



**TechRate**  
AUDIT COMPANY

# Smart Contract Security Audit

# Audit Details



Audited project

**Calypso**



Deployer address

**0xd3b8041c16fa42ee18cfe7fed31b0417664b44af**



Client contacts:

**Calypso team**



Blockchain

**Binance Smart Chain**



Project website:

**<https://calypso.market/>**

# 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 Calypso to perform an audit of smart contracts:

<https://bscscan.com/address/0xc4903bE0052eB897b9cCE1574838a9fE32eF97Ec#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 08.09.2021

|                                  |  |
|----------------------------------|--|
| Contract name                    | Calypso                                    |
| Contract address                 | 0xc4903bE0052eB897b9cCE1574838a9fE32eF97Ec |
| Total supply                     | 1,000,000,000,000,000                      |
| Token ticker                     | CYO  |
| Decimals                         | 9  |
| Token holders                    | 1  |
| Transactions count               | 1  |
| Top 100 holders dominance        | 100.00%                                    |
| Current fee sell total           | 30   |
| OSM wallet                       | 0xfaefe2e0d056243060a6f640d5735cae307001c4 |
| NFT wallet                       | 0xe89d7ed4268329df11a4935ee67dc553d9e4559e |
| Liquidity wallet                 | 0x58c22a5dc4f22a2553c012ff89b717a89c71abc0 |
| Dividend tracker                 | 0x4da1f09e562ed6e2d5cb4c429481baea429dffee |
| Uniswap V2 pair                  | 0x1837fb920124e4cdfa5a57f696baf5329ad7ba13 |
| Contract deployer address        | 0xd3b8041c16fa42ee18cfe7fed31b0417664b44af |
| Contract's current owner address | 0xd3b8041c16fa42ee18cfe7fed31b0417664b44af |

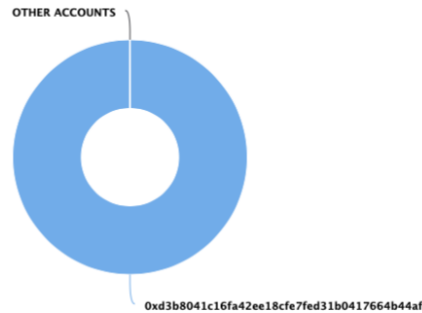
# Calypso Token Distribution

The top 100 holders collectively own 100.00% (1,000,000,000,000,000.00 Tokens) of Calypso

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

## Calypso Top 100 Token Holders

Source: BscScan.com



(A total of 1,000,000,000,000,000.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000,000.00 token)

