

ETSI TS 133 128 V16.15.0 (2023-07)



**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
LTE;
5G;
Security;
Protocol and procedures for Lawful Interception (LI);
Stage 3
(3GPP TS 33.128 version 16.15.0 Release 16)**



ReferenceRTS/TSGS-0333128vgf0

Keywords5G,GSM,LTE,UMTS

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Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	8
Introduction	8
1 Scope	9
2 References	9
3 Definitions, symbols and abbreviations	11
3.1 Definitions	11
3.2 Symbols.....	11
3.3 Abbreviations	11
4 General	12
4.1 Introduction	12
4.2 Basic principles for internal interfaces	13
4.3 Basic principles for external handover interfaces.....	14
4.4 Service scoping	15
4.4.1 General.....	15
4.4.2 CSP service type	15
4.4.3 Delivery type	15
4.4.4 Location Reporting	15
4.4.5 LALS Triggering	15
4.4.6 Roaming Interception	16
5 Transport and Communications Protocol.....	16
5.1 General	16
5.2 Protocols for LI_X1 and LI_T interfaces	16
5.2.1 General usage of ETSI TS 103 221-1	16
5.2.2 Usage for realising LI_X1	16
5.2.3 Usage for realising LI_X1 (management)	17
5.2.4 Service scoping	17
5.2.5 Usage for realising LI_T2.....	17
5.2.6 Usage for realising LI_T3.....	17
5.2.7 Usage for realising LI_XEM1	18
5.3 Protocols for LI_X2 and LI_X3	19
5.3.1 General usage of ETSI TS 103 221-2	19
5.3.2 Usage for realising LI_X2	19
5.3.3 Usage for realising LI_X3	19
5.3.4 Service scoping	20
5.4 Protocols for LI_HI1	20
5.4.1 General.....	20
5.4.2 Service scoping	20
5.5 Protocols for LI_HI2 and LI_HI3.....	20
5.5.1 General.....	20
5.5.2 Usage for realising LI_HI2	20
5.5.3 Usage for realising LI_HI3	20
5.5.4 Service scoping	21
5.5.5 IRI Target Identifiers	21
5.6 Protocols for LI_HI4	21
5.6.1 General.....	21
5.6.2 Usage for realising LI_HI4	21
5.7 Protocols for LI_HIQR.....	22
5.7.1 General.....	22
5.7.2 Usage for realising LI_HIQR.....	22

5.7.2.1	Request structure	22
5.7.2.2	Request parameters	23
5.7.2.3	Response structure	23
5.8	Protocols for LI_XQR	25
5.8.1	General	25
5.8.2	Identity association requests	25
5.8.3	Ongoing identity association requests	25
5.9	Protocols for LI_XER	26
5.10	Protocols for LI_ST interface	26
5.10.1	Overview	26
5.10.2	Storage	26
5.10.3	Retrieval	26
5.10.4	Removal	26
6	Network Layer Based Interception	27
6.1	Introduction	27
6.2	5G	27
6.2.1	General	27
6.2.2	LI at AMF	27
6.2.2.1	Provisioning over LI_X1	27
6.2.2.2	Generation of xIRI over LI_X2	28
6.2.2.2.1	General	28
6.2.2.2.2	Registration	28
6.2.2.2.3	Deregistration	29
6.2.2.2.4	Location update	30
6.2.2.2.5	Start of interception with registered UE	31
6.2.2.2.6	AMF unsuccessful procedure	32
6.2.2.2.7	AMF identifier association	33
6.2.2.3	Generation of IRI over LI_HI2	33
6.2.2.4	Identity privacy	34
6.2.2A	Identifier Reporting for AMF	34
6.2.2A.1	Activation of reporting over LI_XEM1	34
6.2.2A.2	Generation of records over LI_XER	34
6.2.2A.2.2	Association Events	35
6.2.2A.2.3	Transmission to the ICF	36
6.2.3	LI for SMF/UPF	36
6.2.3.1	Provisioning over LI_X1	36
6.2.3.1.1	General	36
6.2.3.1.2	Provisioning of the IRI-POI, IRI-TF and CC-TF in the SMF	36
6.2.3.1.3	Provisioning of the MDF2	37
6.2.3.1.4	Provisioning of the MDF3	38
6.2.3.2	Generation of xIRI at IRI-POI in SMF over LI_X2	39
6.2.3.2.1	General	39
6.2.3.2.2	PDU session establishment	39
6.2.3.2.3	PDU session modification	40
6.2.3.2.4	PDU session release	42
6.2.3.2.5	Start of interception with an established PDU session	42
6.2.3.2.6	SMF unsuccessful procedure	44
6.2.3.2.7	MA PDU sessions	45
6.2.3.2.8	PDU to MA PDU session modification	55
6.2.3.3	Triggering of the CC-POI from CC-TF over LI_T3	56
6.2.3.3.1	LI_T3 interface specifics	56
6.2.3.3.2	CC interception with multi-homed PDU session	57
6.2.3.3.3	CC Interception only at PDU Session Anchor UPFs	58
6.2.3.4	IRI-POI in UPF triggering over LI_T2	58
6.2.3.5	Generation of xIRI at UPF over LI_X2	59
6.2.3.5.1	Packet data header reporting	59
6.2.3.5.2	Fragmentation	60
6.2.3.5.3	Packet Data Header Reporting (PDHR)	60
6.2.3.5.4	Packet Data Summary Reporting (PDSR)	62
6.2.3.6	Generation of xCC at CC-POI in the UPF over LI_X3	64
6.2.3.7	Generation of IRI over LI_HI2	64

