AUDIT REPORT

PolySafe

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Overview

Project Summary

Project Name	PolySafe Protocol
Description	PolySafe (PS) allows users to stake MATIC and its native token, PS to earn daily rewards in PS and users can sell it for MATIC.
Platform	Polygon; Solidity
Codebase	Verified Smart Contract

Audit Summary

Delivery Date	Sept. 25th, 2021
Method of Audit	Static Analysis, Manual Review
Consultants Engaged	1
Timeline	Sept. 21, 2021 - Sept. 22, 2021 & Sept. 24, 2021 - Sept. 25, 2021.

Vulnerability Summary

Total Issues	2
Total Critical	0
Total Major	0
Total Minor	1
Total Informational	1

Introduction

PolyStake (powered by PolySafe)

- PolyStake is a platform that allows users to deposit MATIC to get PolySafe Token using which multiple actions can be performed.
- PolySafe tokens can be staked without any limit on this platform for users to earn more reward.
- This also includes a referral model which allows users to earn up to 3 levels with 2%, 1% and 1% for level 1,2,3 respectively.
- It also consists of AIRDROPS that can be claimed by completing the challenges listed which also includes 3 side games which can be played like Mini Lottery, Simple Duel and Simple Bet.

Tokenomics:

Token Supply: 1,000,000 (Fixed)

Fee Structure: 4% Marketing (from MATIC deposits)
4% Administration Social Network (from Staking)
4% Dev

Airdrop: 100 $PS weekly (Max. airdrop value 100,000 $PS)

Lock Period After Staking: 7 days

Findings

ID	Title	Severity
ISSUE: 01	Addresses not verified in functions	Low
ISSUE: 02	Function should be declared external	Informational

Issue-01: Addresses Not Verified In Functions

Severity: Low

Description:

These functions in the PolySafe contract do not verify if the supplied address input is non-0.

Locations:

PolySafe: 268
PolySafe: 346
PolySafe: 355
PolySafe: 371
PolySafe: 380
PolySafe: 469
PolySafe: 474

Recommendation:

Consider adding a requirement to the function in order to verify that the supplied address is non-0.

Example:

```
require(
        input_address != address(0),
        "invalid address"
);
```


Issue-02: Function Should Be Declared External

Severity: Informational

Description:

The following functions in the PolySafe contract should be declared external, as it is not used from within the contract itself and would reduce gas consumption by using the arguments from callData instead of allocating memory space.

Location:

PolySafe: 268 stakeMatic
PolySafe: 319 stakeToken
PolySafe: 336 unStakeToken
PolySafe: 396 claimToken_M
PolySafe: 414 claimToken_T
PolySafe: 418 sellToken
PolySafe: 437 claimAirdrop
PolySafe: 450 claimAirdropM
PolySafe: 460 withdrawRef
PolySafe: 469 getUserUnclaimedTokens_M
PolySafe: 474 getUserUnclaimedTokens_T
PolySafe: 483 getUserTimeToNextAirdrop
PolySafe: 487 getUserBonAirdrop
PolySafe: 496 getUserCountAirdrop
PolySafe: 504 getContractTokenBalance
PolySafe: 508 getAPY_T
PolySafe: 516 getUserMaticBalance
PolySafe: 520 getUserTokenBalance
PolySafe: 524 getUserMaticStaked
PolySafe: 528 getUserTokenStaked
PolySafe: 532 getUserTimeToUnstake
PolySafe: 536 getTokenPrice
PolySafe: 542 maticToToken
PolySafe: 550 getUserDownlineCount
PolySafe: 554 getUserReferralBonus
PolySafe: 562 getUserReferralWithdrawn
PolySafe: 566 getContractLaunchTime
PolySafe: 574 getTokenSoldToday
PolySafe: 578 getTokenAvailableToSell
PolySafe: 582 getTimeToNextDay

Current:

function function_name **public** {}

Recommendation:

Refactor the visibility of these functions from public to external function function_name **external** {}

Conclusion

Smart contracts within the scope were manually reviewed and analyzed with a static analysis mechanism. For the contract, a high-level description of functionality was presented in the introduction section of the report. Audit report contains all found security vulnerabilities and other issues in the reviewed code. Overall quality of reviewed contracts with respect to security is good. We found 2 low/informational level vulnerabilities, which do not have any significant security impact. The contract is safe and does not have any backdoors.

