soken

SMART CONTRACT
SECURITY AUDIT

Paradox Token

August, 2021

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Disclaimer

This is a comprehensive report based on our automated and manual examination of cybersecurity vulnerabilities and framework flaws. We took into consideration smart contract based algorithms, as well. Reading the full analysis report is essential to build your understanding of project's security level. It is crucial to take note, though we have done our best to perform this analysis and report, that you should not rely on the our research and cannot claim what it states or how we created it. Before making any judgments, you have to conduct your own independent research. We will discuss this in more depth in the following disclaimer - please read it fully.

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Security analysis is based only on the smart contracts. No applications or operations were reviewed for security. No product code has been reviewed.

Procedure

Our analysis contains following steps:

1. Project Analysis;

2. Manual analysis of smart contracts:
- Deploying smart contracts on any of the network(Ropsten/Rinkeby) using Remix IDE
- Hashes of all transaction will be recorded
- Behaviour of functions and gas consumption is noted, as well.

3. Unit Testing:
- Smart contract functions will be unit tested on multiple parameters and under multiple conditions to ensure that all paths of functions are functioning as intended.
- In this phase intended behaviour of smart contract is verified.
- In this phase, we would also ensure that smart contract functions are not consuming unnecessary gas.
- Gas limits of functions will be verified in this stage.

4. Automated Testing:
- Mythril
- Oyente
- Manticore
- Solgraph

Terminology

We categorize the finding into 4 categories based on their vulnerability:

- Low-severity issue — less important, must be analyzed
- Medium-severity issue — important, needs to be analyzed and fixed
- High-severity issue —important, might cause vulnerabilities, must be analyzed and fixed
- Critical-severity issue —serious bug causes, must be analyzed and fixed.

Limitations

The security audit of Smart Contract cannot cover all vulnerabilities. Even if no vulnerabilities are detected in the audit, there is no guarantee that future smart contracts are safe. Smart contracts are in most cases safeguarded against specific sorts of attacks. In order to find as many flaws as possible, we carried out a comprehensive smart contract audit. Audit is a document that is not legally binding and guarantees nothing.

