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SSH 2

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Gliederung

- Motivation
- SSH 2 Aufbau
- SSH 2 keys/Komponenten

Motivation

- Easy and safe access to remote computers
- Prevents eavesdropping, spoofing, man in the middle attacks

Vgl.: Daniel J. Barrett,Richard E. Silverman (2001): The Secure Shell: The Definitive Guide 3.10. Threats SSH Can Counter

SSH 2 Aufbau

SSH Transport Layer Protocol

- Server authentication
- Algorithm negotiation
- Session key exchange
- Privacy,integrity
- Session ID

SSH User Authentication Protocol

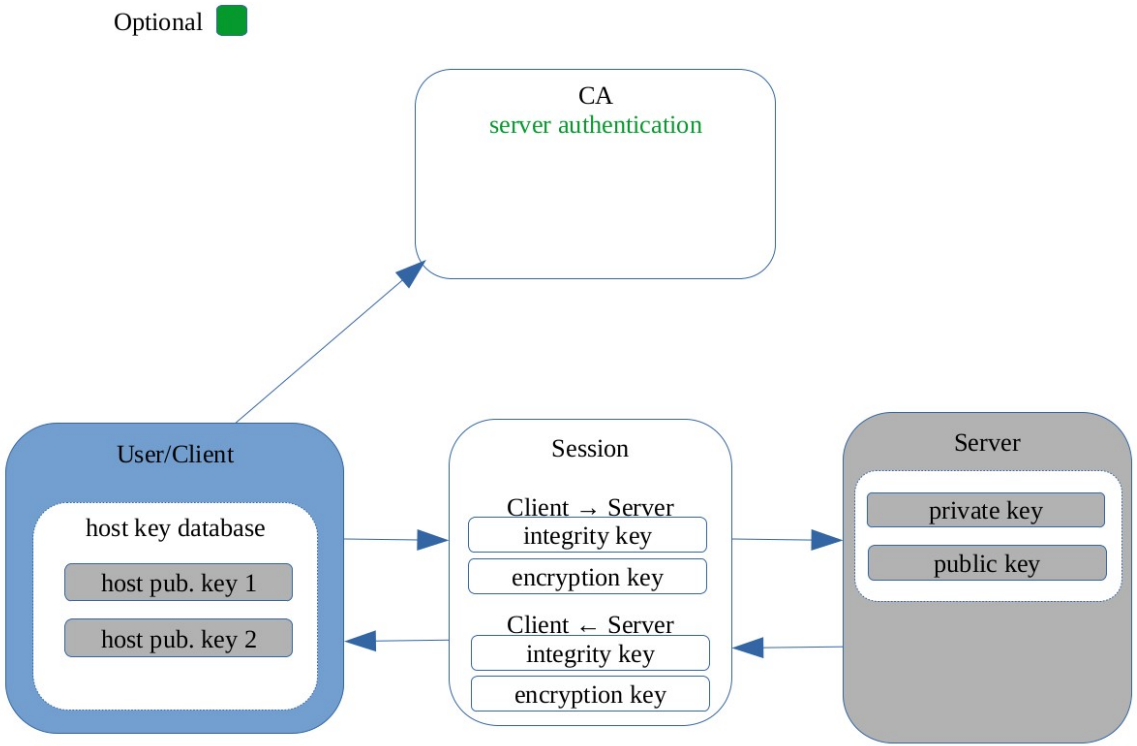
- Client authentication (password,public key)
- Password changing

SSH Connection Protocol

- Remote program execution
- Interactive session
- X forwarding
- ...

Vgl.: Daniel J. Barrett,Richard E. Silverman (2001): The Secure Shell: The Definitive Guide
3.5. Inside SSH-2

