Smart Contract Security Audit

Audit details:

Audited project:	Mullet Doge
Deployer address:	0x70878cfbfed3b686be18fa7f74a4f83f1ee04727
Client contacts:	Mullet Doge team
Blockchain:	Binance Smart Chain
Project website:	https://mulletdoge.com

May, 2021
TechRate

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 Mullet Doge to perform an audit of smart contracts:

- *https://bscscan.com/address/0x35278ccf9bdae082e97d29ed6a8f73e89a75159d#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

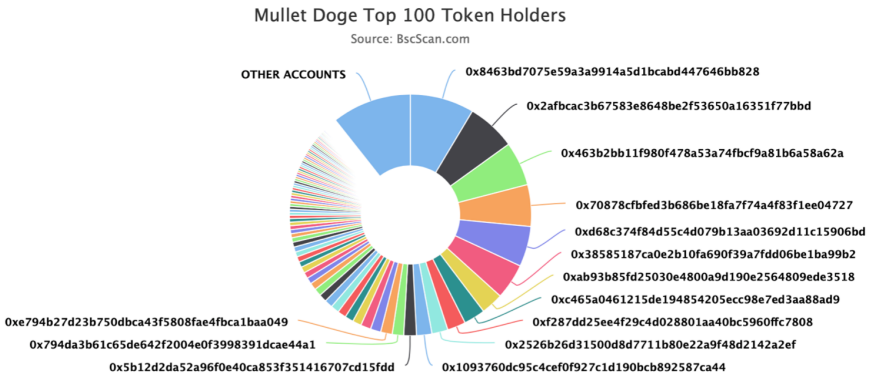
Token contract details for 04.05.2021.

Contract name:	Mullet Doge
Contract address:	0x35278ccf9bdae082e97d29ed6a8f73e89a75159d
Total supply:	84_707_777_156_392_857_466_589
Token ticker:	MDGE
Decimals:	9
Token holders:	782
Transactions count:	4000
Top 100 holders dominance:	89.36 %
Liquidity fee:	Private field
Tax fee:	Private field
Total fees:	15_292_222_843_607_142_533_411
Total burnt:	15_292_222_843_607_142_533_411
Contract deployer address:	0x70878cfbfed3b686be18fa7f74a4f83f1ee04727
Contract's current owner address:	0x0000000000000000000000000000000000000000

Mullet Doge token distribution

The top 100 holders collectively own 89.36% (75,694,054,475,954.60 Tokens) of Mullet Doge

Token Total Supply: 84,707,777,156,392.86 Token | Total Token Holders: 782

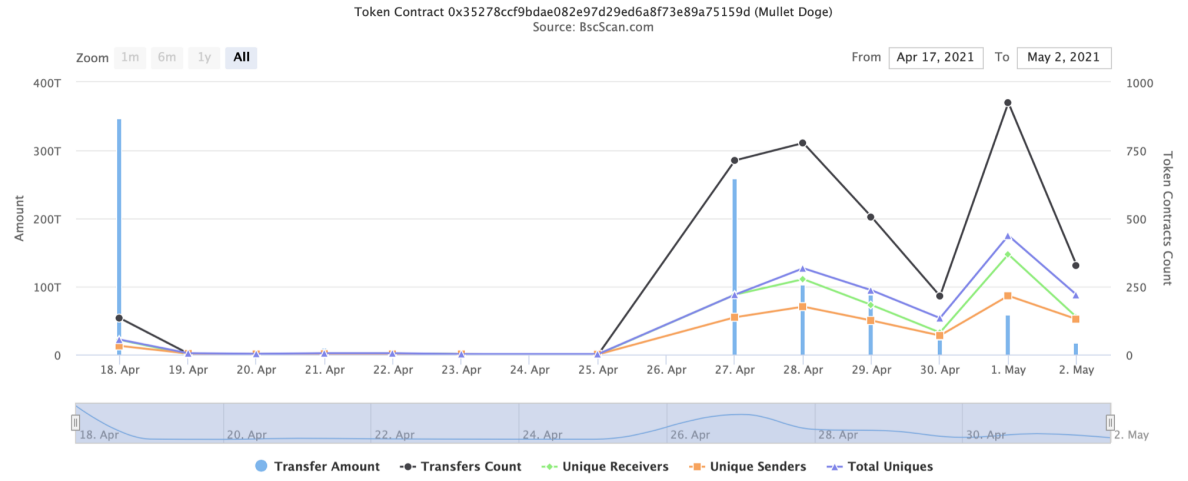


(A total of 75,694,054,475,954.60 tokens held by the top 100 accounts from the total supply of 84,707,777,156,392.86 token)

Mullet Doge contract interaction details

Time Series: Token Contract Overview

Sun 18, Apr 2021 - Sun 2, May 2021



Mullet Doge top 10 token holders

Rank	Address	Quantity (Token)	Percentage
1	0x8463bd7075e59a3a9914a5d1bcabd447646bb828	7,245,333,255,526.761798918	8.5533%
2	0x2afbcac3b67583e8648be2f53650a16351f77bbd	5,510,114,023,406.995550372	6.5049%
3	0x463b2bb11f980f478a53a74fbcf9a81b6a58a62a	5,000,085,998,423.510867747	5.9027%
4	0x70878cfbfed3b686be18fa7f74a4f83f1ee04727	4,732,120,411,518.141640995	5.5864%
5	0xd68c374f84d55c4d079b13aa03692d11c15906bd	4,568,323,051,127.422866416	5.3930%
6	0x38585187ca0e2b10fa690f39a7fdd06be1ba99b2	4,044,438,696,112.436424125	4.7746%
7	0xab93b85fd25030e4800a9d190e2564809ede3518	2,518,880,344,616.742287417	2.9736%
8	0xc465a0461215de194854205ecc98e7ed3aa88ad9	2,424,856,647,352.93648228	2.8626%
9	0xf287dd25ee4f29c4d028801aa40bc5960ffc7808	2,076,780,308,286.947255774	2.4517%
10	0x2526b26d31500d8d7711b80e22a9f48d2142a2ef	1,820,524,470,454.952456736	2.1492%

Contract functions details

+ Context
  - [Int] _msgSender
  - [Int] _msgData

+ [Int] IBEP20
  - [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)
  - [Int] <Constructor> #
  - [Pub] owner
  - [Pub] renounceOwnership #
    - modifiers: onlyOwner
  - [Pub] transferOwnership #
    - modifiers: onlyOwner

+ MDGE (Context, IBEP20, 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] totalFees
- [Pub] totalBurn
- [Pub] deliver #
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Ext] excludeAccount #
  - modifiers: onlyOwner
- [Ext] includeAccount #
  - modifiers: onlyOwner
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #
- [Prv] _transferBothExcluded #
- [Prv] _reflectFee #
- [Prv] _getValues
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Prv] _getTaxFee
- [Ext] _setTaxFee #
  - modifiers: onlyOwner
- [Ext] _setBurnFee #
  - modifiers: onlyOwner
- [Prv] _getMaxTxAmount

($) = 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 `includeAccount()` 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], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[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:

Use EnumerableSet instead of array or do not use long arrays.

Recommendations

- ❏ Change the wrong require comments in _setTaxFee and _setBurnFee functions.
- ❏ Change the wrong require comment in includeAccount function.

Conclusion

Smart contracts contain low severity issues and recommendations.

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.