



Security Assessment

Venus - Token Converter Addendum

CertiK Assessed on Feb 15th, 2024





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Venus - Token Converter Addendum

The security assessment was prepared by Certik, the leader in Web3.0 security.

Executive Summary

TYPES

DeFi

ECOSYSTEM

Binance Smart Chain
(BSC)

METHODS

Manual Review, Static Analysis

LANGUAGE

Solidity

TIMELINE

Delivered on 02/15/2024

KEY COMPONENTS

N/A

CODEBASE

<https://github.com/VenusProtocol/protocol-reserve>

View All in Codebase Page

COMMITTS

base: [d5fb61226ff7a4f20f5442b36b1a5aadf8a8d29d](#)update 1: [987a2874e487076318e0f4f8d5e173ab9111e2a4](#)

View All in Codebase Page

Vulnerability Summary



1

Total Findings

1

Resolved

0

Mitigated

0

Partially Resolved

0

Acknowledged

0

Declined

0 Critical

Critical risks are those that impact the safe functioning of a platform and must be addressed before launch. Users should not invest in any project with outstanding critical risks.

0 Major

Major risks can include centralization issues and logical errors. Under specific circumstances, these major risks can lead to loss of funds and/or control of the project.

1 Medium

1 Resolved



Medium risks may not pose a direct risk to users' funds, but they can affect the overall functioning of a platform.

0 Minor

Minor risks can be any of the above, but on a smaller scale. They generally do not compromise the overall integrity of the project, but they may be less efficient than other solutions.

0 Informational

Informational errors are often recommendations to improve the style of the code or certain operations to fall within industry best practices. They usually do not affect the overall functioning of the code.

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CODEBASE | VENUS - TOKEN CONVERTER ADDENDUM

Repository

<https://github.com/VenusProtocol/protocol-reserve>


Commit

base: [d5fb61226ff7a4f20f5442b36b1a5aadf8a8d29d](#)

update 1: [987a2874e487076318e0f4f8d5e173ab9111e2a4](#)

AUDIT SCOPE | VENUS - TOKEN CONVERTER ADDENDUM

1 file audited ● 1 file without findings

ID	Repo	File	SHA256 Checksum
● ATT	VenusProtocol/protocol-reserve	 AbstractTokenConverter.sol	a21984da425ce7cf0f820965af29b05670a628c50e4f84835b96352c1d0f2e4d

APPROACH & METHODS

VENUS - TOKEN CONVERTER ADDENDUM

This report has been prepared for Venus to discover issues and vulnerabilities in the source code of the Venus - Token Converter Addendum project as well as any contract dependencies that were not part of an officially recognized library. A comprehensive examination has been performed, utilizing Manual Review and Static Analysis 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:

- Testing the smart contracts against both common and uncommon attack vectors;
- Enhance general coding practices for better structures of source codes;
- Add enough unit tests to cover the possible use cases;
- Provide more comments per each function for readability, especially contracts that are verified in public;
- Provide more transparency on privileged activities once the protocol is live.

SUMMARY | VENUS - TOKEN CONVERTER ADDENDUM

This audit concerns the changes made in files outlined in:

- *Protocol Reserve:* PR-71

Note that any centralization risks present in the existing codebase before the PR were not considered in this audit. We recommend all users carefully review the centralization risks, much of which can be found in our previous audits, which can be found here: <https://skynet.certik.com/projects/venus>.

Overview

The purpose of PR-71 is to provide a fix for an issue with the private conversions logic in which the amount of tokens one converter sends to a secondary converter is set to a value higher than the secondary converter can accommodate, causing a revert in the swap logic. This occurs because function `_getAmountIn()` rounded up the calculated value in all cases. The resolution is to adjust the calculation performed in `_getAmountIn()` in order to prevent this issue.

THIRD PARTY DEPENDENCIES

VENUS - TOKEN CONVERTER ADDENDUM

The protocol is serving as the underlying entity to interact with third party protocols. The third parties that the contracts interact with are:

- ERC20 Tokens
- Oracles

The scope of the audit treats third party entities as black boxes and assumes their functional correctness. However, in the real world, third parties can be compromised and this may lead to lost or stolen assets. Moreover, updates to the state of a project contract that are dependent on the read of the state of external third party contracts may make the project vulnerable to read-only reentrancy. In addition, upgrades of third parties can possibly create severe impacts, such as increasing fees of third parties, migrating to new LP pools, etc.

FINDINGS | VENUS - TOKEN CONVERTER ADDENDUM

**1**

Total Findings

0

Critical

0

Major

1

Medium

0

Minor

0

Informational

This report has been prepared to discover issues and vulnerabilities for Venus - Token Converter Addendum. Through this audit, we have uncovered 1 issues ranging from different severity levels. Utilizing the techniques of Manual Review & Static Analysis to complement rigorous manual code reviews, we discovered the following findings:

ID	Title	Category	Severity	Status
ATT-01	Rounding Is Not In Favor Of The Protocol For User Facing Functions	Logical Issue	Medium	● Resolved

ATT-01 | ROUNDING IS NOT IN FAVOR OF THE PROTOCOL FOR USER FACING FUNCTIONS

Category	Severity	Location	Status
Logical Issue	● Medium	AbstractTokenConverter.sol (Base): 576~579, 1135~1136	● Resolved

Description

When calculating the amount of tokenIn for a user to provide for a given amount of tokenOut the logic rounds down. This allows a user to obtain up to $(\text{tokenInToOutConversion} - 1) / \text{EXP_SCALE}$ tokenOut without providing any tokenIn.

Recommendation

We recommend rounding in favor of the protocol during user interactions and adjusting the logic to round down only if it is during a private conversion.

Alleviation

[Certik, 02/15/2024]: The client made changes resolving this finding in commits

- [5486b9909b5d1a2257b8ac7287509e4cd697cd2b](#);
- [684155a8f026fd18555262ca9318fa8038209533](#).

APPENDIX | VENUS - TOKEN CONVERTER ADDENDUM

Finding Categories

Categories	Description
Logical Issue	Logical Issue findings indicate general implementation issues related to the program logic.

Checksum Calculation Method

The "Checksum" field in the "Audit Scope" section is calculated as the SHA-256 (Secure Hash Algorithm 2 with digest size of 256 bits) digest of the content of each file hosted in the listed source repository under the specified commit.

The result is hexadecimal encoded and is the same as the output of the Linux "sha256sum" command against the target file.

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