Ethereum Sequencing and Preconfirms Call Notes

Call #17

Jan 24, 2025

Meeting Duration: 1.5 hours
Audio Video of the Meeting: Call link
Moderator: Justin Drake
Notes: Drew Van der Werff, Sam Jernigan, and Sam Bobitz
Additional Materials:

- See below

Summary

Agenda

- Context Setting
  - Justin Drake
- L2s
  - Speakers: Ben Jones, Nick Johnson, Jesse Pollak, Tomasz Stanczak, Steven Goldfeder, Hayden Adams, Fede Carrone, Ye Zhang
- Based Rollups / Fabric
  - Speakers: Drew Van der Werff, Matthew Edelen, Daniel Wang, Kubi Mensah, Amir Forouzani, Demi Brener, Sam Batternally
- Using L2s for Public Goods Funding
  - Speaker: Vitalik Buterin

Justin Drake on Context Setting

- Justin started the call by giving a recap of the sequencing call series
- He gave the background of rollups, based rollups, and native rollups, and made clear that we should celebrate the diversity of rollup implementations
- He then went through the schedule for the call

Rollups

Ben (Optimism), presentation here

- Ben started off with a clear message: Ethereum cannot sacrifice its values, but must acknowledge it is time to make improvements
- Ben acknowledges the OP Stack needs to fully support based and native rollups, and adoption of these by OP Mainnet and other Superchain members is possible
- He then explained how the MEV supply chain is evolving and is not a one-size-fits-all market, customizability is key to more L2s adopting based sequencing
- Native rollups significantly improve the security model and must supercharge innovation for widespread adoption
- Ben noted that it is key that both Native and Based Rollup infra be accelerating and not regression from today's experiences

Nick (ENS)

- Nick first talked about ENS' decision to move to an L2
- He said the native rollups were very attractive because they reduce the need for human intervention (or entirely)
- He explained how based rollups are attractive because they care deeply about censorship resistance and building a credibly decentralized system
- Nick then announced that Namechain will launch with based sequencing or the intention of switching to based sequencing (if it is not cost-effective upon launch), and aim to switch to native sequencing when it becomes available

Jesse (Base)

- Jesse highlighted the 3 things Base is think about: Based and Native rollups, emphasize a moment of inflection for adoption (and that we are not well positioned to capture the demand), and a call to action to not forget about building apps people want to use to onboard the next billion users
- "What we're projecting on the Base side is something like a 10-20x increase in demand (for blobs) … this year"

Tomasz (Nethermind)

- Tomasz outlined Nethermind's Surge: a template for based rollups that Nethermind's customers will use to deploy enterprise solutions
- He then outlined why based and native rollups will benefit Ethereum and emphasized the importance of coordinating among developers and researchers to achieve its full potential
- Tomasz offered his and Nethermind's help to the community on how to standardize and accelerate based rollups

Steven (Arbitrum)

- Steven (in a pre-recorded message) identified 2 important goals: 1) the need for the L1 to create a unified environment with L2s, and 2) embracing the diversity of L2s, careful not to stifle innovation
- Steven's message was clear: we need to balance building interoperability while not discouraging from innovation and diversity (social coordination is key to achieve this balance)

Hayden – Out sick (Uniswap)

- From Justin's perspective, Hayden seemed to think native rollups resonated with him/Uniswap and he would like to contribute by helping accelerate with research/resources

Fede (Lambda)

- Fede echoed support for innovation and exploring new use cases, and not alienate those who choose to experiment
- He also outlined the suite of products that Lambda has been working on to support accelerating Ethereum including a consensus client (live on Holesky) and an L1 execution client and Rogue (L2)

Ye (Scroll)

- Ye explained Scroll's view is to stay within the same economic zone as Ethereum, and based sequencing was the clear choice
- He expressed the desire for high-level alignment from the community (on behavior under certain conditions)
- He also wanted to highlight native rollups can be a legal hedge against governance concerns

Based Rollups / Fabric

Drew (Commit-Boost/Fabric)

- Drew started by noting that this in no way is a shift away from Commit_Boost, rather leaning in unlocking more resources to help push Ethereum forward
- Fabric to Accelerate Based Rollup Infrastructure and Connectivity: a set of shared standards for based rollups. He noted that Fabric is not a revolutionary item, rather evolution and continuation of Justin and others work.
- He noted that this is why they went with the name fabric: It is trying to be a schelling point for coordination to hopefully help stitch together some of the fragmentation lurking or present in the ecosystem
- Drew then highlighted why now is the time, what Fabric is, what has been achieved and what are the next steps

Matthew (Spire)

- Matthew started by giving background on Spire and their roadmap
- He noted that he is coordinating native rollups community calls and helping educate/pilling the community, and announced Spire's support for the Fabric effort
- He ended by announcing Spire will fully open source its based stack in Feb 2025

Daniel (Taiko)

- Daniel started by outlining Taiko's efforts in based sequencing and preconfirmations and the many partnerships formed with other teams and their overall support to push both based and native rollups forward including supporting Fabric
- He detailed an interesting conversation around DAO liability, and the subsequent control concerns with rollups that may be alleviated by native rollups

Kubi (Gattaca)

- Kubi mentioned all the contributions Gattaca has provided to the community around based rollups and preconfirmations
- Kubi voiced his/Gattaca's support for Fabric, citing the positives of based and native rollups and the need for community coordination

Amir (Puffer)

- Amir gave the backstory on Puffer's journey from founding to the current work done for the community and products they offer
- He then voiced his/Puffer's support for Fabric and detailed the concerns Fabric addresses
- Amir finished by giving the bull case for native rollups and the need for Fabric as a standardization effort

Demian (OpenZeppelin)

- Demian voiced support for the based rollup initiative and wants OpenZeppelin to be an active, neutral player driving the adoption of based rollups and standardization
- He mentioned OpenZeppelin is looking forward to collaborating with and contributing to the based rollup initiative

Sam (Rise)

- Sam first gave the background on Rise, a high-performance based L2 and building an open source based stack
- Sam echoed the need for standardization for based rollups, but warned against over-standardizing which would stifle innovation. He noted Fabric maybe a good venue to execute on this

Public Goods Funding

Vitalik

- Vitalik voiced his support for the based sequencing and native rollup community efforts
- Vitalik said one of his personal goals for 2025 is to expand public goods funding outside of Protocol Guild / L1, citing challenges around L2 infrastructure and general-purpose infrastructure software
- Vitalik presented on an idea where L2s use fees to help contribute to and fund Ethereum ecosystem public goods development
- He also encouraged L2s and other organizations to explore innovation in public goods funding mechanisms and new funding areas

Annex

Attendance

- TBU

Call #15

Jan 3, 2025

Meeting Duration: 1 hour
Audio Video of the Meeting: Call link
Moderator: Justin Drake
Notes: Drew Van der Werff, Sam Jernigan, and Sam Bobitz
Additional Materials:

- Justin's presentation
- Tom's presentation on Facet

Summary

Agenda

- Justin with updates around based sequencing
- Facet on their roll-up

Justin Drake on admin items

- Justin kicked off the call with some updates on the last couple months
- Justin discussed the efforts in Chiang Mai and the updates on the ecosystem
- Justin then handed it over to Facet

Facet team on their based roll-up (Tom, co-founder from Facet presented)

- The team began by discussing the high-level direction and approach of Facet and where Facet fits into based roll-ups
- Tom began by discussing a few reasons why Facet exists, including that they are trying to build an L2 that is for the “bad times”, similar to the Ethereum L1
- Tom then discussed what it means to be in the “bad times”, including different attacks on the L2 and specifically what it means when the roll-up shuts down (including what happens during the 30-day window for the stage two roll-ups)
- Tom then discussed solutions to help address these attacks and what it means to build a roll-up for the hard times, which includes building the roll-up as being based. Tom also reviewed other potential solutions alongside based sequencing + DAOs
- Tom then went through a few other potential solutions outside of being based that could help address these attacks / issues highlighted above, including enshrined roll-ups and Facet
- Tom then discussed what Facet does and some key concepts around Facet, which is a based sovereign roll-up (Tom then went through what it means to be a roll-up, based, and sovereign)
- To help outline why Facet is different from other roll-ups, Tom then discussed Facet in the context of rankings on L2Beat, noting that they are not any of the stages
- Tom then went through how Facet works, including that it is an Optimism fork, how to create a transaction in Facet (mainly that it is at a transaction level inclusion vs blob / block level), and how they support optimistic bridging. Tom then went through a graph with boxes and arrows around how Facet works (please see the presentation for more details)
- Tom then went through how gas works in Facet as they have their own native token and how this token interacts with ETH. Tom highlighted that this is similar to how Optimism works
- Tom then went through bridging, how to send transactions from smart contracts, state roots, deposits, and other mechanisms quickly (see the presentation for more details)
- Tom then went through what is on the roadmap, including batching, fault proofs, and pre-confs
- Tom then went through arguments against using Facet, including bridging and who to Trust, how bridge security could = roll-up security because the gas token is not ETH, and because atomic-based sequencing is expensive
- The presentation then turned to Q&A where Tom / Justin discussed how far out native roll-ups are from mainnet(Justin highlighted it may come in 2026)
- One of the participants asked a question about bridging and asked Tom to go through an example with something like a stablecoin and fungibility given anyone can launch a bridge in Facet (the participant was concerned about the fragmentation of the bridges). Tom then discussed how the Facet bridge works versus a normal OP stack bridge + roll-up. He highlighted that it is true anyone can launch a bridge, but he expects network effects to take over and likely to see a large bridge with network effects around bridges within Facet
- One participant highlighted that if a transaction is submitted through the L1 node and paying for that cost, why not just use Ethereum. Tom then discussed that even if this is

the case, because of the execution, you can still get cheaper transaction execution when using the Facet roll-up

