Loopscale Integration Review

July 2025

Prepared by:

HIGHLAND SECURITY

PUBLIC

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About Highland Security

Highland Security is a leading web3 security company providing consulting services with more than a decade of security expertise. We are experts in web3 security, product security, smart contract security, security automation, and web3 risk management. We offer our clients tailored web3 security services that can provide value at any stage of maturity or product development lifecycle.

Our goal is to establish a long lasting security partnership for our clients that continues beyond the engagement. We consider the unique business needs and situations of our clients on a case-by-case basis and adapt our approach to provide the best value. Contact us at our website or hello@highlandsecurity.io to schedule a free consultation with our team today. To keep up with our latest endeavors and research follow us on X @0xHighlandSec.

Executive Summary

Engagement Summary

During the course of our testing of the Loopscale oracle integration of the Etherfuse RWA protocol, the testing team found that the source code version reviewed adhered to current oracle and Solana security best practices. After addressing the findings and observations captured in this report and if no other major subsequent changes are made to the code, we believe the security posture of this integration is satisfactory in mitigating the likely risks from threat actors. Importantly our review was only focused on the oracle integration and files below, additional audits and security assessments should be performed on the protocol codebase as a whole to validate the security of other components.

The following table summarizes the results of this assessment:

Workstream	**Critical**	**High**	**Medium**	**Low**	**Info**
Etherfuse Stablebond Oracle Integration	-	-	-	-	2

Background and scope

In July 2025 Highland Security performed a source code review of Loopscale Solana program integration of Etherfuse's stablebond collateral asset. The goal of the assessment was to evaluate Loopscale's integration of the pricing mechanics of stablebond as collateral using a Pyth and Switchboard pricing oracles against security best practices and secure configuration. During our review we performed source code analysis of the changes, provided recommendations, and a professional opinion of the in scope source code security. Specifically we performed the following:

Name	Description	Scope

Source Code Review	A security code review of Loopscale's integration of Etherfuse's stablebond oracle pricing into the Loopscale Solana programs and SDK to assess the security of the product against likely threats.	• LoopscaleLabs/loopscale-program-library branch *feat/Etherfuse*: • program-utils/src/utils.rs • programs/loopscale/Cargo.toml • programs/loopscale/src/error.rs • programs/loopscale/src/state/oracle.rs • programs/loopscale/src/tests/oracle/etherfuse.rs • programs/loopscale/src/utils/oracle/etherfuse.rs • programs/loopscale/src/utils/oracle/fx.rs • programs/loopscale/src/utils/oracle/mod.rs • programs/loopscale/src/utils/oracle/pyth.rs • programs/loopscale/src/utils/oracle/ratex.rs

Approach

The following was our approach to execute this engagement:

- *Kick off & planning* - During this phase the team worked with project sponsors to identify key stakeholders for the assessment. Documentation and access to source code and environments was also provisioned as part of this phase. We also performed interviews with key stakeholders to understand how the product works, key product features, and the team's approach to security.

- *Fieldwork* - Once the relevant details for the engagement was collected the fieldwork fieldwork activities started with a documentation and source codereview to familiarize the team with the product functionality and create an efficient assessment approach. We then performed manual review of the in scope components to identify vulnerability and security issues related to the oracle integration.

- *Reporting & verbal briefings* - After the fieldwork was completed, the Highland Security team compiled the information gathered into a draft report document and reviewed the output with project stakeholders. This was an iterative process with feedback from the team being incorporated into a final deliverable.

Positives Practices

- *Oracle Staleness Checks:* During our review we identified data liveness checks for the oracle's being integrated into the protocol. These checks prevent stale price data from being use

- *Pyth FX Price Handling:* The Pyth oracle returns Fx price data in format quote / asset, which is counterintuitive to other providers. Loopscale has correctly converted and uses the correct pricing when handling the Pyth Fx data.

- *Oracle mint type checking:* We noted that Loopscale has correctly implemented both verification of the oracle payment feed types and Etherfuse bond mint account using the program key. The payment feed types correctly implements an allow listing approach for only supported FX currencies.

Findings Summary

No significant issues were identified during this source code review and the Highland Security team provided some informational configuration related recommendations to the Loopscale team.