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AUDIT COMPANY

Smart Contract Security Audit

TechRate

July, 2021

Audit Details

Audited project

Wraith

Deployer address

0x07453870EAE19ef582a3c8A165a77Cc1EFb8eb65

Client contacts:

Wraith team

Blockchain

Binance Smart Chain

Project website:

https://wraithprotocol.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 Wraith to perform an audit of smart contracts:

https://bscscan.com/address/0x8b3b45E48bE6C31366ffd9dD4F29C1edFFcbA97D#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

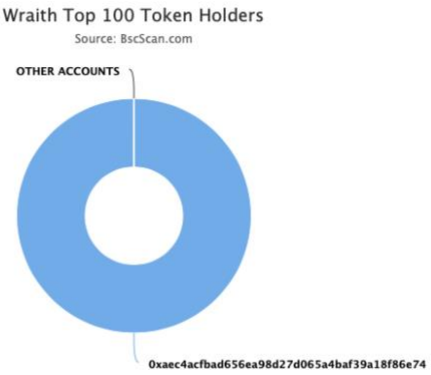
Token contract details for 08.08.2021

Contract name	Wraith
Contract address	0x8b3b45E48bE6C31366ffd9dD4F29C1edFFcbA97D
Total supply	10,000,000,000,000
Token ticker	WRAITH
Decimals	9
Token holders	1
Transactions count	3
Top 100 holders dominance	100.00%
Liquidity fee	5
Total tax fee	15
Wraith charity address	0xa6d605bba28fdca4033b0c52fe61e6f09c405371
Uniswap V2 pair	0xf615808db3918a96890e861b7d731bd97e0ec8be
Contract deployer address	0x07453870EAE19ef582a3c8A165a77Cc1EFb8eb65
Contract's current owner address	0x07453870EAE19ef582a3c8A165a77Cc1EFb8eb65

Wraith Token Distribution

The top 100 holders collectively own 100.00% (10,000,000,000,000.00 Tokens) of Wraith

Token Total Supply: 10,000,000,000,000.00 Token | Total Token Holders: 1



(A total of 10,000,000,000,000.00 tokens held by the top 100 accounts from the total supply of 10,000,000,000,000.00 token)

Wraith Contract Interaction Details

Time Series: Token Contract Overview

Wed 14, Jul 2021 - Wed 14, Jul 2021

Wraith Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	0xaec4acfbad656ea98d27d065a4baf39a18f86e74	10,000,000,000,000	100.0000%

Contract functions details

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

+ [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

+ [Lib] Address
  - [Int] isContract
  - [Int] sendValue #
  - [Int] functionCall #
  - [Int] functionCall #
  - [Int] functionCallWithValue #
  - [Int] functionCallWithValue #
  - [Prv] _functionCallWithValue #

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

+ WRAITH (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] minimumTokensBeforeSwapAmount
- [Prv] deliver #
- [Prv] reflectionFromToken
- [Prv] tokenFromReflection
- [Prv] _approve #
- [Prv] _transfer #
- [Prv] swapAndLiquify #
  - modifiers: lockTheSwap
- [Prv] swapTokensForEth #
- [Prv] addLiquidity #
- [Prv] _tokenTransfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #
- [Prv] _transferBothExcluded #
- [Prv] _getRate
- [Prv] _getValues
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getCurrentSupply
- [Prv] _takeLiquidity #
- [Prv] calculateFee
- [Prv] removeAllFee #
- [Prv] restoreAllFee #
- [Pub] isExcludedFromFee
- [Pub] excludeFromFee #
  - modifiers: onlyOwner
- [Pub] includeInFee #
  - modifiers: onlyOwner
- [Ext] setTaxes #
  - modifiers: onlyOwner
- [Ext] setMaxTxAmount #
  - modifiers: onlyOwner
- [Ext] setNumTokensBeforeSwap #
  - modifiers: onlyOwner
- [Ext] setMarketingWalletAddress #
  - modifiers: onlyOwner
- [Ext] setWraithCharityWalletAddress #

  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyByLimitOnly #
  - modifiers: onlyOwner
- [Ext] prepareForPreSale #
  - modifiers: onlyOwner
- [Ext] prepareForLaunch #
  - modifiers: onlyOwner
- [Prv] transferToAddressETH #
- [Pub] changeRouterVersion #
  - modifiers: onlyOwner
- [Ext] <Fallback> ($)

($) = 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.	Passed
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

No low severity issues found.

