Secure Sockets

Part 1 – TLS Intro

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Part 1 – TLS Intro

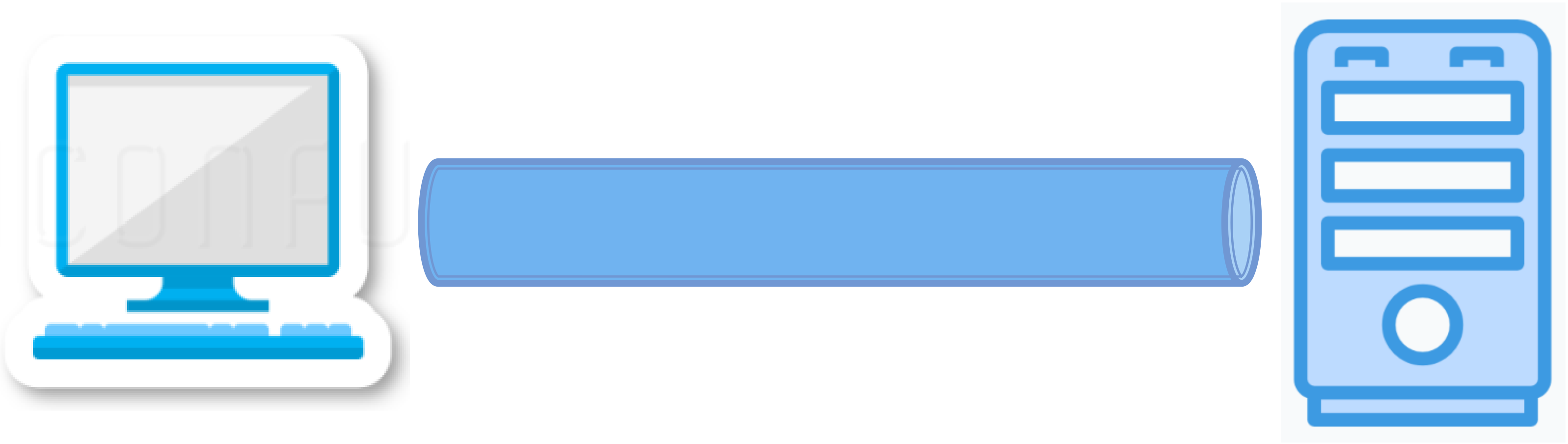
TLS History

Version	Year	Safety
SSL 1.0	1994	🟥
SSL 2.0	1995	🟥
SSL 3.0	1996	🟥
TLS 1.0	1999	🟨
TLS 1.1	2006	🟨
TLS 1.2	2008	🟩
TLS 1.3	2018	🟩

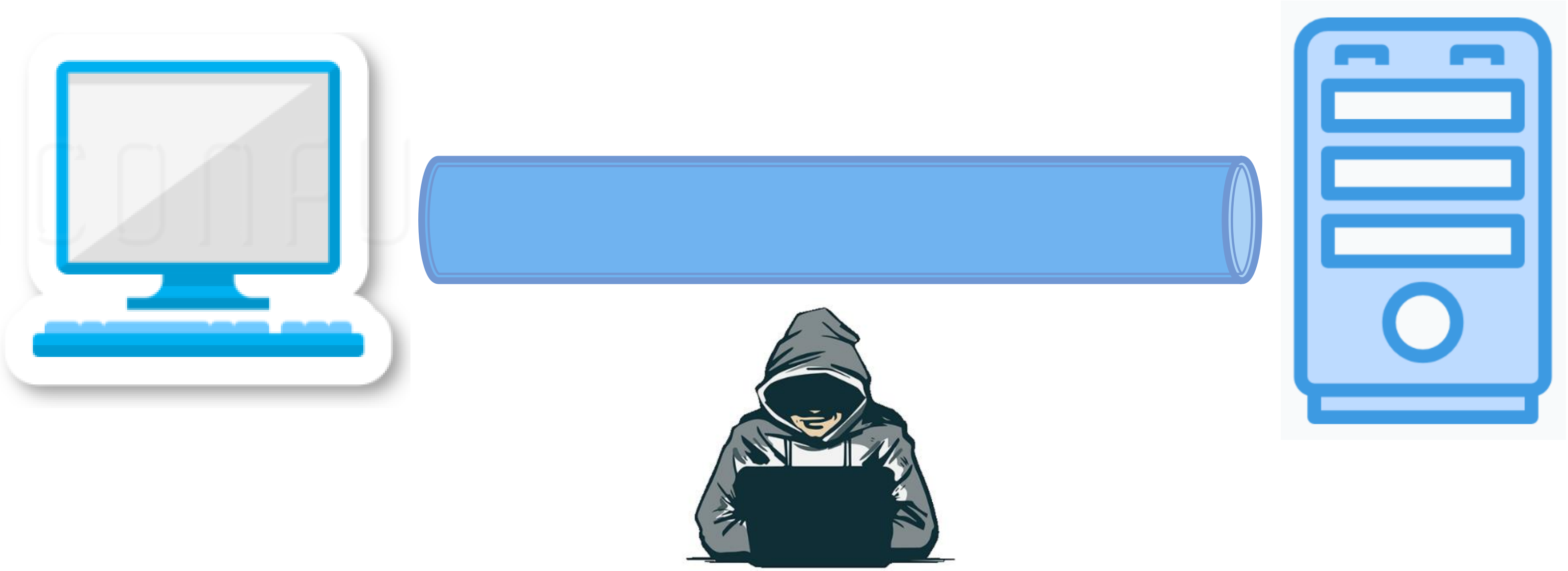
- SSL- Secure Socket Layer
- TLS – Transport Layer Security

