CONTRACT WOLF

Blockchain Security - Smart Contract Audits

# Security Assessment

September 28, 2022

# 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.

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**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

**Baby FPS** 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 **Baby FPS**.

# Description

**Baby FPS** was created by the top holder of the original FPS which hit 100M marketcap. Our aim is to give an opportunity for people who missed out on the main FPS and also bring more exposure to the main token.

# 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

- SafeMath
- BEP20
- Auth
- IDEXFactory
- PCSRouter
- IDividendDistributor
- DividendDistributor
- BABYFPSTOKEN

# Description

Optimization enabled: Yes

Decimal: 8

Symbol: BFPS

Max / Total Supply: 1,000,000,000

# Capabilities

## Components

| Version | Contracts | Libraries | Interfaces | Abstract |
|---|---|---|---|---|
| 1.0 | 2 | 1 | 4 | 1 |

## Exposed Functions

| Version | Public | Private | External | Internal |
|---|---|---|---|---|
| 1.0 | 6 | 0 | 50 | 19 |

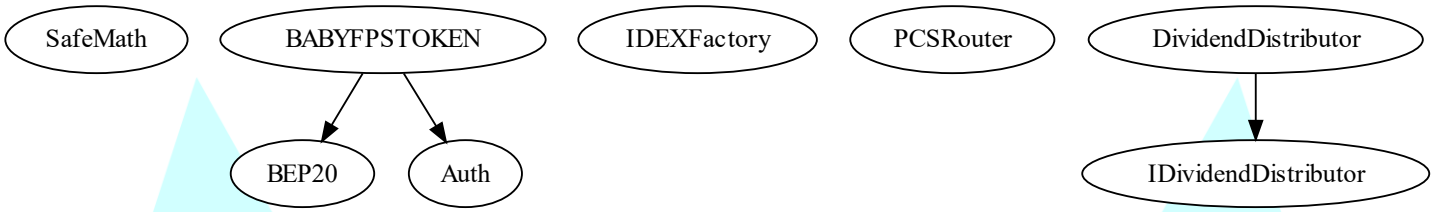
## State Variables

| Version | Total | Public |
|---|---|---|
| 1.0 | 55 | 39 |

## Capabilities

| Version | Solidity Versions Observed | Experimental Features | Can Receive Funds | Uses Assembly | Has Destroyable Contracts |
|---|---|---|---|---|---|
| 1.0 | v0.8.14 | | Yes | No | 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 | – | – | – |

