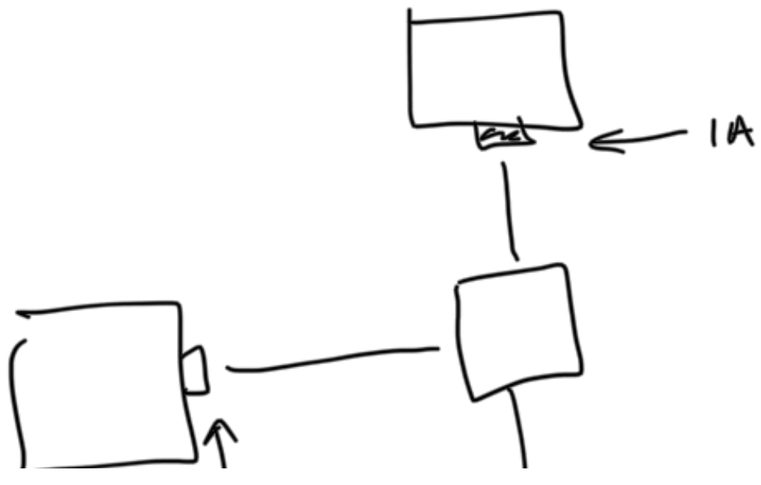
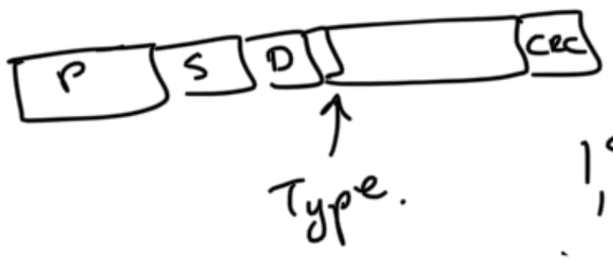
Computer Network Link Layer Part II

1. ARP → address resolution protocol
2. Address routing to another
3. Wrie shark demo Ethernet frames → arp -a table as well.
4. Virtual lans.
5. Data Center networks.

