ETSI TS 102 232-4 V3.7.1 (2024-01)

Lawful Interception (LI);
Handover Interface and
Service-Specific Details (SSD) for IP delivery;
Part 4: Service-specific details for Layer 2 services

Reference
RTS/LI-00248-4

Keywords
IP, Lawful Interception, layer 2, security

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Foreword

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

The present document is part 4 of a multi-part deliverable. Full details of the entire series can be found in part 1 [2].

The ASN.1 module is available as an electronic attachment to the present document (see clause 8.1 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 present document focuses on layer 2 interception of IP-encoded information. It is to be used in conjunction with ETSI TS 102 232-1 [2], in which the handling of the intercepted information is described.

1 Scope

The present document specifies Lawful Interception for an Access Provider that has access to layer 2 session information and that is not required to have layer 3 information. In this case, the focus of Lawful Interception (LI) for IP Network Access is on the portion of the network, commonly referred to as "layer 2 interception", that facilitates subscriber access to the Public IP network.

The present document describes the LI at the interception domain of the access network.

The present document contains:

- a stage 1 description of the Lawful Interception service;
- a stage 2 description of the information flows between the functional entities (including the information elements involved) and triggering events; and
- a stage 3 description of the protocol and procedures to be used in mapping from stage 2 information flows and elements to Intercept Related Information (IRI) and Content of Communication (CC).

The present document is consistent with the definition of the Handover Interface, as described in ETSI TS 102 232-1 [2].

NOTE 1: Layer 3 interception is described in ETSI TS 102 232-3 [12].

NOTE 2: Layer 2 interception is not applicable to the PS domain of the GSM/UMTS networks (ETSI TS 123 060 [15]).

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] Void.

[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 1122: "Requirements for Internet Hosts - Communication Layers".

[4] IETF RFC 1570: "PPP LCP Extensions".

[5] IETF RFC 3046: "DHCP Relay Agent Information Option".

[6] Recommendation ITU-T X.680: "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".

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

[8] IETF RFC 2341: "Cisco Layer Two Forwarding (Protocol) "L2F"".

[9] IETF RFC 2637: "Point-to-Point Tunneling Protocol (PPTP)".

[10] IETF RFC 2661: "Layer Two Tunneling Protocol "L2TP"".

[11] IETF RFC 1661: "The Point-to-Point Protocol (PPP)".

[12] 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".

[13] 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".

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

[15] ETSI TS 123 060: "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); General Packet Radio Service (GPRS); Service description; Stage 2 (3GPP TS 23.060)".

[16] Void.

[17] Void.

[18] Void.

2.2 Informative references

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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 102 503: "Lawful Interception (LI); ASN.1 Object Identifiers in Lawful Interception and Retained data handling Specifications".

[i.2] 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".

[i.3] 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".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI TS 102 232-1 [2], ETSI TS 102 232-3 [12] and the following apply:

Access Provider (AP): Communication Service Provider (CSP), providing access to networks

NOTE 1: APs generally provide dial-up access through a modem and PPP connection, though companies that offer Internet access with other devices, such as cable modems or wireless connections, could also be considered APs.

NOTE 2: In the context of the present document, the network access is defined as IP-based network access to the Internet.

access service: set of access methods provided to a user to access a service and/or a supplementary service

NOTE: In the context of the present document, the service to be accessed is defined as the Internet.

Application Service Provider (ASP): third-party entity that manages and distributes software-based services and solutions to customers across a wide area network from a central data centre

NOTE: In the context of the present document, a company that offers services that are accessible to users who have connectivity via the Internet.

interconnect network: network connecting the AP and the IAP, across which the layer 2 tunnel is established

Internet Access Provider (IAP): company that provides access to the Internet

NOTE: The IAP provides subscribers a username, password and an IP address that enables subscribers to log onto the Internet for virtual connectivity to Application Service Providers.

layer 2: link layer, as defined in IETF RFC 1122 [3]

layer 2 interception: lawful interception using technology that can access layer 2 information

Physical Line Termination Point (PLTP): point in the access provider's infrastructure where the physical line to the customer is terminated

EXAMPLE: xDSL-line termination point, Cable-line termination point, Ethernet-line termination point.

tunnel router: router that is an endpoint of a layer 2 tunnel; there are at least two tunnel routers for each layer 2 tunnel

3.2 Symbols

Void.

