AuditAce

FROM INCEPTION TO SUCCESS

Smart Contract Audit

FOR

Arcstar

DATED : 26 MAY 23'

CRITICAL RISK

Centralization – Excessive fees

Severity: **Critical**

function: setSniperFee

Status: Not Resolved

Overview:

Owner is able to set a certain amount of tax for an arbitrary wallet (buy and sell and transfers), this tax can be within range of 0-99%. this is a critical centralization risk and can be used to disable trades for specifiec addresses.

```
function setSniperFee(
    address[] memory account,
    uint8 _sellFee,
    uint8 _buyFee
) public onlyOwner {
    for (uint256 i = 0; i < account.length; i++) {
        if (_sellFee > 0) {
            sellSniperFee[account[i]] = _sellFee;
        }
        if (_buyFee > 0) {
            buySniperFee[account[i]] = _buyFee;
        }
    }
}
```

Suggestion

To mitigate this centralization issue there are several ways:

- delete this method

- renounce ownership of the contract

- implement an automated method to blacklist sniper bots in 0-5 blocks after enablling trades for public.

CRITICAL RISK

Logical – Setting marketing address to address zero can disable sells

Severity: **Critical**

function: setMarketingWallet

Status: Not Resolved

Overview:

if marketing wallet is set to address zero, sells will be disabled for non-whitelisted wallets. This is because 5% of all sells are sent to marketing wallet which means if marketing wallet is set to address zero, the transaction will be reverted.

```
function setMarketingWallet(address _address) external onlyOwner {
    marketingWallet = _address;
}
```

Suggestion

To mitigate this centralization issue there are several ways:

- Ensure that marketing wallet can not be address zero.

CRITICAL RISK

Centralization – Claiming tokens after presale

Severity: **Critical**

function: setSniperFee & _transfer

Status: Not Resolved

Overview:

setting a high buy tax for presale address at time of claiming tokens, can lead to lose of tokens of contributors. This taxed tokens will be sent to marketing wallet.

```
if (
    sellSniperFee[sender] > 0 &&
    (recipient == pairAddr || sender != pairAddr)
) {
    tax = baseUnit * uint256(sellSniperFee[sender]);
} else if (buySniperFee[recipient] > 0 && sender == pairAddr) {
    tax = baseUnit * uint256(buySniperFee[recipient]);
} else if (recipient == pairAddr) {
    tax = baseUnit * uint256(sellFee);
}
```

Suggestion

to mitigate this issue there are several options:

- delete sellSniperFee function

- renounce ownership of the contract

- implement an automated method to blacklist sniper bots in 0-5 blocks after enablling trades for public.

- ensure that "sender" is not presale address

AUDIT SUMMARY

Project name – Arcstar

Date: 26 May, 2023

Scope of Audit- Audit Ace was consulted to conduct the smart contract audit of the solidity source codes.

Audit Status: Passed With Critical Risk

Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	2	1	0	0	0
Acknowledged	0	0	0	0	0
Resolved	0	0	0	0	0

USED TOOLS

Tools:

1.Manual Review: The code has undergone a line-by-line review by the **Ace** team.

2.ETH Test Network: All tests were conducted on the ETH Test network, and each test has a corresponding transaction attached to it. These tests can be found in the "Functional Tests" section of the report.

3.Slither: The code has undergone static analysis using Slither.

Testnet version:
https://testnet.bscscan.com/token/0xbc93ce86efe03f29efd83b93de9410eb6c66790b

Token Information

Name : Arcstar

Symbol : ARCSTAR

Decimals: 18

Network: Binance smart chain

Token Type:BEP20

Token Address:
0x5331Ca78BF716df553048C1d6430855540f68Cef

Owner:
0xcBd5De8b6A8e7f8a3652e3d5Ce41400c7c892b4d
(at time of writing the audit)

Deployer:0xcBd5De8b6A8e7f8a3652e3d5Ce41400c
7c892b4d

Token Information

Fees:

Buy Fees: 0%

Sell Fees: 0-5%

Transfer Fees: 0%

Fees Privilige: No fees

Ownership :

0xcBd5De8b6A8e7f8a3652e3d5Ce41400c7c892b4d

Minting: None

Max Tx Amount/ Max Wallet Amount: No

Blacklist: No

Other Priviliges:- Fees modification

AUDIT METHODOLOGY

The auditing process will follow a routine as special considerations by Auditace:

- Review of the specifications, sources, and instructions provided to Auditace to make sure the contract logic meets the intentions of the client without exposing the user's funds to risk.

