# YourApp – EveryWhere- AnyTime

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https://tools.ietf.org/html/draft-urien-tls-se-01

https://tools.ietf.org/html/draft-urien-tls-im-03

https://github.com/purien/TLS-SE

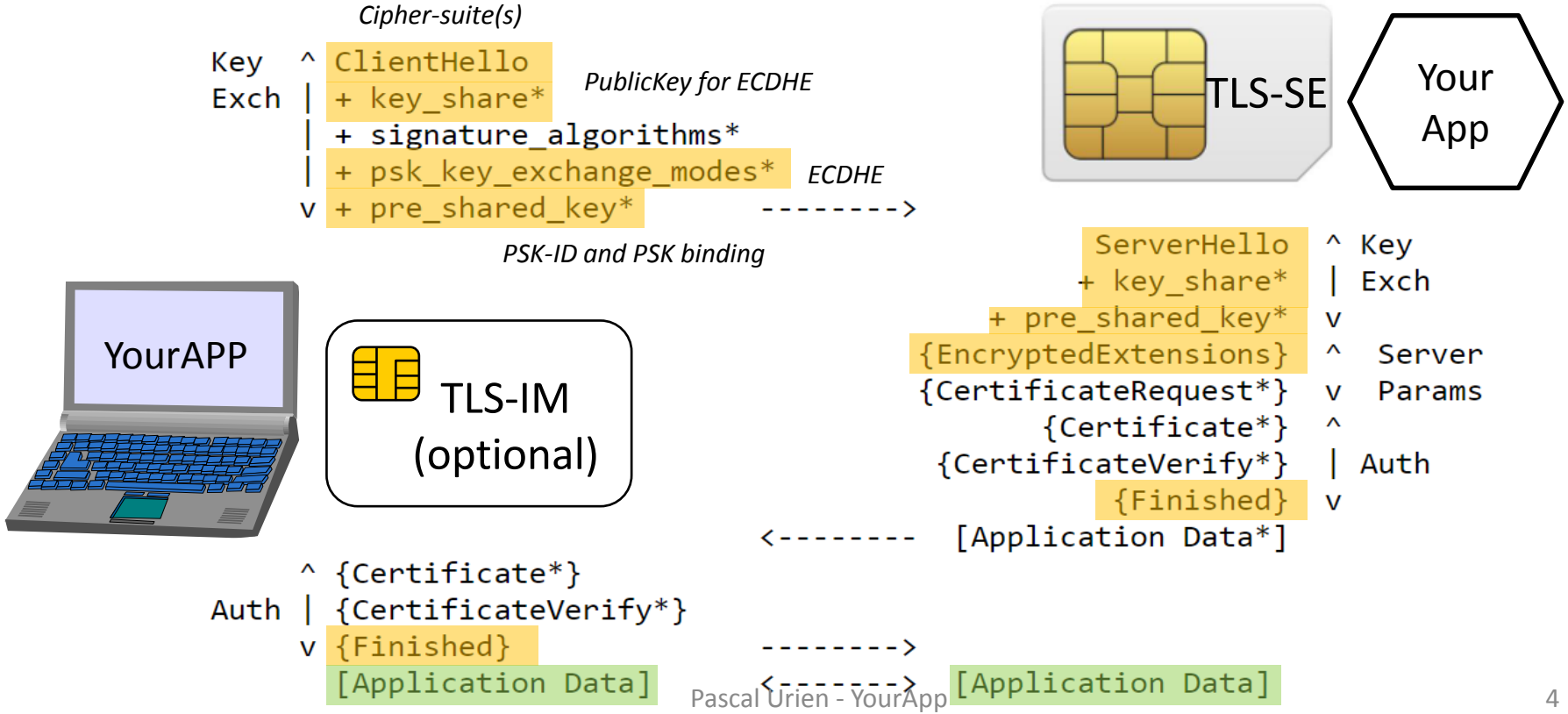
# The Concept

- YourApp, On-Line
  - Is embedded in a secure  element EAL 5/6 (up to 7 levels)
- YourApp server works over a TLS1.3 embedded server
  - TLS-SE:  TLS Secure Element
  - https://tools.ietf.org/html/draft-urien-tls-se-01
- YourApp client works over a TLS1.3 client
  - Client credentials are (optionally)  stored and used in a secure element
  - TLS-IM: TLS Identity Module
  - https://tools.ietf.org/html/draft-urien-tls-im-03

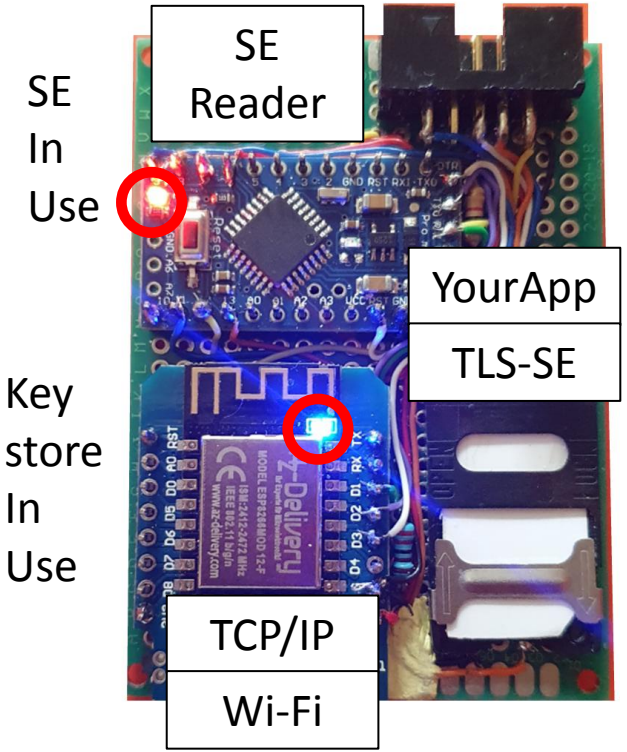
# Why TLS1.3 ?