3.3 Abbreviations

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

AAA	Authentication, Authorization and Accounting
ADSL	Asymmetric Digital Subscriber Line
AP	Access Provider
ASN.1	Abstract Syntax Notation 1
ASP	Application Service Provider
ATM	Asynchronous Transfer Mode
CC	Content of Communication
CIN	Communication Identity Number
CMTS	Cable Modem Termination System
CPE	Customer Premises Equipment
CR	Change Request
CSP	Communications Service Provider
DF	Delivery Function
DHCP	Dynamic Host Configuration Protocol
HI1	Handover Interface 1 (for Administrative Information)
HI2	Handover Interface 2 (for Intercept Related Information)
HI3	Handover Interface 3 (for Content of Communication)
IAP	Internet Access Provider
IAS	Internet Access Service
IP	Internet Protocol
IRI	Intercept Related Information
ISDN	Integrated Services Digital Network
L2CC	Layer 2 Content of Communication
L2F	Layer 2 Forwarding
L2TP	Layer 2 Tunneling Protocol
LAES	Lawful Authorized Electronic Surveillance

LAN	Local Area Network
LCP	Link Control Protocol
LEA	Law Enforcement Agency
LEMF	Law Enforcement Monitoring Facility
LI	Lawful Interception
LIID	Lawful Interception IDentifier
MAC	Media Access Control
MD	Mediation Device
MF	Mediation Function
MOC	Mandatory/Optional/Conditional
NAS	Network Access Server
OID	Object IDentifier
PDU	Protocol Data Unit
PLTP	Physical Line Termination Point
PPP	Point-to-Point Protocol
PPTP	Point-to-Point Tunneling Protocol
PS	Packet Switched
PSTN	Public Switched Telephone Network
RADIUS	Remote Authentication Dial In User Service
RFC	IETF Request For Comment
SP	Service Provider
TC	Technical Committee
VoIP	Voice over Internet Protocol
WLAN	Wireless Local Area Network
xDSL	Digital Subscriber Line technologies

4 General

4.1 Access network

4.1.0 Overview

An access network provides layer 2 connectivity from the Physical Line Termination Point (PLTP) for end-users to an Application Service Provider (ASP) through an Internet Access Provider (IAP). The access provided may be via a telephone, cable, or wireless-network. The present document describes the LI at the access network.

The figures contained in the following clauses do not necessarily refer to physical configurations but identify the business roles associated with various scenarios to provide services. A provider can have one or more of following roles: Access Provider (AP), Internet Access Provider (IAP) and Application Provider.

Lawful interception of communications has to accommodate a multitude of scenarios for public telecommunications. Four representative scenarios are described below.

4.1.1 Scenario 1

This scenario reflects the situation in which the three identified provider roles are provisioned by independent providers.

For example, an ASP provides Call Control for VoIP service, and is using the transport facilities of an IAP for connectivity to the AP.

In this scenario, the specifications of the present document are relevant to the AP, while the IAP and ASP may be involved with interception according to the specifications of ETSI TS 102 232-2 [13] and ETSI TS 102 232-3 [12].

