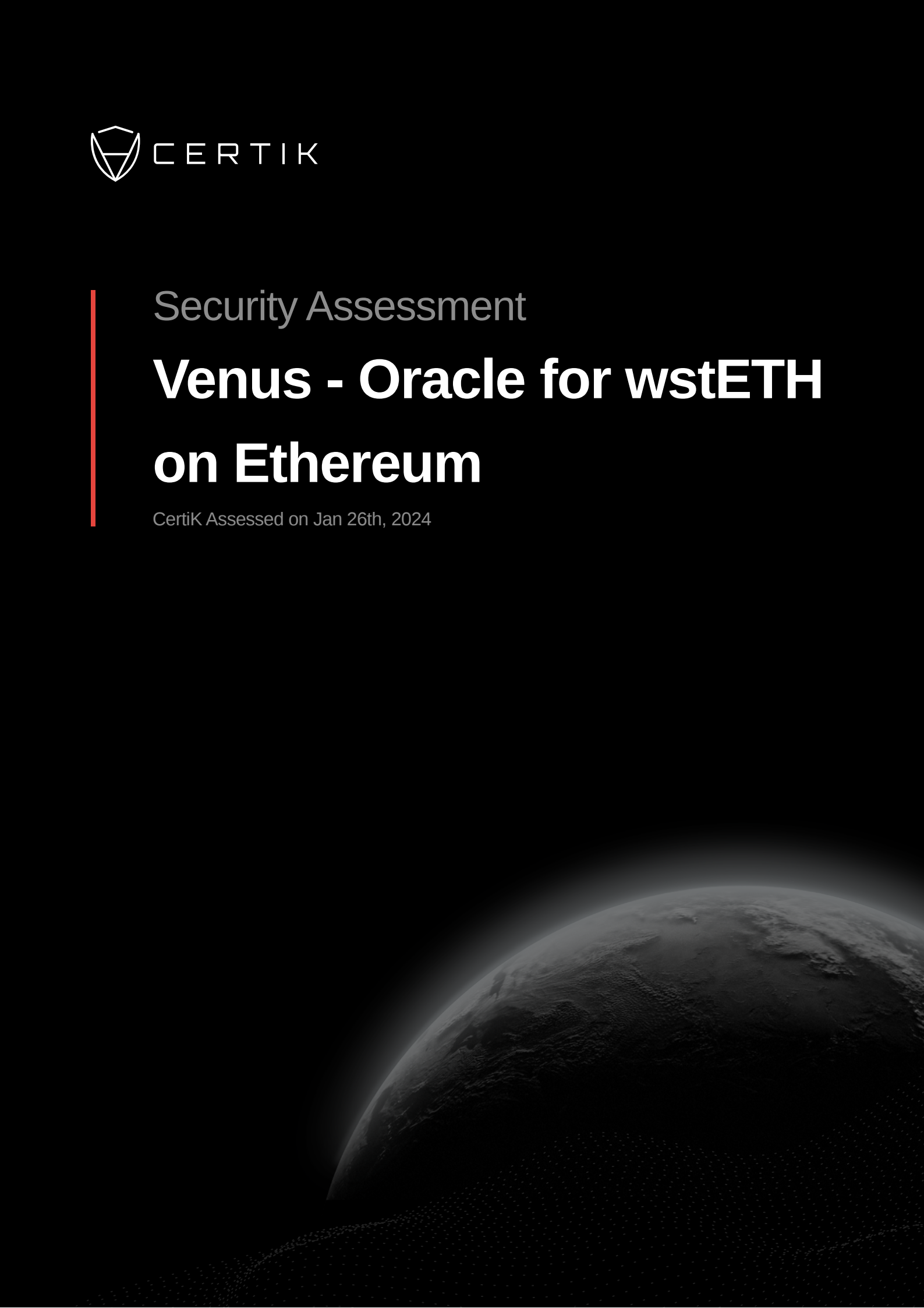
CERTIK

Security Assessment

Venus - Oracle for wstETH on Ethereum

CertiK Assessed on Jan 26th, 2024



CertiK Assessed on Jan 26th, 2024

Venus - Oracle for wstETH on Ethereum

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

Executive Summary

TYPES	ECOSYSTEM	METHODS
DeFi	Ethereum (ETH)	Manual Review, Static Analysis

LANGUAGE	TIMELINE	KEY COMPONENTS
Solidity	Delivered on 01/26/2024	N/A

CODEBASE
https://github.com/VenusProtocol/oracle
View All in Codebase Page

COMMITS
Base: e1b730d67997cfe186e209e601c6236ee0ece846
Update1: d4fee8f71f52fe07b6066cb0d1e5774982c342c4
View All in Codebase Page

