InterFi NETWORK

SMART CONTRACT AUDIT

interfinetwork

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PREPARED FOR

VETME V2

INTRODUCTION

Auditing Firm	InterFi Network
Client Firm	VetMe
Methodology	Automated Analysis, Manual Code Review
Language	Solidity
Token Proxy	0x4636369E34f2031C61F4C20C350547D5fe4469e7
Token Implementation	0xdAF818f23b6BFDb08E7f85969Eb71bae4167aA9D
Blockchain	Ethereum Chain
Centralization	Active ownership
Commit	c6231be684fb40a12218fe2706cf09f8f881850b
Website	https://vetmeblock.com/
Telegram	https://t.me/vetmeportal/
Twitter	https://twitter.com/VetmeToken/
Medium	https://medium.com/@vetmetoken/
Report Date	February 20, 2023

ℹ️ Verify the authenticity of this report on our website: https://www.github.com/interfinetwork

EXECUTIVE SUMMARY

InterFi has performed the automated and manual analysis of solidity codes. Solidity codes were reviewed for common contract vulnerabilities and centralized exploits. Here's a quick audit summary:

Status	Critical 🔴	Major 🟠	Medium 🟡	Minor 🟢	Unknown 🟤
Open	0	0	0	1	0
Acknowledged	1	0	2	2	1
Resolved	0	0	0	0	0
Noteworthy Privileges	Authorize Upgrade, Approve Fees, Set Fees Token, Set Linker, Set Owner, Send VetMe Cross-chain, Link-Unlink				

ℹ️ Please note that smart contracts deployed on blockchains aren't resistant to exploits, vulnerabilities and/or hacks. Blockchain and cryptography assets utilize new and emerging technologies. These technologies present a high level of ongoing risks. For a detailed understanding of risk severity, source code vulnerability, and audit limitations, kindly review the audit report thoroughly.

ℹ️ Please note that centralization privileges regardless of their inherited risk status - constitute an elevated impact on smart contract safety and security.

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SCOPE OF WORK

InterFi was consulted by VetMe to conduct the smart contract audit of their solidity source codes. The audit scope of work is strictly limited to mentioned solidity file(s) only:

- VetMeEthAdapter.sol

ℹ️ If source codes are not deployed on the main net, they can be modified or altered before main-net deployment. Verify the contract's deployment status below:

Public Contract Link	
https://etherscan.io/address/0xdaf818f23b6bfdb08e7f85969eb71bae4167aa9d#code	
Contract Name	VetMeEthAdapter
Compiler Version	0.8.17
License	MIT

AUDIT METHODOLOGY

Smart contract audits are conducted using a set of standards and procedures. Mutual collaboration is essential to performing an effective smart contract audit. Here's a brief overview of InterFi's auditing process and methodology:

CONNECT

- The onboarding team gathers source codes, and specifications to make sure we understand the size, and scope of the smart contract audit.

AUDIT

- Automated analysis is performed to identify common contract vulnerabilities. We may use the following third-party frameworks and dependencies to perform the automated analysis:
  - Remix IDE Developer Tool
  - Open Zeppelin Code Analyzer
  - SWC Vulnerabilities Registry
  - DEX Dependencies, e.g., Pancakeswap, Uniswap
- Simulations are performed to identify centralized exploits causing contract and/or trade locks.
- A manual line-by-line analysis is performed to identify contract issues and centralized privileges. We may inspect below mentioned common contract vulnerabilities, and centralized exploits:

Centralized Exploits	○ Token Supply Manipulation ○ Access Control and Authorization ○ Assets Manipulation ○ Ownership Control ○ Liquidity Access ○ Stop and Pause Trading ○ Ownable Library Verification

Common Contract Vulnerabilities	○ Integer Overflow ○ Lack of Arbitrary limits ○ Incorrect Inheritance Order ○ Typographical Errors ○ Requirement Violation ○ Gas Optimization ○ Coding Style Violations ○ Re-entrancy ○ Third-Party Dependencies ○ Potential Sandwich Attacks ○ Irrelevant Codes ○ Divide before multiply ○ Conformance to Solidity Naming Guides ○ Compiler Specific Warnings ○ Language Specific Warnings

REPORT

- The auditing team provides a preliminary report specifying all the checks which have been performed and the findings thereof.
- The client's development team reviews the report and makes amendments to solidity codes.
- The auditing team provides the final comprehensive report with open and unresolved issues.

PUBLISH

- The client may use the audit report internally or disclose it publicly.

ℹ️ It is important to note that there is no pass or fail in the audit, it is recommended to view the audit as an unbiased assessment of the safety of solidity codes.