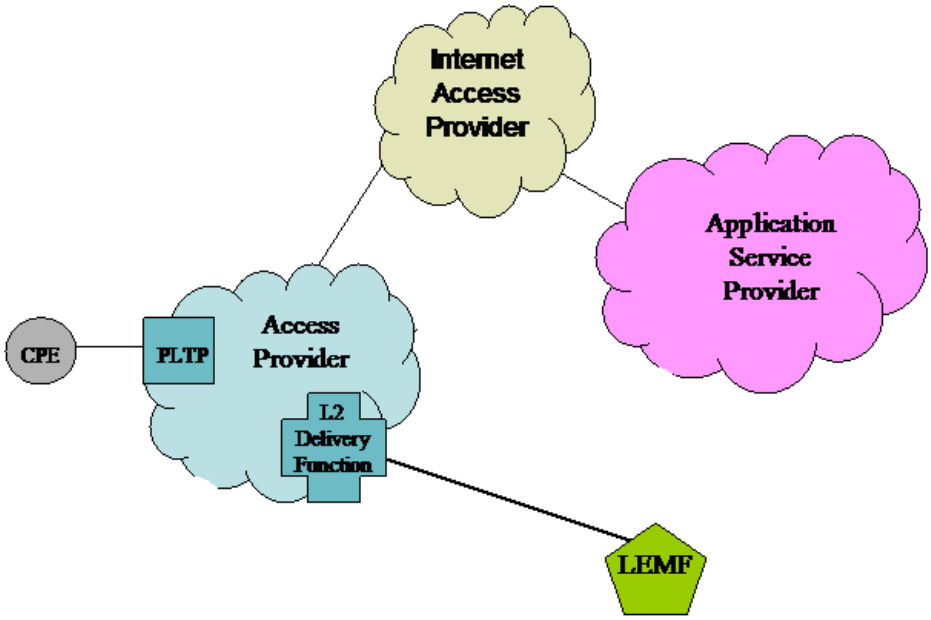

Figure 1: Scenario in which access, transport and application services are offered by three different providers

4.1.2 Scenario 2

This scenario reflects the situation in which a network operator is acting only as an AP, and not as an IAP or ASP.

In this scenario, the specifications of the present document are relevant to the AP, while the IAP/ASP may be involved with interception according to the specifications of ETSI TS 102 232-2 [13] and ETSI TS 102 232-3 [12].

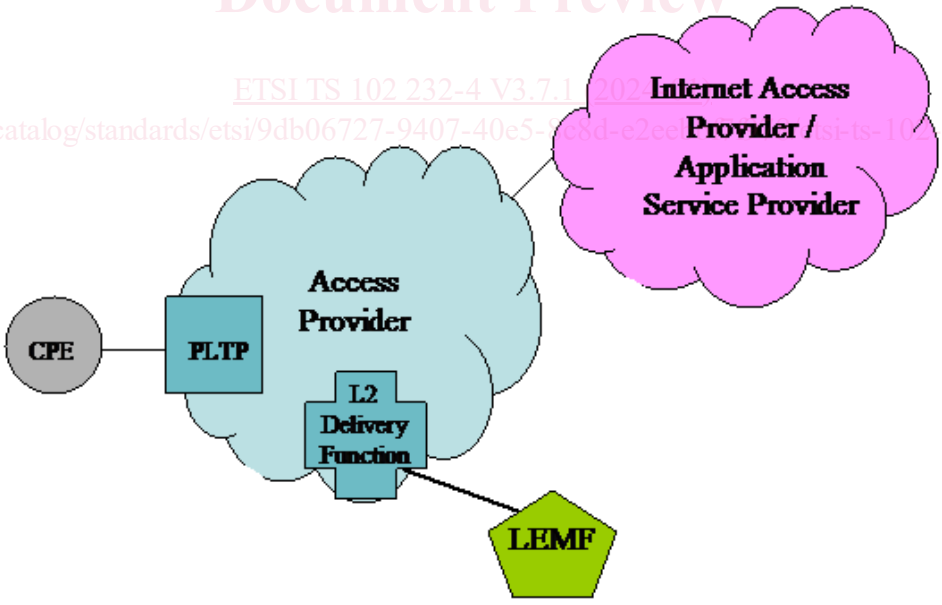

Figure 2: Scenario in which access is offered by a provider separate from the one that is offering Internet transport and application service