Smart Contract Security Audit

Audit details:

Audited project:	FastMoon
Deployer address:	0x73852ea73f5a29ec0d164ea8909ddc36c88c5e9e
Client contacts:	FastMoon team
Blockchain:	Binance Smart Chain
Project website:	https://fastmoon.finance

April, 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 FastMoon to perform an audit of smart contracts:

- *https://bscscan.com/token/0x869dd7a64afbe5370a8c591d9b8650be60c0b8f6*

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

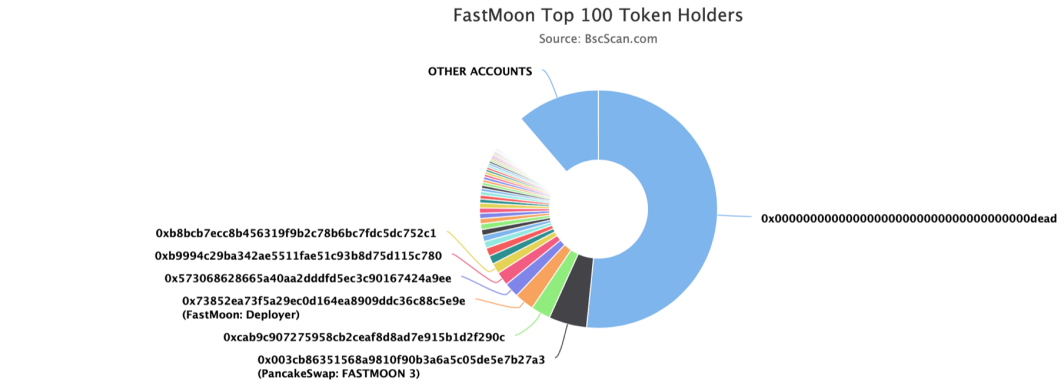
Token contract details for 12.04.2021.

Contract name:	FastMoon
Contract address:	0x869dd7a64afbe5370a8c591d9b8650be60c0b8f6
Total supply:	1_000_000_000_000_000_000_000_000
Token ticker:	FASTMOON
Decimals:	9
Token holders:	4712
Transactions count:	16328
Top 100 holders dominance:	88.7%
Contract deployer address:	0x73852ea73f5a29ec0d164ea8909ddc36c88c5e9e
Contract's current owner address:	0x73852ea73f5a29ec0d164ea8909ddc36c88c5e9e
Current liquidity fee:	4 percent
Current tax fee:	4 percent
Total fees:	93_551_834_744_311_646_593_143
Uniswap V2 pair:	0x003cb86351568a9810f90b3a6a5c05de5e7b27a3
Uniswap V2 router:	0x05ff2b0db69458a0750badebc4f9e13add608c7f
Max transaction amount:	5_000_000_000_000_000_000_000
Deployed at transaction:	0xe80b7098a9efbbe4e2dadf52dcd77a62eee76c2e0e45ef3acde6de8b7a175f4d

FastMoon token distribution

The top 100 holders collectively own 88.71% (887,102,508,938,430.00 Tokens) of FastMoon

