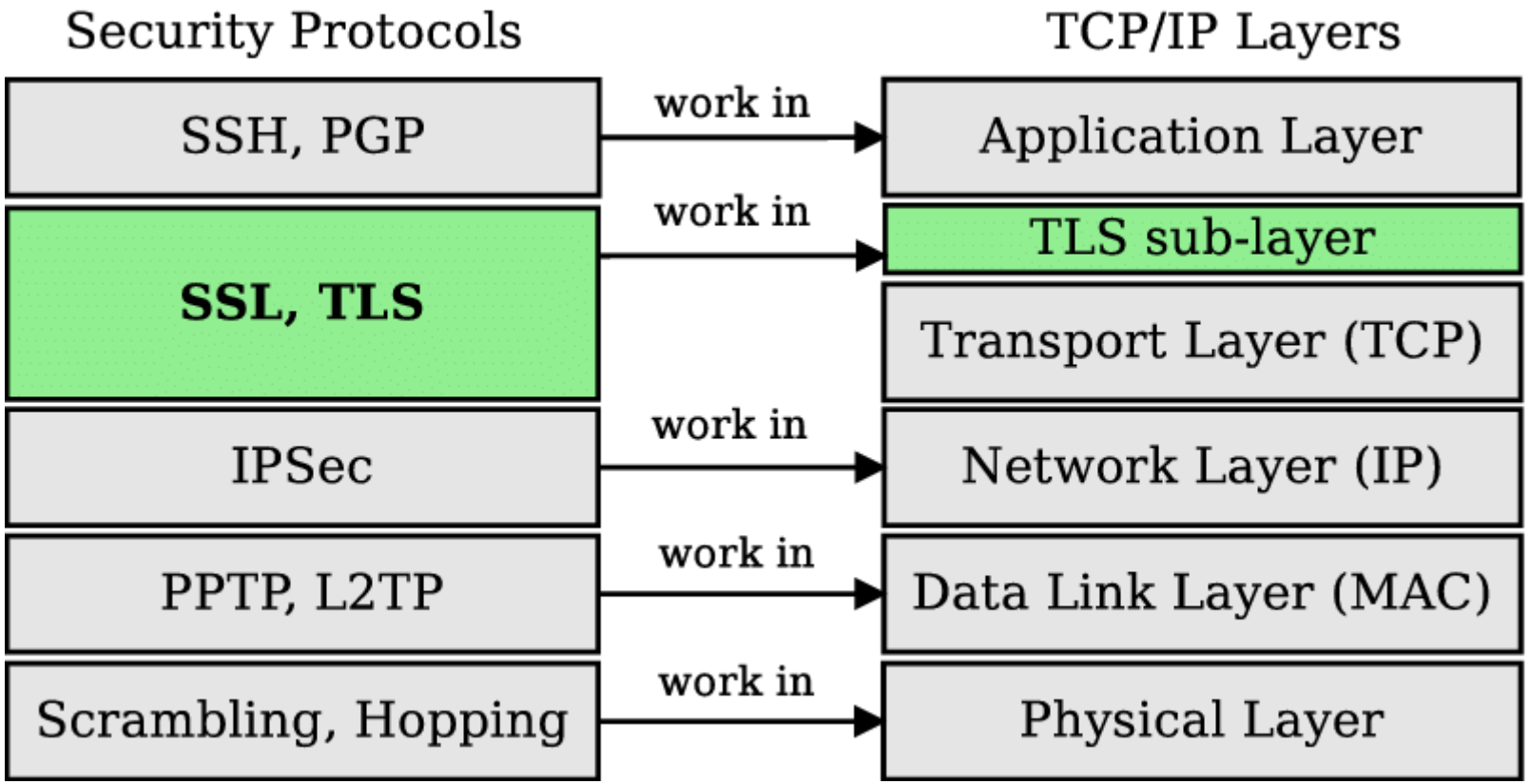
Tutorial 6

An Important Pic in Lecture 9

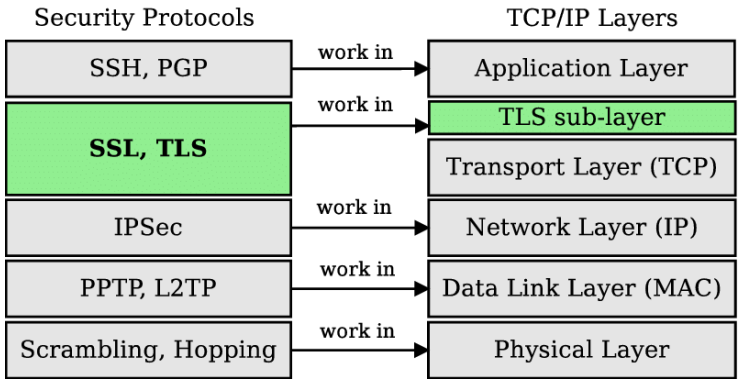


About 79,700,000 results (0.29 seconds)

22 TCP

Changing the Default SSH Port

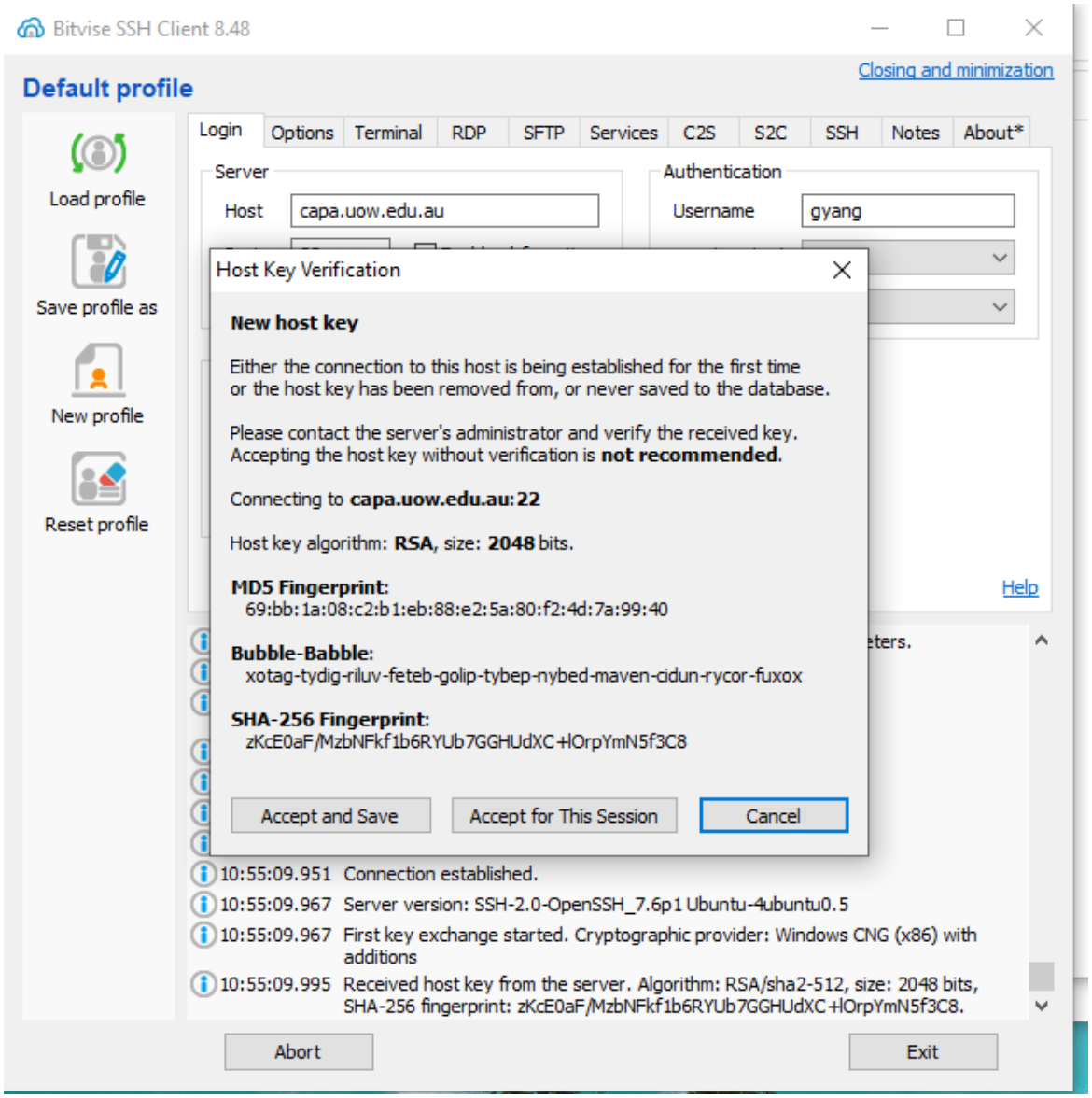
Port Number	Service	Description
22	**TCP**	Secure Shell (SSH) communication.
23	TCP	Used by the Telnet protocol.
25	TCP	The default port for relaying emails via SMTP.
53	DNS	Port for transferring Domain Name System (DNS) queries.

