



**CONTRACT  
WOLF**

**Blockchain Security - Smart Contract Audits**



**Security Assessment**

February 19, 2023



<b>Disclaimer</b>	<b>3</b>
<b>Scope of Work &amp; Engagement</b>	<b>3</b>
<b>Project Description</b>	<b>4</b>
<b>Risk Level Classification</b>	<b>5</b>
<b>Methodology</b>	<b>6</b>
<b>Used Code from other Frameworks / Smart Contracts (Imports)</b>	<b>7</b>
<b>Token Description</b>	<b>8</b>
<b>Inheritance Graph</b>	<b>9</b>
<b>Overall Checkup</b>	<b>10</b>
<b>Verify Claim</b>	<b>11</b>
<b>Write Functions of Contract</b>	<b>12</b>
<b>Call Graph</b>	<b>13</b>
<b>SWC Attacks</b>	<b>14</b>
<b>Audit Result</b>	<b>16</b>
<b>Findings</b>	<b>17</b>
<b>Audit Comments</b>	<b>20</b>

## Disclaimer

**ContractWolf.io** audits and reports should not be considered as a form of project's "advertisement" and does not cover any interaction and assessment from "project's contract" to "external contracts" such as Pancakeswap or similar.

**ContractWolf** does not provide any warranty on its released reports.

**ContractWolf** should not be used as a decision to invest into an audited project and is not affiliated nor partners to its audited contract projects.

**ContractWolf** provides transparent report to all its "clients" and to its "clients participants" and will not claim any guarantee of bug-free code within its **SMART CONTRACT**.

**ContractWolf** presence is to analyze, audit and assess the client's smart contract's code.

Each company or projects should be liable to its security flaws and functionalities.

## Scope of Work

**Belifex** team agreed and provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract.

The goal of this engagement was to identify if there is a possibility of security flaws in the implementation of the contract or system.

**ContractWolf** will be focusing on contract issues and functionalities along with the projects claims from smart contract to their website, whitepaper and repository which has been provided by **Belifex**.

# Description

**Belifex Blockchain Solutions** is an open-source public blockchain and cryptocurrency project.

**Belifex** will be the beginning of a new era with the projects MVP called **BeliPay**, the ultrasonic speed Gateway/Processor Platform.

**BeliSwap** will provide staking and farming solutions for all projects build on Binance Smart Chain.



# Risk Level Classification

Risk Level represents the classification or the probability that a certain function or threat that can exploit vulnerability and have an impact within the system or contract.

Risk Level is computed based on CVSS Version 3.0

Level	Value	Vulnerability
Critical	9 - 10	An Exposure that can affect the contract functions in several events that can risk and disrupt the contract
High	7 - 8.9	An Exposure that can affect the outcome when using the contract that can serve as an opening in manipulating the contract in an unwanted manner
Medium	4 - 6.9	An opening that could affect the outcome in executing the contract in a specific situation
Low	0.1 - 3.9	An opening but doesn't have an impact on the functionality of the contract
Informational	0	An opening that consists of information's but will not risk or affect the contract

# Auditing Approach

Every line of code along with its functionalities will undergo manual review to check its security issues, quality, and contract scope of inheritance. The manual review will be done by our team that will document any issues that there were discovered.

## Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:

- Review of the specifications, sources, and instructions provided to ContractWolf to make sure we understand the size, scope, and functionality of the smart contract.
- Manual review of code, our team will have a process of reading the code line-by-line with the intention of identifying potential vulnerabilities and security flaws.

2. Testing and automated analysis that includes:

- Testing the smart contract functions with common test cases and scenarios, to ensure that it returns the expected results.

3. Best practices review, the team will review the contract with the aim to improve efficiency, effectiveness, clarifications, maintainability, security, and control within the smart contract.

4. Recommendations to help the project take steps to secure the smart contract.

# Used Code from other Frameworks/Smart Contracts (Direct Imports)

## Imported Packages

- AddressUpgradeable
- Initializable
- ContextUpgradeable
- IERC20Upgradeable
- IERC20MetadataUpgradeable
- IterableMapping
- SafeMathUint
- SafeMathInt
- IUniswapV2Pair
- SafeMath
- OwnableUpgradeable
- ERC20Upgradeable
- Context
- IERC20
- IERC20Metadata
- IUniswapV2Router01
- IUniswapV2Router02
- IUniswapV2Factory
- Clones
- Ownable
- ERC20
- DividendPayingTokenInterface
- DividendPayingTokenOptionalInterface
- DividendPayingToken
- DividendTokenDividendTracker
- IgemAntibot
- IPancakeCaller
- DividendTokenWithAntibot

