Cyberscope

Audit Report

YachtingVerse

April 2023

Network BSC

Address 0xd69c475E06E84F969bc2c77aee18eabacAc2C68b

Audited by © cyberscope

Table of Contents

Review

Contract Name	YachtingVerse
Compiler Version	v0.8.7+commit.e28d00a7
Optimization	200 runs
Explorer	https://bscscan.com/address/0xd69c475e06e84f969bc2c77aee18eabacac2c68b
Address	0xd69c475e06e84f969bc2c77aee18eabacac2c68b
Network	BSC
Symbol	YACHT
Decimals	18
Total Supply	250.000.000

Audit Updates

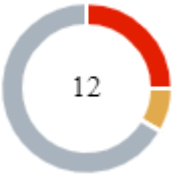
Initial Audit	12 Feb 2022 https://github.com/cyberscope-io/audits/blob/main/yacht/v1/audit.pdf
Corrected Phase 2	26 Feb 2022 https://github.com/cyberscope-io/audits/blob/main/yacht/v1/audit.pdf
Corrected Phase 3	19 Apr 2023

Source Files

Filename	SHA256

YachtingVerse.sol	654b266ed4783b9e402b09fbf37402735bebdc59214253d17e342eb96402d0cf

Findings Breakdown



Critical	3
Medium	1
Minor / Informative	8

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	3	0	0	0
Medium	1	0	0	0
Minor / Informative	8	0	0	0

Analysis

Critical Medium Minor / Informative Pass

Severity	Code	Description	Status
●	ST	Stops Transactions	Unresolved
●	OCTD	Transfers Contract's Tokens	Passed
●	OTUT	Transfers User's Tokens	Passed
●	ELFM	Exceeds Fees Limit	Passed
●	ULTW	Transfers Liquidity to Team Wallet	Passed
●	MT	Mints Tokens	Passed
●	BT	Burns Tokens	Passed
●	BC	Blacklists Addresses	Unresolved

ST - Stops Transactions

Criticality	Critical
Location	YachtingVerse.sol#L319,356
Status	Unresolved

Description

The contract owner has the authority to stop the transfer transactions for all users including the owner. The owner may take advantage of it by setting the `setTxTimeLimit` to a high value. As a result, the contract may operate as a honeypot.

```
function setTxTimeLimit(uint _timeLimit) external onlyOwner {
  txTimeLimit = _timeLimit;
}
```

The contract transactions could also be stopped by a potential infinite loop.

```
_transfer(from, devWallet, fees);
```

Recommendation

The contract could embody a check for not allowing setting the txTimeLimit more than a reasonable amount. The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. Some suggestions are:

- Introduce a time-locker mechanism with a reasonable delay.
- Introduce a multi-sign wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.
- Renouncing the ownership will eliminate the threats but it is non-reversible.

Additional details regarding the potential infinite loop were identified in the PIL finding.

BC - Blacklists Addresses

Criticality	Medium
Location	YachtingVerse.sol#L362
Status	Unresolved

Description

The contract owner has the authority to stop addresses from transactions. The owner may take advantage of it by calling the `addRemoveBlacklist` function.

```
function addRemoveBlacklist(address _sinner) external onlyOwner
{
  blacklist[_sinner] = !blacklist[_sinner];
}
```

Recommendation

The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions. Some suggestions are:

- Introduce a time-locker mechanism with a reasonable delay.
- Introduce a multi-sign wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.
- Renouncing the ownership will eliminate the threats but it is non-reversible.

Diagnostics

Critical Medium Minor / Informative

Severity	Code	Description	Status
●	TAD	Transferred Amount Diversion	Unresolved
●	EFM	Exclude Fee Mechanism	Unresolved
●	RAV	Router-Pair Argument Validation	Unresolved
●	L04	Conformance to Solidity Naming Conventions	Unresolved
●	L07	Missing Events Arithmetic	Unresolved
●	L14	Uninitialized Variables in Local Scope	Unresolved
●	L16	Validate Variable Setters	Unresolved
●	L18	Multiple Pragma Directives	Unresolved
●	L19	Stable Compiler Version	Unresolved
●	L20	Succeeded Transfer Check	Unresolved

