HASHKEY CLOUD

Annual Node Validation Report: 2023

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Global Metrics

$377.23BN (+189%YoY)

Market Cap of Top 75 PoS Assets

$9.16M (+24.94%YoY)

Staking Addresses

$139.62BN (+98.62%YoY)

Staking Market Cap

$5.85M (+8.39%YoY)

Annualized Rewards

Institutional-grade Metrics

PoS public blockchain is becoming mainstream along with the ETH 2.0 launch, the trend of energy conservation and emission reduction worldwide. The top 57 PoS assets have reached 377.235 BN in Market Cap. The total Staked PoS Assets Market Cap grew 98.62% in 2023 compared to the previous year.

Protocol-level staking, which involves staking assets directly on the blockchain's protocol, is considered to have lower risk than other cryptocurrency products. Seeing this opportunity, the number of staking users has experienced rapid growth, increasing by 24.94% in the past year.

Subject	Value	YoY
Total VSP AUM	38.60 BN	+18.48% YoY
Total VSP Addresses	2186.22 K	+1.64% YoY

**VSP stands for Verified Staking Providers*
Source: Staking Rewards

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Validator Performance Overview

APR

+0.33% ↑

Network Average	HASHKEY CLOUD
4.26%	4.36%

The robust infrastructure HashKey Cloud provides makes missed rewards less frequent. Our APR is 0.33% higher than average.

Rewards

+0.1056 ETH ↑

Network Average	HASHKEY CLOUD
1.2896 ETH	1.3952 ETH

Our reward is 0.1056 ETH higher than the network average.

Data Source: Rated Network

Validator Performance Overview

Effectiveness Rating

+0.36% ↑

Network Average	HASHKEY CLOUD
96.46%	96.82%

We provide top-tier security to our customers. Until now, we have 0 slashing record and above-average effectiveness.

AUM

+0.36% ↑

HASHKEY CLOUD
960K ETH

We have 960,000 ETH assets under management, including non-ETH, and about 700,000 ETH under node validation. So far, our share of ETH node validation market stands at 2.45%.

Data Source: Rated Network

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Ethereum

Can we find Goldilocks? Two-tiered model of Ethereum Liquid Staking

TL;DR

- Two-tiered staking model is a native liquid staking method designed to reduce the consensus overhead and encourage more solo-staking validators
- The bonded model eliminates the trust stakers delegated to Staking-as-a-Service providers
- If this model is utilized, several NO-specific LSTs may share the market like a consortium
- This idea delivered Upper-middle capital efficiency and relatively high economic security
- Two-tiered staking model is not an EIP/ ERC now. How to implement it appropriately while minimizing changes to the protocol is still an open question.

What is the Two-Tiered Staking Model?

Two-tiered staking model is a new idea proposed by the Ethereum core dev community. The design proposed a native liquid staking design with a bonded model similar to RocketPool and Cosmos Liquid Staking Module.

