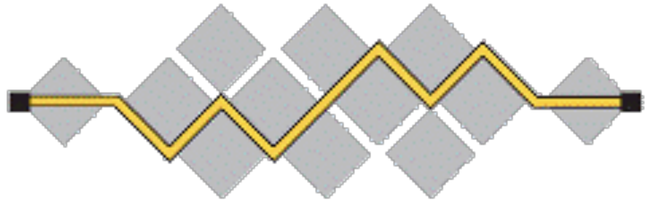

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TLS Working Group
Thursday, November 16, 2017

Exported Authenticators

Nick Sullivan

Problem

- Application layer protocols may want authentication for multiple certificates on the same connection
- Intended first use case is HTTP/2 Additional Certificates
  - Client authentication for HTTP/2 on a per-stream basis
  - Additional server certificates (spontaneous or requested)

Solution: Exported Authenticators

- Allow TLS library to export a blob that proves possession of a certificate and bound to an existing connection
- Closely resembles a series of TLS 1.3 messages: Certificate, CertificateVerify, Finished

History

- Originally proposed at IETF 96
- Adopted at IETF 98
- Implemented and tested in Golang
- Exported Authenticators draft-04: only cosmetic changes

Formal Analysis

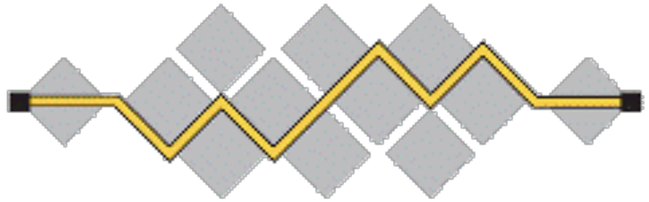
- Cas Cremers and Jonathan Hoyland (Oxford) have preliminary Tamarin model
  - Promising results

Duplicated Logic

- Requires the application layer to select certificates
- No binding between requests and responses
- This logic exists already in TLS: CertificateRequest

Proposed Change

- Add an “Exported Request” API
- Exported Authenticator hash covers Exported Request if present



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