CS169

Final Project I

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1. **Introdcution**

In this project, we run our code by running our own test file connected to the needed components of ns-3. With our test file “mypowertest.cc”, we type in code:

“./waf –run mypowertest” to run our test program.

In this project, our main components are *PacketSinkApplication*, *OnOffApplication, MinstrelWifiManager,* and *parfWifiManager*, and they have the following functions:

*PacketSinkApplication:* Receive and consume traffic generated to an IP address and port, and it is used to complement *OnOffApplication.* (Source:ns-3)

*OnOffApplication:* Generate traffic to a single destination according to an On Off pattern. The duration of each of these states is determined with the onTime and the offTime random variables. During the "Off" state, no traffic is generated. During the "On" state, cbr traffic is generated. This cbr traffic is characterized by the specified "data rate" and "packet size". (Source:ns-3)

*MinstrelWifiManager:* Minstrel is a rate control algorithm implemented in MadWifi and Linux. The basic principle is to probe the environment and adapt the rate based on statistics collected on the probability of successful transmission. The algorithm adapts the rate to the highest rate that it considers successful, and spends a fraction of its time doing 'look around' by trying other rates. (Source:ns-3)

*ParfWifiManager:* Power-controlled Auto Rate Fallback (PARF) is a algorithm that tries to minimize interference among neighboring APs, while ensuring robust end-client performance. Parf tries to maximize the transmission rate while minimizing the transmission power. (Source:ns-3)

In our project, *PacketSinkApplication* and *OnOffApplication* are suitable for our experiment because *OnOffApplication* generates the traffic to the destination with an on off pattern and then the *PacketSInkApplication* at the MS receives the traffic and consumes the traffic. Therefore these two components are used to simulate the communication.

The main difference between *MinstrelWifiManager* and *ParfWifiManager* is the algorithm that they use. In *ParfWifiManager*,