Wrapped MonetaryUnit

Smart Contract Audit Report

SYSFIXED

04 Jan 2021

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Wrapped MonetaryUnit	WMUE	Binance Smart Chain

Addresses

Contract address	0x00abaa93faf8fdc4f382135a7a56f9cf7c3edd21
Contract deployer address	0x600d924195915c9447EdfA1b6Ca3E6A4a353AF64

Project Website

https://www.monetaryunit.org/

Codebase

https://bscscan.com/address/0x00abaa93faf8fdc4f382135a7a56f9cf7c3edd21#code

SUMMARY

Wrapped MonetaryUnit (wMUE) is a token on the other blockchains that represents the MonetaryUnit coin at a 1:1 ratio. Users can swap MUE coins for wMUE tokens and use them on different chains.

Contract Summary

Documentation Quality

Wrapped MonetaryUnit provides a very good documentation with standard of solidity base code.

- The technical description is provided clearly and structured and also dont have any high risk issue.

Code Quality

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by Wrapped MonetaryUnit with the discovery of several low issues.

Test Coverage

Test coverage of the project is 100% (Through Codebase)

Audit Findings Summary

- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 7, 30, 106, 264, 565, 603, 626, 712, 742, 771, 935, 1040, 1091, 1245, 1307, 1373, 1391, 1426 and 1439.
- SWC-107 | It is recommended to use a reentrancy lock, reentrancy weaknesses detected on lines 1387, 1238 and 1220.
- SWC-110 SWC-123 | It is recommended to use of revert(), assert(), and require() in Solidity, and the new REVERT opcode in the EVM on lines 1387 and 1238.

CONCLUSION

We have audited the Wrapped MonetaryUnit project released on January 2021 to discover issues and identify potential security vulnerabilities in the Wrapped MonetaryUnit Project. This process is used to find technical issues and security loopholes which might be found in the smart contract.

The security audit report provides satisfactory results with low-risk issues.

The issues in the Wrapped MonetaryUnit smart contract code do not pose a considerable risk. The writing of the contract is close to the standard of writing contracts in general. The low-risk issues found are some arithmetic operation issues, a floating pragma is set, a call to a user-supplied address is executed, and a call to a user-supplied address is executed. The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code. An external message call to an address specified by the caller is executed. Note that the callee account might contain arbitrary code and could re-enter any function within this contract. Reentering the contract in an intermediate state may lead to unexpected behaviour. Make sure that no state modifications are executed after this call and/or reentrancy guards are in place. A requirement was violated in a nested call and the call was reverted as a result. Make sure valid inputs are provided to the nested call (for instance, via passed arguments).

AUDIT RESULT

Article	Category	Description	Result
Default Visibility	SWC-100 SWC-108	Functions and state variables visibility should be set explicitly. Visibility levels should be specified consciously.	PASS
Integer Overflow and Underflow	SWC-101	If unchecked math is used, all math operations should be safe from overflows and underflows.	PASS
Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.	PASS
Floating Pragma	SWC-103	Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly.	ISSUE FOUND
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS
Unprotected Ether Withdrawal	SWC-105	Due to missing or insufficient access controls, malicious parties can withdraw from the contract.	PASS
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	PASS
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	ISSUE FOUND
Uninitialized Storage Pointer	SWC-109	Uninitialized local storage variables can point to unexpected storage locations in the contract.	PASS
Assert Violation	SWC-110 SWC-123	Properly functioning code should never reach a failing assert statement.	ISSUE FOUND
Deprecated Solidity Functions	SWC-111	Deprecated built-in functions should never be used.	PASS
Delegate call to Untrusted Callee	SWC-112	Delegatecalls should only be allowed to trusted addresses.	PASS