RISK CATEGORIES

Smart contracts are generally designed to hold, approve, and transfer tokens. This makes them very tempting attack targets. A successful external attack may allow the external attacker to directly exploit. A successful centralization-related exploit may allow the privileged role to directly exploit. All risks which are identified in the audit report are categorized here for the reader to review:

Risk Type	Definition
Critical 🔴	These risks could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.
Major 🟠	These risks are hard to exploit but very important to fix, they carry an elevated risk of smart contract manipulation, which can lead to high-risk severity.
Medium 🟡	These risks should be fixed, as they carry an inherent risk of future exploits, and hacks which may or may not impact the smart contract execution. Low-risk re-entrancy-related vulnerabilities should be fixed to deter exploits.
Minor 🟢	These risks do not pose a considerable risk to the contract or those who interact with it. They are code-style violations and deviations from standard practices. They should be highlighted and fixed nonetheless.
Unknown 🟤	These risks pose uncertain severity to the contract or those who interact with it. They should be fixed immediately to mitigate the risk uncertainty.

All statuses which are identified in the audit report are categorized here for the reader to review:

Status Type	Definition
Open	Risks are open.
Acknowledged	Risks are acknowledged, but not fixed.
Resolved	Risks are acknowledged and fixed.

CENTRALIZED PRIVILEGES

Centralization risk is the most common cause of cryptography asset loss. When a smart contract has a privileged role, the risk related to centralization is elevated.

There are some well-intended reasons have privileged roles, such as:

- Privileged roles can be granted the power to `pause()` the contract in case of an external attack.
- Privileged roles can use functions like, `include()`, and `exclude()` to add or remove wallets from fees, swap checks, and transaction limits. This is useful to run a presale and to list on an exchange.

Authorizing privileged roles to externally-owned-account (EOA) is dangerous. Lately, centralization-related losses are increasing in frequency and magnitude.

- The client can lower centralization-related risks by implementing below mentioned practices:
- Privileged role's private key must be carefully secured to avoid any potential hack.
- Privileged role should be shared by multi-signature (multi-sig) wallets.
- Authorized privilege can be locked in a contract, user voting, or community DAO can be introduced to unlock the privilege.
- Renouncing the contract ownership, and privileged roles.
- Remove functions with elevated centralization risk.

ℹ Understand the project's initial asset distribution. Assets in the liquidity pair should be locked. Assets outside the liquidity pair should be locked with a release schedule.

AUTOMATED ANALYSIS

Symbol	Definition
🛑	Function modifies state
💸	Function is payable
🔒	Function is internal
🔐	Function is private
!	Function is important

IERC1822ProxiableUpgradeable	Interface			
└	proxiableUUID	External !		NO!
IBeaconUpgradeable	Interface			
└	implementation	External !		NO!
ERC1967UpgradeUpgradeable	Implementation	Initializable		
└	__ERC1967Upgrade_init	Internal 🔒	🛑	onlyInitializing
└	__ERC1967Upgrade_init_unchained	Internal 🔒	🛑	onlyInitializing
└	_getImplementation	Internal 🔒		
└	_setImplementation	Private 🔐	🛑	
└	_upgradeTo	Internal 🔒	🛑	
└	_upgradeToAndCall	Internal 🔒	🛑	
└	_upgradeToAndCallUUPS	Internal 🔒	🛑	
└	_getAdmin	Internal 🔒		
└	_setAdmin	Private 🔐	🛑	
└	_changeAdmin	Internal 🔒	🛑	
└	_getBeacon	Internal 🔒		

| └ | _setBeacon | Private 🔐 | 🛑 | | |

| └ | _upgradeBeaconToAndCall | Internal 🔒 | 🛑 | | |

| └ | _functionDelegateCall | Private 🔐 | 🛑 | | |

||||||

| **Initializable** | Implementation | | |||

| └ | _disableInitializers | Internal 🔒 | 🛑 | | |

| └ | _getInitializedVersion | Internal 🔒 | | | |

| └ | _isInitializing | Internal 🔒 | | | |

||||||

| **UUPSUpgradeable** | Implementation | Initializable, IERC1822ProxiableUpgradeable, ERC1967UpgradeUpgradeable |||

