= SEQUENCE

{

 hi2epsDomainId [0] OBJECT IDENTIFIER, -- 3GPP HI2 EPS domain

 lawfulInterceptionIdentifier [1] LawfulInterceptionIdentifier,

 -- This identifier is associated to the target.

 timeStamp [3] TimeStamp,

 -- date and time of the event triggering the report.)

 initiator [4] ENUMERATED

 {

 not-Available (0),

 originating-Target (1),

 -- in case of GPRS, this indicates that the PDP context activation, modification

 -- or deactivation is MS requested

 -- in case of EPS, this indicated that the EPS detach, bearer activation, modification

 -- or deactivation is UE requested

 terminating-Target (2),

 -- in case of GPRS, this indicates that the PDP context activation, modification or

 -- deactivation is network initiated

 -- in case of EPS, this indicated that the EPS detach, bearer activation, modification

 -- or deactivation is network initiated

 ...

 } OPTIONAL,

 locationOfTheTarget [8] Location OPTIONAL,

 -- location of the target

 -- or cell site location

 partyInformation [9] SET SIZE (1..10) OF PartyInformation OPTIONAL,

 -- This parameter provides the concerned party, the identiy(ies) of the party

 --)and all the information provided by the party.

 serviceCenterAddress [13] PartyInformation OPTIONAL,

 -- e.g. in case of SMS message this parameter provides the address of the relevant

 -- server

 sMS [14] SMS-report OPTIONAL,

 -- this parameter provides the SMS content and associated information

 national-Parameters [16] National-Parameters OPTIONAL,

 ePSCorrelationNumber [18] EPSCorrelationNumber OPTIONAL,

 -- this parameter provides GPRS Correlation number when the event corresponds to UMTS/GPRS.

 ePSevent [20] EPSEvent OPTIONAL,

 -- This information is used to provide particular action of the target

 -- such as attach/detach

 sgsnAddress [21] DataNodeAddress OPTIONAL,

 gPRSOperationErrorCode [22] GPRSOperationErrorCode OPTIONAL,

 ggsnAddress [24] DataNodeAddress OPTIONAL,

 qOS [25] UmtsQos OPTIONAL,

 networkIdentifier [26] Network-Identifier OPTIONAL,

 sMSOriginatingAddress [27] DataNodeAddress OPTIONAL,

 sMSTerminatingAddress [28] DataNodeAddress OPTIONAL,

 iMSevent [29] IMSevent OPTIONAL,

 sIPMessage [30] OCTET STRING OPTIONAL,

 servingSGSN-number [31] OCTET STRING (SIZE (1..20)) OPTIONAL,

 servingSGSN-address [32] OCTET STRING (SIZE (5..17)) OPTIONAL,

 -- Octets are coded according to 3GPP TS 23.003 [25]

 ...,

 -- Tag [33] was taken into use by ETSI module in TS 101 671v2.13.1

 ldiEvent [34] LDIevent OPTIONAL,

 correlation [35] CorrelationValues OPTIONAL,

 ePS-GTPV2-specificParameters [36] EPS-GTPV2-SpecificParameters OPTIONAL,

 -- contains parameters to be used in case of GTPV2 based intercepted messages

 ePS-PMIP-specificParameters [37] EPS-PMIP-SpecificParameters OPTIONAL,

 -- contains parameters to be used in case of PMIP based intercepted messages

 ePS-DSMIP-SpecificParameters [38] EPS-DSMIP-SpecificParameters OPTIONAL,

 -- contains parameters to be used in case of DSMIP based intercepted messages

 ePS-MIP-SpecificParameters [39] EPS-MIP-SpecificParameters OPTIONAL,

 -- contains parameters to be used in case of MIP based intercepted messages

 servingNodeAddress [40] OCTET STRING OPTIONAL,

 -- this parameter is kept for backward compatibility only and should not be used

 -- as it has been superseeded by parameter visitedNetworkId

 visitedNetworkId [41] UTF8String OPTIONAL,

 -- contains the visited network identifier inside the Serving System Update for

 -- non 3GPP access and IMS, coded according to [53] and 3GPP TS 29.229 [96]

 mediaDecryption-info [42] MediaDecryption-info OPTIONAL,

 servingS4-SGSN-address [43] OCTET STRING OPTIONAL,

 -- Diameter Origin-Host and Origin-Realm of the S4-SGSN based on the TS 29.272 [59].

 -- Only the data fields from the Diameter AVPs are provided concatenated

 -- with a semicolon to populate this field.

 sipMessageHeaderOffer [44] OCTET STRING OPTIONAL,

 sipMessageHeaderAnswer [45] OCTET STRING OPTIONAL,

 sdpOffer [46] OCTET STRING OPTIONAL,

 sdpAnswer [47] OCTET STRING OPTIONAL,

 uLITimestamp [48] OCTET STRING (SIZE (8)) OPTIONAL,

 -- Coded according to 3GPP TS 29.060 [17]; The upper 4 octets shall carry the ULI Timestamp

 -- value; The lower 4 octets are undefined and shall be ignored by the receiver

 packetDataHeaderInformation [49] PacketDataHeaderInformation OPTIONAL,

 mediaSecFailureIndication [50] MediaSecFailureIndication OPTIONAL,

 csgIdentity [51] OCTET STRING (SIZE (4)) OPTIONAL, -- Octets are coded

 -- according to 3GPP TS 23.003 [25]. The 27 bits specified in TS 23.003 shall be encoded as.

 -- follows The most significant bit of the CSG Identity shall be encoded in the most

 -- significant bit of the first octet of the octet string and the least significant bit coded

 -- in bit 6 of octet 4.

 heNBIdentity [52] OCTET STRING OPTIONAL,

 -- 4 or 6 octets are coded with the HNBUnique Identity

 -- as specified in 3GPP TS 23.003 [25], Clause 4.10.

 heNBiPAddress [53] IPAddress OPTIONAL,

 heNBLocation [54] HeNBLocation OPTIONAL,

 tunnelProtocol [55] TunnelProtocol OPTIONAL,

 pANI-Header-Info [56] SEQUENCE OF PANI-Header-Info OPTIONAL,

 -- information extracted from P-Access-Network-Info headers of SIP message;

 -- described in TS 24.229 §7.2A.4 [76]

 imsVoIP [57] IMS-VoIP-Correlation OPTIONAL,

 xCAPmessage [58] OCTET STRING OPTIONAL,

 -- The HTTP message (HTPP header and any XCAP body) of any of the target's IMS supplementary

 -- service setting management or manipulation XCAP messages occuring through the Ut interface

 -- defined in the 3GPP TS 24 623 [77].

 logicalFunctionInformation [59] DataNodeIdentifier OPTIONAL,

 ccUnavailableReason [60] PrintableString OPTIONAL,

 carrierSpecificData [61] OCTET STRING OPTIONAL,

 -- Copy of raw data specified by the CSP or his vendor related to HSS.

 current-previous-systems [62] Current-Previous-Systems OPTIONAL,

 change-Of-Target-Identity [63] Change-Of-Target-Identity OPTIONAL,

 requesting-Network-Identifier [64] OCTET STRING OPTIONAL,

 -- the requesting network identifier PLMN id (Mobile Country Code and Mobile Network Country,

 -- defined in E212 [87]).