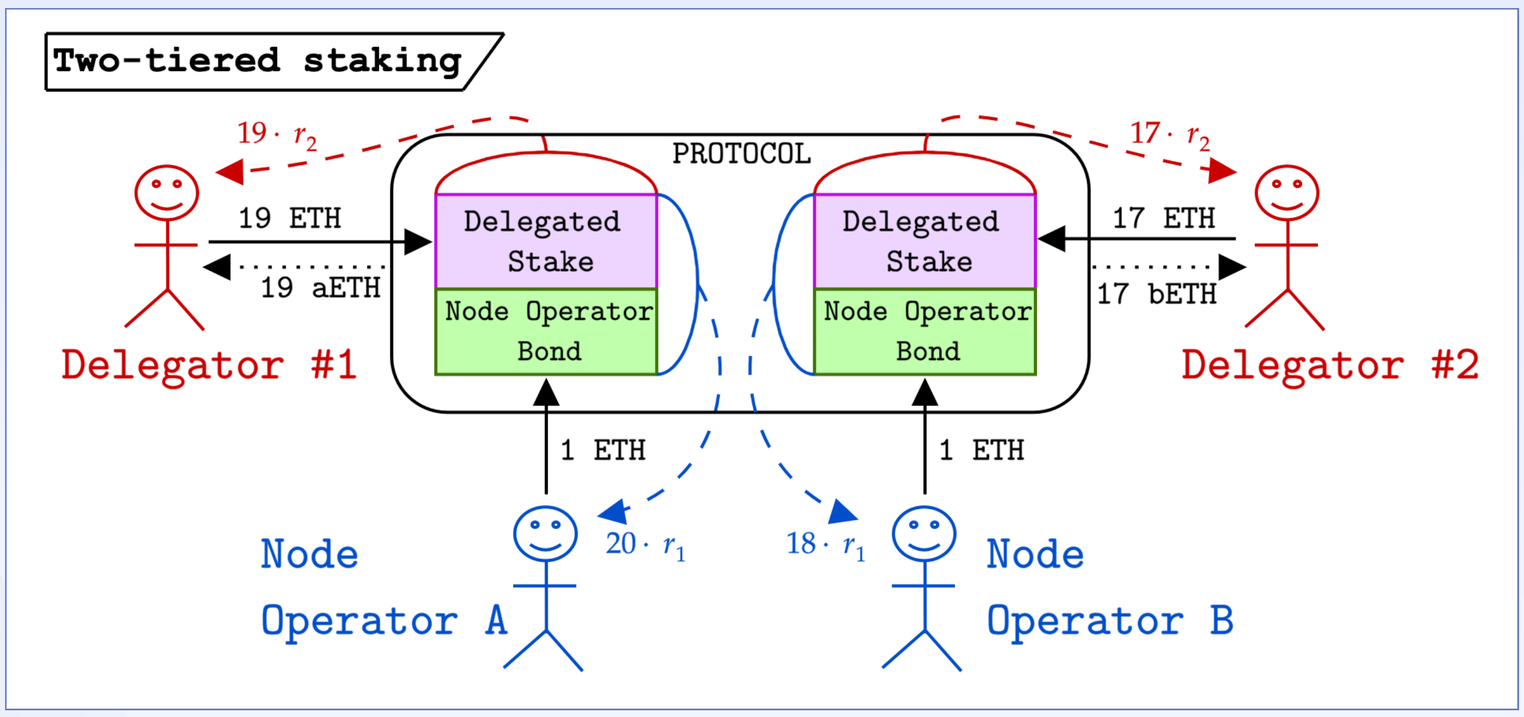
Currently, third-party providers like Lido and RocketPool dominate the liquid staking market. Whereas they do not run validators but delegate them to professional node operators (aka Staking-as-a-Service Providers).
In that case, stakers leverage trust to STaaS providers that their staked ETH will not be slashed by insurance.

The new staking model switches “Proof-of-Trust” to “Proof-of-Bond.” In such a way, staker can delegate their ETH to node operators without the slashing risk. Instead, node operators must collateralize 1 ETH slashable bond for economic security (see details here).

To summarize, we list a table showing the differences between node operators and delegators.

Subject	Node Operator	Delegator
taking Assets	Node Operator Bonds C1： Fixed 1ETH collateralized by a node operator.	Delegated Stake C2：ETH delegated to a node operator, up to 19 ETH.
Slashable	✓	✗
Economic Security	✓	✗
Queue	Requires entering activation and exit queues.	1. No need to enter queues. 2. Redelegate at any time.
Rewards Rate	Slashable rate r1	Risk-free rate r2
Rate Calculation	1. r1 is dynamically determined by current staking returns, which bottom out at a slightly higher rate than r2。 2. r1>=1.05r2	1. r2=1% 2. Designed to encourage entrusted staking.

Here, we describe the workflow shown in the following figure.



