CERTIK

Code Security Assessment

Oland

Mar 15th, 2022

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Summary

This report has been prepared for Oland to discover issues and vulnerabilities in the source code of the Oland 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	Oland
Platform	BSC
Language	Solidity
Codebase	https://bscscan.com/address/0xB0461d7E8212D311b842A58e9989edE849ac6816
Commit	

Audit Summary

Delivery Date	Mar 15, 2022 UTC
Audit Methodology	Static Analysis, Manual Review

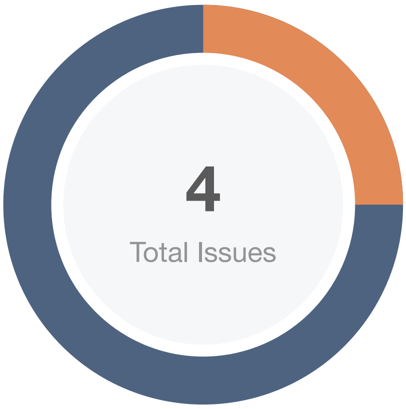
Vulnerability Summary

Vulnerability Level	Total	Pending	Declined	Acknowledged	Partially Resolved	Mitigated	Resolved
Critical	0	0	0	0	0	0	0
Major	1	0	0	0	0	1	0
Medium	0	0	0	0	0	0	0
Minor	0	0	0	0	0	0	0
Informational	3	0	0	3	0	0	0
Discussion	0	0	0	0	0	0	0

Audit Scope

ID	File	SHA256 Checksum
OLA	OLANDToken.sol	9d1a373b516c8ffd6e8d1679d71f3a7399eee10a118632e54a9746f60d9a7f00

Findings



Critical	**0** (0.00%)
Major	**1** (25.00%)
Medium	**0** (0.00%)
Minor	**0** (0.00%)
Informational	**3** (75.00%)
Discussion	**0** (0.00%)

ID	Title	Category	Severity	Status
OLA-01	Improper Usage of `public` and `external` Type	Gas Optimization	Informational	Acknowledged
OLA-02	Unlocked Compiler Version	Language Specific	Informational	Acknowledged
OLA-03	Initial Token Distribution	**Centralization / Privilege**	**Major**	Mitigated
OLA-04	Different Solidity Versions	Language Specific	Informational	Acknowledged

OLA-01 | Improper Usage Of `public` And `external` Type

Category	Severity	Location	Status
Gas Optimization	Informational	OLANDToken.sol: 1010, 1040	Acknowledged

Description

`public` functions that are never called by the contract could be declared as `external`. `external` functions are more efficient than `public` functions.

Recommendation

Consider using the external attribute for public functions that are never called within the contract.

OLA-02 | Unlocked Compiler Version

Category	Severity	Location	Status
Language Specific	Informational	OLANDToken.sol: 8	Acknowledged

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 different compiler versions. 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 `v0.8.2` the contract should contain the following line:

```
pragma solidity 0.8.2;
```

OLA-03 | Initial Token Distribution

Category	Severity	Location	Status
Centralization / Privilege	**Major**	OLANDToken.sol: 1037	Mitigated

Description

All of the `Oland` tokens are sent to the contract deployer when deploying the contract. This could be a centralization risk as the deployer can distribute `Oland` tokens without obtaining the consensus of the community.

Recommendation

We recommend the team to be transparent regarding the initial token distribution process, and the team shall make enough efforts to restrict the access of the private key.

Alleviation

Tokens have been locked according to Tokens Allocation.

See: https://bscscan.com/token/0xB0461d7E8212D311b842A58e9989edE849ac6816#balances

Wallets have different private keys. These wallets will work when they unlocked.

OLA-04 | Different Solidity Versions

Category	Severity	Location	Status
Language Specific	Informational	OLANDToken.sol: 8, 36, 67, 137, 228, 255, 480, 565, 595, 980, 1022	Acknowledged

Description

Multiple Solidity versions are used in the codebase.

Versions used: `^0.8.0`, `^0.8.2`

File: OLANDToken.sol (Line 980)

```
pragma solidity ^0.8.0;
```

File: OLANDToken.sol (Line 1022)

```
pragma solidity ^0.8.2;
```

Recommendation

We recommend using one Solidity version.

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.

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.

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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