CERTIK

Security Assessment

TOWER

Apr 25th, 2021

Summary

This report has been prepared for tower smart contracts, to discover issues and vulnerabilities in the source code of their Smart Contract as well as any contract dependencies that were not part of an officially recognized library. A comprehensive examination has been performed, utilizing Dynamic Analysis, Static Analysis, and Manual Review techniques.

The auditing process pays special attention to the following considerations:

- Testing the smart contracts against both common and uncommon attack vectors.
- Assessing the codebase to ensure compliance with current best practices and industry standards.
- Ensuring contract logic meets the specifications and intentions of the client.
- Cross referencing contract structure and implementation against similar smart contracts produced by industry leaders.
- Thorough line-by-line manual review of the entire codebase by industry experts.

The security assessment resulted in 2 informational findings. We recommend addressing these findings to ensure a high level of security standards and industry practices. We suggest recommendations that could better serve the project from the security perspective:

- Enhance general coding practices for better structures of source codes;
- Add enough unit tests to cover the possible use cases given they are currently missing in the repository;
- Provide more comments per each function for readability, especially contracts are verified in public;
- Provide more transparency on privileged activities once the protocol is live.

Overview

Project Summary

Project Name	TOWER
Platform	Ethereum
Language	Solidity
Codebase	crazydefenseheroes/tower-ethereum-contracts
Commits	017d4f073f114060601d2186433039489f66ceb2

Audit Summary

Delivery Date	Apr 25, 2021
Audit Methodology	Manual Review
Key Components	

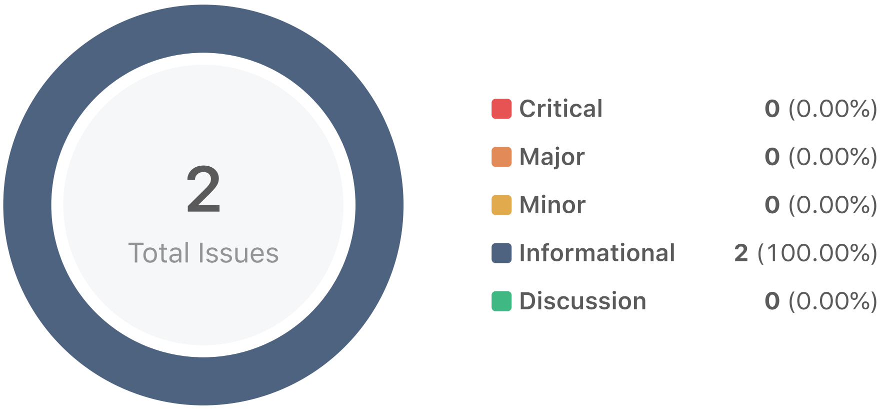
Vulnerability Summary

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

Audit Scope

ID	file	SHA256 Checksum
TOW	TOWER.sol	458e3c6b6789aa19b2939c846f74f084a836ba9eb2046f08a50023608ce3c0a1

Findings



ID	Title	Category	Severity	Status
TOW-01	Code Conventions	Coding Style	Informational	Declined
TOW-02	Zero Amount	Logical Issue	Informational	Declined

TOW-01 | Code Conventions

Category	Severity	Location	Status
Coding Style	● Informational	TOWER.sol: 20	⊗ Declined

Description

It's better to use `<` instead of `!=`.

Recommendation

Consider using `<` instead of `!=`, like below:

```
for (uint256 i = 0; i < holders.length; ++i) {
  ...
}
```

TOW-02 | Zero Amount

Category	Severity	Location	Status
Logical Issue	Informational	TOWER.sol: 21	Declined

Description

There is no validation to check whether `amounts[i]` is zero.

Recommendation

Consider adding checks like below:

```
require(amounts[i]>0, "TOWER: amount of holder is zero");
_mint(holders[i], amounts[i]);
```

Appendix

Finding Categories

Gas Optimization

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

Mathematical Operations

Mathematical Operation 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 findings describe faults in the way 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.

Language Specific

Language Specific findings are issues that would only arise within Solidity, i.e. incorrect usage of private or delete .

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.

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About

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