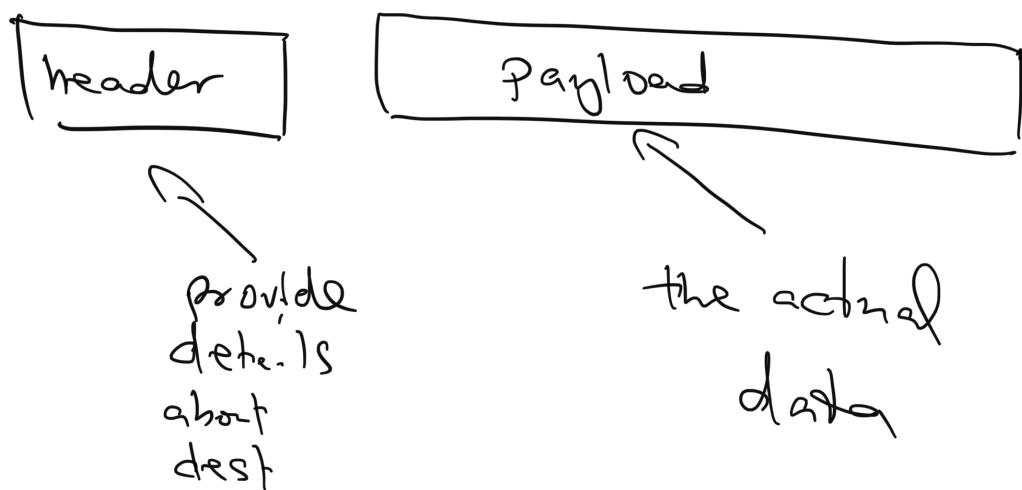
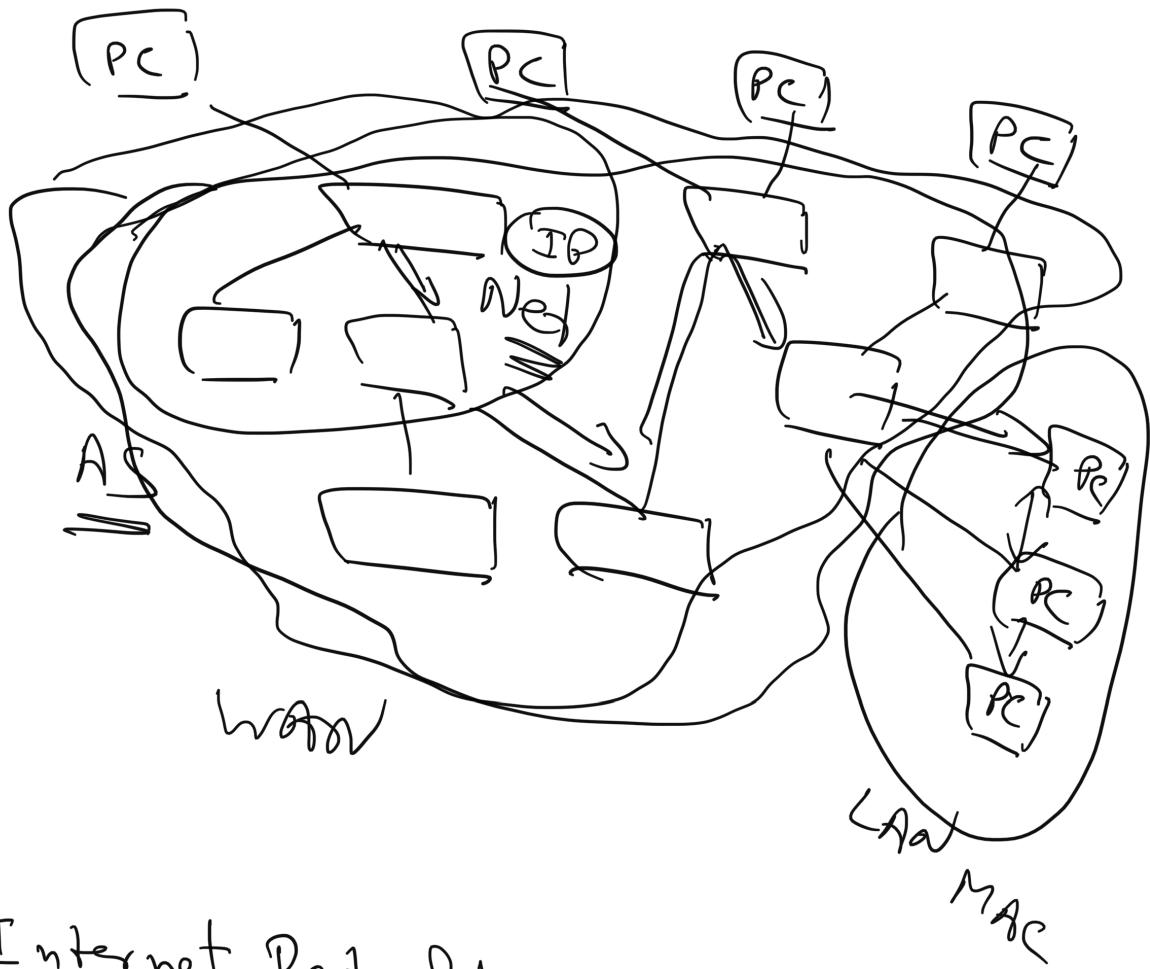


