



# SMART CONTRACT AUDIT REPORT

For

Validus Token (VDT)



**Prepared By:** SFI Team

**Prepared on:** 29/6/2022  
0xaB4EbE37955604d3C5C06A9721BaB5d699a3AAa0

**Prepared for:** Validus Token Team

Contract address:  
0xaB4EbE37955604d3C5C06A9721BaB5d699a3AAa0

## Table of Content

- Disclaimer
- Scope of the audit
- Check Vulnerabilities
- Issue Categories
- Issues Found – Code Review
- Source Lines
- Risk Level
- Capabilities
- Testing proves
- Inheritance graph
- Call Graph
- Source Units In Scope
- Unified Modeling Language (UML)
- Functions signature
- Automatic general report
- Summary of the audit

## • Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as of 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 the team on the basis of what it says or doesn't say, or how team produced it, and it is important for you to conduct your own independent investigations before making any decisions. team go into more detail on this in the below disclaimer below – please make sure to read it in full.

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## • Scope of the audit

The scope of this audit was to analyze and document the Validus Token smart contract codebase for quality, security, and correctness.

## • Introduction

During the period of **June 27, 2022, to June 29, 2022** - SaferICO

Team performed a security audit for **Validus Token** smart contracts.

The project has 1 file. It contains approx 909 lines of Solidity code. Most of the functions and state variables are well commented on using the Nat spec documentation, but that does not create any vulnerability.

Source Code: <https://bscscan.com/address/0xab4ebe37955604d3c5c06a9721bab5d699a3aaa0#code>

## Check Vulnerabilities

In order to check for the security of the contract, we tested several attacks in order to make sure that the contract is secure and follows best practices automatically.

1. Unit tests passing.
2. Compiler warnings;
3. Race Conditions. Reentrancy. Cross-function Race Conditions. Pitfalls in Race Condition solutions;
4. Possible delays in data delivery;
5. Transaction-Ordering Dependence (front running);
6. Timestamp Dependence;

7. Integer Overflow and Underflow;

8. DoS with (unexpected) Revert;

9. DoS with Block Gas Limit

10. Call Depth Attack. Not relevant in modern ethereum network

11. Methods execution permissions;

12. Oracles calls;

13. Economy model. It's important to forecast scenarios when a user is provided with additional economic motivation or faced with limitations. If application logic is based on incorrect economy model, the application will not function correctly and participants will incur financial losses. This type of issue is most often found in bonus rewards systems.

14. The impact of the exchange rate on the logic;

15. Private user data leaks.

## • Issue Categories

Every issue in this report has been assigned to a severity level. There are four levels of severity, and each of them has been explained below.

Risk-level	Description
High	A high severity issue or vulnerability means that your smart contract can be exploited. Issues on this level are critical to the smart contract's performance or functionality, and we recommend these issues be fixed before moving to a live environment.
Medium	The issues marked as medium severity usually arise because of errors and deficiencies in the smart contract code. Issues on this level could potentially bring problems, and they should still be fixed.
Low	Low-level severity issues can cause minor impact and or are just warnings that can remain unfixed for now. It would be better to fix these issues at some point in the future.
Informational	These are severity issues that indicate an improvement request, a general question, a cosmetic or documentation error, or a request for information. There is low-to-no impact.

## • Issues Found – Code Review

### High severity issues

There are no High severity vulnerabilities found.

### Medium severity issues

There are no Medium severity vulnerabilities found.

### Low severity issues

**#Owner privileges (In the period when the owner isn't renounced)**

#### Description

Owner can Exclude an address from fees.