1. Node Operators (NO) collateralize **1 ETH** bond for delegation qualifaction.
2. In the bottom of the figure, node operators A and B collateralized **1 ETH** to protocol.
3. Delegators (so-called stakers) delegate ETH to Node Operators and get specific Liquid Staking Token (LST)
4. Delegator #1 delegates **19 ETH** to NO A, get **19 aETH**
5. Delegator #2 delegates **17 ETH** to NO B, get **17 bETH**
6. Rewards calculation
   a. Node Operators

$$Node\ Operator\ Rewards = (Bond + Delegated\ ETH)\ *\ r_1$$

$$Node\ Operator\ A : (19 + 1) * r_1 = 20 * r_1 \geq 0.21\ ETH$$
$$Node\ Operator\ B : (17 + 1) * r_1 = 18 * r_1 \geq 0.189\ ETH.$$

   b.Delegator

$$Delegator\ Rewards = Delegated\ ETH\ *\ r_2$$

$$Delegator\ \#1 : 19 * r_1 = 0.19\ ETH$$
$$Delegator\ \#2 : 17 * r2 = 0.17\ ETH$$

What are the effects of the Two-tiered Staking model?

As mentioned, the model eliminates the trust assumption and issues NO-specific LST. However, there are 200+ NOs according to Staking Rewards. Imagine there are 200+ LSTs in the market, which one should stakers choose?

Considering the demands for liquidity and composability, such an amount of LSTs may fragment DeFi. We list three possible circumstances discussed in the original blog as follows:

Case	Situation
Utopia	All LSTs are nearly “fungible”
Consortium	Several large LSTs with strong ecosystems share the market.
Winner-takes-all	Single LST dominates the market.

We believe the consortium situation may be the most possible due to overwhelming competition. The LSTs with high liquidity and strong DeFi composability will survive and outperform.

Will the Two-tiered staking model decrease protocol security?

After “The Merge”, Ethereum relied on economic security to prevent double-spending. The economic security of the system is only determined by slashable ether C1. As the delegation rate (maximum ratio between slashable Ether C1 and risk-free Ether C2 is **g=19**, NOs must provide 1 ETH bond for every 19 ETH delegated to them.

$$Capital\ Efficiency = C_2\ /\ \ (C_1 + C_2)$$

If capital efficiency is too low, the market demand for LST can never satisfied. RocketPool uses **g=3**, which causes its deposit pool always to fill up. If you want to get rETH, you can only swap it on the secondary market (DEXs). For Cosmos Hub’s liquid staking module, **g=250**. In such a case, if the total market cap of ETH is **$100 B**, then only **$398 M** can secure the protocol, which is relatively unsafe. Here the ratio refers to how much proportion of Ether can contribute to economic security.

$$Economic\ Security\ Ratio = C_1\ /\ \ (C_1 + C_2)$$

Let us measure the capital efficiency and economic security with **g=19**.

$$Capital\ Efficiency = 19\ /20 = 0.95$$

$$Economic\ Security\ Ratio = 1\ /\ 20 = 0.05$$

So for every 20 ETH, there are at most 19 units of LSTs in circulation. For **$100 B** Market Cap, there are **$2 B** funds to ensure economic security. The table summarizes these metrics, showing that this model provides relatively high economic security and upper-middle capital efficiency.

