Lecture 4 4/8/2021

3. Reading assignment for Chapter 2

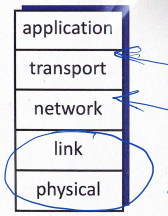
4. Feedback & comments

Announcements

1. Correction in the simulation code
2. Regarding the deep space problem

Internet protocol stack

- *application:* supporting network applications
  - IMAP, SMTP, HTTP
- *transport:* process-process data transfer
  - TCP, UDP
- *network:* routing of datagrams from source to destination
  - IP, routing protocols
- *link:* data transfer between neighboring network elements
  - Ethernet, 802.11 (WiFi), PPP
- *physical:* bits "on the wire"

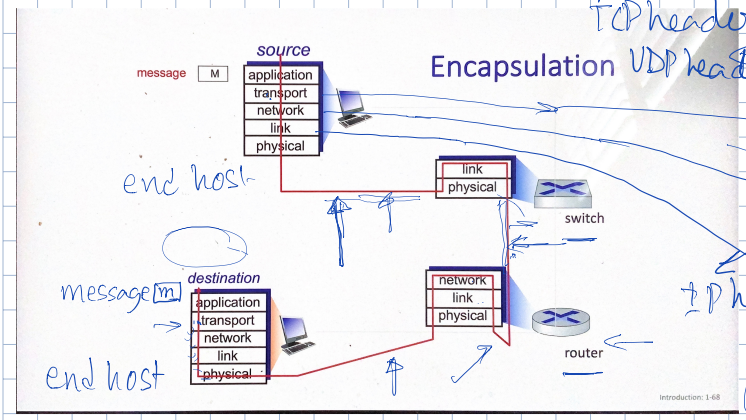


Link/Phy

4 layer protocol stack

Object oriented programming

} interface between the layers



TCP header

UDP header

Application layer exchanging messages

H_T m_p segment

H_N H_T m_p IP packet datagram

IP header

H_L H_N H_T m_p Frame

Link layer header

Frame is transmitted into the link

Switch is a link layer device

→ decapsulation only upto the link layer

Routers is a network layer device

⇒ Routers & Switches only operate upto the n/w layer

⇒ Transport layer & application layer only runs on the end hosts

⇒ end-to-end principle of modern Internet ⇒ dumb

⇒ Very fast / best effort network

Highly adaptable & intelligent end systems

⇒ Very different than the design of the original telephone n/w

end-devices were very simple

core network was very intelligent

⇒ Intelligent n/w (circuit switching)

⇒ Signalling n/w which packet based

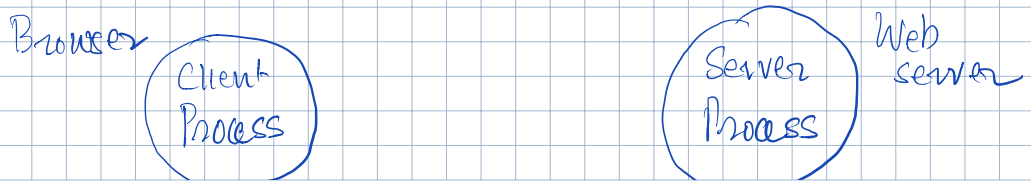
⇒ How the call was set up

⇒ How the circuit was routed

⇒ In case of overloads

SS7

Client-Server Paradigm



- Initiates and send the request (message)
- Active entity

- Server is always on
- Server is waiting for requests from clients
- Passive entity

Most applications are implement over TCP

Client can only send a message (request) once it has established a connection with the server

Connection is called TCP connection

Established using a 3-way handshake