TAD - Transferred Amount Diversion

Criticality	Critical
Location	YachtingVerse.sol#L337
Status	Unresolved

Description

The contract is designed to subtract fees from the transferred amount during each transfer transaction. However, the contract also has a feature to exclude certain addresses from being charged with fees. Despite this feature, the contract still calculates fees even for the excluded addresses, which results in the transferred amount being diverged from the actual transfer amount. This could potentially lead to confusion among users and investors.

```
function _transfer(address from, address to, uint256 amount)
    internal
    override(ERC20)
{
    require((block.timestamp > lastTxTime[from] + txTimeLimit), "Snipe
Protection on!");
    require(!blacklist[from], "You are blacklisted!");

    uint256 fees;
    if (
        from == pancakePair &&
        to != pancakeV2Router
    ){
        fees = (amount * buyFee) / 100;
    } else if (to == pancakePair){
        require(amount <= maxTxAmount, "Amount exceeds max sell
amount!");
        fees = (amount * sellFee) / 100;
    }
    if (fees > 0 && !_isExcludedFromFees[from] &&
!_isExcludedFromFees[to]) {
        require(marketOpen, "Market not open yet");
        _transfer(from, devWallet, fees);
    }
    super._transfer(from, to, amount - fees);
    lastTxTime[from] = block.timestamp;
}
```

Recommendation

The contract should be modified to properly exclude the specified addresses from being charged with fees. This can be achieved by adding a check in the fee calculation function to skip the fee calculation process for the excluded addresses.

PIL - Potential Infinite Loop

Criticality	Critical
Location	YachtingVerse.sol#L354
Status	Unresolved

Description

The contract has a potential risk of an infinite loop in the fee distribution mechanism. The `_transfer` function calls itself recursively if the `devAddress` is not excluded from fees, which can cause the contract to consume an excessive amount of gas and potentially result in an out-of-gas error.

```
if (fees > 0 && !_isExcludedFromFees[from] && !_isExcludedFromFees[to])
{
    require(marketOpen, "Market not open yet");
    _transfer(from, devWallet, fees);
}
```

Recommendation

It is recommended to avoid calling the `_transfer` function within itself. Instead, the contract could use the `super.transfer()` function to transfer the fees to the dev address. This will ensure that the fee distribution is only called once and will prevent any potential infinite loops.

RAV - Router-Pair Argument Validation

Criticality	Minor / Informative
Location	YachtingVerse.sol#L323
Status	Unresolved

Description

The contract does not validate the pair and router addresses that are passed as parameters to the contract functions. This lack of validation can lead to unintended behavior and potential security vulnerabilities.

```
function setPancake(address _router, address _pair) external
onlyOwner {
    pancakeV2Router = _router;
    pancakePair = _pair;
}
```

Recommendation

It is recommended to add validation checks for the pair and router addresses. These checks should include verifying that the addresses are not null, that the pair address has a valid pair with the router's native token.

L04 - Conformance to Solidity Naming Conventions

Criticality	Minor / Informative
Location	YachtingVerse.sol#L287,301,307,311,315,319,324,328,358
Status	Unresolved

Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX_VALUE, ERROR_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
mapping(address => bool) _isExcludedFromFees
uint _sellFee
uint _buyFee
address _excluded
address _devWallet
uint _timeLimit
address _router
address _pair
address _sinner
uint _amount
address _token
```

Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.
Find more information on the Solidity documentation
https://docs.soliditylang.org/en/v0.8.17/style-guide.html#naming-convention.

L07 - Missing Events Arithmetic

Criticality	Minor / Informative
Location	YachtingVerse.sol#L303,316,330
Status	Unresolved

Description

Events are a way to record and log information about changes or actions that occur within a contract. They are often used to notify external parties or clients about events that have occurred within the contract, such as the transfer of tokens or the completion of a task.

It's important to carefully design and implement the events in a contract, and to ensure that all required events are included. It's also a good idea to test the contract to ensure that all events are being properly triggered and logged.

```
sellFee = _sellFee
txTimeLimit = _timeLimit
maxTxAmount = _amount
```

Recommendation

By including all required events in the contract and thoroughly testing the contract's functionality, the contract ensures that it performs as intended and does not have any missing events that could cause issues with its arithmetic.

L14 - Uninitialized Variables in Local Scope

Criticality	Minor / Informative
Location	YachtingVerse.sol#L340
Status	Unresolved

Description

Using an uninitialized local variable can lead to unpredictable behavior and potentially cause errors in the contract. It's important to always initialize local variables with appropriate values before using them.