- One participant highlighted that L2Beat has added Facet under the “Other” category. The participant then asked about what it means to have enshrined smart contracts and why this is any different than current roll-up stacks such as Optimism. The participant also mentioned that anyone can build a bridge for any of the roll-ups today and wasn’t sure why that was any different than the roll-ups of today. Tom mentioned that you can only transact on the L1 with forced inclusion with roll-ups like Optimism only when the admins let you. He highlighted that the admins can always upgrade the contracts which are controlled by the admin. One participant asked for clarity around why native assets on a roll-up may go to zero even when a bridge is compromised. Tom clarified that it is when the roll-up gets shut down is the case where native assets go to zero. Tom and the participant then discussed the impacts of forking. Tom then clarified that the bridge is not controlled by a single EOA and they hope to improve this with time (just like Optimis took time to get fraud proofs in place)
- A participant then asked whether FCT should always be pegged to the price of ETH. Tom then discussed the dynamics around FCT and how it may not be pegged but is likely related to the price of ETH
- A participant then asked Tom to go through some details about FCT mint rates and whether it was tied to transaction costs. Tom went through more details around FCT minting and why there was a fluctuation around FCT mint rates and why the mint is needed (TL;DR mainly to enable balances to be kept for batching to improve user experience / reduce costs)
- A participant asked FCT was live, Tom highlighted that it is not traded but is being used in the Facet network

Annex

Attendance

- TBU

Call #14

Sep 13, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Call link here
Moderator: Justin Drake
Notes: Drew Van der Werff, Sam Jernigan, and Sam Bobitz
Additional Materials:

- https://ethresear.ch/t/pricing-ethereum-blocks-with-vol-markets-with-implications-for-preconfirmations/20419
- See preconf chat for deck

Summary

Agenda

- Some admin announcements from Justin
- Preconf tip pricing from Kevin

Justin Drake on admin items

- Justin highlighted the sequencing day details at devcon
- Justin then highlighted a few more logos that have joined the based sequencing effort

Kevin on preconf pricing

- Kevin started by noting that the discuss was more a pricing discussion versus an ideological one
- Kevin started by providing some background around the framework the team leveraged to think about pricing and how this framework to get to this pricing approach would work in Ethereum
- Kevin then went through the option pricing background / framework and how this plays into pricing the preconf
- Kevin then went through some of the assumptions and requirements around the option trading strategy that is being used to help inform the price of a preconf
- Kevin then went through some of the assumptions and considerations that feed into the pricing model and how he came up with these and how they can be used in the thought exercise and pricing preconfs
- Kevin then went through what they are building at ETHgas and the type of market place they are thinking through
- Kevin started with a high level discussion about what they are building and some of the things they are most excited about and why the team is building this
- Kevin noted that the product is centralized and run by a server but they do plan to explore decentralization and opening the choices up to the community
- Kevin then went through some of the product goals which included reduce fragmentation, increasing access, and product standardization, supporting neutrality, and some additional considerations that came up since publishing
- Kevin then went through some challenges with current market dynamics and fragmentation and how the team is building a unified gateway and some things that are required around that unified gateway include a neutral builder
- Kevin then went through some definitions and some pricing mechanisms to help figure out the price of a preconf through some a secondary market they are setting up
- Kevin highlighted how this would work with partial blocks, full blocks, and future blocks being sold
- Kevin also talked about different type of auction mechanisms between execution and inclusion preconfs

- Kevin then went through the gateway / unified market and why it is important that all these products work within a standard market
- Kevin then went through some of the challenges highlighting specifically that there are some nuances around execution preconfs
- Kevin then highlighted some of the market structures that could develop from this type of model highlighting that we could move from 4 important entities to 40 entities
- Kevin then presented on different types of optimizations within and across blocks and the different types of products that could be offered
- One participant highlighted that the tldr, commitments likely make a block more profitable and could enable certain experiences
- One participant asked about the other types of commitments Kevin had on his slide. Kevin noted that they were beyond this discussion for now
- One participant then asked about sequencing for non-based roll-ups and how this interacts with roll-ups that have different types of sequencing. Kevin noted that he wasn't sure on specifics but that they had looked at this and theoretically there are no limitations but they are still exploring
- One participant asked whether this is a centralizing force, Kevin noted it is but there are potential ways to mitigate these risks
- One participant asked whether running the gateways is mostly dev ops, no need for fancy algo, or capital. Kevin noted that this is mostly accurate but some nuances around things like capital, but Kevin noted that this is def mostly a dev opps
- One participant then spoke about how the community was working towards an efficient shared collateral contract. Kevin noted a few nuances that may make some of this challenging
- One participant noted that the way he has thought about it is the amount of collateral you have posted will determine what type of commitments you can make. Kevin pushed back a bit on this, but they both agreed it was likely due to who they see as buyers of these commitments
- One participant highlighted that execution guarantee has to be top of the block, could this potentially take away the cex<>dex arbitrage profits which indirectly reduce the overall MEV of a block. Kevin mentioned that the market would reflect this and the market would decide but he wasn't fully grasping the question
- One participant asked what it meant to be a neutral building in the context of the presentation. Kevin noted that it is a non-integrated builder that isn't searching

Annex

Attendance

- Auston Sterling
- Max Wilde
- Benjamin Hunter
- Jonas Bostoen
- Paul Burlage

- Francesco Mosterts
- Ben Rodriguez
- Drew Van der Werff
- Antony Denyer
- Justin Drake
- Barnabé Monnot
- Chris Haug
- Pascal Stichler
- Ellie Davidson
- Kevin Lepsoe
- Lucas Ege
- Jeremy Posvar
- Bowen You
- Nick Tang
- David Mihal
- Kabat Synergis
- Lorenzo
- York Zhu
- Daniel Moroz
- Vishesh Choudhry
- Elim Poon
- Ladislaus von Daniels
- Sébastien Rannou
- Luca Donno
- Sam Jernigan
- Sabrina Hsu
- Sacha Saint-Leger
- Gajinder Singh
- Harry Gao
- Vlad Bochok
- Jacob Castro
- Lin Oshitani
- Elena Petreska
- 0xprincess
- Christian Matt
- Amir Forouzani
- Jason Vranek
- Thanh Nguyen
- Anil Kumar
- Kevin Pang
- Sarah Azouvi
- Chien Hao "Edward" Tan
- Alon Muroch
- Can Kısagün

- Orest Tarasiuk
- Takeshi
- Cooper Kunz

Call #13

Aug 23, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Call links here
Moderator: Justin Drake
Notes: Drew Van der Werff, Sam Jernigan, and Sam Bobitz
Additional Materials:
- See below

Summary

Agenda

Preconf tip pricing
- https://docs.google.com/presentation/d/1z_MbbeMjyfbjOXPsgz9dwHMWeL-wXk7_V7LpUJ4_81Q/edit

Justin Drake on Preconf Pricing

- Justin began the conversation noting that this presentation has ideas that are not fully baked
- The talk is going to be in three parts 1) problem of pricing 2) design goals and 3) actual construction
- 1. Problem:
    - Justin kicked off the conversation on the problem of trying to price preconfs. He went through examples of proposers who could have multiple slots in a row and what takes place in Solana. He then discussed how this ties into preconfs
    - Justin then discussed the trade-offs/sacrifices a preconfr makes when selling preconfs, which includes the opportunity cost of including transactions and potentially higher revenue
- 2. Goals
    - Justin then discussed the goals with pricing a preconf / a preconf including no front-running either onchain or offchain, that there needs to be competitive pricing / potentially an auction, that users / wallets need to be able to capture the backrun, and that there should be optimal latency / fill-or-kill / no artificial delays
    - Justin then highlighted that another goal is for the gateway to not be financial savvy but more “dumb” pipes that may require only sophistication of devops and

reputation as well as strict profitability which includes in realization not expectation and per preconf. Last there should be no abuse by gateways
    - Justin then discussed the goal of not having arb opportunities by ensuring the max tip for safety by the user and min tip that is set by the market for the preconf to be included by the gateway matches. He highlighted that the preconf is for users, not traders / arbs
    - Justin then highlighted that one of the side goals could be to make better order flow auctions by bundling the auction of the tip pricing for the preconf alongside the OFA auction
    - A participant then asked Justin to provide more details around various goals. Justin then went through more details and the philosophy behind those goals
    - A participant then highlighted that we should make sure gateways have an incentive to operate as a gateway similar to what we have seen in the MEV-boost relay market
    - One participant then asked about details around the goal not to benefit arbs buying preconfs to arb
- 3) Construction
    - Justin then went through the construction of the preconf pricing and how when there is a max bid for a preconf from a user that crosses the min ask from a pricer, then the transaction gets included as a preconf
    - Justin then went through the formula of how the tips, which represent the bid for a preconf, are calculated to compensate the seller of the preconf for opportunity cost of selling the preconf. He then reviewed how this model interacts with the strict profitability goals outlined earlier in the presentation
    - Justin then went through why encrypted preconfs are needed in the long-run and how we get to this point
- Justin then ended the presentation
    - One participant asked about incentives of this whole system and who is going to run this given those incentives. Justin then went through the incentives and highlighted that the relays are likely to run this and well positioned to do that and the longer term dynamics once APS comes to mainnet
    - A participant then asked whether Justin thought the gateways and pricers will become the same entity. Justin then provided his perspective on why this may not happen
    - One participant then asked about the user experience and how this would change given this model and its effect on execution. Justin provided his perspective on this and that most of these wallet / transaction generators will likely move to OFAs. The participant then asked around for clarifications on whether the dynamics shift when the tip is positive or negative and what they could have received if they didn't use a preconf. Justin then provided his perspective on this question but mentioned UX + education to the user should help with this
    - A participant then highlighted that we should look at if users sensitive to gas price or if they just care for inclusion. And second, if there are negative externalities is

increase in volatility of base fee due to the dynamics being introduced by preconfs and the pricing

Annex

Attendance

- Max Wilde
- Auston Sterling
- Oana Barbu
- Matt Cutler
- Norman Saadé
- Hayden Tsutsui
- Francesco Mosterts
- Jonas Bostoen
- Lorenzo Feroleto
- Nicolas Racchi
- Paul Burlage
- Drew Van der Werff
- Florian Huc
- Simon Brown
- Justin Drake
- Chris Haug
- Ellie Davidson
- Bowen You
- Alex Watts
- Yuki Yuminaga
- Jan Christoph Schlegel
- Robert Miller
- Kubi Mensah
- Cairo
- Ladislaus von Daniels
- Naman Garg
- Irfan Shaik
- Apoorv Sadana
- Sébastien Rannou
- Sara
- Sam Jernigan
- Sabrina Hsu
- Gajinder Singh
- Harry Gao
- Jacob Castro
- Austin Fleming
- Andreas Penzkofer

