A Taxonomy of operational security considerations for manufacturer installed keys and Trust Anchors

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https://www.sandelman.ca/SSW/talk/2023-t2trg-taxonomy-installed-keys/

An even briefer history of this draft

- ANIMA documents
  - masa-considerations
  - registrar-considerations
  - common contents,
- Went to SECDISPATCH in virtual interim meeting in July 2022, at IETF108
  - https://datatracker.ietf.org/meeting/108/session/secdispatch

- Adopted by T2TRG Jan. 2023.

- ?

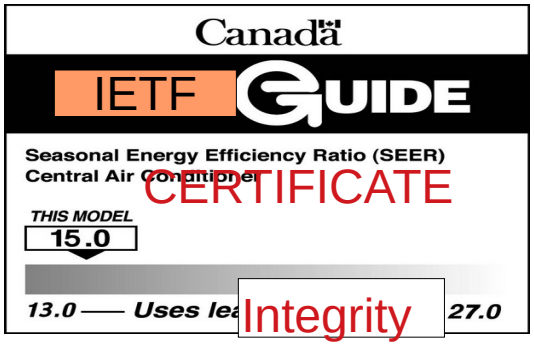
- Profit!

Non-Goals of the document

1) Not aiming to write an ISO27001-ish evaluation process.
2) Not going to make any recommendation as to an appropriate solution for a given risk situation.

Goals of this document

- Enumerate the reasonable, and maybe some less reasonable ways to provision and secure keys, and give them **names**.
- Not just the most secure way, because it is not always worth it.



admin:password

Recent events at CA/B FORUM and LAMPS

- CA/Browser Forum decided that code-signing keys need to be in an HSM
- CSR needs to hold this attestation
- CA that signs code-signing key must have some kind of attestation from HSM about key provence
- LAMPS still debating about what the format of attestation will be

Taxonomy: Key Generation Process

- where/how is the device key generated
  - ~~internal?~~
  - ~~external/factory?~~
  - ~~CPU provisioned seed?~~
  - ~~threashold methods?~~
-

- ++ Key Attributes
- > Source/Creation (enum)
- >> Loaded
- >> Device Derived (e.g. Derived from a device permanent master secret such as a TPM hierarchy seed)
- >> Generated on Device
- >> Key Agreement (???) (Derived from a key agreement)
- >> Co-Generated (???) (Securely cogenerated on more than one machine)
- >> KDF (???) (Derived from a master secret which was in turn derived from a two - or greater - party protocol).

- > Protection (enum - ordered from least to most protected)
- >> Unknown
- >> None/Software
- >> Extractable/Migratable (by the user)
- >> Extractable for Backup (encrypted under a key migratable to another HSM)
- >> Extractable for Storage (encrypted under a PUF, not migratable)
- >> Non Extractable

LAMPS notes:
https://mailarchive.ietf.org/arch/msg/spasm/d0xsQZIBgizetVRaZVULmTkEdlk/

Next Steps

- Additional bikeshedding over some of the terminology/definitions
- Promote the terms more widely
  - Within the IETF and IRTF and also outside
  - Listen to feedback, look for awkward usages
- Publish in late 2023

Questions!