6.2.3.8	Generation of CC over LI_HI3	65
6.2.3.9	Packet Data Information Reporting.....	65
6.2.3.10	Sharing LI state information over LI_ST	66
6.2.3.10.1	Overview	66
6.2.3.10.2	Storing LI state	66
6.2.3.10.3	Retrieving LI state	67
6.2.3.10.4	Removing LI state	67
6.2.4	LI at UDM for 5G.....	68
6.2.4.1	General description	68
6.2.5	LI at SMSF	68
6.2.5.1	Provisioning over LI_X1.....	68
6.2.5.2	Generation of xIRI over LI_X2.....	69
6.2.5.3	SMS Message.....	69
6.2.5.4	Generation of IRI over LI_HI2	72
6.2.6	LI support at NRF	72
6.3	4G	72
6.3.1	General.....	72
6.3.2	LI at MME	73
6.3.2.1	Provisioning over LI_X1.....	73
6.3.2.2	Generation of xIRI over LI_X2.....	73
6.3.2.2.1	General	73
6.3.2.2.2	MME identifier association	73
6.3.2.3	Generation of IRI over LI_HI2	74
6.3.3	LI at SGW/PGW and ePDG	74
6.3.3.1	Provisioning over LI_X1.....	74
6.3.3.2	Generation of xIRI over LI_X2.....	74
6.3.3.3	Generation of xCC at CC-POI in the SGW/PGW and ePDG over LI_X3.....	75
6.3.3.4	Generation of IRI over LI_HI2	75
6.3.3.5	Generation of CC over LI_HI3	75
6.4	3G	75
7	Service Layer Based Interception.....	76
7.1	Introduction	76
7.2	Central Subscriber Management	76
7.2.1	General description	76
7.2.2	LI at UDM	76
7.2.2.1	General description	76
7.2.2.2	Provisioning over LI_X1.....	76
7.2.2.3	Generation of xIRI over LI_X2.....	76
7.2.2.3.1	General description.....	76
7.2.2.3.2	Serving system	76
7.2.2.3.3	Subscriber record change.....	77
7.2.2.3.4	Cancel location	78
7.2.2.3.5	Location information request.....	79
7.2.2.4	Generation of IRI over LI_HI2	79
7.2.3	LI at HSS	79
7.2.3.1	General	79
7.2.3.2	Provisioning over LI_X1.....	80
7.2.3.3	Generation of xIRI over LI_X2.....	80
7.2.3.4	Generation of IRI over LI_HI2	80
7.3	Location.....	80
7.3.1	Lawful Access Location Services (LALS)	80
7.3.1.1	General description	80
7.3.1.2	Provisioning over LI_X1.....	81
7.3.1.2.1	Target positioning service	81
7.3.1.2.2	Triggered location service	81
7.3.1.3	Triggering over LI_T2	82
7.3.1.4	Generation of xIRI over LI_X2.....	83
7.3.1.5	Generation of IRI over LI_HI2	84
7.3.2	Cell database information reporting.....	84
7.3.2.1	General description	84
7.3.2.2	Delivery of cell site information over LI_HI2	84