Token Total Supply: 1,000,000,000,000,000.00 Token | Total Token Holders: 4,712

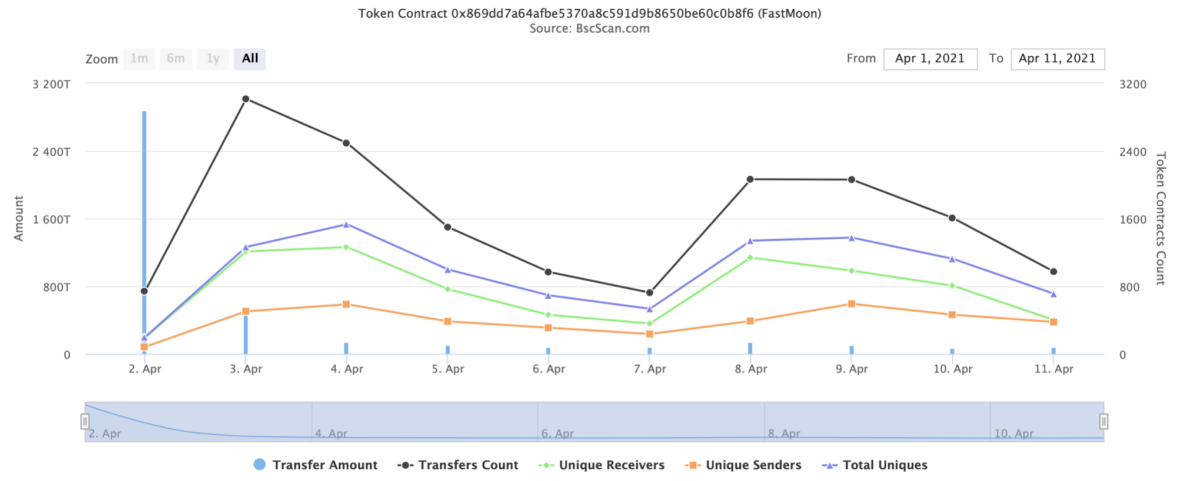


(A total of 887,102,508,938,430.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000,000.00 token)

FastMoon contract interaction details

Time Series: Token Contract Overview

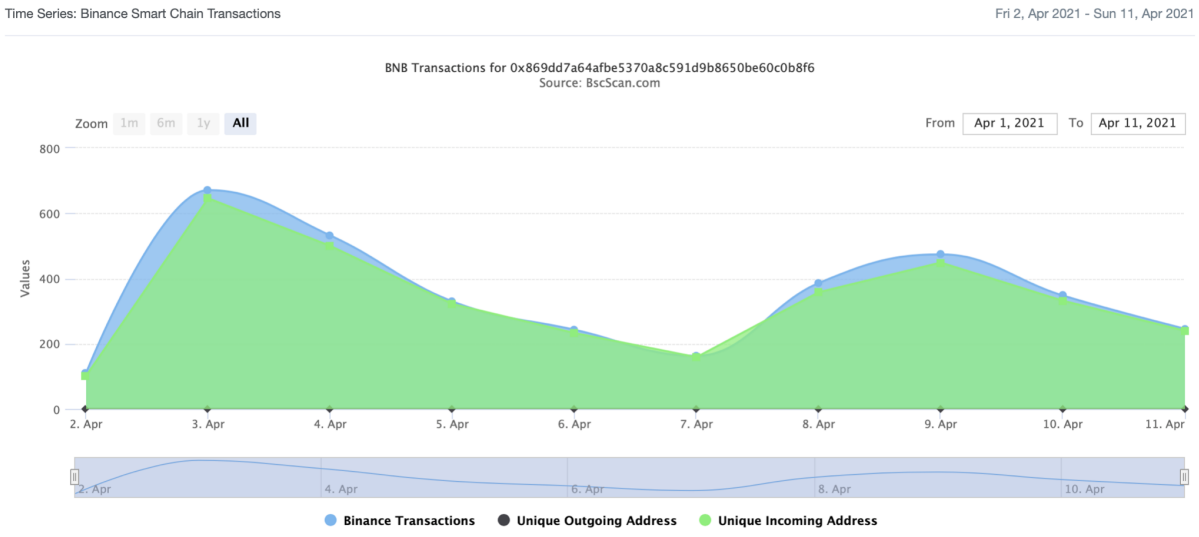
Fri 2, Apr 2021 - Sun 11, Apr 2021



FastMoon top 5 token holders

Rank	Address	Quantity	Percentage	Value
1	0x000000000000000000000000000000000000dead	516,081,884,322,204	51.6082%	$2,425,584.86
2	PancakeSwap: FASTMOON 3	51,682,248,060,720.1	5.1682%	$242,906.57
3	0xcab9c907275958cb2ceaf8d8ad7e915b1d2f290c	26,661,607,082,053.5	2.6662%	$125,309.55
4	FastMoon: Deployer	26,464,208,441,149.2	2.6464%	$124,381.78
5	0x573068628665a40aa2dddfd5ec3c90167424a9ee	20,345,180,095,345	2.0345%	$95,622.35

FastMoon contract transactions chart



Contract functions details

+ [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

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

+ [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
  - [Pub] geUnlockTime
  - [Pub] lock # - modifiers: onlyOwner
  - [Pub] unlock #

+ [Int] IUniswapV2Factory
  - [Ext] feeTo
  - [Ext] feeToSetter
  - [Ext] getPair

- [Ext] allPairs
- [Ext] allPairsLength
- [Ext] createPair #
- [Ext] setFeeTo #
- [Ext] setFeeToSetter #

