



TechRate
AUDIT COMPANY

Smart Contract Security Audit

TechRate

May, 2021

Audit Details



Audited project

EloniumCoin



Deployer address

0x85682d9FB22b6a87c2D0d36F1EDf4155F1FEFe1a



Client contacts:

EloniumCoin team



Blockchain

Binance Smart Chain



Project website:

<https://eloniumcoin.com/>

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 EloniumCoin to perform an audit of smart contracts:

<https://bscscan.com/address/0x45b110fcdd1a20fceb1805ec0f7ca6ef3712befc#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

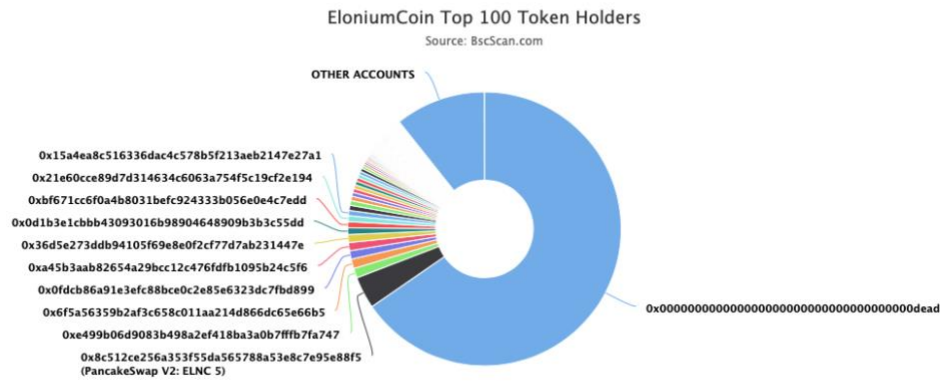
Token contract details for 07.06.2021

Contract name	EloniumCoin
Contract address	0x45B110fCdd1a20fCEb1805ec0F7Ca6ef3712BeFc
Total supply	873,998,839,359.304361
Token ticker	ELNC
Decimals	9
Token holders	3,038
Transactions count	11,093
Top 100 holders dominance	89.28%
Liquidity fee	2
Tax fee	5
Total fees	139976860110122380034
Uniswap V2 pair	0x8c512ce256a353f55da565788a53e8c7e95e88f5
Contract deployer address	0x85682d9FB22b6a87c2D0d36F1EDf4155F1FEFe1a
Contract's current owner address	0x322af42975b61c304e5ad601e2e0c0ffcffc6dab

EloniumCoin Token Distribution

💡 The top 100 holders collectively own 89.28% (780,317,355,559.87 Tokens) of EloniumCoin

Token Total Supply: 873,998,839,359.30 Token | Total Token Holders: 3,038

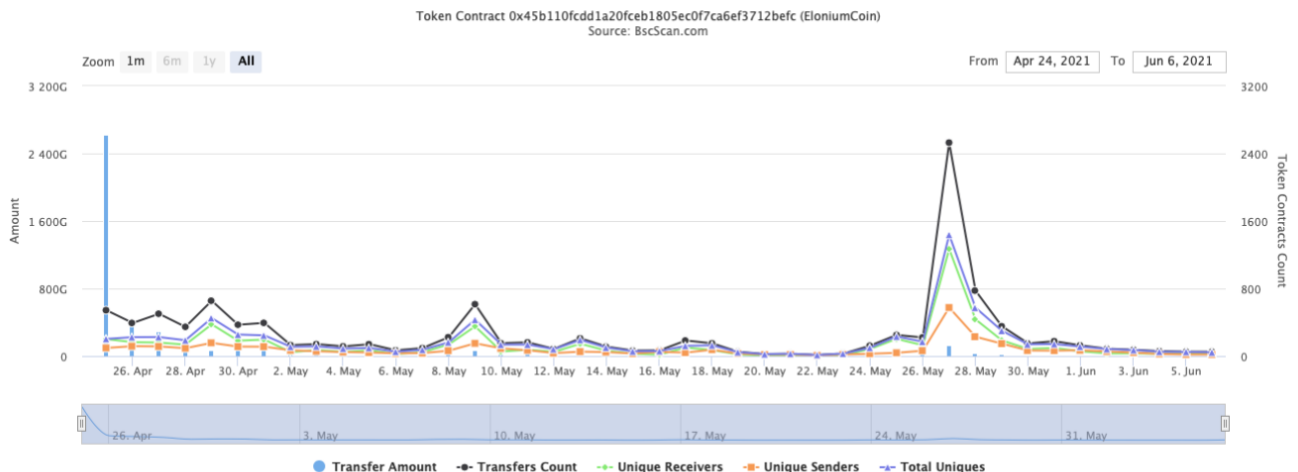


(A total of 780,317,355,559.87 tokens held by the top 100 accounts from the total supply of 873,998,839,359.30 token)


EloniumCoin Contract Interaction Details

Time Series: Token Contract Overview



Sun 25, Apr 2021 - Sun 6, Jun 2021



[illegible]

Rank	Address	Quantity (Token)	Percentage
1	0x00000000000000000000000000000000dead	571,656,455,658.77947592	65.4070%
2	 PancakeSwap V2: ELNC 5	33,091,444,982.217994589	3.7862%
3	0xe499b06d9083b498a2ef418ba3a0b7ffb7fa747	9,908,850,078.912476871	1.1337%
4	0x6f5a56359b2af3c658c011aa214d866dc65e66b5	9,832,683,670.628948361	1.1250%
5	0x0fdcbb86a91e3efc88bce0c2e85e6323dc7fbd899	8,641,452,344.532869727	0.9887%
6	0xa45b3aab82654a29bcc12c476fdb1095b24c5f6	8,511,084,580.084559468	0.9738%
7	0x36d5e273ddb94105f69e8e0f2cf77d7ab231447e	8,157,530,833.025418157	0.9334%
8	0x0d1b3e1cbbb43093016b98904648909b3b3c55dd	6,830,893,725.587747978	0.7816%
9	0xbf671cc6f0a4b8031befc924333b056e0e4c7edd	6,365,312,329.634143584	0.7283%
10	0x21e60cce89d7d314634c6063a754f5c19cf2e194	6,007,878,884.050244247	0.6874%

