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Zakonito prestrezanje (LI) - Izročilni vmesnik in storitveno specifične podrobnosti (SSD) za IP-dostavo vsebin - 1. del: Izročilna specifikacija za IP-dostavo vsebin

Lawful Interception (LI) - Handover Interface and Service-Specific Details (SSD) for IP delivery - Part 1: Handover specification for IP delivery

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Handover Interface and
Service-Specific Details (SSD) for IP delivery;
Part 1: Handover specification for IP delivery**

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Foreword

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

The present document is part 1 of a multi-part deliverable covering the Handover Interface and Service-Specific Details (SSD) for IP delivery, as identified below:

- Part 1:** "Handover specification for IP delivery";
- Part 2: "Service-specific details for messaging services";
- Part 3: "Service-specific details for internet access services";
- Part 4: "Service-specific details for Layer 2 services";
- Part 5: "Service-specific details for IP Multimedia services";
- Part 6: "Service-specific details for PSTN/ISDN services";
- Part 7: "Service-specific details for Mobile Services".

The ASN.1 module is available as an electronic attachment to the present document (see clause A.2 for more details).

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

The objective of the present document is to form the basis for a standardized handover interface for use by both telecommunications service providers and network operators, including Internet Service Providers that will deliver the interception information required by Law Enforcement Authorities under various European treaties and national regulations.

The present document describes how to handover intercepted information via IP-based networks from a CSP to an LEMF. The present document covers the transportation of traffic, but does not specify functionality within CSPs or LEMF (see clause 4.1). The present document handles the transportation of intercepted Content of Communication (CC), Intercept-Related Information (IRI), Transport Related Information (TRI) and HI1 notification information. The tasking and management of Lawful Interception via the HI1 interface is outside the scope of the present document.

The present document is intended to be general enough to be used in a variety of situations: it is not focused on a particular IP-based service. The present document therefore provides information that is not dependent on the type of service being intercepted. In particular the present document describes delivery mechanisms (clause 6), and the structure and header details (clause 5) for both HI2 and HI3 information.

References within the main body of the present document are made if applicable to the 3GPP specification number with in square brackets the reference number as listed in clause 2. In clause 2 "References" the corresponding ETSI specification number is indicated with a reference to the 3GPP specification number. 3GPP specifications are available faster than the equivalent ETSI specifications.

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1 Scope

The present document specifies the general aspects of HI2 and HI3 interfaces for handover via IP based networks.

The present document:

- specifies the modular approach used for specifying IP based handover interfaces;
- specifies the header(s) to be added to IRI and CC sent over the HI2 and HI3 interfaces respectively;
- specifies protocols for the transfer of IRI and CC across the handover interfaces;
- specifies protocol profiles for the handover interface.

The present document is designed to be used where appropriate in conjunction with other deliverables that define the service-specific IRI data formats (including ETSI TS 102 227 [i.1], ETSI TS 101 909-20-1 [33], ETSI TS 101 909-20-2 [34], ETSI TS 102 232-2 [5], ETSI TS 102 232-3 [6], ETSI TS 102 232-4 [32], ETSI TS 102 232-5 [37], ETSI TS 102 232-6 [36] and ETSI TS 102 232-7 [38]). Where possible, the present document aligns with 3GPP TS 33.108 [9] and ETSI TS 101 671 [4] and supports the requirements and capabilities defined in ETSI TS 101 331 [i.9] and ETSI TR 101 944 [i.4].

For the handover of intercepted data within GSM/UMTS PS and CS domains, the present document does not override or supersede any specifications or requirements in 3GPP TS 33.108 [9] and ETSI TS 101 671 [4].

For the handover of services defined in 3GPP TS 33.128 [46], in the event of conflict between the present document and 3GPP TS 33.128 [46], the terms of 3GPP TS 33.128 [46] apply.

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.

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

- [1] Void.
- [2] Void.
- [3] Void.
- [4] [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.

- [5] [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".
- [6] [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".
- [7] Void.

