

State of the Ethereum Union ($1/N$ perspective)



mike neuder
harvard econcs seminar
Tuesday, April 30, 2024

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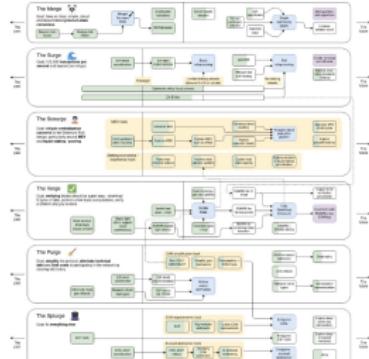
Preliminaries

Raison d'être

Draft Meta
EIP-7600: Hardfork Meta - Pectra

EIPs included in the Prague/Electra Ethereum network upgrade.

Authors Tim Beiko (@timbeiko)
Created 2024-01-18
Discussion Link <https://ethereum-magicians.org/t/eip-7600-hardfork-meta-prague-electra/18205>
Requires EIP-2537, EIP-2935, EIP-3074, EIP-6110, EIP-7002, EIP-7281, EIP-7548, EIP-7669



?

- Plenty of 'next-hard-fork' discussions.
- 'Endgame' research relatively well understood.
- The middle-ground can be rather murky.
- 2024 – new perspectives & new issues!

<https://eips.ethereum.org/EIPS/eip-7600>

<https://twitter.com/VitalikButerin/status/1741190491578810445>

Preliminaries

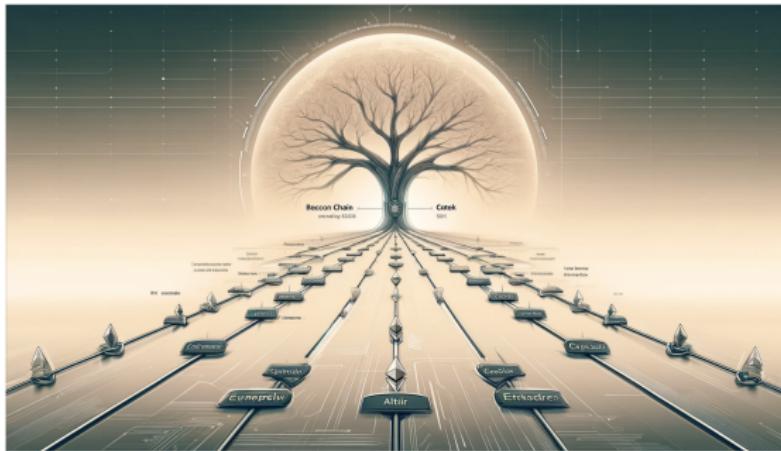
Caveat emptor



- Just the worldview of a few researchers!
- Others have vastly different objectives and priorities ...
- and that is by design!

(recent) Past

A hard-fork-centric retrospective



- **December 1, 2020** – *Beacon chain genesis.*
- **October 27, 2021** – *Altair* ('test hard-fork').
- **September 15, 2022** – *Bellatrix* ("The Merge").
- **April 12, 2023** – *Capella* (*Withdrawals activated*).
- **March 13, 2024** – *Deneb* (*Proto-Danksharding*).

(recent) Past

A hard-fork-centric retrospective



- **December 2020 → April 2023:** Proof-of-Stake Marathon.
 - **April 2023 → April 2024:** ‘Rollup-centric roadmap’ via data sharding.
 - **April 2024 → future:** are we “there” yet?

(recent) Past

The rollup-centric roadmap



- From Vitalik's October 2020 classic: "... where the base layer retrenches and focuses on doing a few things well - namely, consensus and data availability."
- Or in VC/marketing parlance, the "Modular Blockchain Thesis."

(soon™) Present

Ethereum goals and non-goals



- Ethereum has (and aims to preserve)
 - ▶ meaningful decentralization of the validator set,
 - ▶ an exceptional community, and
 - ▶ ETH the asset.
- Ethereum does not aim to
 - ▶ provide the most hospitable L1 execution environment,
 - ▶ sacrifice decentralization for scalability, or
 - ▶ operate like a startup.

(soon™) Present

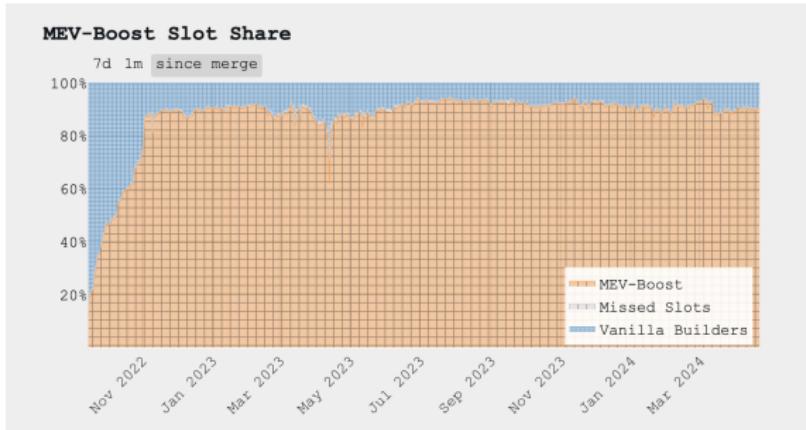
(don't) Reject Modernity



- Ethereum's upgrades make a lot of sense
- ... but a lot has changed since 2020:
 - ▶ **MEV** – block building is highly centralized and increasing network fragility,
 - ▶ **Staking** – liquid staking & restaking shape staking demand, and
 - ▶ **Scaling** – we expect blob demand to increase.