7.3.3	Use of the Location structure	84
7.3.3.1	General description	84
7.4	Messaging	85
7.4.1	Introduction	85
7.4.2	LI at the MMS Proxy-Relay	85
7.4.2.1	Provisioning over LI_X1	85
7.4.2.2	Generation of xIRI over LI_X2	85
7.4.2.3	Generation of xCC over LI_X3	85
7.4.2.4	MMS Record Generation Cases	85
7.4.3	MMS Records	86
7.4.3.1	MMSSend	86
7.4.3.2	MMSSendByNonLocalTarget	88
7.4.3.3	MMSNotification	90
7.4.3.4	MMSSendToNonLocalTarget	90
7.4.3.5	MMSNotificationResponse	92
7.4.3.6	MMSRetrieval	92
7.4.3.7	MMSDeliveryAck	94
7.4.3.8	MMSForward	94
7.4.3.9	MMSDeleteFromRelay	96
7.4.3.10	MMSMBoxStore	97
7.4.3.11	MMSMBoxUpload	97
7.4.3.12	MMSMBoxDelete	98
7.4.3.13	MMSDeliveryReport	98
7.4.3.14	MMSDeliveryReportNonLocalTarget	99
7.4.3.15	MMSReadReport	100
7.4.3.16	MMSReadReportNonLocalTarget	101
7.4.3.17	MMSCancel	102
7.4.3.18	MMSMBoxViewRequest	102
7.4.3.19	MMSMBoxViewResponse	103
7.4.3.20	MMBoxDescription	104
7.4.3.21	MMS Content	106
7.4.4	IRI and CC Generation	106
7.4.4.1	Generation of IRI over LI_HI2	106
7.4.4.2	Generation of CC over LI_HI3	106
7.5	PTC service	106
7.5.1	Introduction	106
7.5.1.1	Provisioning over LI_X1	107
7.5.1.2	Generating xIRI over LI_X2	107
7.5.1.3	Generation of xCC over LI_X3	107
7.5.2	IRI events	107
7.5.2.1	PTC registration	107
7.5.2.2	PTC session initiation	107
7.5.2.3	PTC session abandon attempt	108
7.5.2.4	PTC session start	109
7.5.2.5	PTC session end	110
7.5.2.6	PTC start of interception	111
7.5.2.7	PTC pre-established session	112
7.5.2.8	PTC instant personal alert	112
7.5.2.9	PTC party join	112
7.5.2.10	PTC party drop	113
7.5.2.11	PTC party hold	114
7.5.2.12	PTC media modification	114
7.5.2.13	PTC group advertisement	115
7.5.2.14	PTC floor control	115
7.5.2.15	PTC target presence	117
7.5.2.16	PTC participant presence	118
7.5.2.17	PTC list management	118
7.5.2.18	PTC access policy	119
7.5.3	IRI and CC Generation	120
7.5.3.1	Generation of IRI over LI_HI2	120
7.5.3.2	Generation of CC over LI_HI3	121
7.6	Identifier Association Reporting	121