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

- Owner can change the maximum transaction amount.

```
function setMaxTxAmount(uint256 maxTxAmount⬆) external onlyOwner() {
    _maxTxAmount = maxTxAmount⬆;
}
```

- Owner can exclude from the fee.

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

- Owner can change minimum tokens before swap.

```
function setNumTokensBeforeSwap(uint256 newLimit⬆) external onlyOwner() {
    minimumTokensBeforeSwap = newLimit⬆;
}
```

- Owner can change marketing and Wraith charity wallets.

```
ftrace | funcSig
function setMarketingWalletAddress(address newAddress⬆) external onlyOwner() {
    marketingWalletAddress = payable(newAddress⬆);
}

ftrace | funcSig
function setWraithCharityWalletAddress(address newAddress⬆) external onlyOwner() {
    wraithCharityWalletAddress = payable(newAddress⬆);
}
```

- Owner can disable and enable swapAndLiquifyByLimitOnly.

```
function setSwapAndLiquifyByLimitOnly(bool newValue⬆) public onlyOwner {
    swapAndLiquifyByLimitOnly = newValue⬆;
}
```

- Owner can enable prepareForPreSale and prepareForLaunch presets.

```
function prepareForPreSale() external onlyOwner {
    setSwapAndLiquifyEnabled(false);
    _totalTaxPercent = 0;
    _prevTotalTaxPercent = 0;
    _maxTxAmount = 1000000000 * 10**6 * 10**9;
}
ftrace | funcSig
function prepareForLaunch() external onlyOwner {
    setSwapAndLiquifyEnabled(true);
    _totalTaxPercent = _burnFee.add(_liquidityFee).add(_marketingFee).add(_wraithCharityFee);
    _prevTotalTaxPercent = _totalTaxPercent;
    _maxTxAmount = 3000000 * 10**6 * 10**9;
}
```

- **Owner can change router address.**

```
function changeRouterVersion(address newRouterAddress⬆) public onlyOwner returns(address newPairAddress⬆) {

        IUniswapV2Router02 _uniswapV2Router = IUniswapV2Router02(newRouterAddress⬆);

        newPairAddress⬆ = IUniswapV2Factory(_uniswapV2Router.factory()).getPair(address(this), _uniswapV2Router.WETH());

        if(newPairAddress⬆ == address(0)) //Create If Doesnt exist
        {
            newPairAddress⬆ = IUniswapV2Factory(_uniswapV2Router.factory())
                .createPair(address(this), _uniswapV2Router.WETH());
        }

        uniswapV2Pair = newPairAddress⬆; //Set new pair address
        uniswapV2Router = _uniswapV2Router; //Set new router address
    }
```

- **Owner can change fees.**

```
ftrace | funcSig
function setTaxes(uint256 newBurnFee⬆, uint256 newLiquidityTax⬆, uint256 newMarketingTax⬆, uint256 newWraithCharityTax⬆) external onlyOwner() {
    _burnFee = newBurnFee⬆;
    _liquidityFee = newLiquidityTax⬆;
    _marketingFee = newMarketingTax⬆;
    _wraithCharityFee = newWraithCharityTax⬆;
    _totalTaxPercent = _burnFee.add(_liquidityFee).add(_marketingFee).add(_wraithCharityFee);
    _prevTotalTaxPercent = _totalTaxPercent;
}
```

- **Owner can lock and unlock. By the way, using these functions the owner could retake privileges 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;
}
```

Conclusion

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

Liquidity locking details are NOT provided by the team.

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.