# Description

Optimization enabled: Yes

Decimal: 18

Symbol: BEFX

Max / Total Supply: 100,000,000

## Capabilities

### Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	5	6	12	5

### Exposed Functions

Version	Public	Private	External	Internal
1.0	56	9	116	67

### State Variables

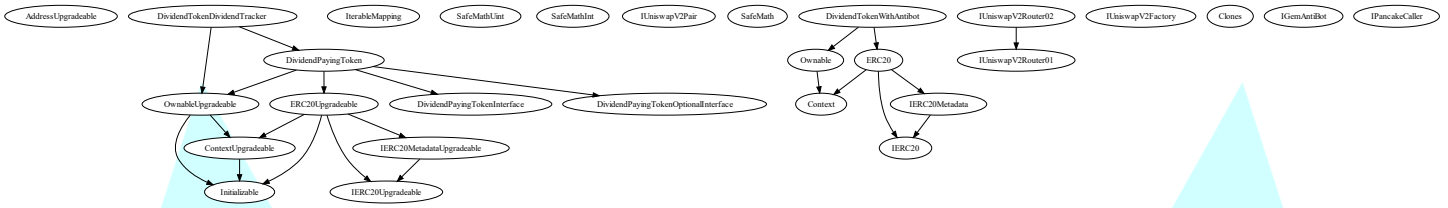
Version	Total	Public
1.0	63	25

## Capabilities

Version	Solidity Versions Observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	v0.8.13		Yes	Yes	No



# Inheritance Graph



# Correct implementation of Token Standard

Tested	Verified
✓	✓

## Overall Checkup (Smart Contract Security)

Tested	Verified
✓	✓

Function	Description	Exist	Tested	Verified
TotalSupply	Information about the total coin or token supply	✓	✓	✓
BalanceOf	Details on the account balance from a specified address	✓	✓	✓
Transfer	An action that transfers a specified amount of coin or token to a specified address	✓	✓	✓
TransferFrom	An action that transfers a specified amount of coin or token from a specified address	✓	✓	✓
Approve	Provides permission to withdraw specified number of coin or token from a specified address	✓	✓	✓

# Verify Claims

Statement	Exist	Tested	Deployer
Renounce Ownership	✓	✓	✓
Mint	✓	✓	✗
Burn	✓	✓	✗
Block	—	—	—
Pause	—	—	—

## Legend

Attribute	Symbol
Verified / Can	✓
Verified / Cannot	✗
Unverified / Not checked	🚩
Not Available	—