- State of art for communication security
  - Several years of debates between security experts at IETF.
  - Privacy enforcement with Diffie-Hellman Exchange over Elliptic Curve (ECDHE)
  - Authenticated Encryption with Associated Data (AEAD)
  - Server and client authentication based on PKI or pre-shared-key (PSK)
- TLS-SE 1.0 works with AES-128-CCM cipher-suite, ECDHE (over SECP256k1), and 32 bytes PSK.
- Next version will support PKI.

# TLS1.3 -RFC 8446- Basic Exchange



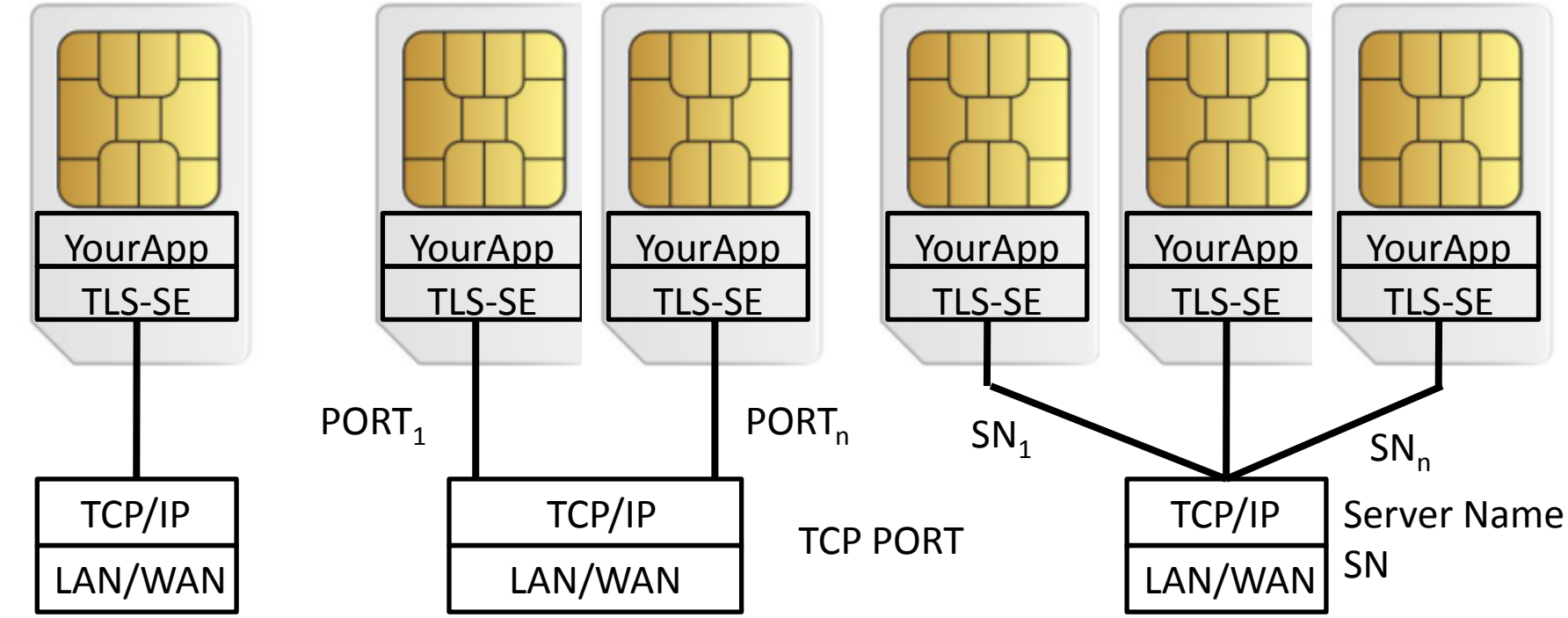
# YourApp example: Blockchain Keystore




xy= key index (two hexadecimal digits)

| | |
|---|---|
| ?00CrLf | Get Version |
| ?01[data]CrLf | Echo |
| cxyCrLf | Clear Key |
| gxyCrLf | Generate Key Pair |
| Xxy[PrivKey]CrLf | Set Private & Public key |
| txy[Seed]CrLf | Set BIP32 Seed |
| vxyCrLf | Get BIP32 Seed |
| bxy[$n_1$…$n_p$]CrLf | Set a BIP32 (p x 32bits) path |
| pxyCrLf | Get Public Key |
| rxyCrLf | Get Private Key |
| sxy[data]CrLf | Sign |

# Scalability Issue



# Questions ?

https://github.com/purien/TLS-SE