# Practical Issues with TLS Client Certificate Authentication

Arnis Parsovs

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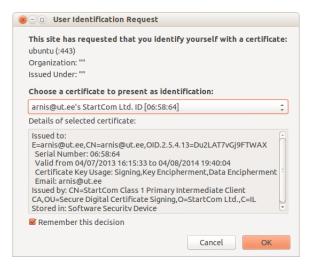
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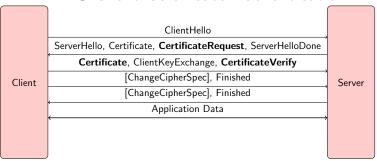
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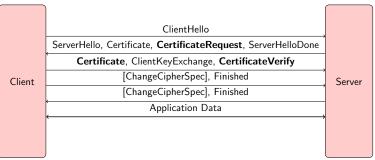
Supported by all major browsers!





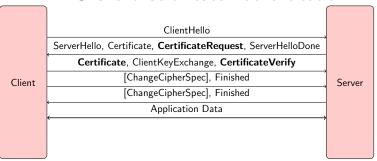
Client	ClientHello ServerHello, Certificate, CertificateRequest, ServerHelloDone Certificate, ClientKeyExchange, CertificateVerify  [ChangeCipherSpec], Finished  [ChangeCipherSpec], Finished  Application Data	Server
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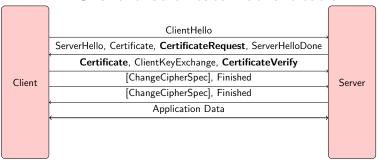


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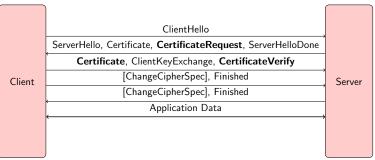


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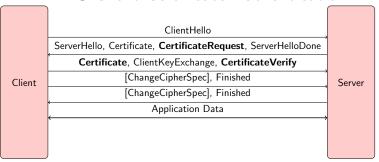


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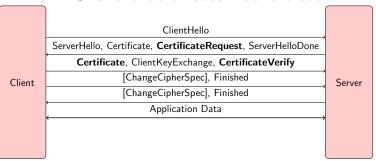


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- No trusted third party required (!)





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  - Required to authorize online banking transactions >200 EUR

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- 18% do not perform revocation checks

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- Provide better CCA audit trail

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Thank you!