Challenge



Moving packets around by address them with MAC address



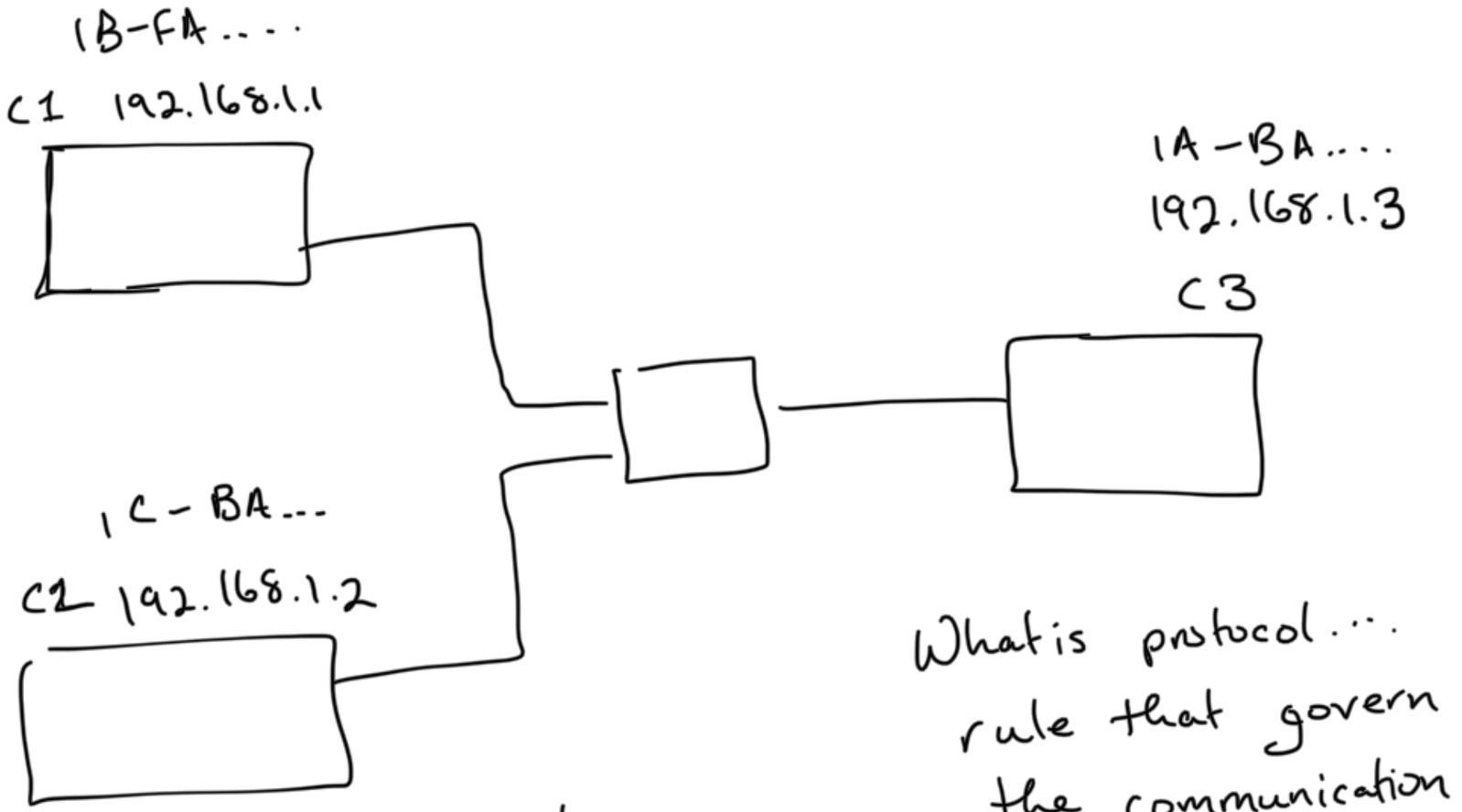
1518 bytes

But we use IP address to communicate so how

1C→ ← 1B

does a machine get a mac from an IP

→ ARP → Address Resolution Protocol.



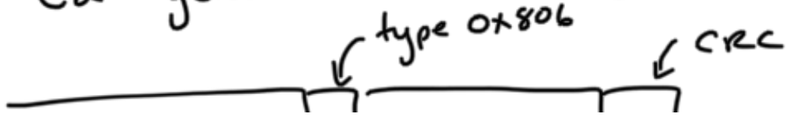
What is protocol....
rule that govern the communication

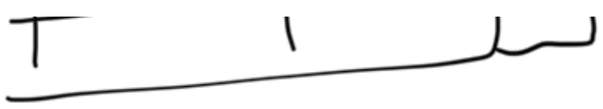
① maintain a table ← normally 20minutes.

