Double Selfish Mining Attack

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We used only 40 peers for simulation as we are keeping constraint on no of blocks created to end the simulation, as the simulation is taking more time to run with more peers as there will be more events regarding transactions and simulation time increases. And we generated 50 blocks in each run.

0.1 Plots

0.1.1 Attacker2 has 0 hashing power

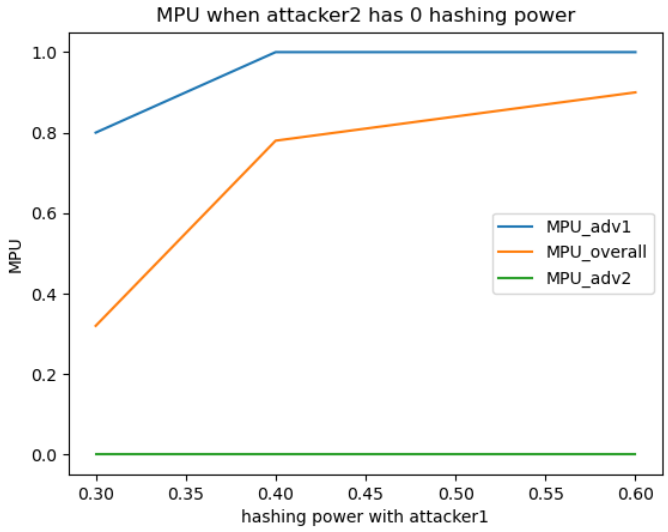

Figure 1: Attacker2 has 0 hashing power

0.1.2 Attacker2 has 30% hashing power

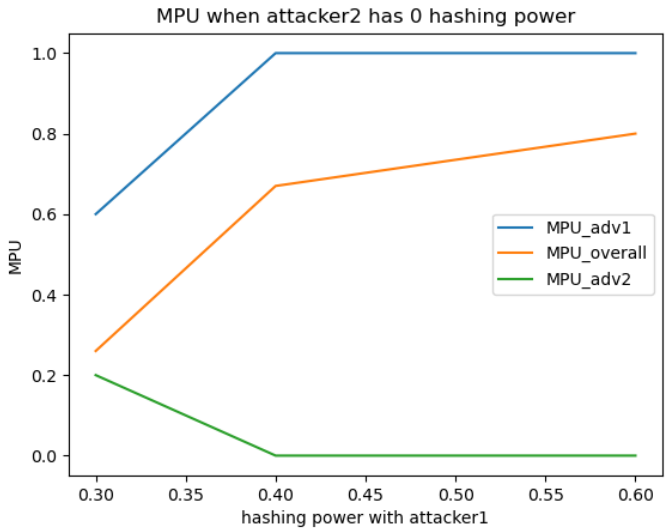

Figure 2: Attacker2 has 30% hashing power

0.2 Observations

- In most of the cases the honest blocks are not in the longest chain because the least hashing power with attackers is 0.3 combined, as we took 40 peers the honest hashing mining power with each peer is 0.018 which is very much less compared to the attackers.
- Attacker who has more hashing power will only have their blocks in the longest chain, as the attacker is creating blocks at faster rate and the other attacker looses his secret chain very often to the other attacker with more hashing power.
- if both the attackers have the same hashing power then the blocks of both the attackers will be in the longest chain. i.e they both loose their chains.
- When the hashing power of attacker1 is greater than 0.4 the MPU of attacker1 is 1 and the MPU of the attacker2 and honest is 0. And the MPU overall peaks because the length of the longest chain will be

more as the attacker1 has more hashing power and create blocks faster than the honest nodes secretly.

- on increasing hashing power of attacker1 the MPU of attacker1 increases and the MPU of attacker2 and honest decreases. Also the no of blocks created by attacker1 increases.
- if attackers has lower hashing power there will be more forking as the attackers loose to perform the selfish mining attack very often so MPU overall decreases, and MPU of attacker1, attacker2 and honest decreases.
- We can see that in second case combined hashing power increased MPU overall decreased, MPU adv2 got increased when when he has 30% hashing power same as attacker1.