TLS – Transport Layer Security

- Given an existing socket, makes it secure
- Not a layer
  - Think about is as a “4.5” layer

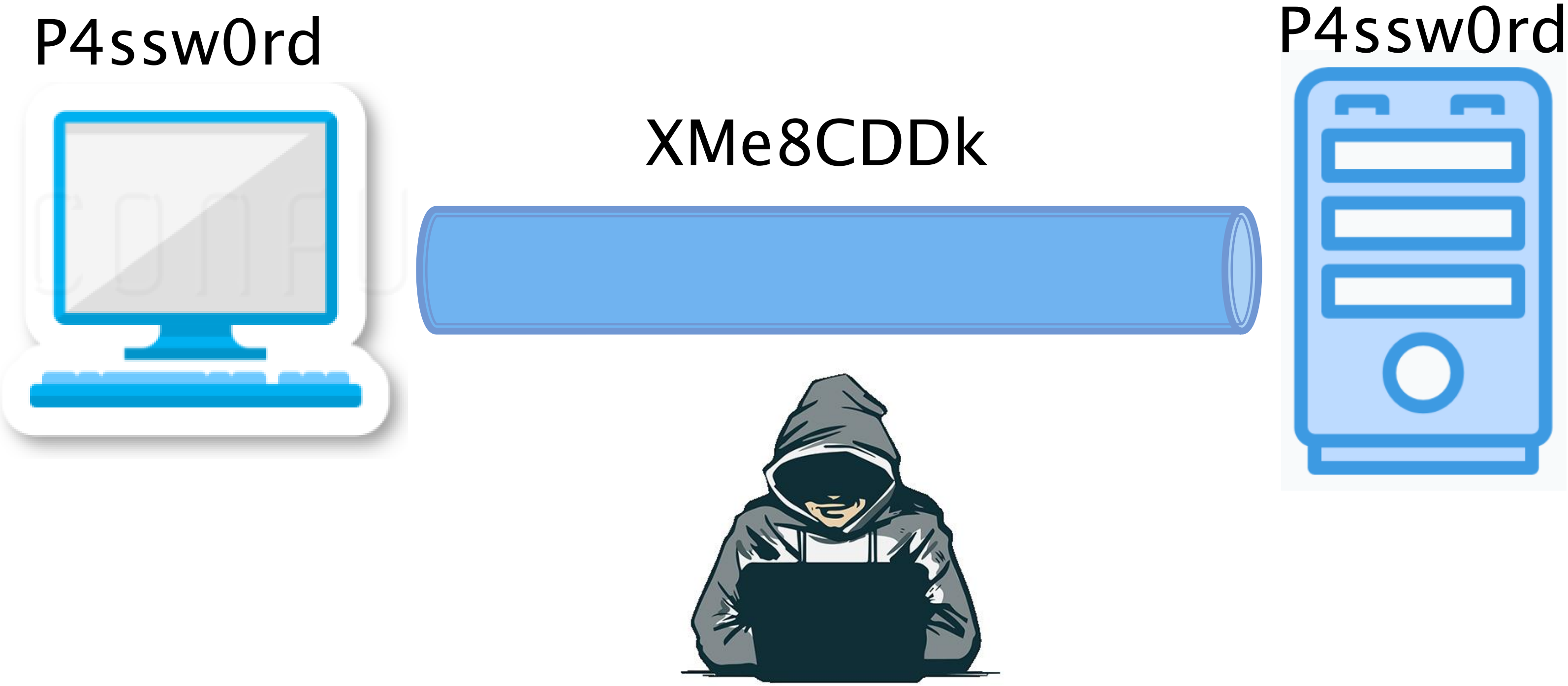


TLS Protocol Goals



- Base assumption – our packets might be eavesdropped and even changed
  - Confidentiality
  - Integrity
  - Authentication

