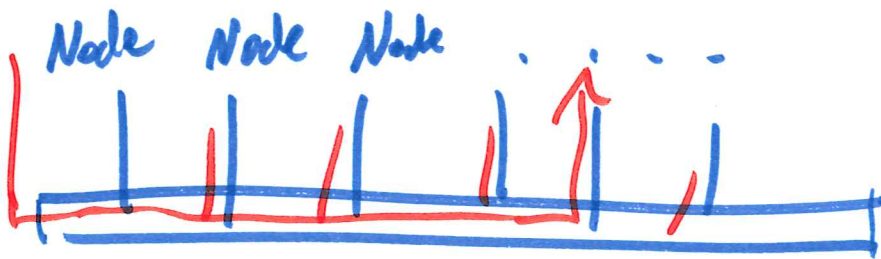


Networking H/W + OSI Model

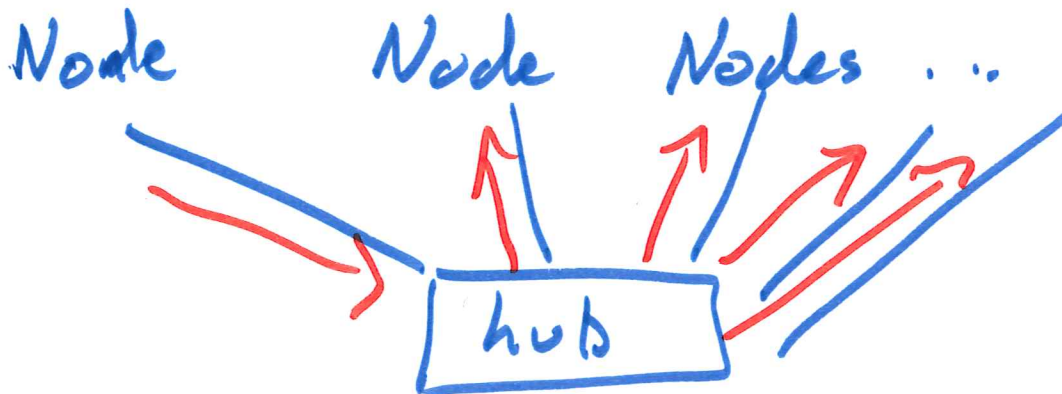
Local Area Network - LAN

Ethernet



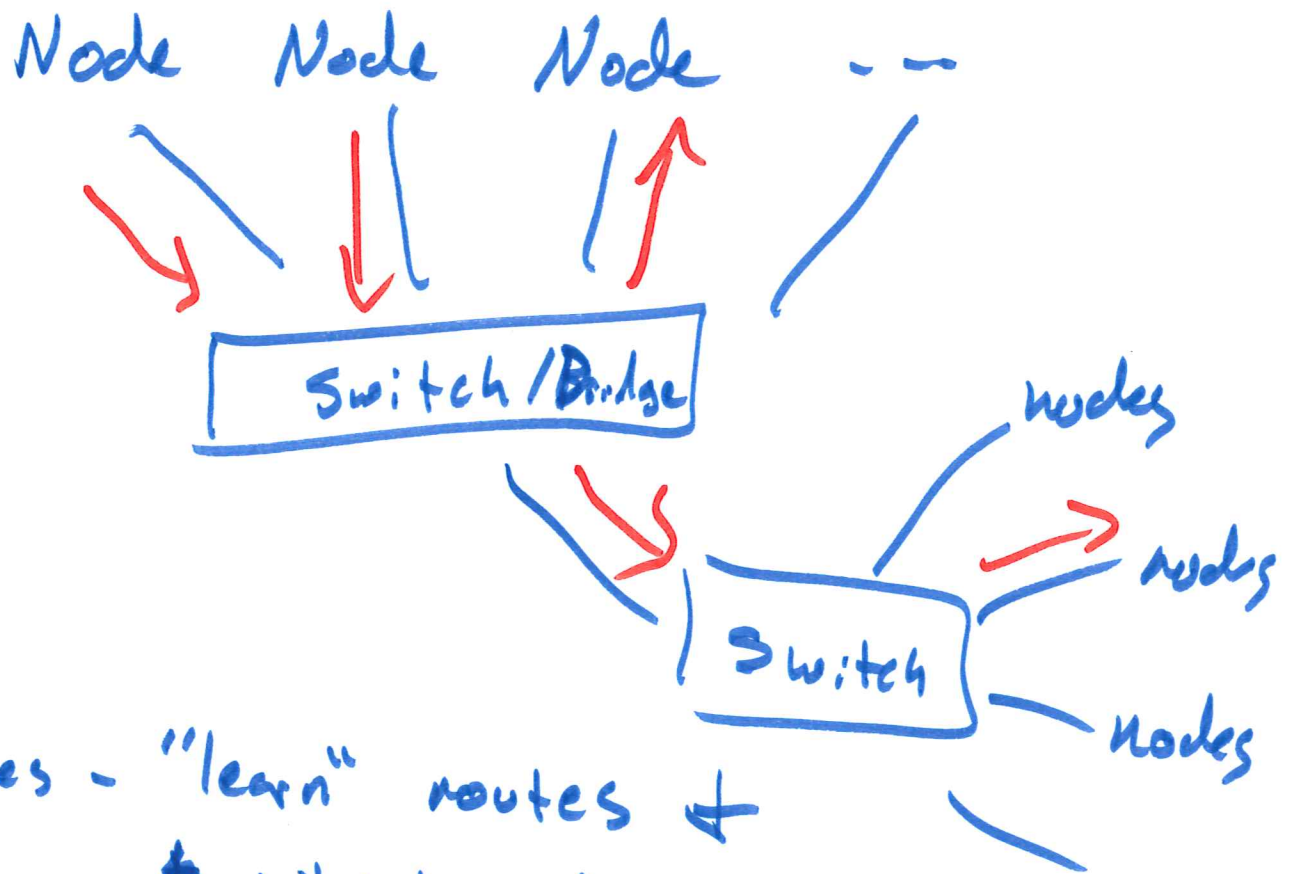
↳ broadcast to everyone, only receiver listens

Problem! → physics



Hub → Broadcasts incoming data to all nodes / ports

Bridge / Switch



Switches - "learn" routes
↳ which nodes on which ports
more efficient than hub

All nodes connected by switches are on
the same network or LAN

Router → connects multiple LANs together

Making a WAN wide era network
can change network type an "internet"

7 layer OSI Model

- often simplified to 5 layers or 4
- some layers combined

- 7 Application → HTTP / SMTP / FTP
 - 6 Presentation → JPEG / XML / JSON
 - 5 Session → Sockets / RPC
 - 4 Transport → "Reliably" transport
TCP / UDP
 - 3 Network → actually transferring data
Based on addresses
IP
 - 2 Data link → node-to-node transfer (MAC)
 - 1 Physical layer → electrical signals
↳ skipped sometimes
- TCP/IP*
- combined*
- combined*