 requesting-Node-Type [65] Requesting-Node-Type OPTIONAL,

 serving-System-Identifier [66] OCTET STRING OPTIONAL,

 -- the serving network identifier PLMN id (MNC, Mobile Country Code and MNC,Mobile Network

 -- Country, defined in E212 [87]) and 3GPP TR 21.905 [38], that may be included in the Diameter

 -- AVP to and from the HSS.

 proSeTargetType [67] ProSeTargetType OPTIONAL,

 proSeRelayMSISDN [68] OCTET STRING (SIZE (1..9)) OPTIONAL,

 -- coded according to 3GPP TS 29.274 [46]

 proSeRelayIMSI [69] OCTET STRING (SIZE (3..8)) OPTIONAL,

 -- coded according to 3GPP TS 29.274 [46]

 proSeRelayIMEI [70] OCTET STRING (SIZE (8)) OPTIONAL,

 -- coded according to 3GPP TS 29.274 [46]

 extendedLocParameters [71] ExtendedLocParameters OPTIONAL, -- LALS extended parameters

 locationErrorCode [72] LocationErrorCode OPTIONAL, -- LALS error code

 otherIdentities [73] SEQUENCE OF PartyInformation OPTIONAL,

 deregistrationReason [74] DeregistrationReason OPTIONAL,

 requesting-Node-Identifier [75] OCTET STRING OPTIONAL,

 roamingIndication [76] VoIPRoamingIndication OPTIONAL,

 -- used for IMS events in the VPLMN.

 cSREvent [77] CSREvent OPTIONAL,

 ptc [78] PTC OPTIONAL, -- PTC Events

 ptcEncryption [79] PTCEncryptionInfo OPTIONAL,

 -- PTC Encryption Information

 additionalCellIDs [80] SEQUENCE OF AdditionalCellID OPTIONAL,

 scefID [81] UTF8String OPTIONAL,

 -- SCEF-ID FQDN as defined by TS 29.336 [101], clause 8.4.5 and RFC 3588 [102] section 4.3

 national-HI2-ASN1parameters [255] National-HI2-ASN1parameters OPTIONAL

}

 -- Parameters having the same tag numbers have to be identical in Rel-5 and onwards modules

-- PARAMETERS FORMATS

DataNodeIdentifier ::= SEQUENCE

{

 dataNodeAddress [1] DataNodeAddress OPTIONAL,

 logicalFunctionType [2] LogicalFunctionType OPTIONAL,

 dataNodeName [3] PrintableString(SIZE(7..25)) OPTIONAL,

 --Unique identifier of a Data Node within the CSP domain. Could be a name/number combination.

...

}

LogicalFunctionType ::= ENUMERATED

{

 pDNGW (0),

 mME (1),

 sGW (2),

 ePDG (3),

 hSS (4),

...

}

PANI-Header-Info ::= SEQUENCE

{

 access-Type [1] OCTET STRING OPTIONAL,

 -- ASCII chain '3GPP-UTRAN-TDD', '3GPP-E-UTRAN-TDD',... : see TS 24.229 §7.2A.4 [76]

 access-Class [2] OCTET STRING OPTIONAL,

 -- ASCII chain '3GPP-UTRAN', '3GPP-E-UTRAN',... : see TS 24.229 §7.2A.4 [76]

 network-Provided [3] NULL OPTIONAL,

 -- present if provided by the network

 pANI-Location [4] PANI-Location OPTIONAL,

 ...

}

PANI-Location  ::= SEQUENCE

{

    raw-Location     [1] OCTET STRING OPTIONAL,

    -- raw copy of the location string from the P-Access-Network-Info header

    location          [2] Location      OPTIONAL,

    ePSLocation       [3] EPSLocation   OPTIONAL,

    ...

}

PartyInformation ::= SEQUENCE

{

 party-Qualifier [0] ENUMERATED

 {

 gPRSorEPS-Target(3),

 ...

 },

 partyIdentity [1] SEQUENCE

 {

 imei [1] OCTET STRING (SIZE (8)) OPTIONAL,

 -- See MAP format [4]

 imsi [3] OCTET STRING (SIZE (3..8)) OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 msISDN [6] OCTET STRING (SIZE (1..9)) OPTIONAL,

 -- MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 e164-Format [7] OCTET STRING (SIZE (1 .. 25)) OPTIONAL,

 -- E164 address of the node in international format. Coded in the same format as

 -- the calling party number parameter of the ISUP (parameter part:[29])

 sip-uri [8] OCTET STRING OPTIONAL,

 -- See [26]

 ...,

 tel-uri [9] OCTET STRING OPTIONAL,

 -- See [67]

 nai [10] OCTET STRING OPTIONAL,

 -- NAI of the target, encoded in the same format as defined by [EPS stage 3 specs]

 x-3GPP-Asserted-Identity [11] OCTET STRING OPTIONAL,

 -- X-3GPP-Asserted-Identity header (3GPP TS 24.109 [79]) of the target, used in

 -- some XCAP transactions as a complement information to SIP URI or Tel URI.

 xUI [12] OCTET STRING OPTIONAL,

 -- XCAP User Identifier (XUI)is a string, valid as a path element in an XCAP URI, that is

 -- may be associated with each user served by a XCAP resource server. Defined in IETF RFC

 -- 4825[80] as a complement information to SIP URI or Tel URI

 iMPI [13] OCTET STRING OPTIONAL,

 -- Private User Identity as defined in 3GPP TS 23.003 [25]

 extID [14] UTF8String OPTIONAL

 -- RFC 4282 [102] compliant string as per TS 23.003 [25], clause 19.7.2

 },

 services-Data-Information [4] Services-Data-Information OPTIONAL,

 -- This parameter is used to transmit all the information concerning the

 -- complementary information associated to the basic data call

 ...

}

Location ::= SEQUENCE

{

 e164-Number [1] OCTET STRING (SIZE (1..25)) OPTIONAL,
 -- Coded in the same format as the ISUP location number (parameter
 -- field) of the ISUP (see EN 300 356 [30]).
 globalCellID [2] GlobalCellID OPTIONAL,

 --see MAP format (see [4])

 rAI [4] Rai OPTIONAL,

 -- the Routeing Area Identifier in the current SGSN is coded in accordance with the

 -- § 10.5.5.15 of document [9] without the Routing Area Identification IEI

 -- (only the last 6 octets are used)

 gsmLocation [5] GSMLocation OPTIONAL,

 umtsLocation [6] UMTSLocation OPTIONAL,

 sAI [7] Sai OPTIONAL,

 -- format: PLMN-ID 3 octets (no. 1 - 3)

 -- LAC 2 octets (no. 4 - 5)

 -- SAC 2 octets (no. 6 - 7)

 -- (according to 3GPP TS 25.413 [62])

 ...,

 oldRAI [8] Rai OPTIONAL,

 -- the Routeing Area Identifier in the old SGSN is coded in accordance with the

 -- § 10.5.5.15 of document [9] without the Routing Area Identification IEI

 -- (only the last 6 octets are used).

 civicAddress [9] CivicAddress OPTIONAL,

 operatorSpecificInfo [10] OCTET STRING OPTIONAL,

 -- other CSP specific information.

 uELocationTimestamp [11] CHOICE

 {

 timestamp [0] TimeStamp,

 timestampUnknown [1] NULL,

 ...