Owner can change all fees (marketing, and charity); it will be less than 5%.

```
function excludeFromFees(address account, bool excluded) public onlyOwner {  
    require(!_isExcludedFromFees[account] != excluded, "Account is already the value of 'excluded'");  
    _isExcludedFromFees[account] = excluded;  
    emit ExcludeFromFees(account, excluded);}   
  
function setFees(uint256 _marketingFee, uint256 _charityFee) external onlyOwner {  
    require(_marketingFee.add(_charityFee) <= 5, "Fees too hugh");  
    marketingFee = _marketingFee;  
    charityFee = _charityFee; } 
```

#### Remediation

Make these functions internal in next version or the team should announce the investors before change the fees and give them time if they want to use the old fees.

Status: Acknowledged by the Auditee.

## Informational issues

# Constant calculations in the contract

Description

recalculated initialization will save 2847 units of gas in deployment

```
uint256 public maxWalletToken = 10000000000 * (10**18);  
_mint(owner(), 1000000000000 * (10**18));
```

### Recommendation

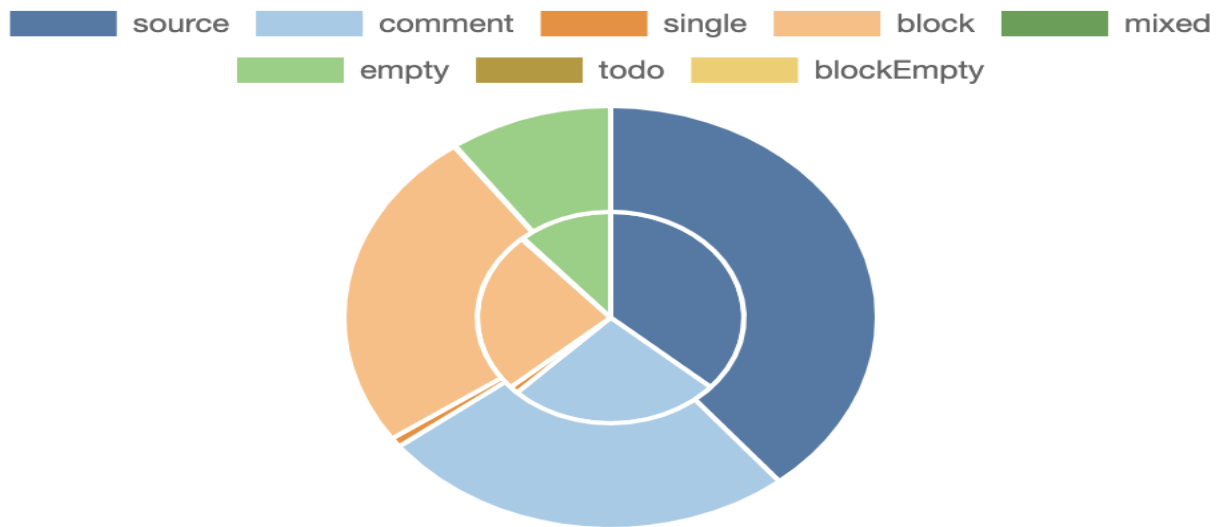
Replace the initialization as

```
uint256 public maxWalletToken = 10000000000000000000000000000;  
_mint(owner(), 10000000000000000000000000000 * (10**18));
```

