FusionTech

CHAVO

Security Assessment

www.coinchavo.com/

TABLE OF CONTENTS

Summary

This report has been prepared for to discover issues and vulnerabilities in the source code of the project as well as any contract dependencies that were not part of an officially recognized library.A comprehensive examination has been performed, utilizing Static Analysisand Manual Reviewtechniques. The auditingprocess pays specialattention to the following considerations:

Testing the smart contracts against both commonand uncommon attackvectors. Assessing the codebase to ensure compliancewith current best practices and industry standards. Ensuring contract logic meets the specifications and intentions of the client. Cross referencing contract structure and implementation againstsimilar smart contracts produced by industryleaders. Thorough line-by-line manual review of the entirecodebase by industryexperts.

The security assessment resulted in findings that ranged from critical to informational. We recommendaddressing these findings to ensure a high level of security standards and industry practices. We suggest recommendations that could betterserve the projectfrom the securityperspective:

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, especiallycontracts that are verified in public; Provide more transparency on privileged activities once the protocolis live.

Project Summary

Project Name	CHAVO - (https://coinchavo.com/)
Platform	BINANCE SMART CHAIN
Language	Solidity
Codebase	https://bscscan.com/address/0xa29685F043A89998eA18254e8E450Df989E13e2b
Commit	a160e76660962f682cada701404f37f35e6114a957267a0da3fbf

Audit Summary

Delivery Date	AUGUST 29, 2023
Audit Methodology	Static Analysis, Manual Review
Key Components	DxBurnToken

Vulnerability Summary

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

Audit Scope

ID	File	SHA256 Checksum
CKP	contract.sol	f79198f1e334d2889b0de0d9507c2bf3e16e6299f37d30102d9496b69c383809

Overview

External Dependencies

The contract serves as the underlying entity to interact with third-party protocols (token- wrapping). The scope of the audit treats third-party entities as blackboxes and assumes their functional correctness. However, in the real world, third parties can be compromised and this may lead to lost or stolen assets.

Privileged Functions

The contract contains the following privileged functions that are restricted by role with the modifier. Since the contract is the owner cannot modify the contract configurations and address attributes.

Overview

External Dependencies

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Privileged Functions

The contract contains the following privileged functions are restricted to gain access by the modifier/_owner. They are used to modify the contract configurations and address attributes. We grouped these functions below.

01 | Centralization Risk in Function

Description

The addLiquidity()_hasLiqBeenAdded() function calls the UniswapV2Router. addLiquidityETH function with the to() address specified as owner() for acquiring the generated LP tokens from the corresponding pool. As a result, over time the _owner address will accumulate a significant portionof LP tokens. If _owner the is an EOA (Externally Owned Account),mishandling of its private key can have devastating consequences to the projectas a whole.

Recommendation

We advise to() address of the UniswapV2Router. addLiquidityETH() function call to be replaced by the contract() itself, i.e. address(this) , and to restrict the management of the LP tokens within the scope of the contract's business logic. This will also protect the LP tokens from being stolen if the _owner() account is compromised. In general, we strongly recommend centralized privileges or roles in the protocol to be improved via a decentralized mechanism or via smart-contract based accounts with enhanced security practices, f.e.Multisignature wallets().

02 | Initial Token Distribution

Category	Severity	Location	Status
Logical Issue	Minor	projects/contract.sol (98ba012): 497	Acknowledged

Description

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

Recommendation

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

03 | Potential Sandwich Attacks

Description

A sandwich attack might happen when an attacker observes a transaction swapping tokens or adding liquidity without setting restrictions on slippage or minimum output amount. The attacker can manipulate the exchange rate by frontrunning (beforethe transaction being attacked) a transaction to purchase one of the assets and make profitsby backrunning (afterthe transaction beingattacked) a transaction to sell the asset.

The following functionsare called withoutsetting restrictions on slippage or minimum outputamount, so transactions triggering these functions are vulnerable to sandwich attacks, especially when the input amount is large:

Recommendation

We recommend setting reasonable minimum output amounts, instead of 0, based on token prices when calling the fore mentioned functions.

04 | Redundant Code

Category	Severity	Location	Status
Logical Issue	Informational	projects/contract.sol (98ba012): 862	Acknowledged

Description

The condition! _isExcluded[sender] & !_isExcluded[recipient] can be included in else .

