ASTROBIATECH
BLOCKCHAIN SECURITY

MADE IN INDIA
BLOCKCHAIN SECURITY

SECURITY ASSESSMENT REPORT

PREPARED FOR

NEXUSDAO

@astrobiatech

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SCOPE OF AUDIT

The scope of this audit was to analyze and document the NEXUSDAO smart contract codebase for quality, security, and correctness.

CHECKED VULNERABILITIES

We have scanned the smart contract for commonly known and more specific vulnerabilities. Here are some of the commonly known vulnerabilities that we considered:

- Re-entrancy
- Timestamp Dependence
- Gas Limit and Loops
- DoS with Block Gas Limit
- Transaction-Ordering Dependence
- Use of tx.origin
- Exception disorder
- Gasless send
- Balance equality
- Byte array
- Transfer forwards all gas
- ERC20 API violation
- Malicious libraries
- Compiler version not fixed
- Redundant fallback function
- Send instead of transfer
- Style guide violation
- Unchecked external call
- Unchecked math
- Unsafe type inference
- Implicit visibility level

TECHNIQUES & METHODS

Throughout the audit of smart contract, care was taken to ensure:

- The overall quality of code.
- Use of best practices.
- Code documentation and comments match logic and expected behaviour.
- Token distribution and calculations are as per the intended behaviour mentioned in the whitepaper.
- Implementation of ERC-20 token standards.
- Efficient use of gas.
- Code is safe from re-entrancy and other vulnerabilities.

The following techniques, methods and tools were used to review all the smart contracts.

Static Analysis

Static Analysis of Smart Contracts was done to identify contract vulnerabilities. In this step a series of automated tools are used to test security of smart contracts.

Code Review / Manual Analysis

Manual Analysis or review of code was done to identify new vulnerability or verify the vulnerabilities found during the static analysis. Contracts were completely manually analyzed, their logic was checked and compared with the one described in the whitepaper. Besides, the results of automated analysis were manually verified.

ISSUE CATEGORIES

Every issue in this report has been assigned with a severity level. There are four levels of severity and each of them has been explained below.

- **HIGH SEVERITY ISSUES**

  A high severity issue or vulnerability means that your smart contract can be exploited. Issues on this level are critical to the smart contract's performance or functionality and we recommend these issues to be fixed before moving to a live environment.

- **MEDIUM SEVERITY ISSUES**

  The issues marked as medium severity usually arise because of errors and deficiencies in the smart contract code. Issues on this level could potentially bring problems and they should still be fixed.

- **LOW SEVERITY ISSUES**

  Low level severity issues can cause minor impact and or are just warnings that can remain unfixed for now. It would be better to fix these issues at some point in the future.

- **INFORMATIONAL**

  These are severity four issues which indicate an improvement request, a general question, a cosmetic or documentation error, or a request for information. There is low-to-no impact.

ISSUES TABLE

TYPE	HIGH	MEDIUM	LOW	INFORMATIONAL
OPEN	-	1	6	-
ACKNOWLWDGENT	-	-	-	-
CLOSED	-	-	-	-

INTRODUCTION

On 27-06-2023 – Astrobiatech Blockchain Security Team performed a security audit for Nexus DAO smart contracts.

CONTRACT NAME	Nexus DAO
CONTRACT ADDRESS	0x4EA82C3f321adC2Da81754DB288C6B5FD8a22645
BLOCKCHAIN	Binance
TOTAL SUPPLY	1000000000
SYMBOL	nxsDAO
DECIMALS	18

OVERVIEW

CONTRACT ADDRESS
0x4EA82C3f321adC2Da81754DB288C6B5FD8a22645

TOKEN TRACKER
Nexus DAO (nxsDAO)

CONTRACT CREATOR
0xf97cab5742e1052f2bdccbac2527c3fceb9f9284

OWNER ADDRESS
0xf97cab5742e1052f2bdccbac2527c3fceb9f9284

SOURCE CODE
Contract Source Code Verified at Bscscan

CONTRACT NAME
NEXUSDAO

OTHER SETTINGS
default evmVersion

COMPILER VERSION
v0.8.17+commit.8df45f5f

OPTIMIZATION ENABLED
Yes with 2000 runs

Code is truncated to fit the constraints of this document.
The code in its entirety can be viewed here.

MANUAL ANALYSIS FINDINGS

MEDIUM

1. Owner can exclude/include accounts from rewards

Description:-

Function that allows the owner of the contract to exclude an address from receiving dividends.

Recommendation:-

It is recommended to add additional access control measures, such as multi-factor authentication or time-based restrictions, to limit the number of authorized users who can call these functions. The contract owner account is well secured and only accessible by authorized parties.

LOW

1. Owner can exclude accounts from fees

Description:-

Excludes/Includes an address from the collection of fees

Recommendation:-

It is recommended to add additional access control measures, such as multi-factor authentication or time-based restrictions, to limit the number of authorized users who can call these functions. The contract owner account is well secured and only accessible by authorized parties.