| └ | __UUPSUpgradeable_init | Internal 🔒 | 🛑 | onlyInitializing |

| └ | __UUPSUpgradeable_init_unchained | Internal 🔒 | 🛑 | onlyInitializing |

| └ | proxiableUUID | External ❗ | | notDelegated |

| └ | upgradeTo | External ❗ | 🛑 | onlyProxy |

| └ | upgradeToAndCall | External ❗ | 💵 | onlyProxy |

| └ | _authorizeUpgrade | Internal 🔒 | 🛑 | | |

||||||

| **IERC20PermitUpgradeable** | Interface | | |||

| └ | permit | External ❗ | 🛑 | |NO❗ |

| └ | nonces | External ❗ | | |NO❗ |

| └ | DOMAIN_SEPARATOR | External ❗ | | |NO❗ |

||||||

| **IERC20Upgradeable** | Interface | | |||

| └ | totalSupply | External ❗ | | |NO❗ |

| └ | balanceOf | External ❗ | | |NO❗ |

| └ | transfer | External ❗ | 🛑 | |NO❗ |

| └ | allowance | External ❗ | | |NO❗ |

| └ | approve | External ❗ | 🛑 |NO❗ |

| └ | transferFrom | External ❗ | 🛑 |NO❗ |

||||||

| **SafeERC20Upgradeable** | Library | |||

| └ | safeTransfer | Internal 🔒 | 🛑 | |

| └ | safeTransferFrom | Internal 🔒 | 🛑 | |

| └ | safeApprove | Internal 🔒 | 🛑 | |

| └ | safeIncreaseAllowance | Internal 🔒 | 🛑 | |

| └ | safeDecreaseAllowance | Internal 🔒 | 🛑 | |

| └ | safePermit | Internal 🔒 | 🛑 | |

| └ | _callOptionalReturn | Private 🔐 | 🛑 | |

||||||

| **AddressUpgradeable** | Library | |||

| └ | isContract | Internal 🔒 | | |

| └ | sendValue | Internal 🔒 | 🛑 | |

| └ | functionCall | Internal 🔒 | 🛑 | |

| └ | functionCall | Internal 🔒 | 🛑 | |

| └ | functionCallWithValue | Internal 🔒 | 🛑 | |

| └ | functionCallWithValue | Internal 🔒 | 🛑 | |

| └ | functionStaticCall | Internal 🔒 | | |

| └ | functionStaticCall | Internal 🔒 | | |

| └ | verifyCallResultFromTarget | Internal 🔒 | | |

| └ | verifyCallResult | Internal 🔒 | | |

| └ | _revert | Private 🔐 | | |

||||||

| **ContextUpgradeable** | Implementation | Initializable |||

| └ | __Context_init | Internal 🔒 | 🛑 | onlyInitializing |

| └ | __Context_init_unchained | Internal 🔒 | 🛑 | onlyInitializing |

| └ | _msgSender | Internal 🔒 | | |

| └ | _msgData | Internal 🔒 | | |

||||||

| **ERC165Upgradeable** | Implementation | Initializable, IERC165Upgradeable |||

| └ | __ERC165_init | Internal 🔒 | 🛑 | onlyInitializing |

| └ | __ERC165_init_unchained | Internal 🔒 | 🛑 | onlyInitializing |

| └ | supportsInterface | Public ❗ | | NO❗ |

||||||

| **IERC165Upgradeable** | Interface | | |||

| └ | supportsInterface | External ❗ | | NO❗ |

||||||

| **StorageSlotUpgradeable** | Library | | |||

| └ | getAddressSlot | Internal 🔒 | | |

| └ | getBooleanSlot | Internal 🔒 | | |

| └ | getBytes32Slot | Internal 🔒 | | |

| └ | getUint256Slot | Internal 🔒 | | |

||||||

| **iGenericHandler** | Interface | | |||

| └ | MapContract | External ❗ | 🛑 | NO❗ |

| └ | UnMapContract | External ❗ | 🛑 | NO❗ |

| └ | genericDeposit | External ❗ | 🛑 | NO❗ |

| └ | fetch_chainID | External ❗ | | NO❗ |

| └ | replayGenericDeposit | External ❗ | 🛑 | NO❗ |

||||||

| **iRouterCrossTalkUpgradeable** | Interface | IERC165Upgradeable |||

| └ | routerSync | External ❗ | 🛑 | NO❗ |

| └ | Link | External ❗ | 🛑 | NO❗ |

| └ | Unlink | External ❗ | 🛑 | NO❗ |

| └ | fetchLinkSetter | External ❗ | | NO❗ |

| └ | fetchLink | External ! | | NO ! |

| └ | fetchHandler | External ! | | NO ! |

| └ | fetchFeeToken | External ! | | NO ! |

| └ | fetchExecutes | External ! | | NO ! |

||||||

| **RouterCrossTalkUpgradeable** | Implementation | Initializable, ContextUpgradeable, iRouterCrossTalkUpgradeable, ERC165Upgradeable |||