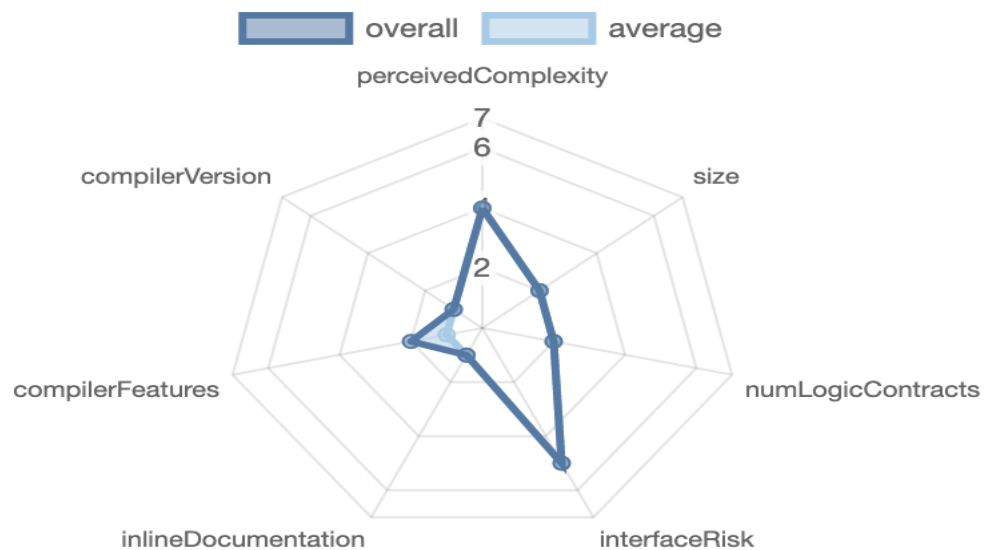
Status: **Acknowledged** by the Auditee.



- Source Lines



- Risk Level



## Testing proves

- Check for security

12c6ccf30bf59be1349ff920c3bebb2b65bbe2210c8fd21abb5070e44eb599a1

File: Validus... | Language: solidity | Size: 30617 bytes | Date: 2022-06-29T06:55:33.708Z

Critical	High	Medium	Low	Note
0	0	0	0	0

- Solidity Static Analysis

SOLIDITY STATIC ANALYSIS

▼ ERC

☒ Select ERC

- ☒ ERC20:  
'decimals' should be 'uint8'

▼ Miscellaneous

☒ Select Miscellaneous

- ☒ Constant/View/Pure functions:  
Potentially constant/view/pure functions
- ☒ Similar variable names:  
Variable names are too similar
- ☒ No return:  
Function with 'returns' not returning
- ☒ Guard conditions:  
Ensure appropriate use of require/assert
- ☒ Result not used:  
The result of an operation not used
- ☒ String length:  
Bytes length != String length
- ☒ Delete from dynamic array:  
'delete' leaves a gap in array
- ☒ Data truncated:  
Division on int/uint values truncates the result

SOLIDITY STATIC ANALYSIS

☒ Select all ☒ Autorun 

Run

▼ Security

☒ Select Security

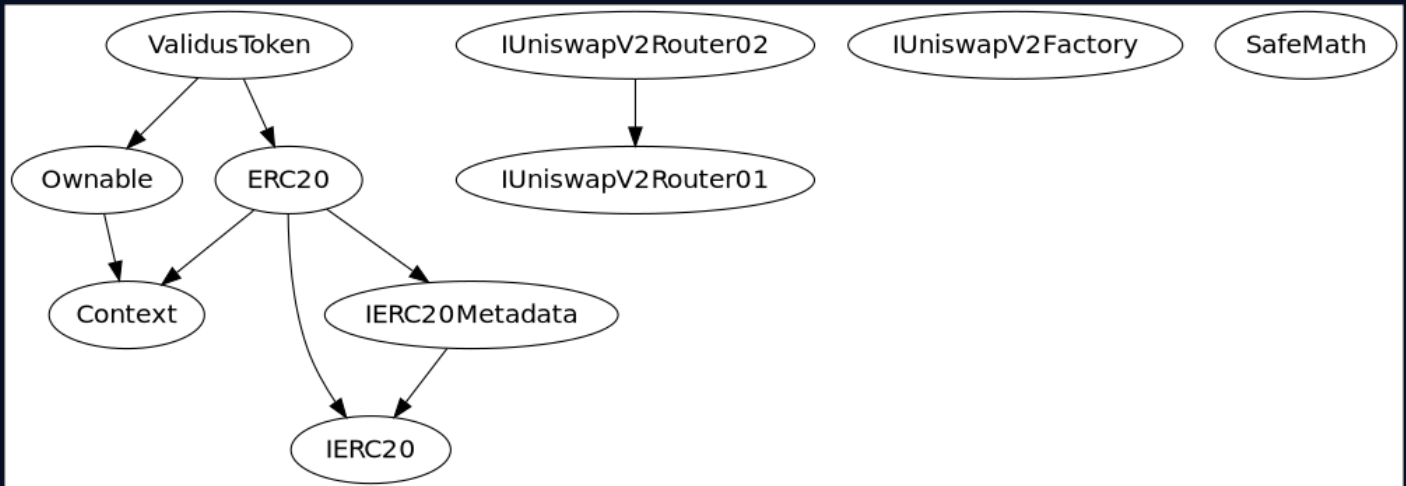
- ☒ Transaction origin:  
'tx.origin' used
- ☒ Check-effects-interaction:  
Potential reentrancy bugs
- ☒ Inline assembly:  
Inline assembly used
- ☒ Block timestamp:  
Can be influenced by miners
- ☒ Low level calls:  
Should only be used by experienced devs
- ☒ Block hash:  
Can be influenced by miners
- ☒ Selfdestruct:  
Contracts using destructed contract can be broken

