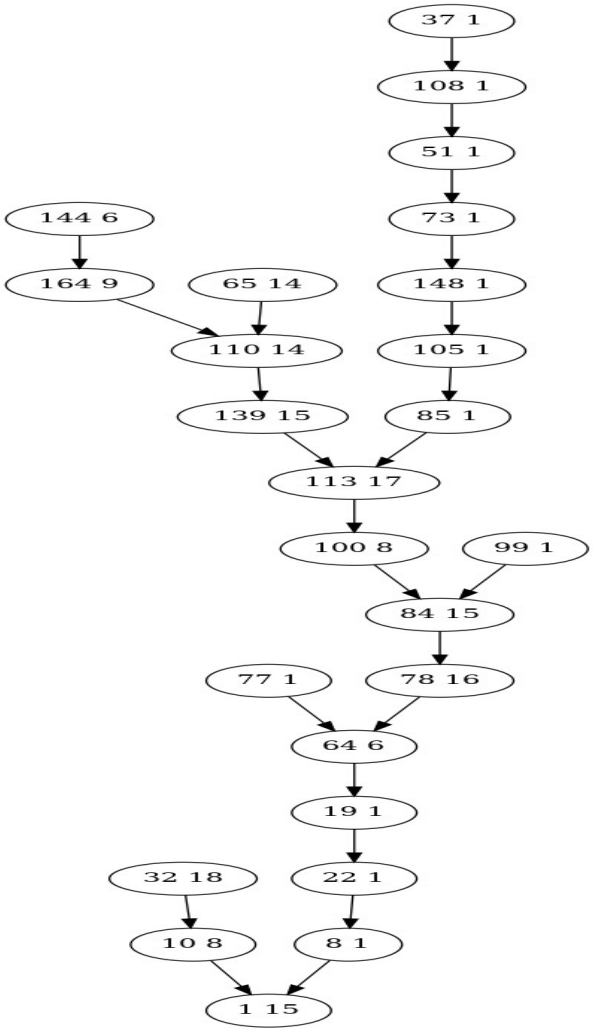
In the overall analysis, we focus on 2 values :
1)MPU node adv =
(Number of block mined by an adversary in main chain)/
(Total number of blocks mined by an adversary)
and
2)MPU overall =
(Number of block in the main chain)/
(Total number of blocks generated across all the nodes)

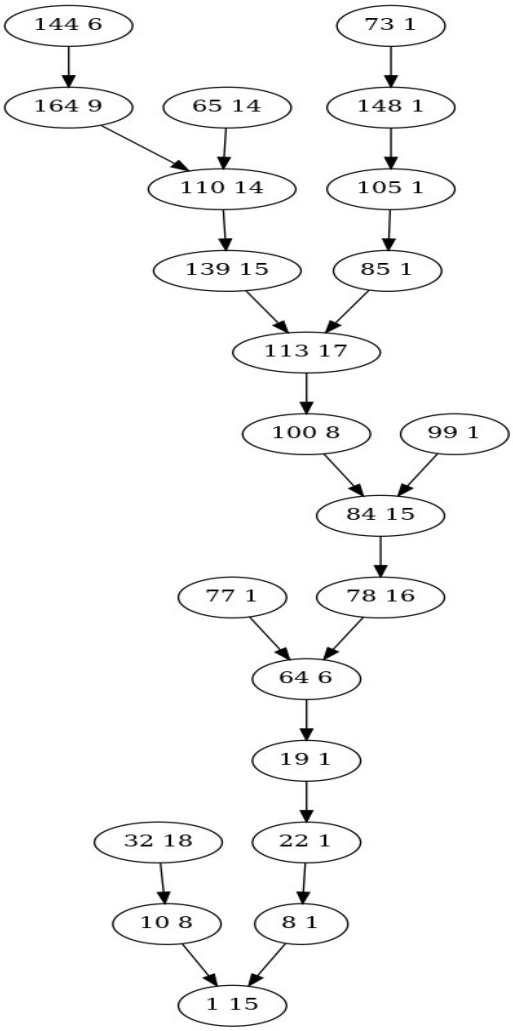
NOTE : we have considered at the end of the simulation that for calculating MPU node adv, we include the unreleased private chain of the adverary(if any) in the no. Of blocks mined by the adversary in the main chain.

