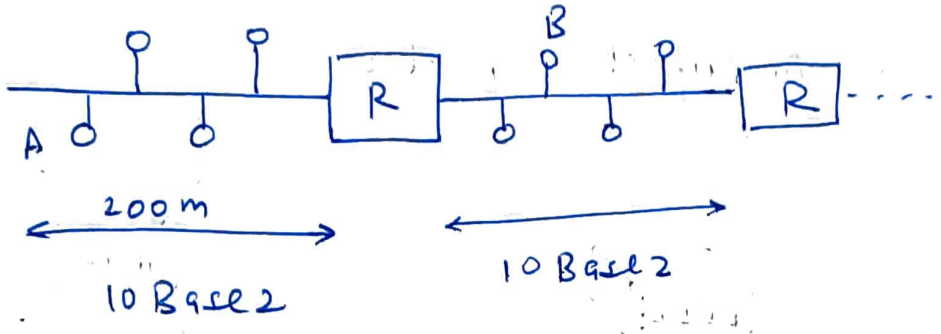
Lec 1.6 : Repeaters in Computer Networks

↳ Hardware (used in physical layer)



Repeater just strengthens the attenuated signal

→ Repeater is not similar to Amplifier.

- Repeater increases signal to original strength
- Amplifier can increase it manifold.

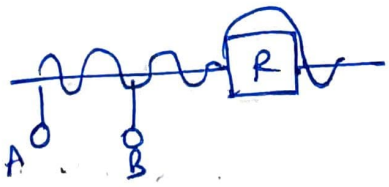
→ Repeater → 2 port device

→ Forwarding

(Repeater sends the signal of A to B).

→ No filtering

B is in same line as A but still repeater will forward the signal.



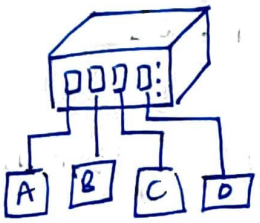
→ Collision domain → max. number of collisions

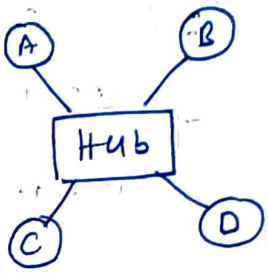
'n' → no of devices on both sides.

Lec 1.7 Hub (Physical Layer)

↳ Purely hardware, no software works on Hub.

Hub → (i) Multiport Repeater





(Star)

(ii) Forwarding → Yes.

Hub will forward data send by let's say A to D.

(iii) Filtering - NO

Message sent by A will go to B, C, D irrespective of whether it was sent to them or not.

Hub broadcasts message to all.

(iv) Collision domain

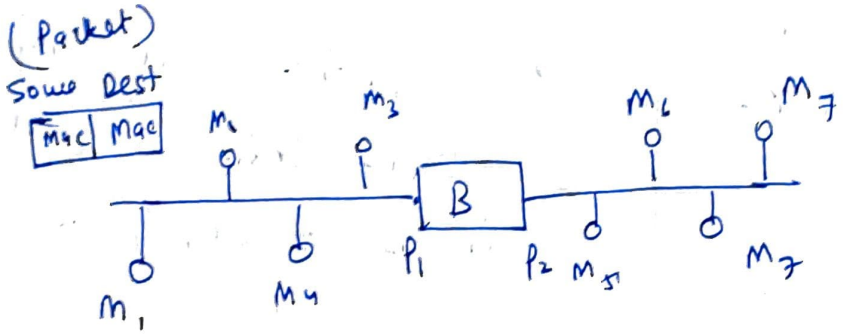
'n' collisions max (n → number of devices)

Lec 1.8 - Bridges (physical and Data Link layer)