▼ Gas & Economy

☒ Select Gas & Economy

- ☒ Gas costs:  
Too high gas requirement of functions
- ☒ This on local calls:  
Invocation of local functions via 'this'
- ☒ Delete dynamic array:  
Use require/assert to ensure complete deletion
- ☒ For loop over dynamic array:  
Iterations depend on dynamic array's size
- ☒ Ether transfer in loop:  
Transferring Ether in a for/while/do-while loop

- **Inheritance graph**



- **Solidity Unit Testing Code & Results**

```
// SPDX-License-Identifier: GPL-3.0

pragma solidity >=0.4.22 <0.9.0;

// This import is automatically injected by Remix
import "remix_tests.sol";

// This import is required to use custom transaction context
// Although it may fail compilation in 'Solidity Compiler' plugin
// But it will work fine in 'Solidity Unit Testing' plugin
import "remix_accounts.sol";
import "../ValidusToken.sol";

// File name has to end with '_test.sol', this file can contain more than one testSuite contracts
contract testSuite {

    /// 'beforeAll' runs before all other tests

    /// More special functions are: 'beforeEach', 'beforeAll', 'afterEach' & 'afterAll'

    function beforeAll() public {
```

## SOLIDITY UNIT TESTING



Test your smart contract in Solidity.

Select directory to load and generate test files.

Test directory:

tests

Create

Generate

How to use...

Run

Stop

☒ Select all

☒ tests/ValidusToken\_test.sol

Progress: 1 finished (of 1)

**PASS** testSuite

(tests/ValidusToken\_test.sol)

