



Smart Contract Security Audit Report

Wirex Token

September 2022

Security Status



www.hacksafe.io



Audit Details



Audited project

Wirex Token



Deployer address

0x1b9dFC56e38b0F92448659C114e2347Bd803911c



Client contacts

Wirex Token Team



Blockchain

Avalanche



Website

<https://nereus.finance/>

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.

Procedure

Step 1 - In-Depth Manual Review

Manual line-by-line code reviews to ensure the logic behind each function is sound and safe from various attack vectors. This is the most important and lengthy portion of the audit process (as automated tools often cannot find the nuances that lead to exploits such as flash loan attacks).

Step 2 - Automated Testing

Simulation of a variety of interactions with your Smart Contract on a test blockchain leveraging a combination of automated test tools and manual testing to determine if any security vulnerabilities exist.

Step 3 – Leadership Review

The engineers assigned to the audit will schedule meetings with our leadership team to review the contracts, any comments or findings, and ask questions to further apply adversarial thinking to discuss less common attack vectors.

Step 4 - Resolution of Issues

Consulting with the team to provide our recommendations to ensure the code's security and optimize its gas efficiency, if possible. We assist project team's in resolving any outstanding issues or implementing our recommendations.

Step 5 - Published Audit Report

Boiling down results and findings into an easy-to-read report tailored to the project. Our audit reports highlight resolved issues and any risks that exist to the project or its users, along with any remaining suggested remediation measures. Diagrams are included at the end of each report to help users understand the interactions which occur within the project.

Background

HackSafe was commissioned by Wirex Token to perform an audit of smart contracts:

- <https://snowtrace.io/address/0xfcDe4A87b8b6FA58326BB462882f1778158B02F1#code>

The purpose of the audit was to achieve the

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be understood 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.

Contract Details

Token contract details for 23.09.2022

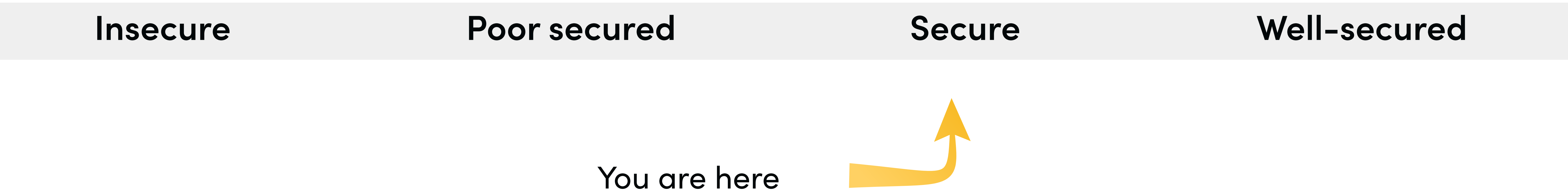
Token Type	: ERC20
Contract name	: MintSwapCanonicalToken
Contract address	: 0xfcDe4A87b8b6FA58326BB462882f1778158B02F1
Total supply	: 8,110,902,576.044687
Token ticker	: WXT
Decimals	: 18
Token holders	: 514
Transactions count	: 43,623
Compiler version	: v0.8.9+commit.e5eed63a
Contract deployer address	: 0x1b9dFC56e38b0F92448659C114e2347Bd803911c
Owner address	: 0xdd3de3b819edd3a014fda93868d7dfc873341467

Social profiles

Twitter Profile	: https://twitter.com/nereusfinance
Coinmarketcap Profile	: https://coinmarketcap.com/currencies/wirex-token/
Coingecko profile	: https://www.coingecko.com/en/coins/wirex/

Audit Summary

According to the standard audit assessment, Customer`s solidity smart contracts are “Secure”. This token contract does contain owner control, which do not make it fully decentralized as owner does have control over smart contract.



We used various tools like Slither, Mythril and Remix IDE. At the same time this finding is based on critical analysis of the manual audit. All issues found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the issues checking status.

We found 0 critical, 0 high, 1 medium and 1 low and some very low-level issues. These issues are not critical ones.