Data → split data into smaller chunks
(packets)

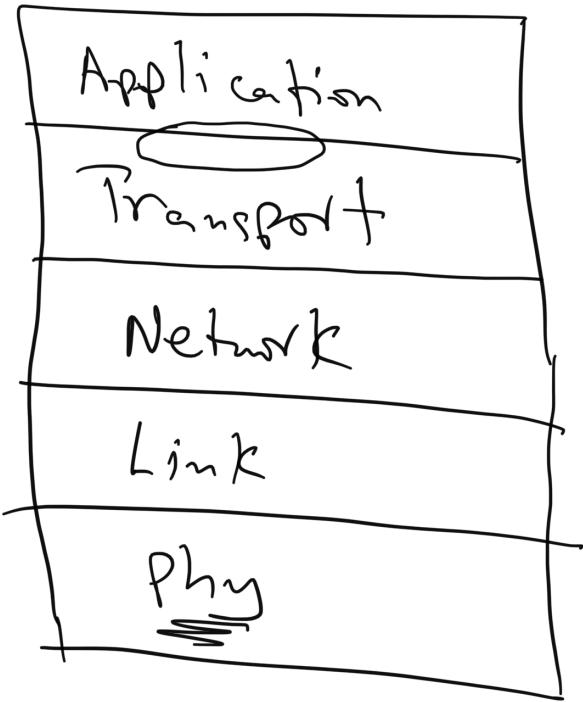


- A network's connection structure
 - ↳ network topology

- Computing devices → host nodes
 - ↑
sources or dest.
 - routers → forward packets
Comm. nodes.
 - computers in close proximity
Local Area Network (LAN)
 - Internet → Wide Area Network (WAN)
-
- AS
 - Shortest path w/ cycles



- Internet Protocol layers



Phy layer

↳ moving bits

Link layer:

Transfers data between machines
on LAN e.g. Ethernet

- group bits → frames
- Media Access Control Address (MAC)

Network layer

↳ tasked routing packets,
↳ numeric label

- 32-bit address \rightarrow IPv4
- 128 " " \rightarrow IPv6
- Main \rightarrow Internet protocol (IP)

Transport Layer

- Uses a 16-bit address
 - \hookrightarrow port
- Ex: TCP
 - \hookrightarrow connection oriented protocol