DoS (Denial of Service)	SWC-113 SWC-128	Execution of the code should never be blocked by a specific contract state unless required.	PASS
Race Conditions	SWC-114	Race Conditions and Transactions Order Dependency should not be possible.	PASS
Authorization through tx.origin	SWC-115	tx.origin should not be used for authorization.	PASS
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	PASS
Signature Unique ID	SWC-117 SWC-121 SWC-122	Signed messages should always have a unique id. A transaction hash should not be used as a unique id.	PASS
Incorrect Constructor Name	SWC-118	Constructors are special functions that are called only once during the contract creation.	PASS
Shadowing State Variable	SWC-119	State variables should not be shadowed.	PASS
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	PASS
Write to Arbitrary Storage Location	SWC-124	The contract is responsible for ensuring that only authorized user or contract accounts may write to sensitive storage locations.	PASS
Incorrect Inheritance Order	SWC-125	When inheriting multiple contracts, especially if they have identical functions, a developer should carefully specify inheritance in the correct order. The rule of thumb is to inherit contracts from more /general/ to more /specific/.	PASS
Insufficient Gas Griefing	SWC-126	Insufficient gas griefing attacks can be performed on contracts which accept data and use it in a sub-call on another contract.	PASS
Arbitrary Jump Function	SWC-127	As Solidity doesnt support pointer arithmetics, it is impossible to change such variable to an arbitrary value.	PASS

Typographical Error	SWC-129	A typographical error can occur for example when the intent of a defined operation is to sum a number to a variable.	PASS
Override control character	SWC-130	Malicious actors can use the Right-To-Left-Override unicode character to force RTL text rendering and confuse users as to the real intent of a contract.	PASS
Unused variables	SWC-131 SWC-135	Unused variables are allowed in Solidity and they do not pose a direct security issue.	PASS
Unexpected Ether balance	SWC-132	Contracts can behave erroneously when they strictly assume a specific Ether balance.	PASS
Hash Collisions Variable	SWC-133	Using abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS
Hardcoded gas amount	SWC-134	The transfer() and send() functions forward a fixed amount of 2300 gas.	PASS
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS

SMART CONTRACT ANALYSIS

Started	Sunday Jan 03 2021 06:42:34 GMT+0000 (Coordinated Universal Time)
Finished	Monday Jan 04 2021 22:50:13 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	WrappedMUE.sol

Detected Issues

ID	Title	Severity	Status
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
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SWC-107	A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.	low	acknowledged
SWC-107	A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.	low	acknowledged
SWC-107	A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.	low	acknowledged
SWC-123	REQUIREMENT VIOLATION.	low	acknowledged
SWC-123	REQUIREMENT VIOLATION.	low	acknowledged

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 7

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
6
7   pragma solidity ^0.7.0;
8
9   /*
10   * @dev Provides information about the current execution context, including the
11
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 30

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
29
30   pragma solidity ^0.7.0;
31
32   /**
33   * @dev Interface of the ERC20 standard as defined in the EIP.
34
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 106

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
105
106   pragma solidity ^0.7.0;
107
108   /**
109   * @dev Wrappers over Solidity's arithmetic operations with added overflow
110
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 264

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
263
264   pragma solidity ^0.7.0;
265
266   /**
267   * @dev Implementation of the {IERC20} interface.
268
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 565

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
564
565   pragma solidity ^0.7.0;
566
567   /**
568   * @dev Extension of {ERC20} that allows token holders to destroy both their own
569
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 603

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
602
603   pragma solidity ^0.7.0;
604
605   /**
606   * @dev Interface of the ERC165 standard, as defined in the
607
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 626

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
625
626   pragma solidity ^0.7.0;
627
628   /**
629   * @title IERC1363 Interface
630
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 712

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
711
712   pragma solidity ^0.7.0;
713
714   /**
715   * @title IERC1363Receiver Interface
716
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 742

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
741
742   pragma solidity ^0.7.0;
743
744   /**
745   * @title IERC1363Spender Interface
746
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 771

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
770
771   pragma solidity ^0.7.0;
772
773   /**
774   * @dev Collection of functions related to the address type
775
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 935

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
934
935   pragma solidity ^0.7.0;
936
937   /**
938   * @dev Library used to query support of an interface declared via {IERC165}.
939
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1040