1)Selfish Mining Attack

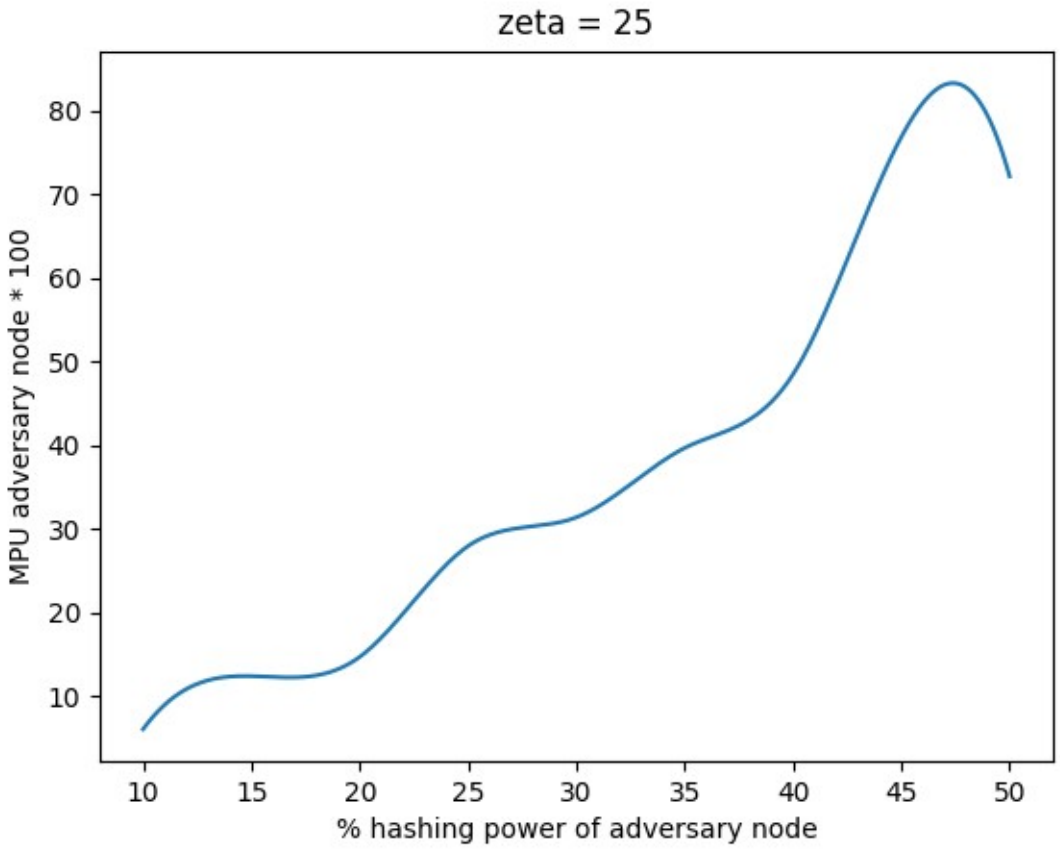
a)Varying hashing power
The tree of adversary node and honest node are as follows
i.adversary node:



ii.honest node

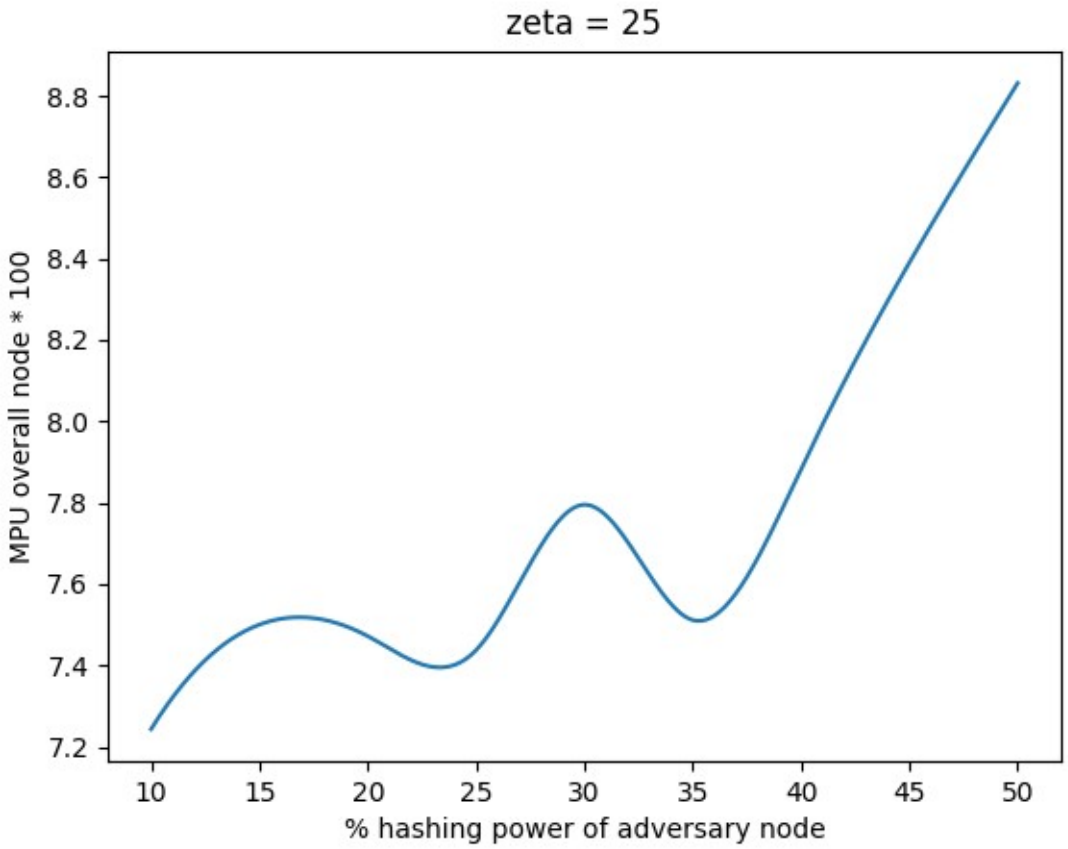


at the end of adversary, we an see the private chain. We plot of MPU adv node v/s hashing power of adversary graph for various values of adversary's hashing power :



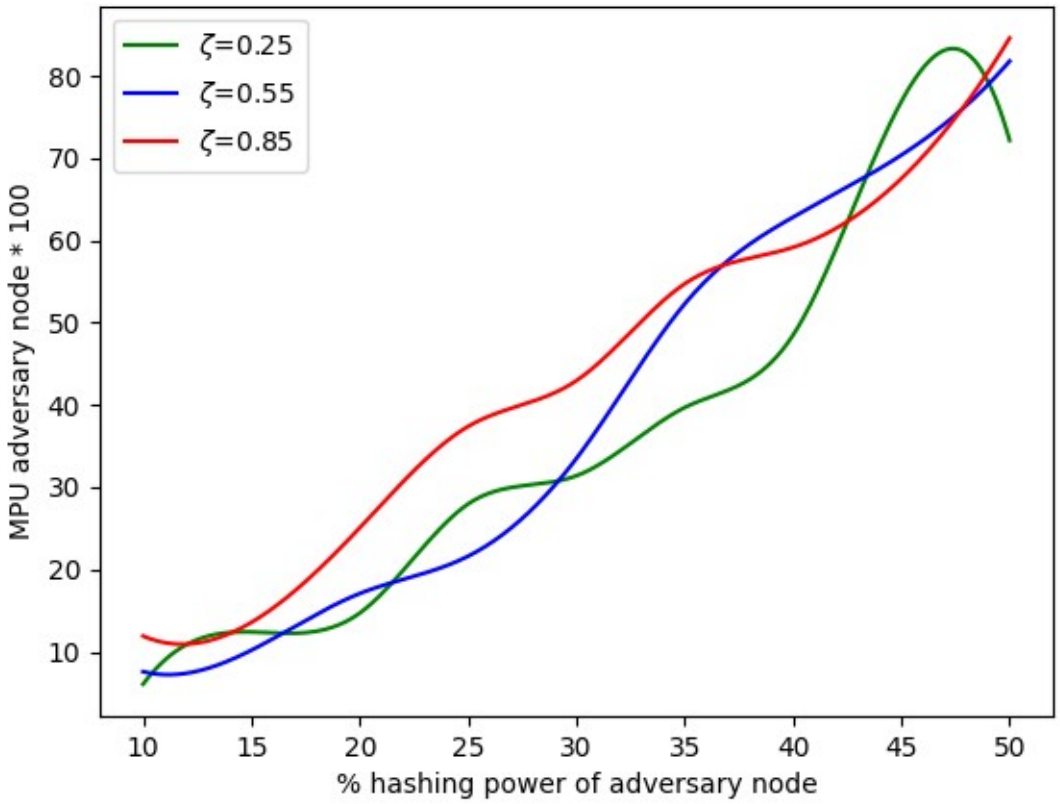
We can see from the graph that as the hashing power of the adversary is increased, the ratio tends to 1 , i.e., all the blocks mined by the attacker get into the main chain.

