Manifold Insights 12.20.22

Some highlights from some new papers that have been published recently bring to light MEV Relays and their impact on the Ethereum ecosystem. You can find the paper sources at the bottom of this post.

Flashbots releases code to their SGX solution

twitter.com

Chris Hager ⚡

@metachris

Exciting news from Flashbots!

Today, we're happy to share our code and key learnings on running Geth inside SGX with the community.

writings.flashbots.net/geth-inside-sgx

12:53 PM - 20 Dec 2022 190

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You may remember us mentioning this back in february when Intel stopped supporting certain SGX chipsets or when Secret Network got pwned last month - These sorts of guarantees w.r.t. SGX are hard to make without the proper focus, and from our perspective Intel does not care that much about the problems SGX tries to address. For a more competent approach of enclaves look no further than Bedrock Systems

SoK: MEV Countermeasures: Theory and Practice

Note, this graphic contains incorrect datasets due to how they validate which relay producing which block. Manifold does not always insert an artificial tx at the end of the block like flashbots does, which is how they attribute blocks.

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mev-boost-builder-relay-sankey

600×750 190 KB

](https://global.discourse-cdn.com/standard10/uploads/manifold/original/1X/2d6fed89f2fb97f8879e96d279e24984a2bcd92f.png)

Wait time of ‘Sanctioned Transactions’

…We compare the waiting time [28] of sanctioned transactions and regular ones. The waiting time of a given transaction is the time between when it first appears in the mempool and when it is minded in a block. We plot the distribution of waiting time for regular transactions and sanctioned transactions.

The median waiting times of regular transactions and sanctioned transactions are 8.87s and 14.93s respectively, thus sanctioned transactions have to wait for about 68% longer on average than regular transactions before they can be included in a block

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waiting-time-hist

974×512 46.4 KB

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waiting-time-ecdf

1018×520 52.6 KB

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Compliance with OFAC Uberalles Planetary Indulgence

Interestingly, (this) shows that only Flashbots is fully OFAC compliant before Nov 8th, 2022. While the other three relays, bloXroute (Regulated), Blocknative, and Eden, who claim to be OFAC compliant, still proposed blocks containing sanctioned transactions. On Nov 8th, 2022, OFAC updated the sanctions list, but all of the OFAC-compliant relays failed to promptly adapt to the new list

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3254×2394 799 KB

](https://global.discourse-cdn.com/standard10/uploads/manifold/original/1X/97fb857aa0d9bd48e4f53de3e8bac3e612f815a9.jpeg)

A Flash(bot) in the Pan

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logo

512×512 53.8 KB

](https://global.discourse-cdn.com/standard10/uploads/manifold/original/1X/951b49f85e5b9f27c61e1a43fb4d94f21a93c860.png)

FlashMission Accomplished?

Despite Flashbots' efforts towards its goals, we must question how much progress it has actually made in achieving those goals. And if has made enough progress to be considered a success.

Illuminating MEV

The first goal (Goal 1: Illuminating MEV) is to increase transparency of MEV in the mempool. If Flashbots has spurred more users to engage with other private pools then transparency cannot be said to be sufficiently addressed. It is not clear that, indeed, Flashbots was the driving factor in users moving towards other private pools, but private pools have certainly replaced public MEV to a large extent (Section 6.2). Despite our efforts to contact the Flashbots project with the

hope of measuring, directly, their pool of pending transactions,

we were unable to get through to them. This is a strike against

Flashbots as in this regard, it is no different than any other "dark",

private pool.

Conversely, their measurement dashboard [17] has many interesting plots and datapoints, though it contains no direct analysis of Flashbots' real world use cases. Another concern is that the methodology for generating these plots is not sufficiently open, making comparison difficult—if not impossible. Overall, there is no clear answer to whether Goal 1 has been achieved. Flashbots is much more open than other private pools, but does not seem to be an optimal solution in illuminating MEV behavior.

Democratizing MEV)

The second goal of Flashbots (Goal 2: Democratizing MEV) is similarly complex. Through Flashbots, more people have access to MEV-permitting infrastructure than ever before. However, this comes at the risk of taking on losses (Section 5.2), especially for non-miners—who already have fewer resources than their miner counterparts. This is because some degree of knowledge in writing smart contracts and understanding MEV opportunities is required to use Flashbots. This is beneficial for whoever can afford the effort to write (and verify) such contracts, but leaves non-experts in the same position as before. In fact, they are in a worse position, because now their are many more users who will be trying to frontrun them. Again, there is no clear answer to whether MEV is democratized, so we stick to the same refrain: more than before, but less than it could be.

:Distributing Benefits

The third goal of Flashbots is to distribute the benefits of MEV extraction (Goal 3: Distributing Benefits). On this point, we note that after an initially steep climb in usage, Flashbots has seen a decline in the number of blocks published (see Figure

3). If rational actors are declining in their usage of Flashbots, then it can only be assumed that they are not finding it as profitable as other options. This is unsurprising given that non-miners (a sizeable population) are seeing much less profit than they were before Flashbots (see Figure 8b). And so for those users no longer using Flashbots, the MEV problem has not been addressed. On this count, it is clear that Flashbots is not achieving its goal. Benefits are even more skewed than before.

Citations

There GitHub can be found here: GitHub - a-flashbot-in-the-pan/a-flashbot-in-the-pan: Tools for measuring MEV extraction through Flashbots (IMC 2022).

[1]Yang, S., Zhang, F., Huang, K., Chen, X., Yang, Y., and Zhu, F., “SoK: MEV Countermeasures: Theory and Practice”, arXiv e-prints

, 2022.

[2]Weintraub, B., Ferreira Torres, C., Nita-Rotaru, C., and State, R., “A Flash(bot) in the Pan: Measuring Maximal Extractable Value in Private Pools”, arXiv e-prints

, 2022.

Editors Note

We will start publishing a biweekly Insights post going forward.

End of Year round up and AMA probably on the 27/28 depending on what we hear back. Thanks!