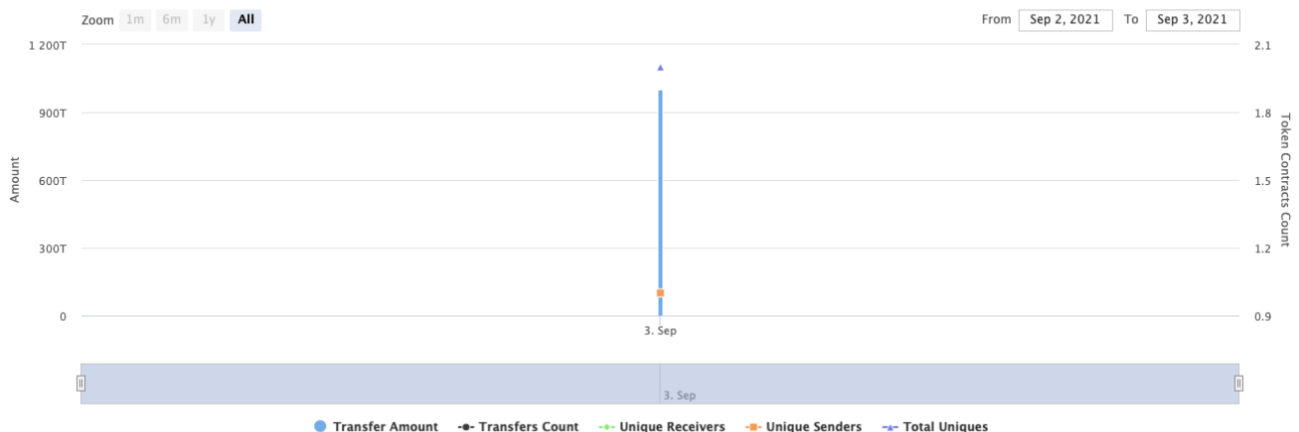
# Calypso Contract Interaction Details

Time Series: Token Contract Overview

Fri 3, Sept 2021 - Fri 3, Sept 2021

Token Contract 0xc4903bE0052eB897b9cCE1574838a9fE32eF97Ec (Calypso)

Source: BscScan.com



# Calypso Top 10 Token Holders

| Rank | Address  | Quantity (Token)      | Percentage |
|------|--|-----------------------|------------|
| 1    | <a href="#">0xd3b8041c16fa42ee18cfe7fed31b0417664b44af</a> | 1,000,000,000,000,000 | 100.0000%  |





# Contract functions details

- + [Int] IERC20
  - [Ext] totalSupply
  - [Ext] balanceOf
  - [Ext] transfer #
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transferFrom #
- + [Int] IERC20Metadata (IERC20)
  - [Ext] name
  - [Ext] symbol
  - [Ext] decimals
- + Context
  - [Int] \_msgSender
  - [Int] \_msgData
- + Ownable (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] IterableMapping
  - [Pub] get
  - [Pub] getIndexOfKey
  - [Pub] getKeyAtIndex
  - [Pub] size
  - [Pub] set #
  - [Pub] remove #
- + [Lib] SafeMathUint
  - [Int] toInt256Safe
- + [Lib] SafeMathInt
  - [Int] mul
  - [Int] div
  - [Int] sub
  - [Int] add



- [Int] abs
- [Int] toUint256Safe
- + [Int] DividendPayingTokenInterface
  - [Ext] dividendOf
  - [Ext] distributeDividends (\$)
  - [Ext] withdrawDividend #
- + [Int] DividendPayingTokenOptionalInterface
  - [Ext] withdrawableDividendOf
  - [Ext] withdrawnDividendOf
  - [Ext] accumulativeDividendOf
- + [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] mint #
  - [Ext] burn #
  - [Ext] swap #
  - [Ext] skim #
  - [Ext] sync #
  - [Ext] initialize #
- + [Int] IUniswapV2Factory
  - [Ext] feeTo
  - [Ext] feeToSetter
  - [Ext] getPair
  - [Ext] allPairs
  - [Ext] allPairsLength
  - [Ext] createPair #
  - [Ext] setFeeTo #
  - [Ext] setFeeToSetter #
- + [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 #

+ ERC20 (Context, IERC20, IERC20Metadata)

- [Pub] <Constructor> #
- [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] \_beforeTokenTransfer #

+ DividendPayingToken (ERC20, DividendPayingTokenInterface, DividendPayingTokenOptionalInterface)

- [Pub] <Constructor> #
  - modifiers: ERC20
- [Ext] <Fallback> (\$)
- [Pub] distributeDividends (\$)
- [Pub] withdrawDividend #
- [Int] \_withdrawDividendOfUser #
- [Pub] dividendOf
- [Pub] withdrawableDividendOf
- [Pub] withdrawnDividendOf