- Finn Casey
- Lin Oshitani
- Swapnil Raj
- Elena Petreska
- Misha Komarov
- Noah Pravecek
- Murat Akdeniz
- Christian Matt
- Amir Forouzani
- Jason Vranek
- Thanh Nguyen
- Anil Kumar
- Mohammad Jahanara
- mteam
- Chien Hao "Edward" Tan
- Orest Tarasiuk
- Jünger L

Next meeting date and time

Call #12

Aug 2, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Call links here
Moderator: Justin Drake
Notes: Drew Van der Werff, Sam Jernigan, and Sam Bobitz
Additional Materials:

- See below

Summary

Agenda for the call:

- Demo day

Justin started the call by providing two quick updates:

1) Bringing awareness to two new based rollups: Intmax (Japanese, zkRollup specialized for payments) and Taiko's Gwyneth

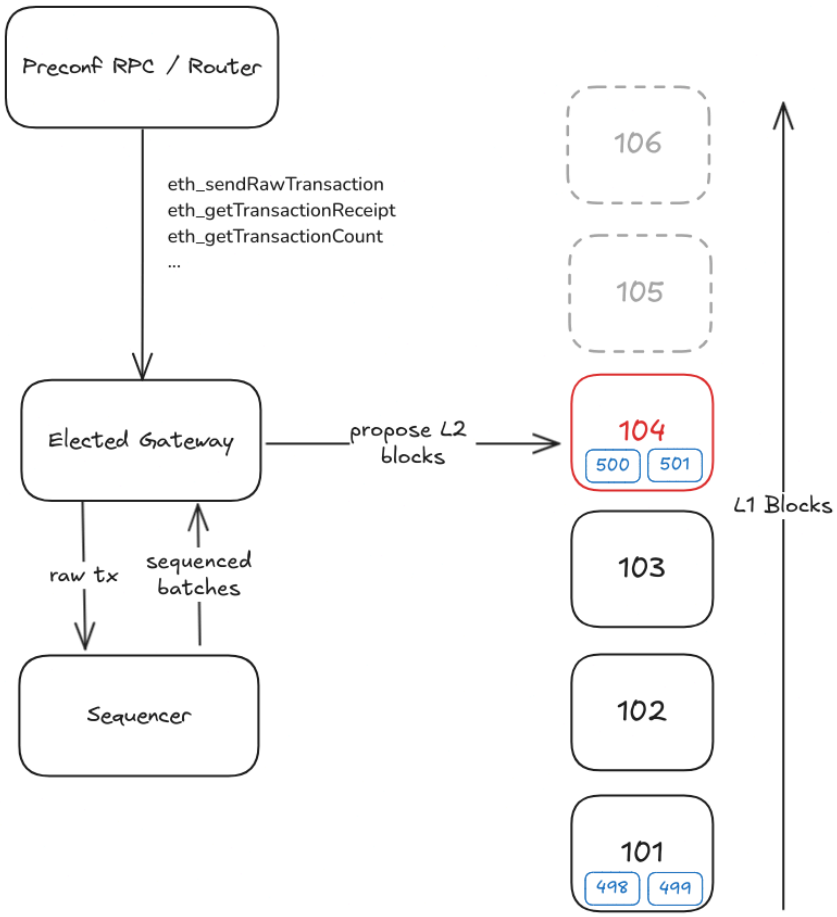
2) Announcement of a repo for the registration contract on the Ethereum Github (Ethereum/preconfs)

Demo #1 – Gattaca (Kubi and Lorenzo)

L2 Execution Preconfs via Delegation

Presentation:
https://docs.google.com/presentation/d/1jnboA60U-0Ezi68vrzkQPGXFlvfduA_vPLAOQpz7KEk/edit?usp=sharing

- Started the call by giving a refresher on inclusion preconfs at ZuBerlin and L2 execution preconfs
- Gattaca has built preconf RPC / Router on Helder to get to L2 execution preconfs, diagram below
- Users can directly request preconfs through the RPC and the router is responsible for identifying who is the correct elected gateway or proposer based on the lookahead (used MetaMask)
- Kubi highlighted that the gateway maintains and advances state, can return correct data at any point which allows for very fast preconfs (testing around 20ms)
- Supports L1 inclusion, not execution
- Lorenzo provided the demonstration, showing an example of what the UX could look like
- One question came up about whether this was applicable to other L2s (not just Taiko). Kubi confirmed it is trying to be as agnostic to L2s as possible
- Kubi confirmed they are talking to MetaMask about developing a Snap to create a better UX



- Next steps to getting to Mainnet include solidifying infrastructure, open sourcing a version of the gateway, enforcing slashing, and integrating the lookahead (by working with teams from the registration contract)

Demo #2 – Bolt (Jonas)

L1 preconfirmations

Presentation:
https://docs.google.com/presentation/d/1Evw60UTJSH7bTXbyViyb_DaKsetCYhGWbb9qrG-_1Dk/edit?usp=sharing

- Jonas started the presentation by talking about Bolt's progress since ZuBerlin, including proposer discovery, local fallback block building, blob support, and bundle support
- Jonas began the demo after the updates, showing an ETH transfer with an L1 inclusion preconf with MetaMask integration (signature request sent to MetaMask, transaction to RPC)
- An excerpt of all logs was presented to showcase the process
- The next steps are:

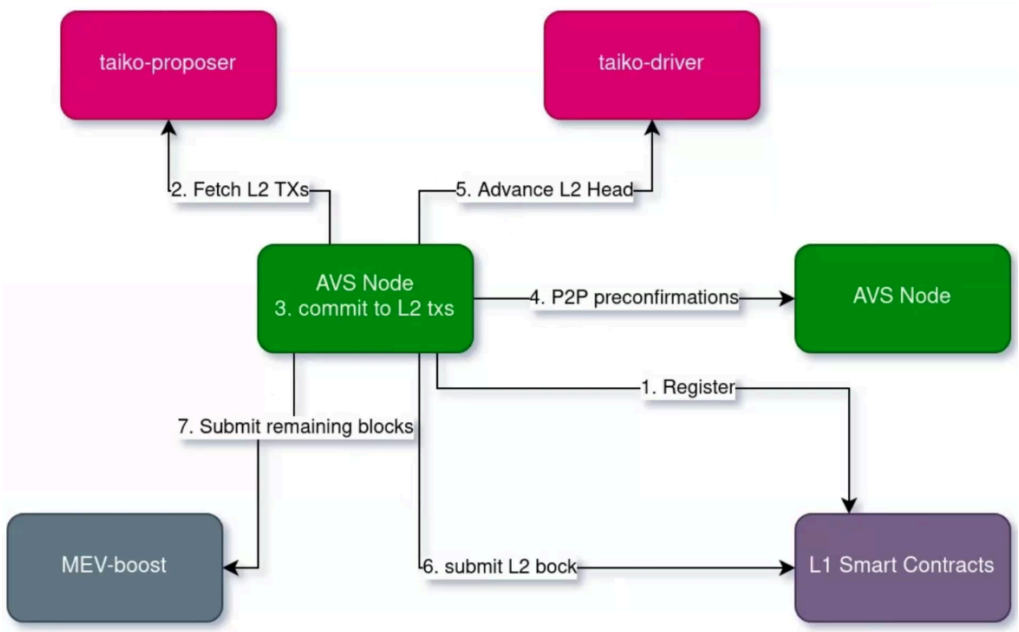
        - Researching use cases & economic modelling, slashing/freezing, fair exchange, and other commitment types
        - Developing commit-boost integration, registry implementation, and finalizing constraints-API
    - Jonas also confirmed they aim to deploy on Holesky by the end of September, moving closer to actual production of proposer commitments and L1 inclusion preconfs
    - A question about bundle support was raised. Jonas confirmed that if your bundle is included, all transactions will be in the same order. However, Bolt provides only inclusion guarantees, not execution guarantees, so a transaction could still fail.
    - Justin asked about other types of commitments bolt is looking into. Jonas mentioned a block space claim type of commitment (block space reserved in advance, even if you do not know what will be put in it).

Demo #3 – Switchboard team / Nethermind (Lin and Maciej)

Taiko preconfirmation demo in Helder

Presentation:
https://docs.google.com/presentation/d/1C-zoTcZssf_MCa1FZ1v_qxqLnxjqrVbh0RltSvc1ZYk/edit?usp=sharing

- Project is funded by and in collaboration with Taiko
- Lin jumped into their design overview
    - L1 slot is broken into four 3-second “sub-slots”
    - At the end of each sub-slot, the preconfirmer will preconfirm a L2 block
- Lin confirms they use batch preconfirmations and explained the issue of a pricing mechanism that came up with continuous preconfs (batching enables pricing via auctions within the batch at the cost of losing latency speed)
- Maciej presented the demo and the preconf process, diagram below



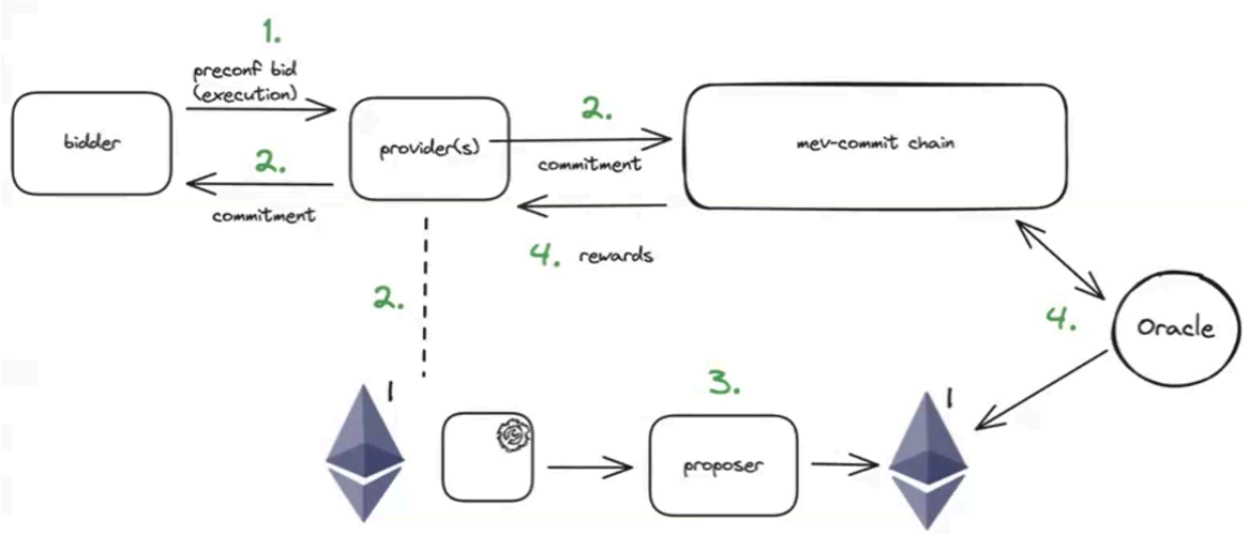
- Next steps include working on ECSDA -> BLS mapping design and working on implementing AVS P2P
- Future direction includes addressing the fair exchange problem, improving election mechanism, and L2 PBS
- A discussion about batching and the role of searchers followed between Justin, Lin, and other participants

