CERTIK

Security Assessment

Madworld

Nov 12th, 2021

Table of Contents

Summary

Overview

- Project Summary
- Audit Summary
- Vulnerability Summary
- Audit Scope

Findings

- UMA-01 : Unlocked Compiler Version
- UMA-02 : Initial token distribution

Appendix

Disclaimer

About

Summary

This report has been prepared for Madworld to discover issues and vulnerabilities in the source code of the Madworld project as well as any contract dependencies that were not part of an officially recognized library. A comprehensive examination has been performed, utilizing 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;
- 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.

Overview

Project Summary

Project Name	Madworld
Platform	other
Language	Solidity
Codebase	https://github.com/madworld-io/madworld-contracts
Commit	8581761acb831e11c5bef4d73626c3fae8ab6d01

Audit Summary

Delivery Date	Nov 12, 2021
Audit Methodology	Static Analysis, Manual Review
Key Components	

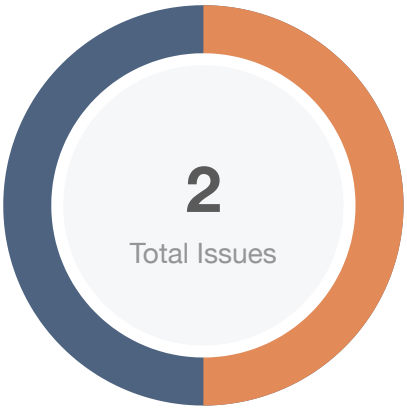
Vulnerability Summary

Vulnerability Level	Total	Pending	Declined	Acknowledged	Partially Resolved	Resolved
Critical	0	0	0	0	0	0
Major	1	0	0	0	0	1
Medium	0	0	0	0	0	0
Minor	0	0	0	0	0	0
Informational	1	0	0	0	0	1
Discussion	0	0	0	0	0	0

Audit Scope

ID			File	SHA256 Checksum

Findings



Critical	0 (0.00%)
Major	1 (50.00%)
Medium	0 (0.00%)
Minor	0 (0.00%)
Informational	1 (50.00%)
Discussion	0 (0.00%)

ID	Title	Category	Severity	Status
UMA-01	Unlocked Compiler Version	Language Specific	Informational	Resolved
UMA-02	Initial token distribution	**Centralization / Privilege**	**Major**	Resolved

UMA-01 | Unlocked Compiler Version

Category	Severity	Location	Status
Language Specific	Informational	contracts/token/ERC20/UMAD.sol (8581761): 3	Resolved

Description

The contract has unlocked compiler version. An unlocked compiler version in the source code of the contract permits the user to compile it at or above a particular version. This, in turn, leads to differences in the generated bytecode between compilations due to differing compiler version numbers. This can lead to an ambiguity when debugging as compiler specific bugs may occur in the codebase that would be hard to identify over a span of multiple compiler versions rather than a specific one.

Recommendation

We advise that the compiler version is instead locked at the lowest version possible that the contract can be compiled at. For example, for version `^0.7.0` the contract should contain the following line:

```
pragma solidity 0.7.0;
```

Alleviation

Fixed in commit: ef87959b5b0b167119bc07a289e0dba02a419c4a

UMA-02 | Initial token distribution

Category	Severity	Location	Status
Centralization / Privilege	**Major**	contracts/token/ERC20/UMAD.sol (8581761): 36	Resolved

Description

All of the UMAD tokens are sent to the `holders` address when deploying the contract. This could be a centralization risk as the deployer can put arbitrary addresses into the `holders` array without obtaining the consensus of the community.

Recommendation

We recommend the team to be transparent regarding the initial token distribution process.

Alleviation

Token distribution plan can be found in the LightPaper:
https://madworld.io/UMAD_LightPaper_Final_August_30_2021.pdf

Appendix

Finding Categories

Centralization / Privilege

Centralization / Privilege findings refer to either feature logic or implementation of components that act against the nature of decentralization, such as explicit ownership or specialized access roles in combination with a mechanism to relocate funds.

Language Specific

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

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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