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Lawful Interception (LI);
Interface for warrant information

Reference
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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Lawful Interception (LI).

Modal verbs terminology

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Executive summary

The present document defines a protocol for the electronic exchange of legal and technical information for the purposes of establishing and managing lawfully required actions (e.g. Lawful Interception). In this phase, the present document is intended to provide the underlying functionality for HI-1, as defined in the ETSI LI Reference Model, and it has been designed for applicability beyond LI in future phases.

Introduction

The present document was constructed in multiple phases. The first phase of the present document consisted of a reference architecture. It was created by investigating current practices and procedures across TC LI. It makes clear the distinction between the process of communicating with the Communication Service Provider to inform them about the interception details (commonly called "tasking") and also communication among government/law enforcement/judiciary to establish the warrant (commonly called "warrantry"). The second phase of the present document provided a standardized detailed interface based on the architecture in the first phase, in particular for LI. The present document anticipates that future phases will add other requests for legal action.

1 Scope

The present document defines an electronic interface between two systems for the exchange of information relating to the establishment and management of lawful required action, typically Lawful Interception. Typically this interface would be used between: on one side, a Communications Service Provider; and, on the other side, a Government or Law Enforcement Agency who is entitled to request a lawful action. The present document is a specific and detailed example of one particular Warrantry interface for eWarrants [i.1].

The ETSI reference model for LI (ETSI TS 101 671 [1] or ETSI TS 102 232-1 [2]) defines three interfaces between law enforcement and CSPs, called HI-1, HI-2 and HI-3. The protocol defined in the present document is designed to provide a large part of the functionality for HI-1. It is not designed to be used for HI-2 (delivery of intercept related information) or HI-3 (delivery of communications content). The protocol designed in the present document may also be used for interfaces which require structured exchange of information relating to the establishment and management of Lawful Interception. The general view is that the HI-1 concept can also be used for other legal actions than LI. For that reason the present document could, besides LI, also be applied for retained data requests, seized data requests, data preservation orders and other similar legal requests.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI TS 101 671: "Lawful Interception (LI); Handover interface for the lawful interception of telecommunications traffic".

NOTE: ETSI TS 101 671 is in status "historical" and is not maintained.

[2] 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".

[3] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[4] W3C Recommendation 26 November 2008: "Extensible Markup Language (XML) 1.0".

[5] IETF RFC 2818: "HTTP over TLS".

[6] IETF RFC 4279: "Pre-Shared Key Ciphersuites for Transport Layer Security (TLS)".

[7] ETSI TS 103 280: "Lawful Interception (LI); Dictionary for common parameters".

[8] IETF RFC 1738: "Uniform Resource Locators (URL)".

NOTE: Obsoleted by IETF RFC 4248 and IETF RFC 4266.

[9] IETF RFC 2045: "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies".

[10] IETF RFC 2046: "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types".

[11] IETF RFC 1321: "The MD5 Message-Digest Algorithm".

[12] W3C Recommendation, 14 December 2017: "HTML 5.2".

[13] IEEE POSIX 1003.1™-2017: " IEEE Standard for Information Technology--Portable Operating System Interface (POSIX(R)) Base Specifications, Issue 7".

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

[15] ETSI TS 102 232-2: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 2: Service-specific details for messaging services".

[16] ETSI TS 102 232-3: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 3: Service-specific details for internet access services".

[17] ETSI TS 102 232-4: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 4: Service-specific details for Layer 2 services".

[18] ETSI TS 102 232-5: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 5: Service-specific details for IP Multimedia Services".

[19] ETSI TS 102 232-6: "Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 6: Service-specific details for PSTN/ISDN services".

[20] 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".

[21] ETSI TS 123 501: "5G; System architecture for the 5G System (5GS) (3GPP TS 23.501)".

[22] ETSI TS 102 657: "Lawful Interception (LI); Retained data handling; Handover interface for the request and delivery of retained data".

[23] IETF RFC 6234: "US Secure Hash Algorithms (SHA and SHA-based HMAC and HKDF)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TR 103 690: "Lawful Interception (LI); eWarrant Interface".