UDP
→ a best effort protocol

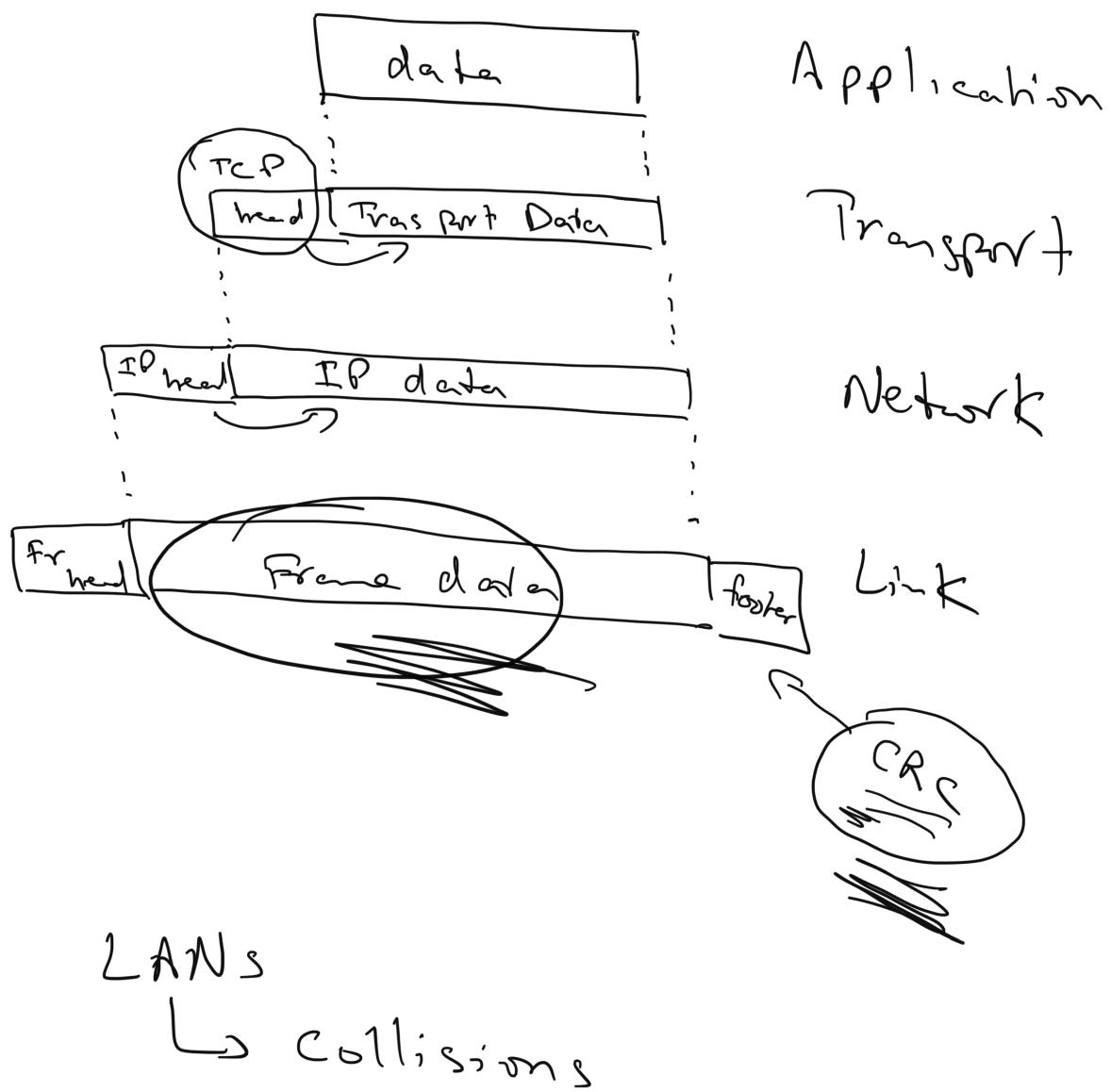
Application layer

Provide protocols for services

HTTP → TCP

SMTP → TCP

VOIP → UDP → real time

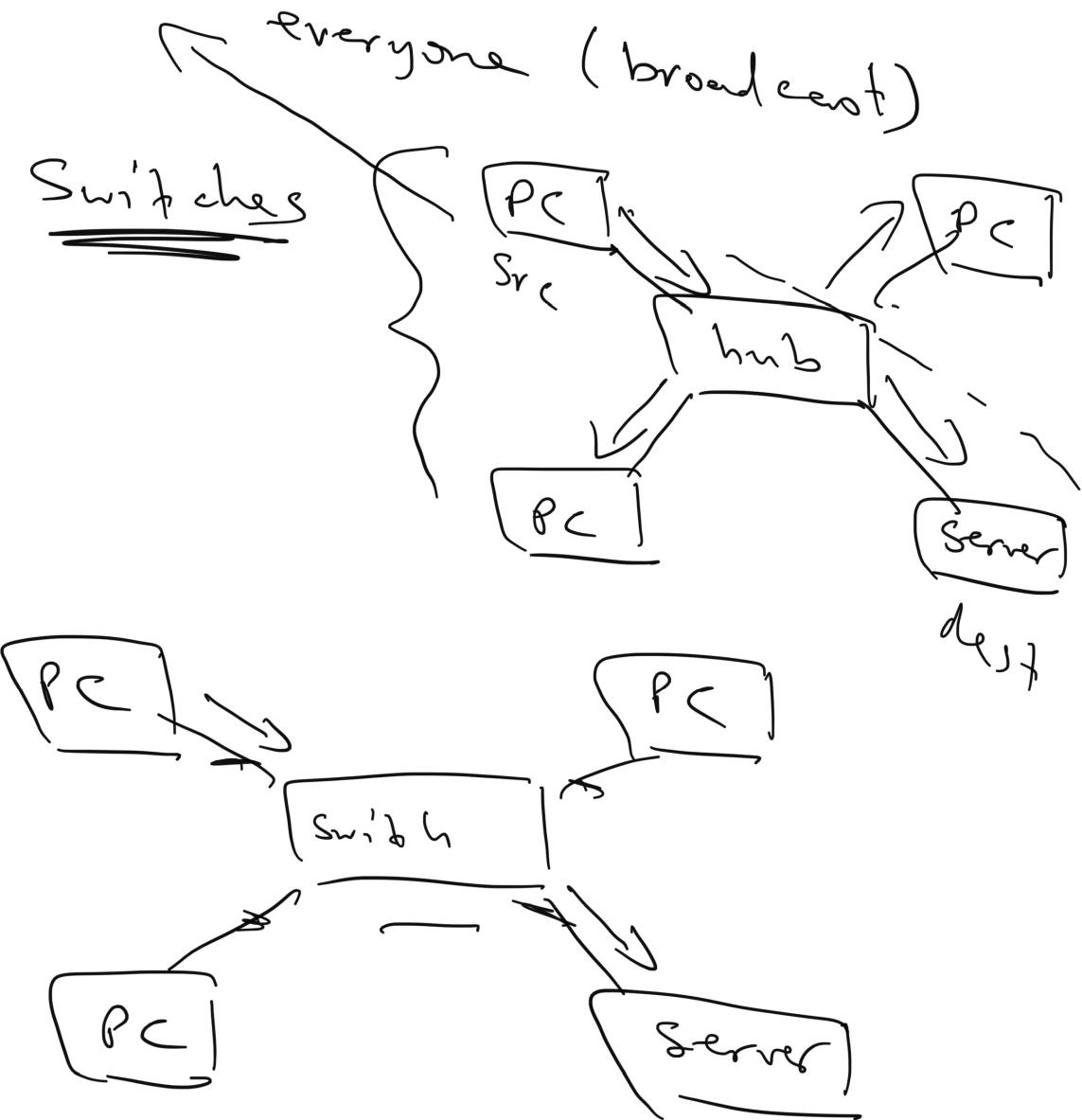




Wait random
x msec

Hub vs Switch