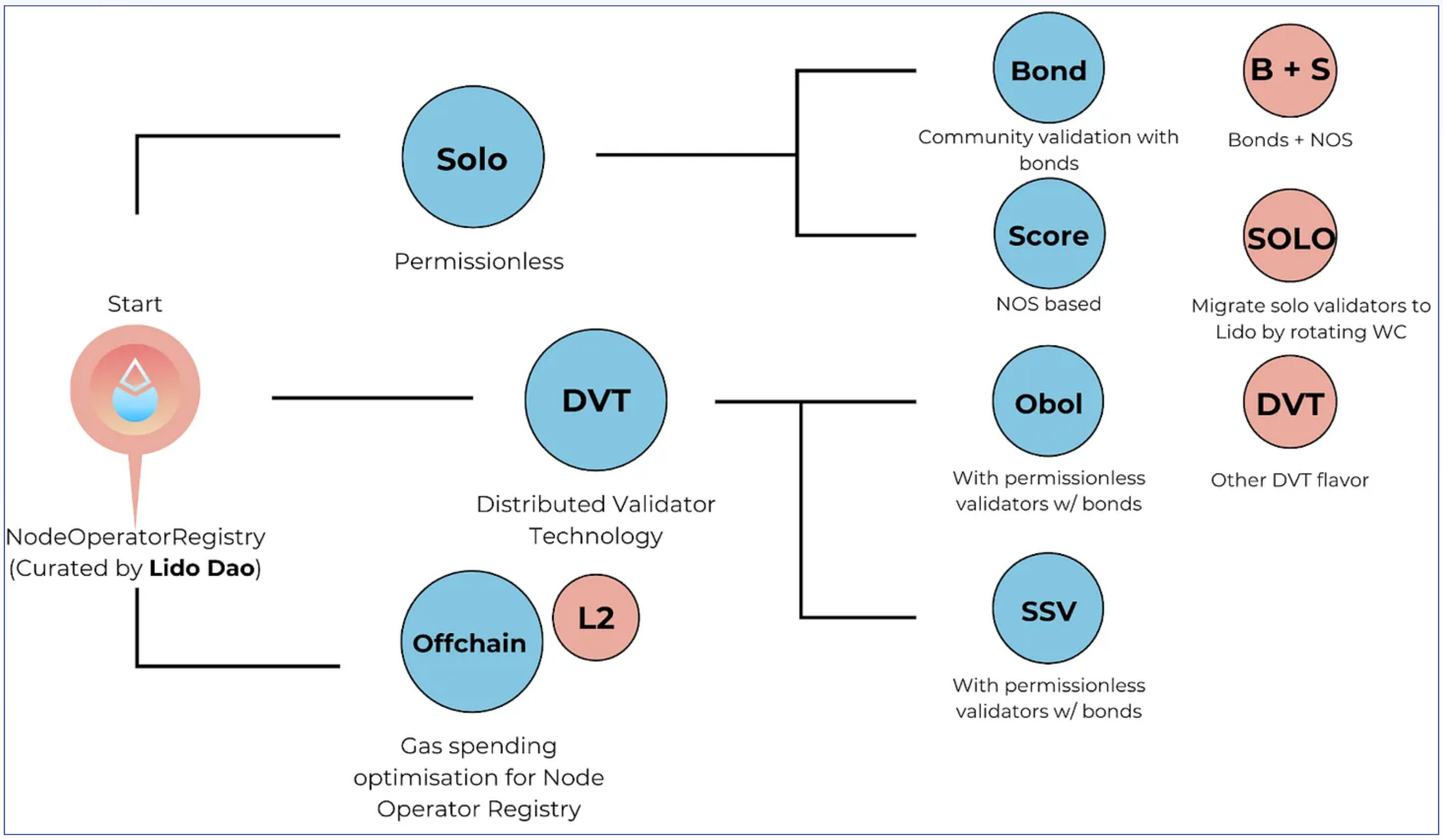
Subject	Two-tiered Staking	RocketPool	Cosmos Liquid Staking
Delegation Rate (g)	19	3	250
Capital Efficiency	19/20=95%	3/4=75%	250251~=99.6%
Economic Security	Relatively High	High	Low

How does DVT reform the Staking ecosystem?

Liquid Staking Protocols

Liquid staking protocols aim to address the liquidity problem for protocol-level staking. At the same time, DVT (Distributed Validator Technology) primarily tackles the issue of the single point of failure for node operators, thereby increasing security and staking rewards. These two solutions have different focuses but can be combined effectively. The overall scale of the staking ecosystem is unlikely to experience significant fluctuations due to a single technical indicator. As a result, some liquid staking protocols that do not adopt DVT technology may lose some stakes sensitive to security and rewards, thereby reducing the liquidity of the liquid staking protocol.

Using DVT in liquid staking protocols inevitably increases the complexity of liquid staking protocols and introduces more potential risk points, placing higher technical requirements on the developers of liquid staking protocols. Even if the developers of a liquid staking protocol do not need to develop the DVT protocol themselves, the risk points of the DVT protocol can directly affect the security of the liquid staking protocol that utilizes it.



