Lawful Interception

An introduction to ITU:
ICT Trends and Challenges in a Global Era
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Outline

- What is LI?
- LI in the history of telecommunications
- LI technology
  - What is intercepted?
  - How is intercepted?
- LI standards
  - ITU-T and LI
- Conclusion
Def: Lawful Interception (LI)

- *Lawfully authorized* interception and monitoring of telecommunications pursuant to an order of a government body
- *Lawful?* Conducted in accordance with national law, following due process after receiving proper authorization from competent authorities
What is lawful?

“The Lives of Others” (Oscar winner 2006)

Lawyers for Guantánamo Inmates Accuse U.S. of Eavesdropping
By WILLIAM GLABERSON
Published: May 7, 2008

ECHELON interception network
What is lawful?

- 85 pages of legislation from 31 different countries: Australia; Austria; Argentina; Belgium; Brazil; Canada; Estonia; Finland; France; Germany; Hong Kong; India; Ireland; Israel; Italy; Japan; Republic of Korea; Lithuania; Malaysia; The Netherlands; New Zealand; Norway; The Philippines; Poland; Romania; Russia; Singapore; South Africa; Sweden; The United Kingdom; The USA.
LI in the history of telecommunications

1840 1867 1962 2006

1865
LI in the history of telecommunications (2)

- Samuel Morse (1791-1872)
- First public message sent with electronic telegraph (circa 1840)
- Establishment of International Telegraph Union on 17 May 1865
LI in the history of telecommunications (3)

- Interception and replacement of telegraph messages and stock data on their way from west coast to east coast (NYSE)
- Profit from plunging stock prices

1867
LI in the history of telecommunications (4)

- Easy telephone surveillance magazine advertisement
- Interception system as a gadget for domestic use

1962
LI in the history of telecommunications (5)

• ‘Athens affair’: mobile phones of 106 Vodafone Greece VIP customers, including PM, may have been routinely overheard and recorded
• ‘miscommunication’ between FBI and ISP – access to 100s of e-mail accounts instead of one approved by LEA

The New York Times
F.B.I. Gained Unauthorized Access to E-Mail
By ERIC LICHTBLAU
Published: February 17, 2008
What is intercepted?

• Depending on legislation, or LEA’s order:
  ▪ Contents of communications (CC)
    ▪ Voice, video, text messages, e-mail content, etc.
  ▪ Intercept related information (IRI)
    ▪ Signalling information
    ▪ Phone numbers, IP addresses, time, date, duration
    ▪ Who communicated with whom, when, for how long, using which medium?
    ▪ IRI have always been used by telcos for billing and network management
LI process

Network Operator (NWO), Access Provider (AP), Service Provider (SvP)

LI Order

Requested Information

Law Enforcement Agency (LEA)

Law Enforcement Monitoring Facility (LEMF)
LI process (2)

- **Capture** - CC and IRI related to the subject are extracted from the network
- **Filtering** – information related to the subject that falls within the topic of the inquiry is separated from accidentally gathered information, and formatted to a pre-defined delivery format
- **Delivery** – requested information is delivered to the LEMF
LI architecture (PSTN)
LI architecture

- Interception by applying a (physical) ‘tap’ on strategic points, such as
  - Telephone lines
  - Digital switches
  - GSM base stations
  - Session border Controllers (SBC) in IP networks
  - etc
LI in Skype?

- Skype reportedly uses non-proprietary, widely trusted encryption techniques:
  - RSA for negotiation
  - AES to encrypt conversations
- But who has access to the keys?
- Communication needs to be decrypted for ‘SkypeOut’
LI standards

- National LI laws require telcos, NSPs, etc to deploy interception systems that fulfil standards made by certain SDOs:
  - US CALEA (Communications Assistance for Law Enforcement Act)
    - Standards by CableLabs, ATIS, TIA
  - Many European countries
    - Standards by ETSI, national standards bodies
- See ‘Ready Guide to Intercept Legislation’
LI standards (2)

• ITU-T: Study Groups for all types of communications – LI could be agenda item in most SGs, such as
  ▪ SG 9: LI in IPCablecom
  ▪ SG 11: Signalling requirements for LI
  ▪ SG 12: LI and Quality of Service (QoS)
  ▪ SG 13: LI and cybersecurity
  ▪ SG 16: LI in Multimedia systems
  ▪ SG 17: LI and Identity Management (IDM)
  ▪ SG 19: LI in Mobile telecommunication networks
  ▪ Etc.

• But...
LI standards (3)

- National matter vs. international matter
  - ‘Grey area’
- Technical discussion of LI tends to get very quickly into parallel discussion of human rights, such as secrecy of communications
- Privacy and security must play a role in standards development
- LI treated with different priority and intensity
Conclusion

• ICTs have permitted LI since the era of Morse’s telegraph
• Number of (authorised) LI applications is growing (e.g. by 54% between 1996 and 2006 in the US – majority drug-related wiretaps)
• Standards are needed to assure transparent interception, focus on privacy and security
Further reading

- History of ITU, [http://www.itu.int/net/about/history.aspx](http://www.itu.int/net/about/history.aspx)