DTLS Profile for IoT

draft-hartke-dice-profile

IETF 88

Klaus Hartke
DICE Charter

“The first task of the working group is to define a DTLS profile that is suitable for Internet of Things applications and is reasonably implementable on many constrained devices.”
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Profile Applicability

- Communication Model
- Threat Model
- Security Requirements
- Classes of Devices
- Trust Model
- ...

...
Cipher Suites

• Specific Cipher Suite(s) vs. Cryptographic Agility
• Server Authentication vs. Mutual Authentication

• X.509 Certificates vs. Raw Public Keys vs. Pre-Shared Keys
• Perfect Forward Secrecy
• ...
Extensions

- Signature Algorithms [RFC5246]
- Server Name Indication [RFC6066]
- Maximum Fragment Length [RFC6066]
- Certificate Status Request [RFC6066]
- Truncated HMAC [RFC6066]
- Supported Elliptic Curves [RFC4492]
- Supported Point Formats [RFC4492]
- Application Layer Protocol [I-D.ietf-tls-applayerprotoneg]
- Cached Info [I-D.ietf-tls-cached-info]
- Session Resumption without Server-Side State [RFC5077]
- Snap Start [I-D.agl-tls-snapstart]
- Renegotiation Indication [RFC5746]
- Heartbeat [RFC6520]
- ...
Other

- Compression
- Renegotiation vs. Reconnection
- Session Resumption
- Replay Protection
- Timer Values
- Certificate Revocation
- Encrypt-then-MAC [I-D.gutmann-tls-encrypt-then-mac]
- Hash Algorithm
- ...
Implementation Considerations

• Version negotiation
  [I-D.pettersen-tls-version-rollback-removal]
  [I-D.bmoeller-tls-downgrade-scsv]

• ...
Next steps

• Same understanding of a DTLS profile?
  • Are any aspects out of scope?
  • Do additional aspects need to be included?

• Many choices depend on the usage scenario
  • Can we identify a single profile or should we aim for a (small) family of profiles?

• Identify the profile elements
  • Can we already identify DTLS functionality that is/isn’t useful to have in any scenario?
    • E.g., compression