



TechRate
AUDIT COMPANY

Smart Contract Security Audit

Audit Details



Audited project

Metaroid NFT



Deployer address

0x2fafa265a008b6671bd1cf9997ac6b1be48da4cd



Client contacts:

Metaroid NFT team



Blockchain

Binance Smart Chain



Project website:

<https://www.metaroid.io/>

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 Metaroid NFT to perform an audit of smart contracts:

<https://bscscan.com/address/0x6fced7dfda0c5c0e213d8ade9af6dc6c727a0840#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 15.02.2022

Contract name	Metaroid NFT
Contract address	0x6fceD7dfDa0C5C0e213D8ade9AF6dC6c727A0840
Total supply	1,000,000,000
Token ticker	METAROID
Decimals	9
Token holders	1,857
Transactions count	5,505
Top 100 holders dominance	83.57%
Liquidity fee	1
Tax fee	2
Total fees	15738567093914849
Uniswap V2 pair	0x9241b819bbc4b5d768c710c484427b9cf046acd5
Contract deployer address	0x2fafa265a008b6671bd1cf9997ac6b1be48da4cd
Contract's current owner address	0x2fafa265a008b6671bd1cf9997ac6b1be48da4cd

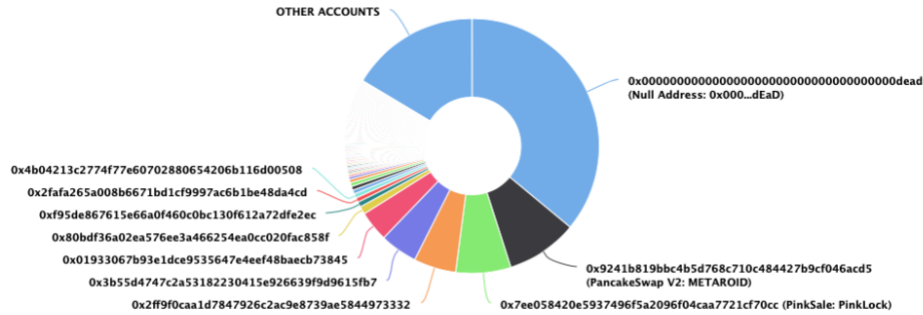
Metaroid NFT Token Distribution

The top 100 holders collectively own 83.57% (835,670,308.57 Tokens) of Metaroid NFT

Token Total Supply: 1,000,000,000.00 Token | Total Token Holders: 1,857

Metaroid NFT Top 100 Token Holders

Source: BscScan.com



(A total of 835,670,308.57 tokens held by the top 100 accounts from the total supply of 1,000,000,000.00 token)

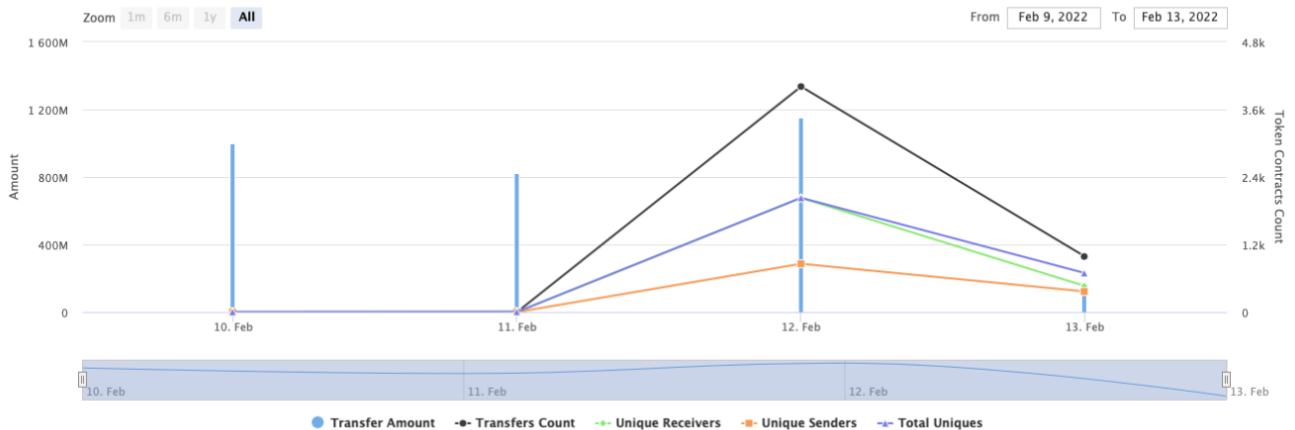
Metaroid NFT Contract Interaction Details