Demo #4 - Primev (Murat)

CLI demo

Presentation: https://x.com/primev_xyz/status/1819011420362563677?s=46&t=FJuVLzl4_I2Fgn0QUwEBSA

- Murat started the discussion by outlining the process from bid to commitment to rewards, diagram below



- Murat highlighted the oracle is currently centralized, but becoming an AVS
- The demo showcased the ability to select what time frame the bid is valid (via decay timestamps), with the optionality solving the fair exchange problem
- Murat discussed analysis done around the bids on Holesky, highlighting some erratic behavior by bidders

Annex

Attendance

- Max Wilde
- Auston Sterling
- Benjamin Hunter
- Francesco Mosterts
- Jonas Bostoen
- Lorenzo Feroleto
- Nicolas Racchi
- Paul Burlage
- Naman Garg
- Drew Van der Werff
- Simon Brown
- Matt Nelson
- Nathan Worsley
- Justin Drake
- Marc Nitzsche
- Pascal Stichler
- Ellie Davidson

- Bowen You
- Yuki Yuminaga
- Kabat Synergis
- Kubi Mensah
- Lorenzo
-
- Cairo
- Ladislaus von Daniels
- Vishesh Choudhry
- Apoorv Sadana
- Luca Donno
- Sam Jernigan
- Sacha Saint-Leger
- Eugene Pshenichnyy
- Sabrina Hsu
- Daniel Ivanov
- Raghav Agarwal
- Harry Gao
- Vlad Bochok
- Jacob Castro
- Austin Fleming
- Aikaterini-Panagiota Stouka
- Anshu Jalan
- Conor McMenamin
- Lin Oshitani
- Swapnil Raj
- Elena Petreska
- Maciej Skrzypkowski
- Noah Pravecek
- 0xprincess
-
- Brendan Farmer
- Murat Akdeniz
- Christian Matt
- Jason Vranek
- Sam Battenally
- Hai Nguyen Quang
- Mohammad Jahanara
- Kaito Yanai
- Chien Hao Tan
- Alon Muroch
- Can Kısagün
- Orest Tarasiuk
- Jünger L

- Igor
- Marek Šandrik
- Will Qiu
- Alexander Movsunov
- Tomáš Eminger

Next meeting date and time

- August, 23, 2024

Call #11

Jun 21, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Call links here
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan
Additional Materials:

- See Preconf TG Chat

Summary

Agenda for the call:

- Helder
- Keyspace

Justin kicked off the call to chat on Helder:

- Justin let the community know we are running a persistent testnet to allow for cross team testing at ETH.CC

Niran from Keystore on Keyspace:

- Niran started the call providing a bit of context of how they view Keyspace in the context of based sequencing / preconfs
- Niran highlighted that Keyspace is very focused on the wallet side of things and it's key to give Base users / Coinbase wallet users a unified experience across all different ecosystems
- Niran then went through what Keyspace is at a high-level and some of the details around how Keyspace actually works. The important highlight is that Keyspace is its own roll-up

- He then moved onto discussing more details around how Keyspace fits within based sequencing / L2s and composability
- Niran then discussed about how Keyspace and sequencing works for the Keyspace roll-up and their desire to use based sequencing to get some key features they want (mostly decentralization and liveliness)
- Niran then moved into more detail around how Keyspace gets the roots across L1 and L2 networks. For L2s, he discussed the nuances across different L2s and mechanisms that need to be used because of those designs. He also discussed that today they mainly use the Wormhole oracle to get this across multiple chains but are exploring alternatives
- Niran then went through how wallets can integrate with Keyspace and also how this would work for client side signatures
- Niran then went through how bundlers can integrate with Keyspace
- Niran then went through how roll-ups can integrate with Keyspace
- Niran then went through their road map, near-term and longer-term milestones (including exploring things like moving Keystore to being an L3, some optimizations, aggregation, intent usage around user fees for recovery, and time delays) they hope to complete / are currently headed towards
- A participant asked to go through more details of why based-sequencing is an attractive option to Keystore. Niran highlighted that their target is to have many / a size of all ethereum validators to act as a sequencer for Keystore so that there is very limited risk of liveness faults
- A participant asked about permissionless of proving / sequencing. Niran highlighted that today this is how they are currently thinking about it -> likely they will implemented based-sequencing and but don't want to be the first to do this / test it out
- A participant asked about latency requirements and how this could impact your sequencing decision. Niran highlighted that time is not sensitive for key changes
- A participant asked about upgrades to smart contracts and governance around those contracts. The current thinking is no governance and rather at upgrades there will be a new version of Keyspace (very similar model to Uniswap)
- A participant asked for more details around latency and some use cases where you may want a faster key change / revoke system. Niran highlighted the design space and initially why they aren't too focused on latency
- A participant then asked about the use of oracles, Niran highlighted a few design space trade-offs of trustlessness versus costs
- A participant then asked what the team size is of Keyspace is, Niran highlighted that there are 3 people and the team members have really been driving a lot of the work
- A participant then asked about when they would be comfortable timeline wise to launch / be a fast follower for based sequencing. Niran highlighted that they release on a quarterly work and suspect the sequencing likely early next year
- A participant then asked about sequencing and if there is no current L1 proposers in the look ahead period. Niran highlighted that this is a good point. A participant then discussed a bit more about how to mitigate this risk in vanilla based sequencing

Annex

Attendance

- …

Next meeting date and time

- TBD

Call #9

May 24, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Call links here
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan
Additional Materials:

- https://docs.google.com/presentation/d/1M5nEpjSuEnuew_P8bdLIk-zZ-v55mWgbeiZ5czto8bI/edit#slide=id.g2df684a22ec_0_85
- https://ethresear.ch/t/credibly-neutral-preconfirmation-collateral-the-preconfirmation-registry/19634

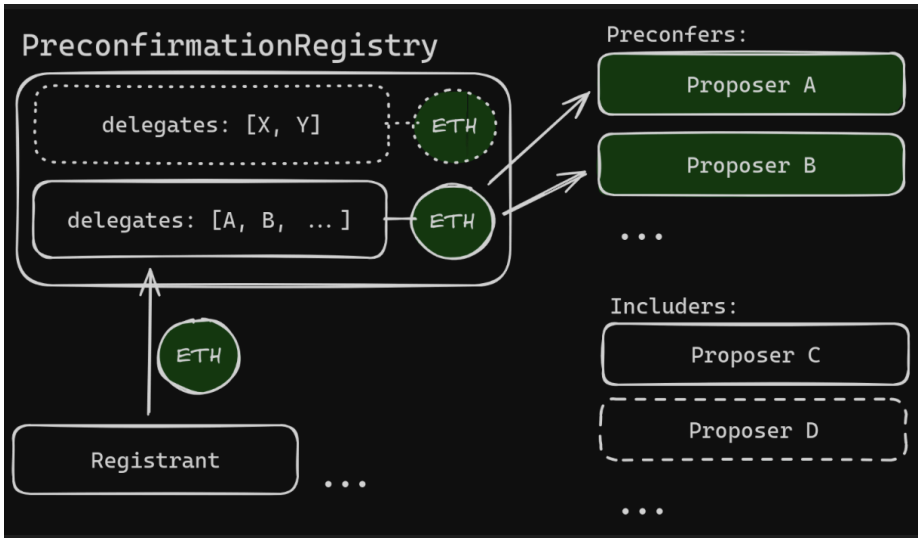
Summary

Agenda for the call:

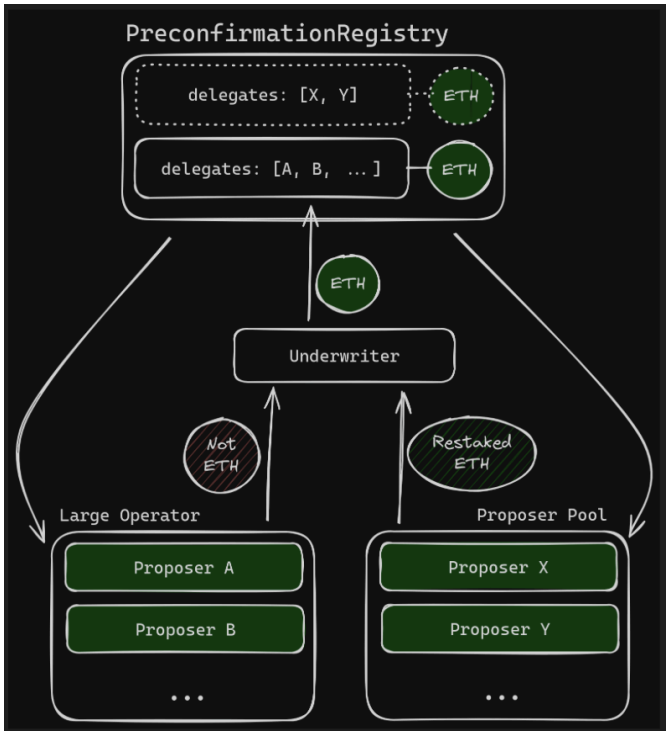
- Matthew on Credibly Neutral Preconf Collateral