TLS Protocol Goals



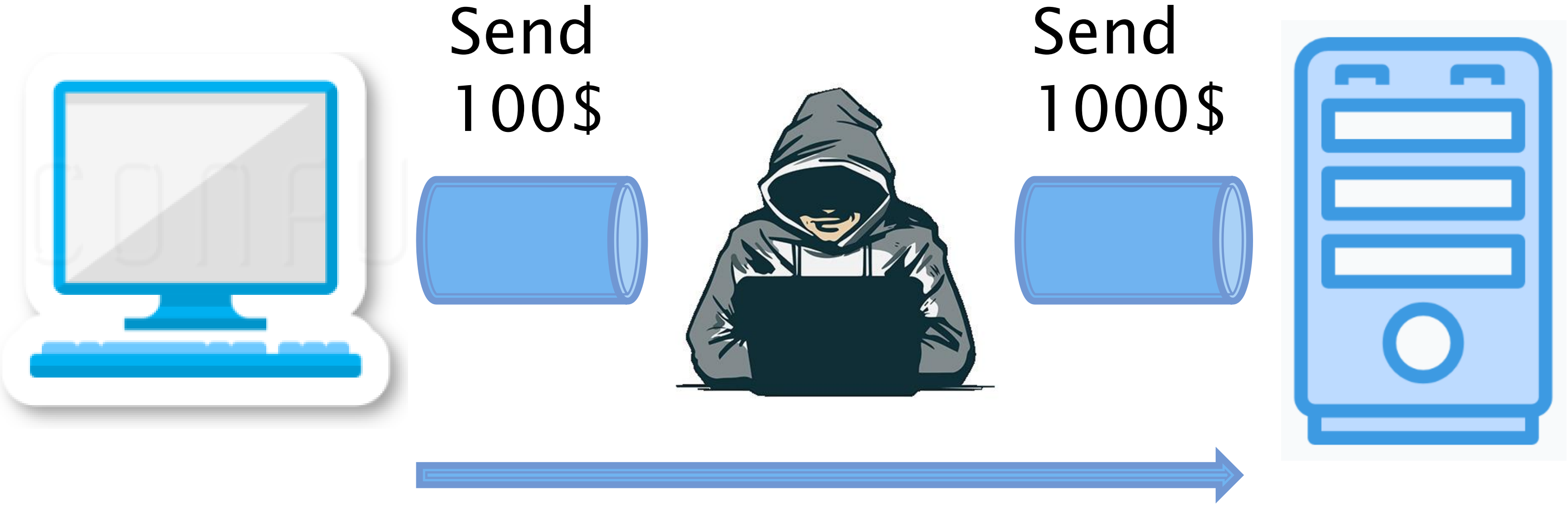
P4ssw0rd

XMe8CDDk

P4ssw0rd

- Confidentiality

TLS Protocol Goals

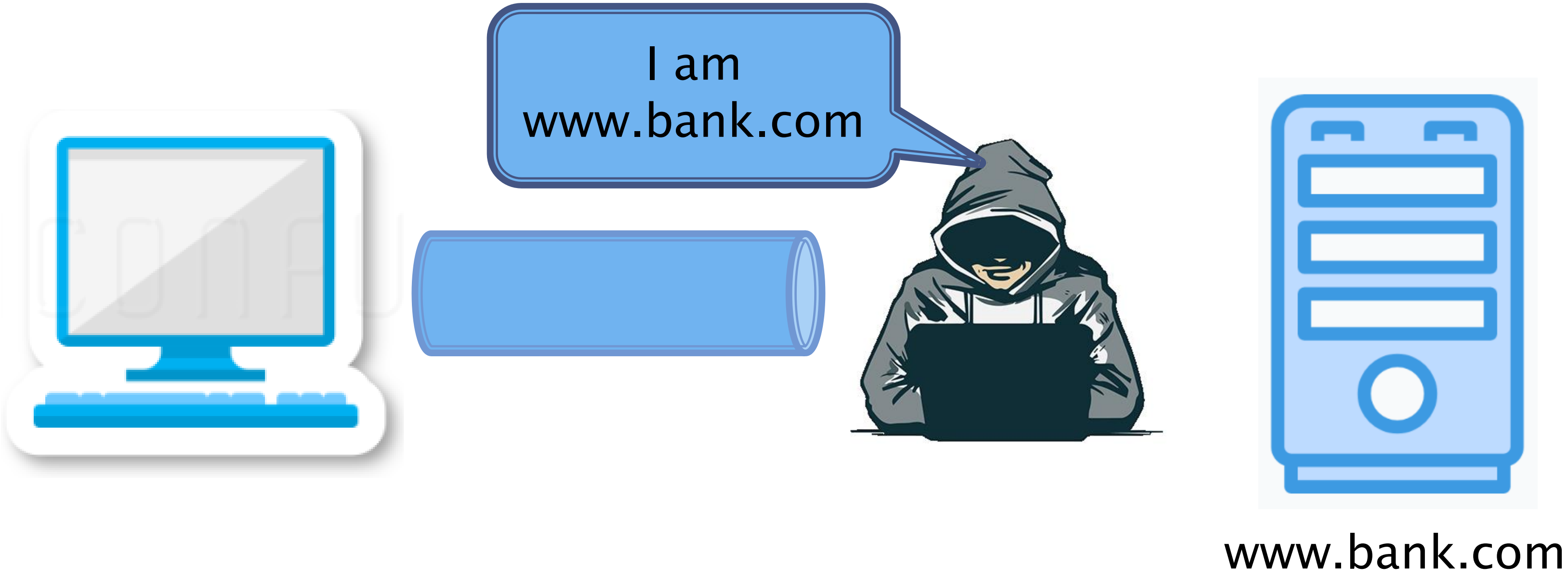


Send 100$

Send 1000$

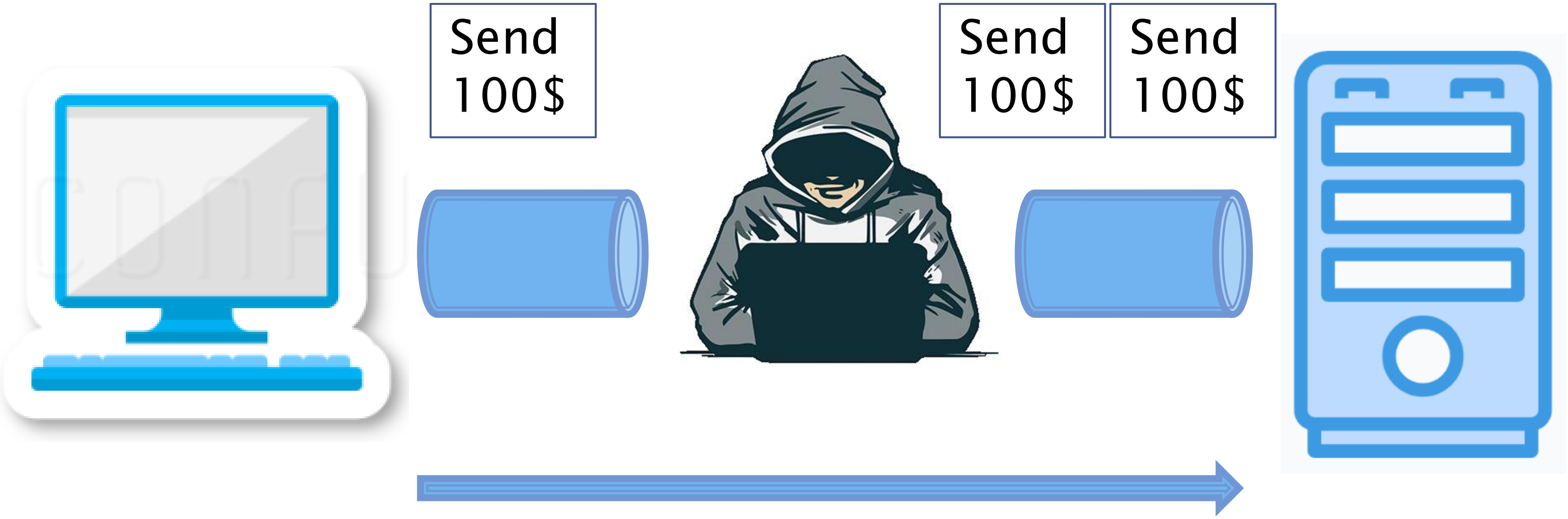
