ETSI's IP Handover Standards

Mark Lastdrager

Pine Digital Security

mark@lawfulinterception.com

Handover specs [1]

- Interface between Communications Service Provider (CSP) and Law Enforcement Agency (LEA)
- Describes:
  - How to encapsulate intercepted packets
  - What additional information to add (headers)
  - (Optionally) how to encrypt the packets
- Does not describe how to obtain the intercepted packets

Handover specs [2]

- Specifications use ASN.1 (Abstract Syntax Notation 1) encoding
- ASN.1 makes it
  - easy to write a specification
  - easy to implement the specification

Example ASN.1 statement

```
EmailIRI                    ::= SEQUENCE
     -- EmailIRI is the PDU sent for each "piece" of E-mail IRI.
{
     emailIRIObjId                        [0] RELATIVE-OID,
     eventType                                [1] E-mail-Event,
     client-Address                       [2] IPAddress OPTIONAL,
       -- Provided if available
     server-Address                       [3] IPAddress OPTIONAL,
       -- Provided if available
     client-Port                              [4] INTEGER OPTIONAL,
       -- Provided if available
     server-Port                              [5] INTEGER OPTIONAL,
       -- Provided if available
     server-Octets-Sent                   [6] INTEGER,
     client-Octets-Sent                   [7] INTEGER,
     protocol-ID                              [8] E-mail-Protocol,
     e-mail-Sender                        [9] UTF8String (SIZE (0..255)) OPTIONAL,
       -- Not available in some cases; if a value is available, it must be provided
     e-mail-Recipients                    [10] E-mail-Address-List OPTIONAL,
       -- Not available is some cases; if a value is available, it must be provided
     status                                   [11] E-mail-Status,
     total-Recipient-Count                [12] INTEGER (0..4294967295) OPTIONAL,
     message-ID                               [13] OCTET STRING OPTIONAL,
       -- Network byte order
```