Matthew from Spire on Credibly Neutral Preconf Collateral

- Justin gave an intro on the context around collateral and why it was important in the context of based sequencing
- Matthew is the CPO and co-founder of a company called Spire that is working on a based sequencing roll-up
- Matthew started the presentation with background and a few assumptions about the idea behind credibly neutral preconf collateral
- Matthew then discussed the solution which is essentially a registration smart contract on mainnet that allows preconfers to register in this smart contract by providing collateral. One of the key features is the collateral can be shared amongst those who register. Below is a diagram around how this might work



- Matthew then highlighted that most of the complexity is actually off-chain and went through the dynamics of how this would work. The main role as part of this is the underwriter who is a sophisticated actor
- Matthew then discussed how home stakers could team up to also participate in this market even if they are not sophisticated
- Matthew then discussed a few trade-offs given these designs and a few ideas to help mitigate these trade-offs
- Here is a diagram of the off-chain functions where most of the operations will take place



- Matthew then went through how there can be some dynamic parameterization around how much collateral is required given the different stakeholders and users

- One participant asked for clarity around how the slashing is going to be enforced and the timing of that enforcement. Matthew then went through a potential solution to address this which they refer to as forced ejection (also covered in more detail in the ETH Research Post)
- A participant then asked about how the underwriter would turn reputation into pure ETH, Matthew highlighted it is similar to normal underwriting and assessing the counterparty and that there is a lot of trust in the relationship
- A participant asked about slashing and the size of the slashing. Matthew highlighted that this was handled away from the registration contract / collateral
- A participant asked about the assumption Matthew is making that there has to be collateral or whether it was possible to do this without collateral. Matthew and Justin highlighted a few reasons of why we might need collateral
- A participant then asked about why there even needs to be a registry if the slashing is a direct relationship between the end user and preconfer. Justin then highlighted why this standardization is important for L2s and alignment around that registry
- A participant asked about why reputation is so important in all this. Justin then went through a bit more about why reputation is important / how this ties into the pristine collateral of ETH / how this ties into both the on-chain and off-chain
- A participant then asked a bit about censorship resistance and how the reputation aspect impacts this. Matthew then highlighted that this is why we have 1000 ETH of pristine collateral. Justin also added color around how the underwriting process works and can help alleviate this concern and highlighted how execution tickets will remove a lot of these trade-offs
- A participant then highlighted how these execution tickets could impact this from their perspective and could increase the pooling versus decrease
- A participant asked about what the underwriter has to post as collateral and how that works, Justin and Matthew clarified how this could work both off-chain and on-chain
- A participant asked about how the one to many relationship would work for delegation. Matthew went through a few of these mechanisms
- Justin then highlighted that the slashing mechanism needs to have some standards around it to reduce the potential slashing mechanism. Matthew highlighted that in his mental model we have both the registry and slashing in the same place. Justin and Matthew went back and forth on the trade-offs between these models and why the standardization is / is not important
- One participant asked about what risks the underwriter has, Matthew highlighted the risks that the underwriter has which is mostly long-term de-pegg risk

Annex

Attendance

- Max Wilde
- Auston Sterling
- Hugo Tsai

- Benjamin Hunter
- Jonas Bostoen
- Lorenzo Feroleto
- Nicolas Racchi
- Paul Burlage
- Simon Brown
- Josh Rodolf
- Julian Ma
- Justin Drake
- Pascal Stichler
- Ellie Davidson
- Lucca Spaapen
- Drew Van der Werff
- Ladislaus von Daniels
- Naman Garg
- Luca Donno
- Sacha Saint-Leger
- Conor McMenamin
- Lin Oshitani
- Oisín Kyne
- Murat Akdeniz
- Christian Matt
- Jihoon "AJ" Park
- Thanh Nguyen
- Mohammad Jahanara
- Sam Jernigan
- Kaito Yanai
- Matthew "mteam88" Edelen
- Edward Tan
- Elim Poon
- Jünger L

Next meeting date and time

- 5.31.24 14:00 GMT

Call #8

May 17, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Call links here
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan

Additional Materials:

- More manageable bite-sized md-s on the 4 parts of this presentation:
- Vanilla Based Sequencing: https://hackmd.io/@Perseverance/rkhnAbi06
- Preconfirmations: https://hackmd.io/@Perseverance/rJ0nun5yR
- Pipelines & GMEV-Boost: https://hackmd.io/@Perseverance/SkfEI0sl0
- Opt-in: https://hackmd.io/@Perseverance/B14YLFLZR
- Presentation: https://docs.google.com/presentation/d/1sDBrDTBtVh-eV4cwtJdYPuRSV2kKSX26iQIZ37D6OA8/edit#slide=id.p

Summary

Agenda for the call:

- LimeChain's based preconf R&D
    - Goals and Fundamentals Decentralised Sequencing
    - Vanilla Based Sequencing
    - Preconfirmations
    - Block Building Pipelines
    - Opt-in Mechanics
    - Q&A

George from LimeChain on Based Preconf R&D

- George and the LimeChain team received a grant from the EF. This presentation is based on the output of that research
- George began by talking about the characteristics of a centralized sequencer and why it may be “cool” or “not cool”
- George then discussed the guiding principles and goals for the design of a decentralized sequencer: secure without UX sacrifice, economy sustainability, composability, inheriting ethereum liveness over external liveness, and protocol over trust based censorship resistance
- George then went through mapping out the trade-offs across various approaches found across the decentralized sequencing ecosystem / design decisions
- In the end, their given the design goals and principles their analysis resulted in exploring vanilla based sequencing as the best candidate for decentralized sequencing
- George highlighted that 80% of their research / the output of their effort was aligned with what Justin has been discussing over the last few months
- George then went through a discussion around preconfs and how they fit within based sequencing. One of the outputs of their analysis has led them to propose some EIPs and FIPs around user preconfs
- George then went through the details around the standard they are proposing for a user preconf including timing of delivery, why the preconf can be rejected, pricing, and the fields of the transaction
- A participant asked a question about how preconfs are getting paid for and whether a native token can be used or if it must be ETH. George highlighted that they are not opinionated on this and it could be any payment mechanism

- George then went through the potential preconf flow and what needs to be off-chain and what needs to on-chain and how actors like builders and sequencers will interact with based sequencing / preconfs
- Georege then went through a fork of MEV boost to enable the transaction flow of preconfs + block construction. This software is called Gmev-boost and drives how blocks will be constructed with vanilla based sequencing
- George then went through some discussion and trade-offs of who (i.e., builders, proposer) will help orchestrate the information passing around constructing a block and inclusion of the preconf transactions / data
- George then went through how the sequencers will interact within the preconf / based sequencing transaction supply chain as well as various mechanics that will be required
- A participant then discussed a few of the details around when the sequencer keys are exposed
- A participant then asked about what this would require for a proposer to run gmev-boost
- A participant then discussed the latency related to how the signatures are passed around and its potential impact on building blocks and things like DVT. George and this participant went back and forth on a few design decisions
- A participant then asked about fall backs if a preconfer has to rely on a fall back sequencer. George responded that slashing mechanisms will be less and overtime this should be reduced as the market develops

Annex

Attendance

- Francesco Mosterts
- Jonas Bostoen
- Lorenzo Feroleto
- Paul Burlage
- Chris Haug
- Kabat Synergis
- Luca Donno
- George Spasov
- Daniel Ivanov
- Conor McMenamin
- Oisín Kyne
- Christian Matt
- Jihoon "AJ" Park
- Tariz Jeong
- Kaito Yanai
- Jacob Castro
- Santiago Palladino
- Simon Brown
- Andreas Penzkofer

- Thanh Nguyen
- Sam Jernigan
- Brecht Devos
- Dani K
- Jünger L
- Max Wilde
- Benjamin Hunter
- Manish Paranjape
- Justin Drake
- Drew Van der Werff
- Ladislaus von Daniels
- Naman Garg
- Jonah Burian

Next meeting date and time

- 5.24.24 14:00 GMT

Call #7

May 10, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Video
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan
Additional Materials: Justin's presentation here and Sacha's presentation here

Summary

Agenda for the call:

- Presentation #1: Bootstrapping based preconfs (Justin)
- Presentation #2: Preconf thoughts from Lido (Sacha)

Justin on Bootstrapping Preconfs

Justin will present on two topics: design ideas and coordination games

Design ideas:

- Lookahead problem:
    - Justin began the presentation by discussing the problem of an empty lookahead

        - The lookahead problem is not having one preconfer in the lookahead period which is around 20% of validators in the network opting into providing preconfs
        - The solution Justin went through essentially has a fallback mechanism where if there is not a preconfer in the next 32 slots, a random sequencer is selected and can be aware of the next preconfer and with some trusted coordination can delegate some preconfs to that party
        - Justin then went through the mechanics of how this could work given the sequencers don't have the rights to ensure block inclusion like a proposer
        - One of the participants asked for clarity around the mechanics of what the sequencer is doing and how it interacts with the preconfer. Justin clarified how the sequencer and proposers would interact in this model
        - One participant asked for clarification if the preconf sequencer right was for a whole epoch, Justin clarified that once there is a sizeable amount of preconfers this will not be the case
        - Justin then discussed some additional use cases for forwarding / coordinating preconfs if there is an overload on one preconfer
        - A participant highlighted that we are creating a preconf pool just like we have a transaction pool
- Justin then spoke about stake freezing problem which is tied to asking preconfs to put down ETH as collateral when the system initially begins with the potential of being slashed. Justin then proposed a solution to help reduce the risk while the network is bootstrapping
    - The solution still requires sequencers and gateways to put up collateral, but you freeze the stake and during that time if there is a fault, instead of slashing the collateral is frozen and they can't act as a preconfer
    - A participant asked whether we should have a higher issuance for the preconfs proposers, Justin and others pushed back on this idea
    - One participant mentioned that if you are freezing a sequencer in the bootstrapping phase you may lose essential sequencers that are facilitating the preconf with this solution

Coordination game:

- Shelling point: One solution Justin discussed was using Taiko as a shelling point to lead the market
- Credible neutrality: Justin went through the two key points that are important to understand when determining how to best achieve credible neutral coordination games for preconfs markets; 1) sequencer elections and 2) sequencer commitments
    - For sequencer elections, the roll-up has full power
    - For sequencing commitments, there is an open market
    - Given in the near-term there is no MEV for sequencers and preconfs, maybe this will more naturally develop
- Justin then went through a timeline and progress. Justin thinks this is the year where we go 0 - 1 on preconfs. See slides for more details about events