- Integrity

TLS Protocol Goals



- Authentication

Anti-replay



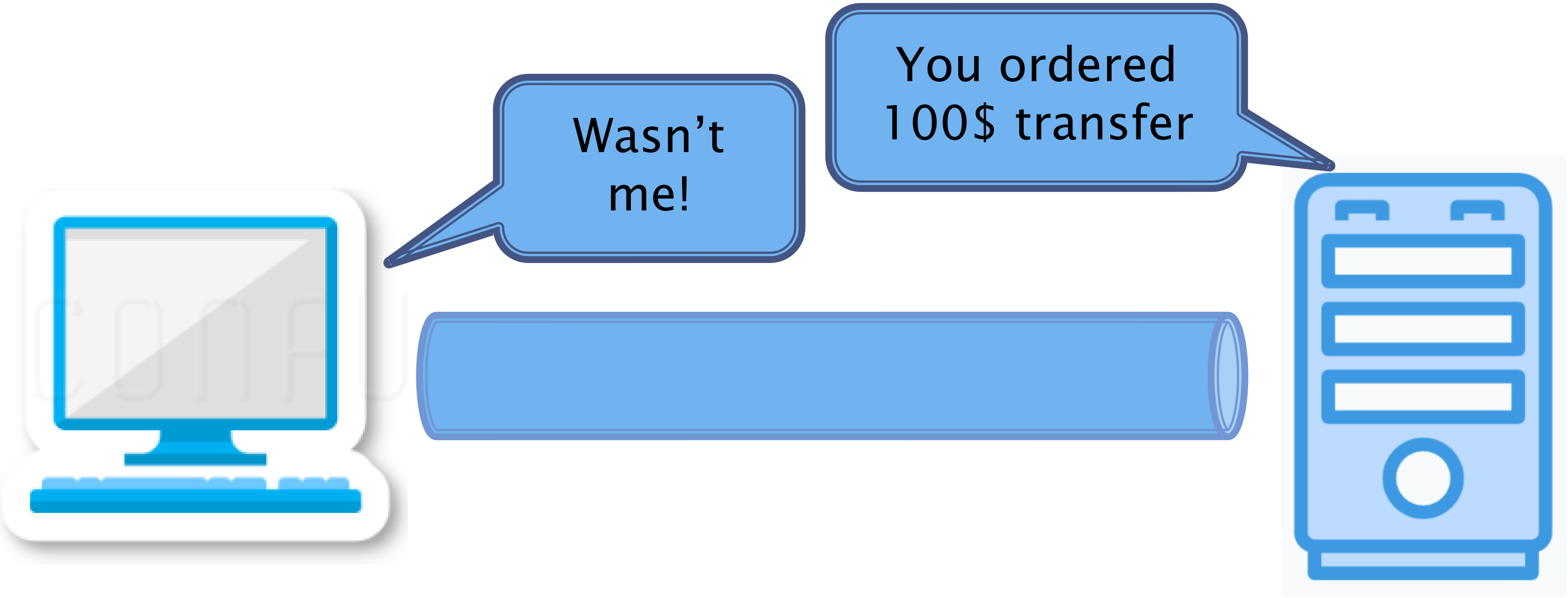
Send 100$

Send 100$

Send 100$

- Part of the encryption process

Non-repudiation



- We can not deny a message we sent
- Ensured by:
  - Authentication – no one can pretend to be us
  - Integrity – no one can change a message we sent

Summary

- Confidentiality
- Integrity
- Authentication
- Anti-replay
- Non-repudiation