# Write Functions of Contract

1. approve

2. claim

3. decreaseAllowance

4. excludeFromDividends

5. excludeFromFees

6. excludeFromMaxTransactionAmount

7. increaseAllowance

8. processDividendTracker

9. renounceOwnership

10. setAutomatedMarketMakerPair

11. setMarketingWallet

12. setSwapTokensAtAmount

13. setUsingAntiBot

14. transfer

15. transferFrom

16. transferOwnership

17. updateClaimWait

18. updateDividendTracker

19. updateGasForProcessing

20. updateLiquidityFee

21. updateMarketingFee

22. updateMaxTransactionAmount

23. updateMaxWallet

24. updateMinimumTokenBalanceForDividends

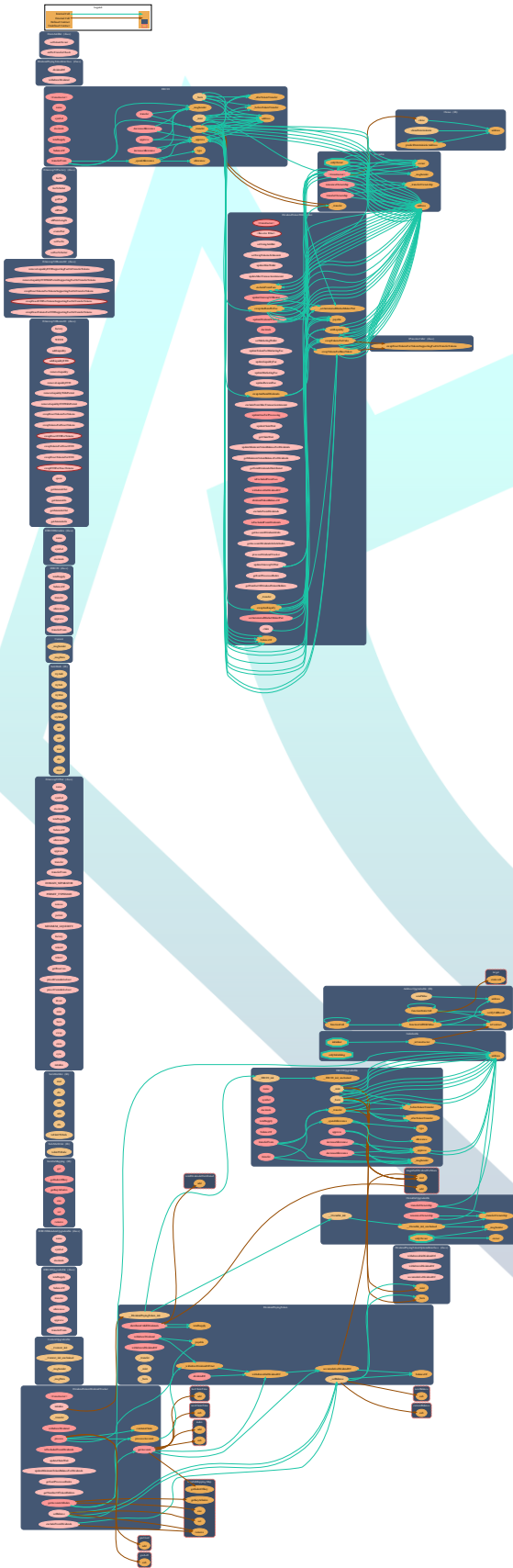
25. updateRewardFee

26. updateTokenForMarketingFee

27. updateUniswapV2Pair

28. updateUniswapV2Router

# Call Graph



# SWC Attacks

ID	Title	Status
<a href="#">SWC-136</a>	Unencrypted Private Data On-Chain	PASSED
<a href="#">SWC-135</a>	Code With No Effects	PASSED
<a href="#">SWC-134</a>	Message call with hardcoded gas amount	PASSED
<a href="#">SWC-133</a>	Hash Collisions with Multiple Variable Length Arguments	PASSED
<a href="#">SWC-132</a>	Unexpected Ether balance	PASSED
<a href="#">SWC-131</a>	Presence of unused variables	PASSED
<a href="#">SWC-130</a>	Right-To Left Override control character (U+202E)	PASSED
<a href="#">SWC-129</a>	Typographical Error	PASSED
<a href="#">SWC-128</a>	DoS With Block Gas Limit	PASSED
<a href="#">SWC-127</a>	Arbitrary Jump with Function Type Variable	PASSED
<a href="#">SWC-126</a>	Insufficient Gas Griefing	PASSED
<a href="#">SWC-125</a>	Incorrect Inheritance Order	PASSED
<a href="#">SWC-124</a>	Write to Arbitrary Storage Location	PASSED
<a href="#">SWC-123</a>	Requirement Violation	PASSED
<a href="#">SWC-122</a>	Lack of Proper Signature Verification	PASSED
<a href="#">SWC-121</a>	Missing Protection against Signature Replay Attacks	PASSED
<a href="#">SWC-120</a>	Weak Sources of Randomness from Chain Attributes	PASSED
<a href="#">SWC-119</a>	Shadowing State Variables	PASSED
<a href="#">SWC-118</a>	Incorrect Constructor Name	PASSED
<a href="#">SWC-117</a>	Signature Malleability	PASSED
<a href="#">SWC-116</a>	Block values as a proxy for time	PASSED
<a href="#">SWC-115</a>	Authorization through tx.origin	PASSED
<a href="#">SWC-114</a>	Transaction Order Dependence	PASSED
<a href="#">SWC-113</a>	DoS with Failed Call	PASSED
<a href="#">SWC-112</a>	Delegate call to Untrusted Callee	PASSED
<a href="#">SWC-111</a>	Use of Deprecated Solidity Functions	PASSED

<a href="#"><u>SWC-110</u></a>	Assert Violation	<b>PASSED</b>
<a href="#"><u>SWC-109</u></a>	Uninitialized Storage Pointer	<b>PASSED</b>
<a href="#"><u>SWC-108</u></a>	State Variable Default Visibility	<b>PASSED</b>
<a href="#"><u>SWC-107</u></a>	Reentrancy	<b>PASSED</b>
<a href="#"><u>SWC-106</u></a>	Unprotected SELFDESTRUCT Instruction	<b>PASSED</b>
<a href="#"><u>SWC-105</u></a>	Unprotected Ether Withdrawal	<b>PASSED</b>
<a href="#"><u>SWC-104</u></a>	Unchecked Call Return Value	<b>PASSED</b>
<a href="#"><u>SWC-103</u></a>	Floating Pragma	<b>LOW ISSUE</b>
<a href="#"><u>SWC-102</u></a>	Outdated Compiler Version	<b>PASSED</b>
<a href="#"><u>SWC-101</u></a>	Integer Overflow and Underflow	<b>PASSED</b>
<a href="#"><u>SWC-100</u></a>	Function Default Visibility	<b>PASSED</b>

# AUDIT PASSED

## Low Issues

A floating pragma is set (SWC-103)	L: 2	DividendTokenWithAntibot.sol IUniswapV2Factory.sol IUniswapV2Router01.sol DividendTokenDividendTracker.sol SafeMathInt.sol SafeMathUint.sol IterableMapping.sol
	L: 4	ERC20.sol Ownable.sol Clones.sol IUniswapV2Factory.sol IUniswapV2Router02.sol IERC20.sol IERC20Metadata.sol Context.sol ERC20Upgradeable.sol OwnableUpgradeable.sol SafeMath.sol IERC20Upgradeable.sol IERC20MetadataUpgradeable.sol ContextUpgradeable.sol Initializable.sol AddressUpgradeable.sol



# Findings

## Description:

A floating pragma is set (SWC-103)

## Suggestion:

Specific version to ensure that the bytecode does not vary between builds.