Justin then moved to Q&A

- One participant asked Justin about adoption by year-end, he highlighted a few participants who are committed to this
- One participant asked what the upgrade to the current transaction flow would need to be, Justin outlined those pieces
- One participant then asked about what infrastructure would be used for collateral management / staking of collateral by the preconfer. Justin noted some items he had discussed with the EigenLayer team
- One participant highlighted some upgrades that might be needed for gas efficiency tied to preconfs designs

Justin then handed the discussion over to Sacha to discuss preconfs from the Lido community's perspective

Sacha: Lido community and preconfs

- Sacha began by highlighting he is one of the key Lido contributors who believes that Lido should prioritize Ethereum aligned validator services, but that these changes and upgrades must be weighed with the risks
- He then argued that Lido has already started to work on validator services via MEV boost and Lido is committed to helping push based-sequencing forward
    - https://research.lido.fi/t/regoose-updated-goals-for-lido-in-the-light-of-mvi-and-restaking/7462
- Sacha then went through details of how they think about preconfs specifically and how he is very optimistic around validator services and preconfs
- Sacha then went through the guiding stars that will help the Lido community make determinations around what validator services / preconfs protocols they will opt into
- Sacha then went through the key questions from his perspective that are currently top of mind
- Justin summarized the talk: 1) Sacha is excited by preconfs / based sequencing and 2) Sacha does not want Lido dominating initial adoption / using their validators to bootstrap the initial phases as they want to bring others along and care about credible neutrality
- One of the participants asked Sacha questions about using current transaction flows and whether there are risks with using this approach. Sacha that they were open to all solutions but he saw this as the fastest path forward

Annex

Attendance

- Leo Fan
- Matt Cutler
- Francesco Mosterts
- Jonas Bostoen

- Lorenzo Feroleto
- Paul Burlage
- Chris Haug
- Ellie Davidson
- Lucca Spaapen
- Ankit Chiplunkar
- Kabat Synergis
- Luca Donno
- Sacha Saint-Leger
- George Spasov
- Daniel Ivanov
- Aikaterini-Panagiota Stouka
- Conor McMenamin
- Lin Oshitani
- Swapnil Raj
- Juan Gadea
- Oisín Kyne
- Murat Akdeniz
- Harry Gao
- Feng Liang
- AJ Park
- Kaito Yanai
- Jacob Castro
- Lasse Herskind
- Santiago Palladino
- Simon Brown
- Seungmin "Harry" Jeon
- Andreas Penzkofer
- Daniel Lumi
- Sam Battenally
- Thanh Nguyen
- Sam Jernigan
- Mamy Ratsimbazafy
- Brecht Devos
- Jünger L
- Max Wilde
- Auston Sterling
- Kubi Mensah
- 0xprincess
- Niclas Blomberg
- Josh Rodult
- Julian Ma
- Justin Drake
- Drew Van der Werff

- Ladislaus von Daniels
- Jonah Burian
- Artem Kotelskiy

Next meeting date and time

- 5/17/24 14:00 GMT

Call #5

Mar 29, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Link
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan
Additional Materials: See individual sections below, but the main presentation here

Summary

Agenda for the call:

- Copper from Aztec to present on based sequencing and the trade-offs / road map for Aztec to potentially become a based roll-up

Presentation from Cooper:

- Cooper began with a meme and a couple of disclaimers about what he was about to present. Cooper noted that the main goal of presenting is to encourage engagement with the community to help make better decisions around Aztec and roll-ups more broadly. He noted that Aztec is not currently based, but there could be some day and they are exploring this as an option
- Cooper started by going through the benefits of based sequencers, including faster block times, less engineering work, synchronous composability, and more Etherem-aligned
- Cooper then moved to the counterarguments, including reliance on Ethereum's road map, reduced sovereignty of the roll-ups and whether this should be internalized or externalized, that Aztec/roll-ups may like to build and not outsource, less well-defined economics, potential censorship that happens at the L1, and L1 congestion leading to costs going up for roll-ups
- Cooper then discussed the road map for Aztec and how this decision might fit within that road map. He noted that decentralizing the sequencer is key and that things like based roll-ups could play into performance improvements for Aztec
- Cooper then discussed various ways that Aztec could improve performance and how based sequencing could help with this versus the other options

- Justin highlighted a few angles about settlement, data availability, and based sequencing and how this interplays with Ethereum alignment and how this could impact a roll-up
- Cooper then presented a summary slide on trade-offs across based roll-ups and versus sovereign roll-up sequencing designs
- Cooper provided some resources about the research the Aztec community has posted to date around sequencing (link)
- Cooper then went through a few potential designs for a based sequencer a simple and naive approach:
    - Simple: How Aztec would work with based sequencing and various dynamics that would likely play out
    - Naive: How Aztec would work with using economic-based sequencing
- Cooper then highlighted blob censorship, including blob inclusion lists and a shared encrypted blob registry. He then went through how the latter would work
- Cooper then went through soft L1 tx censorship highlighting a few philosophical approaches
- Cooper then went through the main highlights and did a poll on whether Aztec should become a based roll-ups (see results at the end of the notes)
- A participant then asked about how based roll-up impacts sovereignty. Cooper highlighted that this could impact the governance structure of Aztec
- A participant that voted no on Atztec becoming a based roll-up outlined why they voted no, echoing the points Cooper made around synchronous composability and data availability
- Justin revisited Ben's question and highlighted a few other points, particularly around governance. Cooper agreed with these comments and expanded around immutability and Aztecs goals
- A participant then asked a question and highlighted a technical component around losing sovereignty and went back and forth around trade-offs around universal synchronous composability Cooper highlighted where Aztec may sit in the trade-off curve
- Justin then went back and discussed the dynamics between data availability and sequencing
- Cooper then asked about an encrypted blob registry - one of the participants spoke about some potential solutions and how this might work and key questions that would need to be answered
- A participant asked for a follow-up around censorship, Cooper highlighted that it would protect against soft censorship and Justin added a bit more detail about how the encryption may work
- A participant asked about whether restaking could have potential impacts on how Cooper views censorship and whether this type of technology could impact Aztec's governance minimization goals
- Justin gave an update on the poll -> 89% voted yes and 10% voted no with one participant voting no just to be contrarian and for no reasons
- With that, the call finished

Annex

Attendance

- Francesco Mosterts
- Nicolas Racchi
- Paul Burlage
- Kydo
- Chris Haug
- Ben Fisch
- Ellie Davidson
- Kartik Nayak
- Stephane Gosselin
- Luca Donno
- Isidoros Passadis
- George Spasov
- Daniel Ivanov
- Conor McMenamin
- Lin Oshitani
- Nick Preszler
- Noah Pravecek
- Odysseas Lamtzidis
- Murat Akdeniz
- Kaito Yanai
- Jacob Castro
- Cooper Kunz
- Joe Andrews
- Santiago Palladino
- Simon Brown
- David Mihal
- Gwangsu "Pang" Shin
- Antonio Locascio
- Kalman Lajko
- Brendan Farmer
- Hai Nguyen Quang
- Sam Jernigan
- Ye Zhang
- William Robinson
- Arixon
- Mamy Ratsimbazafy
- Brecht Devos
- David Weisiger
- Jünger L
- Saniya More
- Benjamin Hunter

- Nathan Worsley
- Shea Ketsdever
- Loi Luu
- 0xprincess
- Josh Rodult
- Julian Ma
- Justin Drake
- Facundö Indabera
- Ladislaus von Daniels
- Matthew Edelen
- Drew Van der Werff
- Artem Kotelskiy
- Yuki Yuminaga
- Filip Siroky

Next meeting date and time

- Friday, 5/9/2024 - 14:00 UTC

Call #3

Mar 8, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Link
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan
Additional Materials: See individual sections below

Summary

Agenda for the call:

- Based ecosystem update
- Discussion with Alex Gluchowski
- Based project teaser updates

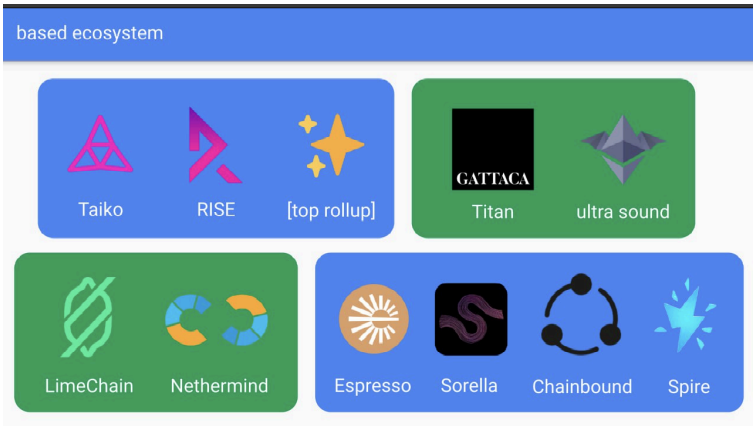
Actions Needed

- There are a few based sequencing and pre-confirm focused events at ETH London next week

1). Based Ecosystem Updates:

Justin's update on the based ecosystem that is developing:

- Justin started with the development over the last few months around the based ecosystem
- Beginning of 2024, there was only one roll-up project working around based sequencing, now we know of 3
- There are also now two consultancy firms working on based sequencing
- There are also now 4 firms working on and around based sequencing
- There are also now 2 relays at that working on based sequencing and pre-confirms



2). Alex from MatterLabs then presented concerns around based sequencing (last call where projects discussed concerns he was on a plane):