[i.2] IETF RFC 3261: "SIP: Session Initiation Protocol".

[i.3] IETF RFC 3966: "The tel URI for Telephone Numbers".

[i.4] IETF RFC 3508: "H.323 Uniform Resource Locator (URL) Scheme Registration".

[i.5] IETF RFC 4282: "The Network Access Identifier".

[i.6] ETSI TS 123 003 (V13.4.0): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Numbering, addressing and identification (3GPP TS 23.003 version 13.4.0 Release 13)".

[i.7] ETSI TS 124 229 (V13.3.1): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229 version 13.3.1 Release 13)".

[i.8] IEEE Std 802-2001™: "IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture".

[i.9] Recommendation ITU-T E.164: "The international public telecommunication numbering plan".

[i.10] Recommendation ITU-T E.212: "The international identification plan for public networks and subscriptions".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

Communications Service Provider (CSP): Network Operator (NWO) or Access Provider (AP) who is obliged by law to perform a lawful action in response to a Warrant (e.g. perform Lawful Interception)

Law Enforcement Agency (LEA): Government or Law Enforcement Agency who is entitled to request a lawful action

warrant: legal authorization to perform an action or set of actions

3.2 Symbols

Void.

3.3 Abbreviations

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

CC	Content of Communication
CIDR	Classless InterDomain Routing
CSP	Communication Service Provider
CSPID	Communication Service Provider Identifier
ERE	Extended Regular Expression
FQDN	Fully Qualified Domain Name
FTP	File Transfer Protocol
HI	Handover Interface
HI-1	Handover Interface 1
HI-2	Handover Interface 2
HI-3	Handover Interface 3
HI-B	Handover Interface B
HTML	Hypertext Markup Language
HTTP	HyperText Transfer Protocol
IEEE	Institute of Electrical and Electronics Engineers
IMEI	International Mobile station Equipment Identity
IMEISV	International Mobile station Equipment Identity Software Version
IMPI	IP Multimedia Private Identity
IMPU	IP Multimedia PUblic identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
IRI	Intercept Related Information
ISO	International Organization for Standardization
JPEG	Joint Photographic Experts Group
LD	Lawful Disclosure
LDID	Lawful Disclosure IDentifier
LEA	Law Enforcement Agency

LI	Lawful Intercept
LIID	Lawful Intercept IDentifier
MAC	Media Access Control
MIME	Multipurpose Internet Mail Extensions
MSISDN	Mobile Station International Subscriber Directory Number
NAI	Network Access Identifier
POSIX	Portable Operating System Interface
RFC	Request For Comments
SIP	Session Initiation Protocol
SV	Software Version
TC	Technical Committee
TCP	Transmission Control Protocol
TIFF	Tagged Image File Format
TLS	Transport Layer Security
UDP	User Datagram Protocol
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UTF	Unicode Transformation Format
UUID	Universally Unique Identifier
WI	Warrant Information
XML	eXtensible Markup Language
XSD	XML Schema Definition

4 Structure and model

4.1 Structure of the standard

The present document defines an interface and data structures that can be used to enable electronic warrant and tasking information to be exchanged. The processes for creating, approving and implementing a warrant are national matters. The present document does not attempt to dictate or define these processes, but provides an interface and data structures on which such processes can be built. Likewise, the present document assumes that a suitable physical network infrastructure is available. Figure 4.1 shows the conceptual structure of the standard.

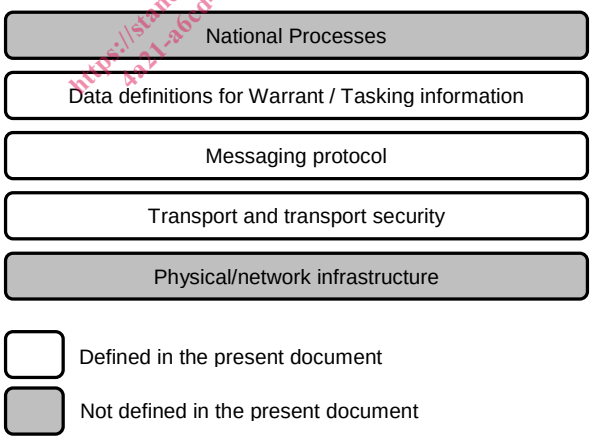

Figure 4.1: Conceptual structure of the standard

4.2 Structure of the present document

Clause 5 defines the how messages are exchanged in the messaging protocol.