 } OPTIONAL

 -- Date/time of the UE location

}

GlobalCellID ::= OCTET STRING (SIZE (5..7))

Rai ::= OCTET STRING (SIZE (6))

Sai ::= OCTET STRING (SIZE (7))

AdditionalCellID ::= SEQUENCE

{

 nCGI [1] NCGI,

 gsmLocation [2] GSMLocation OPTIONAL,

 umtsLocation [3] UMTSLocation OPTIONAL,

 timeOfLocation [4] GeneralizedTime OPTIONAL,

 ...

}

MCC ::= NumericString (SIZE(3))

MNC ::= NumericString (SIZE(2..3))

PLMNID ::= SEQUENCE

{

 mCC [1] MCC,

 mNC [2] MNC,

 ...

}

-- TS 36.413 [100], clause 9.2.1.142

NRCellID ::= BIT STRING (SIZE(36))

NCGI ::= SEQUENCE

{

 pLMNID [1] PLMNID,

 nRCellID [2] NRCellID,

 ...

}

GSMLocation ::= CHOICE

{

 geoCoordinates [1] SEQUENCE

 {

 latitude [1] PrintableString (SIZE(7..10)),

 -- format : XDDMMSS.SS

 longitude [2] PrintableString (SIZE(8..11)),

 -- format : XDDDMMSS.SS

 mapDatum [3] MapDatum DEFAULT wGS84,

 ...,

 azimuth [4] INTEGER (0..359) OPTIONAL

 -- The azimuth is the bearing, relative to true north.

 },

 -- format : XDDDMMSS.SS

 -- X : N(orth), S(outh), E(ast), W(est)

 -- DD or DDD : degrees (numeric characters)

 -- MM : minutes (numeric characters)

 -- SS.SS : seconds, the second part (.SS) is optionnal

 -- Example :

 -- latitude short form N502312

 -- longitude long form E1122312.18

 utmCoordinates [2] SEQUENCE

 {

 utm-East [1] PrintableString (SIZE(10)),

 utm-North [2] PrintableString (SIZE(7)),

 -- example utm-East 32U0439955

 -- utm-North 5540736

 mapDatum [3] MapDatum DEFAULT wGS84,

 ...,

 azimuth [4] INTEGER (0..359) OPTIONAL

 -- The azimuth is the bearing, relative to true north.

 },

 utmRefCoordinates [3] SEQUENCE

 {

 utmref-string PrintableString (SIZE(13)),

 mapDatum MapDatum DEFAULT wGS84,

 ...

 },

 -- example 32UPU91294045

 wGS84Coordinates [4] OCTET STRING

 -- format is as defined in [37].

}

MapDatum ::= ENUMERATED

{

 wGS84,

 wGS72,

 eD50, -- European Datum 50

 ...

}

UMTSLocation ::= CHOICE {

 point [1] GA-Point,

 pointWithUnCertainty [2] GA-PointWithUnCertainty,

 polygon [3] GA-Polygon

}

GeographicalCoordinates ::= SEQUENCE {

 latitudeSign ENUMERATED { north, south },

 latitude INTEGER (0..8388607),

 longitude INTEGER (-8388608..8388607),

 ...

}

GA-Point ::= SEQUENCE {

 geographicalCoordinates GeographicalCoordinates,

 ...

}

GA-PointWithUnCertainty ::=SEQUENCE {

 geographicalCoordinates GeographicalCoordinates,

 uncertaintyCode INTEGER (0..127)

}

maxNrOfPoints INTEGER ::= 15

GA-Polygon ::= SEQUENCE (SIZE (1..maxNrOfPoints)) OF

 SEQUENCE {

 geographicalCoordinates GeographicalCoordinates,

 ...

 }

SMS-report ::= SEQUENCE

{

 sMS-Contents [3] SEQUENCE

 {

 sms-initiator [1] ENUMERATED -- party which sent the SMS

 {

 target (0),

 server (1),

 undefined-party (2),

 ...

 },

 transfer-status [2] ENUMERATED

 {

 succeed-transfer (0), -- the transfer of the SMS message succeeds

 not-succeed-transfer(1),

 undefined (2),

 ...

 } OPTIONAL,

 other-message [3] ENUMERATED -- in case of terminating call, indicates if

 -- the server will send other SMS

 {

 yes (0),

 no (1),

 undefined (2),

 ...

 } OPTIONAL,

 content [4] OCTET STRING (SIZE (1 .. 270)) OPTIONAL,

 -- Encoded in the format defined for the SMS mobile

 ...,

 sMSContentRemovedIndicator [5] BOOLEAN OPTIONAL

 }

}

EPSCorrelationNumber ::= OCTET STRING

 -- In case of PS interception, the size will be in the range (8..20)

CorrelationValues ::= CHOICE {

 iri-to-CC [0] IRI-to-CC-Correlation, -- correlates IRI to Content(s)

 iri-to-iri [1] IRI-to-IRI-Correlation, -- correlates IRI to IRI

 both-IRI-CC [2] SEQUENCE { -- correlates IRI to IRI and IRI to Content(s)

 iri-CC [0] IRI-to-CC-Correlation,

 iri-IRI [1] IRI-to-IRI-Correlation}

}

IMS-VoIP-Correlation ::= SET OF SEQUENCE {

 ims-iri [0] IRI-to-IRI-Correlation,

 ims-cc [1] IRI-to-CC-Correlation OPTIONAL

}

IRI-to-CC-Correlation ::= SEQUENCE { -- correlates IRI to Content

 cc [0] SET OF OCTET STRING,-- correlates IRI to multiple CCs

 iri [1] OCTET STRING OPTIONAL

 -- correlates IRI to CC with signaling

}

IRI-to-IRI-Correlation ::= OCTET STRING -- correlates IRI to IRI

EPSEvent ::= ENUMERATED

{

 pDPContextActivation (1),

 startOfInterceptionWithPDPContextActive (2),

 pDPContextDeactivation (4),

 gPRSAttach (5),

 gPRSDetach (6),

 locationInfoUpdate (10),

 sMS (11),

 pDPContextModification (13),

 servingSystem (14),

 ... ,

 startOfInterceptionWithMSAttached (15),

 e-UTRANAttach (16),

 e-UTRANDetach (17),

 bearerActivation (18),

 startOfInterceptionWithActiveBearer (19),

 bearerModification (20),

 bearerDeactivation (21),

 uERequestedBearerResourceModification (22),

 uERequestedPDNConnectivity (23),

 uERequestedPDNDisconnection (24),

 trackingAreaEpsLocationUpdate (25),

 servingEvolvedPacketSystem (26),

 pMIPAttachTunnelActivation (27),

 pMIPDetachTunnelDeactivation (28),

 startOfInterceptWithActivePMIPTunnel (29),

 pMIPPdnGwInitiatedPdnDisconnection (30),

 mIPRegistrationTunnelActivation (31),

 mIPDeregistrationTunnelDeactivation (32),

 startOfInterceptWithActiveMIPTunnel (33),

 dSMIPRegistrationTunnelActivation (34),

 dSMIPDeregistrationTunnelDeactivation (35),

 startOfInterceptWithActiveDsmipTunnel (36),

 dSMipHaSwitch (37),

 pMIPResourceAllocationDeactivation (38),

 mIPResourceAllocationDeactivation (39),

 pMIPsessionModification (40),

 startOfInterceptWithEUTRANAttachedUE (41),

 dSMIPSessionModification (42),

 packetDataHeaderInformation (43),

 hSS-Subscriber-Record-Change (44),

 registration-Termination (45),

 -- FFS

 location-Up-Date (46),

 -- FFS

 cancel-Location (47),

 register-Location (48),

 location-Information-Request (49),

 proSeRemoteUEReport (50),

 proSeRemoteUEStartOfCommunication (51),

 proSeRemoteUEEndOfCommunication (52),

 startOfLIwithProSeRemoteUEOngoingComm (53),

 startOfLIforProSeUEtoNWRelay (54),

 scefRequestednonIPPDNDisconnection (55)

}

-- see [19]

CSREvent ::= ENUMERATED

{

 cSREventMessage (1),

 ...