- Manual review of the entire codebase by our experts, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.

- Specification comparison is the process of checking whether the code does what the specifications, sources, and instructions provided to Auditace describe.

- Test coverage analysis determines whether the test cases are covering the code and how much code isexercised when we run the test cases.

- Symbolic execution is analysing a program to determine what inputs cause each part of a program to execute.

- Reviewing the codebase to improve maintainability, security, and control based on the established industry and academic practices.

VULNERABILITY CHECKLIST

- Return values of low-level calls
- Private modifier
- Multiple Sends
- Using Suicide
- Gas Limitand Loops
- Address hardcoded
- Exception Disorder
- Using inline assembly
- Divide before multiply
- Missing Zero Address Validation
- Compiler version not fixed

- **Gasless Send**
- Using block.timestamp
- Re-entrancy
- Tautology or contradiction
- Timestamp Dependence
- Revert/require functions
- Use of tx.origin
- Integer overflow/underflow
- Dangerous strict equalities
- Using SHA3
- Using throw

CLASSIFICATION OF RISK

Severity

Description

◆ **Critical**

These vulnerabilities could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.

◆ **High-Risk**

A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.

◆ **Medium-Risk**

A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.

◆ **Low-Risk**

A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.

◆ **Gas Optimization /Suggestion**

A vulnerability that has an informational character but is not affecting any of the code.

Findings

Severity

Found

◆ **Critical**

2

◆ **High-Risk**

1

◆ **Medium-Risk**

0

◆ **Low-Risk**

0

◆ **Gas Optimization / Suggestions**

0

INHERITANCE TREE

POINTS TO NOTE

- Owner is able to set 0-5% tax for sells
- Owner is not able to set max buy/sell/transfer/hold amount
- Owner is able to blacklist an arbitrary wlalet
- Owner is not able able to limit buys/transfers/sells by a max amount as limit
- Owner is not able to mint new tokens
- Owner must enabel trades manually for holders

CONTRACT ASSESMENT

Contract	Type	Bases		
└	**Function Name**	**Visibility**	**Mutability**	**Modifiers**
Arcstar	Implementation	ERC20, Ownable		
└	<Constructor>	Public ❗	🔴	ERC20
└	<Receive Ether>	External ❗	💵	NO ❗
└	_transfer	Internal 🔒	🔴	
└	setMarketingWallet	External ❗	🔴	onlyOwner
└	setPairAddr	External ❗	🔴	onlyOwner
└	setExcluded	Public ❗	🔴	onlyOwner
└	removeExcluded	Public ❗	🔴	onlyOwner
└	setSniperFee	Public ❗	🔴	onlyOwner
└	removeSniperFee	Public ❗	🔴	onlyOwner
└	setSellFee	Public ❗	🔴	onlyOwner
└	isExcluded	Public ❗	NO ❗	
└	isSniper	Public ❗	NO ❗	