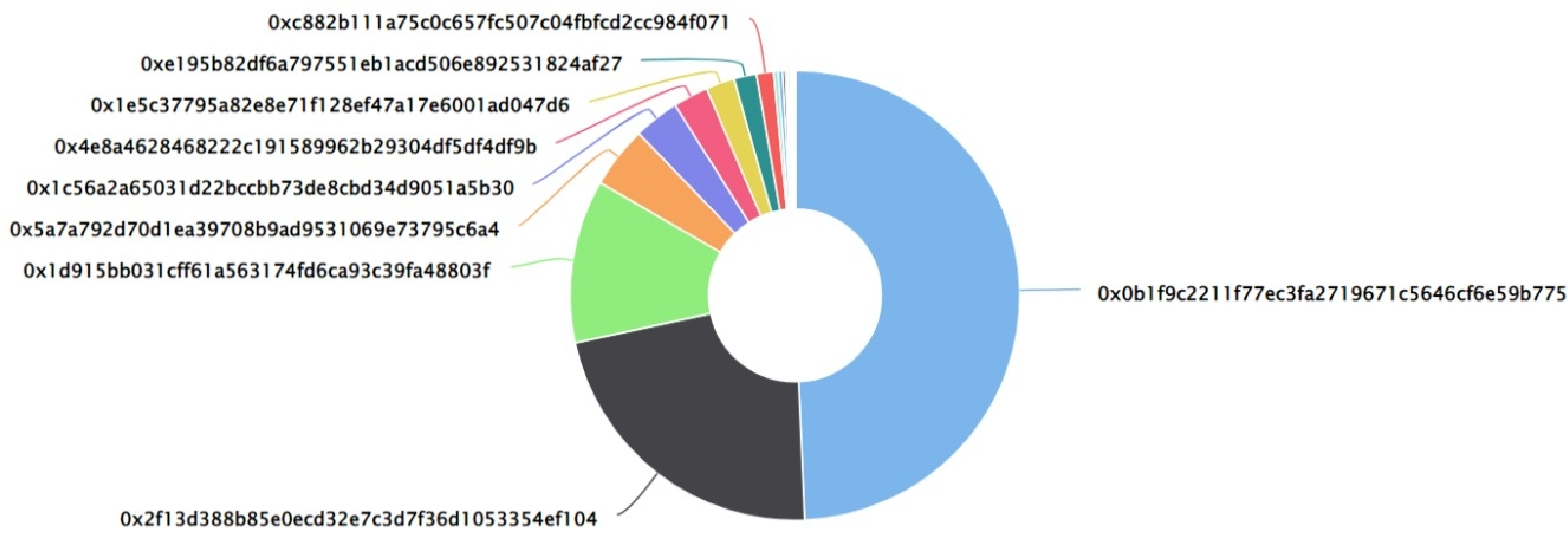
Wirex Token Token Distribution

The top 100 holders collectively own 99.99% (8,110,274,949.04 Tokens) of Wirex Token

Token Total Supply: 8,110,902,576.04 Token | Total Token Holders: 515










Wirex Token Top 100 Token Holders

Source: snowtrace.io



Wirex Token Top 20 Token Holders

(A total of 8,110,274,949.04 tokens held by the top 100 accounts from the total supply of 8,110,902,576.04 token)

Rank	Address	Quantity (Token)	Percentage
1	 0x0b1f9c2211f77ec3fa2719671c5646cf6e59b775	4,000,000,000	49.3163%
2	0x2f13d388b85e0ecd32e7c3d7f36d1053354ef104	1,808,328,707.978702550701041752	22.2950%
3	0x1d915bb031cff61a563174fd6ca93c39fa48803f	953,189,985.124319743385949212	11.7520%
4	 0x5a7a792d70d1ea39708b9ad9531069e73795c6a4	360,640,598.783742501241398507	4.4464%
5	 0x1c56a2a65031d22bccbb73de8cbd34d9051a5b30	264,181,639.085356006007688118	3.2571%
6	 0x4e8a4628468222c191589962b29304df5df4df9b	203,242,411.059419682155892258	2.5058%
7	 0x1e5c37795a82e8e71f128ef47a17e6001ad047d6	168,147,743.580486246181955533	2.0731%
8	0xe195b82df6a797551eb1acd506e892531824af27	130,610,164.559617487635528424	1.6103%
9	0xc882b111a75c0c657fc507c04fbfcd2cc984f071	100,857,219.584337232892707155	1.2435%
10	0x935f64b44b5c48a1539c4ada5161d27ace4205b5	26,185,021.210562732117509298	0.3228%
11	0x0d0707963952f2fba59dd06f2b425ace40b492fe	25,363,793.110354760808234088	0.3127%
12	0xd8c578357c4d904b4e27e00ea9453789eabd5490	16,524,584.014869553563727271	0.2037%
13	 0x25a5e35ad230c6308accb66044bb63e06aaa59ca	12,818,797.253199231634790559	0.1580%
14	 0x2372fbbb0817e58fb6deb36698cbf4add4148fe5	12,754,421.63638098024026387	0.1573%
15	 0xd1c99f5831bd32502d7a3115a06f24d1f98fe3df	6,808,684.56050794810577593	0.0839%
16	0xee0188a4399f3488f6e5782c242075c527de5d55	3,022,985.916988122111461224	0.0373%
17	0xdfd30da4bd377b7a5790186f1050ea0d4ba47a48	2,687,187.149628078391779415	0.0331%
18	 0xab95ae6510c7415b7af4ae04674b408708c5bc72	1,398,756.261618066865272225	0.0172%
19	0xd1402db2d28baeb571b32757938a12575221672d	1,083,581.99811965	0.0134%
20	0x44f12ef573f5a70464b7904e037aff4ec0061c6f	1,026,494.621623460980917233	0.0127%

