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Qualcomm

Updates on IETF EAT

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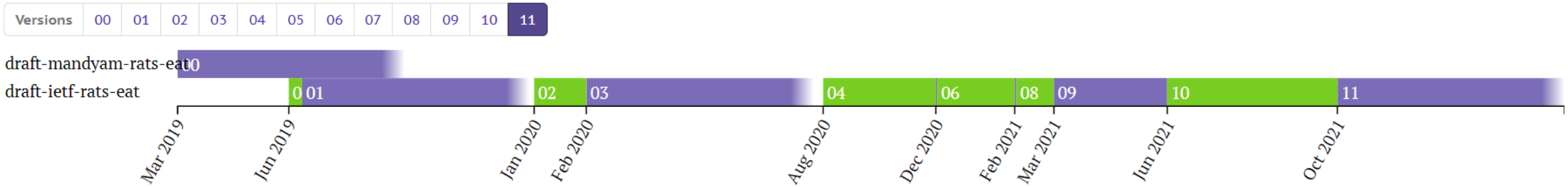
IETF EAT Standardization Progress

- EAT is a standards-track I.-D. in the IETF Remote Attestation Procedures (rats) Working Group



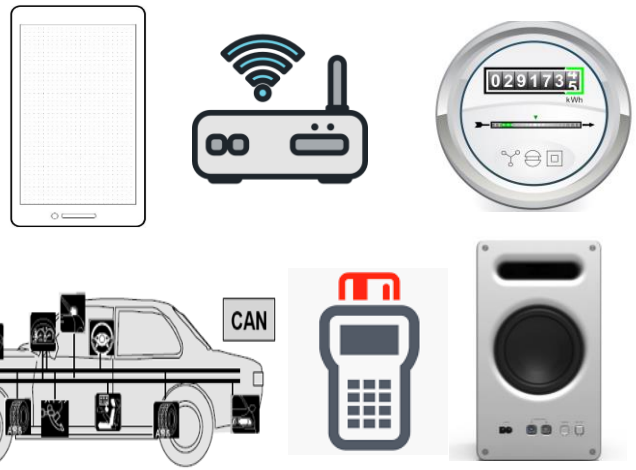
  - In WG Last Call state

- Core function
  - An Entity Attestation Token (EAT) provides a signed (attested) set of claims that describe state and characteristics of an entity, typically a device like a phone or an IoT device. These claims are used by a relying party to determine how much it wishes to trust the entity

- EAT profiles have also been created
  - ARM PSA Token - https://tools.ietf.org/id/draft-tschofenig-rats-psa-token-05.txt
  - QWES Token - https://tools.ietf.org/id/draft-mandyam-rats-qwestoken-00.txt

- Open issues, public review comments and open-source implementation being tracked in GitHub
  - https://github.com/ietf-rats-wg/eat/

Good Devices



Bad Devices

Entity Attestation Token

- Chip & device manufacturer
- Device ID (e.g. serial number)
- Boot state, debug state…
- Firmware, OS & app names and versions
- Geographic location
- Measurement, rooting & malware detection…

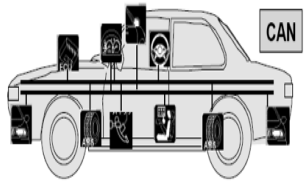
All Are Optional

Cryptographically secured by signing

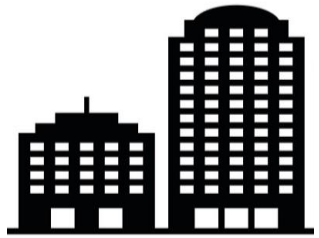
Banking risk engine

IoT backend

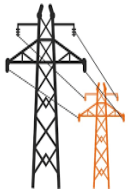
Network infrastructure



Car components



Enterprise auth risk engine



Electric company

EAT: Core Designs

- **Overall**
  - An extensible and crypto-agile container for transporting Claims about a device state
    - Use Certificate or directly Private/Public Key pairs
  - Built on the IETF CDDL (Concise Data Definition Language) over IETF COSE (CBOR Object Signing and Encryption) or JSON data structures standards
  - Inherits from CWT (CBOR Web Token) claims, later also adds JWT claims
    - IANA administers claim definitions and numbering for both specifications

- **Claims**
  - Token ID, Timestamp, Nonce, Universal Entity ID, Origination, OEM ID, Security Level, Boot State, Location, Age, etc.
    - All optional
  - Also extensible to add in other claims
    - Via CWT or JWT registry through IANA

EAT Adoption in Other SDOs

- Baseline attestation solution for FIDO Device Onboard (FDO)
  - https://fidoalliance.org/specs/FDO/fido-device-onboard-v1.0-ps-20210323/fido-device-onboard-v1.0-ps-20210323.html

- GlobalPlatform has adopted EAT for TEE's EntityAttestation API

EAT Commercialization

- All products requiring support for Alexa Voice Services (AVS) require EAT support
  - This is due to requirement for PSA Certification – TOE (target-of-evaluation) must be attestable either via EAT token or PSA token
- QCC 710, targeted to Electronic Shelf Label (ESL) market, supports EAT in the device onboarding protocol
  - Mutual attestation between device owner (cloud service “Mgmt. Entity” – ME) and ESL device
- QC WES (Qualcomm Wireless Edge Services) remote attestation solution is EAT-compliant
- All products supporting ARM Trusted FW (ATF) for TrustZone support ARM PSA Token out of the box
  - PSA Token is EAT compliant
  - https://community.arm.com/arm-community-blogs/b/internet-of-things-blog/posts/how-psa-apis-will-enable-secure-devices-and-a-consistent-developer-experience

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Thank you

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