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1039
1040   pragma solidity ^0.7.0;
1041
1042   /**
1043   * @dev Implementation of the {IERC165} interface.
1044
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1091

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1090
1091   pragma solidity ^0.7.0;
1092
1093   /**
1094   * @title ERC1363
1095
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1245

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1244
1245   pragma solidity ^0.7.0;
1246
1247   /**
1248   * @title ERC20Mintable
1249
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1307

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1306
1307   pragma solidity ^0.7.0;
1308
1309   /**
1310   * @dev Contract module which provides a basic access control mechanism, where
1311
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1373

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1372
1373   pragma solidity ^0.7.0;
1374
1375   /**
1376   * @title TokenRecover
1377
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1391

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1390
1391   pragma solidity ^0.7.0;
1392
1393   /**
1394   * @title ServiceReceiver
1395
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1426

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1425
1426   pragma solidity ^0.7.0;
1427
1428   /**
1429   * @title ServicePayer
1430
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1439

low SEVERITY

The current pragma Solidity directive is ""^0.7.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- WrappedMUE.sol

Locations

```
1438
1439   pragma solidity ^0.7.0;
1440
1441   /**
1442   * @title WrappedMUE
1443
```

SWC-107 | A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.

LINE 1387

low SEVERITY

An external message call to an address specified by the caller is executed. Note that the callee account might contain arbitrary code and could re-enter any function within this contract. Reentering the contract in an intermediate state may lead to unexpected behaviour. Make sure that no state modifications are executed after this call and/or reentrancy guards are in place.

Source File

- WrappedMUE.sol

Locations

```
1386   function recoverERC20(address tokenAddress, uint256 tokenAmount) public onlyOwner
{
1387   IERC20(tokenAddress).transfer(owner(), tokenAmount);
1388   }
1389   }
1390
1391
```

SWC-107 | A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.

LINE 1238

low SEVERITY

An external message call to an address specified by the caller is executed. Note that the callee account might contain arbitrary code and could re-enter any function within this contract. Reentering the contract in an intermediate state may lead to unexpected behaviour. Make sure that no state modifications are executed after this call and/or reentrancy guards are in place.

Source File

- WrappedMUE.sol

Locations

```
1237   }
1238   bytes4 retval = IERC1363Spender(spender).onApprovalReceived(
1239   _msgSender(), amount, data
1240   );
1241   return (retval == _ERC1363_APPROVED);
1242
```

SWC-107 | A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.

LINE 1220

low SEVERITY

An external message call to an address specified by the caller is executed. Note that the callee account might contain arbitrary code and could re-enter any function within this contract. Reentering the contract in an intermediate state may lead to unexpected behaviour. Make sure that no state modifications are executed after this call and/or reentrancy guards are in place.

Source File

- WrappedMUE.sol

Locations

```
1219   }
1220   bytes4 retval = IERC1363Receiver(recipient).onTransferReceived(
1221   _msgSender(), sender, amount, data
1222   );
1223   return (retval == _ERC1363_RECEIVED);
1224
```

SWC-123 | REQUIREMENT VIOLATION.

LINE 1387

low SEVERITY

A requirement was violated in a nested call and the call was reverted as a result. Make sure valid inputs are provided to the nested call (for instance, via passed arguments).

Source File

- WrappedMUE.sol

Locations

```
1386   function recoverERC20(address tokenAddress, uint256 tokenAmount) public onlyOwner
{
1387   IERC20(tokenAddress).transfer(owner(), tokenAmount);
1388   }
1389   }
1390
1391
```

SWC-123 | REQUIREMENT VIOLATION.

LINE 1238

low SEVERITY

A requirement was violated in a nested call and the call was reverted as a result. Make sure valid inputs are provided to the nested call (for instance, via passed arguments).

Source File

- WrappedMUE.sol

Locations

```
1237   }
1238   bytes4 retval = IERC1363Spender(spender).onApprovalReceived(
1239   _msgSender(), amount, data
1240   );
1241   return (retval == _ERC1363_APPROVED);
1242
```

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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 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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