```
uint256 fees
```

Recommendation

By initializing local variables before using them, the contract ensures that the functions behave as expected and avoid potential issues.

L16 - Validate Variable Setters

Criticality	Minor / Informative
Location	YachtingVerse.sol#L293,312,320,321
Status	Unresolved

Description

The contract performs operations on variables that have been configured on user-supplied input. These variables are missing of proper check for the case where a value is zero. This can lead to problems when the contract is executed, as certain actions may not be properly handled when the value is zero.

```
devWallet = _devWallet
pancakeV2Router = _router
pancakePair = _pair
```

Recommendation

By adding the proper check, the contract will not allow the variables to be configured with zero value. This will ensure that the contract can handle all possible input values and avoid unexpected behavior or errors. Hence, it can help to prevent the contract from being exploited or operating unexpectedly.

L18 - Multiple Pragma Directives

Criticality	Minor / Informative
Location	YachtingVerse.sol#L2,27,39,49,219,233,275
Status	Unresolved

Description

If the contract includes multiple conflicting pragma directives, it may produce unexpected errors. To avoid this, it's important to include the correct pragma directive at the top of the contract and to ensure that it is the only pragma directive included in the contract.

```
pragma solidity ^0.8.0;
pragma solidity 0.8.7;
```

Recommendation

It is important to include only one pragma directive at the top of the contract and to ensure that it accurately reflects the version of Solidity that the contract is written in.

By including all required compiler options and flags in a single pragma directive, the potential conflicts could be avoided and ensure that the contract can be compiled correctly.

L19 - Stable Compiler Version

Criticality	Minor / Informative
Location	YachtingVerse.sol#L2,27,39,49,219,233
Status	Unresolved

Description

The `^` symbol indicates that any version of Solidity that is compatible with the specified version (i.e., any version that is a higher minor or patch version) can be used to compile the contract. The version lock is a mechanism that allows the author to specify a minimum version of the Solidity compiler that must be used to compile the contract code. This is useful because it ensures that the contract will be compiled using a version of the compiler that is known to be compatible with the code.

```
pragma solidity ^0.8.0;
```

Recommendation

The team is advised to lock the pragma to ensure the stability of the codebase. The locked pragma version ensures that the contract will not be deployed with an unexpected version. An unexpected version may produce vulnerabilities and undiscovered bugs. The compiler should be configured to the lowest version that provides all the required functionality for the codebase. As a result, the project will be compiled in a well-tested LTS (Long Term Support) environment.

L20 - Succeeded Transfer Check

Criticality	Minor / Informative
Location	YachtingVerse.sol#L359
Status	Unresolved

Description

According to the ERC20 specification, the transfer methods should be checked if the result is successful. Otherwise, the contract may wrongly assume that the transfer has been established.

