Bridging mechanisms in the context of Olas ecosystem

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Abstract

This document provides an exploration of Olas Protocol's need for bridging mechanisms, summarizes criteria for selecting providers already described in the previous analysis shared with the community, and our short and long-term recommendations on prominent bridging solutions.

Summary

Olas protocol is deployed on various blockchains, including Ethereum, Gnosis, Polygon, Solana, and Arbitrum. The primary motivations for bridge functionality are cross-chain governance, OLAS token bridging and bonding (LP token bridging). The selection of bridge providers for Olas protocol is guided by criteria such as trust minimization, low manual involvement, and support for multiple chains. Since no single provider meets all criteria yet, the recommendation is to prioritize native bridges and consider Wormhole as an alternative due to its high permissionlessness and extensive chain coverage. Looking ahead, this leaves the DAO the option to migrate to a dominant and secure bridging standard, once one emerges, and explore a proprietary bridged OLAS system as the Olas protocol matures.

Motivation and discussion

Olas protocol is already deployed on various blockchains including Ethereum, Gnosis, Polygon, Solana, and Arbitrum, with plans for additional deployments in the future.

The primary motivations for incorporating bridge functionality within the Olas ecosystem are the need for cross-chain governance and cross-chain token transfers (specifically, OLAS utility token and associated LP tokens).

1. Cross-chain governance is required for configuring service registries on L1 (different from Ethereum) and L2 networks. Specifically, Olas protocol needs to send messages from Ethereum-based governance contracts to the target chains. A framework used to evaluate cross-chain messaging protocols for this kind of cross chain governance can be found here. Presently, Olas employs mechanisms like the FxPortal for Polygon, Arbitrary Message Bridge (AMB) for Gnosis Chain, and Arbitrum's native method for L1-L2 messaging for Arbitrum. For Solana, Wormhole's message passing functionality can be used in the future.

2. Cross-chain token transfers: To incentivize deep liquidity for the OLAS token on various chains a bonding mechanism is used.The bonding process involves bridging OLAS token to a target chain, and bridging the corresponding OLAS-ChainToken LP created back to Ethereum.

   Native bridges are currently used for OLAS transfers from Ethereum to Gnosis, Polygon, and Arbitrum. While Wormhole is used for OLAS transfer from Ethereum to Solana. Similarly, the native bridge is used for OLAS-xDAI LP transfer from Gnosis to Ethereum, while Wormhole is used for MATIC-OLAS LP transfer from Polygon to Ethereum, OLAS-wETH LP transfer from Arbitrum to Ethereum, and will be used for wSOL-OLAS LP transfer from Solana to Ethereum.

As already mentioned here, the selection of bridge providers for OLAS is guided by specific criteria, including high degrees of trust minimization, high degree of permissionless, avoidance of vendor lock-in, bridge-provider abstraction, and support for multiple chains.

For cross-chain governance, native bridges remain the most secure and trustworthy option preserving a high degree of permissionless.

In an ideal scenario, for OLAS token bridging, a uniform representation of OLAS token across all the target networks is envisioned, eliminating the need to pass through Ethereum. However, current investigations have not identified a single provider enabling a uniform OLAS token representation across chains while meeting all the above criteria. Specifically, Chainlink CCIP presents challenges with bridging fees and permissioned integration complexities, LayerZero with its lock-in to the OFT token standard and lack of Solana support, and xERC20 with limited chain support and adoption. Therefore, in the current setting, prioritizing the adoption of native bridges is still the most secure and preferred option despite the drawback of a forced detour through Ethereum for bridging between other chains.

For LP token bridging, there is no need to transfer the tokens across chains other than Ethereum. However, there are the same drawbacks for using Chainlink CCIP, LayerZero, or xERC20 for LP token bridging. Moreover, more than often, bridging from the target to Ethereum an LP created on the target chains presents integration complexities, requires access to permissioned token whitelist (as for Arbitrum and Polygon) or built-in solutions for bridging transfer, as for Polygon (see here for more information). Finally, since we already have integration requirements of Wormhole for OLAS token bridging, also for LP-bridging, Wormhole emerges as a viable alternative, offering high permissionless, extensive chain coverage, and a moderate level of trust assumption.

Conclusion and discussion

For now, the recommendation is to prioritize native bridges where available for cross-governance purposes and for OLAS token bridging. In the absence of native bridges for OLAS bridging and, in general, for LP-token bridging, Wormhole stands out as a viable alternative, offering minimal manual intervention, extensive chain coverage, and a moderate level of trust assumption.

In the future, we recommend migrating to the dominant and most secure standard in the maturing bridging landscape as a messaging layer and creating a proprietary bridged OLAS system, leveraging only the messaging layers of third-party bridge providers. The feasibility of this vision is guaranteed by Autonolas' significant control over the "canonical" bridged tokens used for bonding and staking. This should allow the Autonolas DAO to migrate from the current disjoint token representations to a unified cross-chain OLAS token in the future.