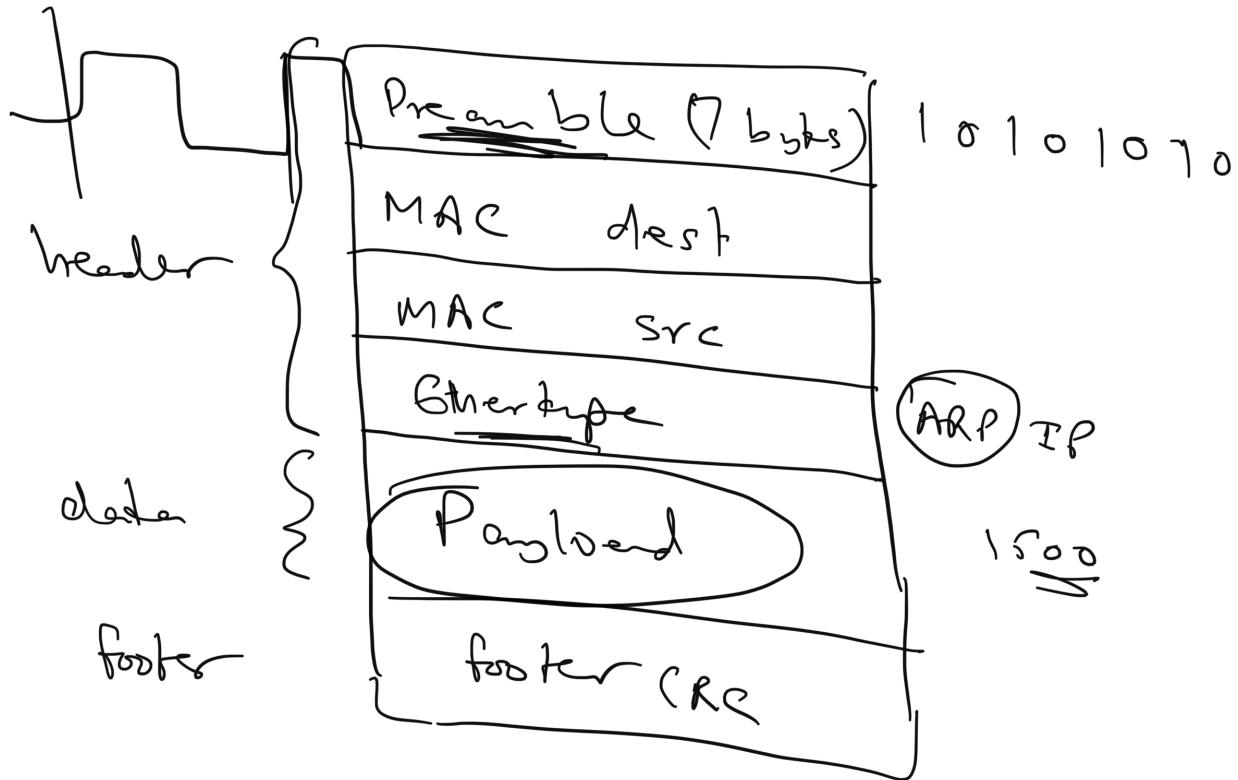
Hubs \rightarrow forward all frames to



desh

Ethernet

- 48-bit MAC Address
- unique
- 24-bit \rightarrow mfg 2^{24}
- "ifconfig"



ARP = Address Resolution Protocol

- Vulnerable ARP spoofing

- Vulnerable ARP spoofing

