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AUDIT COMPANY

Smart Contract Security Audit

TechRate

September, 2021

Audit Details

Audited project

Bullish AF

Deployer address

0xbc809e21d7324f099ab1fefc44bb1c314e4c4cea

Client contacts:

Bullish AF team

Blockchain

Binance Smart Chain

Project website:

http://thebullishtoken.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 Bullish AF to perform an audit of smart contracts:

https://bscscan.com/address/0x740a00c764e8d9c7946a751526e2ba4c8a44212b#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

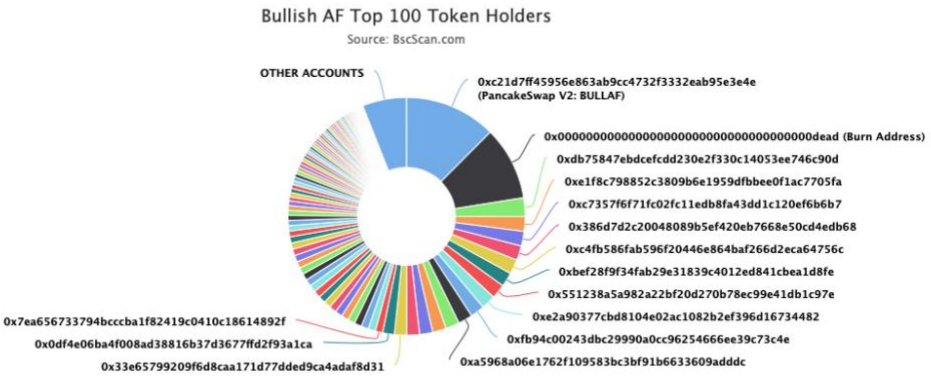
Token contract details for 14.09.2021

Contract name	Bullish AF
Contract address	0x740a00c764E8d9c7946A751526e2ba4C8A44212B
Total supply	300,000,000,000
Token ticker	BULLAF
Decimals	9
Token holders	732
Transactions count	16,194
Top 100 holders dominance	93.99%
Marketing wallet	0xc0007e5c3d2604ee263edbbdf15acd72efaac2ae
Total tax fee selling	18
Total tax fee buying	14
Uniswap V2 pair	0xc21d7ff45956e863ab9cc4732f3332eab95e3e4e
Contract deployer address	0xbc809e21d7324f099ab1fefc44bb1c314e4c4cea
Contract's current owner address	0xbc809e21d7324f099ab1fefc44bb1c314e4c4cea

Bullish AF Token Distribution

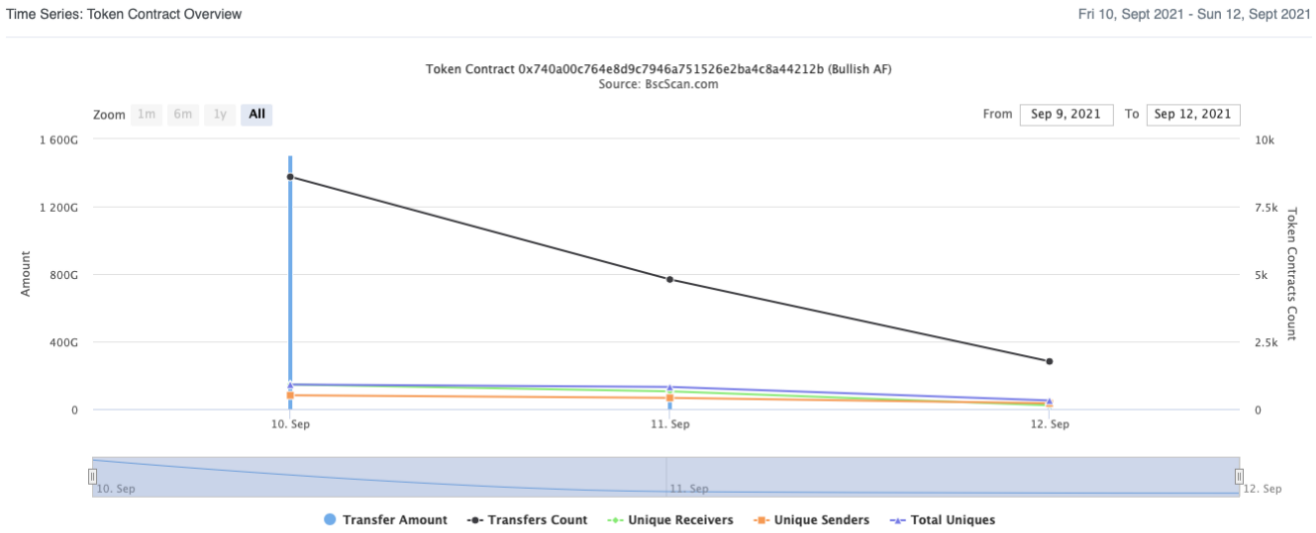
The top 100 holders collectively own 93.99% (281,968,796,603.45 Tokens) of Bullish AF

Token Total Supply: 300,000,000,000.00 Token | Total Token Holders: 732



(A total of 281,968,796,603.45 tokens held by the top 100 accounts from the total supply of 300,000,000,000.00 token)

