



TechRate
AUDIT COMPANY

Smart Contract Security Audit

TechRate

June, 2021

Audit Details



Audited project

TAILTECH



Deployer address

0xeF9AE9eA52d0b98F20348e7cc761c456847D5fA2



Client contacts:

TAILTECH team



Blockchain

Binance Smart Chain



Project website:

<https://tailtech.net/>

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

Background

TechRate was commissioned by TAILTECH to perform an audit of smart contracts:

<https://bscscan.com/address/0x498dcb15c2890673ae132ef0c267b78cbe494823#code>

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Contracts Details

Token contract details for 24.06.2021

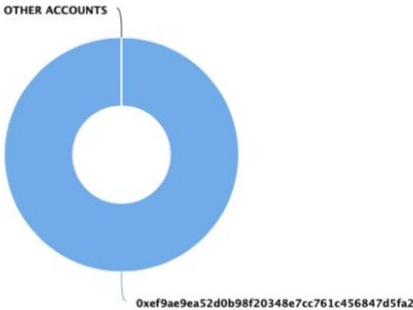
Contract name	TAILTECH
Contract address	0x498DcB15C2890673aE132eF0c267B78CbE494823
Total supply	10,000
Token ticker	TailTech
Decimals	18
Token holders	1
Transactions count	1
Top 100 holders dominance	100.00%
Charity fee	300
Tax fee	100
Total fees	0
Charity address	0x82118c139e259ed7b57b2a658ca78c7ef8cf5d3a
Contract deployer address	0xeF9AE9eA52d0b98F20348e7cc761c456847D5fA2
Contract's current owner address	0xef9ae9ea52d0b98f20348e7cc761c456847d5fa2

TAILTECH Token Distribution

The top 100 holders collectively own 100.00% (10,000.00 Tokens) of TailTech

Token Total Supply: 10,000.00 Token | Total Token Holders: 1

TailTech Top 100 Token Holders
Source: BscScan.com



(A total of 10,000.00 tokens held by the top 100 accounts from the total supply of 10,000.00 token)

TAILTECH Top 10 Token Holders

Rank	Address	Quantity (Token)	Percent
1.	0xef9ae9ea52d0b98f20348e7cc761c456847d5fa2	10,000	100.0000%



Contract functions details

+ Context

- [Int] _msgSender
- [Int] _msgData

+ [Int] IERC20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer #
- [Ext] allowance
- [Ext] approve #
- [Ext] transferFrom #

+ [Lib] SafeMath

- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div
- [Int] mod
- [Int] mod

+ [Lib] Address

- [Int] isContract
- [Int] sendValue #
- [Int] functionCall #
- [Int] functionCall #
- [Int] functionCallWithValue #
- [Int] functionCallWithValue #
- [Prv] _functionCallWithValue #

+ Ownable (Context)

- [Pub] <Constructor> #
- [Pub] owner
- [Pub] renounceOwnership #
 - modifiers: onlyOwner
- [Pub] transferOwnership #
 - modifiers: onlyOwner

+ [Int] Token

- [Ext] transfer #

+ TailTech (Context, IERC20, Ownable)

- [Pub] <Constructor> #
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer #
- [Pub] allowance

- [Pub] approve #
- [Pub] transferFrom #
- [Pub] increaseAllowance #
- [Pub] decreaseAllowance #
- [Pub] isExcluded
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Ext] excludeAccount #
 - modifiers: onlyOwner
- [Ext] includeAccount #
 - modifiers: onlyOwner
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] collectFee #
- [Prv] _getReflectionRate
- [Ext] delegates
- [Ext] delegate #
- [Ext] delegateBySig #
- [Ext] getCurrentVotes
- [Ext] getPriorVotes
- [Int] _delegate #
- [Int] _moveDelegates #
- [Int] _writeCheckpoint #
- [Int] safe32
- [Int] getChainId
- [Pub] ExcludedFromFee #
 - modifiers: onlyOwner
- [Pub] IncludeFromFee #
 - modifiers: onlyOwner
- [Pub] setTaxFee #
 - modifiers: onlyOwner
- [Pub] setCharityFee #
 - modifiers: onlyOwner
- [Pub] setCharityAddress #
 - modifiers: onlyOwner
- [Ext] <Fallback> (\$)

(\$)= payable function

= non-constant function

Issues Checking Status

Issue description		Checking status
1.	Compiler errors.	Passed
2.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3.	Possible delays in data delivery.	Passed
4.	Oracle calls.	Passed
5.	Front running.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow.	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Low issues
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	The impact of the exchange rate on the logic.	Passed
13.	Private user data leaks.	Passed
14.	Malicious Event log.	Passed
15.	Scoping and Declarations.	Passed
16.	Uninitialized storage pointers.	Passed
17.	Arithmetic accuracy.	Passed
18.	Design Logic.	Passed
19.	Cross-function race conditions.	Passed
20.	Safe Open Zeppelin contracts implementation and usage.	Passed
21.	Fallback function security.	Passed

Security Issues

✓ High Severity Issues

No high severity issues found.

✓ Medium Severity Issues

No medium severity issues found.

✓ Low Severity Issues

1. Out of gas

Issue:

- The function `includeInAccount()` uses the loop to find and remove addresses from the `_excluded` list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

```
function includeAccount(address account↑) external onlyOwner() {
    require(!_isExcluded[account↑], "TailTech: Account is already included");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account↑) {
            _excluded[i] = _excluded[_excluded.length - 1];
            tokenBalance[account↑] = 0;
            _isExcluded[account↑] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- The function `_getCurrentSupply` also uses the loop for evaluating total supply. It also could be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

```
function _getCurrentSupply() private view returns (uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (
            _rOwned[_excluded[i]] > rSupply ||
            _tOwned[_excluded[i]] > tSupply
        ) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

Recommendation:

Check that the excluded array length is not too big.

Owner privileges (In the period when the owner is not renounced)

- Owner can change the tax and charity fee.

```
function setTaxFee(uint256 fee↑) public onlyOwner {  
    _taxFee = fee↑;  
}  
  
ftrace | funcSig  
function setCharityFee(uint256 fee↑) public onlyOwner {  
    _charityFee = fee↑;  
}
```

- Owner can exclude from the fee.

```
function ExcludedFromFee(address account↑, bool) public onlyOwner {  
    isExcludedFromFee[account↑] = true;  
}
```

- Owner can change charity address.

```
function setCharityAddress(address _Address↑) public onlyOwner {  
    require(_Address↑ != charityAddress);  
    charityAddress = _Address↑;  
}
```

Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope.

Liquidity locking details NOT provided by the team.

TechRate note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.



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