- One of the top concerns from Alex is around centralization and the potential risks that come with any sequencer, including based sequencers. He presented his case for why this could take place
- Alex noted that the top priority from based sequencing should first be around reducing risks of centralization / creating a trustless framework, then driving adoption
- Alex also noted that from a roll-up perspective, there are two concerns / things they have learned in the past that the community / this group should focus on:
    a. Alex said those working on based sequencing should focus on commuting the end game / goals of a world we want to end in
    b. Second, Alex noted that teams should ensure there is still connectivity across different roll-ups / systems with the ability to exit in and out of the roll-ups
- One participant discussed that they think the based sequencers should be built in a way that does not force opinions on the roll-up and allows the roll-ups to express what they want around various design features
- One participant spoke about the concerns highlighted by Alex around builders and centralization and also highlighted some misconceptions around what a shared sequence is and highlighted what Espresso is working on and the lens they use to view this part of the tech stack
    a. Justin summarized this point: If there is demand for synchronous composability, there will be demand for shared sequencing and this will happen no matter what. The key question is if we can build this system in a way that there are very low barriers to entry

    b. The participants agreed and highlighted that they think is optimally achieved through a shared sequencer/marketplace for shared sequencers which they are building
- One participant highlighted that some of the product features Alex highlighted as a concern, specifically about censorship-resistant, will be very difficult to implement from an engineering perspective
- Participants went back and forth with the TL;DR being that if we don't fix censorship resistance today we may never be in a place to fix it—this applies to all sequencing not just decentralized sequencing
- One participant spoke about how they are going to use the relay to try and use things like inclusion lists to reduce censorship resistance
- Kalman from MatterLabs then presented on how to potentially achieve universal synchronous composability ("USC") for based sequencing and sequencing more broadly as well as L2 interoperability standards (presentation: https://docs.google.com/presentation/d/1eikRHYyUFzyihLm_euzE-LNj7mG3wuuyRgfe0DLuvvA/edit?usp=sharing)
- The presenter started by highlighting where in the sequencing stack zkSync has focused for USC. The main solution they are working towards is a shared bridge with an asset verifier. The presenter then discussed this solution
- The presenter also highlighted another solution referred to as mass deposit sharing (from Jordi Baylina)
- The presenter then quickly discussed trade-offs across these approaches and the next steps
- Alex highlighted that there was a telegram group that people could join to discuss these two solutions and topics: https://t.me/+BCv3nfaQmU0yNDgy

3). Justin then teed up some announcements on recent community updates:

- Espresso: They are working towards launching a marketplace for sequencing and why roll-ups will benefit from this marketplace given the flexibility / potential additional value that could develop. The Espresso team published a blog with more details -> https://hackmd.io/kkVJEfd0THeMYhSD1no0Eg?view
- Alex from Ultrasound Relay: Alex presented how ultrasound is thinking about pre-confirmation how the relay could help with this role and why it fits quite nicely within the current transaction flow. Alex also touched on censorship resistance and how the pre-confers could be priced
- Events: Justin discussed the events around based roll-ups and pre-confirms that will be at ETH London
- George from Limechain also highlighted that they are working on research around "Based Ticketing Roll-ups" with the research being supported by a grant from the Ethereum Foundation. The blog will be published shortly

Q&A

- One participant asked about synchronous composability which was referenced during the discussion by MatterLabs. The participant also asked around cross chain and whether this effort was focused on just asset transfers or did it focus on solutions that addressed a broader set of use cases

- Justin discussed the definition of synchronous composability and what this looks like in practice across roll-ups and transactions and that the focus was on broad use cases not just transaction transfers / swaps
- The participant then discussed how they see the future around synchronous composability may work with concepts such as intents
- Justin then highlighted that the asset verifier solution is what this idea is all about

Annex

Attendance

- Joshua Baker
- Bharath Vedartham
- Matt Cutler
- Mobeen Chaudhry
- Francesco Mosterts
- Marc Nitzsche
- Ben Fisch
- Ellie Davidson
- Kartik Nayak
- Lucca
- Stephane Gosselin
- Luca Donno
- George Spasov
- Conor McMenamin
- Lin Oshitani
- Swapnil Raj
- Nick Preszler
- Noah Pravecek
- Murat Akdeniz
- AJ Park
- Jacob Castro
- Lisa Akselrod
- David Mihal
- Andreas Penzkofer
- Daniel Lumi
- Kalman Lajko
- Ben
- Jesus Ligero
- Mohammad Jahanara
- Sam Jernigan
- Ye Zhang
- William Robinson
- Brecht Devos
- David Weisiger

- Nathan Worsley
- Kubi Mensah
- Alex Tesfamichael
- Josh Rodult
- Julian Ma
- Justin Drake
- Brian Stout
- Facundö Indabera
- Ladislaus von Daniels
- Naman Garg
- Rohan Shrothrium
- Gajinder Singh
- Jonah Burian
- Drew Van der Werff
- Artem Kotelskiy
- Walt Smith
- Yuki Yuminaga
- Matthew Rabinowitz
- David Rakušan
- Alex Gluchowski
-

Next meeting date and time

- TBD, likely March 22, 2024

Call #2

Feb 23, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: Video Link
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan
Additional Materials: See individual sections below

Summary

Actions Needed

- None noted

Presentations on potential risks and concerns around based sequencing and based preconfirms

- During this call, multiple teams presented on an array of topics. The agenda is outlined below. Please note that Alex Gluchowski could not make the call.

first	last	topic	specificity
Ellie	Davidson	L1 reorgs and finality tradeoffs	based sequencing
Cooper	Kunz	L1 builder censorship	based sequencing
Jonas	Bostoen	preconfer delegation and centralisation	based sequencing
Ben	Fisch	based rollup MEV misalignment	based sequencing
Ye	Zhang	shared sequencer scaling bottleneck	shared sequencing
Alex	Gluchowski	sync vs async composability path dependence	shared sequencing
Alex	Watts	preconfirmation-based market manipulation	decentralised sequencing

Ellie Davidson from Espresso discussed L1 / L2 interoperability and preconfer finality

- Link to slides: https://docs.google.com/presentation/d/1QWJbxkDmGcHo2Qa_gpWoMd4XEOE8LQnnHnLOB0VTYyA/edit?usp=sharing
- Ellie first discussed that the presentation would cover L1 and L2 interoperability and L2 preconfirmation finality and the dynamics these play between each other
    - L1 and L2 interoperability: The ability to perform atomic swaps between these networks or to react to L1 state on the L2
    - Preconfirmations: This is around how confident I am that my preconfirmation will be honored on the L1 (in Ellie's view, preconfirm finality is when the finalization takes place on the L1)
- Ellie then discussed the concept of conditional finality which is the idea that a particular L2 block will only be finalized when a certain L1 block is finalized
- Ellie then discussed how most roll-ups currently operate with slow interoperability, but strong finality guarantees. Ellie highlighted that this is nearly the opposite of how a roll-up would need to operate with a based sequencer which would provide fast finality and weak preconfirmation guarantees
- Ellie finished with a discussion about the takeaways and potential solutions
- Q&A: There was a question about the dependencies between roll-ups with conditional finality

Cooper from Aztec discussed censorship concerns and a based sequencer

- Copper covered L1 builder censorship and how based sequencing and based preconfirms could impact this. Cooper noted that censorship is very important for roll-ups like Aztec
- Cooper went through a few options and the phases that Aztec have been iterating on and how this compares to the a-based sequencer
- Copper then went through some of the design considerations for a shared sequencer specific to finality and how these could impact censorship
- Cooper then went through a few product features and what they would want to see and better understand from any team building a shared sequencer
- Q&A: An attendee asked about getting a better understanding of compliance requirements for builders and another asked about the proof data availability and how this is unique to Aztec

Jonas from Chainbound discussed the delegation role in a preconfirmation model

- Link to slides: https://docs.google.com/presentation/d/1yv0YQbsMFK7HbjG9tLFaTDYXM2yjBruCr83W3XgWOmk/edit?usp=sharing
- Started by going through a few definitions from his perspective on sequencers, preconform, liveness fault, and safety fault
- Jonas then went through a flow of how these different roles / definitions work together for based preconfirmations
- Jonas then discussed the scope / some assumptions of the proposals / discussion
- Jonas then gave his perspective on why relays could be key for preconfirms as well as the downsides to relying on the relay
- Jonas then discussed his perspective on why node operators could organize the preconfirm
- Q&A: One participant asked about incentives and economic security by both the relay and the node operator, one participant asked about some implementation details around staking and then asked for clarification on how this would work with node operators

Ben from Espresso discussed roll-up and based sequencer incentive alignment

- Ben covered incentive alignment between the roll-up and using a based sequencer
- Ben then discussed the challenge with incentives and a based sequencer and why the incentives between the two parties may not be compatible
- Ben then went through how we could potentially design a system where the incentives are aligned between a based sequencer and roll-up
- Ben then discussed a solution the Espresso has been working on to allow for a roll-up to use a based sequencer and still receive the revenue from sequencing the roll-up transactions
- Q&A: One participant asked some clarifying questions about how the economics would work and the auction mechanism to return value to the roll-up

Ye from Scroll to discuss the performance of a shared sequencer

- Ye first discussed some foundational ways he views L2s and why the performance of a based sequencer is critical
- Ye then discussed a few challenges that may come up around the performance of a based sequencer
- Ye then specifically discussed the based sequencer needing to have the ability for global sequencing mechanisms and that the shared sequencer may struggle with this / we need to think about this during the design process
- Ye provided a few example solutions to help address performance challenges
- Justin highlighted that the considerations Ye had raised were not just for based sequencing, but for all shared sequencers
- Q&A: One attendee asked about the trade-offs / conditions Ye had highlighted between some of the solutions and assumptions and about the dynamics of generating the proofs versus the construction of the block

Alex Watts from Fastlane discussed based preconfirmations and market manipulation

- Link to slides: https://docs.google.com/presentation/d/1y9OhyQuJ0qJP1s-WyKbdNF_qrk3Nn_cyAVDefC0d1_Y/edit?usp=sharing
- Alex discussed an attack vector related to preconfirmations and went through the flow of how attacks with preconfimations could take place
- Alex went through a few specific attack vectors we will see if we have preconfirms today
- Alex then provided a flow of an example attack
- Alex discussed a few potential solutions that could be implemented into the preconfirmation flow to help alleviate these attacks and then discussed some issues and questions around these solutions
- Q&A: One attendee discussed a few of the assumptions Alex presented

Annex

Attendance

- Joshua Baker
- Francesco Mosterts
- Jonas Bostoen
- Lorenzo Feroleto
- Chris Haug
- Marc Nitzsche
- Pascal Stichler
- Ben Fisch
- Ellie Davidson
- Kartik Nayak
- Luca
- Alex Watts