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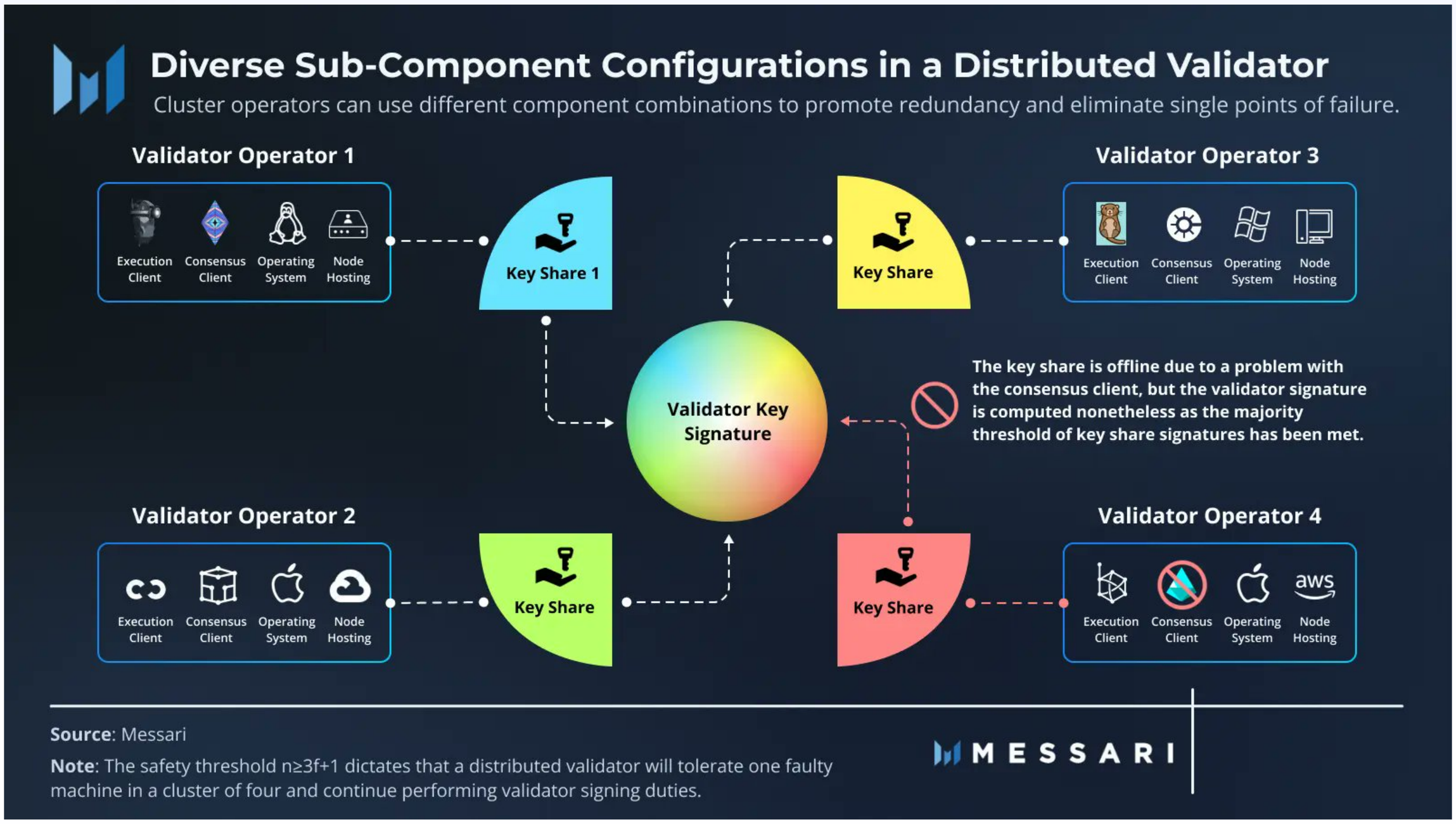
Node Operators

Applying DVT technology provides more solutions for Node Operators. The two most important metrics for Node Operators are security and profitability. Node Operators must store the Validator Signing Key in the server when running a Beacon Node. If the server is attacked, there is a risk of Validator Signing Key leakage, which in turn affects the security of the validator. If DVT is used, the complete Validator Signing Key is not stored on the Node Operators' server, which guarantees the protection of the validator node.