✓ Before all



✓ Check success



✓ Check success2



✓ Check failure



✓ Check sender and value



Result for tests/ValidusToken\_test.sol

Passed: 5

Failed: 0

Time Taken: 0.29s

```
// <instantiate contract>
Assert.equal(uint(1), uint(1), "1 should be equal to 1");
}

function checkSuccess() public {
    // Use 'Assert' methods: https://remix-
    ide.readthedocs.io/en/latest/assert_library.html
    Assert.ok(2 == 2, 'should be true');
    Assert.greaterThan(uint(2), uint(1), "2 should be greater than to
1");
    Assert.lessThan(uint(2), uint(3), "2 should be lesser than to
3");
}

function checkSuccess2() public pure returns (bool) {
    // Use the return value (true or false) to test the contract
    return true;
}

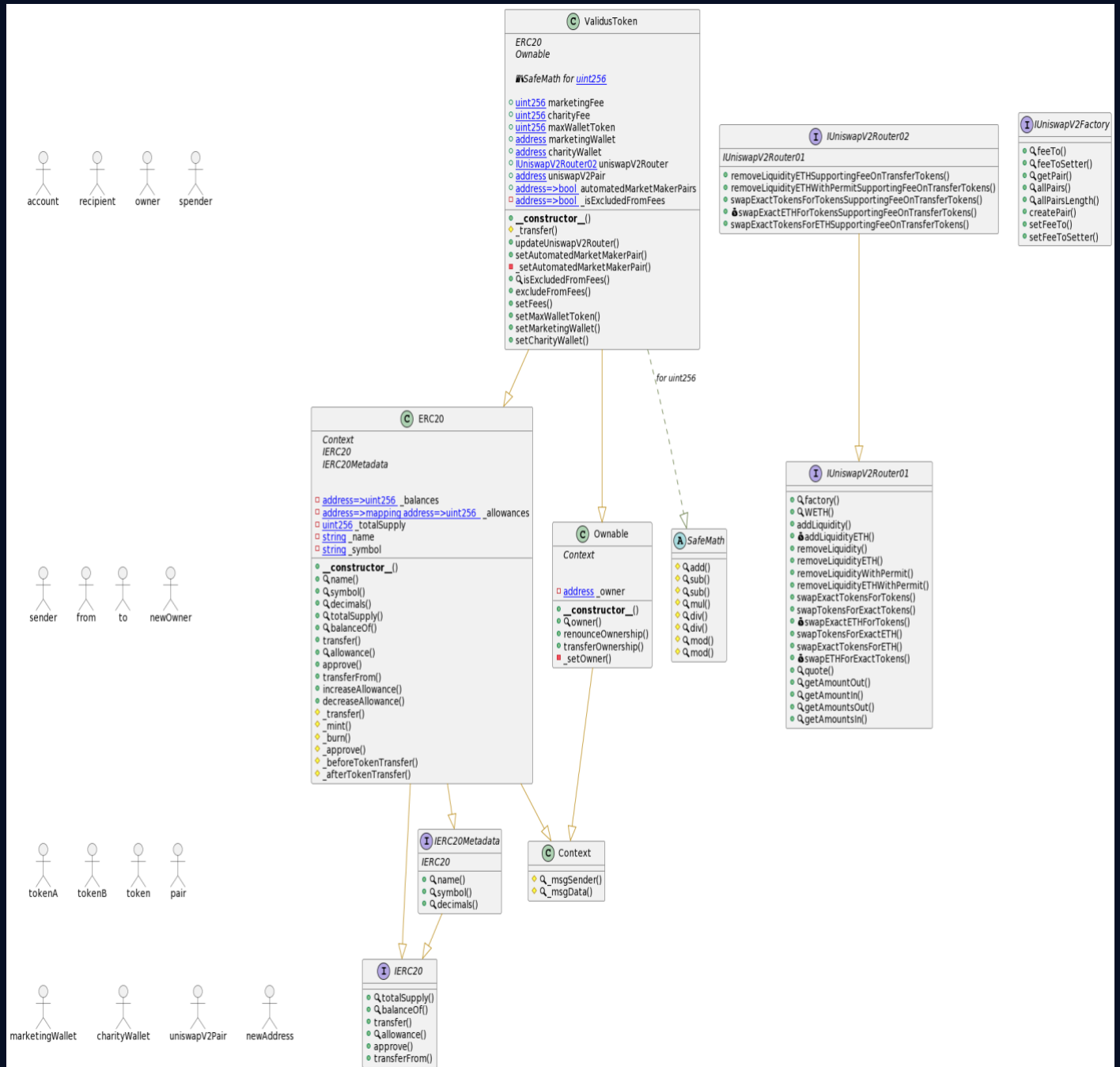
function checkFailure() public {
    Assert.notEqual(uint(1), uint(2), "1 should not be equal to 1");
}

/// Custom Transaction Context: https://remix-
ide.readthedocs.io/en/latest/unittesting.html#customization
/// #sender: account-1
/// #value: 100
function checkSenderAndValue() public payable {
    // account index varies 0-9, value is in wei
    Assert.equal(msg.sender, TestsAccounts.getAccount(1), "Invalid
sender");
    Assert.equal(msg.value, 100, "Invalid value");
}
}
```

# Call Graph



## • Unified Modeling Language (UML)



## • Capabilities

### Components

 Contracts	 Libraries	 Interfaces	 Abstract
2	1	5	2

### Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.