}

IMSevent ::= ENUMERATED

{

 unfilteredSIPmessage (1),

 -- This value indicates to LEMF that the whole SIP message is sent , i.e. without filtering

 -- CC; location information is removed by the DF2/MF if not required to be sent.

 ...,

 sIPheaderOnly (2),

 -- If warrant requires only IRI then specific content in a 'sIPMessage'

 -- (e.g. 'Message', etc.) has been deleted before sending it to LEMF.

 decryptionKeysAvailable (3),

 -- This value indicates to LEMF that the IRI carries CC decryption keys for the session

 -- under interception.

 startOfInterceptionForIMSEstablishedSession (4),

 -- This value indicates to LEMF that the IRI carries information related to

 -- interception started on an already established IMS session.

 xCAPRequest (5),

 -- This value indicates to LEMF that the XCAP request is sent.

 xCAPResponse (6) ,

 -- This value indicates to LEMF that the XCAP response is sent.

 ccUnavailable (7),

 -- This value indicates to LEMF that the media is not available for interception for intercept

 -- orders that require media interception.

 sMSOverIMS (8),

 -- This value indicates to LEMF that the SMS utilized by SMS over IP (using IMS) is

 -- being reported.

 servingSystem(9),

 -- Applicable to HSS interception

 subscriberRecordChange(10),

 -- Applicable to HSS interception
 registrationTermination(11),

 -- Applicable to HSS interception

 locationInformationRequest(12)

 -- Applicable to HSS interception

}

Services-Data-Information ::= SEQUENCE

{

 gPRS-parameters [1] GPRS-parameters OPTIONAL,

 ...

}

GPRS-parameters ::= SEQUENCE

{

 pDP-address-allocated-to-the-target [1] DataNodeAddress OPTIONAL,

 aPN [2] OCTET STRING (SIZE(1..100)) OPTIONAL,

 -- The Access Point Name (APN) is coded in accordance with

 -- 3GPP TS 24.008 [9] without the APN IEI (only the last 100 octets are used).

 -- Octets are coded according to 3GPP TS 23.003 [25].

 pDP-type [3] OCTET STRING (SIZE(2)) OPTIONAL,

 -- Include either Octets 3 and 4 of the Packet Data Protocol Address information element

 -- of 3GPP TS 24.008 [9] or Octets 4 and 5 of the End User Address IE of 3GPP TS 29.060 [17].

 -- when PDP-type is IPv4 or IPv6, the IP address is carried by parameter

 -- pDP-address-allocated-to-the-target

 -- when PDP-type is IPv4v6, the additional IP address is carried by parameter

 -- additionalIPaddress

 ...,

 nSAPI [4] OCTET STRING (SIZE (1)) OPTIONAL,

 -- Include either Octet 2 of the NSAPI IE of 3GPP TS 24.008 [9]

 -- or Octet 2 of the NSAPI IE of 3GPP TS 29.060 [17].

 additionalIPaddress [5] DataNodeAddress OPTIONAL

}

GPRSOperationErrorCode ::= OCTET STRING

-- The parameter shall carry the GMM cause value or the SM cause value, as defined in the

-- standard [9], without the IEI.

LDIevent ::= ENUMERATED

{

 targetEntersIA (1),

 targetLeavesIA (2),

 ...

}

UmtsQos ::= CHOICE

{

 qosMobileRadio [1] OCTET STRING,

 -- The qosMobileRadio parameter shall be coded in accordance with the § 10.5.6.5 of

 -- document [9] without the Quality of service IEI and Length of

 -- quality of service IE (. That is, first

 -- two octets carrying 'Quality of service IEI' and 'Length of quality of service

 -- IE' shall be excluded).

 qosGn [2] OCTET STRING

 -- qosGn parameter shall be coded in accordance with § 7.7.34 of document [17]

}

EPS-GTPV2-SpecificParameters ::= SEQUENCE

{

 pDNAddressAllocation [1] OCTET STRING OPTIONAL,

 aPN [2] OCTET STRING (SIZE (1..100)) OPTIONAL,

 protConfigOptions [3] ProtConfigOptions OPTIONAL,

 attachType [4] OCTET STRING (SIZE (1)) OPTIONAL,

 -- coded according to TS 24.301 [47]

 ePSBearerIdentity [5] OCTET STRING OPTIONAL,

 detachType [6] OCTET STRING (SIZE (1)) OPTIONAL,

 -- coded according to TS 24.301 [47], includes switch off indicator

 rATType [7] OCTET STRING (SIZE (1)) OPTIONAL,

 failedBearerActivationReason [8] OCTET STRING (SIZE (1)) OPTIONAL,

 ePSBearerQoS [9] OCTET STRING OPTIONAL,

 bearerActivationType [10] TypeOfBearer OPTIONAL,

 aPN-AMBR [11] OCTET STRING OPTIONAL,

 -- see 3GPP TS 29.274 [46] parameters coding rules defined for EPS-GTPV2-SpecificParameters.

 procedureTransactionId [12] OCTET STRING OPTIONAL,

 linkedEPSBearerId [13] OCTET STRING OPTIONAL,

 --The Linked EPS Bearer Identity shall be included and coded according to 3GPP TS 29.274 [46].

 tFT [14] OCTET STRING OPTIONAL,

 -- Only octets 3 onwards of TFT IE from 3GPP TS 24.008 [9] shall be included.

 handoverIndication [15] NULL OPTIONAL,

 failedBearerModReason [16] OCTET STRING (SIZE (1)) OPTIONAL,

 trafficAggregateDescription [17] OCTET STRING OPTIONAL,

 failedTAUReason [18] OCTET STRING (SIZE (1)) OPTIONAL,

 -- coded according to TS 24.301 [47]

 failedEUTRANAttachReason [19] OCTET STRING (SIZE (1)) OPTIONAL,

 -- coded according to TS 24.301 [47]

 servingMMEaddress [20] OCTET STRING OPTIONAL,

 -- Contains the data fields from the Diameter Origin-Host and Origin-Realm AVPs

 -- as received in the HSS from the MME according to the TS 29.272 [59].

 -- Only the data fields from the Diameter AVPs are provided concatenated

 -- with a semicolon to populate this field.

 bearerDeactivationType [21] TypeOfBearer OPTIONAL,

 bearerDeactivationCause [22] OCTET STRING (SIZE (1)) OPTIONAL,
 ePSlocationOfTheTarget [23] EPSLocation OPTIONAL,
 -- the use of ePSLocationOfTheTarget is mutually exclusive with the use of locationOfTheTarget

 -- ePSlocationOfTheTarget allows using the coding of the parameter according to SAE stage 3.

