CERTIK

Security Assessment

GNCDeFi

Apr 5th, 2021

Summary

This report has been prepared for GNCDeFi 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	GNCDeFi
Platform	Ethereum
Language	Solidity
Codebase	https://github.com/gncdefi/contract
Commits	010eefd3e4e01d01bbe9ec25bb4206e20a9c6162

Audit Summary

Delivery Date	Apr 05, 2021
Audit Methodology	Static Analysis, Manual Review
Key Components	GNCToken

Vulnerability Summary

Total Issues	5
Critical	0
Major	0
Minor	1
Informational	4
Discussion	0

Audit Scope

ID	file	SHA256 Checksum
GNC	GNCToken.sol	4780f20d32dae237bf582fe9e4a91dcafabf47efc3627ab88f286871800da2b7

Findings

Critical	0 (0.00%)
Major	0 (0.00%)
Minor	1 (20.00%)
Informational	4 (80.00%)
Discussion	0 (0.00%)

ID	Title	Category	Severity	Status
GNT-01	Wrong EIP-20 Implementation	Volatile Code	Minor	Pending
GNT-02	Wrong Contract Name	Coding Style	Informational	Pending
GNT-03	Centralized GNC Holding Position	Business Model	Informational	Pending
GNT-04	Missing Zero Address Validation	Volatile Code	Informational	Pending
GNT-05	Unnecessary Fallback Function	Business Mode	Informational	Pending

GNT-01 | Wrong EIP-20 Implementation

Category	Severity	Location	Status
Volatile Code	Minor	../../../CertiKProject/certik-audit-projects/gncdefi/projects/gncdefi/GNCToken.sol: 65~66, 74~75, 49~50, 33~34, 37~39	Pending

Description

According to EIP-20, functions `transfer()`, `transferFrom()`, and `approve()` should always have a `bool` return value, for the ERC20 caller to handle, as the callers must not assume that `false` is never returned.

Recommendation

Recommend using OpenZeppelin's ERC20.

GNT-02 | Wrong Contract Name

Category	Severity	Location	Status
Coding Style	Informational	../../../CertiKProject/certik-audit-projects/gncdefi/projects/gncdefi/GNCToken.sol: 86	Pending

Description

Seems the function name should be `GNCToken` instead of `GCNToken`

GNT-03 | Centralized GNC Holding Position

Category	Severity	Location	Status
Business Model	Informational	../../../CertiKProject/certik-audit-projects/gncdefi/projects/gncdefi/GNCToken.sol: 95~96	Pending

Description

The total supply of the GNC token is assigned to the contract owner at the beginning

Recommendation

Given the token itself is not mintable, the business design of having one address holding all tokens sounds reasonable. Once the token goes live, we assume many transactions would involve the wallet unlock of the owner address and the team shall make enough efforts to restrict the access of the private key.

GNT-04 | Missing Zero Address Validation

Category	Severity	Location	Status
Volatile Code	Informational	../../../CertiKProject/certik-audit-projects/gncdefi/projects/gncdefi/GNCToken.sol: 65~66, 49~50, 74~75	Pending

Description

There are functions missing `address(0)` validation:

- `transferFrom()`: missing validation on `_from` and `_to`
- `transfer()`: missing validation on `_to`
- `approve()`: missing validation on `_spender`

GNT-05 | Unnecessary Fallback Function

Category	Severity	Location	Status
Business Mode	Informational	../../../CertiKProject/certik-audit-projects/gncdefi/projects/gncdefi/GNCToken.sol: 99~101	Pending

Description

In contract `GCNToken`, the fallback function is implemented with always reverting whenever anyone send Ether to the contract. According to the Solidity Documentation:

If no such function exists, the contract cannot receive Ether through regular transactions and throws an exception.

Remove current implementation of current fallback function can also reject receiving external Ether transfers.

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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