SCSV & Credential Protection Ciphersuites for (TLS)

draft-badra-tls-identity-protection
draft-badra-tls-ciphersuite-identity-protection

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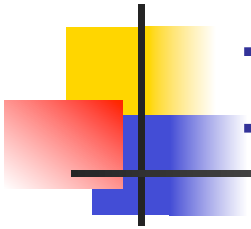
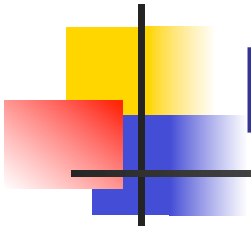


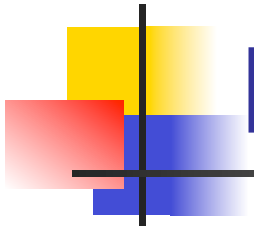
Identity Protection

- Send the Certificate and CertificateVerify messages encrypted during the Handshake
  - send the ChangeCipherSpec before Certificate and CertificateVerify and after ClientKeyExchange
  - Initially proposed in 2000



Messages order changes

- Could be done using
  - Extensions
    - RFC5246: both the SSLv3 and TLS 1.0/TLS 1.1 specifications require implementations to ignore data following the ClientHello (i.e., extensions) if they do not understand it. However, some SSLv3 and TLS 1.0 implementations incorrectly fail the handshake in such a case. This means that clients that offer extensions may encounter handshake failures



Messages order changes

- Cipher Suites
  - Example: TLS_CP_RSA_WITH_RC4_128_MD5
  - draft-badra-tls-ciphersuite-identity-protection
- SCSV in ClientHello.cipher_suites
  - No extension is needed
  - draft-badra-tls-identity-protection

Messages order

Client		Server
ClientHello	-------->	
		ServerHello
		Certificate
		CertificateRequest
	<--------	ServerHelloDone
ClientKeyExchange		
ChangeCipherSpec		
Certificate		
CertificateVerify		
Finished	-------->	
		ChangeCipherSpec
	<--------	Finished

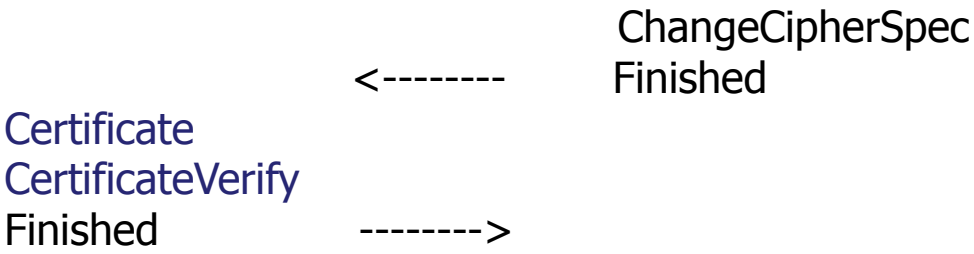
No authenticated indication is received from the server before sending the Client Certificate

Messages order case: CP ciphersuites

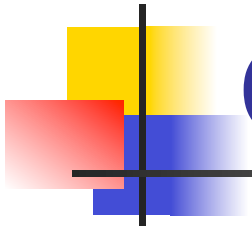
Client		Server
ClientHello	-------->	
		ServerHello
		Certificate
		CertificateRequest
	<--------	ServerHelloDone
ClientKeyExchange		
ChangeCipherSpec	-------->	
		ChangeCipherSpec
	<--------	Finished
Certificate		
CertificateVerify		
Finished	-------->	

Authenticated indication is implicitly provided in the received Finished from the server

Messages order case: SCSV



The client never sends its Certificate before receiving an authenticated indication from the server



Current and Next Steps

- Implementations
- WG item?