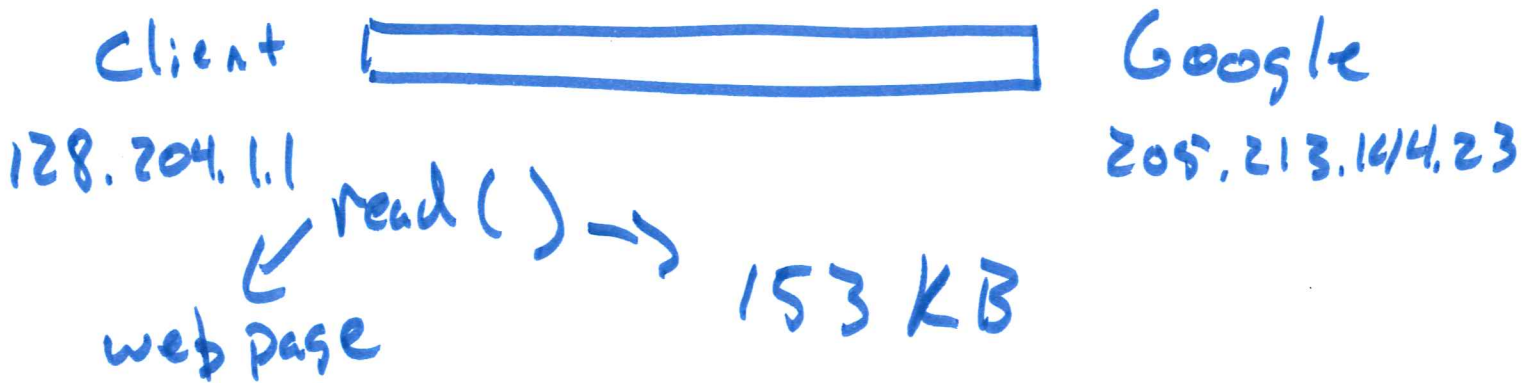
6-7 App / Presentation

HTTP GET http://www.google.com

POST ↳ turn name into address 205.213.144.23

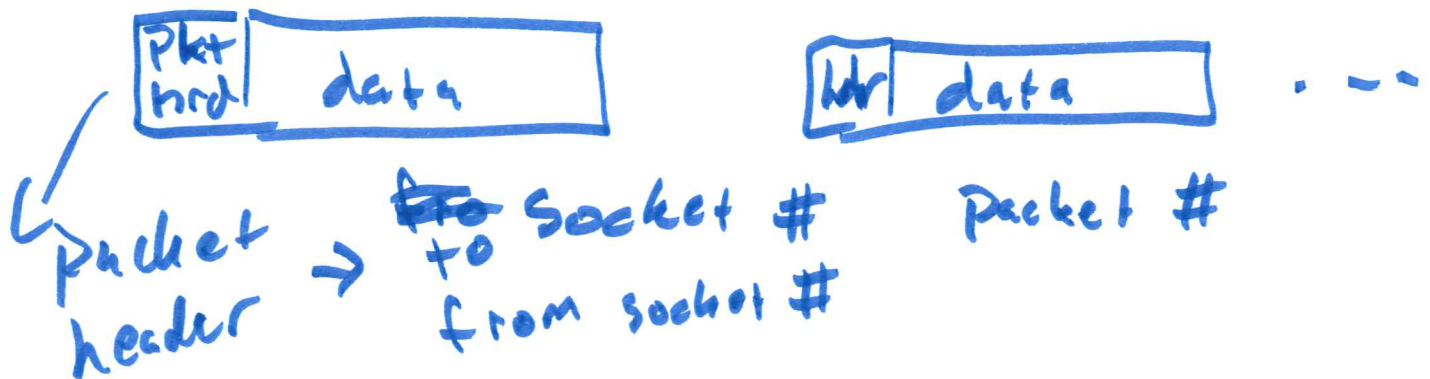
5 Session → open a socket

write(~~www~~.GET.....)



4 Transport (TCP)

↳ - break message up into packets



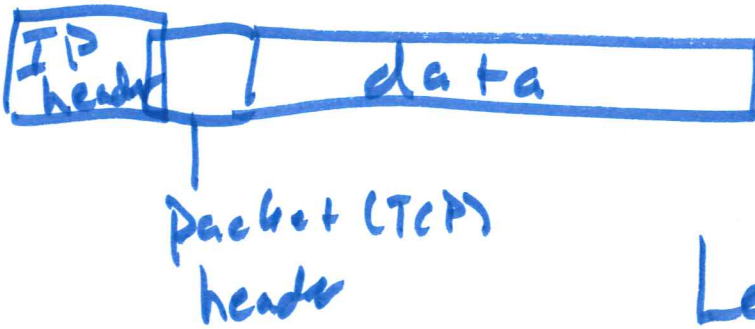
- Tracks each packet to see if it arrived

for each packet receiver sends an ACK
can send a NACK

✓
acknowledgement

Packets can be dropped + resent
+ arrive out of order + other bad thing

3 Network layer IP → addresses of sender/receiver
adds another header to packet



→ send messages across networks

Level routers work on

2 Data-link moves data hardware to hardware

Frame header → MAC addresses
↳ which NIC to send to



↳ switches work here