Obol

x
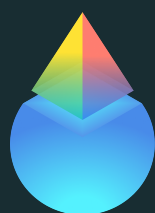
LIDO

Performance Report

October 3rd 2022 – 15th Jan 2023

Distributed Validator Technology (DVT) has officially become one of the key primitives that will drive network security and decentralisation for Ethereum in 2023 and for many years to come. Strong performance results from continued testing with our DV clusters and our Lido Pilot demonstrate how DVT is now positioned as the must-have technology primitive for all node operators.

DVT allows an Ethereum PoS Validator to be run on more than one node or machine, enabling a construct known as multi-operator validation. This allows a cluster of nodes run by an individual, group, or community of operators to act together as a single validator on Ethereum. Running a validator as a cluster of nodes improves its resiliency while greatly reducing the slashing risk of honest validators, regardless of its size. This makes staking more robust and accessible for all validators.

As we continue scaling and onboarding node operators with our Bia testnet, we've gathered key metrics from our Lido clusters for the 104 days between Oct. 3rd, 2022 to Jan 15th, 2023. We also benchmark these metrics against other industry players, showing strong results and reaffirming our confidence in the future of the technology.

With Bia, we want to build on our learnings from our previous Athena testnet and stress test DVT at an even larger scale. We aim to test with a more diverse variety of client combinations, cluster sizes, and deployment environments. To support our testnet efforts, we will also be conducting extensive audits and performance reports with two industry leaders: Sigma Prime and Miga Labs.

Our Lido clusters have been active since November 18th and November 29th respectively, both showing very promising results as we continue to drive adoption for distributed validators across the Ethereum ecosystem.

Contents

Obol

Lido DV Clusters Overview

Obol	Cluster 1 HCNS–Lido	Cluster 2 DKCSBES–Lido
Network	Goerli	Goerli
# Validators	1	1
Active since	November 18th	November 29th
Operators	- Hashquark - CryptoManufaktur - Nethermind - Simply Staking	- DSRV - Kukis Global - Chorus One - Staking Facilities - Blockscape - Everstake - Stakely
Links	Beaconcha.in Rated.network	Beaconcha.in Rated.network

Lido DV Clusters Performance Metrics (Görli)

Metric	Obol Lido Pilot	ssv.network Lido Pilot	Attestant
Number of Validators	2	2	2010
Slashing Received	0	0	0
Avg. Uptime	99.8%	98.3%	99.9%
Avg. Inclusion Distance	1.50	1.57	1.51
Avg. Attester Effectiveness	62.6%	59.1%	62.4%
Avg. Proposer Effectiveness	75%	0%	100%
Avg. Validator Effectiveness	62.7%	59.4%	62.6%
Avg. Missed Attestations	0.2%	1.7%	0.1%

Average Uptime (7-day MAs)

Legend: Attestant, Obol Pilot, SSV Pilot

Y-axis: 100%, 95%, 90%, 85%, 80%

X-axis (Time): 16/10/2022, 30/10/2022, 13/11/2022, 27/11/2022, 11/12/2022, 25/12/2022, 8/1/2023
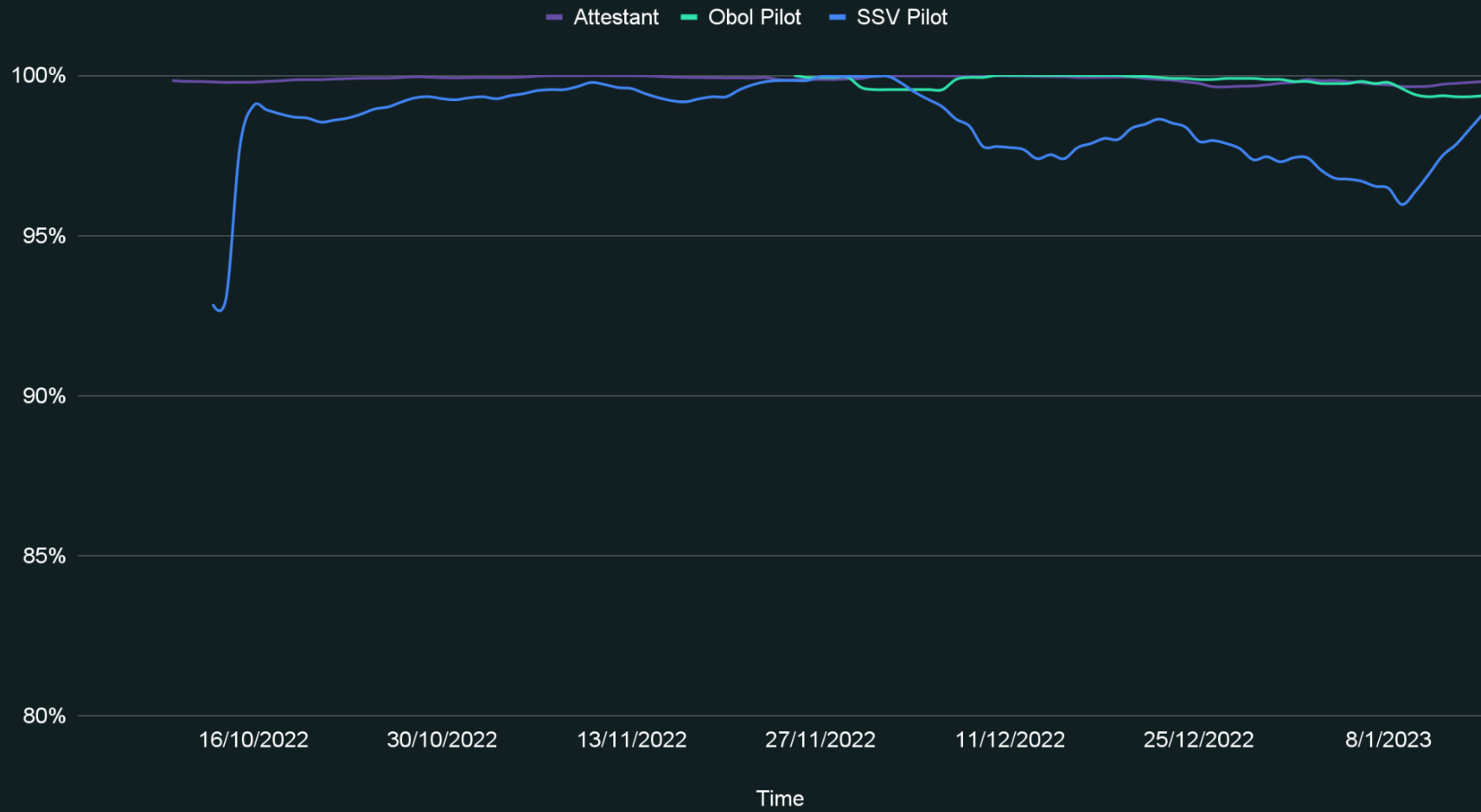
Average Inclusion Distance (7-Day MAs)

Average Attester Effectiveness (7-day MAs)
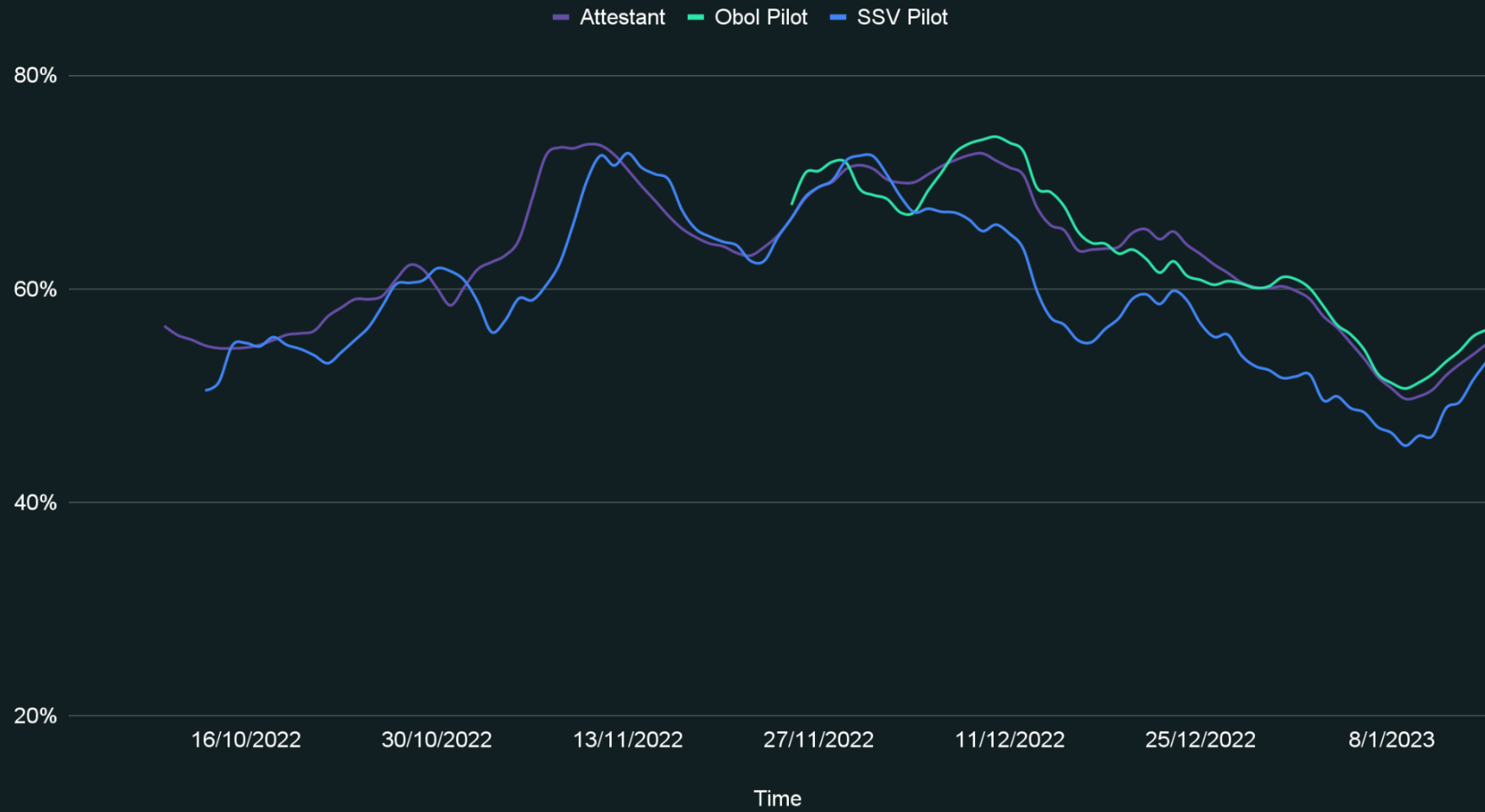
Average Proposer Effectiveness

Average Validator Effectiveness (7-day MAs)

— Attestant   — Obol Pilot   — SSV Pilot
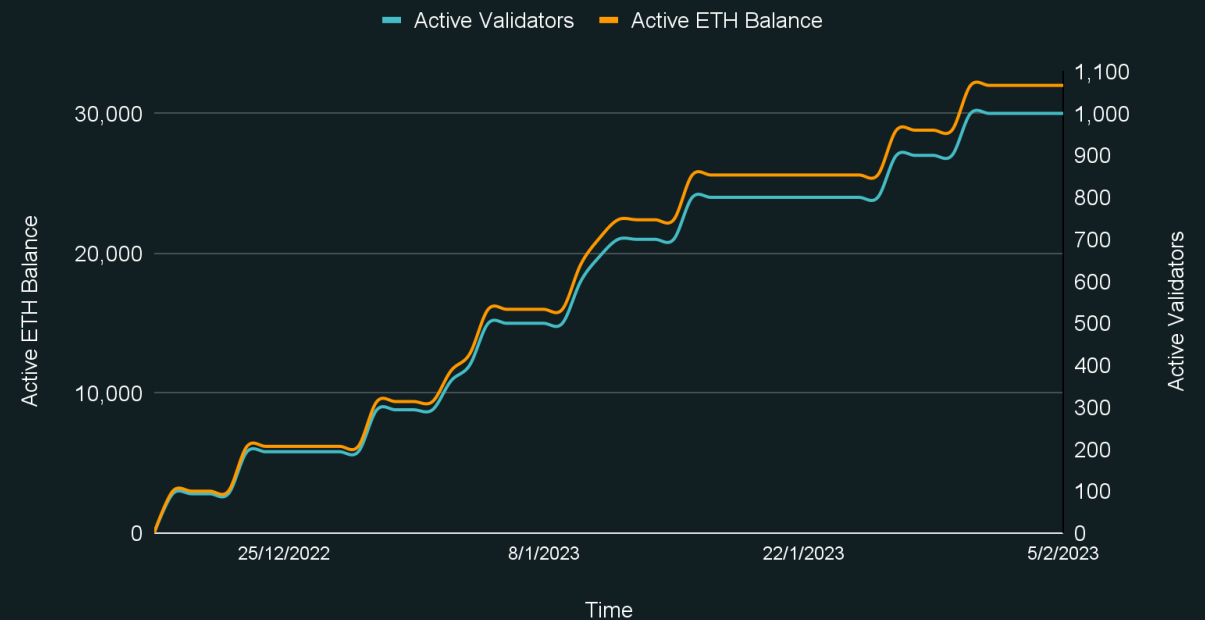
Time

Obol

Obol's 1000 Validators Cluster

Performance Summary

This cluster has been running since December 18th with a variety of validator client and beacon node pairs, growing the active validator set steadily up to 1000 active validators within the cluster. Our 4 node cluster has two Teku validators and two Lighthouse validators. Each node has its own private beacon node, running either Lighthouse or Nimbus consensus clients, with one of Besu, Erigon or Nethermind execution clients.

Metrics	
Number of Validators	1000
Slashing Received	0
Avg. Uptime	97.3%
Avg. Inclusion Distance	1.60
Avg. Attester Effectiveness	56.7%
Avg. Proposer Effectiveness	90.4%
Avg. Validator Effectiveness	57.0%
Avg. Missed Attestations	2.7%

Active Validators
Time-Series

Inclusion Distance

Time-Series

Slots

2.5

2.0

1.5

1.0

25/12/2022   8/1/2023   22/1/2023

Time

━━ 1000 Validator Cluster   ━━ Obol's Lido Pilot
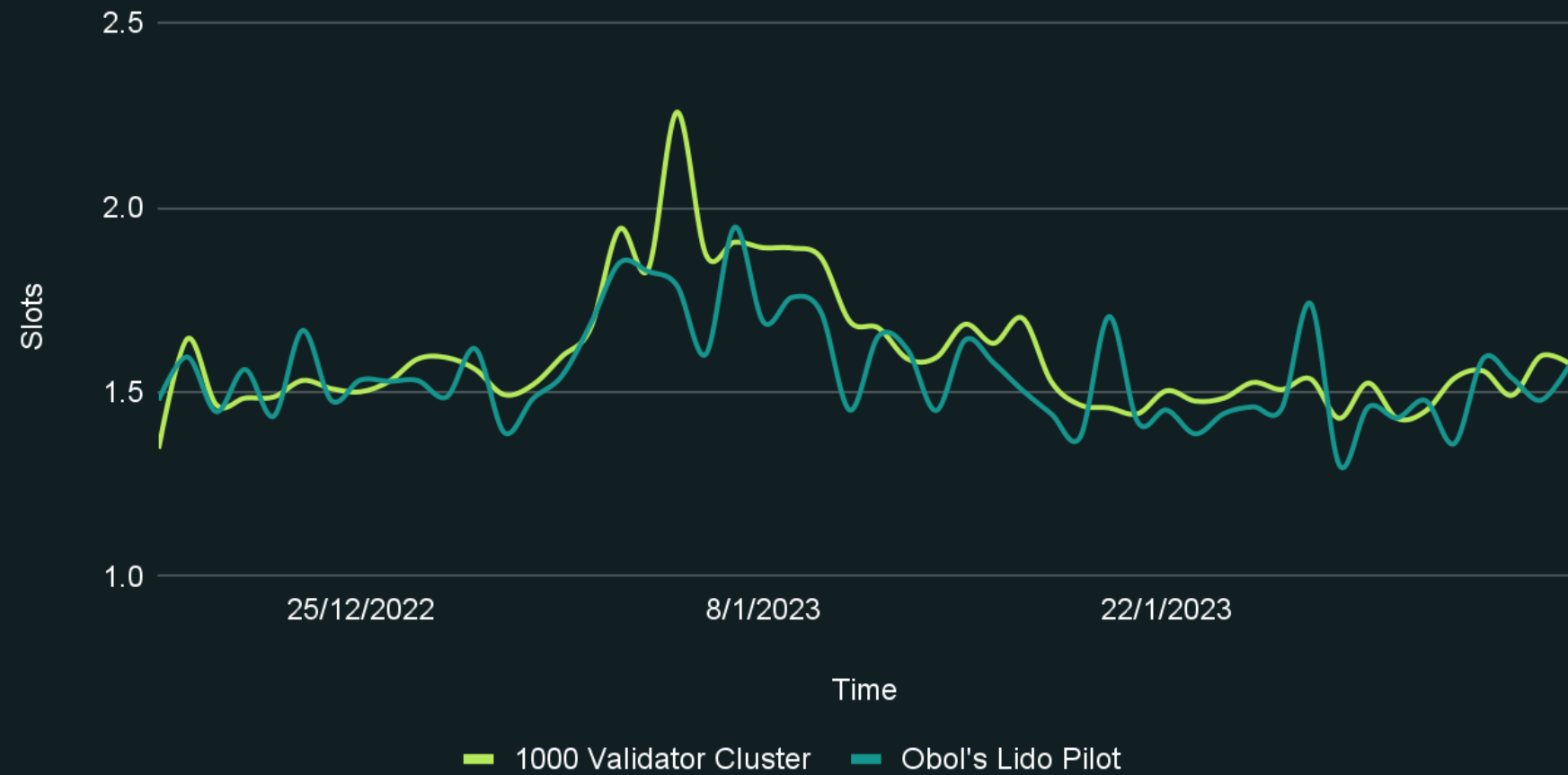
Obol

Validator Effectiveness

Time-Series

1000 Validator Cluster — Obol's Lido Pilot

Obol

Data Considerations

- Obol & SSV Data was retrieved using Rated Network's API (/v0/eth/validators/{validator_index_or_pubkey}/effectiveness) for days 559 to 665 since genesis on Prater/Görli.
- Data from Attestant, our benchmark node operator, was retrieved using Rated Network's API (/v0/eth/operators/{operator_id}/effectiveness) for days 559 to 665 since genesis on Prater/Goerli.
- All metrics are as is from Rated Network or deduced from simple maths definition (perc. missed attestations). See Rated docs and definitions here.
- For the purposes of this report we have introduced a simplified version of the Proposer Effectiveness metric, where proposerEffectiveness = proposedCount / proposedDutiesCount.
- Pubkeys can be accessed freely here.
- Raw data for Obol's Lido Pilot, SSV's Lido Pilot, Attestant, and Obol's 1000 Validator Cluster can be accessed freely here.

Supported Duties

Obol's middleware, Charon, is a distributed validator middleware – it works to coordinate validators to work in a distributed manner with fault tolerance. The following table outlines which validator clients have produced which duties on a Public Testnest, and which are still under construction (🚧)

Stay up to date with Obol's support for all validator clients at https://dvt.obol.tech

Duty \ Client	Teku	Lighthouse	Nimbus	Prysm	Lodestar	Vouch
Attestation	✅	✅	✅	🚧	✅	✅
Attestation Aggregation	🚧	🚧	🚧	🚧	🚧	🚧
Block Proposal	✅	✅	🚧	🚧	🚧	🚧
Blinded Block Proposal (MEV–boost)	✅	✅	🚧	🚧	🚧	🚧
Sync Committee Attestation	✅	✅	🚧	🚧	🚧	🚧
Sync Committee Aggregation	🚧	🚧	🚧	🚧	🚧	🚧