Also Plot for MPU overall v/s hashing power of the adversary graph is as follows:



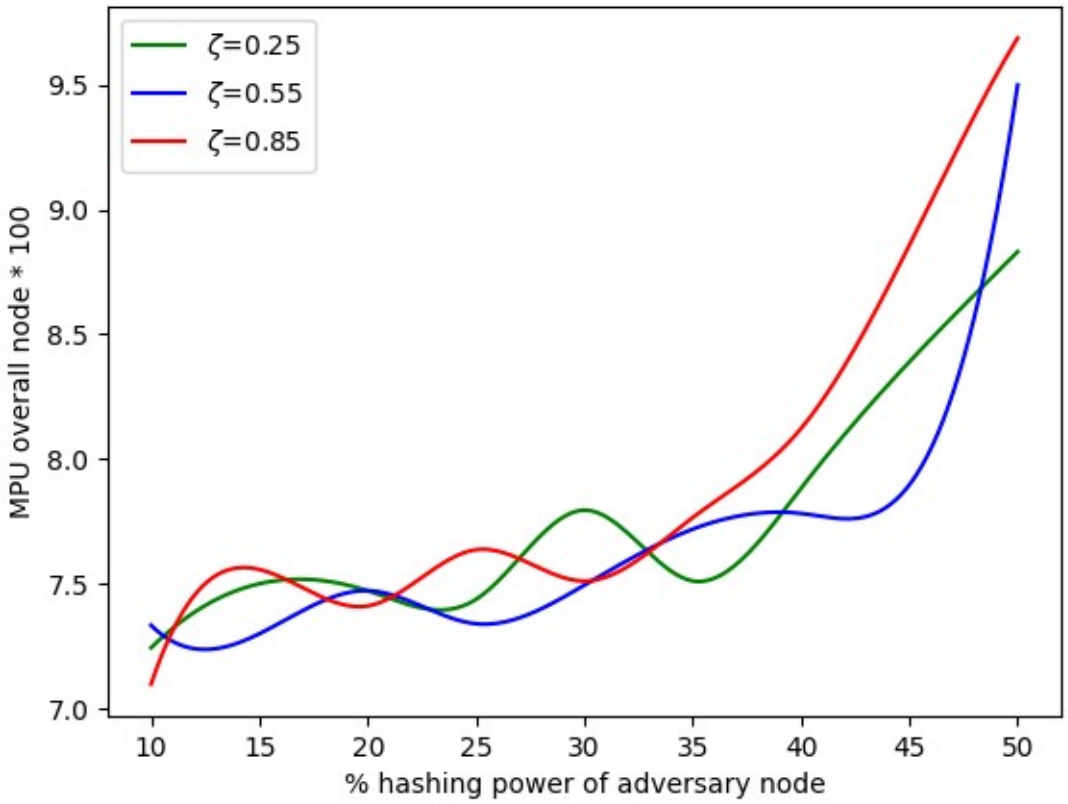
b) Varying zeta(fraction of honest nodes which are adversary's peer)

We plot of MPU adv node v/s hashing power for different values of zeta graph for various values of zeta :



We see that as value of zeta increases, more honest nodes will work on adversary's node at lower hashing power since at higher hashing power zeta does not factor much and hence no. Of blocks mined by adversary will be higher in the main chain

