

Possum — Portals V_I

Security Review

Ethan Bennett

Darklinear Solutions

Contents

About Darklinear Solutions	I
Introduction	I
Finding	I
Users can bypass portalEnergy calculations when unstaking to steal extra yield from the contract	I

About Darklinear Solutions

Darklinear Solutions leverages years of expertise in smart contract and software engineering to provide unrivaled security reviews for blockchain applications. Learn more at darklinear.com.

Introduction

Possum's Portals allow users to deposit yield-earning assets to receive their yield upfront. This review consists of an issue found in the Hats Finance competitive audit for Possum's Portals V1 in November 2023. It does not represent a full and exhaustive audit of the protocol.

Finding

Users can bypass portalEnergy calculations when unstaking to steal extra yield from the contract

Severity: High risk

Description: An attacker can inflate their portalEnergy infinitely by exploiting the rounding error on L314 of Portal.sol — since the division will round down, any `_amount` small enough to make `_amount * maxLockDuration` less than `SECONDS_PER_YEAR` will return 0. Any logic that uses the raw `_amount` proceeds as intended, so the attacker still receives their unstaked funds like they normally would. But they also keep all the portalEnergy they built up in the process.

Proof of concept: It is possible that this could be exploited more efficiently or with greater impact than the loop in this PoC, but this attack is already significant enough to consider it high-risk: portalEnergy has real value within Portal, and that value can be stolen without limit by any attacker.

Recommendation: The simplest solution would likely be instituting a minimum for the `_amount` of principal tokens in both `stake` and `unstake`. Note that this minimum is a function of the `maxLockDuration`: it should not be referenced explicitly, since it will change with `maxLockDuration` (which, itself, is designed to change). As is, the minimum number of principal tokens with which the contract operates properly is 5.

You could check for this dynamically with:

```
require (_amount * maxLockDuration >= SECONDS_PER_YEAR)
```

The reason I suggest this over adjusting the math is that rounding up instead of down could present a different risk in this context. However, if it is important to retain this functionality for small `_amounts`, the math could be reworked instead.