Token Contract Details for 23.08.2021

Contract Name: **Paradox Token**

Deployer address: **0x7ef70df9c9b90d420078e0f60a4dbaaa7538b330**

Total Supply: **16,000,000,000**

Token Tracker: **PDoX**

Decimals: **18**

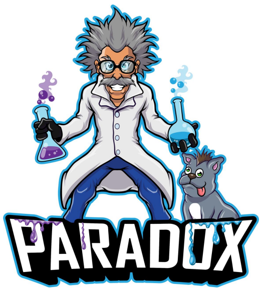
Token holders: **2**

Transactions count: **2**

Top 100 holders dominance: **100%**

Contract deployer address:
0x7ef70df9c9b90d420078e0f60a4dbaaa7538b330

Audit Details



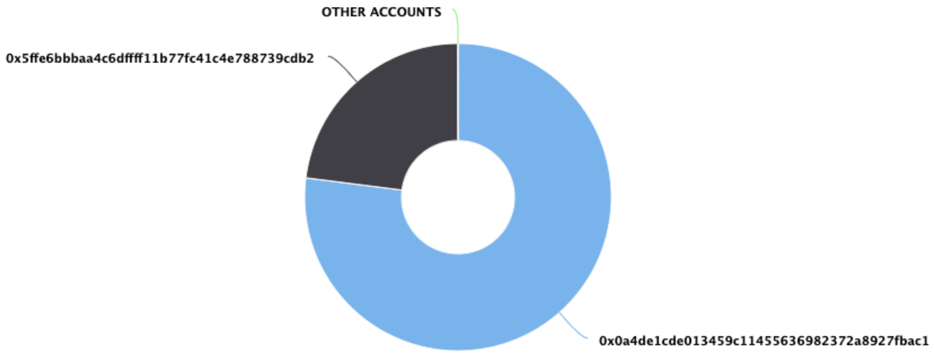
Project Name: **Paradox Token**

Language: **Solidity**

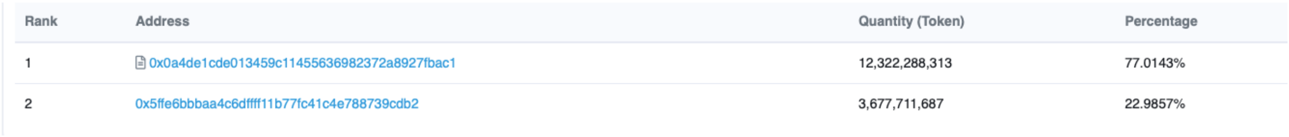
Blockchain: **BSC**

Project Website: **paradoxtoken.net**

Paradox Token Distribution



Paradox Top 10 Holders



Rank	Address	Quantity (Token)	Percentage
1	0x0a4de1cde013459c11455636982372a8927fbac1	12,322,288,313	77.0143%
2	0x5ffe6bbbaa4c6dffff11b77fc41c4e788739cdb2	3,677,711,687	22.9857%

Contract Function Details

+ Main.sol
- [Pub] updateDividendTracker
- [Pub] updateUniswapV2Router
- [Pub] excludeFromFees
- [Pub] excludeMultipleAccountsFromFees
- [Ext] setMarketingWallet
- [Ext] setMaxWallet
- [Ext] setBUSDRewardsFee
- [Ext] setLiquiditFee
- [Ext] setMarketingFee
- [Pub] setAutomatedMarketMakerPair
- [Prv] _setAutomatedMarketMakerPair
- [Pub] updateGasForProcessing
- [Ext] updateClaimWait
- [Ext] getTotalDividendsDistributed
- [Pub] isExcludedFromFees
- [Pub] withdrawableDividendOf
- [Pub] dividendTokenBalanceOf
- [Ext] excludeFromDividends
- [Ext] getAccountDividendsInfo
- [Ext] getAccountDividendsInfoAtIndex
- [Ext] processDividendTracker
- [Ext] claim
- [Ext] getLastProcessedIndex
- [Ext] getNumberOfDividendTokenHolders
- [Int] _transfer
- [Prv] swapAndSendToFee
- [Prv] swapAndLiquify
- [Prv] swapTokensForEth
- [Prv] swapTokensForBUSD
- [Prv] addLiquidity
- [Prv] swapAndSendDividends
- [Prv] addLiquidity
- [Prv] addLiquidity

+ ParadoxDividendTracker is Ownable, DividendPayingToken
- [Int] _transfer
- [Pub] withdrawDividend
- [Ext] excludeFromDividends
- [Ext] updateClaimWait
- [Ext] getLastProcessedIndex
- [Ext] getNumberOfTokenHolders

- [Pub] getAccount
- [Pub] getAccountAtIndex
- [Prv] canAutoClaim
- [Ext] setBalance
- [Pub] process
- [Pub] processAccount

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

+ DividendPayingToken.sol
- [Pub] distributeBUSDDividends
- [Pub] withdrawDividend
- [Pub] _withdrawDividendOfUser
- [Pub] dividendOf
- [Pub] withdrawableDividendOf
- [Pub] withdrawnDividendOf
- [Pub] accumulativeDividendOf
- [Int] _transfer
- [Int] _mint
- [Int] _burn
- [Int] _setBalance

+ DividendPayingTokenInterface.sol
- [Ext] dividendOf
- [Ext] withdrawDividend

+ DividendPayingTokenOptionalInterface.sol
- [Ext] withdrawableDividendOf
- [Ext] withdrawnDividendOf
- [Ext] accumulativeDividendOf

+ ERC20 is Context, IERC20
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer #
- [Pub] allowance
- [Pub] approve #
- [Pub] transferFrom #
- [Pub] increaseAllowance
- [Pub] decreaseAllowance

- [Int] _transfer
- [Int] _mint
- [Int] _burn
- [Int] _approve
- [Int] _setupDecimals
- [Int] _beforeTokenTransfer

+ [Int] IERC20.sol
- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer #
- [Ext] allowance #
- [Ext] approve
- [Ext] transferFrom #