| └ | __RouterCrossTalkUpgradeable_init | Internal 🔒 | 🛑 | initializer |

| └ | __RouterCrossTalkUpgradeable_init_unchained | Internal 🔒 | 🛑 | initializer |

| └ | setLink | Internal 🔒 | 🛑 | |

| └ | setFeeToken | Internal 🔒 | 🛑 | |

| └ | fetchHandler | External ! | | NO ! |

| └ | fetchLinkSetter | External ! | | NO ! |

| └ | fetchLink | External ! | | NO ! |

| └ | fetchFeeToken | External ! | | NO ! |

| └ | fetchExecutes | External ! | | NO ! |

| └ | routerSend | Internal 🔒 | 🛑 | isLinkSet |

| └ | emitCrossTalkSendEvent | Private 🔐 | 🛑 | |

| └ | routerSync | External ! | 🛑 | isLinkSync isHandler |

| └ | routerReplay | Internal 🔒 | 🛑 | |

| └ | _hash | Internal 🔒 | | |

| └ | Link | External ! | 🛑 | isHandler isLinkUnSet |

| └ | Unlink | External ! | 🛑 | isHandler isLinkSet |

| └ | approveFees | Internal 🔒 | 🛑 | |

| └ | _routerSyncHandler | Internal 🔒 | 🛑 | |

||||||

| **VetMeEthAdapter** | Implementation | Initializable, UUPSUpgradeable, RouterCrossTalkUpgradeable |||

| └ | initialize | External ! | 🛑 | initializer |

| └ | setOwner | External ! | 🛑 | onlyOwner |

| └ | _authorizeUpgrade | Internal 🔒 | 🛑 | onlyOwner |

| └ | setLinker | External ! | 🛑 | onlyOwner |

| └ | setFeesToken | External ! | 🛑 | onlyOwner |

| └ | _approveFees | External ! | 🛑 | onlyOwner |

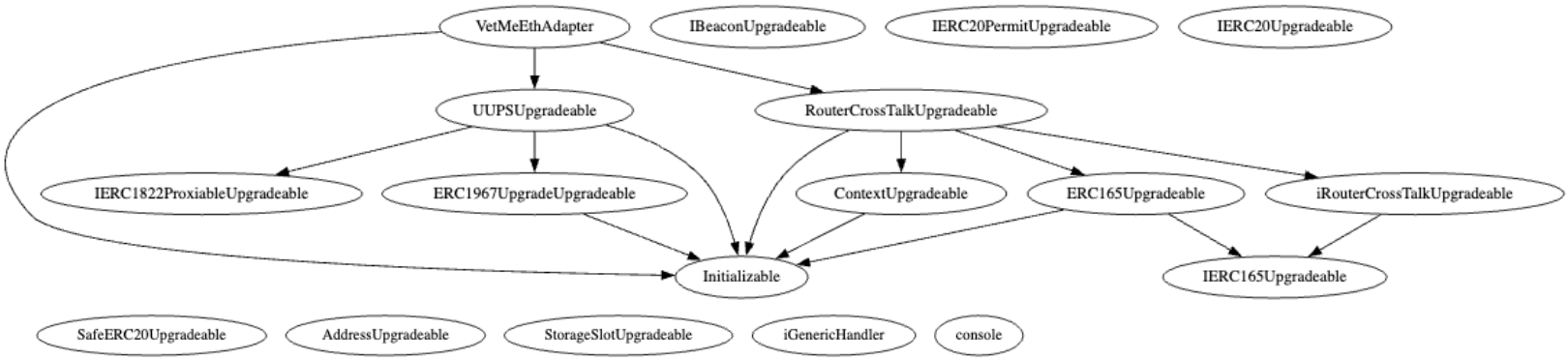
| └ | sendVetMeCrossChain | External ! | 🛑 | NO! |

| └ | replaySendVetMeCrossChain | External ! | 🛑 | onlyOwner |

| └ | _routerSyncHandler | Internal 🔒 | 🛑 | |

| └ | recoverFeeTokens | External ! | 🛑 | onlyOwner |

INHERITANCE GRAPH



MANUAL REVIEW

Identifier	Definition	Severity
CEN-01	Centralized privileges	Medium 🟡

`onlyOwner` centralized privileges are listed below:

```
setOwner()
_authorizeUpgrade()
setLinker()
setFeesToken()
_approveFees()
replaySendVetMeCrossChain()
recoverFeeTokens()
```


RECOMMENDATION

Deployer, contract owner, and privileged roles' private keys should be secured carefully. Please refer to PAGE-09 CENTRALIZED PRIVILEGES for a detailed understanding.