(soon™) Present

State of MEV

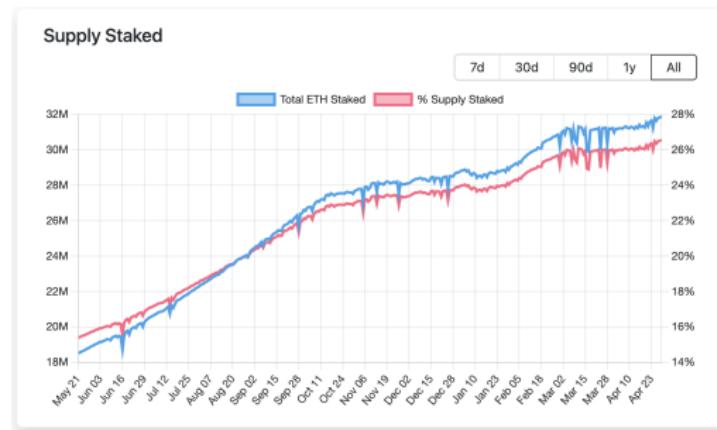


- 90% of Ethereum blocks built through `mev-boost`.
- 95% of those blocks are built by three builders.
- 2/3 top builders are censoring transactions.
- Lots'o'value being extracted from users; estimates in the high 9 figures (several hundred million) annually.

<https://mevboost.pics/>, <https://relayscan.io/>, <https://censorship.pics/>

(soon™) Present

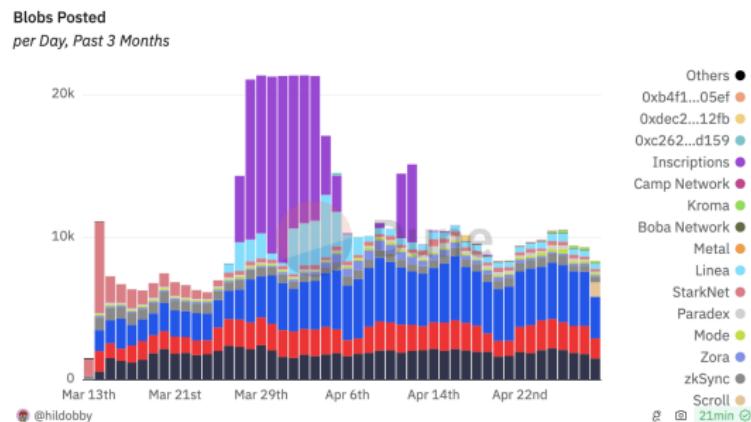
State of Staking



- 26.5% of the Ether supply staked (≈ 32 mm ETH ≈ 100 bn USD).
- $\approx 50\%$ stake share for top 5 entities.
- 40% of ETH in LSTs/LRTs, 71% of LST share in Lido.
- ≈ 16 bn USD in Eigenlayer (5/8 of which is in LRTs).

(soon™) Present

State of Scaling



- Around 2 blobs per-block so far (target is 3).
- L2s are the main blob consumers.
- Sub-cent L2 transaction fees (for now).
- Meaningful increases in L2 activity.

(short/medium-term) Future

To Prague/Electra



- “Hard-forks are like music festivals.” – Tim Beiko
- What's in Prague/Electra?
 - ▶ Intended to be a “small fork,” targetting EOY-2024.
 - ▶ Headliners: EIP-3074 (account abstraction), EIP-7251 (increase MAX_EFFECTIVE_BALANCE).
- IMO, these were the the wrong choices.
- Addressing censorship, accounting for staking demand, and scaling blob throughput remain the elephants in Ethereum's room.

(short/medium-term) Future *& Beyond*



- ... which makes Osaka (the fork following Prague/Electra) critically important (earliest timing EOY-2025).
- A dream fork
 - ▶ address censorship with Inclusion Lists,
 - ▶ adjust issuance to preserve viability of unstaked ETH, and
 - ▶ scale blobs with PeerDAS.

<https://eips.ethereum.org/EIPS/eip-7547>

<https://ethresear.ch/t/peerdas-a-simpler-das-approach-using-battle-tested-p2p-components/16541>

<https://ethereum-magicians.org/t/electra-issuance-curve-adjustment-proposal/18825>

The capital 'F', Future

tl;dl; (too long; didn't listen;)



stokes

@ralexstokes

...

ethereum is first and foremost a cultural project, we just happen to use software for the leverage

3:14 PM · Dec 19, 2022 · **47.3K** Views

21

53

285

16

↑

- Ethereum is great because the people make it great...
- but the job is not done yet.

thanks! :-)