7.6.1	General.....	121
7.6.2	ICF	121
7.6.2.1	General	121
7.6.2.2	ICF receipt of records over LI_XER.....	121
7.6.2.3	ICF Query and Response over LI_XQR	121
7.6.2.4	ICF Identifier Association Event Handling.....	121
7.6.3	IQF.....	122
7.6.3.1	General	122
7.6.3.2	IQF Query and Response over LI_HIQR.....	123
7.6.3.3	IQF Query and Response over LI_XQR	123
Annex A (normative):	Structure of both the Internal and External Interfaces	124
Annex B (normative):	LI Notification	125
Annex C (normative):	XSD Schema for LI_X1 extensions	127
Annex D (informative):	Drafting Guidance	128
D.1	Introduction	128
D.2	Drafting conventions	128
D.3	Naming conventions.....	128
D.4	ASN.1 Syntax conventions.....	129
Annex E (normative):	XSD Schema for Identity Association.....	131
Annex F (normative):	ASN.1 schema for LI_XER messages.....	132
Annex G (normative):	XSD Schema for State Transfers.....	133
Annex Z (informative):	Change history	134
History		137

ETSI TS 133 128 V16.15.0 (2023-07)
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Introduction

The present document has been produced by the 3GPP TSG SA to standardise Lawful Interception of telecommunications. The present document describes protocols and procedures for Lawful Interception based on 3GPP specifications. These protocols and procedures cover both internal 3GPP interfaces (those required to intercept communications and manage interception within a 3GPP network) and external handover interfaces (those used for delivery of intercepted communications to Law Enforcement, or handling of warrants).

Lawful Interception needs to be done in accordance with the applicable national or regional laws and technical regulations. Such national laws and regulations define the extent to which capabilities in the present document are applicable in specific jurisdictions.

1 Scope

The present document specifies the protocols and procedures required to perform Lawful Interception within a 3GPP network. The present document addresses both internal interfaces used internally with a 3GPP network and external handover interfaces used to handover intercepted communications to law enforcement.

The present document describes the detailed targeting of communications in each point of interception within a 3GPP network and the information that a point of interception needs to be able to capture. Furthermore, the detailed data formats for both the internal and external interfaces are also defined.

National regulations determine the applicable set of information that needs to be handed over or excluded from handover to law enforcement for a given 3GPP operator service.

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] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.501: "System Architecture for the 5G System".
- [3] 3GPP TS 33.126: "Lawful Interception Requirements".
- [4] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".
- [5] 3GPP TS 33.127: "Lawful Interception (LI) Architecture and Functions".
- [6] ETSI TS 103 120: " Lawful Interception (LI); Interface for warrant information".
- [7] ETSI TS 103 221-1: "Lawful Interception (LI); Internal Network Interfaces; Part 1: X1".
- [8] ETSI TS 103 221-2: "Lawful Interception (LI); Internal Network Interfaces; Part 2: X2/X3".
- [9] 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".
- [10] 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".
- [11] 3GPP TS 33.501: "Security Architecture and Procedures for the 5G System".
- [12] 3GPP TS 33.108: "3G security; Handover interface for Lawful Interception (LI)".
- [13] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS)".
- [14] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General Aspects".
- [15] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane nodes".
- [16] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".
- [17] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