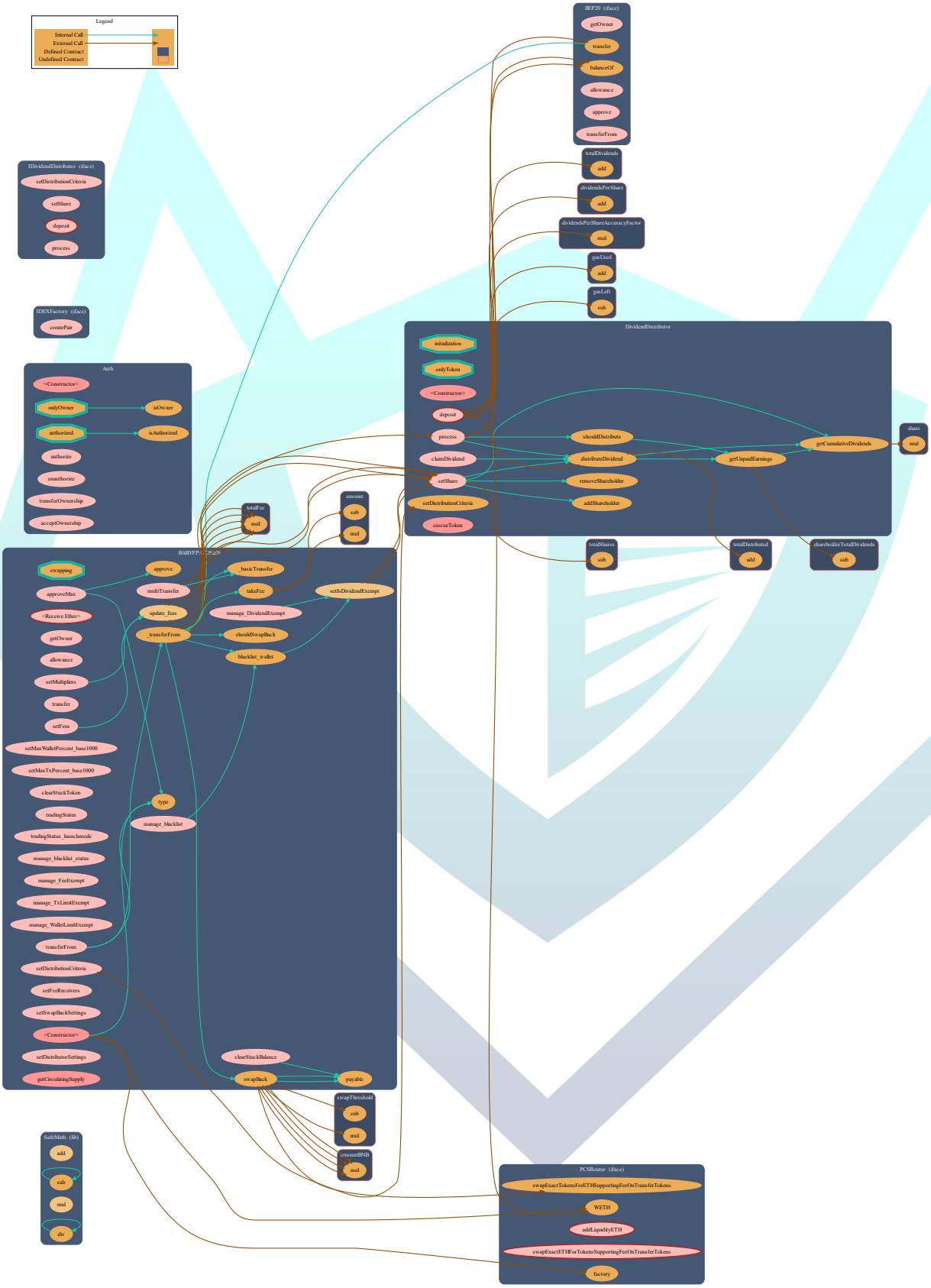
Legend

| Attribute | Symbol |
|---|---|
| Verified / Can | ✓ |
| Verified / Cannot | ✗ |
| Unverified / Not checked | ⚑ |
| Not Available | – |

# Write Functions of Contract

1. acceptOwnership
2. approve
3. approveMax
4. authorize
5. clearStuckBalance
6. clearStuckToken
7. manage_DividendExempt
8. manage_FeeExempt
9. manage_TxLimitExempt
10. manage_WalletLimitExempt
11. manage_blacklist
12. manage_blacklist_status
13. multiTransfer
14. setDistributionCriteria
15. setDistributorSettings
16. setFeeReceivers
17. setFees
18. setMaxTxPercent_base1000
19. setMaxWalletPercent_base1000
20. setMultipliers
21. setSwapBackSettings
22. tradingStatus
23. tradingStatus_launchmode
24. transfer
25. transferFrom
26. transferOwnership
27. unauthorize

