

Assignment 3
Wireless Networks
Full marks: 14

Continuing from assignment 2

[Create a topology of 20 WiFi clients using NS-3 simulations, the clients are connected to an AP. The AP is connected to a server through p2p links. Specify the p2p link's bandwidth to 1000Mbps and delay to be 100ms. WiFi network has a path loss and fading model, and uses MistrelHTManager as the rate adaptation manager. Create two IP subnets, one for WiFi networks and another for the p2p network. Let all the clients download a 5MB file from the server. Compute the completion time of each client (completion time is defined as the time difference between the request sending time and when the last byte of 5MB download comes), plot the completion time of each client. Now, along with the download let the clients also run an upload application with upload rate of 100-200Kbps. Compute the completion time.]

- a. Instrument your simulation to compute collision % [2]
- b. Now change your simulation for the AP to use DL OFDMA, what changes do you observe in terms of response time and collision %, explain [4]
- c. Try with various RU configurations, which one performs the best in terms of response time and collision %? [4]
- a. Now change your simulations to use both DL and UL OFDMA (use the best RU config you found from previous question, what changes do you observe in terms of response time and collision %, explain [4]

Submit your code, creating separate files for each, while showing demo you should be able to run any of these files that the TA asks you to show.

Submit all the code files, along with the report, and submit a zip file containing all.