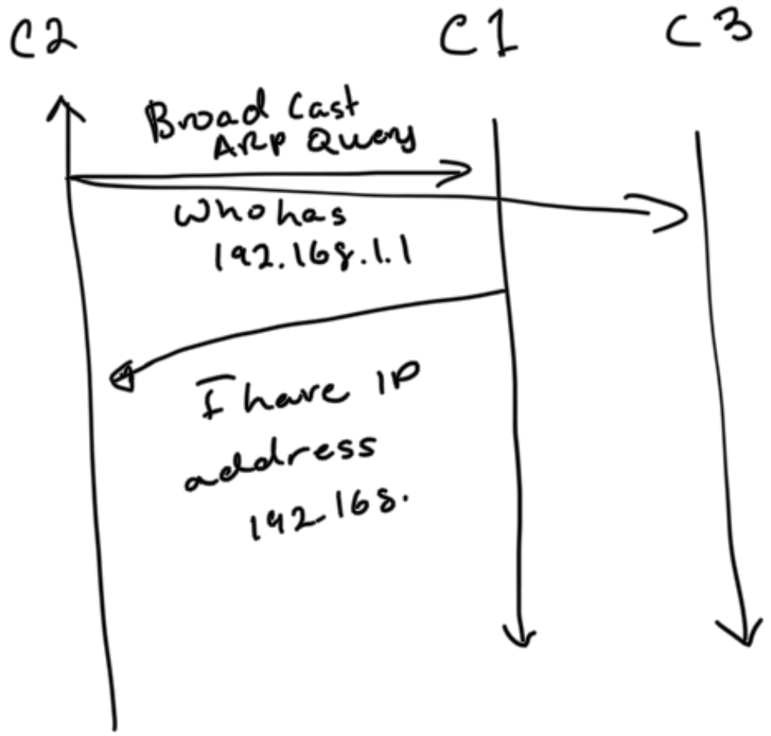
Mac	IP	TTL

① user types
192.168.1.1 on C2

② C2 generates a ARP query







But it does know the MAC of the machine so how can it query

ARP sets the destination address to ff-ff-ff-ff-ff-ff

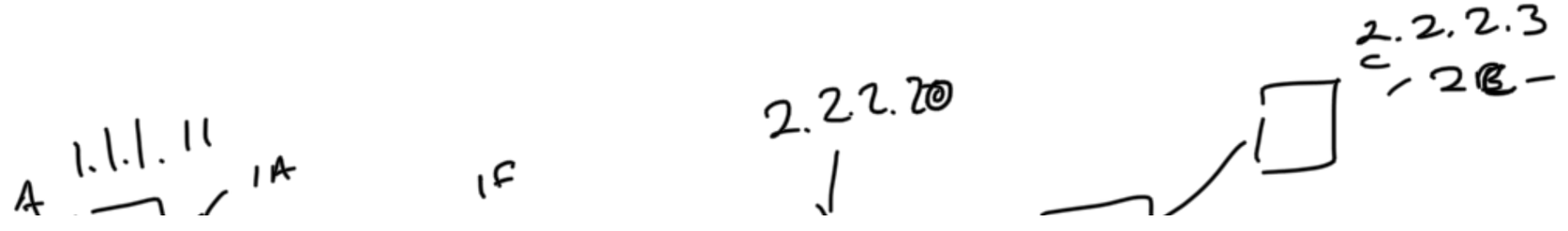
→ Special address called a broadcast address.

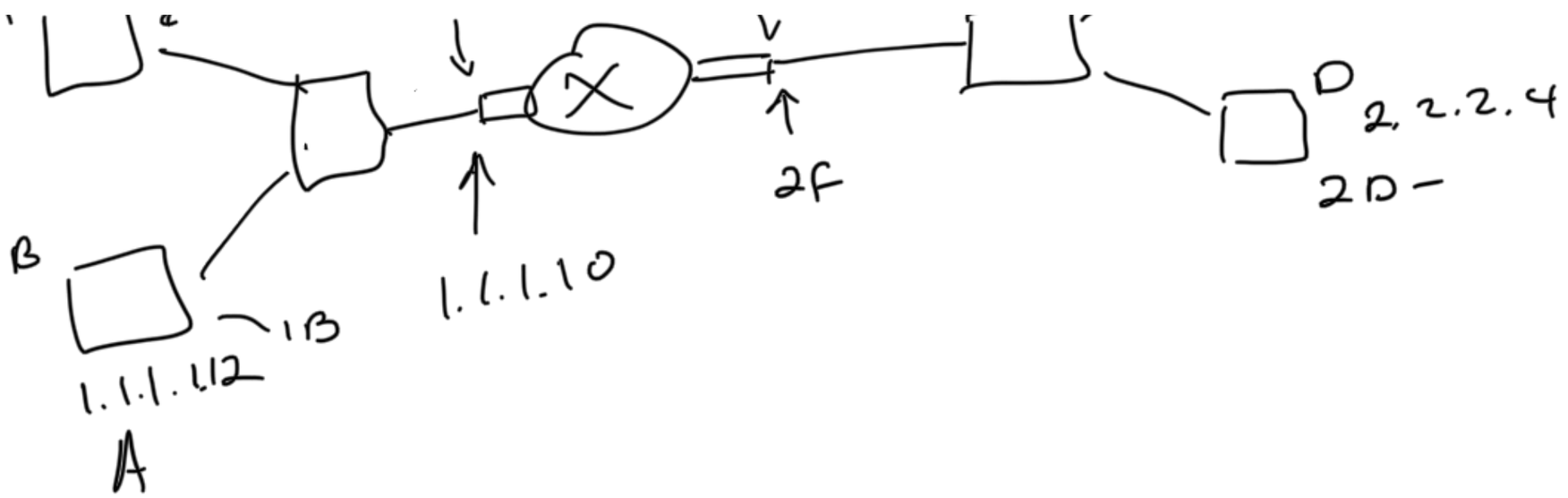
* Illustrate of network diagram

Source is set with source mach address of the querier.

