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A DTLS Profile for the Internet of Things
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Abstract

This document defines a DTLS profile that is suitable for Internet of Things applications and is reasonably implementable on many constrained devices.

Disclaimer

This is a very early, very rough draft. At this stage, the draft is not intended to make any specific proposal for a profile, but aims to create a shared understanding of what a DTLS profile defines. No security analysis has been performed.

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[1.](#) Introduction

This document defines a DTLS 1.2 [[RFC6347](#)] profile that enables secure and private exchange of information in Internet of Things applications and is reasonably implementable on many constrained devices.

- o One-stop list of RFCs to be implemented.
- o No changes to TLS or DTLS.
- o No new extensions defined by the profile.
- o No negotiation of the profile between client and server.
- o Profile avoids doing things the TLS WG decided not to do.
- o Profile aligns with the DTLS security modes of the Constrained Application Protocol (CoAP) [[I-D.ietf-core-coap](#)].

- o Profile takes advantage of existing hardware support where possible.
- o Document includes a brief discussion of extensions not included.

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[2.](#) Profile

[2.1.](#) Applicability

- o Communication Model
- o Threat Model
- o Security Requirements
- o Classes of Devices [[I-D.ietf-lwig-guidance](#)]
- o Trust Model
- o ...

[2.2.](#) Cipher Suites

- o Specific Cipher Suite(s) -vs- Cryptographic Agility
- o Server Authentication -vs- Mutual Authentication
- o X.509 Certificates -vs- Raw Public Keys -vs- Pre-Shared Keys
- o Perfect Forward Secrecy
- o Only AEAD Cipher Suites
- o ...

[2.3.](#) Extensions

- o Signature Algorithms [[RFC5246](#)]
- o Server Name Indication [[RFC6066](#)]

- o Maximum Fragment Length [[RFC6066](#)]
- o Client Certificate URLs [[RFC6066](#)]
- o Truncated HMAC [[RFC6066](#)]
- o Certificate Status Request [[RFC6066](#)]
- o Supported Elliptic Curves [[RFC4492](#)]
- o Supported Point Formats [[RFC4492](#)]

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- o Application Layer Protocol [[I-D.ietf-tls-applayerprotoneg](#)]
- o Cached Info [[I-D.ietf-tls-cached-info](#)]
- o Session Resumption without Server-Side State [[RFC5077](#)]
- o Renegotiation Indication [[RFC5746](#)]
- o Heartbeat [[RFC6520](#)]
- o ...

[2.4.](#) Other

- o Timer Values
- o Compression
- o Renegotiation -vs- Reconnection
- o Session Resumption (with Server-Side State)
- o Extended Session Resumption
[[I-D.hummen-dtls-extended-session-resumption](#)]
- o Replay Protection
- o Certificate Revocation

- o Encrypt-then-MAC [[I-D.gutmann-tls-encrypt-then-mac](#)]
- o Hash Algorithm [[I-D.campagna-suitee](#)]
- o ...

3. Implementation Considerations

- o [[I-D.sheffer-tls-bcp](#)]
- o [[I-D.ietf-lwig-tls-minimal](#)]
- o Random Number Generation [[RFC4086](#)]
- o Denial-of-Service Countermeasures [[RFC6347](#)]
- o Version Negotiation [[I-D.pettersen-tls-version-rollback-removal](#)]
[[I-D.bmoeller-tls-downgrade-scsv](#)]

- o Upgrade from Server-Authenticated to Mutually-Authenticated
- o Common Implementation Pitfalls
- o ...

4. Privacy Considerations

- o [[RFC6973](#)]
- o [[I-D.cooper-ietf-privacy-requirements](#)]
- o Meta Data
- o Traffic Patterns
- o Fingerprinting
- o ...

5. Security Considerations

- o [\[RFC3552\]](#)

- o ...

[6.](#) IANA Considerations

This document includes no request to IANA.

[7.](#) Acknowledgements

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