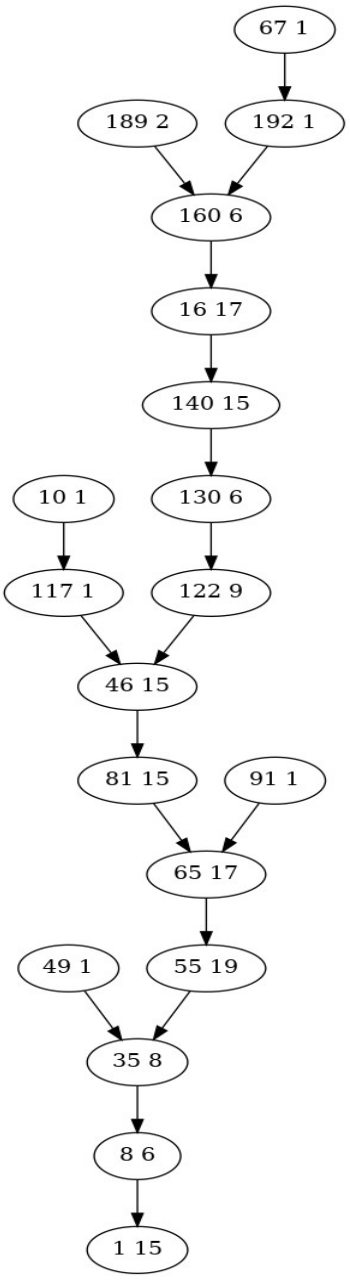
We plot of MPU overall v/s hashing power for different values of zeta graph for various values of zeta :



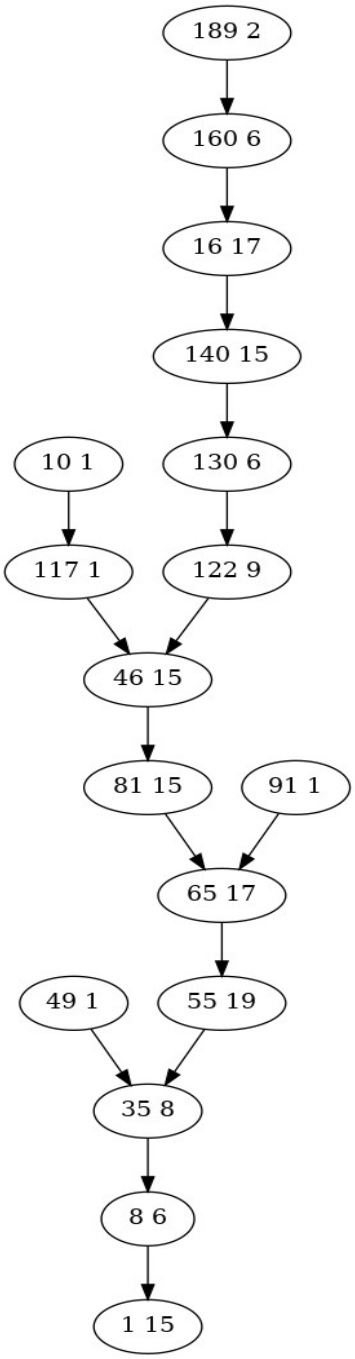
2) Stubborn Mining

The tree of adversary node and honest node are as follows :

adversary node:

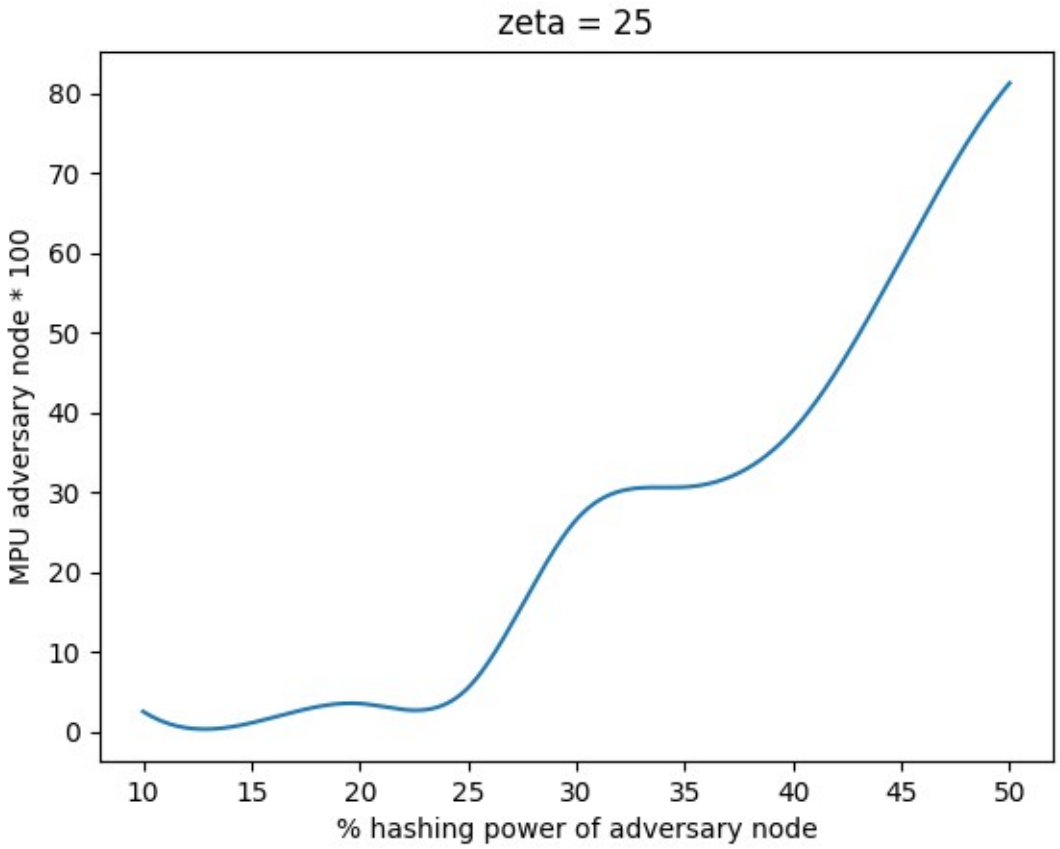


honest node :