- Bridges connect two different LAN's

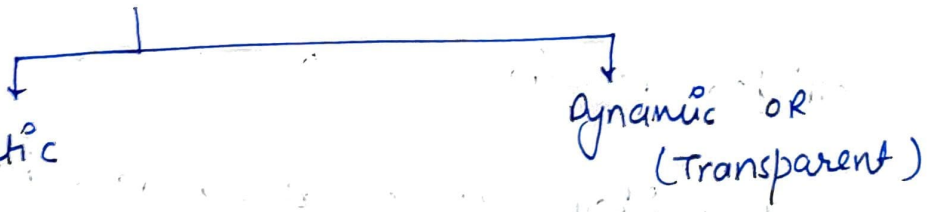
- Forwarding (Yes)

  ↳ जब Bridge के पास packet आयेगा, तो वो उसे आगे forward करेगा



Bridge checks whether to forward or not from the help of MAC address

Types of Bridges



MAC	Port
M_1	P_1
M_2	P_1
M_3	P_1
M_4	P_1
M_5	P_2
M_6	P_2
M_7	P_1
M_8	P_2

↳ This is problematic because if MAC address changes or let's say PC is now connected to different LAN, bridge will not be modified.

Bridge will use this table for filtering & forwarding

→ Dynamic Bridges → They learn the table.

→ Initial table is empty.

→ first time, it will broadcast the packet and then record ports for all.

MAC	Port
M_1	P_1
M_6	P_2

$M_1 \longrightarrow M_6$

→ So, bridge will maintain table initially, but once it is formed, it is fast

→ No need of network administrator in this case.

- Filtering - Yes

- Collision Domain

↳ collisions do not occur in bridges because they use store and forward strategy.

→ Bridge has a buffer memory that stores the data packet

- Bridges Data Unit Protocol

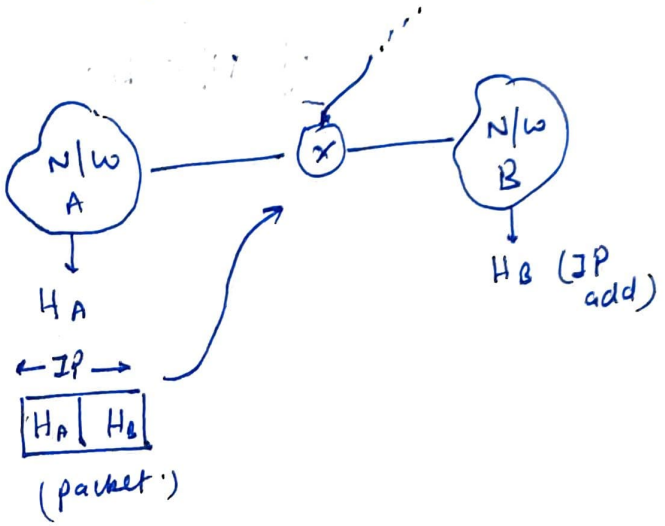
↳ Packets do not get caught in permanent loops because bridges maintain minimum spanning tree using Bridges Data Unit Protocol.

Lec 1.9 Routers (Physical, Data link (MAC), Network layer (IP))

Internet:

- Forwarding (Yes)

Router can forward, because router uses routing table

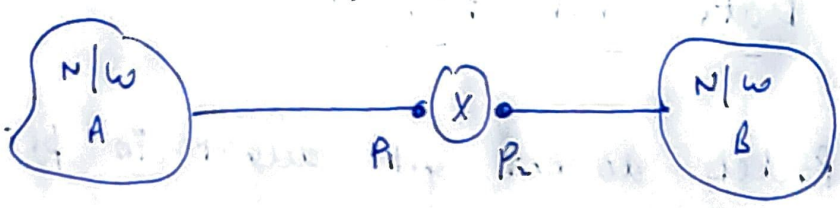


If router cannot decide where it wants to send the packet, then it can broadcast the packet (flooding).

- Filtering - Yes → using routing table

- Routing

- collision - NO, router also uses store and forward method.



P_1 will be an IP address and it will come from many interfaces already in N/w A.

Similarly, P_2 will be an IP address that will come from one of the many interfaces of N/w B.