# Call Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
IBEP20 (iface)
getOwner
transfer
balanceOf
allowance
approve
transferFrom
IDividendDistributor (iface)
setDistributionCriteria
setShare
deposit
process
totalDividends
add
dividendsPerShare
add
dividendsPerShareAccuracyFactor
mul
gasUsed
add
gasLeft
sub
IDEXFactory (iface)
createPair
DividendDistributor
initialization
onlyToken
<Constructor>
deposit
process
claimDividend
setShare
setDistributionCriteria
rescueToken
shouldDistribute
distributeDividend
removeShareholder
addShareholder
getUnpaidEarnings
getCumulativeDividends
share
mul
totalShares
sub
totalDistributed
add
shareholderTotalDividends
sub
Auth
<Constructor>
onlyOwner
isOwner
authorized
isAuthorized
authorize
unauthorize
transferOwnership
acceptOwnership
totalFee
mul
amount
sub
mul
BABYFP
swapping
approveMax
<Receive Ether>
getOwner
allowance
setMultipliers
transfer
setFees
setMaxWalletPercent_base1000
setMaxTxPercent_base1000
clearStuckToken
tradingStatus
tradingStatus_launchmode
manage_blacklist_status
manage_FeeExempt
manage_TxLimitExempt
manage_WalletLimitExempt
transferFrom
setDistributionCriteria
setFeeReceivers
setSwapBackSettings
<Constructor>
setDistributorSettings
getCirculatingSupply
approve
multiTransfer
update_fees
_transferFrom
_basicTransfer
takeFee
manage_DividendExempt
shouldSwapBack
blacklist_wallet
setIsDividendExempt
type
manage_blacklist
clearStuckBalance
swapBack
payable
swapThreshold
sub
mul
amountBNB
mul
SafeMath (lib)
add
sub
mul
div
PCSRouter (iface)
swapExactTokensForETHSupportingFeeOnTransferTokens
WETH
addLiquidityETH
swapExactETHForTokensSupportingFeeOnTransferTokens
factory

# SWC Attacks

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

| | | |
|---|---|---|
| SWC-110 | Assert Violation | **PASSED** |
| SWC-109 | Uninitialized Storage Pointer | **PASSED** |
| SWC-108 | State Variable Default Visibility | **LOW ISSUE** |
| SWC-107 | Reentrancy | **PASSED** |
| SWC-106 | Unprotected SELFDESTRUCT Instruction | **PASSED** |
| SWC-105 | Unprotected Ether Withdrawal | **PASSED** |
| SWC-104 | Unchecked Call Return Value | **PASSED** |
| SWC-103 | Floating Pragma | **PASSED** |
| SWC-102 | Outdated Compiler Version | **PASSED** |
| SWC-101 | Integer Overflow and Underflow | **PASSED** |
| SWC-100 | Function Default Visibility | **PASSED** |

# AUDIT PASSED

## Low Issues

| | |
|---|---|
| State variable visibility is not set (SWC-108) | L: 161, L: 162, L: 170, L: 171, L: 173, L: 174, L: 175, L: 189, L: 191, L: 335, L: 349, L: 383, L: 387 |
| Potential use of “block.number” as source of randomness (SWC-120) | L: 470, L: 481 |

# Function Comments

**Description:**

State variable visibility is not set (SWC-108)

**Suggestion:**

Specify variables as **public, internal, or private.**

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**Description:**

Potential use of “block.number” as source of randomness (SWC-120)

**Suggestion:**

- Using commitment scheme, e.g. RANDAO.
- Using external sources of randomness via oracles, e.g. Oraclize. Note that this approach requires trusting in oracle, thus it may be reasonable to use multiple oracles.
- Using of Bitcoin block hashes, as they are more expensive to mine.

# Audit Comments

- Owner can take tokens from other addresses
- Owner can set fees up to 100%
- Owner can set max wallet limit up to 100%
- Owner can set max tx limit up to 100%
- Owner can transfer ownership
- Owner can block/unblock user
- Owner can take BNB from contract
- Owner can take tokens from contract
- Owner can toggle trading and antibot status
- Owner can toggle blacklist status
- Owner can set swap back settings status
- Owner can set/unset addresses as authorized
- Authorized can include/exclude addresses from dividends
- Authorized can include/exclude addresses from fees
- Authorized can include/exclude addresses from max tx limit
- Authorized can include/exclude addresses from max wallet limit
- Authorized can set multipliers
- Authorized can set fee receivers
- Authorized can set distribution criteria
- Authorized can set gas with an amount not greater than 750,000
- Owner cannot burn tokens
- Owner cannot pause contract
- Owner cannot mint after initial deployment

# CONTRACTWOLF

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