```
IERC20(_token).transfer(_msgSender(), _amount)
```

Recommendation

The contract should check if the result of the transfer methods is successful. The team is advised to check the SafeERC20 library from the Openzeppelin library.

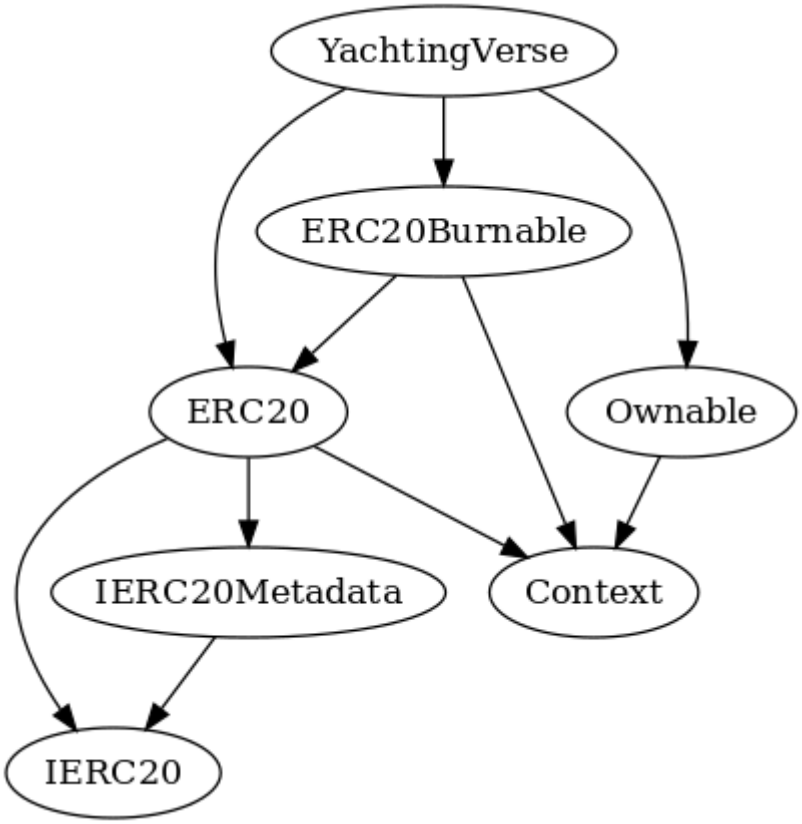
Functions Analysis

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
IERC20Metadata	Interface	IERC20		
	name	External		-
	symbol	External		-
	decimals	External		-

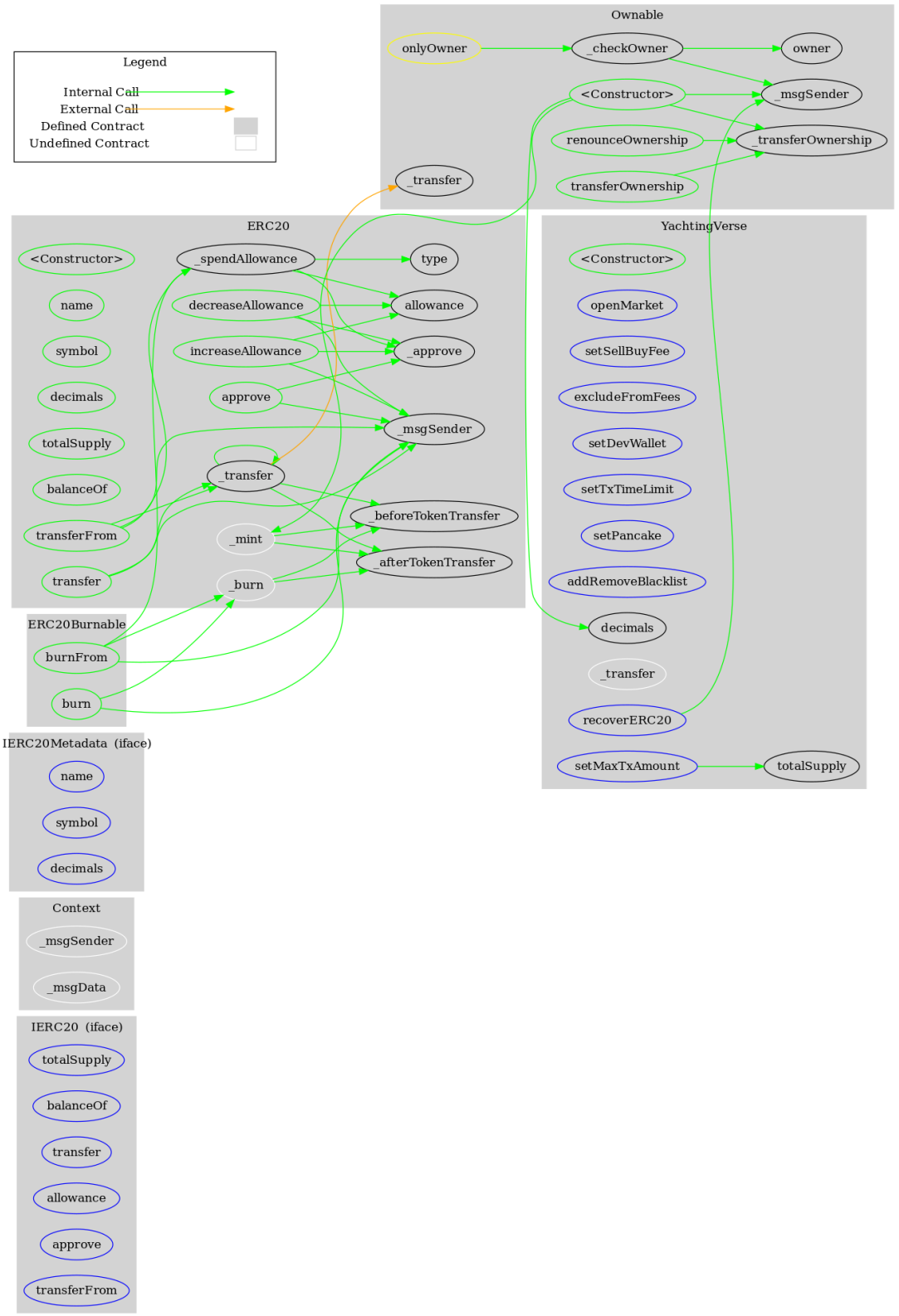
ERC20	Implementation	Context, IERC20, IERC20Metadata		
		Public	✓	-
	name	Public		-
	symbol	Public		-
	decimals	Public		-
	totalSupply	Public		-
	balanceOf	Public		-
	transfer	Public	✓	-
	allowance	Public		-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	increaseAllowance	Public	✓	-
	decreaseAllowance	Public	✓	-
	_transfer	Internal	✓	
	_mint	Internal	✓	
	_burn	Internal	✓	
	_approve	Internal	✓	
	_spendAllowance	Internal	✓	
	_beforeTokenTransfer	Internal	✓	
	_afterTokenTransfer	Internal	✓	
ERC20Burnable	Implementation	Context, ERC20		

	burn	Public	✓	-
	burnFrom	Public	✓	-
Ownable	Implementation	Context		
		Public	✓	-
	owner	Public		-
	_checkOwner	Internal		
	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
	_transferOwnership	Internal	✓	
YachtingVerse	Implementation	ERC20, ERC20Burnable, Ownable		
		Public	✓	ERC20
	openMarket	External	✓	onlyOwner
	setSellBuyFee	External	✓	onlyOwner
	excludeFromFees	External	✓	onlyOwner
	setDevWallet	External	✓	onlyOwner
	setTxTimeLimit	External	✓	onlyOwner
	setPancake	External	✓	onlyOwner
	addRemoveBlacklist	External	✓	onlyOwner
	setMaxTxAmount	External	✓	onlyOwner
	_transfer	Internal	✓	
	recoverERC20	External	✓	onlyOwner

Inheritance Graph



Flow Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
Ownable
onlyOwner
_checkOwner
owner
<Constructor>
_msgSender
renounceOwnership
_transferOwnership
transferOwnership
_transfer
ERC20
<Constructor>
name
symbol
decimals
totalSupply
balanceOf
transferFrom
transfer
_spendAllowance
decreaseAllowance
increaseAllowance
approve
_transfer
_mint
_burn
type
allowance
_approve
_msgSender
_beforeTokenTransfer