---

## Owner can set liquidity buy/sell fees up to 20%

```
function updateLiquidityFee(
    uint16 _sellLiquidityFee↑,
    uint16 _buyLiquidityFee↑
) external onlyOwner {
    require(
        _sellLiquidityFee↑+sellMarketingFee+sellRewardFee <= 200,
        "sell fee <= 20%"
    );
    require(
        _buyLiquidityFee↑+buyMarketingFee+buyRewardFee <= 200,
        "buy fee <= 20%"
    );
    emit UpdateLiquidityFee(
        _sellLiquidityFee↑,
        _buyLiquidityFee↑,
        sellLiquidityFee,
        buyLiquidityFee
    );
    sellLiquidityFee = _sellLiquidityFee↑;
    buyLiquidityFee = _buyLiquidityFee↑;
}
```

## Owner can set marketing buy/sell fees up to 20%

```
function updateMarketingFee(
    uint16 _sellMarketingFee!,
    uint16 _buyMarketingFee!
) external onlyOwner {
    require(
        _sellMarketingFee!+sellLiquidityFee+sellRewardFee <= 200,
        "sell fee <= 20%"
    );
    require(
        _buyMarketingFee!+buyLiquidityFee+buyRewardFee <= 200,
        "buy fee <= 20%"
    );
    emit UpdateMarketingFee(
        _sellMarketingFee!,
        _buyMarketingFee!,
        sellMarketingFee,
        buyMarketingFee
    );
    sellMarketingFee = _sellMarketingFee!;
    buyMarketingFee = _buyMarketingFee!;
}
```

## Owner can set reward buy/sell fees up to 20%

```
function updateRewardFee(
    uint16 _sellRewardFee!,
    uint16 _buyRewardFee!
) external onlyOwner {
    require(
        _sellRewardFee!+(sellLiquidityFee)+(sellMarketingFee) <= 200,
        "sell fee <= 20%"
    );
    require(
        _buyRewardFee!+(buyLiquidityFee)+(buyMarketingFee) <= 200,
        "buy fee <= 20%"
    );
    emit UpdateRewardFee(
        _sellRewardFee!,
        _buyRewardFee!,
        sellRewardFee,
        buyRewardFee);
    sellRewardFee = _sellRewardFee!;
    buyRewardFee = _buyRewardFee!;
}
```

## Owner can set max wallet limit

```
function updateMaxWallet(uint256 _maxWallet) external onlyOwner {
    require(_maxWallet>0, "maxWallet>0");
    emit UpdateMaxWallet(_maxWallet, maxWallet);
    maxWallet = _maxWallet;
}
```

---

## Owner can set max tx limit

```
function updateMaxTransactionAmount(uint256 _maxTransactionAmount)
    external
    onlyOwner
{
    require(_maxTransactionAmount>0, "maxTransactionAmount>0");
    maxTransactionAmount = _maxTransactionAmount;
    emit UpdateMaxTransactionAmount(_maxTransactionAmount, maxTransactionAmount);
}
```

# Audit Comments

- Owner can update buy/sell fees up to 20%
- Owner can set max wallet limit with an amount greater than 0
- Owner can set max tx limit with an amount greater than 0
- Owner can renounce ownership
- Owner can transfer ownership
- Owner can distribute CAKE dividends
- Owner can exclude addresses from dividends
- Owner can update claim wait between 1 to 24 hours
- Owner can update minimum token balance for dividends
- Owner can toggle antibot status
- Owner can set token swap threshold
- Owner can update dividend tracker address
- Owner can update pair address
- Owner can update router address
- Owner can include/exclude addresses from fees
- Owner can set marketing wallet address
- Owner can update token for marketing fee address
- Owner can set automated market maker pair address and status
- Owner can include/exclude addresses from max tx limit
- Owner can update gas with an amount between 200,000 to 500,000
- Owner cannot burn tokens
- Owner cannot block user
- Owner cannot pause contract
- Owner cannot mint after initial deployment



# **CONTRACTWOLF**

**Blockchain Security - Smart Contract Audits**