 Public	 Payable
63	4

External	Internal	Private	Pure	View
45	62	2	13	23

### StateVariables

Total	 Public
15	8





### Capabilities

Solidity Versions observed	 Experimental Features	 Can Receive Funds	 Uses Assembly	 Has Destroyable Contracts	
0.8.14		yes			
 Transfers ETH	 Low-Level Calls	 DelegateCall	 Uses Hash Functions	 ECREcover	 New/Create/Create2
 TryCatch	 Σ Unchecked				
	yes				

## • Source Units In Scope

### Source Units in Scope

Source Units Analyzed: 1  
Source Units in Scope: 1 (100%)

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
	ValidusToken.sol	5	5	909	658	326	311	314	
	Totals	5	5	909	658	326	311	314	

Legend: [ - ]

- **Lines:** total lines of the source unit
- **nLines:** normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
- **nSLOC:** normalized source lines of code (only source-code lines; no comments, no blank lines)
- **Comment Lines:** lines containing single or block comments
- **Complexity Score:** a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

## • Function Signature

Sighash | Function Signature

=====

```
39509351 => increaseAllowance(address,uint256)
119df25f => _msgSender()
8b49d47e => _msgData()
18160ddd => totalSupply()
70a08231 => balanceOf(address)
a9059cbb => transfer(address,uint256)
dd62ed3e => allowance(address,address)
095ea7b3 => approve(address,uint256)
23b872dd => transferFrom(address,address,uint256)
06fdde03 => name()
95d89b41 => symbol()
313ce567 => decimals()
a457c2d7 => decreaseAllowance(address,uint256)
30e0789e => _transfer(address,address,uint256)
4e6ec247 => _mint(address,uint256)
6161eb18 => _burn(address,uint256)
104e81ff => _approve(address,address,uint256)
cad3be83 => _beforeTokenTransfer(address,address,uint256)
8f811a1c => _afterTokenTransfer(address,address,uint256)
8da5cb5b => owner()
715018a6 => renounceOwnership()
f2fde38b => transferOwnership(address)
fc201122 => _setOwner(address)
c45a0155 => factory()
ad5c4648 => WETH()
e8e33700 => addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256)
f305d719 => addLiquidityETH(address,uint256,uint256,uint256,address,uint256)
baa2abde => removeLiquidity(address,address,uint256,uint256,uint256,address,uint256)
02751cec => removeLiquidityETH(address,uint256,uint256,uint256,address,uint256)
2195995c => removeLiquidityWithPermit(address,address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes32,bytes32)
ded9382a => removeLiquidityETHWithPermit(address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes32,bytes32)
38ed1739 => swapExactTokensForTokens(uint256,uint256,address[],address,uint256)
8803dbee => swapTokensForExactTokens(uint256,uint256,address[],address,uint256)
```



```
7ff36ab5 => swapExactETHForTokens(uint256,address[],address,uint256)
4a25d94a => swapTokensForExactETH(uint256,uint256,address[],address,uint256)
18cbafe5 => swapExactTokensForETH(uint256,uint256,address[],address,uint256)
fb3bdb41 => swapETHForExactTokens(uint256,address[],address,uint256)
ad615dec => quote(uint256,uint256,uint256)
054d50d4 => getAmountOut(uint256,uint256,uint256)
85f8c259 => getAmountIn(uint256,uint256,uint256)
d06ca61f => getAmountsOut(uint256,address[])
1f00ca74 => getAmountsIn(uint256,address[])
af2979eb => removeLiquidityETHSupportingFeeOnTransferTokens(address,uint256,uint256,uint256,address,uint256)
5b0d5984 =>
removeLiquidityETHWithPermitSupportingFeeOnTransferTokens(address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes
32,bytes32)
5c11d795 => swapExactTokensForTokensSupportingFeeOnTransferTokens(uint256,uint256,address[],address,uint256)
b6f9de95 => swapExactETHForTokensSupportingFeeOnTransferTokens(uint256,address[],address,uint256)
791ac947 => swapExactTokensForETHSupportingFeeOnTransferTokens(uint256,uint256,address[],address,uint256)
017e7e58 => feeTo()
094b7415 => feeToSetter()
e6a43905 => getPair(address,address)
1e3dd18b => allPairs(uint256)
574f2ba3 => allPairsLength()
c9c65396 => createPair(address,address)
f46901ed => setFeeTo(address)
a2e74af6 => setFeeToSetter(address)
771602f7 => add(uint256,uint256)
b67d77c5 => sub(uint256,uint256)
e31bdc0a => sub(uint256,uint256,string)
c8a4ac9c => mul(uint256,uint256)
a391c15b => div(uint256,uint256)
b745d336 => div(uint256,uint256,string)
f43f523a => mod(uint256,uint256)
71af23e8 => mod(uint256,uint256,string)
65b8dbc0 => updateUniswapV2Router(address)
9a7a23d6 => setAutomatedMarketMakerPair(address,bool)
a7f7b36f => _setAutomatedMarketMakerPair(address,bool)
4fbee193 => isExcludedFromFees(address)
c0246668 => excludeFromFees(address,bool)
0b78f9c0 => setFees(uint256,uint256)
```

```
91d55f41 => setMaxWalletToken(uint256)
```

```
5d098b38 => setMarketingWallet(address)
```

```
30563bd7 => setCharityWallet(address)
```