Bullish Contract Interaction Details



Bullish AF Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	PancakeSwap V2: BULLAF	37,481,113,047.949485901	12.4937%
2	Burn Address	30,000,000,000	10.0000%
3	0xdb75847ebdcefcdd230e2f330c14053ee746c90d	7,632,516,080.953140879	2.5442%
4	0xe1f8c798852c3809b6e1959dfbbee0f1ac7705fa	5,996,305,872.502973688	1.9988%
5	0xc7357f6f71fc02fc11edb8fa43dd1c120ef6b6b7	5,959,163,779.72076383	1.9864%
6	0x386d7d2c20048089b5ef420eb7668e50cd4edb68	5,950,988,344.466620551	1.9837%
7	0xc4fb586fab596f20446e864baf266d2eca64756c	5,932,258,315.130502066	1.9774%
8	0xbef28f9f34fab29e31839c4012ed841cbea1d8fe	5,848,000,000	1.9493%
9	0x551238a5a982a22bf20d270b78ec99e41db1c97e	5,847,805,710.767099005	1.9493%
10	0xe2a90377cbd8104e02ac1082b2ef396d16734482	5,834,970,139.30077104	1.9450%

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 #

+ BullishAF (Context, IERC20, Ownable)

- [Pub] <Constructor> #
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] allowance
- [Pub] increaseAllowance #
- [Pub] decreaseAllowance #
- [Pub] minimumTokensBeforeSwapAmount
- [Pub] approve #
- [Prv] _approve #
- [Pub] blacklistAddress #
  - modifiers: onlyOwner
- [Pub] setIsExcludedFromFee #
  - modifiers: onlyOwner
- [Ext] setTaxes #
  - modifiers: onlyOwner
- [Ext] setMaxTxAmount #
  - modifiers: onlyOwner
- [Ext] enableDisableWalletLimit #
  - modifiers: onlyOwner
- [Ext] setIsWalletLimitExempt #
  - modifiers: onlyOwner
- [Ext] setWalletLimit #
  - modifiers: onlyOwner
- [Ext] setNumTokensBeforeSwap #
  - modifiers: onlyOwner
- [Ext] setMarketingWalletAddress #
  - modifiers: onlyOwner
- [Ext] setbuyBackWalletAddress #
  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyByLimitOnly #
  - modifiers: onlyOwner
- [Pub] getCirculatingSupply
- [Prv] transferToAddressETH #
- [Pub] changeRouterVersion #
  - modifiers: onlyOwner
- [Ext] <Fallback> ($)
- [Pub] transfer #
- [Pub] transferFrom #
- [Prv] _transfer #
- [Int] _basicTransfer #
- [Prv] swapAndLiquify #
  - modifiers: lockTheSwap
- [Prv] swapTokensForEth #
- [Prv] addLiquidity #
- [Int] takeFee #

($) = 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 blacklist addresses.

```
function blacklistAddress(address account, bool newValue) public onlyOwner {
    isBlacklisted[account] = newValue;
}
```

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

```
function setTaxes(
    uint256 newLiquidityTax,
    uint256 newMarketingTax,
    uint256 newBuyBackTax,
    uint256 newExtraFeeOnSell
) external onlyOwner {
    _liquidityFee = newLiquidityTax;
    _marketingFee = newMarketingTax;
    _buyBackFee = newBuyBackTax;
    _extraFeeOnSell = newExtraFeeOnSell;

    _totalTaxIfBuying = _liquidityFee.add(_marketingFee).add(_buyBackFee);
    _totalTaxIfSelling = _totalTaxIfBuying.add(_extraFeeOnSell);
}
```

- Owner can change the maximum transaction amount.

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

- Owner can exclude from the fee.

```
function setIsExcludedFromFee(address account⬆, bool newValue⬆)
    public
    onlyOwner
{
    isExcludedFromFee[account⬆] = newValue⬆;
}
```

- Owner can change wallet limits settings.

```
ftrace | funcSig
function enableDisableWalletLimit(bool newValue⬆) external onlyOwner {
    checkWalletLimit = newValue⬆;
}

ftrace | funcSig
function setIsWalletLimitExempt(address holder⬆, bool exempt⬆)
    external
    onlyOwner
{
    isWalletLimitExempt[holder⬆] = exempt⬆;
}

ftrace | funcSig
function setWalletLimit(uint256 newLimit⬆) external onlyOwner {
    _walletMax = newLimit⬆;
}
```

- Owner can marketing and buyback wallets.

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

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

- Owner can change minimum number of tokens before swap.

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

- Owner can change Uniswap 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 swap and liquify settings.

```
ftrace | funcSig
function setSwapAndLiquifyEnabled(bool _enabled⬆) public onlyOwner {
    swapAndLiquifyEnabled = _enabled⬆;
    emit SwapAndLiquifyEnabledUpdated(_enabled⬆);
}

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

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

```
ftrace | funcSig
function lock(uint256 time⬆) public virtual onlyOwner {
    _previousOwner = _owner;
    _owner = address(0);
    _lockTime = block.timestamp + time⬆;
    emit OwnershipTransferred(_owner, address(0));
}

ftrace | funcSig
function unlock() public virtual {
    require(_previousOwner == msg.sender, "You don't have permission to unlock");
    require(block.timestamp > _lockTime , "Contract is locked until 7 days");
    emit OwnershipTransferred(_owner, _previousOwner);
    _owner = _previousOwner;
}
```

Conclusion

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

Liquidity locking details are provided by the team:
https://dxsale.app/app/v3/dxlockview?id=0&add=0xbC809e21D7324f099ab1feFC44bB1c314e4C4CeA&type=lplock&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.