Flow control problems

IEEE 802.3
Ethernet in the First Mile
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Half Duplex flow control

- When Rx buffer is filling up
  - MAC sends Jam pattern
  - The link is stuffed with garbage data
  - The station that transmitted, senses the collision
  - The station resends the frame later (back off algorithm)
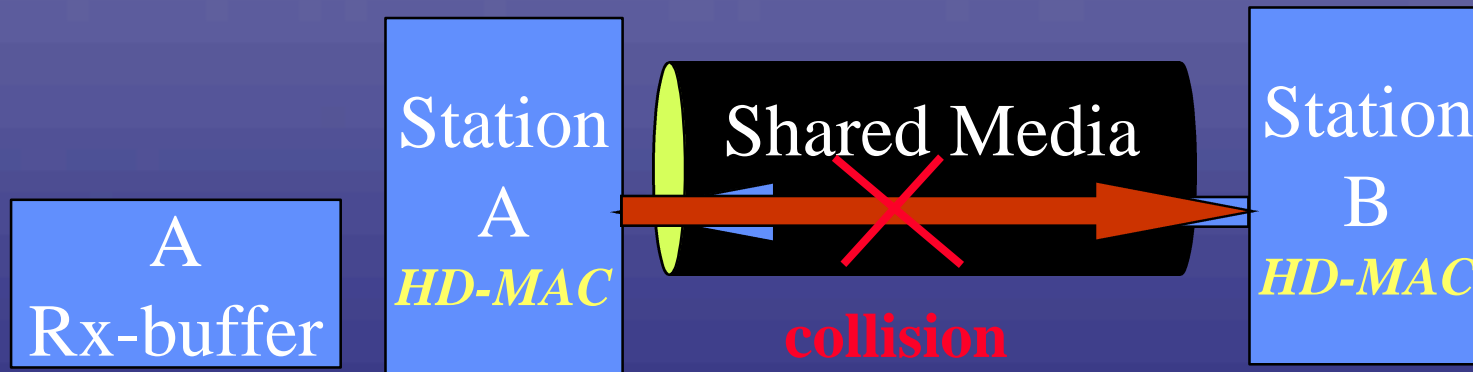
- Station B transmitted

- Station A Rx-buffer starts to filling up

- Station A MAC sends jam pattern

- Collision on the shared media

- Station B sense collision and resend frame
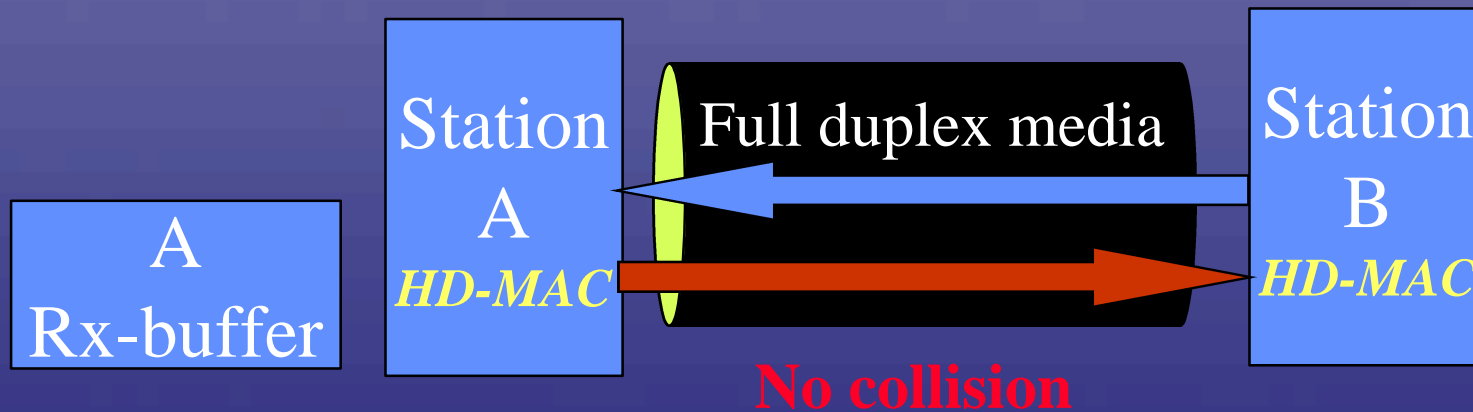
Station
A

A
Rx-buffer

Station
A
HD-MAC

Full duplex media

Station
B

HD-MAC

No collision

- Station B transmitted

- Station A Rx-buffer starts to filling up

- Station A MAC sends jam pattern

- The jam pattern will send to station B

- Station B will continue transmission

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■ Operating half-duplex MAC over xDSL media (which is inherently full duplex…)

◆ We can implement xDSL layer flow control (I.e VDSL IB)

◆ But:

We Loose the MAC layer flow control

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- When Rx buffer fills up
  - MAC sends PAUSE message
  - The peer MAC receives the PAUSE message
  - The peer MAC stops transmission (according to the PAUSE message)

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- Operating full-duplex MAC over xDSL media (which is inherently full duplex…)

  - Can we allow the existing MAC layer flow control over the xDSL link?

  - Can we initiate our own PHY layer flow control towards the MAC?

  - But :

  Both layers flow control may interfere!

Full duplex issues

■ Peer MAC should stop transmission xxnsec after receiving PAUSE frame.

◆ The VDSL link delay is xxnsec

◆ But,

complicated xDSL link layer flow control (PAUSE processor)