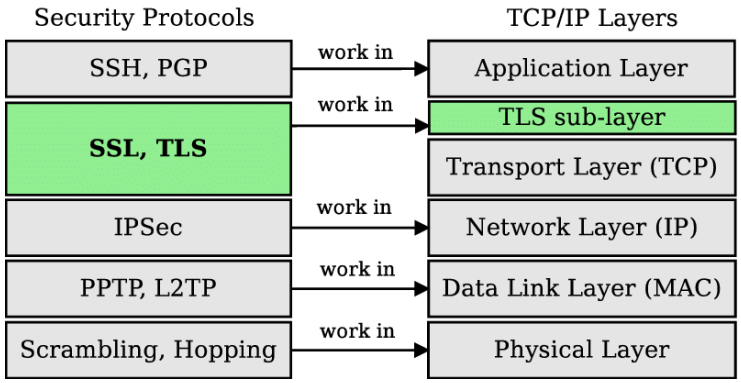


1.Alice is using computer A and Bob is using computer B. Alice doesn't know B before. Can you use SSH to have a secure communication (B is the host)?

- No. SSH protocol doesn't use certificates. Alice must **SECURELY** get Bob's public key first. (see the next page)

SSH Key Fingerprints



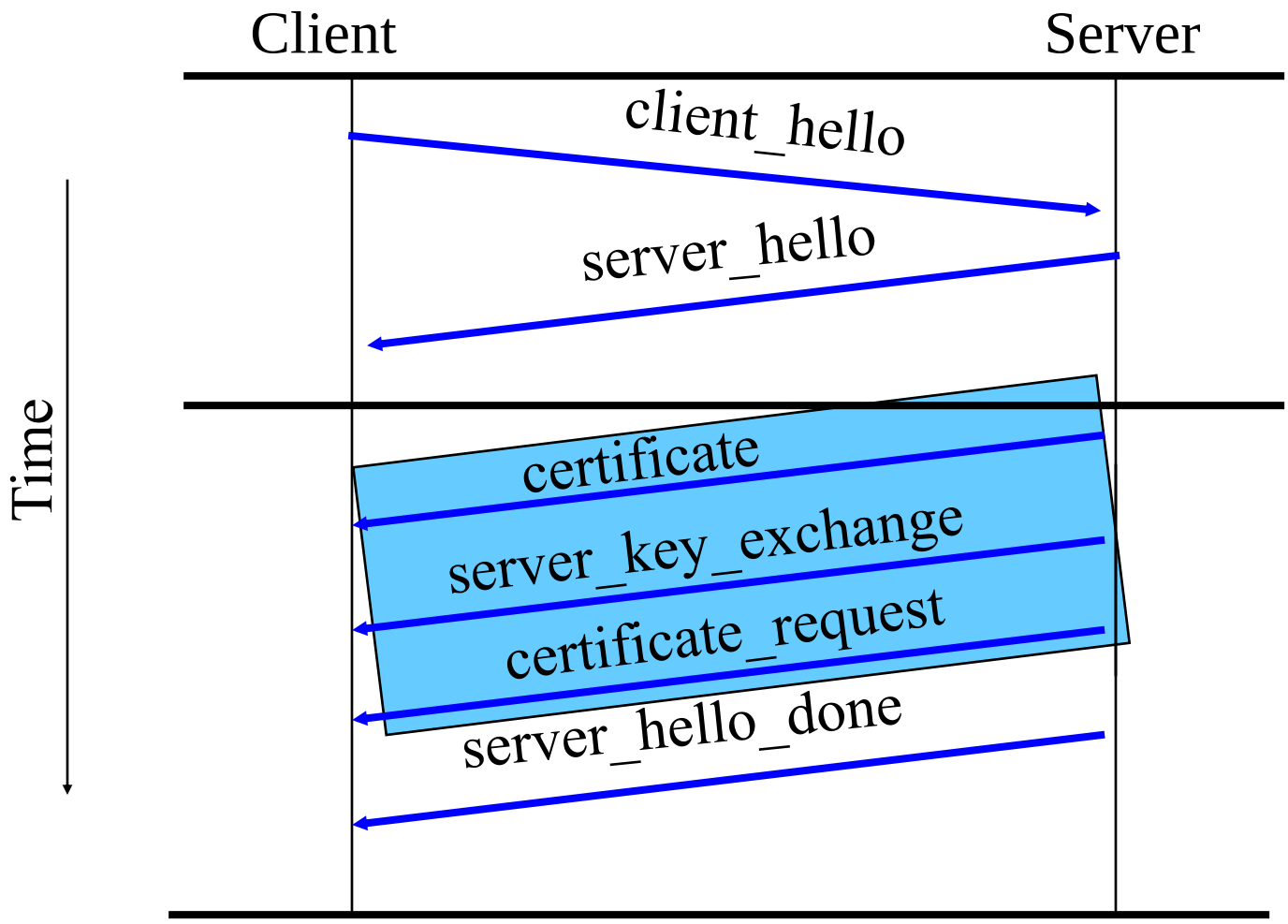


2.Bob is hosting a web server via port number 80 in his company. However, the firewall in his company has blocked all requests sent to port number 80. How can Bob visit the website homepage at home using SSH?