SSH Transport Layer Protocol

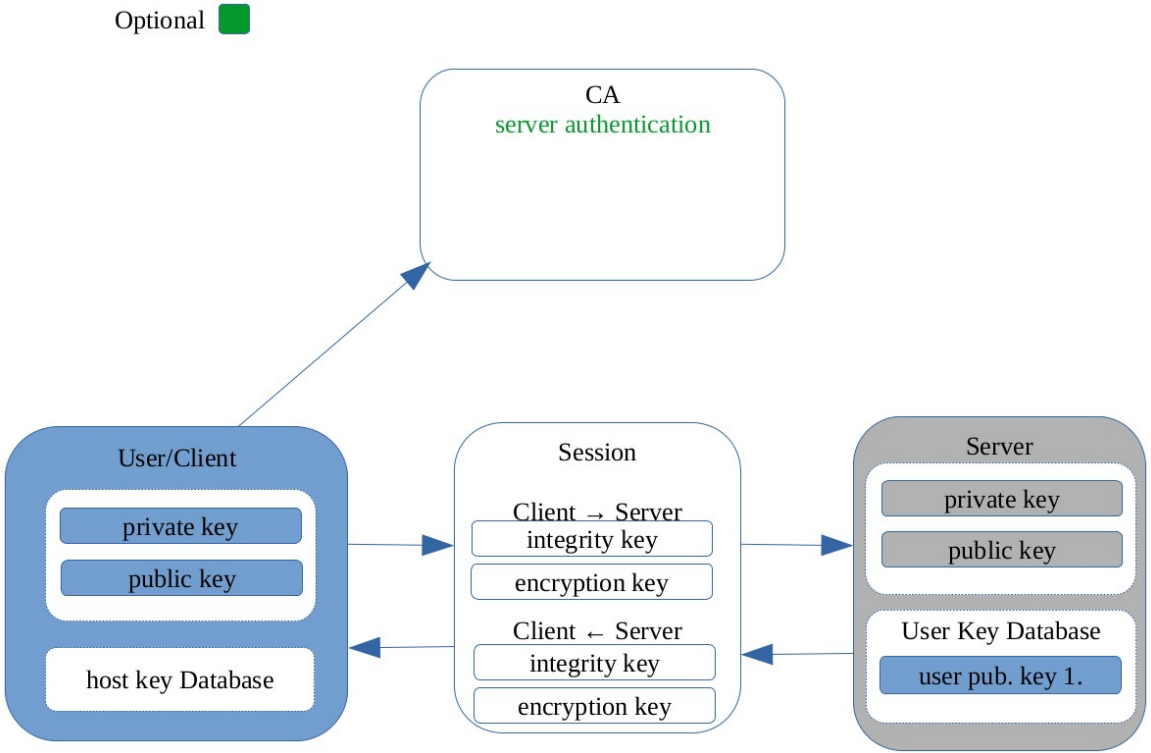


Connection establishment

- Tcp connection
- Algorithm negotiation
- Client: (number)
- Server: (number, public key, signature)
- Both calculate session keys

Vgl.: Daniel J. Barrett,Richard E. Silverman (2001): The Secure Shell: The Definitive Guide 3.5. Inside SSH-2

SSH User Authentication Protocol



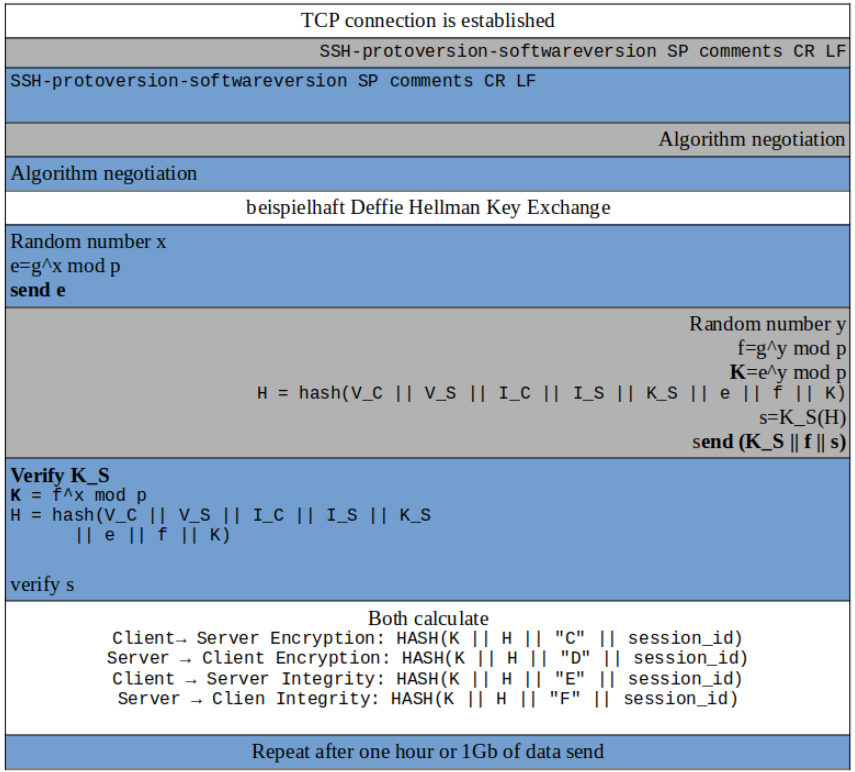
User authentication

- Client signs data with private key
- Server checks if a authorized public key exists

Vgl.: Daniel J. Barrett,Richard E. Silverman (2001): The Secure Shell: The Definitive Guide
3.5. Inside SSH-2
O.V.(O.J.):OpenSSH: Key Management Needs Attention

Deffie Hellmann Key Exchange

Grey: Server
Blue: Client
p: prime
g: generator for subgroup
q: order of subgroup
V_S:Server identification string
V_C: Clients identification string
K_S: Server public host key
I_C: Client SSH_MSG_KEXINIT
I_S: Server SSH_MSG_KEXINIT



Vgl.: RFC 4253

Quellen

Daniel J. Barrett,Richard E. Silverman (2001): The Secure Shell: The Definitive Guide, First edition, O`Rilley, URL: https://docstore.mik.ua/orelly/networking_2ndEd/ssh/index.htm

SSH-Arch: Ylonen, T. and C. Lonvick, Ed., "The Secure Shell (SSH) Protocol Architecture", RFC 4251, January 2006

SSH-Userauth: Ylonen, T. and C. Lonvick, Ed., "The Secure Shell (SSH) Authentication Protocol", RFC 4252, January 2006

SSH-Trans: Ylonen, T. and C. Lonvick, Ed., "The Secure Shell (SSH) Transport Layer Protocol", RFC 4253, January 2006

O.V.(O.J.): SSH Protocol, SSH.com, URL: https://www.ssh.com/ssh/protocol/

O.V.(O.J.):OpenSSH: Key Management Needs Attention, SSH.com, URL:https://www.ssh.com/ssh/openssh/

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