2. Owner can change fee percentages max 10%

Description:-

Functions that allows the owner of the contract to update the buy/sell fees of the contract. These functions assumes that the input parameters are valid and do not exceed the maximum limit of 10%.

Recommendation:-

It is recommended to add additional access control measures, such as multi-factor authentication or time-based restrictions, to limit the number of authorized users who can call these functions. The contract owner account is well secured and only accessible by authorized parties.

3. Trading must be enabled by the owner

Description:-

Function enables trading by setting the tradingEnabled true

Recommendation:-

It is recommended to add additional access control measures, such as multi-factor authentication or time-based restrictions, to limit the number of authorized users who can call these functions. The contract owner account is well secured and only accessible by authorized parties.

4. Owner can change the swap tokens at amount within reasonable limit

Description:-

setSwapTokensAtAmount function allows the owner to set the minimum number of tokens required to trigger an automatic swap.

Recommendation:-

It' s important to ensure that the new swapTokensAtAmount value is reasonable and will not adversely affect the functioning of the token or any associated systems.

5. Owner can change swap setting

Description:-

Function allows the contract owner to enable or disable the automatic swapping.

Recommendation:-

It is recommended to ensure that the contract owner account is well secured and only accessible by authorized parties.

6. Owner can withdraw any token(except native token) from the contract

Description:-

claimStuckTokens function allows the contract owner to recover any ERC20 tokens or BNB that were mistakenly sent to the contract' s address. There arerequire statement to prevent the owner from accidentally claiming the native token.

Recommendation:-

It is generally considered safe for a contract owner to claim stuck tokens, but it' s important to ensure that the owner is not abusing this function to steal tokens. In this implementation, there is a require statement that ensures that the owner cannot claim the native token of the blockchain on which the contract is deployed.