- [18] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".
- [19] 3GPP TS 23.003: "Numbering, addressing and identification".
- [20] OMA-TS-MLP-V3_5-20181211-C: "Open Mobile Alliance; Mobile Location Protocol, Candidate Version 3.5", https://www.openmobilealliance.org/release/MLS/V1_4-20181211-C/OMA-TS-MLP-V3_5-20181211-C.pdf.
- [21] 3GPP TS 29.540: "5G System; SMS Services; Stage 3".
- [22] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".
- [23] 3GPP TS 38.413: "NG Application Protocol (NGAP)".
- [24] 3GPP TS 29.572: "Location Management Services; Stage 3".
- [25] 3GPP TS 29.503: "5G System; Unified Data Management Services".
- [26] IETF RFC 815: "IP datagram reassembly algorithms".
- [27] IETF RFC 2460: "Internet Protocol, Version 6 (IPv6) Specification".
- [28] IETF RFC 793: "Transmission Control Protocol".
- [29] IETF RFC 768: "User Datagram Protocol".
- [30] IETF RFC 4340: "Datagram Congestion Control Protocol (DCCP)".
- [31] IETF RFC 4960: "Stream Control Transmission Protocol".
- [32] IANA (www.iana.org): Assigned Internet Protocol Numbers, "Protocol Numbers".
- [33] IETF RFC 6437: "IPv6 Flow Label Specification".
- [34] IETF RFC 791: "Internet Protocol".
- [35] Open Geospatial Consortium OGC 05-010: "URNs of definitions in ogc namespace".
<https://standards.ietf.org/catalog/standards/sist/15d4cdaf-a5a1-4b33-8266->
- [36] 3GPP TS 33.107: "3G security; Lawful interception architecture and functions".
- [37] 3GPP TS 37.340: "Evolved Universal Radio Access (E-UTRA) and NR-Multi-connectivity; Stage 2".
- [38] 3GPP TS 36.413: "S1 Application Protocol (S1AP)".
- [39] OMA-TS-MMS_ENC-V1_3-20110913-A: "Multimedia Messaging Service Encapsulation Protocol".
- [40] 3GPP TS 23.140: "Multimedia Messaging Protocol. Functional Description. Stage 2".
- [41] 3GPP TS 38.415: "NG-RAN; PDU Session User Plane Protocol".
- [42] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".
- [43] IETF RFC 4566: "SDP: Session Description Protocol".
- [44] 3GPP TS 24.193: "Stage 3: Access Traffic Steering, Switching and Splitting (ATSSS)".
- [45] 3GPP TS 29.509: "5G System; Authentication Server Services; Stage 3".
- [46] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [47] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [48] 3GPP TS 29.504: "5G System; Unified Data Repository Services; Stage 3".

- [49] 3GPP TS 29.505: "5G System; Usage of the Unified Data Repository services for Subscription Data; Stage 3".
- [50] 3GPP TS 29.598: "5G System; Unstructured Data Storage Services; Stage3".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

3.2 Symbols

For the purposes of the present document, the following symbols apply:

<symbol> <Explanation>

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

ADMF	LI Administration Function
CC	Content of Communication
CSP	Communication Service Provider
CUPS	Control and User Plane Separation
ICF	Identity Caching Function
IEF	Identity Event Function
IQF	Identity Query Function
IRI	Intercept Related Information
LALS	Lawful Access Location Services
LEA	Law Enforcement Agency
LEMF	Law Enforcement Monitoring Facility
LI	Lawful Interception
LICF	Lawful Interception Control Function
LI_HI1	LI_Handover Interface 1
LI_HI2	LI_Handover Interface 2
LI_HI3	LI_Handover Interface 3
LI_HI4	LI_Handover Interface 4
LI_HIQR	Lawful Interception Handover Interface Query Response
LIPF	Lawful Interception Provisioning Function
LIR	Location Immediate Request
LI_SI	Lawful Interception System Information Interface
LISF	Lawful Interception State Storage Function
LI_ST	Lawful Interception State Transfer Interface
LI_X1	Lawful Interception Internal Interface 1
LI_X2	Lawful Interception Internal Interface 2
LI_X3	Lawful Interception Internal Interface 3
LI_XEM1	Lawful Interception Internal Interface Event Management Interface 1
LI_XER	Lawful Interception Internal Interface Event Record

LI_XQR	Lawful Interception Internal Interface Query Response
LTF	Location Triggering Function
MDF	Mediation and Delivery Function
MDF2	Mediation and Delivery Function 2
MDF3	Mediation and Delivery Function 3
MM	Multimedia Message
MMS	Multimedia Message Service
NPLI	Network Provided Location Information
O&M	Operations and Management
POI	Point Of Interception
SDP	Session Description Protocol
SIRF	System Information Retrieval Function
SOI	Start Of Interception
TF	Triggering Function
TNGF	Trusted Non-3GPP Gateway Function
TWIF	Trusted WLAN Interworking Function
xCC	LI_X3 Communications Content.
xIRI	LI_X2 Intercept Related Information

4 General

4.1 Introduction

The present document provides details of the internal and external interfaces required for a network operator, access provider and/or service provider to provide the necessary information to a Law Enforcement Agency (LEA) required to meet LI requirements. LI requirements for 3GPP networks and services are given in TS 33.126 [3].