 -- location of the target

 -- or cell site location

 ...,

 pDNType [24] OCTET STRING (SIZE (1)) OPTIONAL,

 -- coded according to TS 24.301 [47]

 requestType [25] OCTET STRING (SIZE (1)) OPTIONAL,

 -- coded according to TS 24.301 [47]

 uEReqPDNConnFailReason [26] OCTET STRING (SIZE (1)) OPTIONAL,

 -- coded according to TS 24.301 [47]

 extendedHandoverIndication [27] OCTET STRING (SIZE (1)) OPTIONAL,

 -- This parameter with value 1 indicates handover based on the flags in the TS 29.274 [46].

 -- Otherwise set to the value 0.

 -- The use of extendedHandoverIndication and handoverIndication parameters is

 -- mutually exclusive and depends on the actual ASN.1 encoding method.

 uLITimestamp [28] OCTET STRING (SIZE (8)) OPTIONAL,

 -- The upper 4 octets shall carry the ULI Timestamp value; The lower 4 octets are undefined

 -- and shall be ignored by the receiver

 uELocalIPAddress [29] OCTET STRING OPTIONAL,

 uEUdpPort [30] OCTET STRING (SIZE (2)) OPTIONAL,

 tWANIdentifier [31] OCTET STRING OPTIONAL,

 tWANIdentifierTimestamp [32] OCTET STRING (SIZE (4)) OPTIONAL,

 proSeRemoteUeContextConnected [33] RemoteUeContextConnected OPTIONAL,

 proSeRemoteUeContextDisconnected [34] RemoteUeContextDisconnected OPTIONAL,

 secondaryRATUsageIndication [35] NULL OPTIONAL
 }

 -- All the parameters within EPS-GTPV2-SpecificParameters are coded as the corresponding IEs

 -- without the octets containing type and length. Unless differently stated, they are coded

 -- according to 3GPP TS 29.274 [46]; in this case the octet containing the instance

 -- shall also be not included.

TypeOfBearer ::= ENUMERATED

{

 defaultBearer (1),
 dedicatedBearer (2),

 ...

}

EPSLocation ::= SEQUENCE

{

 userLocationInfo [1] OCTET STRING (SIZE (1..39)) OPTIONAL,
 -- see 3GPP TS 29.274 [46] parameters coding rules defined for EPS-GTPV2-SpecificParameters.

 gsmLocation [2] GSMLocation OPTIONAL,

 umtsLocation [3] UMTSLocation OPTIONAL,

 olduserLocationInfo [4] OCTET STRING (SIZE (1..39)) OPTIONAL,

 -- coded in the same way as userLocationInfo

 lastVisitedTAI [5] OCTET STRING (SIZE (1..5)) OPTIONAL,

 -- the Tracking Area Identity is coded in accordance with the TAI field in 3GPP TS 29.274
 -- [46].

 tAIlist [6] OCTET STRING (SIZE (7..97)) OPTIONAL,

 -- the TAI List is coded acording to 3GPP TS 24.301 [47], without the TAI list IEI

 ...,

 threeGPP2Bsid [7] OCTET STRING (SIZE (1..12)) OPTIONAL,

 -- contains only the payload from the 3GPP2-BSID AVP described in the 3GPP TS 29.212 [56].

 civicAddress [8] CivicAddress OPTIONAL,

 operatorSpecificInfo [9] OCTET STRING OPTIONAL,

 -- other CSP specific information.

 uELocationTimestamp [10] CHOICE

 {

 timestamp [0] TimeStamp,

 timestampUnknown [1] NULL,

 ...

 } OPTIONAL

 -- Date/time of the UE location

}

ProtConfigOptions ::= SEQUENCE

{

 ueToNetwork [1] OCTET STRING (SIZE(1..251)) OPTIONAL,

 -- This shall be coded with octet 3 onwards of the Protocol Configuration Options IE in

 -- accordance with 3GPP TS 24.008 [9].

 networkToUe [2] OCTET STRING (SIZE(1..251)) OPTIONAL,

 -- This shall be coded with octet 3 onwards of the Protocol Configuration Options IE in

 -- accordance with 3GPP TS 24.008 [9].

...

}

RemoteUeContextConnected ::= SEQUENCE OF RemoteUEContext

RemoteUEContext ::= SEQUENCE

{

 remoteUserID [1] RemoteUserID,

 remoteUEIPInformation [2] RemoteUEIPInformation,

...

}

RemoteUserID ::= OCTET STRING

RemoteUEIPInformation ::= OCTET STRING

RemoteUeContextDisconnected ::= RemoteUserID

EPS-PMIP-SpecificParameters ::= SEQUENCE

{

 lifetime [1] INTEGER (0..65535) OPTIONAL,

 accessTechnologyType [2] OCTET STRING (SIZE (4)) OPTIONAL,

 aPN [3] OCTET STRING (SIZE (1..100)) OPTIONAL,

 iPv6HomeNetworkPrefix [4] OCTET STRING (SIZE (20)) OPTIONAL,

 protConfigurationOption [5] OCTET STRING OPTIONAL,

 handoverIndication [6] OCTET STRING (SIZE (4)) OPTIONAL,

 status [7] INTEGER (0..255) OPTIONAL,

 revocationTrigger [8] INTEGER (0..255) OPTIONAL,

 iPv4HomeAddress [9] OCTET STRING (SIZE (4)) OPTIONAL,

 iPv6careOfAddress [10] OCTET STRING OPTIONAL,

 iPv4careOfAddress [11] OCTET STRING OPTIONAL,

 ...,

 servingNetwork [12] OCTET STRING (SIZE (3)) OPTIONAL,

 dHCPv4AddressAllocationInd [13] OCTET STRING (SIZE (1)) OPTIONAL,

 ePSlocationOfTheTarget [14] EPSLocation OPTIONAL

 -- parameters coded according to 3GPP TS 29.275 [48] and RFCs specifically

 -- referenced in it.

}

EPS-DSMIP-SpecificParameters ::= SEQUENCE

{

 lifetime [1] INTEGER (0..65535) OPTIONAL,

 requestedIPv6HomePrefix [2] OCTET STRING (SIZE (25)) OPTIONAL,

 -- coded according to RFC 5026

 homeAddress [3] OCTET STRING (SIZE (8)) OPTIONAL,

 iPv4careOfAddress [4] OCTET STRING (SIZE (8)) OPTIONAL,

 iPv6careOfAddress [5] OCTET STRING (SIZE(16)) OPTIONAL,

 aPN [6] OCTET STRING (SIZE (1..100)) OPTIONAL,

 status [7] INTEGER (0..255) OPTIONAL,

 hSS-AAA-address [8] OCTET STRING OPTIONAL,

 targetPDN-GW-Address [9] OCTET STRING OPTIONAL,

 ...

 -- parameters coded according to 3GPP TS 24.303 [49] and RFCs specifically

 -- referenced in it.