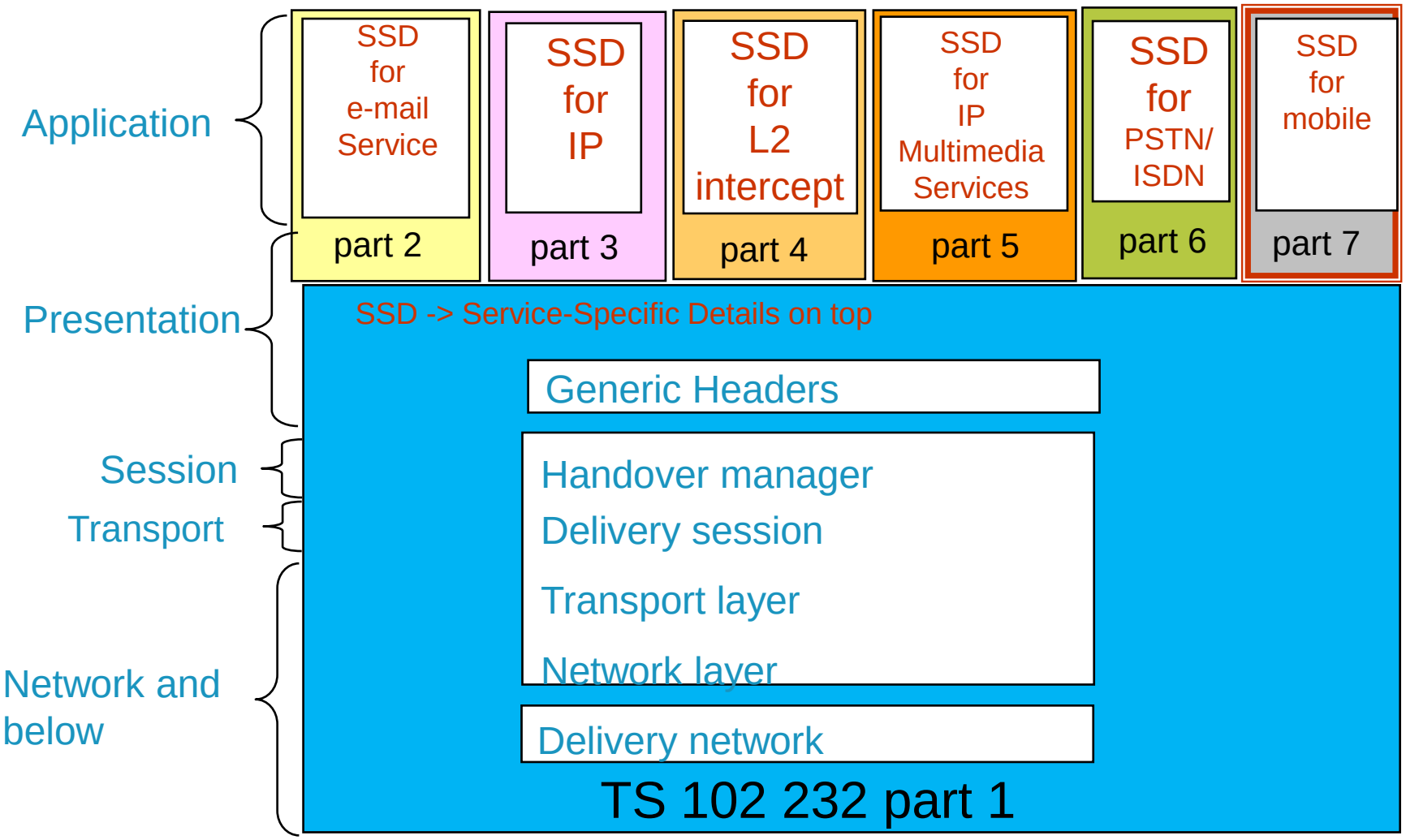
Old Document Numbering

New Document Numbering

(Since december 2006)

- Main document: TS 102 232 part 1
- 6 subdocuments: part 2 to 7
- Easy to remember!

The Big Picture



TS 102 232 part 1

- Scope: General hando
- Covers:
  - Generic headers
  - Transport to LEA
  - HI2 or IRI: Interceptio
  - HI3 or CC: Content of
- Rapporteur: Matthev e)

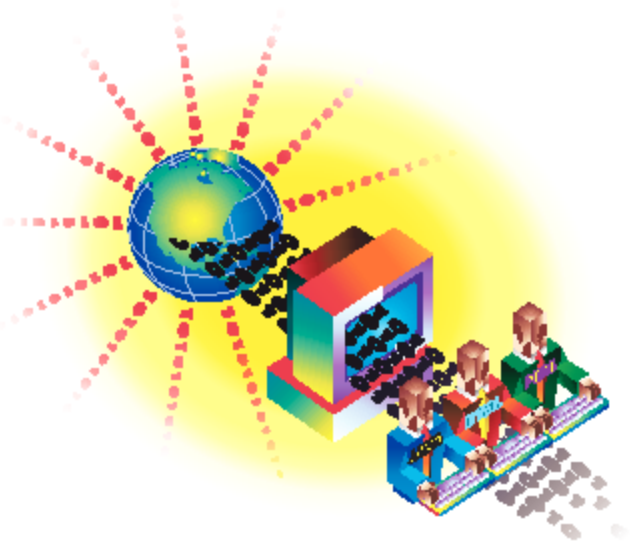
- LIID
- Authorization country code
- Communication Identifier
- Sequence number
- Timestamp
- Payload direction
- Payload type
- Interception Type
- IRI record type (Begin, Continue, End, Report)

TS 102 232 part 2

- Scope: Electronic mail
- Covers:
  - E-mail from and to the target (SMTP)
  - Mailbox retrieval by the target (POP3)
  - Mailbox manipulation by the target (IMAP)
- Rapporteur: Mark Lastdrager (Pine Digital Security)