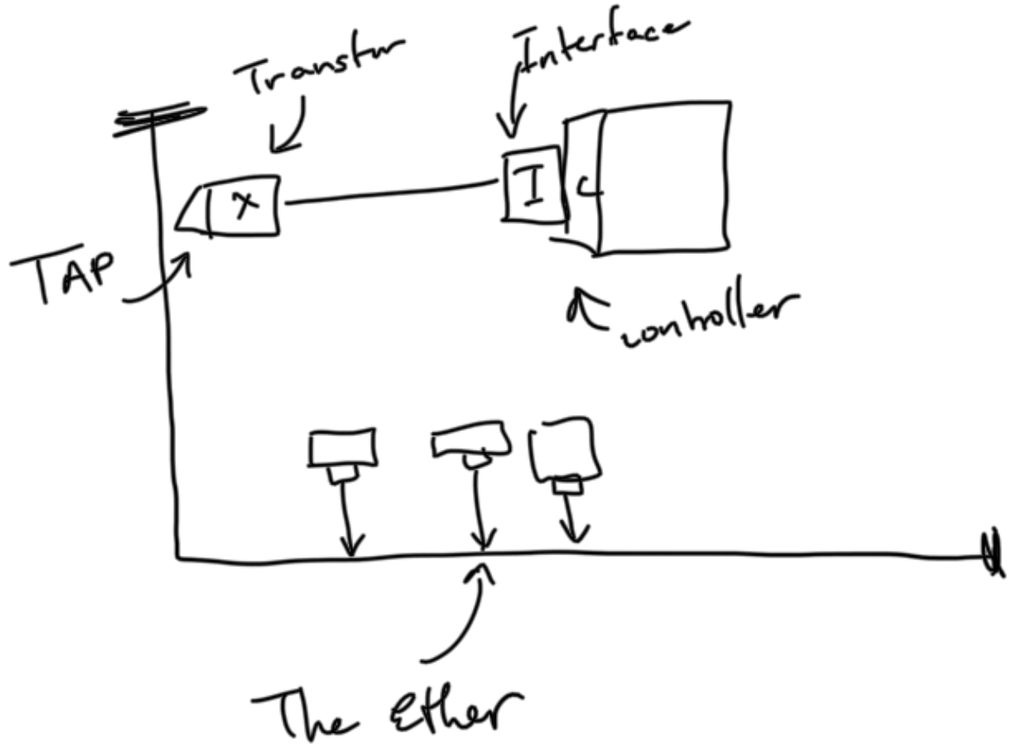
ARP Query
Source MAC: 1C-BA
Source IP : 192.168.1.2
Target IP : 192.168.1.1

