2nd Security Workshop
Future Security

Activities in ETSI/TC LI

Lawful Interception standardisation,
Retained Data

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Why Lawful Interception in EU

17th January 1995: EU Council of Ministers adopted a resolution on Lawful Interception

The providers of public telecommunications networks and services are legally required to make available to the authorities the information necessary to enable them to investigate telecommunications.
Main body in ETSI for LI Standards development and coordination is ETSI/TC LI
History of ETSI/TC LI


- ETSI/TC Security (TC SEC)

- ETSI/Technical Committee Lawful Interception (TC LI)
  - Established as stand-alone TC in Oct 2002
Participation in ETSI/TC LI

- Law Enforcement Agencies / Government
  - NL, UK, DE, USA, AU, CA, AS, FR, RU, FIN, IT, S, GR, ES, KR

- Operators
  - KPN (NL), DT (DE), TeliaSonera (S), Inmarsat, Telenor, Telstra (AU), BT(UK), T-Mobile (DE), Vodafone (DE), UPC

- Manufacturers (switch)
  - Siemens, Ericsson, Nokia, Cisco, Alcatel
  - Lucent Technologies, Nortel, Marconi, Motorola

- Manufacturers (mediation / LEA equipment)
  - Manufacturers may be active in all areas
Terms of Reference ETSI/TC LI

- To capture the requirements of “Law Enforcement Agencies” and translating those into requirements to be applied to technical specifications
- To develop and publish handover interfaces, and rules for the carriage of technology specific interception across these interfaces
- To develop a set of standards that allow ETSI standards to support industry compliance to the requirements of national and international law
LEA requirements (step 1)

- **ETSI TS 101 331**
  **Requirements of Law Enforcement Agencies**
  - Provides guidance in the area of co-operation by network operators/service providers with the lawful interception of telecommunications
  - Provides a set of requirements relating to handover interfaces for the interception
Types of Lawful Intercepted data

- **Content of Communication (CC)**
  - Information exchanged between two or more users of a telecommunications service

- **Intercept Related Information (IRI)**
  - Collection of information or data associated with telecommunication services involving the target identity:
    - communication associated information or data (including unsuccessful communication attempts)
    - service associated information or data (e.g., service profile management by subscriber)
    - location information
General network arrangements
(TS 101 331)

- Content of Communication
  - Communication associated information
  - Service associated information
  - Location information

- Handover Interface

- Result of interception (IRI + CC)

- Law Enforcement Monitoring Facility
General on security LI feature

- **Local staff**
  - Only authorised personnel may have knowledge that interception has been activated on a target
  - Unauthorised persons shall not be able to detect that any interception is active on certain subscribers

- **Parties in the communications**
  - Neither the target nor the other parties involved in the communications should be able to detect that interception is (de)activated or that interception is taking place

- **Other users**
  - Other users of any telecommunications service should not be able, by any means, to detect that any interception facility has been (de)activated or that interception is taking place
LI Handover Interface (step 3)

- **ETSI TS 101 671 (ETSI ES 201 671)**
  Handover Interface for the Lawful Interception of Telecommunications Traffic

- Generic flow of information and procedures and information elements, applicable to any future telecommunication network or service
- Circuit switched and packet data
- Covered technologies:
  - PSTN, ISDN, GSM, UMTS (CS), GPRS, TETRA
  - wireline NGN (including PSTN/ISDN emulation)
  - wireline IMS PSTN simulation
- frozen: no new technologies to be added
Handover Interface ports

- **HI1: for administrative information**
  - Request for lawful interception:
    - target identity, LIID, start/duration, IRI or IRI+CC,
    - IRI delivery address, CC delivery address, ...
  - Management information

- **HI2: for delivery of Intercept Related Information**
  - All data related to establish the telecommunication service and to control its progress
  - Correlation information

- **HI3: for delivery of Content of Communication**
  - Transparent en-clair copy of the communication
  - Correlation information
Handover Interface Concept

(TS 101 671)

NWO/AP/SvP’s domain

LEA domain

IIF: internal interception function
INI: internal network interface

HI1: administrative information
HI2: intercept related information
HI3: content of communication

LEMF

LI handover interface HI
Parameters in IRI records

- IRI record type (Begin, Continue, End, Report)
- LI related identities
  - LIID, target, network operator, network element, call ID, ...
- Timestamp
- Intercepted call direction (to / from target)
- Intercepted call state (in progress, connected)
- Address: Calling party / Called party / Forwarded-to-party / ..
  - E164, TEI, IMSI, IMEI, MSISDN, SIP URI, ...
- Ringing tone duration / conversation duration
- Type of intercept:
  - PSTN, ISDN, GSM (CS), TETRA, GPRS (PD), UMTS (CS)
- Supplementary service information
- Location information
- National parameters
- ....
Interception network
ISDN/PSTN Services
step-by-step

IRI: Intercept Related Information
CC: Content of Communication
INI: Internal Network Interface
IIF: Internal Intercepting Function
AI: Administrative Interface

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<tr>
<th>Switching functions</th>
<th>Data</th>
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<tbody>
<tr>
<td>IIF</td>
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Mediation
Function 1

Mediation
Function 2

Mediation
Function 3

Mediator

Paper
warrent

Authorisation
authority /
Law
enforcement
agency

Law
enforcement
agency

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<td>HI1</td>
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IIF: Handover Interface
HI1: Administration
HI2: Intercept Related Information
HI3: Content of Communication

