

Coursework 1

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① *Describe each one of the potential limitations of multiplexing and the advantages of carrier sensing medium access.*

Multiplexing is a way to share the medium by splitting into different time frames (time multiplexing) or frequency bands (frequency multiplexing) or some other way. However, depending on traffic some users may want to send more or less data, which cannot be handled just by multiplexing.

CSMA on the other hand first senses the medium and if sensed idle transmits the data. With Collision Avoidance (CA) (or CSMA/CD for ethernet) and even MACAW to solve the hidden terminal problem it would avoid data collisions quite effectively. Also exponential back-off schemes lower probabilities of collisions happening but also allows for full use of the channel, when sensed idle.

② *Collision detection schemes employed in fixed network MAC protocols do not work in wireless networks. Explain (using diagrams) hidden terminal and exposed terminal problems and present possible solutions. Particularly, how is collision detection implemented in 802.11?*

Hidden terminal:

