

stOLAS Whitepaper

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Executive Summary

stOLAS is a liquid staking token that represents staked OLAS assets in the Autonolas ecosystem. It is designed to provide users with a simple, flexible method to gain staking exposure without the need to run independent agents or services. Built according to the ERC4626 standard, stOLAS maintains compatibility with major DeFi protocols, offering liquidity, composability, and efficiency.

Unlike traditional OLAS staking, which typically requires the deployment and management of complex infrastructure, stOLAS enables users to effortlessly stake their OLAS tokens, receive staking rewards indirectly, and retain full DeFi usability of their assets.

The token's structure is designed to:

Streamline participation in the Autonolas ecosystem,

Maintain user liquidity across DeFi platforms,

Separate governance participation into a future, dedicated voting token (vOLAS).

By following best practices in smart contract security and committing to future third-party audits, stOLAS aims to become the cornerstone of a thriving and decentralized OLAS staking ecosystem.

Introduction to stOLAS

The Autonolas ecosystem is built around autonomous services, operating with a decentralized coordination model. At the heart of this ecosystem is OLAS, the native token, which powers staking mechanisms and incentivizes service provision.

Participating in native OLAS staking traditionally requires users to deploy agents and services on decentralized networks — a model that, while powerful, introduces technical and operational complexity.

stOLAS abstracts away these difficulties.

Inspired by successful liquid staking models such as Lido's stETH, stOLAS provides users with:

An easy entry point into OLAS staking rewards,

A fully liquid, transferable, and composable ERC20-like asset,

An optional path to governance participation via a future governance token (vstOLAS).

When users deposit OLAS into the stOLAS vault, they receive a corresponding amount of stOLAS tokens.

These tokens represent a share of the total OLAS staked through the system and are freely usable in the broader DeFi ecosystem — including decentralized exchanges (DEXs), lending protocols, and more.

By decoupling staking complexity from liquidity needs, stOLAS aims to significantly lower the barrier of entry for users, developers, and liquidity providers alike.

Token Utility

stOLAS is a pure utility token. It represents a share in the collective pool of staked OLAS tokens deposited into the stOLAS Vault. stOLAS holders gain indirect exposure to staking rewards generated by the OLAS staking system without undertaking operational responsibilities such as deploying agents or running services.

Key aspects of stOLAS utility:

Access to Rewards: Holding stOLAS provides users with access to the staking rewards distributed by the Autonolas staking system.

DeFi Liquidity: As an ERC20-compliant token, stOLAS can be freely traded, transferred, and utilized across DeFi platforms.

Separation of Governance: Governance rights are not embedded within stOLAS itself. Instead, governance will be facilitated through a future dedicated token, vstOLAS.

Underlying Collateralization: Each stOLAS token is backed 1:1 by OLAS deposits, adjusted for system mechanics such as yield accumulation.

Unlike securities, stOLAS does not promise fixed returns, dividends, or profit-sharing.

Its role is purely functional within the ecosystem, allowing frictionless participation in staking and DeFi markets.

Architecture Overview

The stOLAS Vault architecture is built on the ERC4626 standard, ensuring high composability with DeFi applications and clear, audited logic for asset management.

Main components:

Vault Contract (stOLAS): The smart contract that holds OLAS deposits and issues stOLAS shares.

Depositor: A user who deposits OLAS into the Vault and receives stOLAS in return.

Redeemer: A user who burns stOLAS tokens to redeem their underlying OLAS.

Workflow:

A user deposits OLAS tokens into the stOLAS Vault.

The Vault issues an equivalent number of stOLAS tokens based on the current exchange rate (initially 1:1).

As staking rewards accumulate externally, the effective backing per stOLAS token may increase over time.

Users can redeem their stOLAS to withdraw OLAS, realizing their accumulated exposure to staking rewards.

Separation of Voting:

Governance functions are not handled via stOLAS. A separate token, vstOLAS, will be issued to represent voting rights, preserving DeFi liquidity for stOLAS holders while still enabling active participation for those who choose to engage in governance.

Technical Overview

The stOLAS Vault strictly adheres to the ERC4626 specification, offering standardized methods for depositing, withdrawing, minting, and redeeming assets.

Key Functions:

`deposit(uint256 assets, address receiver)`: User deposits OLAS and receives stOLAS shares.

`withdraw(uint256 assets, address receiver, address owner)`: User redeems OLAS by burning stOLAS shares.

`mint(uint256 shares, address receiver)`: User requests a specific number of stOLAS shares, providing the required OLAS amount.

`redeem(uint256 shares, address receiver, address owner)`: User redeems OLAS by burning a specified number of stOLAS shares.

Valuation Mechanics:

Initial Exchange Rate: 1 OLAS = 1 stOLAS at vault launch.

Accrued Yield Effect: Over time, if OLAS staking rewards accumulate in the system (or externally affect the system's perception of value), the effective value of each stOLAS token may rise relative to OLAS.

Reserves and Liquidity:

The Vault maintains full on-chain reserves of OLAS corresponding to issued stOLAS tokens.

Liquidity management strategies may be introduced in the future to optimize large-scale redemptions without harming the stability of the system.

Fee Model:

Initially, no protocol fees are imposed on minting, redeeming, or staking operations.

Future governance via vstOLAS holders may introduce dynamic fee parameters.

DeFi Integrations and Use Cases

stOLAS is built from the ground up to be composable, portable, and integratable across the decentralized finance (DeFi) ecosystem. Its adherence to the ERC4626 vault standard and ERC20 interface enables seamless interactions with existing DeFi protocols and services.

Key Integration Scenarios

Uniswap V3 Liquidity Pools stOLAS can be paired with WETH or other tokens in Uniswap V3 pools. A dedicated smart contract is planned for facilitating these integrations, enabling users to earn trading fees while retaining exposure to OLAS staking yields.

Lending and Collateralization

In future integrations, stOLAS could be used as collateral within lending protocols. By depositing stOLAS, users may be able to borrow stablecoins or other assets, unlocking liquidity without sacrificing staking benefits.

Index Funds and Yield Aggregators

stOLAS can be included in structured DeFi products such as index tokens or yield farming aggregators. This expands access to OLAS exposure for passive DeFi participants.

Bridges and Cross-Chain Use

As LayerZero and other cross-chain messaging protocols evolve, stOLAS can be wrapped or represented on other EVM chains, enabling multichain OLAS staking exposure.

Summary

stOLAS is not just a staking representation — it is a DeFi-native asset. Its structure and standardization make it ideally suited for deep integration with composable on-chain systems.

Security and Audits

Security is a foundational concern of the stOLAS project. All core contracts have undergone internal code review and testing, and the development team is committed to ongoing transparency and auditability.

Internal Audit

A full internal audit has been conducted to identify critical issues in the vault logic, asset accounting, mint/redeem flows, and edge cases. No critical vulnerabilities remain unaddressed in the current codebase.

Future Audits

To provide formal assurance and community trust, the project intends to undergo external audit via the Hunt platform (<https://hunt.r.xyz>). This process is expected to cover:

Vault invariants and accounting logic,

ERC4626 compliance and edge cases,

Asset withdrawal logic under high liquidity stress,

Re-entrancy and privilege boundaries.

The audit timeline will be defined before mainnet launch and results will be made publicly available.

Ongoing Practices

Open-source repository available for community inspection,

Transparent versioning and change logs,

Bug bounty program under consideration post-audit.

Risk Factors

Participation in the stOLAS system, as with all smart contract-based systems, involves inherent risks. Users are encouraged to review the following risk factors before engaging with the protocol.

Smart Contract Risk

Despite audits and testing, bugs or vulnerabilities in the contract logic may lead to unintended behavior, fund loss, or system malfunction. This is a general risk present in all DeFi systems.

Market and Price Risk

The price of OLAS (and thus indirectly stOLAS) may experience volatility due to market forces. Liquidity providers and stOLAS holders may face impermanent loss or asset depreciation.

Liquidity Risk

While the stOLAS vault is designed to be fully backed and redeemable, extreme conditions (e.g., mass withdrawals or market-wide DeFi crises) may temporarily impact redemption availability.

Governance and Upgrade Risk

Future changes to protocol parameters (such as fees or redemption logic) may be proposed and governed by vstOLAS holders. Misaligned incentives or low governance participation could result in suboptimal protocol decisions.

Regulatory Risk

The evolving regulatory landscape around staking tokens, synthetic assets, and DeFi protocols could affect the future legality, accessibility, or utility of stOLAS in certain jurisdictions.

Roadmap

The stOLAS project is structured around a phased rollout to ensure careful scaling, user onboarding, and security assurances.

Phase 1: Launch of stOLAS Vault (Completed)

Deployment of the ERC4626-compliant stOLAS vault contract.

Enable OLAS deposits and stOLAS minting.

Internal audit completed and public code repository opened.

Phase 2: DeFi Integrations (In Progress)

Integration of stOLAS into Uniswap V3 liquidity pools.

Initial partnerships with DeFi aggregators and index fund providers.

Exploration of lending market integrations (e.g., stOLAS as collateral).

Phase 3: Governance Layer Launch

Deployment of vstOLAS — the dedicated governance token.

Establishment of on-chain governance processes.

Initial governance decisions: e.g., fee setting, audit management, protocol upgrades.

Phase 4: Cross-Chain Expansion

Extend stOLAS and vstOLAS to other EVM-compatible blockchains.

Build bridges using secure cross-chain messaging protocols (e.g., LayerZero).

Phase 5: Full Ecosystem Maturity

Enable full DeFi-native OLAS staking experience.

Expand staking options, insurance coverage, and additional yield strategies.

Continuous protocol improvements through governance.

Future Ecosystem Expansion

The launch of stOLAS is only the beginning of a broader vision for OLAS staking liquidity and DeFi composability.

Planned expansions include:

Voting and Governance via vstOLAS:

vstOLAS holders will be empowered to propose and vote on critical protocol parameters, ensuring decentralized control.

Insurance Mechanisms:

Future introduction of insurance pools to protect users against smart contract risks.

Staking Strategies:

Introduction of advanced strategies (e.g., delegated staking, layered yield products) to maximize returns for OLAS holders.

Institutional Adoption:

Build pathways for institutions and funds to participate securely and compliantly in OLAS staking via stOLAS.

Through careful, security-first scaling, stOLAS aims to become a central pillar in the Autonolas and broader DeFi ecosystems.

Glossary

OLAS: The native token of the Autonolas ecosystem, used for staking, coordination, and service incentives.

stOLAS: A liquid staking token representing ownership of staked OLAS held in the stOLAS vault.

vstOLAS: A future governance token granting voting rights over protocol decisions.

Vault: A smart contract managing pooled deposits and issuing ERC20-compliant share tokens.

ERC4626: A standardized interface for tokenized vaults in the Ethereum ecosystem, optimizing composability.

Contact Information

Official Website: <https://olas-lst-app.vercel.app/>

Repository: <https://github.com/kupermind/olas-lst>

For inquiries, partnership opportunities, and security reports, please contact the development team via the official website contact form.