DTLS Update

draft-ietf-tls-rfc4347-bis-05

IETF 80

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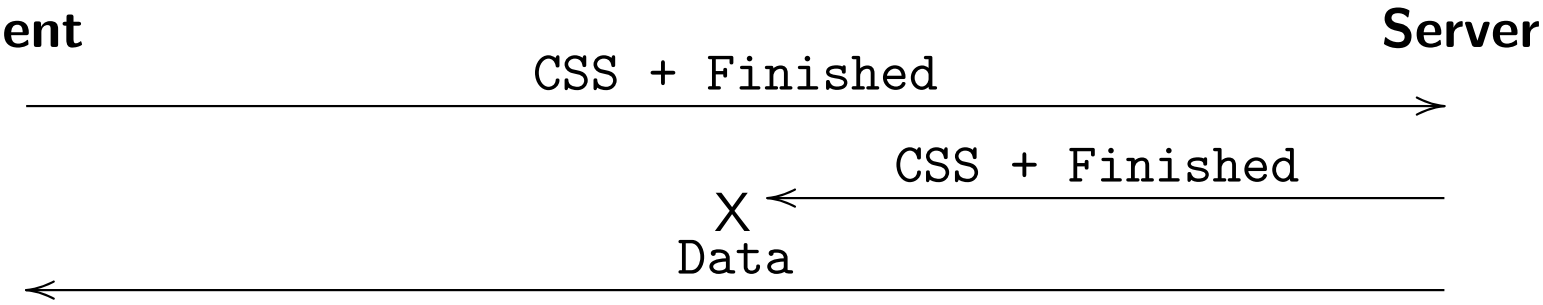
Status Overview

- Document taken to IETF LC
- Lots of good comments (both IESG and non-IESG)
- New version (-05)
- A few open issues left

Final Handshake Message Loss

Basic case:



- Server thinks it is done; Client thinks it isn't
- Parallel case with resumption and the client's last message
- Two issues
  - What should the client do?
  - Why doesn't this cause deadlock?
- This was at least unclear and likely unspecified

Behavior Under Loss

- Receiver
  - Epoch allows detection of this case
  - MUST NOT accept non-handshake messages in a new epoch prior to `Finished`
  - MAY buffer those messages and process them later (or not)
    - MAY shortcut the retransmit timer when receiving unexpected application data messages
- Sender
  - Sender MUST save the last flight for 2MSL
  - Respond to a retransmit of the other side's flight with a retransmit

Epoch Wrapping

- What does epoch wrapping do? [Farrell]

- Prohibit wrapping [MUST rehandshake first]

What about state loss?

- What happens when a client loses state? [Kaufman]
  - It sends a new `ClientHello`
  - This can be confusing
- New text:
  - Epoch = 0 indicates a new handshake
  - Server MUST NOT destroy existing association until reachability established
    - Cookie exchange
    - Finished exchange

IANA Considerations

Draft read:

> "Upon registration, new TLS cipher suites MUST indicate whether they are suitable for DTLS usage and what, if any, adaptations must be made."

- Unfortunately, there was nothing here about an IANA registry
- Added one (Section 7)

Miscellaneous Mostly Editorial

- Clarifications throughout about DTLS versus IP fragmentation
- Clarification about backward compatibility
- Add reference to v6 Packet Too Big
- Implementations MUST propagate PMTU indications (i.e., ICMP*)
- Silent discard may include logging
- Added a changes list at the end (thanks to Peter Saint-André)

2MSL

- Concern from Miguel Garcia that we referenced TCP MSL
  - Looked like we were expecting DTLS stack to read the TCP MSL
- Intention here is to be referencing the TCP spec
  - So we can benefit if new research/new net conditions
- Will fix in next version

Record Sequence Numbers for Retransmitted Hello Messages

- What happens if a hello message is lost?
  - Client retransmits
- What should the sequence numbers be?
  - Clearly: client should be next sequence
  - Proposal: server echo client [Tuexen]
- Objections?

CCS position hard to determine

- CCS has no handshake sequence number
  - Hard to determine expected position vis-a-vis other messages
  - E.g., CSS arrives, are you expecting a CertificateVerify?
- Processing CSS properly requires knowing handshake state machine
  - But which messages are expected is still deterministic
- Proposal: leave as-is but add note about it

Plan

- Make changes above
- New version by end of April
- IESG approval
- ???
- Profit