Identifier	Definition	Severity
CEN-09	Use of proxy and upgradeable contracts	Critical 🔴

Privileged role can initiate contract implementation. Contract upgradeability allows privileged roles to change current contract implementation.

```
contract VetMeEthAdapter is
    Initializable,
    UUPSUpgradeable,
    RouterCrossTalkUpgradeable
{
    using SafeERC20Upgradeable for IERC20Upgradeable;
```


RECOMMENDATION

Test and validate current contract thoroughly before deployment. Future contract upgradeability negatively elevates centralization risk.

ACKNOWLEDGEMENT

VetMe team has kept the smart contract upgradeable to introduce new features, optimize contract efficiency and fix potential future bugs.

Identifier	Definition	Severity
LOG-03	Checks Effects Interactions	Medium 🟡

Below mentioned function should be verified for Checks Effects Interactions.

`sendVetMeCrossChain()`

- Function does not check whether the `_amount` is greater than zero. This can cause undesired behavior like burning a negative number of tokens.
- Function is not checking if the `_crossChainGasPrice` is greater than zero.
- Function is not checking if the `_chainID` parameter is valid.

RECOMMENDATION

Use Checks Effects Interactions pattern when handing over the flow to an external entity and guard function against re-entrancy attacks.

ACKNOWLEDGEMENT

VetMe team has put required checks for `_amount` and `_burn`.

Identifier	Definition	Severity
COD-05	Missing zero address validation	Minor

Below mentioned functions are missing zero address input validation:

`setOwner()`
`setLinker()`
`setFeesToken()`

RECOMMENDATION

Validate if the modified address is `dead(0)` or not.

Identifier	Definition	Severity
COD-08	Lack of fallback function	Minor

Fallback functions are usually executed in one of the following cases: If a function identifier doesn't match any of the available functions in a smart contract. If there was no data supplied along with the function call.

RECOMMENDATION

It is recommended to include a fallback function that either reverts the transaction or emits an event to inform the contract owner or users that an invalid function or transaction was attempted. This can help to prevent the contract from being misused or exploited.

Identifier	Definition	Severity
COD-10	Third Party Dependencies	Unknown

Smart contract is interacting with third party protocols e.g., Market Makers, Open Zeppelin tools, Generic Handler, Router Cross Talk. The scope of the audit treats third party entities as black boxes and assumes their functional correctness. However, in the real world, third parties can be compromised, and exploited. Moreover, upgrades in third parties can create severe impacts, e.g., increased transactional fees, deprecation of previous routers, etc.

RECOMMENDATION

Inspect third party dependencies regularly, and mitigate severe impacts whenever necessary.

Identifier	Definition	Severity
COM-01	Floating compiler status	Minor

Compiler is set to `^0.8.0`

RECOMMENDATION

Pragma should be fixed to the version that you're indenting to deploy your contracts with.

DISCLAIMERS

InterFi Network provides the easy-to-understand audit of solidity source codes (commonly known as smart contracts).

The smart contract for this particular audit was analyzed for common contract vulnerabilities, and centralization exploits. This audit report makes no statements or warranties on the security of the code. This audit report does not provide any warranty or guarantee regarding the absolute bug-free nature of the smart contract analyzed, nor do they provide any indication of the client's business, business model or legal compliance. This audit report does not extend to the compiler layer, any other areas beyond the programming language, or other programming aspects that could present security risks. Cryptographic tokens are emergent technologies, they carry high levels of technical risks and uncertainty. You agree that your access and/or use, including but not limited to any services, reports, and materials, will be at your sole risk on an as-is, where-is, and as-available basis. This audit report could include false positives, false negatives, and other unpredictable results.

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ABOUT INTERFI NETWORK

InterFi Network provides intelligent blockchain solutions. We provide solidity development, testing, and auditing services. We have developed 150+ solidity codes, audited 1000+ smart contracts, and analyzed 500,000+ code lines. We have worked on major public blockchains e.g., Ethereum, Binance, Cronos, Doge, Polygon, Avalanche, Metis, Fantom, Bitcoin Cash, Velas, Oasis, etc.

InterFi Network is built by engineers, developers, UI experts, and blockchain enthusiasts. Our team currently consists of 4 core members, and 6+ casual contributors.

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SMART CONTRACT AUDITS | SOLIDITY DEVELOPMENT AND TESTING

RELENTLESSLY SECURING PUBLIC AND PRIVATE BLOCKCHAINS