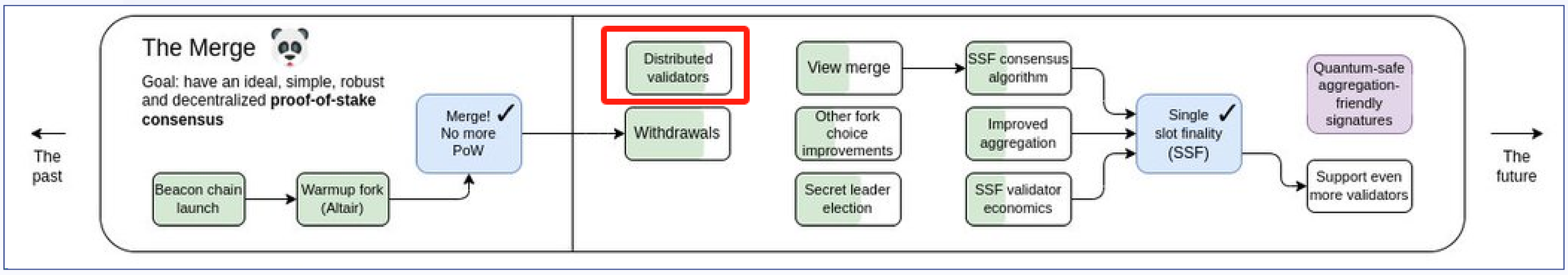
In Ethereum's economic model, if a validator node misses an attestation, it will be unable to get corresponding rewards and even be punished. To ensure a high-level APR, a validator must be online and confirm availability, which requires robust operation and maintenance capabilities, including monitoring the validator node, disaster recovery, and backup. In the past solution, the validator had to run on a single server, suffering from the potential risk of the single point of failure. At the same time, DVT uses KeyShares technology to distribute duties to multiple nodes, improving the fault tolerance of nodes.a high-level



Ethereum

Widespread use of DVT would benefit Ethereum's decentralization and stability. Although the Ethereum Foundation fully considered the current technical conditions and financial requirements when determining the 32 ETH that make up a validator node, 32 ETH is still a certain threshold for individual investors. This is one of the reasons for the rapid growth of liquidity staking protocols. However, many liquidity staking protocols require the user to hand over custody of ETH to the protocol, which implicitly increases the centralization of Ethereum. DVT technology divides validator duties into multiple parts to enhance the decentralization of the entire network.

Node operators running DVT are free to choose both execution and consensus clients, improving the overall health of the Ethereum network. This eliminates single points of failure and reduces the risk of slashing by allowing the validator to run on multiple clients.



Future Trend: Decentralization

As we see, two-tiered staking shows a path to a more decentralized future. However, there are still some remaining questions:

1. How to prevent fragmented liquidity?
2. How to set dynamically adjusted r_1 towards the "Goldilocks rate”?
3. Will it cause more centralization and security problems?

Meanwhile, DVT introduces a novel approach to reducing centralization and enhancing network decentralization. By dividing validator duties into multiple shares, DVT effectively minimizes reliance on a single server, thereby reducing the concentration of power. This decentralized approach empowers Node Operators to select execution and consensus layer clients freely, promoting network health and resilience while mitigating the risks of the single point of failure. It also enables enterprise-level security for home-stakers.
With the two-tiered staking model and DVT, more solo-taking validators may be encouraged to join the Ethereum ecosystem, contributing to its decentralization efforts.

Want to know more?

For more information about our All-in-one Infrastructure Services, please visit hashkey.cloud.

If you have any questions, feel free to contact us at bd@hashkey.cloud.