## • Automatic General Report

### Files Description Table

File Name	SHA-1 Hash
/Users/macbook/Desktop/smart contracts/ValidusToken.sol	1d700518b2b24ea353960bcd4af825d3141acc5f

### Contracts Description Table

Contract	Type	Bases		
↳	**Function Name**	**Visibility**	**Mutability**	**Modifiers**
**Context**   Implementation				
↳	_msgSender	Internal	🔒	
↳	_msgData	Internal	🔒	
**IERC20**   Interface				
↳	totalSupply	External	🔓	NO🔓
↳	balanceOf	External	🔓	NO🔓
↳	transfer	External	🔓   🔒	NO🔓
↳	allowance	External	🔓	NO🔓
↳	approve	External	🔓   🔒	NO🔓
↳	transferFrom	External	🔓   🔒	NO🔓
**IERC20Metadata**   Interface   IERC20				
↳	name	External	🔓	NO🔓
↳	symbol	External	🔓	NO🔓
↳	decimals	External	🔓	NO🔓
**ERC20**   Implementation   Context, IERC20, IERC20Metadata				
↳	<Constructor>	Public	🔓   🔒	NO🔓
↳	name	Public	🔓	NO🔓
↳	symbol	Public	🔓	NO🔓

```














| ^ | decimals | Public | | | NO |
| ^ | totalSupply | Public | | | NO |
| ^ | balanceOf | Public | | | NO |
| ^ | transfer | Public | | | NO |
| ^ | allowance | Public | | | NO |
| ^ | approve | Public | | | NO |
| ^ | transferFrom | Public | | | NO |
| ^ | increaseAllowance | Public | | | NO |
| ^ | decreaseAllowance | Public | | | NO |
| ^ | _transfer | Internal | | | |
| ^ | _mint | Internal | | | |
| ^ | _burn | Internal | | | |
| ^ | _approve | Internal | | | |
| ^ | _beforeTokenTransfer | Internal | | | |
| ^ | _afterTokenTransfer | Internal | | | |
|||||
| **Ownable** | Implementation | Context |||
| ^ | <Constructor> | Public | | | NO |
| ^ | owner | Public | | | NO |
| ^ | renounceOwnership | Public | | | onlyOwner |
| ^ | transferOwnership | Public | | | onlyOwner |
| ^ | _setOwner | Private | | | |
|||||
| **IUniswapV2Router01** | Interface | |||
| ^ | factory | External | | | NO |
| ^ | WETH | External | | | NO |
| ^ | addLiquidity | External | | | NO |
| ^ | addLiquidityETH | External | | | NO |
| ^ | removeLiquidity | External | | | NO |
| ^ | removeLiquidityETH | External | | | NO |
| ^ | removeLiquidityWithPermit | External | | | NO |
| ^ | removeLiquidityETHWithPermit | External | | | NO |
| ^ | swapExactTokensForTokens | External | | | NO |
| ^ | swapTokensForExactTokens | External | | | NO |
| ^ | swapExactETHForTokens | External | | | NO |
| ^ | swapTokensForExactETH | External | | | NO |
| ^ | swapExactTokensForETH | External | | | NO |
| ^ | swapETHForExactTokens | External | | | NO |