+ [Int] IUniswapV2Pair
- [Ext] name
- [Ext] symbol
- [Ext] decimals
- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] allowance
- [Ext] approve #
- [Ext] transfer #
- [Ext] transferFrom #
- [Ext] DOMAIN_SEPARATOR
- [Ext] PERMIT_TYPEHASH
- [Ext] nonces
- [Ext] permit #
- [Ext] MINIMUM_LIQUIDITY
- [Ext] factory
- [Ext] token0
- [Ext] token1
- [Ext] getReserves
- [Ext] price0CumulativeLast
- [Ext] price1CumulativeLast
- [Ext] kLast
- [Ext] mint #
- [Ext] burn #
- [Ext] swap #
- [Ext] skim #
- [Ext] sync #
- [Ext] initialize #

+ [Int] IUniswapV2Router01
- [Ext] factory
- [Ext] WETH
- [Ext] addLiquidity #
- [Ext] addLiquidityETH ($)
- [Ext] removeLiquidity #
- [Ext] removeLiquidityETH #
- [Ext] removeLiquidityWithPermit #
- [Ext] removeLiquidityETHWithPermit #
- [Ext] swapExactTokensForTokens #
- [Ext] swapTokensForExactTokens #
- [Ext] swapExactETHForTokens ($)

  - [Ext] swapTokensForExactETH #
  - [Ext] swapExactTokensForETH #
  - [Ext] swapETHForExactTokens ($)
  - [Ext] quote
  - [Ext] getAmountOut
  - [Ext] getAmountIn
  - [Ext] getAmountsOut
  - [Ext] getAmountsIn

+ [Int] IUniswapV2Router02 (IUniswapV2Router01)
  - [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
  - [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #
  - [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
  - [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens ($)
  - [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

+ FastMoon (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] isExcludedFromReward
  - [Pub] totalFees
  - [Pub] deliver #
  - [Pub] reflectionFromToken
  - [Pub] tokenFromReflection
  - [Pub] excludeFromReward # - modifiers: onlyOwner
  - [Ext] includeInReward # - modifiers: onlyOwner
  - [Prv] _transferBothExcluded #
  - [Pub] excludeFromFee # - modifiers: onlyOwner
  - [Pub] includeInFee # - modifiers: onlyOwner
  - [Ext] setTaxFeePercent # - modifiers: onlyOwner
  - [Ext] setLiquidityFeePercent # - modifiers: onlyOwner
  - [Ext] setMaxTxPercent # - modifiers: onlyOwner
  - [Pub] setSwapAndLiquifyEnabled # - modifiers: onlyOwner
  - [Ext] <Fallback> ($)
  - [Prv] _reflectFee #
  - [Prv] _getValues
  - [Prv] _getTValues

- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Prv] _takeLiquidity #
- [Prv] calculateTaxFee
- [Prv] calculateLiquidityFee
- [Prv] removeAllFee #
- [Prv] restoreAllFee #
- [Pub] isExcludedFromFee
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] swapAndLiquify # - modifiers: lockTheSwap
- [Prv] swapTokensForEth #
- [Prv] addLiquidity #
- [Prv] _tokenTransfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #

($) = 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 `includeInReward()` uses the loop to find and remove addresses from the `_isExcluded` list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long excluded addresses list.

```
    function includeInReward(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.

Owner privileges

1. Owner privileges

- ❏ Owner can change the tax fee.

```
function includeInFee(address account⬆) public onlyOwner {
    _isExcludedFromFee[account⬆] = false;
}
```

- ❏ Owner can change the liquidity fee.

```
function setLiquidityFeePercent(uint256 liquidityFee⬆) external onlyOwner() {
    _liquidityFee = liquidityFee⬆;
}
```

- ❏ Owner can change the maximum transaction amount.

```
function setMaxTxPercent(uint256 maxTxPercent⬆) external onlyOwner() {
    _maxTxAmount = _tTotal.mul(maxTxPercent⬆).div(
        10**2
    );
}
```

- ❏ Owner can exclude from the fee.

```
function excludeFromFee(address account⬆) public onlyOwner {
    _isExcludedFromFee[account⬆] = true;
}
```

Conclusion

Smart contracts do not contain any high severity issues! However, there are some owner privileges.

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.