Recommendation

The following code can be removed:

```
... else if (!_isExcluded[sender] && !_isExcluded[recipient]) {
    _transferStandard(sender, recipient, amount);
} ...
```

05 | Typos In The Contract

Category	Severity	Location	Status
Coding Style	● Informational	projects/contract.sol (98ba012): 470, 670	ⓘ Acknowledged

Description

There are several typos in the code and comments.

1. In the following code snippet, tokensIntoLiquidity() should be tokensIntoLiquidity()

```
event SwapAndLiquify(
        uint256 tokensSwapped,
        uint256 ethReceived,
        uint256 tokensIntoLiqudity
    );
```

2. recieve() should be recieve() _swapping() should be _swapping() in the line of comment //to _recieve ETH from UniswapV2Router when swaping() .

06 | Function and Variable Naming

Description

_burnfee()

_creator()

_devfee()

_devWalletAddress()

_maxBurnFee()

_maxDevFee()

_allowance()

_balanceof()

_decimals

_isExcludedFromFee()

_mintedByDxsale()

_mintingFinishedPermanent()

_name()

_owner()

_symbol()

_totalsupply()

07 | Potential Resource Exhaustion

Category	Severity	Location	Status
Logical Issue	● Informational	projects/contract.sol (98ba012): 614, 709	ⓘ Acknowledged

Description

The farloop() within functions and _getCurrentSupply() takes the variable _excluded.length(), as the maximal iterationtimes. If the size of the array is very large, it could exceed the gas limit to execute the functions. In this case, the contract might suffer from DoS (Denial of Service) situation.

Recommendation

We recommend the team review the design and ensure investors that this would not cause loss to the project.

08 | FullInlinerNonExpressionSplitArgumentEvaluationOrder

Description

Function call arguments in Yul are evaluated right to left. This order matters when the argument expressions have side-effects, and changing it may change contract behavior. FullInliner is an optimizer step that can replace a function call with the body of that function. The transformation involves assigning argument expressions to temporary variables, which imposes an explicit evaluation order. FullInliner was written with the assumption that this order does not necessarily have to match usual argument evaluation order because the argument expressions have no side-effects. In most circumstances this assumption is true because the default optimization step sequence contains the ExpressionSplitter step. ExpressionSplitter ensures that the code is in *expression-split form*, which means that function calls cannot appear nested inside expressions, and all function call arguments have to be variables. The assumption is, however, not guaranteed to be true in general. Version 0.6.7 introduced a setting allowing users to specify an arbitrary optimization step sequence, making it possible for the FullInliner to actually encounter argument expressions with side-effects, which can result in behavior differences between optimized and unoptimized bytecode. Contracts compiled without optimization or with the default optimization sequence are not affected. To trigger the bug the user has to explicitly choose compiler settings that contain a sequence with FullInliner step not preceded by ExpressionSplitter.

09 | StorageWriteRemovalBeforeConditionalTermination

Description

A call to a Yul function that conditionally terminates the external EVM call could result in prior storage writes being incorrectly removed by the Yul optimizer. This used to happen in cases in which it would have been valid to remove the store, if the Yul function in question never actually terminated the external call, and the control flow always returned back to the caller instead. Conditional termination within the same Yul block instead of within a called function was not affected. In Solidity with optimized via-IR code generation, any storage write before a function conditionally calling ``return(...)`` or ``stop()`` in inline assembly, may have been incorrectly removed, whenever it would have been valid to remove the write without the ``return(...)`` or ``stop()``. In optimized legacy code generation, only inline assembly that did not refer to any Solidity variables and that involved conditionally-terminating user-defined assembly functions could be affected.

10 | DelegateCallReturnValue

Description

The return value of the low-level .delegatecall() function is taken from a position in memory, where the call data or the return data resides. This value is interpreted as a boolean and put onto the stack. This means if the called function returns at least 32 zero bytes, .delegatecall() returns false even if the call was successful.

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 mechanismto relocate funds.

Logical Issue

Logical Issue findingsdetail a fault in the logic of the linked code, such as an incorrect notion on how block.times tamp works.

Volatile Code

Volatile Code findingsrefer to segmentsof code that behave unexpectedly on certain edge cases that may resultin a vulnerability.

Coding Style

Coding Style findings usually do not affect the generated byte-code but rather commenton how to make the codebase more legible and, as a result, easily maintainable.

Inconsistency

Inconsistency findings referto 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 setterfunction.

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 hexa-decimal encoded and is the same as the output of the Linux "sha256sum" commandagainst the target file.

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