DRAFT-OUNSWORTH-PKIX-KEY-ATTESTATION

IETF 116 – LAMPS

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SECURING A WORLD IN MOTION

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MOTIVATION

- CA/B Ballots CSC-13 and CSC 17 require code signing certificates to be generated and stored in HSMs by 1 June 2023.
- HSMs today don't tend to support any key attestation format, and where they do it's a wild west of proprietary formats.
- Goal: avoid CAs needing to implement dozens of proprietary formats.
- WebAuthn / RATS / EAT is not a good fit:
  - We would need to define a WebAuthn Attestation Statement Format to carry the attributes that we care about for HSMs.
  - Needing to support WebAuthn / CBOR inside HSM boundaries to then put that data into an ASN.1/DER CSR is … weird.
- Timeline: no way we'll make Standard + Adoption by 1 June 2023, but maybe within the year?

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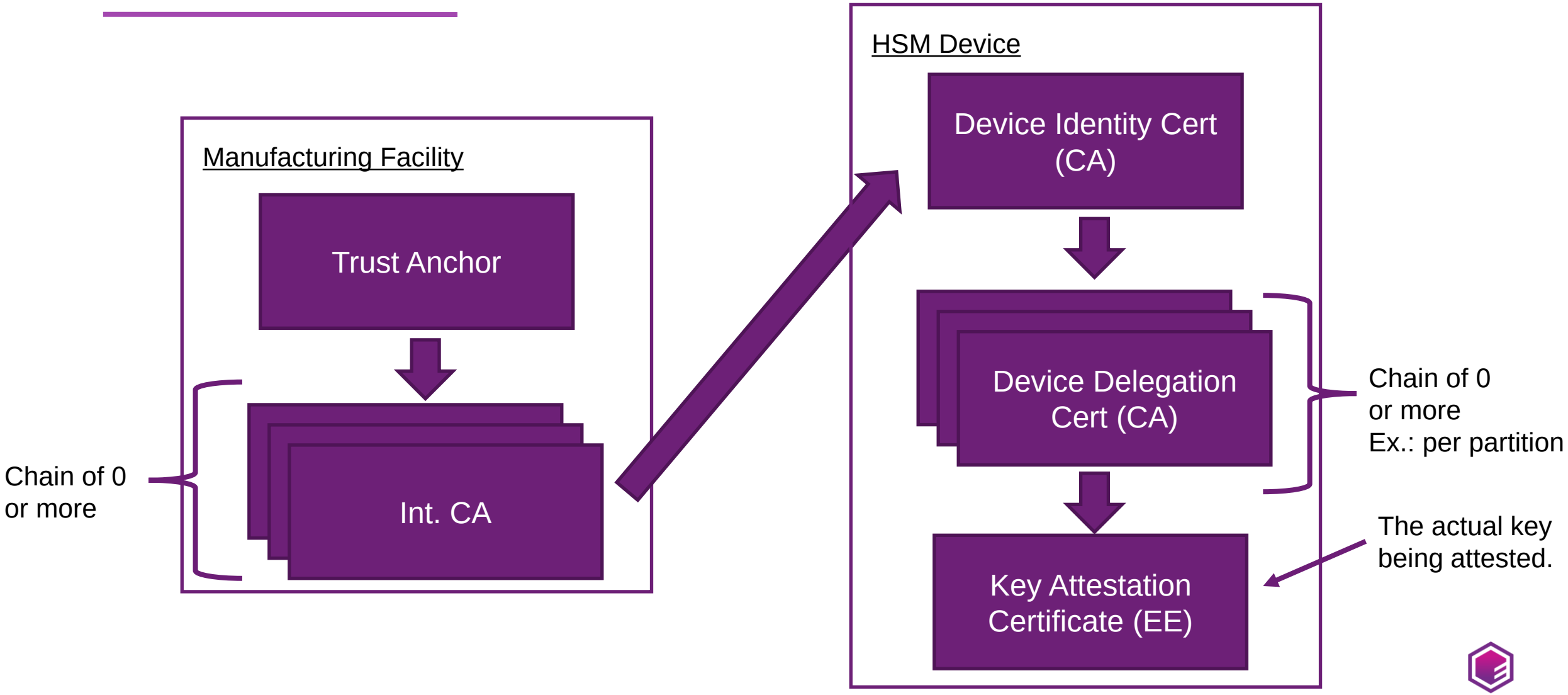
TECHNICAL OVERVIEW

- Design principle: “Just an X.509 cert chain with some new v3 extensions”.



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TECHNICAL OVERVIEW -- EXTENSIONS

- We want to put key policy info in a few v3 extensions throughout the cert chain:
  - DeviceInformation / DeviceSubkeyInformation / ApplicationKeyInformation
    - Vendor-agnostic info in defined fields.
    - Vendor-proprietary policy info goes in `vendorinfo`.

```
ApplicationKeyInformation ::= SEQUENCE {
 vendor UTF8STring       -- manufacturer of device
 model UTF8STring        -- device model information
 vendorinfo OCTET STRING -- vendor-specific information
}
```

- New Extended Key Use (EKU) types indicate key policies within the HSM, ex.:

```
id-Recoverable OBJECT IDENTIFIER ::= { tbd }
-- the key can be recovered under administrative control
-- basically, an intentionally vague "can it be exported?"
```

- Intention: A CA can tell if this key meets CA/B BRs without needing to parse the `vendorinfo`, but can do so to apply more detailed issuance policy.

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SUPPORTIVE VENDORS

Authors

- Entrust
  - Both Entrust CA and nShield HSM
- Crypto4A
- Forntanix
- Keyfactor

Interested parties

- Forntanix
- Keyfactor
- Utimaco

- I’m looking for more supporters. I’ll be starting a bi-weekly author’s meeting after 116.

Adoption?

(I suppose “because LAMPS” this actually needs a charter change?)

(Dispatch? is there a better place than LAMPS?)

Russ suggested combining with draft-ietf-lamps-key-attestation-ext, which also dodges the charter issue.

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