KEY ESCROW - and its Risks

(an illustration of organisational and other issues)

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KEY ESCROW SYSTEM:

Other names are Key Recovery, Data recovery, Exceptional Access and Trusted Third Party
(Fullmaktssystem, Depositionssystem)

Main characteristics/definition:

- A System for Law-Enforced Covert Surveillance
- A mechanism through which a third party can get access to the cleartext of encrypted data without the knowledge of the user.
- Requires the existence of one or many very sensitive keys that must be protected for very ling times

REQUIREMENTS FROM AUTHORITIES:

- Access to keys must be possible without end-user knowledge or consent
- Access to communicated as well as stored data
- Ubiquitous adoption/International coverage
- High Availability (less than 2h, around the clock, all year)
- Key escrow should be possible for long times afterwards
- Cp “Self-Escrow” (e.g. for employees in a company)

RISKS WITH KEY ESCROW (1):

There are a number of fundamental new risks with a system of the type suggested for Key Escrow:

1. Introduces of new vulnerabilities (i.e. a risk for the basic functionality of the system)

    - new potential (illicit) access to data

    - insider misuse

    - new (very valuable) targets for attacks

    - destroys Forward Secrecy

    - transmission and storage of the keys

RISKS WITH KEY ESCROW (2):

2. Complexity

   - hard to design such systems (several bugs found in the former “US Escrowed Encryption Standard, based on the Clipper chip).

   - scale factors

   - operational complexity

   - authorization for Key Recovery

RISKS WITH KEY ESCROW (3):

3. Costs

   - operational costs (for agents)
   - product design costs
   - costs for authority control, evaluation, accreditation, etc
   - end-user costs

SUMMARY:

- The suggested Key Escrow system is a good example of the problems that arise when attempting to construct very large, complex systems that have to be secure.
- See “The Risks of Key Recovery, Key Escrow, Trusted Third Party and Encryption”: http://www.cdt.org/crypto/risks98/