```

```

| ^ | quote | External | | | NO |
| ^ | getAmountOut | External | | | NO |
| ^ | getAmountIn | External | | | NO |
| ^ | getAmountsOut | External | | | NO |
| ^ | getAmountsIn | External | | | NO |
|||||
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 |||
| ^ | removeLiquidityETHSupportingFeeOnTransferTokens | External | | | NO |
| ^ | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External | | | NO |
| ^ | swapExactTokensForTokensSupportingFeeOnTransferTokens | External | | | NO |
| ^ | swapExactETHForTokensSupportingFeeOnTransferTokens | External | | | NO |
| ^ | swapExactTokensForETHSupportingFeeOnTransferTokens | External | | | NO |
|||||
| **IUniswapV2Factory** | Interface | |||
| ^ | feeTo | External | | | NO |
| ^ | feeToSetter | External | | | NO |
| ^ | getPair | External | | | NO |
| ^ | allPairs | External | | | NO |
| ^ | allPairsLength | External | | | NO |
| ^ | createPair | External | | | NO |
| ^ | setFeeTo | External | | | NO |
| ^ | setFeeToSetter | External | | | NO |
|||||
| **SafeMath** | Library | |||
| ^ | add | Internal | | |
| ^ | sub | Internal | | |
| ^ | sub | Internal | | |
| ^ | mul | Internal | | |
| ^ | div | Internal | | |
| ^ | div | Internal | | |
| ^ | mod | Internal | | |
| ^ | mod | Internal | | |
|||||
| **ValidusToken** | Implementation | ERC20, Ownable |||
| ^ | <Constructor> | Public | | | ERC20 |
| ^ | _transfer | Internal | | |
| ^ | updateUniswapV2Router | Public | | | onlyOwner |
| ^ | setAutomatedMarketMakerPair | Public | | | onlyOwner |


```


	↳		_setAutomatedMarketMakerPair		Private						
	↳		isExcludedFromFees		Public				NO		
	↳		excludeFromFees		Public						onlyOwner
	↳		setFees		External						onlyOwner
	↳		setMaxWalletToken		External						onlyOwner
	↳		setMarketingWallet		External						onlyOwner
	↳		setCharityWallet		External						onlyOwner

## Legend

	Symbol		Meaning	
--	--------	--	---------	--

	:-----:		-----	
--	---------	--	-------	--

			Function can modify state	
--	---	--	---------------------------	--

			Function is payable	
--	---	--	---------------------	--

- **Summary of the Audit**

According to all test, the customer`s solidity smart contract is **Well Secure**.

The general overview is presented in the Project Information section and all issues found are located in the audit overview section.

The test found 0 critical, 0 high, 0 medium, 1 low issues, and 1 note.