CERTIK

Security Assessment

Cointribute Token

May 20th, 2021

Summary

This report has been prepared for Cointribute Token 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 findings that ranged from critical to informational. 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	Cointribute Token
Description	A typical BEP-20 implementation which deducts two types of fees per token transfer, one for the team and one for the donation wallet.
Platform	BSC
Language	Solidity
Codebase	https://github.com/cointribute/bep20-contract
Commits	1. 9cfca12e6f71b065ae6f15694aa88a2594b4f80a 2. 4ad7782bcbaaa3a1d5bc5f49d1c2257f87e9ce46

Audit Summary

Delivery Date	May 20, 2021
Audit Methodology	Static Analysis, Manual Review
Key Components	BEP-20 Token

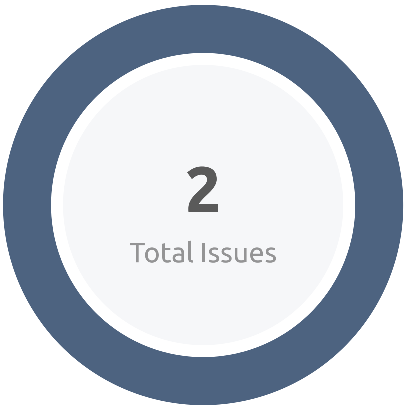
Vulnerability Summary

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

Audit Scope

ID	file	SHA256 Checksum
CTB	CTBToken.sol	3c552848baad105a364e84a4f27e0023574373ebba711df8e5665a3327d2fa82

Findings



- **Critical** **0** (0.00%)
- **Major** **0** (0.00%)
- **Minor** **0** (0.00%)
- **Informational** **2** (100.00%)
- **Discussion** **0** (0.00%)

ID	Title	Category	Severity	Status
CTB-01	User-Defined Getters	Gas Optimization	Informational	Resolved
CTB-02	Inexistent Input Sanitization	Logical Issue	Informational	Resolved

CTB-01 | User-Defined Getters

Category	Severity	Location	Status
Gas Optimization	Informational	CTBToken.sol: 339~345	Resolved

Description

The linked variables contain user-defined getter functions that are equivalent to their name barring for an underscore (`_`) prefix / suffix.

Recommendation

We advise that the linked variables are instead declared as `public` and that they are renamed to their respective getter's name as compiler-generated getter functions are less prone to error and much more maintainable than manually written ones.

Alleviation

The development team opted to consider our references, changed the visibility of the linked state variables to `public`, adjusted their naming and removed the user-defined getter functions.

CTB-02 | Inexistent Input Sanitization

Category	Severity	Location	Status
Logical Issue	Informational	CTBToken.sol: 347~353	Resolved

Description

The constructor function fails to check the values of its arguments.

Recommendation

We advise to either add the relative `require` statements, checking the input values against the zero address, or utilize each wallet's setter function.

Alleviation

The development team opted to consider our references and added a `require` statement, ensuring inequality of the arguments and the zero address.

Appendix

Finding Categories

Gas Optimization

Gas Optimization findings 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 findings relate to mishandling of math formulas, such as overflows, incorrect operations etc.

Logical Issue

Logical Issue findings 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 but rather 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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