}

EPS-MIP-SpecificParameters ::= SEQUENCE

{

 lifetime [1] INTEGER (0.. 65535) OPTIONAL,

 homeAddress [2] OCTET STRING (SIZE (4)) OPTIONAL,

 careOfAddress [3] OCTET STRING (SIZE (4)) OPTIONAL,

 homeAgentAddress [4] OCTET STRING (SIZE (4)) OPTIONAL,

 code [5] INTEGER (0..255) OPTIONAL,

 foreignDomainAddress [7] OCTET STRING (SIZE (4)) OPTIONAL,

 ...

 -- parameters coded according to 3GPP TS 29.279 [63] and RFCs specifically

 -- referenced in it.

}

MediaDecryption-info ::= SEQUENCE OF CCKeyInfo

 -- One or more key can be available for decryption, one for each media streams of the

 -- intercepted session.

CCKeyInfo ::= SEQUENCE

{

 cCCSID [1] OCTET STRING,

 -- the parameter uniquely mapping the key to the encrypted stream.

 cCDecKey [2] OCTET STRING,

 cCSalt [3] OCTET STRING OPTIONAL,

 -- The field reports the value from the CS\_ID field in the ticket exchange headers as

 -- defined in IETF RFC 6043 [61].

 ...

}

MediaSecFailureIndication ::= ENUMERATED

{

 genericFailure (0),

 ...

}

PacketDataHeaderInformation ::= CHOICE

{

 packetDataHeader [1] PacketDataHeaderReport,

 packetDataSummary [2] PacketDataSummaryReport,

...

}

PacketDataHeaderReport ::= CHOICE

{

 packetDataHeaderMapped [1] PacketDataHeaderMapped,

 packetDataHeaderCopy [2] PacketDataHeaderCopy,

...

}

PacketDataHeaderMapped ::= SEQUENCE

{

 sourceIPAddress [1] IPAddress,

 sourcePortNumber [2] INTEGER (0..65535) OPTIONAL,

 destinationIPAddress [3] IPAddress,

 destinationPortNumber [4] INTEGER (0..65535) OPTIONAL,

 transportProtocol [5] INTEGER,

 -- For IPv4, report the "Protocol" field and for IPv6 report "Next Header" field.

 -- Assigned Internet Protocol Numbers can be found at

 -- http://www.iana.org/assignments/protocol-numbers/protocol-numbers.xml

 packetsize [6] INTEGER OPTIONAL,

 flowLabel [7] INTEGER OPTIONAL,

 packetCount [8] INTEGER OPTIONAL,

 direction [9] TPDU-direction,

...

}

TPDU-direction ::= ENUMERATED

{

 from-target (1),

 to-target (2),

 unknown (3)

}

PacketDataHeaderCopy ::= SEQUENCE

{

 direction [1] TPDU-direction,

 headerCopy [2] OCTET STRING, -- includes a copy of the packet header at the IP

 -- network layer and above including extension headers, but excluding contents.

...

}

PacketDataSummaryReport ::= SEQUENCE OF PacketFlowSummary

PacketFlowSummary ::= SEQUENCE

{

 sourceIPAddress [1] IPAddress,

 sourcePortNumber [2] INTEGER (0..65535) OPTIONAL,

 destinationIPAddress [3] IPAddress,

 destinationPortNumber [4] INTEGER (0..65535) OPTIONAL,

 transportProtocol [5] INTEGER,

 -- For IPv4, report the "Protocol" field and for IPv6 report "Next Header" field.

 -- Assigned Internet Protocol Numbers can be found at

 -- http://www.iana.org/assignments/protocol-numbers/protocol-numbers.xml

 flowLabel [6] INTEGER OPTIONAL,

 summaryPeriod [7] ReportInterval,

 packetCount [8] INTEGER,

 sumOfPacketSizes [9] INTEGER,

 packetDataSummaryReason [10] ReportReason,

...

}

ReportReason ::= ENUMERATED

{

 timerExpired (0),

 countThresholdHit (1),

 pDPComtextDeactivated (2),

 pDPContextModification (3),

 otherOrUnknown (4),

 ...

}

ReportInterval ::= SEQUENCE

{

 firstPacketTimeStamp [0] TimeStamp,

 lastPacketTimeStamp [1] TimeStamp,

 ...

}

TunnelProtocol ::= CHOICE

{

 rfc2868ValueField [0] OCTET STRING, -- coded to indicate the type of tunnel established between

 -- the HeNB and the SeGW as specified in TS 33.320. The actual coding is provided in 3 octets

 -- with the Value field of the Tunnel Type RADIUS attribute as specified in IETF RFC 2868.

 -- This corresponds to the outer layer tunnel between the HeNB and the SeGW as viewed by the

 -- SeGW

 nativeIPSec [1] NULL, -- if native IPSec is required by TS 33.320 between HeNB and SeGW

...

}

HeNBLocation ::= EPSLocation

Requesting-Node-Type ::= ENUMERATED

{

 mSC (1),

 sMS-Centre (2),

 gMLC (3),

 mME (4),

 sGSN (5),

 ...

}

Change-Of-Target-Identity ::= SEQUENCE

{

 new-MSISDN [1] PartyInformation OPTIONAL,

 -- new MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 new-A-MSISDN [2] PartyInformation OPTIONAL,

 -- new A-MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in TS 23.003 [25]

 old-MSISDN [3] PartyInformation OPTIONAL,

 -- old MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in MAP format document TS 29.002 [4]

 old-A-MSISDN [4] PartyInformation OPTIONAL,

 -- old A-MSISDN of the target, encoded in the same format as the AddressString

 -- parameters defined in TS 23.003 [25]

 new-IMSI [5] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 old-IMSI [6] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Station Identity E.212 number beginning with Mobile Country Code

 new-IMEI [7] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Equipement Identity defined in MAP format document TS 29.002 [4]

 old-IMEI [8] PartyInformation OPTIONAL,

 -- See MAP format [4] International Mobile

 -- Equipement Identity defined in MAP format document TS 29.002 [4]

...,

 new-IMPI [9] PartyInformation OPTIONAL,
 old-IMPI [10] PartyInformation OPTIONAL,

 new-SIP-URI [11] PartyInformation OPTIONAL,

 old-SIP-URI [12] PartyInformation OPTIONAL,

 new-TEL-URI [13] PartyInformation OPTIONAL,

 old-TEL-URI [14] PartyInformation OPTIONAL

}

Current-Previous-Systems ::= SEQUENCE

{

 serving-System-Identifier [1] OCTET STRING OPTIONAL,

 -- VPLMN id (Mobile Country Code and Mobile Network Country, E. 212 number [87]).

 current-Serving-MME-Address [2] DataNodeIdentifier OPTIONAL,

 -- The IP address of the current serving MME or its the Diameter Origin-Host and Origin-Realm.

 previous-Serving-System-Identifier [3] OCTET STRING OPTIONAL,

 -- VPLMN id (Mobile Country Code and Mobile Network Country, defined in E212 [87]).

 previous-Serving-MME-Address [4] DataNodeIdentifier OPTIONAL,

 -- The IP address of the previous serving MME or its Diameter Origin-Host and Origin-Realm.

...

}

ProSeTargetType ::= ENUMERATED

{

 pRoSeRemoteUE (1),

 pRoSeUEtoNwRelay (2),

 ...

}

VoIPRoamingIndication ::= ENUMERATED {

 roamingLBO (1), -- used in IMS events sent by VPLMN with LBO as roaming

 roamingS8HR (2), -- used in IMS events sent by VPLMN with S8HR as roaming

 ...