The high-level architecture that defines the necessary interfaces is specified in TS 33.127 [5]. The generic high-level architecture is as follows:

ETSI TS 133 128 V16.15.0 (2023-07)
<https://standards.iteh.ai/catalog/standards/sist/f5d4cdaf-a5a1-4033-8206-143531651297/etsi-ts-133-128-v16-15-0-2023-07>

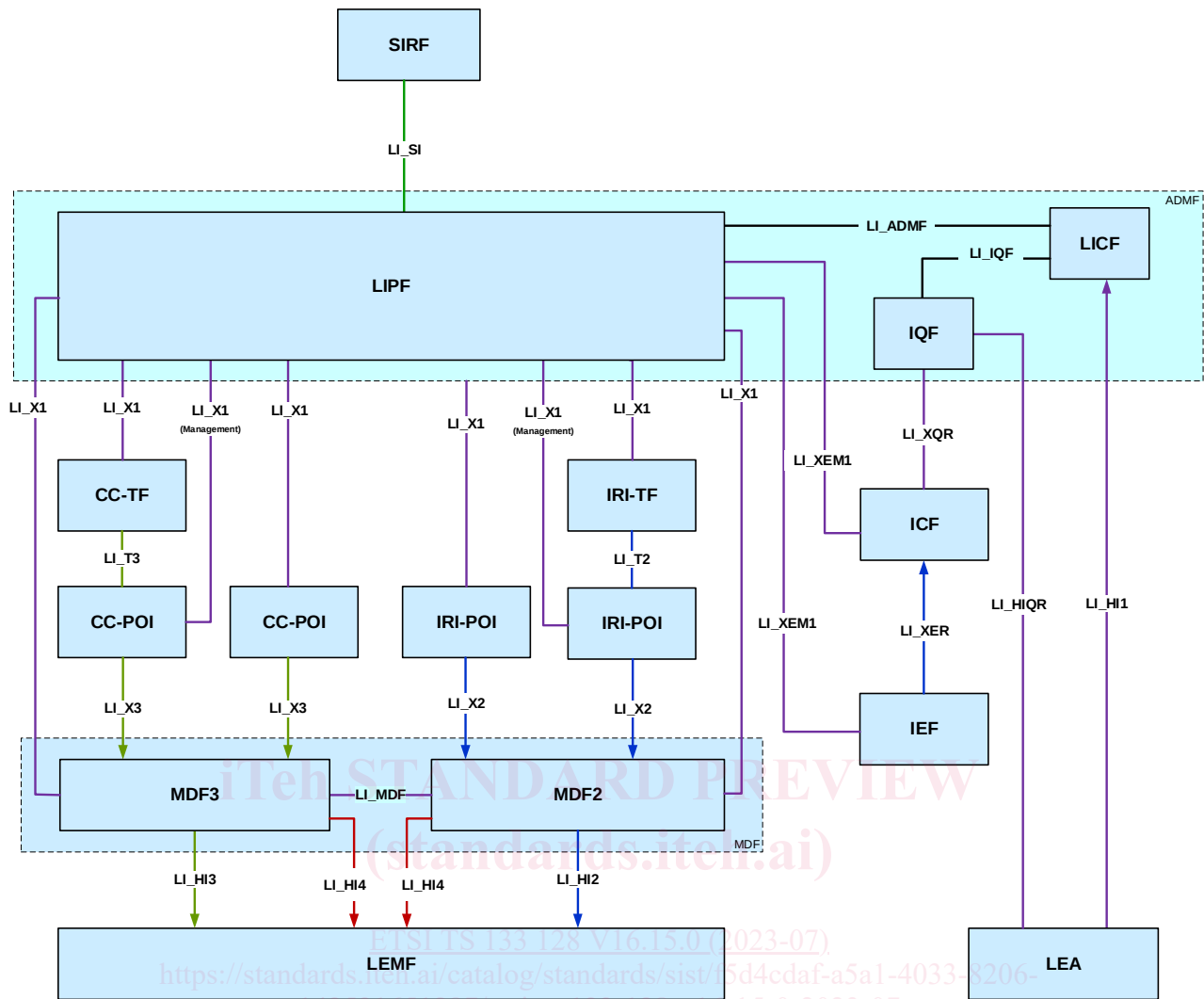


Figure 4.1-1: High-level architecture diagram with key point-to-point LI interfaces

The specification of the interfaces is split into two parts:

- Internal interfaces used between an operator's network functions are described in clause 4.2.
- External interfaces used in communicating with a LEA are described in clause 4.3.