SSL/TLS

Handshake Protocol Action

First Half

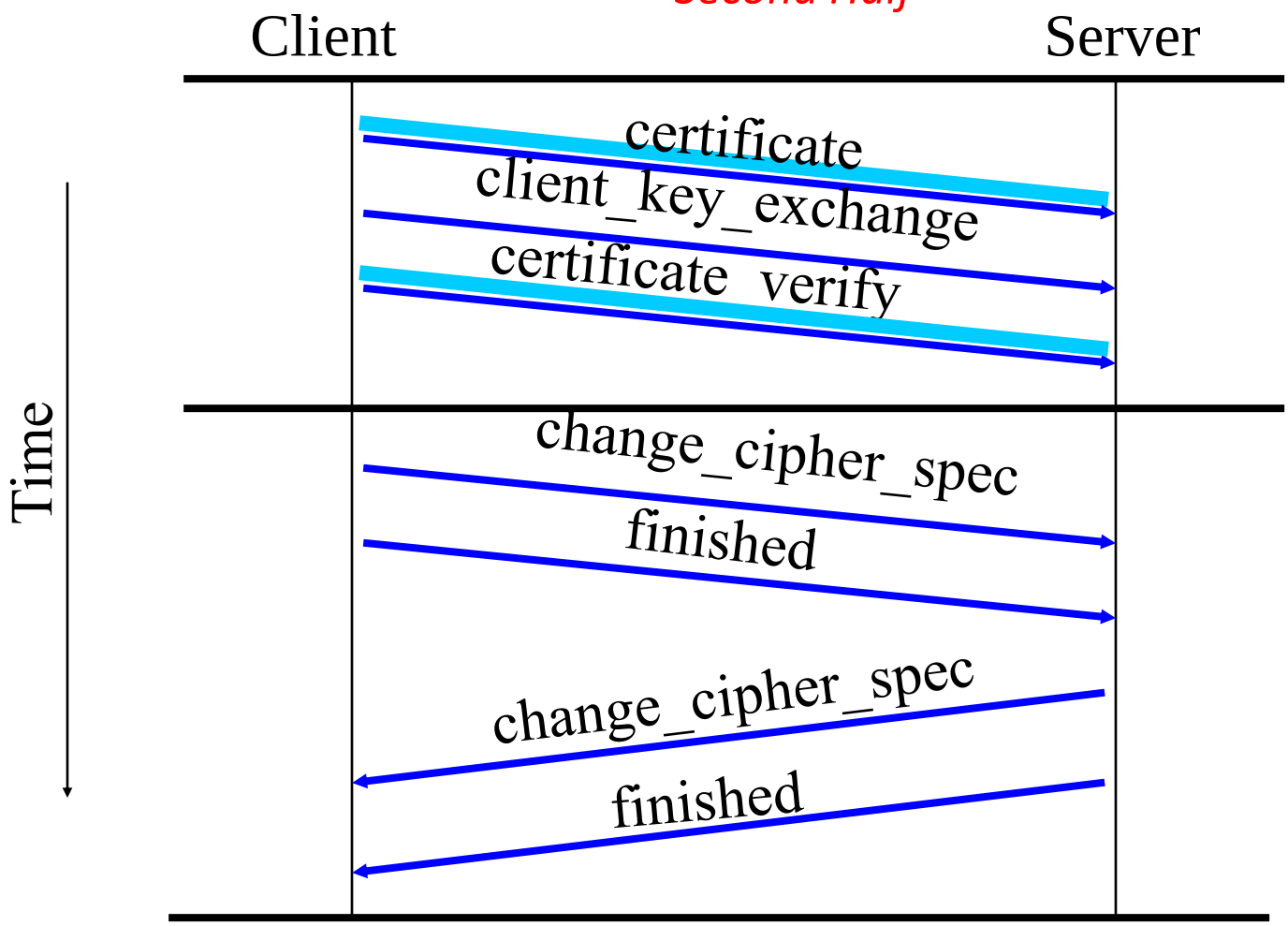


Establish security capabilities, including protocol version, session ID, cipher suite, compression method and initial random numbers.

Server may send certificate, key exchange, and request certificate. Server signals end of hello message phase

Handshake Protocol Action

Second Half



Client sends certificate if requested. Client sends key exchange. Client may send certificate verification.

Change cipher suite and finish handshake protocol.

NOTE:- Shaded transfers are optional or situation-dependent messages that are not always sent.

1. Explain how pre_master_secret in SSL is sent to the server using RSA key transport.

2. What is the advantage of Ephemeral Diffie-Hellman key exchange method over the RSA key transport method?

3. Consider the SSL Handshake Protocol. Why does not the action of the client validating the certificate presented by the server authenticate the server to the client?

The certificate contains Server's ID, Public key, Timestamp,... and has been signed by a trusted authority. It can be sent by any one since the certificate is public.
The server is only authenticated when it uses its private key to sign the key exchange message.

4. Is SSL or IPSec sufficient for electronic commerce applications? Justify your answer.

SSL provides client-server authentication (both ways) and encrypts message flows between client and server. It can protect secret information such as credit card numbers or PINs.

It becomes insufficient when the dealer (server) requires a client to sign a credit card payment. The SSL signing functions are used for authentication only. It does not provide flexible signing capability to the application layer.

More complicate payment systems require special payment software to ensure all security issues are addressed. For example, Secure Electronic Transaction (SET) provides more security features than those of SSL.

IPSec ensures the authenticity and confidentiality of network traffic, but it does not provide these features at the application layer. For example, it cannot handle the authenticity of a user.

5. Two computers A and B are running TLS protocols. Now, all applications communicating between A and B cannot be seen by a hacker. Is this correct? Justify your answer.