Clause 6 defines the format of the messages exchanged in the messaging protocol.

Clause 7 describes the data definitions and structures for HI-1 Objects that are exchanged and used as part of the warrant and tasking processes.

Clause 8 describes the data definitions and structures for HI-1 Task Objects.

Clause 9 describes the transport mechanism(s) used by the messaging protocol.

4.3 Reference model

The present document defines an interface between two participants.

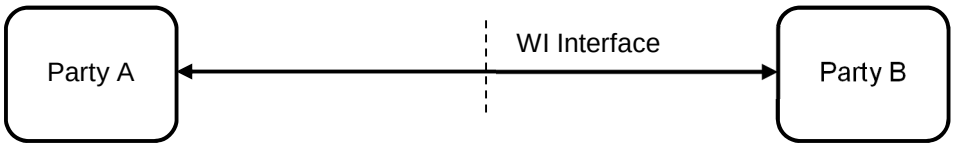

Figure 4.2: Reference model for WI interface

The process of approving or enacting a warrant will often involve more than two participants. Multi-party or multi-step interactions can, by national agreement, be composed of multiple two-party interactions. For example:

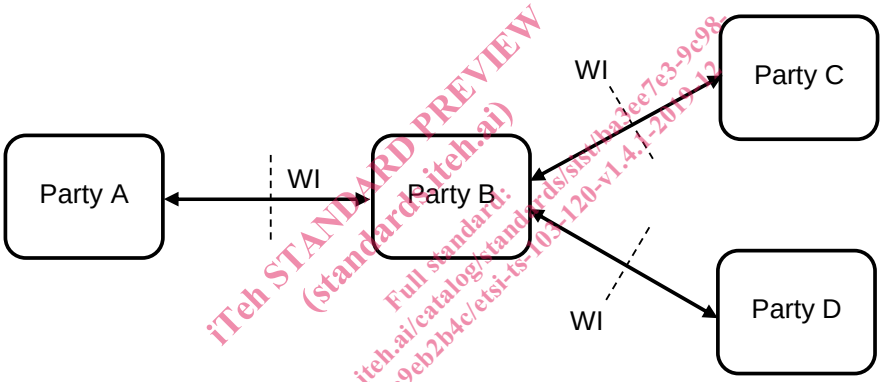

Figure 4.3: Example national process composed of WI interactions

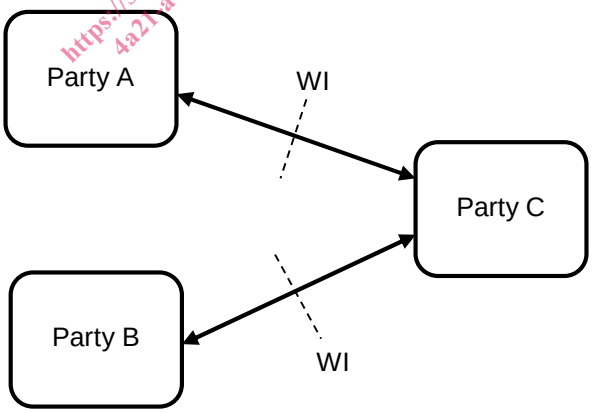

Figure 4.4: Further example national process composed of WI interactions

The nature of these "higher-level" multi-party processes will be dictated by national legislation, and as such are not defined in the present document.

5 Message Exchange

HI-1 defines two roles in an HI-1 communication:

- The Sender generates a Request Message, and transmits it.
- The Receiver receives the Request Message, processes it, and returns a Response Message to the Sender.

HI-1 message exchange therefore follows a simple Request-Response pattern between Sender and Receiver.