+ [Int] IERC20Metadata is IERC20
- [Ext] name
- [Ext] symbol
- [Ext] decimals

+ [Lib] IterableMapping.sol
- [Pub] get
- [Pub] getIndexOfKey
- [Pub] getKeyAtIndex
- [Pub] size
- [Pub] set
- [Pub] remove

+ [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]_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 #

+ Ownable.sol (Context)
- [Pub] <Constructor> #
- [Pub] owner
- [Pub] renounceOwnership #
  - modifiers: onlyOwner
- [Pub] transferOwnership #
  - modifiers: onlyOwner

+ [Lib] SafeMath
- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div
- [Int] mod
- [Int] mod

+ [Lib] SafeMathInt
- [Int] mul
- [Int] div
- [Int] sub
- [Int] add
- [Int] abs
- [Int] toUint256Safe

+ [Lib] SafeMathUint
- [Int] toUint256Safe

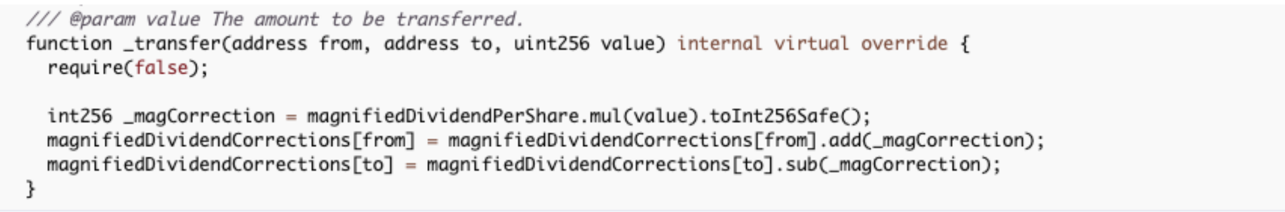
($) = payable function
# = non-constant function

Vulnerabilities checking

Issue Description	Checking Status
Compiler Errors	Completed
Delays in Data Delivery	Completed
Re-entrancy	Completed
Transaction-Ordering Dependence	Completed
Timestamp Dependence	Completed
Shadowing State Variables	Completed
DoS with Failed Call	Completed
DoS with Block Gas Limit	Completed
Outdated Complier Version	Completed
Assert Violation	Completed
Use of Deprecated Solidity Functions	Completed
Integer Overflow and Underflow	Completed
Function Default Visibility	Completed
Malicious Event Log	Completed
Math Accuracy	Completed
Design Logic	Completed
Fallback Function Security	Completed
Cross-function Race Conditions	Completed
Safe Zeppelin Module	Completed

Security Issues

1) Unreachable code:



```
/// @param value The amount to be transferred.
function _transfer(address from, address to, uint256 value) internal virtual override {
  require(false);

  int256 _magCorrection = magnifiedDividendPerShare.mul(value).toInt256Safe();
  magnifiedDividendCorrections[from] = magnifiedDividendCorrections[from].add(_magCorrection);
  magnifiedDividendCorrections[to] = magnifiedDividendCorrections[to].sub(_magCorrection);
}
```

Given the require(false) statement, the code block will never be executed and is unnecessary.

Recommendation:

We recommend removing the unreachable / unnecessary code block

2) Missing Emit Events:

The function that affects the status of sensitive variables should be able to emit events as notifications to customers. E.g. _transfer( ) ; setBalance()

Recommendation:

We recommend adding events for sensitive actions, and emit them in the function.

3) Volatile Code:

The return values of functions *swapExactTokensForETHSupportingFeeOnTransferTokens* and *addLiquidityETH* are not properly handled.

Recommendation:

We recommend using variables to receive the return value of the functions mentioned above and handle both success and failure cases if needed by the business logic.

Conclusion

Low-severity issues exist within smart contracts. Smart contracts are free from any critical or high-severity issues.

NOTE: Please check the disclaimer above and note, that audit makes no statements or warranties on business model, investment attractiveness or code sustainability.

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