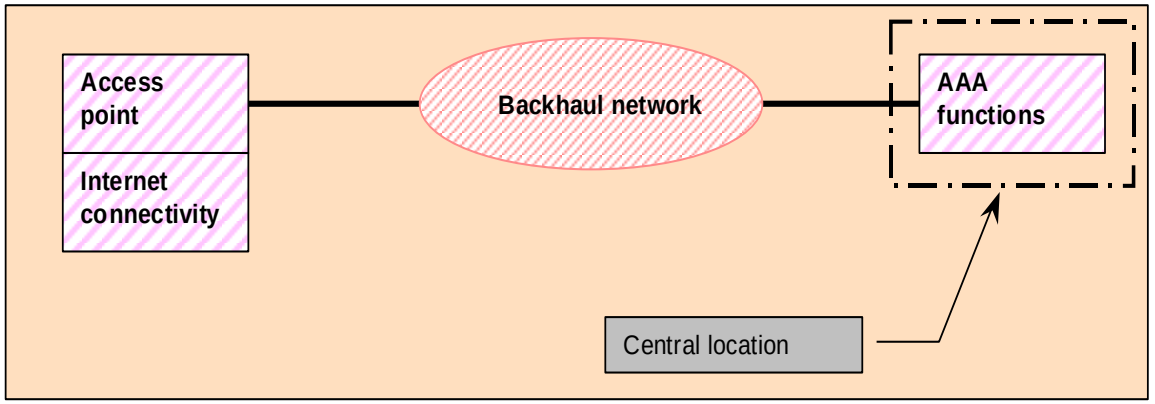
TS 102 232 part 3

- Scope: internet access
- Covers:
  - xDSL
  - Dial-up
  - Cable
  - Fixed internet
- Rapporteur: Mark Lastdrager(Pine Digital Security)



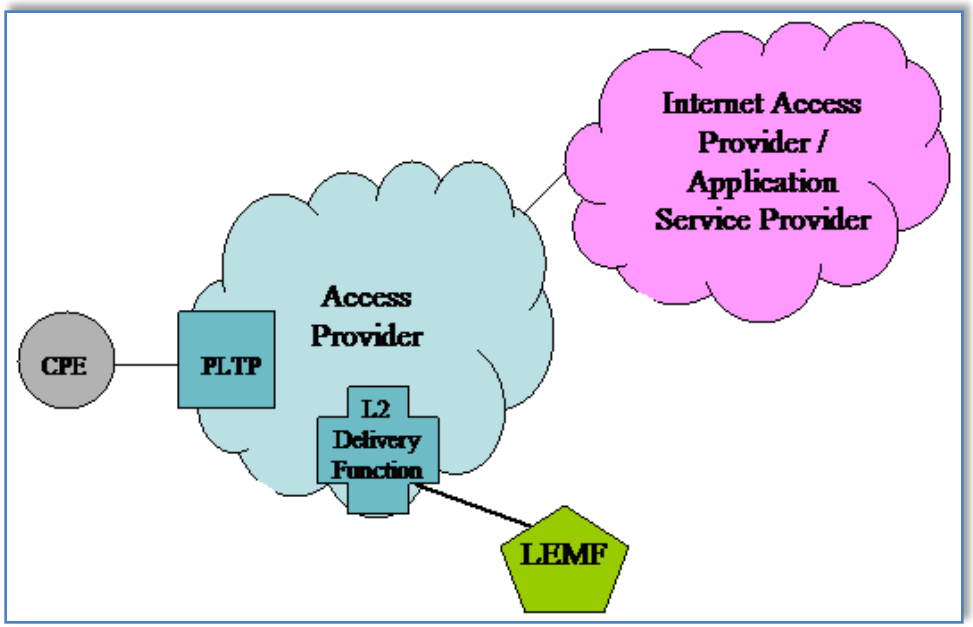
TS 102 232 part 3 [wifi]

- TR 102 519 contains recommendations
  - Update part 3 to include geo location
- Two ways of interception:
  - From the air (not easy or even impossible)
  - On the wire (easy, but WLAN traffic may be masqueraded)



TS 102 232 part 4

- Scope: layer 2 service
- Covers:
  - xDSL (on L2 level)
  - ATM
- Rapporteur: Wolfgang Schumacher (DT)



TS 102 232 part 5

- Scope: IP Multimedia (Voice/Video over IP)
- Covers:
  - Signaling
  - Media
- Rapporteur: Mark Lastdrager (Pine Digital Security)