IRI: Intercept Related Information
CC: Content of Communication
INI: Internal Network Interface
IIF: Internal Intercepting Function
AI: Administrative Interface
Architecture Reports from TC LI

- ETSI TR 101 943
  Concepts of Interception in a Generic Network Architecture
  - High-level informative overview and principles regarding implementation of LI for telecommunications

- ETSI TR 102 528
  Interception domain Architecture for IP networks
  - High level reference architecture for supporting lawful interception for IP networks
  - High level description of Internal Network Functions and Interfaces.
  - Application of the reference model to voice and multimedia over IP services, data layer 3 and layer 2 services
  - Reference model in the network operator and communication service provider domain
Reference model for LI in IP networks

(ETSI TR 102 528)

CSP DOMAIN

LI Administration Function (AF)

Intercept Related Information Internal Interception Function (IRI-IIF)

Content of Communication Trigger Function (CCTF)

Lawful Interception Mediation Function (MF)

Content of Communication Internal Interception Function (CC-IIF)

LEA DOMAIN

Authorisation authority / Law enforcement agency

Law enforcement agency

LEA

HI

HI1

INI1a

INI1b

INI1c

INI2

INI3

CCTI

CCCI

HI2 [IRI]

HI3 [CC]
Handover of LI via IP Networks (step 3)

- **ETSI TS 102 232 part 01** *(formerly TS 102 233)*
  Delivery of IP based interception
  - General aspects of handover for HI2 and HI3 (as defined by TS 101 671) where the underlying transport system is based on the Internet Protocol stack.
  - Modular approach used for specifying IP based handover interfaces
  - Header(s) to be added to IRI and CC sent over the HI2 and HI3 interfaces
  - Protocols for the transfer of IRI and CC across the handover interfaces
  - To be used in conjunction with other deliverables that define the service-specific IRI data formats
IP service-specific details (applications)

- **ETSI TS 102 232 part 02** (formerly TS 102 233)
  Service-specific details for E-Mail Services
  - Description for handover of E-mail messages; SMTP, POP3, IMAP4

- **ETSI TS 102 232 part 03** (formerly TS 102 234)
  Service-specific details for Internet Access Services
  - Description for handover of Internet Access Information and TCP/IP information; DHCP, RADIUS

- **ETSI TS 102 232 part 04** (formerly TS 102 815)
  Service-specific details for Layer 2 Services
  - Description for LI functionality of Layer 2 access

- **ETSI DTS/LI-00024** (=> TS 102 232 part 05)
  Service-specific details for IP Multimedia Services

- **ETSI TS 102 232 part 06**
  Service-specific details for PSTN/ISDN Services
TS 102 232 IP HO Family

SSD for E-mail Services
part 02

SSD for Internet Access Services
part 03

SSD for Layer 2 Services
part 04

SSD for IP Multimedia Services
DTS/LI-00024
part 05

SSD for PSTN/ISDN Services

SSD for Mobile Services
new WI

SSD -> Service-Specific Details on top

Generic Headers

Handover manager
Delivery session
Transport layer
Network layer

Delivery network

TS 102 232 part 01

Application
Presentation
Session
Transport
Network and below
LI possibility on a VoIP platform

1) All SIP messages are copied over SPAN ports via the Collecting Switch to the LI Data Gathering Function
2) All rtp is copied to the Switch and if needed to the GF
3) If needed intercepted rtp (local SBC traffic) is copied from the SBC to the LI Data Gathering Function
Relationships with other bodies

- 3GPP/SA3-LI (LI for UMTS & GSM)
- ETSI/TC TISPAN WG7 (LI for wireline NGN & IMS)
- ETSI/TC AT (LI for IPCableCom)
- ETSI/TC TETRA (LI for Tetra system)
- ATIS/PTCS LAES SC (T1.678 v1 / J-STD-025-B)
Why study on Retained Data in EU

15th of March 2006

Directive 2006/24/EC
on
the retention of data processed in
connection with the provision of
public electronic communication services
or of
public electronic communication networks
Applicability Directive

- The content of the communication may not be retained
- Successful and unsuccessful call attempts
- Fixed network telephony
- Mobile telephony
- Internet access
- Internet e-mail
- Internet telephony
- Proportional requirements shall be defined by each Member State in its national law
Categories of data to be retained

- data to trace and identify the source of a communication
- data to identify the destination of a communication
- data to identify the date, time and duration of a communication
- data to identify the type of communication
- data to identify users' communication equipment or what purports to be their equipment
- data to identify the location of mobile communication equipment
Actual LI working/study issues TC LI

- **ETSI DTS/LI-00049**  
  Request and Delivery of Retained Data  
  Requirements of Law Enforcement Agencies

- **ETSI DTS/LI-00030**  
  Retained Data Handover Interface

- **ETSI DTS/LI-00024** *(TS 102 232 part 05)*  
  LI of IP Multimedia Services communication

- **ETSI DTS/LI-000xx** *(TS 102 232 part 07)*  
  LI of Mobile Packet Data Services (IP Hand Over)

- Maintenance of existing LI specifications;  
  especially TS 101 331, TS 101 671 (CS) and  
  TS 102 232-family (IP)
More details on ETSI/TC LI can be found on:


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