Contract functions details

Ownable.sol

+Ownable(Context)

- <constructor>
- [Pub] owner
- [Pub] renounceOwnership #
 - modifiers: onlyOwner
- [Pub] transferOwnership #
 - modifiers: onlyOwner
- [Pvt] _setOwner

ERC20.sol

+ERC20 (Context, IERC20, IERC20Metadata)

- <constructor>
- [Ext] getOwner
- [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 #
- [Int] _afterTokenTransfer #

IERC20.sol

+[Int] IERC20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer
- [Ext] allowance
- [Ext] approve

Contract functions details

-[Ext] transferFrom

IERC20Metadata.sol

+[Int] IERC20Metadata (IERC20)

-[Ext] name

-[Ext] symbol

-[Ext] decimals

SafeERC20.sol

+[Lib] SafeERC20

-[Int] safeTransfer

-[Int] safeTransferFrom

-[Int] safeApprove

-[Int] safeIncreaseAllowance

-[Int] safeDecreaseAllowance

-[Pvt] _callOptionalReturn

Address.sol

+[Lib] Address

-[Int] isContract

-[Int] sendValue

-[Int] functionCall

-[Int] functionCall

-[Int] functionCallWithValue

-[Int] functionCallWithValue

-[Int] functionStaticCall

-[Int] functionStaticCall

-[Int] functionDelegateCall

-[Int] functionDelegateCall

-[Pvt] _verifyCallResult

Context.sol

+Context

-[Int] _msgSender

-[Int] _msgData

MintSwapCanonicalToken.sol

+MintSwapCanonicalToken (MultiBridgeToken)

-<constructor>

-[Ext] swapBridgeForCanonical #

Contract functions details

- [Ext] swapCanonicalForBridge #
- [Ext] setBridgeTokenSwapCap #
- modifiers: onlyOwner

MultiBridgeToken.sol

+MultiBridgeToken (ERC20, Ownable)

- <constructor>

- [Ext] mint #

- [Ext] burn #

- [Pub] decimals

- [Ext] updateBridgeSupplyCap #

- modifiers: onlyOwner

- [Ext] getOwner

(\$) = payable function

= non-constant function

Issues Checking Status

No.	Title	Status
1.	Unlocked Compiler Version	Low issue
2.	Missing Input Validation	Passed
3.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
4.	Possible delays in data delivery	Passed
5.	Oracle calls.	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.	Private use data leaks.	Passed
13.	Malicious Event log.	Passed
14.	Scoping and Declarations.	Passed
15.	Uninitialized storage pointers.	Passed
16.	Arithmetic accuracy.	Passed
17.	Design Logic.	Passed
18.	Safe Open Zeppelin contracts implementation and usage.	Medium issue
19.	Incorrect Naming State Variable	Passed
20.	Too old version	Passed

Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to assets loss or data manipulations.
High	High-level vulnerabilities are difficult to exploit; however, they also have a significant impact on smart contract execution, e.g., public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to assets loss or data manipulations.
Low	Low-level vulnerabilities are mostly related to outdated, unused, etc. code snippets that can't have a significant impact on execution.

Security Issues

✔ Critical Severity Issues

No critical severity issue found.

✔ High Severity Issues

No high severity issues found.

✔ Medium Severity Issues

One medium severity issues found.

1. Safe Open Zeppelin contracts implementation and usage.

- **Description**

Contract MintSwapCanonicalToken.sol and MultiBridgeToken.sol have direct import openzeppelin smart contracts files.

- **Recommendation**

It is advisable to not to direct import any files from github repository as any changes in that files can affect your contract's logic too.

✔ Low Severity Issues

One low severity issue found.

1. Unlocked Compiler Version.

- **Description**

The contract utilizes an unlocked compiler version. An unlocked compiler version in the contract's source code permits the user to compile it at or above a particular version. This, in turn, leads to differences in the generated bytecode between compilations due to differing compiler version numbers. This can lead to ambiguity when debugging as compiler-specific bugs may occur in the codebase that would be difficult to identify over a span of multiple compiler versions rather than a specific one.

- **Recommendation**

It is advisable that the compiler version is alternatively locked at the lowest version possible so that the contract can be compiled. For example, for version ^0.8.0 the contract should contain the following line:

```
pragma solidity 0.8.9;
```

Centralization

Owner Privileges :

- Wirex Token Contract:
 - Owner can remove and transfer ownership.
 - Owner can update bridge supply cap.
 - Owner can set bridge token swap cap.

This smart contract has some functions which can be executed by the Admin (Owner) only. If the admin wallet private key would be compromised, then it would create trouble but smart contract ownership has not been renounced. Following are Admin functions:

- Transferownership
- Renounceownership
- Setbridgetokenswapcap
- Updatebridgesupplycap

Conclusion

Smart contract contains low and medium severity issues! The further transfer and operations with the fund raised are not related to this particular contract.

HackSafe 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.