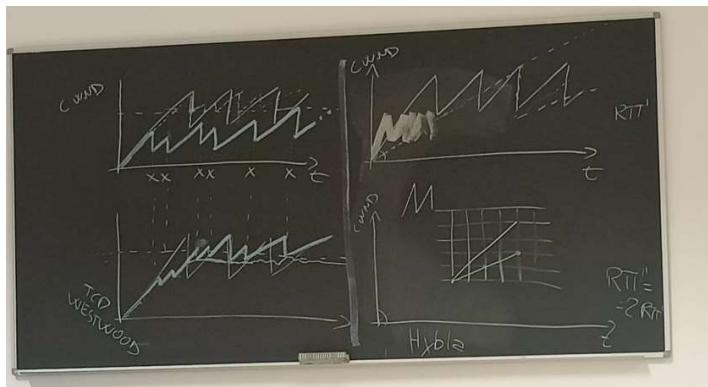


16 POSSIBLE EXAM QUESTIONS FROM CLASS AND OLD EXAM QUESTIONS

Here is a textual list of popular questions, as Palazzi told us in class last lesson:

- Exposed/Hidden Terminal and how to solve
- Piconet/Scatternet
- Vehicular Networks Transmission Range
- Differences between TCP versions and determine range specific to the single case
- What is the Fresnel Zone
- Differences between AODV and DSR

Here are some pictures of things that may be asked:



A comprehensive list including all the ones from MEGA (as of February 2024):

- 2023-2024
 - RTT Unfairness
 - TCP Hybla
 - Hidden and Exposed terminal problems
 - DIFS and SIFS time
 - Show how the *cwnd* changes over time with TCP + explanation of what was represented
 - What is an ad-hoc network? Draw one and show how the routing between 2 nodes work
 - Talk about Bluetooth + what is a piconet/scatternet?
 - Talk about VANET + which protocol we saw in class?
 - Indicate one TCP protocol shown in class that fixes one of his problems
 - Talk about TCP + wireless and draw RTT + cwnd and how changes (e.g. Hybla)
 - Draw a scatternet and talk about it
 - Talk about MANETs and talk about its routing algorithms/AODV with drawing and also difference between AODV and DSR

- 2022-2023
 - 1 – IEEE 802.11: What is it? What does it regulate? What are the different versions of the standard? Do they need to be able to interact?
 - 2 – DCF: What is it? How does a packet exchange work? What is the difference by using CSMA/CA? What is the "hidden terminal" problem and how to resolve it?
 - 3 – TCP: What is it? What are the main versions?
 - 4 – TCP HYBLA: What is it? What is it suitable for? How does it work? What are the pros and cons of using it?
 - 5 – Bluetooth: What is it? What is a piconet and is it formed?
- 2021-2022
 - TCP wireless
 - Routing inside MANETs in general
 - May seem more cryptic than it actually is
 - Infact, it's required to talk about Routing chapter in general
 - AODV
- 2018-2019
 - Fresnel Zone: general explanation with drawing
 - TCP Hybla:
 - how it works (description of rho parameter)
 - goal (elimination of RTT parameter, place all connections at RTT_0)
 - graph of how a TCP Hybla connection changes along with another generic TCP
 - (e.g., TCP New Reno)
 - 802.11 standards:
 - graph of the steps of a new connection (DIFS, RTS, SIFS, CTS, SIFS, message...)
 - Hidden terminal:
 - explanation
 - because it is not enough $\langle message, ack \rangle$
 - but you have to do $\langle RTS, CTS, message, ack \rangle$
 - (message can be lost if you lose RTS it weighs less)
 - Vehicular Networks:
 - general explanation
 - parameters defined by the standard
- 2013-2014
 - 3 TCP charts (New Reno)
 - one made by him
 - one with twice as many errors
 - one with twice as many RTTs
 - Mention a version of TCP that works with high [packet] errors in wireless
 - Answer (I would say): SACK (answers correctly Reno/New Reno problems and recovers in a single RTT, working overall pretty well)
 - Other answer: Snoop (addresses high BERs)
 - Mention a version of TCP that works on lines with high RTTs and is fair
 - Answer: Hybla (but fairness is not always there)

- Answer: Cubic (better on unfairness, works with high RTTs)
- Quickly explain why we chose to mention those versions of TCP
- What is the contention window of MAC 802.11 (not the congestion window of TCP)
 - What it is used for, how it works, how it is managed
- What is an ad hoc network
 - Mention some typical problems
 - especially why routing can be difficult
- Explain the difference between proactive and reactive routing
 - and mention examples, name only
- What are VANETs, what is special about nodes and needs