}

DeregistrationReason ::= CHOICE

{

 reason-CodeAVP [1] INTEGER,

 server-AssignmentType [2] INTEGER,

 -- Coded according to 3GPP TS 29.229 [96]

 ...

}

PTCEncryptionInfo ::= SEQUENCE {

 cipher [1] UTF8String,

 cryptoContext [2] UTF8String OPTIONAL,

 key [3] UTF8String,

 keyEncoding [4] UTF8String,

 salt [5] UTF8String OPTIONAL,

 pTCOther [6] UTF8String OPTIONAL,

 ...

}

PTC ::= SEQUENCE {

 abandonCause [1] UTF8String OPTIONAL,

 accessPolicyFailure [2] UTF8String OPTIONAL,

 accessPolicyType [3] AccessPolicyType OPTIONAL,

 alertIndicator [5] AlertIndicator OPTIONAL,

 associatePresenceStatus [6] AssociatePresenceStatus OPTIONAL,

 bearer-capability [7] UTF8String OPTIONAL,

 -- identifies the Bearer capability information element (value part)

 broadcastIndicator [8] BOOLEAN OPTIONAL,

 -- default False, true indicates this is a braodcast to a group

 contactID [9] UTF8String OPTIONAL,

 emergency [10] Emergency OPTIONAL,

 emergencyGroupState [11] EmergencyGroupState OPTIONAL,

 timeStamp [12] TimeStamp,

 pTCType [13] PTCType OPTIONAL,

 failureCode [14] UTF8String OPTIONAL,

 floorActivity [15] FloorActivity OPTIONAL,

 floorSpeakerID [16] PTCAddress OPTIONAL,

 groupAdSender [17] UTF8String OPTIONAL,

 -- Identifies the group administrator who was the originator of the group call.

 -- tag [18] was used in r15 (15) version-4 (4)

 groupAuthRule [19] GroupAuthRule OPTIONAL,

 groupCharacteristics [20] UTF8String OPTIONAL,

 holdRetrieveInd [21] BOOLEAN OPTIONAL,

 -- true indicates target is placed on hold, false indicates target was retrived from hold.

 -- tag [22] was used in r15 (15) version-4 (4)

 imminentPerilInd [23] ImminentPerilInd OPTIONAL,

 implicitFloorReq [24] ImplicitFloorReq OPTIONAL,

 initiationCause [25] InitiationCause OPTIONAL,

 invitationCause [26] UTF8String OPTIONAL,

 iPAPartyID [27] UTF8String OPTIONAL,

 iPADirection [28] IPADirection OPTIONAL,

 listManagementAction [29] ListManagementAction OPTIONAL,

 listManagementFailure [30] UTF8String OPTIONAL,

 listManagementType [31] ListManagementType OPTIONAL,

 maxTBTime [32] UTF8String OPTIONAL, -- defined in seconds.

 mCPTTGroupID [33] UTF8String OPTIONAL,

 mCPTTID [34] UTF8String OPTIONAL,

 mCPTTInd [35] BOOLEAN OPTIONAL,

 -- default False indicates to associate from target, true indicates to the target.

 location [36] Location OPTIONAL,

 mCPTTOrganizationName [37] UTF8String OPTIONAL,

 mediaStreamAvail [38] BOOLEAN OPTIONAL,

 -- True indicates available for media, false indicates not able to accept media.

 priority-Level [40] Priority-Level OPTIONAL,

 preEstSessionID [41] UTF8String OPTIONAL,

 preEstStatus [42] PreEstStatus OPTIONAL,

 pTCGroupID [43] UTF8String OPTIONAL,

 pTCIDList [44] UTF8String OPTIONAL,

 pTCMediaCapability [45] UTF8String OPTIONAL,

 pTCOriginatingId [46] UTF8String OPTIONAL,

 pTCOther [47] UTF8String OPTIONAL,

 pTCParticipants [48] UTF8String OPTIONAL,

 pTCParty [49] UTF8String OPTIONAL,

 pTCPartyDrop [50] UTF8String OPTIONAL,

 pTCSessionInfo [51] UTF8String OPTIONAL,

 pTCServerURI [52] UTF8String OPTIONAL,

 pTCUserAccessPolicy [53] UTF8String OPTIONAL,

 pTCAddress [54] PTCAddress OPTIONAL,

 queuedFloorControl [55] BOOLEAN OPTIONAL,

 --Default FALSE,send TRUE if Queued floor control is used.

 queuedPosition [56] UTF8String OPTIONAL,

 -- indicates the queued position of the Speaker (Target or associate) who has the

 -- right to speak.

 registrationRequest [57] RegistrationRequest OPTIONAL,

 registrationOutcome [58] RegistrationOutcome OPTIONAL,

 retrieveID [59] UTF8String OPTIONAL,

 rTPSetting [60] RTPSetting OPTIONAL,

 talkBurstPriority [61] Priority-Level OPTIONAL,

 talkBurstReason [62] Talk-burst-reason-code OPTIONAL,

 -- Talk-burst-reason-code Defined according to the rules and procedures

 -- in (OMA-PoC-AD [97])

 talkburstControlSetting [63] TalkburstControlSetting OPTIONAL,

 targetPresenceStatus [64] UTF8String OPTIONAL,

 port-Number [65] INTEGER (0..65535) OPTIONAL,

 ...

}

AccessPolicyType ::= SEQUENCE

{

 userAccessPolicyAttempt [1] BOOLEAN,

 -- default False, true indicates Target has accessed.

 groupAuthorizationRulesAttempt [2] BOOLEAN,

 -- default False, true indicates Target has accessed.

 userAccessPolicyQuery [3] BOOLEAN,

 -- default False, true indicates Target has accessed.

 groupAuthorizationRulesQuery [4] BOOLEAN,

 -- default False, true indicates Target has accessed.

 userAccessPolicyResult [5] UTF8String,

 groupAuthorizationRulesResult [6] UTF8String,

 ...

}

AlertIndicator ::= ENUMERATED

{

 -- indicates the group call alert condition.

 sent (1),

 received (2),

 cancelled (3),

 ...

 }

AssociatePresenceStatus ::= SEQUENCE

{

 presenceID [1] UTF8String,

 -- identity of PTC Client(s)or the PTC group

 presenceType [2] PresenceType,

 presenceStatus [3] BOOLEAN,

 -- default false, true indicates connected.

...

}

PresenceType ::= ENUMERATED

{

 pTCClient (1),

 pTCGroup (2),

 -- identifies the type of presenceID given [PTC Client(s) or PTC group].

 ...

}

Emergency ::= ENUMERATED

{

 -- MCPTT services indication of peril condition.

 imminent (1),

 peril (2),

 cancel (3),

 ...

}

EmergencyGroupState ::= SEQUENCE

{

 -- indicates the state of the call, at least one of these information

 -- elements shall be present.

 clientEmergencyState [1] ENUMERATED

{

 -- in case of MCPTT call, indicates the response for the client

 inform (1),

 response (2),

 cancelInform (3),

 cancelResponse (4),

 ...

} OPTIONAL,

 groupEmergencyState [2] ENUMERATED

{

 -- in case of MCPTT group call, indicates if there is a group emergency or

 -- a response from the Target to indicate current Client state of emergency.

 inForm (1),

 reSponse (2),

 cancelInform (3),

 cancelResponse (4),

...

 },

...

}

PTCType ::= ENUMERATED

{

 pTCStartofInterception (1),

 pTCServinSystem (2),

 pTCSessionInitiation (3),

 pTCSessionAbandonEndRecord (4),

 pTCSessionStartContinueRecord (5),

 pTCSessionEndRecord (6),

 pTCPre-EstablishedSessionSessionRecord (7),

 pTCInstantPersonalAlert (8),

 pTCPartyJoin (9),

 pTCPartyDrop (10),

 pTCPartyHold-RetrieveRecord (11),

 pTCMediaModification (12),

 pTCGroupAdvertizement (13),

 pTCFloorConttrol (14),

 pTCTargetPressence (15),

 pTCAssociatePressence (16),

 pTCListManagementEvents (17),

 pTCAccessPolicyEvents (18),

 pTCMediaTypeNotification (19),

 pTCGroupCallRequest (20),

 pTCGroupCallCancel (21),

 pTCGroupCallResponse (22),

 pTCGroupCallInterrogate (23),

 pTCMCPTTImminentGroupCall (24),

 pTCCC (25),

 pTCRegistration (26),

 pTCEncryption (27),

...

}

FloorActivity ::= SEQUENCE

{

 tBCP-Request [1] BOOLEAN,

 -- default False, true indicates Granted.

 tBCP-Granted [2] BOOLEAN,

 -- default False, true indicates Granted permission to talk.

 tBCP-Deny [3] BOOLEAN,

 -- default True, False indicates permission granted.

 tBCP-Queued [4] BOOLEAN,

 -- default False, true indicates the request to talk is in queue.

 tBCP-Release [5] BOOLEAN,

 -- default True, true indicates the Request to talk is completed,

 -- False indicates PTC Client has the request to talk.

 tBCP-Revoke [6] BOOLEAN,

 -- default False, true indicates the privilege to talk is canceld from the

 -- PTC server.

 tBCP-Taken [7] BOOLEAN,

 -- default True, false indicates another PTC Client has the permission to talk.

 tBCP-Idle [8] BOOLEAN,

 -- default True, False indicates the Talk Burst Protocol is taken.

...

}

GroupAuthRule ::= ENUMERATED

{

 allow-Initiating-PtcSession (0),

 block-Initiating-PtcSession (1),

 allow-Joining-PtcSession (2),

 block-Joining-PtcSession (3),

 allow-Add-Participants (4),

 block-Add-Participants (5),

 allow-Subscription-PtcSession-State (6),

 block-Subscription-PtcSession-State (7),

 allow-Anonymity (8),

 forbid-Anonymity (9),

...

}

ImminentPerilInd ::= ENUMERATED

{

 request (1),

 response (2),

 cancel (3),

 -- when the MCPTT Imminent Peril Group Call Request, Response or Cancel is detected

...

}

ImplicitFloorReq ::= ENUMERATED

{

 join (1),

 rejoin (2),

 release (3),

 -- group Call request to join, rejoin, or release of the group call

...

}

InitiationCause ::= ENUMERATED

{

 requests (1),

 received (2),

 pTCOriginatingId (3),

 -- requests or receives a session initiation from the network or another

 -- party to initiate a PTC session. Identify the originating PTC party, if known.

...

}

IPADirection ::= ENUMERATED

{

 toTarget (0),

 fromTarget (1),

...

}

ListManagementAction ::= ENUMERATED

{

 create (1),

 modify (2),

 retrieve (3),

 delete (4),

 notify (5),

...

}

ListManagementType ::= ENUMERATED

{

 contactListManagementAttempt (1),

 groupListManagementAttempt (2),

 contactListManagementResult (3),

 groupListManagementResult (4),

 requestSuccessful (5),

...

}

Priority-Level ::= ENUMERATED

{

 pre-emptive (0),

 high-priority (1),

 normal-priority (2),

 listen-only (3),

...

}

PreEstStatus ::= ENUMERATED

{

 established (1),

 modify (2),

 released (3),

...

}

PTCAddress ::= SEQUENCE

{

 uri [0] UTF8String,

 -- The set of URIs defined in [RFC3261] and related SIP RFCs.

 privacy-setting [1] BOOLEAN,

 -- Default FALSE, send TRUE if privacy is used.

 privacy-alias [2] VisibleString OPTIONAL,

 -- if privacy is used, the PTC Server creates an anonymous PTC Address of the form

 -- <sip:anonymous@anonymous.invalid>. In addition to anonymity, the anonymous PTC

 -- Addresses SHALL be unique within a PTC Session. In case more than one anonymous

 -- PTC Addresses are used in the same PTC Session, for the second Anonymous PTC

 -- Session and thereafter, the PTC Server SHOULD use the form

 -- sip:anonymous-n@anonymous.invalid where n is an integer number.

 nickname [3] UTF8String OPTIONAL,

...

}

RegistrationRequest ::= ENUMERATED

{

 register (1),

 re-register (2),

 de-register (3),

...

}

RegistrationOutcome ::= ENUMERATED

{

 success (0),

 failure (1),

...

}

RTPSetting ::= SEQUENCE

{

 ip-address [0] IPAddress,

 port-number [1] Port-Number,

 -- the IP address and port number at the PTC Server for the RTP Session

...

}

Port-Number ::= INTEGER (0..65535)

TalkburstControlSetting ::= SEQUENCE

{

 talk-BurstControlProtocol [1] UTF8String,

 talk-Burst-parameters [2] SET OF VisibleString,

 -- selected by the PTC Server from those contained in the original SDP offer in the

 -- incoming SIP INVITE request from the PTC Client

 tBCP-PortNumber [3] INTEGER (0..65535),

 -- PTC Server's port number to be used for the Talk Burst Control Protocol

...

}

Talk-burst-reason-code ::= VisibleString

END -- OF EpsHI2Operations

### \*\*\* NEXT CHANGE \*\*\*

# Annex P (normative):Removal of content from SMS

Subject to national agreement, the content of an SMS message may have to be removed in case of IRI-only interception.

The following procedure shall be applied to remove the content.

The short message (SM) portion of the TP-User-Data (TS 23.040 [XX] clause 9.2.3.24) shall be replaced by the equivalent of "Space" in the original encoding for the total length of the SM portion as determined by the TP-User-Data-Length field (TS 23.040 [XX] clause 9.2.3.16), and accounting for the Length of the User Data Header (UDHL) field (TS 23.040 [XX] clause 9.2.3.24) if the latter is present as indicated by the TP-User-Data-Header-Indicator field (TS 23.040 [XX] clause 9.2.3.23). While replacing the SM data, the Data Coding Scheme (TS 23.038 [YY] clause 4) shall be considered.

If the TP-User-Data-Header-Indicator indicates the TP-User-Data Header is present, the Header shall be rewritten so that each of the Information Elements that are not classified as "SMS Control" in TS 23.040 [XX] clause 9.2.3.24 shall be converted to a Filler Information Element per TS 23.040 [XX] clause 9.2.3.24.17.

In any case, the overall length of the TP-User-Data, and if present, the overall length of the TP-User-Data Header, shall not be changed.

NOTE: The procedure in this annex is defined to ensure backwards compatibility in SMS decoding implementations if the SMS content has been removed.

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