Smart Contract Flow Diagram:

https://ipfs.io/ipfs/QmV6RKKi5YRYmL2QjmBqKfY3TRnGp6DZMQBDCXDXXTjZ2z

Appendix

Finding Categories:

Gas Optimization

Gas Optimization refers to exhibits that do not affect the functionality but generate different, optimal EVM opcodes resulting in a reduction on the total gas cost of a transaction.

Arithmetic

Arithmetic exhibits entail findings that relate to mishandling of math formulas, such as overflows, incorrect operations etc.

Logical Issue

Logical Issue findings are exhibits that detail a fault in the logic of the linked code, such as an incorrect notion on how block timestamp works.

Control Flow

Control Flow findings concern the access control imposed on functions, such as owner-only functions being invoke-able by anyone under certain circumstances.

Volatile Code

Volatile Code findings refer to segments of code that behave unexpectedly on certain edge cases that may result in a vulnerability.

Data Flow

Data Flow checks ensure covering faults where data is handled at rest and in memory, such as the result of a struct assignment operation affecting an in-memory struct rather than an in-storage one.

Coding Style

Coding Style findings usually do not affect the generated byte-code and comment on how to make the codebase more legible and as a result easily maintainable.

Inconsistency

Inconsistency findings refer to functions that should seemingly behave similarly yet contain different code, such as a constructor assignment imposing different require statements on the input variables than a setter function.

Magic Numbers

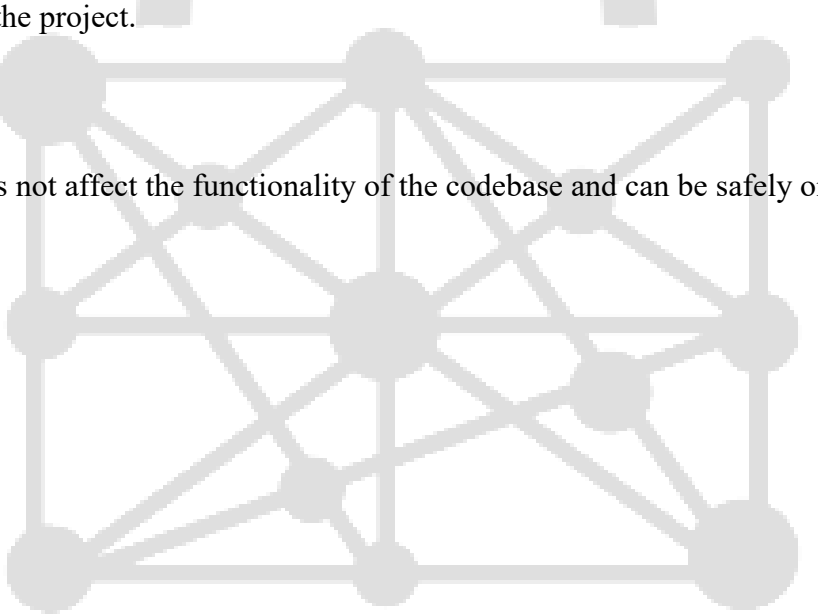
Magic Number findings refer to numeric literals that are expressed in the codebase in their raw format and should otherwise be specified as constant contract variables aiding in their legibility and maintainability.

Compiler Error

Compiler Error findings refer to an error in the structure of the code that renders it impossible to compile using the specified version of the project.

Dead Code

Code that otherwise does not affect the functionality of the codebase and can be safely omitted.



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