- [8] Void.
- [9] [ETSI TS 133 108](#): "Universal Mobile Telecommunications System (UMTS); LTE; Digital cellular telecommunications system (Phase 2+) (GSM); 3G security; Handover interface for Lawful Interception (LI) (3GPP TS 33.108)".
- [10] [ISO 3166-1](#): "Codes for the representation of names of countries and their subdivisions -- Part 1: Country code".
- [11] [Recommendation ITU-T X.680](#): "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [12] [Recommendation ITU-T X.690](#): "Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)".
- [13] Void.
- [14] [IETF RFC 791](#): "Internet Protocol".
- [15] Void.
- [16] [IETF RFC 793](#): "Transmission Control Protocol".
- [17] [IETF RFC 1122](#): "Requirements for Internet Hosts - Communication Layers".
- [18] Void.
- [19] Void.
- [20] Void.
- [21] [IETF RFC 5246](#): "The Transport Layer Security (TLS) Protocol Version 1.2".
- NOTE 1: IETF RFC 5246 obsoletes IETF RFC 4346: "The Transport Layer Security (TLS) Protocol Version 1.1" and IETF RFC 3268: "Advanced Encryption Standard (AES) Ciphersuites for Transport Layer Security (TLS)" which was referenced until ETSI TS 102 232-1 (V2.6.1).-d9-b372-4c9a-a9a1-dd2eb8ac19c3/sist-ts_etsi-ts_102_232-1_v3_29_1-2023
- NOTE 2: IETF RFC 4346 obsoletes IETF RFC 2246: "The TLS Protocol Version 1.0".
- [22] Void.
- [23] [IETF RFC 5681](#): "TCP Congestion Control".
- NOTE: IETF RFC 5681 obsoletes IETF RFC 2581: "TCP Congestion Control".
- [24] Void.
- [25] Void.
- [26] Void.
- [27] [IETF RFC 6298](#): "Computing TCP's Retransmission Timer".
- NOTE: IETF RFC 6298 obsoletes IETF RFC 2988: "Computing TCP's Retransmission Timer".
- [28] Void.
- [29] Void.
- [30] [IETF RFC 6818](#): "Updates to the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile".
- NOTE: IETF RFC 6818 obsoletes IETF RFC 5280: "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile".
- [31] Void.

- [32] [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".
- [33] [ETSI TS 101 909-20-1](#): "Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 20: Lawful Interception; Sub-part 1: CMS based Voice Telephony Services".
- [34] [ETSI TS 101 909-20-2](#): "Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 20: Lawful Interception; Sub-part 2: Streamed multimedia services".
- [35] Void.
- [36] [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".
- [37] [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".
- [38] [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".
- [39] Void.
- [40] [FIPS PUB 186-4](#): "Digital Signature Standard (DSS)".
- [41] [IETF RFC 7525](#): "Recommendations for Secure Use of Transport Layer Security (TLS) and Datagram Transport Layer Security (DTLS)".
- [42] [FIPS PUB 180-4](#): "Secure Hash Standard (SHS)".
- [43] Void.
- [44] [ETSI TS 103 280](#): "Lawful Interception (LI); Dictionary for common parameters".
- [45] [ETSI TS 103 462](#): "Lawful Interception (LI); Inter LEMF Handover Interface".
- [46] [ETSI TS 133 128](#): "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)".
- [47] [IETF RFC 8446](#): "The Transport Layer Security (TLS) Protocol Version 1.3".

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 TS 102 227: "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 4; Functional Entities, Information Flow and Reference Point Definitions; Lawful Interception".
- [i.2] [Library of Congress document Z39.50](#).
- [i.3] Void.
- [i.4] ETSI TR 101 944: "Telecommunications security; Lawful Interception (LI); Issues on IP Interception".

- [i.5] ETSI TR 102 503: "Lawful Interception (LI); ASN.1 Object Identifiers in Lawful Interception and Retained data handling Specifications".
- [i.6] Void.
- [i.7] IETF RFC 2923: "TCP Problems with Path MTU Discovery".
- [i.8] ISO/IEC TR 10000-1: "Information technology -- Framework and taxonomy of International Standardized Profiles -- Part 1: General principles and documentation framework".
- [i.9] ETSI TS 101 331: "Lawful Interception (LI); Requirements of Law Enforcement Agencies".
- [i.10] ETSI ES 201 158: "Telecommunications security; Lawful Interception (LI); Requirements for network functions".
- [i.11] IETF RFC 792: "Internet Control Message Protocol".
- [i.12] IETF RFC 7323: "TCP Extensions for High Performance".
- [i.13] IETF RFC 1191: "Path MTU discovery".
- [i.14] IETF RFC 2018: "TCP Selective Acknowledgement Options".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 101 671 [4], ETSI ES 201 158 [i.10], ETSI TS 101 331 [i.9] and the following apply:

Communications Service Provider (CSP): organizations (e.g. Service Providers (SvP), Network Operators (NWO) or Access Providers (AP)) who are obliged by law to provide interception

international standardized profile: internationally agreed-to, harmonised document which describes one or more profiles

profile: set of one or more base standards and/or international standardized profiles, and, where applicable, the identification of chosen classes, conforming subsets, options and parameters of those base standards or International Standardized Profiles necessary to accomplish a particular function

Transport Related Information (TRI): information which is sent across a Handover Interface in order to maintain, test or secure the interface

NOTE: It does not include any CC or IRI.

3.2 Symbols

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

| | |
|-------------|--|
| <parameter> | parameters are indicated by angle brackets |
| kB | Kilobyte |