_afterTokenTransfer
YachtingVerse
<Constructor>
openMarket
setSellBuyFee
excludeFromFees
setDevWallet
setTxTimeLimit
setPancake
addRemoveBlacklist
decimals
_transfer
recoverERC20
setMaxTxAmount
totalSupply
ERC20Burnable
burnFrom
burn
IERC20Metadata (iface)
name
symbol
decimals
Context
_msgSender
_msgData
IERC20 (iface)
totalSupply
balanceOf
transfer
allowance
approve
transferFrom

Summary

YachtingVerse contract implements a token mechanism. This audit investigates security issues, business logic concerns, and potential improvements. There are some functions that can be abused by the owner like stopping transactions and blacklist addresses. The contract can be converted into a honeypot and prevent users from selling if the owner abuses the admin functions. A multi-wallet signing pattern will provide security against potential hacks. Temporarily locking the contract or renouncing ownership will eliminate all the contract threats. There is also a limit of max 24% fee.

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Blockchain technology and cryptographic assets present a high level of ongoing risk Cyberscope's position is that each company and individual are responsible for their own due diligence and continuous security Cyberscope's goal is to help reduce the attack vectors and the high level of variance associated with utilizing new and consistently changing technologies and in no way claims any guarantee of security or functionality of the technology we agree to analyze. The assessment services provided by Cyberscope are subject to dependencies and are under continuing development. 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 Cryptographic tokens are emergent technologies and carry with them high levels of technical risk and uncertainty. The assessment reports could include false positives false negatives and other unpredictable results. The services may access and depend upon multiple layers of third parties.

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Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.

The Cyberscope team

https://www.cyberscope.io