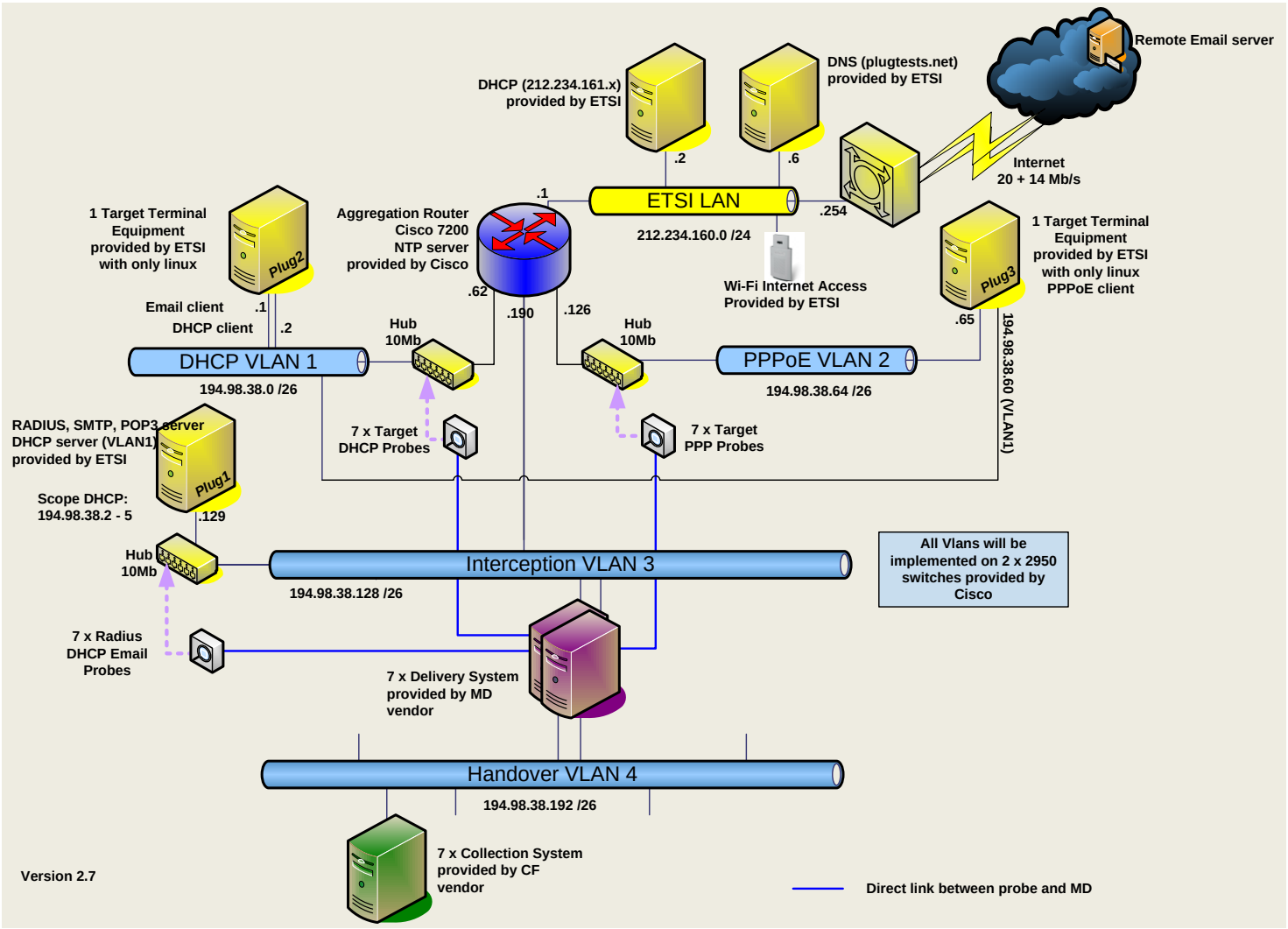
TS 102 232 part 6

- Scope: PSTN/ISDN (including emulation)
- Covers:
  - delivery of “old world” telephony in “new world” IP handover standard
- Rapporteur: Mark Shepherd (Detica/Home Office)

TS 102 232 part 7

- Scope: mobile services
- Covers:
  - Handover of 3GPP data in 102 232 framework
    - Circuit switched IRI
    - Mobile packet IRI/CC
    - Mobile multimedia IRI/CC
- Rapporteur: Mark Shepherd (Detica/Home Office)

Spec testing [1]



Spec testing [2]

- Plugtest 2:
  - Lannion, France
  - Tested specs:
    - TS 102 671 (PSTN/ISDN)
    - Part 2/e-mail
    - Part 5/multimedia
    - Part 6/PSTN emulation
  - A report was delivered, no official CRs were made

Thanks!

mark@lawfulinterception.com