Time Series: Token Contract Overview




Thu 10, Feb 2022 - Sun 13, Feb 2022

Token Contract 0x6fcd7dfda0c5c0e213d8ade9af6dc6c727a0840 (Metaroid NFT)

Source: BscScan.com



Metaroid NFT Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	Null Address: 0x000...dEaD	360,000,000	36.0000%
2	 PancakeSwap V2: METAROID	90,732,405.150036577	9.0732%
3	 PinkSale: PinkLock	70,010,112.225590169	7.0010%
4	 0x2ff9f0caa1d7847926c2ac9e8739ae5844973332	53,808,746.277813353	5.3809%
5	0x3b55d4747c2a53182230415e926639f9d9615fb7	47,582,959.630378022	4.7583%
6	0x01933067b93e1dce9535647e4eef48baecb73845	38,704,516.401706685	3.8705%
7	0x80bdf36a02ea576ee3a466254ea0cc020fac858f	10,000,000	1.0000%
8	0xf95de867615e66a0f460c0bc130f612a72dfe2ec	6,414,172.921739296	0.6414%
9	0x2fafa265a008b6671bd1cf9997ac6b1be48da4cd	5,820,096.395092492	0.5820%
10	0x4b04213c2774f77e60702880654206b116d00508	5,500,775.583494232	0.5501%



Contract functions details

- + [Int] IERC20
 - [Ext] totalSupply
 - [Ext] balanceOf
 - [Ext] transfer #
 - [Ext] allowance
 - [Ext] approve #
 - [Ext] transferFrom #
- + [Lib] SafeMath
 - [Int] tryAdd
 - [Int] trySub
 - [Int] tryMul
 - [Int] tryDiv
 - [Int] tryMod
 - [Int] add
 - [Int] sub
 - [Int] mul
 - [Int] div
 - [Int] mod
 - [Int] sub
 - [Int] div
 - [Int] mod
- + Context
 - [Int] _msgSender
 - [Int] _msgData
- + [Lib] Address
 - [Int] isContract
 - [Int] sendValue #
 - [Int] functionCall #
 - [Int] functionCall #
 - [Int] functionCallWithValue #
 - [Int] functionCallWithValue #
 - [Int] functionStaticCall
 - [Int] functionStaticCall
 - [Int] functionDelegateCall #
 - [Int] functionDelegateCall #
 - [Prv] _verifyCallResult
- + Ownable (Context)
 - [Pub] <Constructor> #
 - [Pub] owner
 - [Pub] renounceOwnership #
 - modifiers: onlyOwner
 - [Pub] transferOwnership #
 - modifiers: onlyOwner
- + [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 #
- + METAROID (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] setMarketingFeePercent #
 - 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] _takeMarketing #

- [Prv] calculateTaxFee
- [Prv] calculateMarketingFee
- [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 `_excluded` 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(!_excluded[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:

Check that the excluded array length is not too big.

Notes:

- numTokensSellToAddToLiquidity and _maxTxAmount equals _tTotal.

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

- Owner can change the tax, marketing and liquidity fee.

```
ftrace | funcSig
function setTaxFeePercent(uint256 taxFee↑) external onlyOwner() {
    _taxFee = taxFee↑;
}

ftrace | funcSig
function setMarketingFeePercent(uint256 marketingFee↑) external onlyOwner() {
    _marketingFee = marketingFee↑;
}

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

Liquidity locking details provided by the team:

<https://www.pinksale.finance/#/pinklock/record/22549?chain=BSC>

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.