- Luca Donno
- Sacha Saint-Leger
- George Spasov
- Conor McMenamin
- Swapnil Raj
- Noah Pravecek
- Murat Akdeniz
- AJ Park
- Jean-Luc Shorey
- Jacob Castro
- Cooper Kunz
- Lisa Akselrod
- Santiago Palladino
- Roberto Bayardo
- Florian Huc
- Nicolas Liochon
- Andreas Penzkofer
- Bruno França
- Kalman Lajko
- Mohammad Jahanara
- Sam Jernigan
- Ye Zhang
- Karthik Srinivasan
- William Robinson
- Noam Nisan
- Brecht Devos
- David Weisiger
- Uri Klarman
- Nathan Worsley
- Daniel "Dmarz" Marzec
- Quintus Kilbourn
- Kubi Mensah
- Alex Tesfamichael
- Barnabé Monnot
- Josh Rodult
- Julian Ma
- Justin Drake
- Brian Stout
- Facundö Indabera
- Rohan Shrothrium
- Gajinder Singh
- Jonah Burian
- Drew. Van der Werff
- Artem Kotelskiy

- Walt Smith
- Yuki Yuminaga
- Tuukka Tuomikoski
- David Rakušan

Next meeting date and time

- Friday, March 8, 2024 14:00 UTC

Call #1

Feb 16, 2024

Meeting Duration: 1 hour
Audio Video of the Meeting: youtube
Moderator: Justin Drake
Notes: Drew Van der Werff and Sam Jernigan
Additional Materials: slides

Summary

Actions Needed

- Follow-up discussions around various components of the design space

Presentation on Based-Sequencing and Preconfirms

- Justin began by providing a presentation on based sequencing and based preconfirms. The goal was to get as deep as possible around some of the current designs. The presentation can be found in a link above
- The presentation had two parts 1) the motivation and 2) the construction
- Justin gave an intro, highlighting the need for a united chain across Ethereum and having all the roll-ups living “in the same land” with low friction for moving between each roll-up
- Ethereum already provides a united front across settlement and data availability, now the focus should be a unified experience for sequencing on Ethereum
- Decentralized sequencing is the all-encompassing framework where quite a bit of research has taken place, however, within this bucket there are two other themes; 1) shared sequencers and 2) based sequencers. The presentation will be focused on based sequencing. Justin also provided an overview of various approaches roll-up teams are contemplating for shared sequencing

- Details of construction:
    - Based Sequencing: On the beacon chain today we have a look ahead period, the proposal is to use the proposers in that look ahead period and allow these proposers to opt into providing based sequencing by posting collateral
    - Preconfirm: In the preconfirm construct, the “user” will observe which proposers in the look-ahead period have opted into based sequencing. Once observed, the user will “ask” one of those proposers to provide a preconfirm. When the proposer provides this preconfirm, they are promising to deliver inclusion and execution in the future, if this is not fulfilled they are slashed (slashing conditions depend on why the preconfirm was missed)
- Justin went through how the communication of preconfirms would flow through MEV boost
- Last, Justin highlighted that this framework is actually quite similar to the Execution Ticket (“ET”) proposal. However, until we have ET’s, to achieve preconfirms we will likely require a new role. This role would be the party running the overhead required to facilitate the preconfirm auctions / pricing / etc. on behalf of a proposer
- This role would also need to ensure liveliness. Justin proposed that the relay may actually be a good candidate for this role given they are already facilitating communication through these parties / they are already key to liveliness

Questions and Discussion from Attendees

- One of the attendees highlighted that there is a consideration around the block value being suboptimal in this construct. Justin discussed that this issue would apply across any based sequencing, not just preconfirms. He discussed a preconfirm tip as a potential solution
- One attendee asked about the complexities that may arise with multiple preconfers. Justin noted that in this model there would be only one preconfer, similar to the monopoly power a proposer has over a slot
- Justin then re-reviewed how the preconfirm is selected
- One attendee then discussed the pricing of preconfirms and how a floor could be calculated for preconfirms
- An attendee asked for more clarification around the selection of preconfer and when the preconfirm should be shared
- One attendee discussed some potential timing games that could take place, how this was similar to the inclusion lists proposal, and proposed pricing ideas
- Another attendee discussed the ordering of how users may select a preconfer in the look-ahead period
- One attendee went through details around the preconfer and pushed back on some attendees concerns around trust and centralization risk
- An attendee asked for more clarity around the execution of a transaction in a preconfirm, Justin highlighted that there likely will be some variation in this / is an open design space

Annex

Attendance

- Itamar Reif
- Josh Bowen
- Matt Cutler
- Uri Klarman
- Kaylei Fleming
- Francesco Mosterts
- Jonas Bostoen
- Lorenzo Feroleto
- Nicolas Racchi
- Nathan Worsley
- Kydo
- Chris Haug
- Marc Nitzsche
- Pascal Stichler
- Ben Fisch
- Ellie Davidson
- Alex Watts
- Daniel "Dmarz" Marzec
- Hasu
- Quintus Kilbourn
- Kubi Mensah
- Luca Donno
- Sacha Saint-Leger
- Conor McMenamin
- Swapnil Raj
- Noah Pravecek
- Murat Akdeniz
- Niclas Blomberg
- Jack M
- Jean-Luc
- David Mihal
- Florian Hub
- Bruno França
- Kalman Lajko
- Stanislav "Stas" Bezkorovainyi
- Zach Kolodny
- Diego Estevez
- Brendan Farmer
- Mohammad Jahanara
- Sam Jernigan
- Ludwig Van Beethoven

- William Robinson
- Brecht Devos
- Jonah Burian
- Drew Van der Werff
- Artem Kotelskiy
- Filip Siroky
- Walt Smith
- Matthew Rabinowitz
- David Rakušan
- Josh Rudolf
- Justin Drake
- Facundö Indabera
- Gajinder Singh
- Naman Garg

Next meeting date and time

- Friday, February 23, 2024 14:00 UTC

Call #0

Feb 9, 2024

Recording: https://youtu.be/8xFVC9T9LR4
Notes taken by Drew Van der Werff 🙏
Additional Materials:

- Original post on Based Rollups
- Original post on Based Preconfirms

Summary

Actions Needed

- Get representation from other key stakeholders
- Set up recurring meeting
- Uri to set up call to go through each component / increase education of all participants
- Align on an event throughout the year to host on based sequencing / preconfirms

- Sync up on the technical details and understand the challenges / problems for implementation

Introduction of the Group

- Justin began by highlighting the most difficult part of based sequencing and preconfirmations (“these concepts”) is likely social coordination versus the technical details. For this reason, he started this series of calls as well as aggregated a sheet with all the teams thinking / building around these concepts

Introductions from Attendees

- We began the call with introductions. Attendees spanned across MEV infrastructure, rollups, investors, and researchers
- Call participants were asked for introductions highlighting their previous experience, interest, conviction, and what they were building around these concepts

MEV Infrastructure

- MEV infrastructure participants highlighted they were excited about these concepts
- All noted that they were going through research and experimentation
- All noted that there was still a lot of experimentation around design choices that needed more exploration
- Some noted they were actively building products around these concepts
- Two teams noted that they had a product MVP / POC around preconfirmations in testnet

Rollups

- All teams noted that they were interested in preconfirms and based sequencing and that they were actively researching and exploring these concepts
- One rollup team noted that preconfirms in particular were important to their product to help create more consistency around posting to Ethereum
- One rollup team noted that they plan to launch a based rollup in the next few months. Once this is out, they will then explore implementations of preconfirms
- One rollup team noted that they had a grant program to help fund research around these concepts
- One rollup team noted that they believed preconfirms and based sequencing would be important to help solve the current fragmentation of rollups on Ethereum. They noted they were exploring these concepts alongside proof-aggregation

Investors

- All investors noted they were excited about based sequencing and preconfirms
- Two investors noted they have been researching various components around these concepts and how they could impact or be implemented in Ethereum

Researchers

- Researchers were excited to be part of the group and could see the unlock these concepts could have on users of Ethereum
- One researcher noted some skepticism around technical implementation details
- Another researcher noted their excitement and how preconfirms tied into blockspace futures research they pioneered over the last few years
- One researcher noted that he thought a lot more education would be needed to drive social consensus around these concepts

Infrastructure to Support Exploring / Implementation

- Events: ZuBerlin is a potential event to focus on these concepts
- Grants: Taiko is giving out grants, the Ethereum Foundation may also give grants, and Flashbots is offering grants around these concepts
- Education: Yuri offered to coordinate a session to go through the fundamentals of these concepts
- Hiring: Espresso, Flashbots, Nethermind, Sorella, Scroll, Aztec, and Fuel are hiring engineers and researchers for these concepts

Coordination

- Additional Stakeholders: Liquidity providers, applications, validators, wallets, hardware, restakers, exchanges
- Tools: Noted that it would be great if someone could have a demo / something we could work through with stakeholders to test these concepts
- Education: Need some type of standard we can point to so everyone is aligned
- Event: need to have an event focused on this

Annex

Attendance

- Uri Klarman
- Jonas Bostoen
- Francesco Mosterts
- Nicolas Racchi
- Lorenzo Feroleto
- Ben Fisch
- Ellie Davidson
- Daniel "Dmarz" Marzec
- Quintus Kilbourn
- Alex Tesfamichael

- Bartek Kiepuszewski
- Nathan Worsley
- Sacha Saint-Leger
- Conor McMenamin
- Swapnil Raj
- George Spasov
- Chris Haug
- Pascal Stichler
- Murat Akdeniz
- Cooper Kunz
- Lisa Akselrod
- David Mihal
- Sam Jernigan
- Mohammad Jahanara
- Brecht Devos
- Brendan Farmer
- Ludwig Van Beethoven
- Philippe Dumonet
- Karthik Srinivasan
- William Robinson
- Jonah Burian
- Drew Van der Werff
- Artem Kotelskiy
- Walt Smith
- David Rakušan
- Alex Stokes
- Justin Drake
- Julian Ma
- Facundö Indabera
- Matthew "mteam88" Edelen

Next meeting date and time

- Friday, February 17, 2024 14:00 UTC