

Post-upgrade review: what's next for Ethereum?

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Ethereum's network keeps evolving

When the ethereum network enabled withdrawal of staked Ether (ETH) and related rewards on 12 April 2023, several upgrades were made into the blockchain. Many investors wonder why the 'Shanghai upgrade' was rebranded as 'Shapella upgrade'. This was due to the fact that software upgrades were made both on the execution layer of the blockchain (the Shanghai upgrade) and on the consensus layer of the blockchain (Capella upgrade). The execution layer is an environment where applications and smart contracts reside and where transactions within and between applications are processed. The consensus layer, on the other hand, is a place where the network rules are enforced. This layer became active with the introduction of Proof-of-Stake (PoS) consensus mechanism. The combination of these upgrades is called 'Shapella'. It is typical for the Ethereum network that it keeps evolving and improving. In fact, Ethereum's inventor, Vitalik Buterin, has stated that after the completion of the Merge, the network is only 50% complete.

Staking yield varies

On 30 May 2023, Ethereum's annual staking yield was estimated at 5.6%¹. The estimated yield varies depending on the amount of validators, the amount of transactions, whether maximum extractable value (MEV) technology is used, and how ETH is staked: via solo home staking, staking-as-a-service, via liquid staking pools or via centralised exchanges. The number of validators has increased to a total of almost 593,000 validators². One could assume that when the validator number increases, the annual percentage yield (APY) might go down, but transaction fees and MEV technology, on the other hand, might increase the yield. MEV is about prioritising the transactions and outsourcing the block production to third parties to maximise the yield. As more use cases are being developed, and more ETH is being used, the transaction portion of the yield might increase.

Number of validators keeps increasing, making the network more secure

The more validators there are the more secure the network is, although there comes a point when additional validators no longer add value in terms of security but add to the cost of securing the network. In fact, Ethereum developers are planning to cap the number of validators to make sure they do not overpay for economic security and to have plenty of new ETH for staking and for collateral purposes behind decentralised stablecoins. It also appears necessary to restrict the growth of validators as some future upgrades on Ethereum, such as single slot finality, require every validator to respond in seconds. To have a million validators might make this process technically challenging³.

The largest individual new validators since the unstaking event come from liquid staking providers Lido Finance (19%) and Rocketpool (4%) and centralised exchange provider Coinbase (7%). Over 50% of new validators are unidentified⁴.

Validators wanting a full exit has dropped significantly

After withdrawal of staked ETH and related rewards were allowed, the Ethereum network limited the number of full validator exits to maintain the stability and security of the network. The number of full exits was limited to seven validators per epoch, which is 6.4 minutes, meaning that a maximum of 1,575 validators could exit the network per day⁵.

Although there was an initial flurry of exits, on 30 May 2023, just 53,028 ETH or approximately \$101 million of ETH was waiting for a full exit. This number is down 6x from early May when over 350,681 ETH was waiting for a full exit from the network. The number of validators that have exited fully so far is approximately 10% and, at the moment, the number of validators waiting for a full exit is just 1,642, down from 10,920 validators in early May⁶. A big part of exited validators come from Kraken, and was expected, as Kraken has settled a lawsuit with the Securities and Exchange Commission in the US and promised to stop offering its staking-as-a-service product to US customers. Other large exits have come from Binance, Coinbase, and Huobi⁷. It also looks as though 50% of ETH waiting for withdrawal has come from Kraken⁸.

Source: Block Research, 31 May, 2023. Beacon Chain is the original proof-of-stake blockchain which ran in parallel to the proof-of-work blockchain until The Merge.

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The feared downside price pressure on ETH did not materialise and, in fact, the price of ETH has not changed much since unstaking. The price is flat since 12 April 2023, although the price has varied somewhat during this time period. ETH, however, has had a meaningful run since the beginning of 2023, and is up by more than 50% this year⁹.

Increasing amount of staked ETH shows the attraction of staking yield for investors

Since the Merge in September of last year, the amount of ETH staked has increased by 60% to a total of over 21.6 million from 13.5 million of ETH staked last September. This number includes the ETH rewards¹⁰ and is close to 16% of the total ETH in circulation. The number of validators has increased as well by 40% since the Merge last September to 593,000 from 420,000. We expect the staking ratio to increase

further and to at least double in the next year or so. Increased amount of staking activity and the increasing number of validators are positive signs for the Ethereum network and show that staking yield is part of the attraction for investing in Ethereum.

Slow transaction processing and high costs remain to be resolved

The Shapella upgrade does not solve the problem of network congestion or high gas/transaction fees, which became a problem during the last bull market of 2021-2022. Several other layer 1 networks, such as Solana, were actively developed and promoted during this time, because Ethereum's gas fees rose to exceedingly high levels during high demand periods. For the moment, the network's ability to handle transactions remains limited to 15-30 transactions per second.

Up until recently, to address the capacity limitation problem, the Ethereum developers have talked about implementing sharding later this year. Sharding is a term whereby the network is split into smaller 'shards' to increase capacity. What seems to have taken precedence recently, instead, is to work together with layer 2 networks and to increase the Ethereum's network capacity via Proto-Danksharding.

Short-term scalability is expected to be achieved via Proto-Danksharding

Proto-Danksharding is a way to address the scalability problem on the Ethereum blockchain. It uses layer 2 rollups (optimistic rollups, zero-knowledge rollups) to move transactions off-chain, bundle them up, and verify them back as a single transaction on the Ethereum's layer 1 blockchain. If there is a problem with a transaction, this transaction can be reconstructed on Ethereum's layer 1 network. This need to post the transaction data back to the layer 1 network is expensive because data is posted on all Ethereum nodes and is expected to live on the chain forever.

Proto-Danksharding aims to solve this problem by attaching data 'blobs' into the network temporarily. Blobs would be large portable bundles that could contain cheap transaction data. These blobs would not be accessible to Ethereum Virtual Machine's (EVM) environment and would be automatically deleted after a fixed time period. This would enable layer 2 rollups to send transaction data back to layer 1 much more cheaply and pass these savings on to users resulting in cheaper transactions.

1 Source: Ethereum.org

2 Source: Ethereum.org

3 Source: Tim Beiko & Justin Drake, Ethereum Foundation, April 2023.

4 Source: Nansen.ai

5 Source: Ethereum.org

6 Source: Nansen.ai

7 Source: Rated Network Explorer.

8 Source: Nansen.ai

9 Source: Nansen.ai

10 Source: Nansen.ai

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