4.2 Basic principles for internal interfaces

This clause lists the internal interfaces shown in clause 4.1, indicates the protocol used to realise each interface, and gives a reference to the relevant clauses of the present document that specify how the protocol is to be used for the given interface.

Table 4.2-1: Internal interfaces and related protocols

Interface	Description	Protocol used to realise interface	Usage
LI_SI	Used to provide system information to the LIPF from the SIRF.	Out of scope of the present document.	
LI_X1	Used to configure and audit Directly-provisioned POIs, TFs and MDFs.	ETSI TS 103 221-1 [7].	See clause 5.2.2
LI_X1 (Management)	Used to audit Triggered POIs.	ETSI TS 103 221-1 [7].	See clause 5.2.3
LI_X2	Used to pass xIRI from IRI-POIs to the MDF2.	ETSI TS 103 221-2 [8].	See clause 5.3.2
LI_X3	Used to pass xCC from CC-POIs to the MDF3.	ETSI TS 103 221-2 [8].	See clause 5.3.3
LI_T2	Used to pass triggering information from the IRI-TF to a Triggered IRI-POI.	ETSI TS 103 221-1 [7].	See clause 5.2.4
LI_T3	Used to pass triggering information from a CC-TF to a Triggered CC-POI.	ETSI TS 103 221-1 [7].	See clause 5.2.4
LI_XQR	Used to pass queries from IQF to ICF and responses from ICF to IQF.	ETSI TS 103 221-1 [7].	See clause 5.8
LI_XER	Used to pass identifier association event records from IEFs to ICF.	See Clause 5.9.	See clause 5.9
LI_XEM1	Used by the LICF/LIPF to manage IEFs and ICF.	ETSI TS 103 221-1 [7].	See clause 5.2.7
LI_ADMF	Used to pass intercept provisioning information from the LICF to the LIPF.	Out of scope of the present document.	
LI_MDF	Used by MDF2 and MDF3 in interactions necessary to correctly generate CC and IRI from xCC and xIRI.	Out of scope of the present document.	
LI_IQF	Used to pass information related to IEFs and ICF to IQF.	Out of scope of the present document.	
LI_ST	Used to transfer LI state information to and from the LISSF.	3GPP TS 29.598 [50].	See clauses 5.10 and 6.2.3.10

4.3 Basic principles for external handover interfaces

This clause lists the external handover interfaces shown in clause 4.1, indicates the protocol used to realise each interface, and gives a reference to the relevant clauses of the present document that specify how the protocol is to be used for the given interface.

Table 4.3-1: External handover interfaces and related protocols

Interface	Description	Protocol used to realise interface	Usage
LI_HI1	Used to send warrant and other interception request information from LEA to operator.	ETSI TS 103 120 [6] shall be supported. Other methods (e.g. manual exchange) may be used depending on national regulatory requirements.	See clause 5.4
LI_HI2	Used to send IRI from the MDF2 to the LEMF.	ETSI TS 102 232-1 [9] and ETSI TS 102 232-7 [10] shall be supported.	See clause 5.5
LI_HI3	Used to send CC from the MDF3 to the LEMF.	ETSI TS 102 232-1 [9] and ETSI TS 102 232-7 [10] shall be supported.	See clause 5.5
LI_HI4	Used to send LI notification information from MDF2/3 to LEMF.	ETSI TS 102 232-1 [9] and ETSI TS 102 232-7 [10] shall be supported.	See clause 5.6
LI_HIQR	Used to send warrant and other identifier association query information from LEA to CSP and used by the CSP to send query responses to the LEA.	ETSI TS 103 120 [6] shall be supported.	See clause 5.7