EloniumCoin LP Token Holders

Rank	Address	Quantity	Percentage
1	 0x3f4d6bf08cb7a003488ef082102c2e6418a4551e	59.8427	99.6764%
2	0xee8eadebb4ffa1614dd552596ed6799d861031bc	0.121291244590021383	0.2020%
3	0x07d80ae6f36a5e08dca74ce884a24d39db9934ed	0.058169010229233907	0.0969%
4	0x9cf124390815fe5d7626bc501e6d38e97fb705cd	0.007002638433648399	0.0117%
5	0xabbd4769782d5043a5a7a2f591682d3b7c2d4bf9	0.005722173639088012	0.0095%
6	0x00136076820f96e82f7c515f8b72fbf515617d14	0.00207579952203366	0.0035%
7	 0x00	0.000000000000001	0.0000%

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
- + 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 #

+ EloniumCoin (Context, IERC20, Ownable)

- [Pub] <Constructor> #
 - modifiers: Ownable
- [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] totalBurn
- [Pub] deliver #
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Pub] excludeFromReward #
 - modifiers: onlyOwner
- [Ext] includeInReward #
 - modifiers: onlyOwner
- [Pub] excludeFromFee #
 - modifiers: onlyOwner
- [Pub] includeInFee #
 - modifiers: onlyOwner
- [Ext] setTaxFeePercent #
 - modifiers: onlyOwner
- [Ext] setLiquidityFeePercent #
 - modifiers: onlyOwner
- [Ext] setBurnFeePercent #
 - modifiers: onlyOwner
- [Ext] setMinLiquidityPercent #
 - modifiers: onlyOwner
- [Ext] setMaxTxPercent #
 - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
 - modifiers: onlyOwner
- [Ext] <Fallback> (\$)
- [Ext] setUniswapRouter #
 - modifiers: onlyOwner
- [Ext] setUniswapPair #
 - modifiers: onlyOwner
- [Ext] setExcludedFromAutoLiquidity #
 - modifiers: onlyOwner
- [Ext] setExcludedToAutoLiquidity #
 - modifiers: onlyOwner
- [Prv] removeAllFee #
- [Prv] restoreAllFee #
- [Pub] isExcludedFromFee
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] swapAndLiquify #
 - modifiers: lockTheSwap
- [Prv] swapTokensForEth #
- [Prv] addLiquidity #
- [Prv] _tokenTransfer #
- [Prv] _transferBothExcluded #

- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #
- [Prv] _reflectFee #
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Prv] _takeLiquidity #
- [Prv] calculateTaxFee
- [Prv] calculateLiquidityFee
- [Prv] calculateBurnFee

(\$) = 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.

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

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

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

ftrace | funcSig
function setLiquidityFeePercent(uint256 liquidityFee↑) external onlyOwner {
    _liquidityFee = liquidityFee↑;
}

ftrace | funcSig
function setBurnFeePercent(uint256 burnFee↑) external onlyOwner {
    _burnFee = burnFee↑;
}
```

- Owner can change the maximum transaction amount.

```
function setMaxTxPercent(uint256 maxTxPercent↑) external onlyOwner {
    _maxTxAmount = _tTotal.mul(maxTxPercent↑).div(100);
}
```

- Owner can exclude from the fee.

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

- Owner can change minimum balance to add to liquidity.

```
function setMinBalanceToAddToLiquidity(uint256 minBalance↑) external onlyOwner {
    numTokensSellToAddToLiquidity = minBalance↑;
}
```

- Owner can lock and unlock. By the way, using these functions the owner could leave as owner even after the ownership was renounced.


```

//Locks the contract for owner for the amount of time provided
function lock(uint256 time) public virtual onlyOwner {
    _previousOwner = _owner;
    _owner = address(0);
    _lockTime = now + time;
    emit OwnershipTransferred(_owner, address(0));
}

//Unlocks the contract for owner when _lockTime is exceeds
function unlock() public virtual {
    require(_previousOwner == msg.sender, "You don't have permission to unlock");
    require(now > _lockTime , "Contract is locked until 7 days");
    emit OwnershipTransferred(_owner, _previousOwner);
    _owner = _previousOwner;
}

```

- Owner can change Uniswap router and pair.

```

ftrace | funcSig
function setUniswapRouter(address r↑) external onlyOwner {
    IUniswapV2Router02 _uniswapV2Router = IUniswapV2Router02(r↑);
    uniswapV2Router = _uniswapV2Router;
}

ftrace | funcSig
function setUniswapPair(address p↑) external onlyOwner {
    uniswapV2Pair = p↑;
}

```

- Owner can exclude “from” and “to” auto liquidity(affects swapAndLiquifyEnabled part in _transfer function).

```

ftrace | funcSig
function setExcludedFromAutoLiquidity(address a↑, bool b↑) external onlyOwner {
    _isExcludedFromAutoLiquidity[a↑] = b↑;
}

ftrace | funcSig
function setExcludedToAutoLiquidity(address a↑, bool b↑) external onlyOwner {
    _isExcludedToAutoLiquidity[a↑] = b↑;
}

```

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://deeplock.io/lock/0x8C512cE256A353f55Da565788a53E8c7E95E88f5>

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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