Legend

Symbol	Meaning
🔴	Function can modify state
💵	Function is payable

STATIC ANALYSIS

```
Arcstar.setSellFee(uint8) (contracts/Token.sol#1033-1036) should emit an event for:
        - sellFee = _sellFee (contracts/Token.sol#1035)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-events-arithmetic

Arcstar.constructor(address,address)._pairAddr (contracts/Token.sol#938-941) lacks a zero-check on :
                - pairAddr = _pairAddr (contracts/Token.sol#943)
Arcstar.constructor(address,address)._marketingWallet (contracts/Token.sol#932) lacks a zero-check on :
                - marketingWallet = _marketingWallet (contracts/Token.sol#944)
Arcstar.setMarketingWallet(address)._address (contracts/Token.sol#987) lacks a zero-check on :
                - marketingWallet = _address (contracts/Token.sol#988)
Arcstar.setPairAddr(address)._address (contracts/Token.sol#991) lacks a zero-check on :
                - pairAddr = _address (contracts/Token.sol#992)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-zero-address-validation

Different versions of Solidity are used:
        - Version used: ['>=0.5.0', '>=0.6.2', '^0.8.17']
        - >=0.5.0 (contracts/Token.sol#359)
        - >=0.6.2 (contracts/Token.sol#157)
        - ^0.8.17 (contracts/Token.sol#8)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#different-pragma-directives-are-used

Context._msgData() (contracts/Token.sol#117-119) is never used and should be removed
ERC20._burn(address,uint256) (contracts/Token.sol#701-717) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code

Pragma version^0.8.17 (contracts/Token.sol#8) necessitates a version too recent to be trusted. Consider deploying with 0.6.12/0.7.6/0.8.16
Pragma version>=0.6.2 (contracts/Token.sol#157) allows old versions
Pragma version>=0.5.0 (contracts/Token.sol#359) allows old versions
solc-0.8.19 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity

Function IUniswapV2Router01.WETH() (contracts/Token.sol#162) is not in mixedCase
Parameter Arcstar.setMarketingWallet(address)._address (contracts/Token.sol#987) is not in mixedCase
Parameter Arcstar.setPairAddr(address)._address (contracts/Token.sol#991) is not in mixedCase
Parameter Arcstar.setSniperFee(address[],uint8,uint8)._sellFee (contracts/Token.sol#1009) is not in mixedCase
Parameter Arcstar.setSniperFee(address[],uint8,uint8)._buyFee (contracts/Token.sol#1010) is not in mixedCase
Parameter Arcstar.setSellFee(uint8)._sellFee (contracts/Token.sol#1033) is not in mixedCase
Constant Arcstar.feeLimit (contracts/Token.sol#916) is not in UPPER_CASE_WITH_UNDERSCORES
Constant Arcstar.denominator (contracts/Token.sol#922) is not in UPPER_CASE_WITH_UNDERSCORES
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions

Variable IUniswapV2Router01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountADesired (contracts/Token.sol#167) is too simila
r to IUniswapV2Router01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (contracts/Token.sol#168)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar

Arcstar.initialSupply (contracts/Token.sol#914) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant

Arcstar.router (contracts/Token.sol#925) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
```

Static Analysis

an static analysis of the code were performed using slither. No issues were found

FUNCTIONAL TESTING

1- Adding liquidity (passed):
https://testnet.bscscan.com/tx/0x85b94ecc70530a8d8f18d2563a
a82dc992e17785aeb2f1bf9d43762d48cff9ce

2- Buying (0% tax) (passed):
https://testnet.bscscan.com/tx/0x5891fb8f8dccfbd438eb173ebd8
0222f9d77d1a307a00504fc2fa94ad156479e

3- Selling (0% tax) (passed):
https://testnet.bscscan.com/tx/0xec10fedf77180175267d92c395a
57200e390e654defa6b25be919260050136b5

4- Transferring (0% tax) (passed):
https://testnet.bscscan.com/tx/0x586e6e0d89d1c8af996b36bd67
d1ad8f8fedd3f5a95cfe298c7719312d7e1f2a

2- Buying (0% tax) (passed):
https://testnet.bscscan.com/tx/0xbcbb9be87c3ede5af8751c346f3
86c1a441a561243d670fab65a4f60b91d035f

3- Selling (5% tax) (passed):
https://testnet.bscscan.com/tx/0xca74d2f095119cdcd8547627f85
a8c5c09324ce93227f2b21206e93face9f858

4- Transferring (0% tax) (passed):
https://testnet.bscscan.com/tx/0xc49f68b53bd02dafe2644b2bfa1
69ce521338c8adccd80c10c80f2ac16fefee1

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