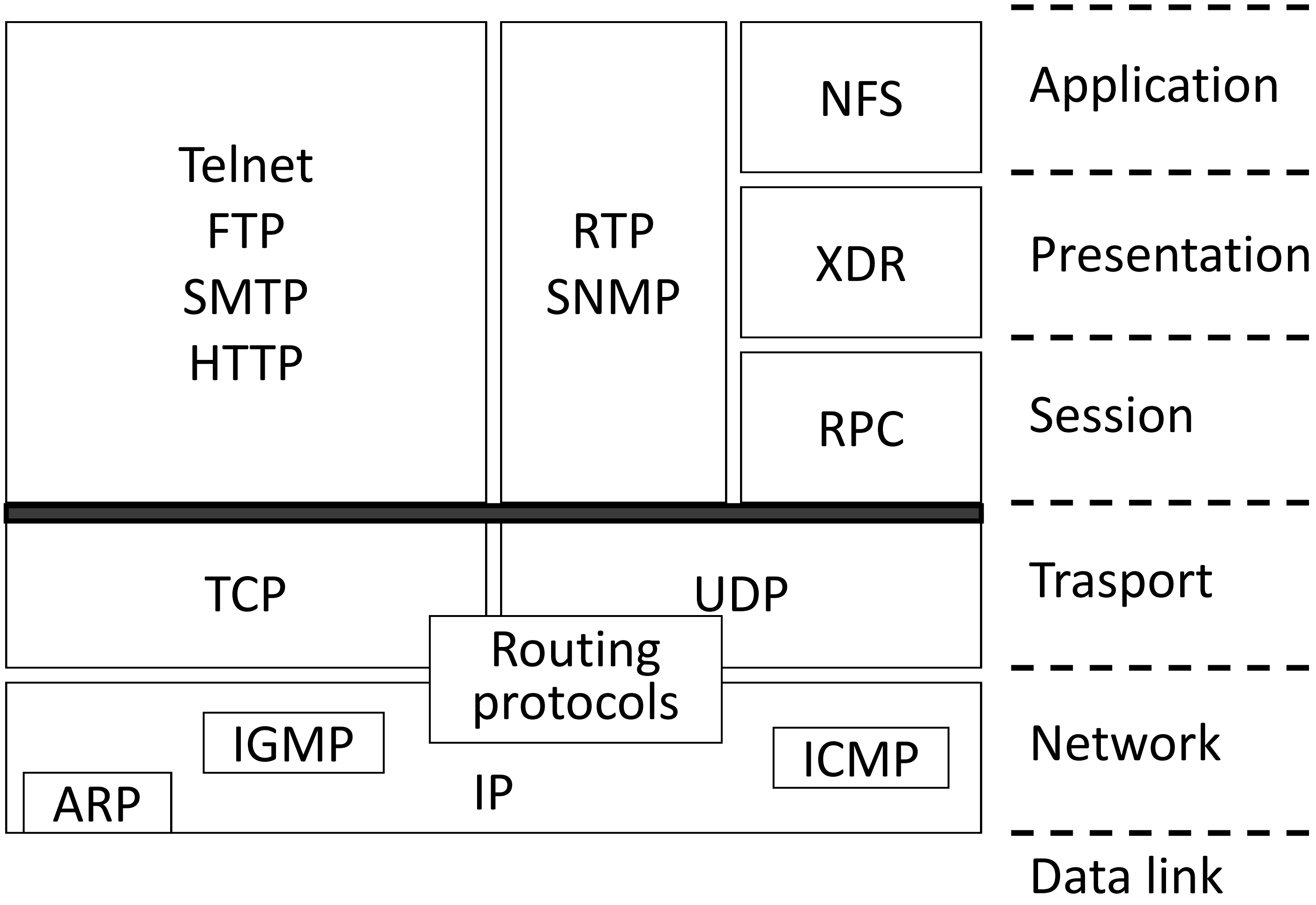
SSL
SECURE SOCKET LAYER

In The Protocol Architecture



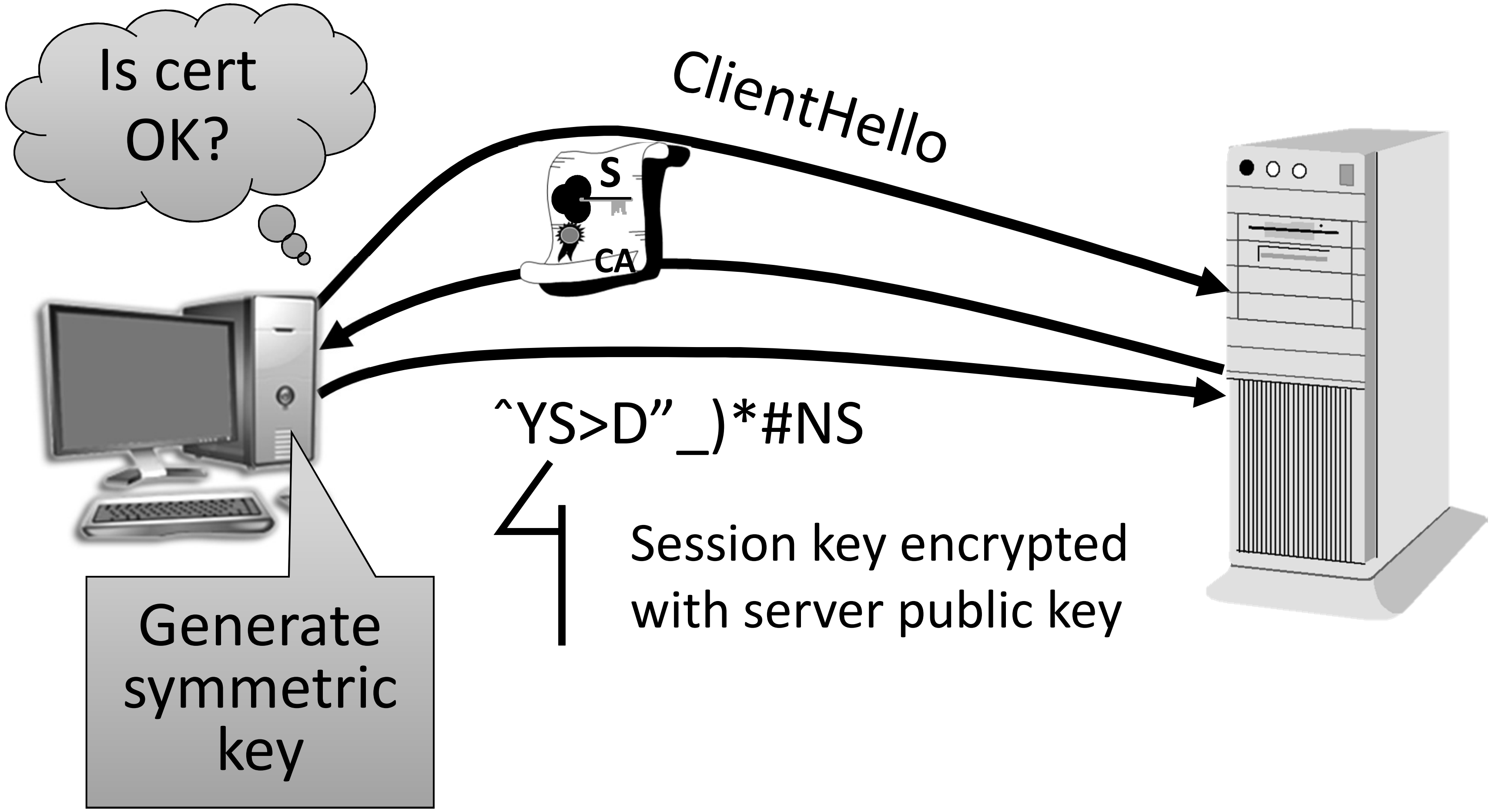
Features

- Endpoint authentication
- Secure transport session
    - Encrypted
    - Authenticated
- TLS: Transport Layer Security

Widely Deployed

- POPS, Secure IMAP, Secure SMTP, HTTPS, SFTP
- Usually different port
  - HTTP: 80, HTTPS: 443
- Possibly same: STARTTLS

SSL Handshake



Is cert OK?

ClientHello

^YS>D"_)*#NS

Session key encrypted with server public key

Generate symmetric key

Parameter Negotiation

- →Client offers
  - →List of cyphers
  - →Parameters
- →Server
  - →Picks cyphers
  - →Might requests client cert

Security Features

- → Only hello and server cert are in clear
- → A pair of sessions keys per direction
    - → Encryption
    - → Authentication
- → Periodically changed

SSL Record Protocol

- → Header
  - → Authentication (MAC)
- → Max 32KB
- → Same data protection as IPsec
- → No IP header protection