- [Pub] accumulativeDividendOf
- [Int] \_transfer #
- [Int] \_mint #
- [Int] \_burn #
- [Int] \_setBalance #
- + Calypso (ERC20, Ownable)
  - [Pub] <Constructor> #
    - modifiers: ERC20
  - [Ext] <Fallback> (\$)
  - [Pub] updateDividendTracker #
    - modifiers: onlyOwner
  - [Pub] updateUniswapV2Router #
    - modifiers: onlyOwner
  - [Pub] transfer #
  - [Pub] blacklistAddress #
    - modifiers: onlyOwner
  - [Pub] removeBlacklist #
    - modifiers: onlyOwner
  - [Pub] excludeFromFees #
    - modifiers: onlyOwner
  - [Pub] excludeMultipleAccountsFromFees #
    - modifiers: onlyOwner
  - [Ext] setSwapTokensAtAmount #
    - modifiers: onlyOwner
  - [Pub] updateOSMWallet #
    - modifiers: onlyOwner
  - [Pub] updateMarketingWallet #
    - modifiers: onlyOwner
  - [Pub] updateLiquiWallet #
    - modifiers: onlyOwner
  - [Pub] updateNFTWallet #
    - modifiers: onlyOwner
  - [Pub] updateGasForProcessing #
    - modifiers: onlyOwner
  - [Ext] updateClaimWait #
    - modifiers: onlyOwner
  - [Ext] getClaimWait
  - [Ext] getTotalDividendsDistributed
  - [Pub] isExcludedFromFees
  - [Pub] withdrawableDividendOf
  - [Pub] dividendTokenBalanceOf
  - [Ext] getAccountDividendsInfo
  - [Ext] getAccountDividendsInfoAtIndex
  - [Ext] processDividendTracker #
  - [Ext] claim #
  - [Ext] getLastProcessedIndex
  - [Ext] getNumberOfDividendTokenHolders
  - [Int] \_transfer #
  - [Prv] \_getFeeAmount
  - [Prv] \_accountAllFee #
  - [Prv] \_distributeBNBBalance #
  - [Prv] sendToWallet #
  - [Prv] buybackOSM #
  - [Ext] getBalance

- [Prv] swapTokensForBNB #
  - [Prv] sendDividends #
  - [Ext] withdrawTokens #
    - modifiers: onlyOwner
  - [Ext] launchNow #
    - modifiers: onlyOwner
  - [Ext] bulkSendToken #
  - [Ext] enableBurnFeeMode #
    - modifiers: onlyOwner
  - [Ext] disableBurnFeeMode #
    - modifiers: onlyOwner
  - [Ext] reduceSellFee #
    - modifiers: onlyOwner
  - [Ext] increaseSellFee #
    - modifiers: onlyOwner
- + CYODividendTracker (DividendPayingToken, Ownable)
- [Pub] <Constructor> #
    - modifiers: DividendPayingToken
  - [Int] \_transfer #
  - [Pub] withdrawDividend #
  - [Ext] excludeFromDividends #
    - modifiers: onlyOwner
  - [Ext] updateClaimWait #
    - modifiers: onlyOwner
  - [Ext] getLastProcessedIndex
  - [Ext] getNumberOfTokenHolders
  - [Pub] getAccount
  - [Pub] getAccountAtIndex
  - [Prv] canAutoClaim
  - [Ext] setBalance #
    - modifiers: onlyOwner
  - [Pub] process #
  - [Pub] processAccount #
    - modifiers: onlyOwner

(\$) = 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.                                       | Low issues      |
| 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

### 1. Out of gas

Issue:

- The function `excludeMultipleAccountsFromFees()` uses the loop to exclude multiple accounts from fees. Function will be aborted with `OUT_OF_GAS` exception if there will be a long addresses list.
- The function `bulkSendToken()` uses the loop to send multiple amounts of tokens. Function will be aborted with `OUT_OF_GAS` exception if there will be a long addresses list.

Recommendation:

Be careful about accounts array length.

## Notes:

- Dividend tracker may be changed. So that logic of `setBalance` and other functions could be another and not audited.
- In `_withdrawDividendOfUser` function gas value is constant, and could not be changed if needed.

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

- Owner can change dividend tracker.
- Owner can change Uniswap router address.
- Owner can blacklist addresses.
- Owner can exclude from the fees.
- Owner can change swapTokensAtAmount.
- Owner can change OSM, marketing, liquidity and NFT wallets.
- Owner can exclude and include addresses in automatedMarketMakerPairs array.
- Owner can change gas for processing.
- Owner can update claimWait value.
- Owner can withdraw ERC20 tokens.
- Owner can launch contract.
- Owner can enable and disable burn fee.
- Owner can reduce and increase sell fee.



# Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope. The further transfers and operations with the funds raise are not related to this particular contract.

Liquidity locking details NOT provided by the team.

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## *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.*