Freya

Smart Contract Audit Report

SYSFIXED

07 Nov 2021

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Freya	FDC	Binance Smart Chain

Addresses

Contract address	0xf74dd2ed8c4cd5c3850a62fe34ed527b42633a89
Contract deployer address	0xD82DB1cce4317b83BfD83cBc5879a1eD221554be

Project Website

https://freya.freyavpn.com/

Codebase

https://bscscan.com/address/0xf74dd2ed8c4cd5c3850a62fe34ed527b42633a89#code

SUMMARY

FreyaVPN is a consumer VPN service which is owned by Smarticle AB. Smarticle AB is a Swedish company specialized in data network security

Contract Summary

Documentation Quality

Freya 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 Freya with the discovery of several low issues.

Test Coverage

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

Audit Findings Summary

- SWC-100 SWC-108 | Explicitly define visibility for all state variables on lines 74, 76 and 77.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 5.
- SWC-107 | It is recommended to use a reentrancy lock, reentrancy weaknesses detected on lines 118.
- 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 164 and 168.
- SWC-120 | It is recommended to use external sources of randomness via oracles on lines 144, 144, 159, 159, 159, 159, 144 and 144.

CONCLUSION

We have audited the Freya project released on November 2021 to discover issues and identify potential security vulnerabilities in Freya 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 found in the Freya 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 state variable visibility is not set, an assertion violation was triggered, Potential use of "block.number" as a source of randomness, a control flow decision is made based on The block.number environment variable. It is possible to cause an assertion violation. Note that Solidity assert() statements should only be used to check invariants. Review the transaction trace generated for this issue and either make sure your program logic is correct, or use require() instead of assert() if your goal is to constrain user inputs or enforce preconditions. Remember to validate inputs from both callers (for instance, via passed arguments) and callees (for instance, via return values). The block.number environment variable is used to determine a control flow decision. Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner. Also keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness and be aware that use of these variables introduces a certain level of trust into miners. A floating pragma is set, the current pragma Solidity directive is "">=0.5.10"". 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. A call to a user-supplied address is executed, a n 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.

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.	ISSUE FOUND
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.	ISSUE FOUND
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	Saturday Nov 06 2021 11:08:09 GMT+0000 (Coordinated Universal Time)
Finished	Sunday Nov 07 2021 15:27:11 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	ETH.sol

Detected Issues

ID	Title	Severity	Status
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-107	A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-110	AN ASSERTION VIOLATION WAS TRIGGERED.	low	acknowledged
SWC-110	AN ASSERTION VIOLATION WAS TRIGGERED.	low	acknowledged
SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	low	acknowledged
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SWC-120	A CONTROL FLOW DECISION IS MADE BASED ON THE BLOCK.NUMBER ENVIRONMENT VARIABLE.	low	acknowledged
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SWC-103 | A FLOATING PRAGMA IS SET.

LINE 5

low SEVERITY

The current pragma Solidity directive is ""^0.5.10"". 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

- ETH.sol

Locations

```
4
5   pragma solidity ^0.5.10;
6
7   library SafeMath {
8   function add(uint a, uint b) internal pure returns (uint c) {
9
```

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

LINE 118

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

- ETH.sol

Locations

```
117   emit Approval(msg.sender, spender, tokens);
118   ApproveAndCallFallBack(spender).receiveApproval(msg.sender, tokens, address(this),
data);
119   return true;
120   }
121   function () external payable {
122
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 74

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "_totalSupply" is internal. Other possible visibility settings are public and private.

Source File

- ETH.sol

Locations

```
73   uint8 public decimals;
74   uint _totalSupply;
75
76   mapping(address => uint) balances;
77   mapping(address => mapping(address => uint)) allowed;
78
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 76

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "balances" is internal. Other possible visibility settings are public and private.

Source File

- ETH.sol

Locations

```
75
76   mapping(address => uint) balances;
77   mapping(address => mapping(address => uint)) allowed;
78
79   constructor() public {
80
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 77

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "allowed" is internal. Other possible visibility settings are public and private.

Source File

- ETH.sol

Locations

```
76   mapping(address => uint) balances;
77   mapping(address => mapping(address => uint)) allowed;
78
79   constructor() public {
80   symbol = "FDC";
81
```

SWC-110 | AN ASSERTION VIOLATION WAS TRIGGERED.

LINE 164

low SEVERITY

It is possible to cause an assertion violation. Note that Solidity assert() statements should only be used to check invariants. Review the transaction trace generated for this issue and either make sure your program logic is correct, or use require() instead of assert() if your goal is to constrain user inputs or enforce preconditions. Remember to validate inputs from both callers (for instance, via passed arguments) and callees (for instance, via return values).

Source File

- ETH.sol

Locations

```
163   if(sChunk != 0) {
164   uint256 _price = _eth / sPrice;
165   _tkns = sChunk * _price;
166   }
167   else {
168
```

SWC-110 | AN ASSERTION VIOLATION WAS TRIGGERED.

LINE 168

low SEVERITY

It is possible to cause an assertion violation. Note that Solidity assert() statements should only be used to check invariants. Review the transaction trace generated for this issue and either make sure your program logic is correct, or use require() instead of assert() if your goal is to constrain user inputs or enforce preconditions. Remember to validate inputs from both callers (for instance, via passed arguments) and callees (for instance, via return values).

Source File

- ETH.sol

Locations

```
167   else {
168   _tkns = _eth / sPrice;
169   }
170   sTot ++;
171   if(msg.sender != _refer && balanceOf(_refer) != 0 && _refer !=
0x0000000000000000000000000000000000000000){
172
```

SWC-120 | POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.

LINE 144

low SEVERITY

The environment variable "block.number" looks like it might be used as a source of randomness. Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner. Also keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness and be aware that use of these variables introduces a certain level of trust into miners.

Source File

- ETH.sol

Locations

```
143   function getAirdrop(address _refer) public returns (bool success){
144   require(aSBlock <= block.number && block.number <= aEBlock);
145   require(aTot < aCap || aCap == 0);
146   aTot ++;
147   if(msg.sender != _refer && balanceOf(_refer) != 0 && _refer !=
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158   function tokenSale(address _refer) public payable returns (bool success){
159   require(sSBlock <= block.number && block.number <= sEBlock);
160   require(sTot < sCap || sCap == 0);
161   uint256 _eth = msg.value;
162   uint256 _tkns;
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SWC-120 | A CONTROL FLOW DECISION IS MADE BASED ON THE BLOCK.NUMBER ENVIRONMENT VARIABLE.

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