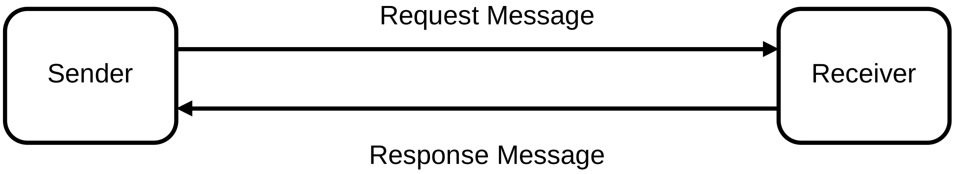

Figure 5.1

Note that the roles of Sender and Receiver are logical ones. A given node may act as both a Sender and Receiver for different exchanges, depending on the specifics of the relevant national processes, network configuration and implementation details.

Clause 6 describes the structure of Request and Response messages.

6 Message Structure

6.1 Overview

The high-level structure for HI-1 Request and Response messages is shown in figure 6.1.

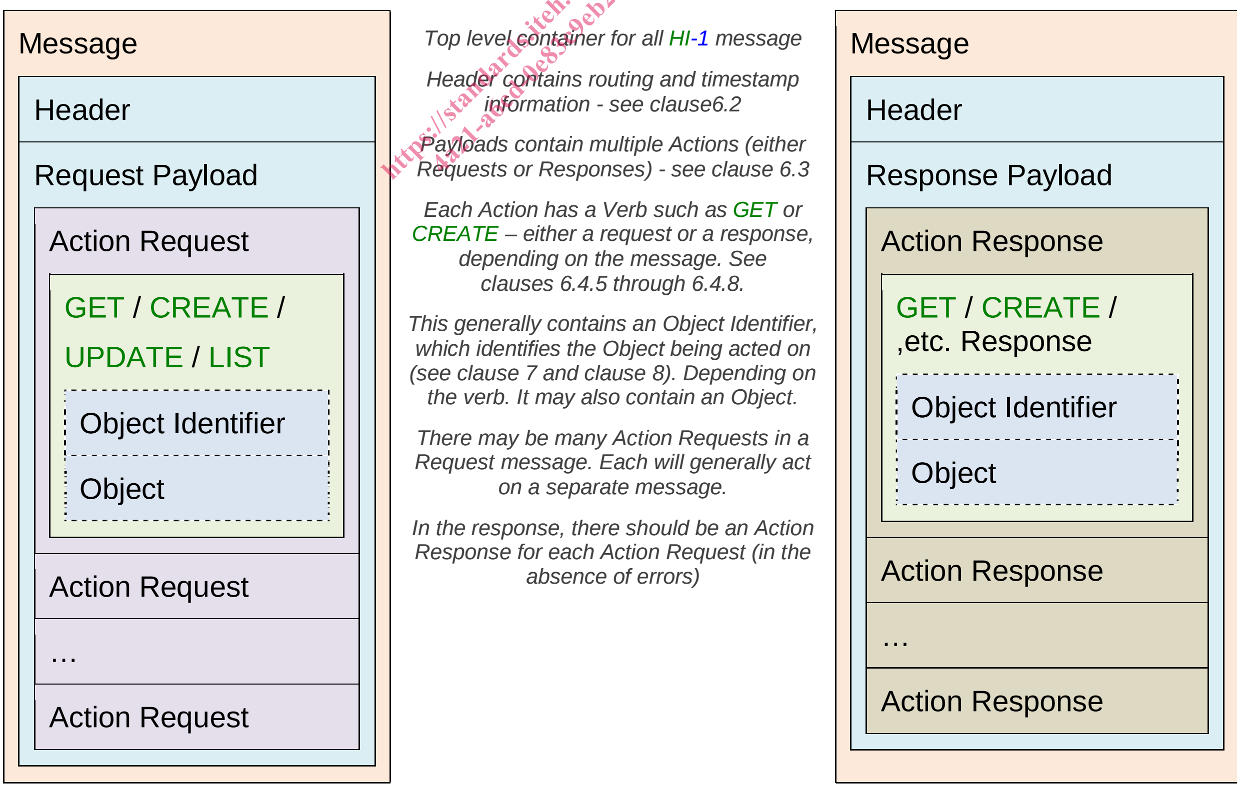

Figure 6.1: High-level message structure