Vulnerability Summary

2	2	0	0	0	0
Total Findings	Resolved	Mitigated	Partially Resolved	Acknowledged	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.
0	Medium		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.
2	Informational	2 Resolved	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 - ORACLE FOR WSTETH ON ETHEREUM

Repository

https://github.com/VenusProtocol/oracle

Commit

Base: e1b730d67997cfe186e209e601c6236ee0ece846
Update1: d4fee8f71f52fe07b6066cb0d1e5774982c342c4

AUDIT SCOPE | VENUS - ORACLE FOR WSTETH ON ETHEREUM

1 file audited ● 1 file without findings

ID	Repo	File	SHA256 Checksum
WET	VenusProtocol/oracle	WstETHOracle.sol	45cb0bb49145ed38b5f10efc744e6ebb184 28c17791338fe2f961257828a40d8

APPROACH & METHODS

VENUS - ORACLE FOR WSTETH ON ETHEREUM

This report has been prepared for Venus to discover issues and vulnerabilities in the source code of the Venus - Oracle for wstETH on Ethereum 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.

DEPENDENCIES | VENUS - ORACLE FOR WSTETH ON ETHEREUM

Third Party Dependencies

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

- Oracles
- Lido

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.

Recommendations

We recommend constantly monitoring the third parties involved to mitigate any side effects that may occur when unexpected changes are introduced, as well as vetting any third party contracts used to ensure no external calls can be made before updates to its state.

OVERVIEW | VENUS - ORACLE FOR WSTETH ON ETHEREUM

This audit concerns the changes made in files outlined in:

- PR-155

The purpose of this PR is to introduce a specialized oracle for wstETH that assumes a 1 to 1 peg between stETH and WETH, as opposed to utilizing an external oracle to fetch the stETH price or wstETH price. This adds a trust assumption that Lido will function as intended, returning the correct conversion rate and ensuring the peg.

The Venus wstETH oracle calculates the price by first fetching the amount of stETH that corresponds to 1 wstETH from the stETH contract. It then multiplies the resulting amount of stETH by the price of WETH, fetched from the resilient oracle. This is where the 1 to 1 peg is assumed as the price of WETH is used as opposed to the price of stETH.

FINDINGS | VENUS - ORACLE FOR WSTETH ON ETHEREUM

2	0	0	0	0	2
Total Findings	Critical	Major	Medium	Minor	Informational

This report has been prepared to discover issues and vulnerabilities for Venus - Oracle for wstETH on Ethereum. Through this audit, we have uncovered 2 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
WET-01	Specific Imports Not Consistently Used	Inconsistency	Informational	Resolved
WET-02	Typos And Inconsistencies	Inconsistency	Informational	Resolved

WET-01 | SPECIFIC IMPORTS NOT CONSISTENTLY USED

Category	Severity	Location	Status
Inconsistency	Informational	WstETHOracle.sol (Base): 4~5	Resolved

Description

Many of the added files use specific imports, however, some import the entire file.

Recommendation

We recommend using specific imports to clarify what is used and remain consistent.

Alleviation

`[CertiK, 01/17/2024]`: The client made the recommended changes in commit d4fee8f71f52fe07b6066cb0d1e5774982c342c4.

WET-02 | TYPOS AND INCONSISTENCIES

Category	Severity	Location	Status
Inconsistency	Informational	WstETHOracle.sol (Base): 58	Resolved

Description

In the function `getPrice()`, "wstETH" is misspelled as "wsETH".

Recommendation

We recommend fixing the typo mentioned above.

Alleviation

`[CertiK, 01/17/2024]`: The client made the recommended changes in commit a51101b1d06c8c042b5e67351e0d786d79b38147.

APPENDIX | VENUS - ORACLE FOR WSTETH ON ETHEREUM

Finding Categories

Categories	Description
Inconsistency	Inconsistency findings refer to different parts of code that are not consistent or code that does not behave according to its specification.

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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