ARP Response:
sent 1C-BA
Terget MAC: 1B-FA
Target IP : 192.168.1.2

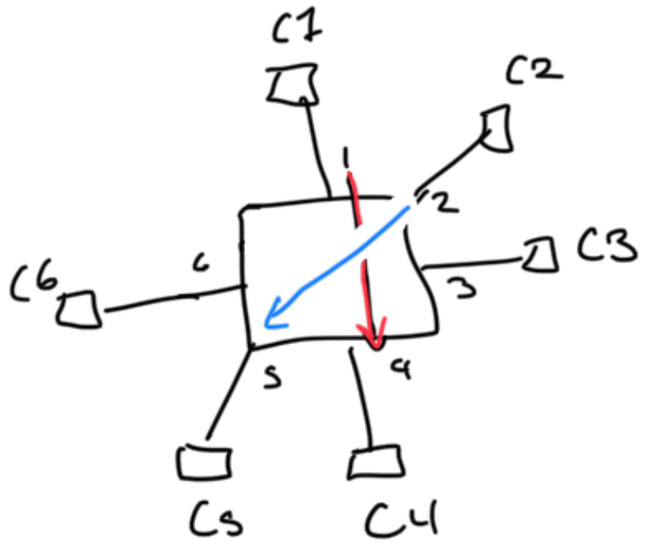




Good throughs



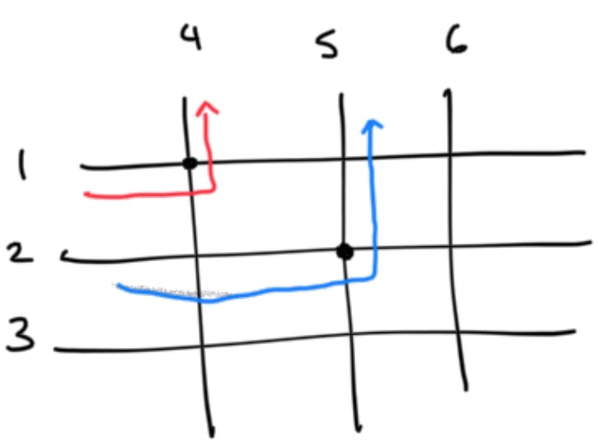
Thoughts on switching



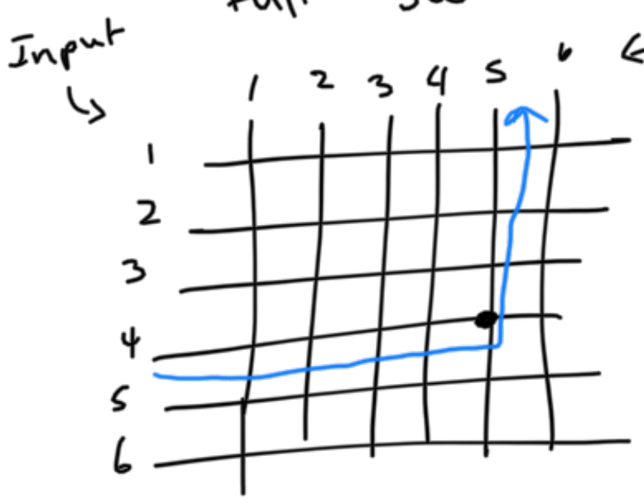
① cross bar switch

②

Part of the switch

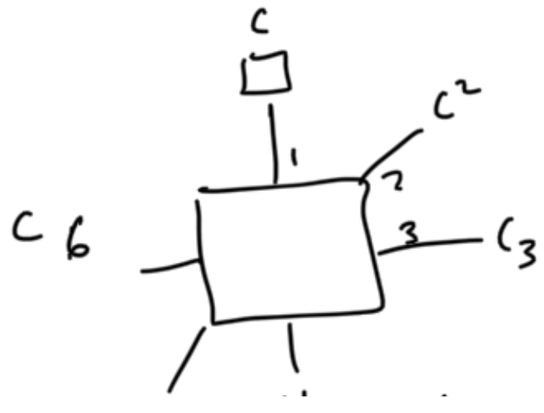


full switch



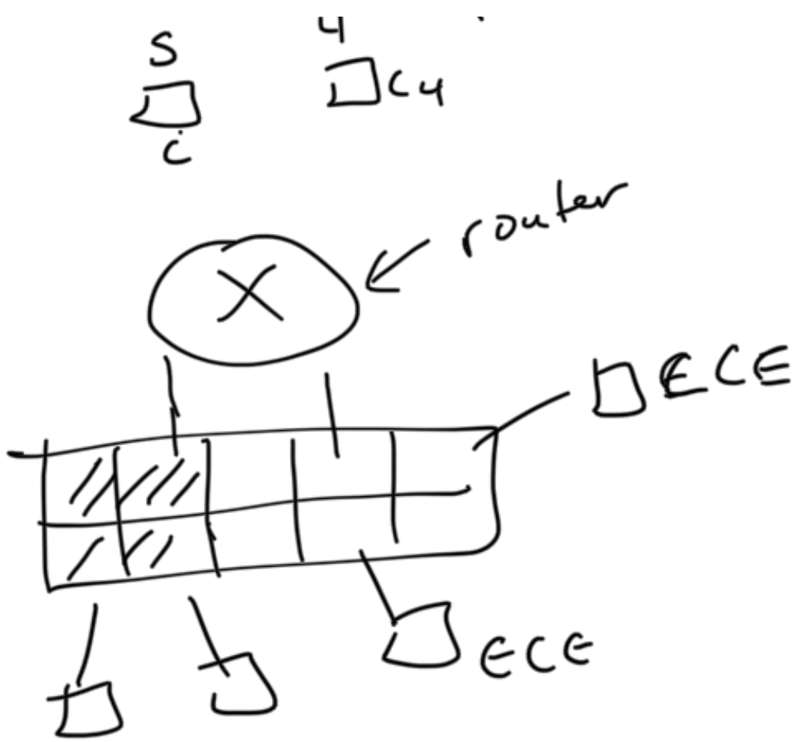
In on 4
out on 5

Vlans (software based partitioning)



LAN 1
C1, C4, C6

LAN 2
C2, C3, C5



ARP Spoofing