3.3 Abbreviations

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

| | |
|-------|--|
| 3GPP | Third Generation Partnership Project |
| AP | Access Provider |
| ASCII | American Standard Code for Information Interchange |
| ASN.1 | Abstract Syntax Notation One |

| | |
|-------|--|
| ATM | Asynchronous Transfer Mode |
| BER | Basic Encoding Rules |
| CBC | Cipher-Block Chaining |
| CC | Content of Communication |
| CID | Communication IDentifier |
| CIN | Communication Identity Number |
| CMS | Call Management Service |
| CR | Change Request |
| CS | Circuit Switched |
| CSP | Communications Service Provider |
| DCC | Delivery Country Code |
| DER | Distinguished Encoding Rules |
| DF | Delivery Function |
| DSA | Digital Signature Algorithm |
| DSL | Digital Subscriber Line |
| DSS | Digital Signature Standard |
| EIPID | Extended Interception Point Identifier |
| EPS | Evolved Packet System |
| FIFO | First-In-First-Out |
| FIPS | Federal Information Processing Standards |
| GCSE | Group Communications System Enablers |
| GPRS | General Packet Radio Service |
| GSM | Global System for Mobile communications |
| HI | Handover Interface |
| HI1 | Handover Interface 1 (for Administrative Information) |
| HI2 | Handover Interface 2 (for Intercept Related Information) |
| HI3 | Handover Interface 3 (for Content of Communication) |
| HM | Handover Manager |
| HO | HandOver |
| ICMP | Internet Control Message Protocol |
| ID | Identifier |
| ILHI | Inter LEMF Handover Interface |
| IMS | IP Multimedia Subsystem |
| IP | Internet Protocol |
| IPID | Interception Point Identifier |
| IPSec | IP Security |
| IRI | Intercept Related Information |
| ISDN | Integrated Services Digital Network |
| ISP | Internet Service Provider |
| IT | Information Technology |
| IV | Initialization Vector |
| LEA | Law Enforcement Agency |
| LEMF | Law Enforcement Monitoring Facility |
| LGW | Law enforcement monitoring facility GateWay |
| LI | Lawful Interception |
| LIID | Lawful Interception IDentifier |
| MD | Mediation Device |
| MF | Mediation Function (at CSP) |
| MPLS | Multi-Protocol Label Switching |
| MSS | Maximum Segment Size |
| MTU | Maximum Transmission Unit |
| NEID | Network Element IDentifier |
| NID | Network IDentifier |
| NIST | National Institute of Standards and Technology |
| NWO | Network Operator |
| OID | Object IDentifier |
| OPID | OPerator IDentifier |
| OSI | Open Systems Interconnection |
| PDU | Protocol Data Unit |
| PROSE | PROximity SERVICES |
| PS | Packet Switched |
| PSTN | Public Switched Telephone Network |

| | |
|---------|---|
| PUB | PUBlication |
| QoS | Quality of Service |
| resLEMF | responding LEMF |
| RFC | Request For Comments |
| RTT | Round Trip Time |
| SACK | Selective ACKnowledgement |
| SHA | Secure Hash Algorithm |
| SSD | Service-Specific Details |
| SvP | Service Provider |
| TC | Technical Committee |
| TCP | Transmission Control Protocol |
| TIPHON | Telecommunication and Internet Protocol Harmonization Over Networks |
| TLS | Transport Layer Security |
| TLV | Type Length Value element |
| TRI | Transport Related Information |
| UDP | User Datagram Protocol |
| ULIC | UMTS LI Correlation |
| UMTS | Universal Mobile Telecommunications System |
| VoIP | Voice Over Internet Protocol |
| VPN | Virtual Private Network |
| WLAN | Wireless Local Area Network |

4 General

4.1 Functionality

Figure 1 shows the stages in the interception chain.

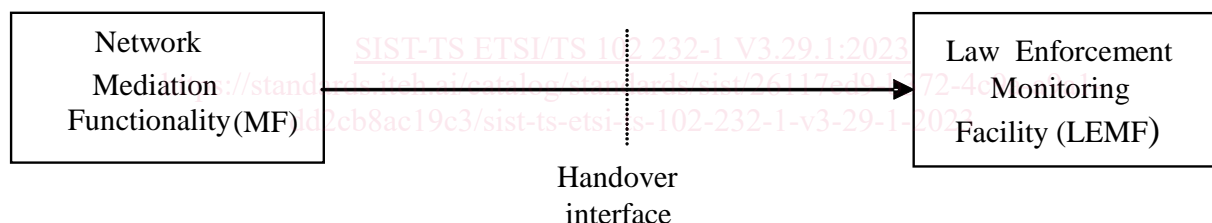


Figure 1: Stages of the interception chain

The first stage includes the creation or separation of intercepted data from the target network or target service, and the creation of IRI data. It is typically the responsibility of the CSP and is outside the scope of the present document.

The second stage ("Handover interface") consists of formatting the results of interception (except where IRI formats are specified in other standards), managing the connection between the CSP Mediation Functionality (MF) and the Law Enforcement Monitoring Facility (LEMF) and transporting the data. It should as far as possible be independent of the other stages and is the joint responsibility of the CSP and the LEA. The present document focuses on the handover interface.

The third stage includes functionality for interpreting and displaying the results of interception. It is typically the responsibility of the LEA and is outside the scope of the present document.

4.2 Intercepted data types

4.2.1 Introduction

Interception is possible at the following network elements: access element, network connectivity element and service element (as defined in ETSI TR 101 944 [i.4], clause 5.1). Each method is associated with one or more OSI Layer(s) and produces intercepted data in one or more formats, as shown by table 1 (see also ETSI TR 101 944 [i.4], figure 3).