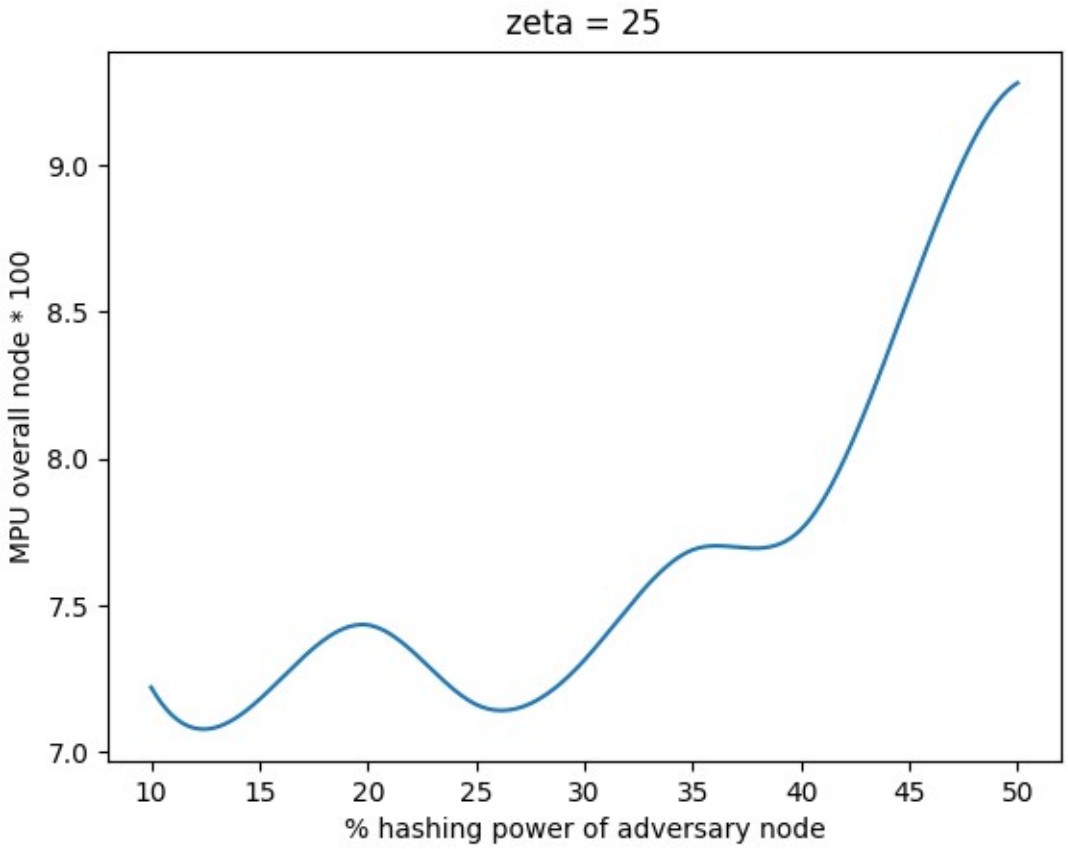
a) Varying Hashing Power

We plot of MPU adv node v/s hashing power of adversary graph for various values of adversary's hashing power :



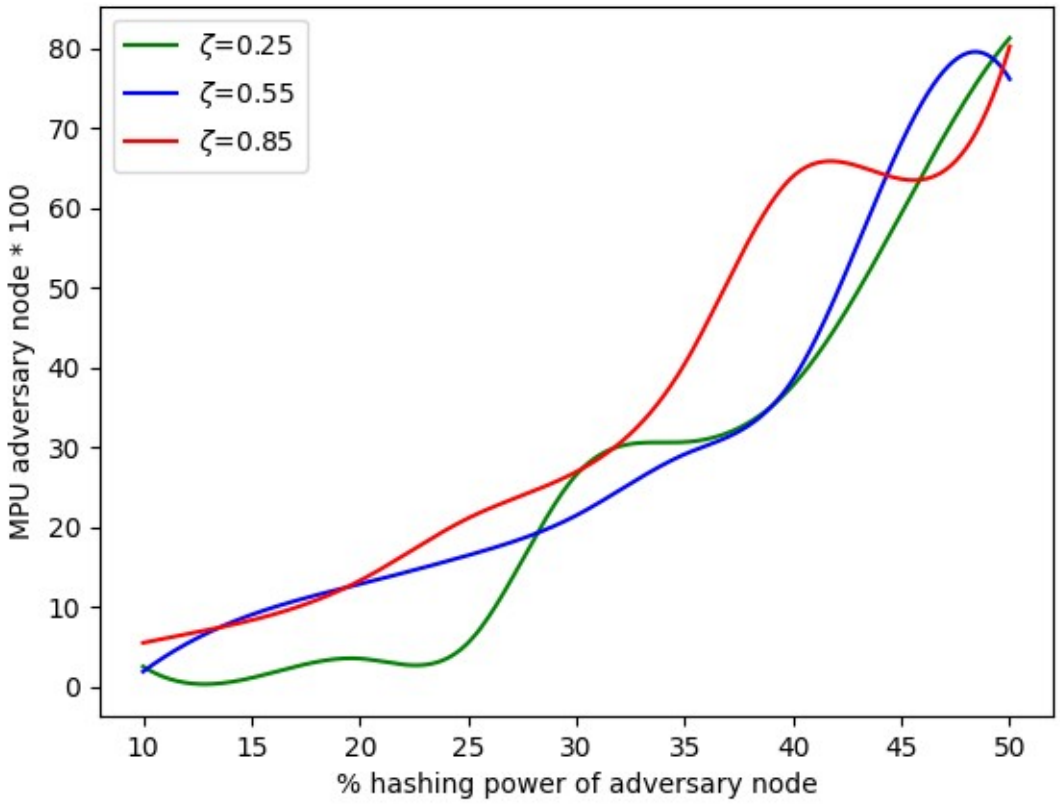
We can see from the graph that as the hashing power of the adversary is increased, the ratio tends to 1 , i.e., all the blocks mined by the attacker get into the main chain.

Also Plot for MPU overall v/s hashing power of the adversary graph is as follows:



b)Varying Zeta:

We plot of MPU adv node v/s hashing power for different values of zeta graph for various values of zeta :



We can see that for lower values of hashing power, if the zeta is high mpu of adversary node is compartively higher.

We plot of MPU overall v/s hashing power for different values of zeta graph for various values of zeta :