AUTOMATED ANALYSIS

```
INFO:Detectors:
Reentrancy in NEXUSDAO._transfer(address,address,uint256) (token.sol#667-708):
        External calls:
        - swapAndLiquify(liquidityTokens) (token.sol#695)
                - uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(half,0,path,address(this),block.timestamp) (token.sol#720-725)
                - uniswapV2Router.addLiquidityETH{value: newBalance}(address(this),otherHalf,0,0,DEAD,block.timestamp) (token.sol#729-736)
        - swapAndSendMarketing(marketingTokens) (token.sol#700)
                - (success) = recipient.call{value: amount}() (token.sol#74)
                - uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(tokenAmount,0,path,address(this),block.timestamp) (token.sol#748-753)
                - address(marketingWallet).sendValue(newBalance) (token.sol#757)
        External calls sending eth:
        - swapAndLiquify(liquidityTokens) (token.sol#695)
                - uniswapV2Router.addLiquidityETH{value: newBalance}(address(this),otherHalf,0,0,DEAD,block.timestamp) (token.sol#729-736)
        - swapAndSendMarketing(marketingTokens) (token.sol#700)
                - (success) = recipient.call{value: amount}() (token.sol#74)
        State variables written after the call(s):
        - _tokenTransfer(from,to,amount) (token.sol#707)
                - _rOwned[address(this)] = _rOwned[address(this)] + rMarketing (token.sol#608)
                - _rOwned[address(this)] = _rOwned[address(this)] + rLiquidity (token.sol#598)
                - _rOwned[sender] = _rOwned[sender] - rAmount (token.sol#814)
                - _rOwned[sender] = _rOwned[sender] - rAmount (token.sol#804)
                - _rOwned[sender] = _rOwned[sender] - rAmount (token.sol#826)
                - _rOwned[sender] = _rOwned[sender] - rAmount (token.sol#837)
                - _rOwned[recipient] = _rOwned[recipient] + rTransferAmount (token.sol#805)
                - _rOwned[recipient] = _rOwned[recipient] + rTransferAmount (token.sol#827)
                - _rOwned[recipient] = _rOwned[recipient] + rTransferAmount (token.sol#816)
                - _rOwned[recipient] = _rOwned[recipient] + rTransferAmount (token.sol#839)
        NEXUSDAO._rOwned (token.sol#318) can be used in cross function reentrancies:
        - NEXUSDAO._getCurrentSupply() (token.sol#582-592)
        - NEXUSDAO._takeLiquidity(uint256) (token.sol#594-602)
        - NEXUSDAO._takeMarketing(uint256) (token.sol#604-612)
        - NEXUSDAO._transferBothExcluded(address,address,uint256) (token.sol#834-844)
        - NEXUSDAO._transferFromExcluded(address,address,uint256) (token.sol#823-832)
        - NEXUSDAO._transferStandard(address,address,uint256) (token.sol#802-810)
        - NEXUSDAO._transferToExcluded(address,address,uint256) (token.sol#812-821)
        - NEXUSDAO.balanceOf(address) (token.sol#445-448)
        - NEXUSDAO.constructor() (token.sol#375-427)
        - NEXUSDAO.deliver(uint256) (token.sol#488-495)
        - NEXUSDAO.excludeFromReward(address) (token.sol#514-521)
        - _tokenTransfer(from,to,amount) (token.sol#707)
```

```
                - _rTotal = _rTotal - rFee (token.sol#550)
        NEXUSDAO._rTotal (token.sol#332) can be used in cross function reentrancies:
        - NEXUSDAO._getCurrentSupply() (token.sol#582-592)
        - NEXUSDAO._reflectFee(uint256,uint256) (token.sol#549-552)
        - NEXUSDAO.constructor() (token.sol#375-427)
        - NEXUSDAO.deliver(uint256) (token.sol#488-495)
        - NEXUSDAO.tokenFromReflection(uint256) (token.sol#508-512)
        - _tokenTransfer(from,to,amount) (token.sol#707)
                - _tOwned[address(this)] = _tOwned[address(this)] + tMarketing (token.sol#610)
                - _tOwned[address(this)] = _tOwned[address(this)] + tLiquidity (token.sol#600)
                - _tOwned[sender] = _tOwned[sender] - tAmount (token.sol#825)
                - _tOwned[sender] = _tOwned[sender] - tAmount (token.sol#836)
                - _tOwned[recipient] = _tOwned[recipient] + tTransferAmount (token.sol#815)
                - _tOwned[recipient] = _tOwned[recipient] + tTransferAmount (token.sol#838)
        NEXUSDAO._tOwned (token.sol#319) can be used in cross function reentrancies:
        - NEXUSDAO._getCurrentSupply() (token.sol#582-592)
        - NEXUSDAO._takeLiquidity(uint256) (token.sol#594-602)
        - NEXUSDAO._takeMarketing(uint256) (token.sol#604-612)
        - NEXUSDAO._transferBothExcluded(address,address,uint256) (token.sol#834-844)
        - NEXUSDAO._transferFromExcluded(address,address,uint256) (token.sol#823-832)
        - NEXUSDAO._transferToExcluded(address,address,uint256) (token.sol#812-821)
        - NEXUSDAO.balanceOf(address) (token.sol#445-448)
        - NEXUSDAO.constructor() (token.sol#375-427)
        - NEXUSDAO.excludeFromReward(address) (token.sol#514-521)
        - NEXUSDAO.includeInReward(address) (token.sol#523-534)
        - inSwapAndLiquify = false (token.sol#703)
        NEXUSDAO.inSwapAndLiquify (token.sol#360) can be used in cross function reentrancies:
        - NEXUSDAO._transfer(address,address,uint256) (token.sol#667-708)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities
INFO:Detectors:
NEXUSDAO.claimStuckTokens(address) (token.sol#538-547) ignores return value by ERC20token.transfer(msg.sender,balance) (token.sol#546)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unchecked-transfer
INFO:Detectors:
NEXUSDAO.constructor().router (token.sol#377) is a local variable never initialized
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#uninitialized-local-variables
INFO:Detectors:
NEXUSDAO.claimStuckTokens(address) (token.sol#538-547) ignores return value by address(msg.sender).sendValue(address(this).balance) (token.sol#541)
NEXUSDAO.swapAndLiquify(uint256) (token.sol#710-739) ignores return value by uniswapV2Router.addLiquidityETH{value: newBalance}(address(this),otherHalf,0,0,DEAD,block.timestamp) (token.sol#729-736)
NEXUSDAO.swapAndSendMarketing(uint256) (token.sol#741-760) ignores return value by address(marketingWallet).sendValue(newBalance) (token.sol#757)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-return
```

MYTHRIL ANALYSIS

```
gitpod /workspace/spring-petclinic (master) $ myth a token.sol
The analysis was completed successfully. No issues were detected.
```

FEES

BUY FEES	5%
Marketing	5%
Reflection	0%

SELL FEES	10%
Marketing	5%
Reflection	5%

HOLDERS

Rank	Address	Quantity	Percentage	Analytics
1	0xf97cab5742e1052f2bdccbac2527c3fceb9f9284	1,000,000,000	100.0000%	

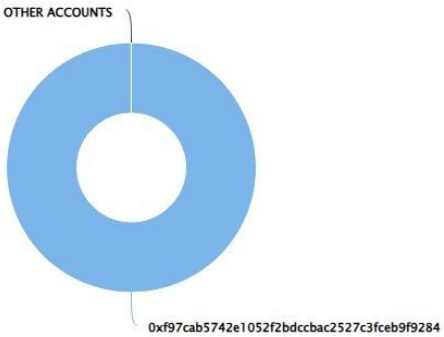
Range: Top 100

The top 100 holders collectively own 100.00% (1,000,000,000.00 Tokens) of Nexus DAO

Token Total Supply: 1,000,000,000.00 Token | Total Token Holders: 1

Nexus DAO Top 100 Token Holders

Source: BscScan.com



SUMMARY

In this report, we have considered the security of the NEXUSDAO platform. We performed our audit according to the procedure described above. 0 high , 1 medium, 6 low, and 0 informational severity were discovered during the audit.

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