



Cyberscope

## Audit Report

# WakandaRouter

September 2022

Type      BEP20

Network    BSC TESTNET

Address    0xd97ECf01cd2C2f7F38999f2585483bb3A09139eF

Audited by   © cyberscope

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## Contract Review

<b>Contract Name</b>	WakandaRouter
<b>Compiler Version</b>	v0.6.6+commit.6c089d02
<b>Testing Deploy</b>	<a href="https://testnet.bscscan.com/token/0xd97ECf01cd2C2f7F38999f2585483bb3A09139eF">https://testnet.bscscan.com/token/0xd97ECf01cd2C2f7F38999f2585483bb3A09139eF</a>
<b>Domain</b>	-

## Audit Updates

<b>Initial Audit</b>	21st September 2022
<b>Corrected</b>	

## Source Files

Filename	SHA256
<b>helpers/IERC20.sol</b>	64469bf9aef280453f36bf73598078a603b95f1ef20bc0ef8256e76b216c44d8
<b>swap/Router.sol</b>	ecd7660cee1e38dcee45001cfc4aba1479c2b4fa3f5cd3b855f32d39aaf85b47

# Introduction

The WakandaRouter contract implements a router contract. The router, which uses the library, fully supports all the basic requirements of a front-end offering trading and liquidity management functionality. Notably, it natively supports multi-pair trades (e.g. x to y to z), treats native currency as a first-class citizen, and offers meta-transactions for removing liquidity.

# Contract Diagnostics

● Critical   ● Medium   ● Minor / Informative

Severity	Code	Description	Status
●	L01	Public Function could be Declared External	Unresolved
●	L04	Conformance to Solidity Naming Conventions	Unresolved
●	L09	Dead Code Elimination	Unresolved
●	L14	Uninitialized Variables in Local Scope	Unresolved

## L01 - Public Function could be Declared External

<b>Criticality</b>	minor / informative
<b>Location</b>	src/swap/Router.sol#L1216,1226,1200,1192,1208
<b>Status</b>	Unresolved

### Description

Public functions that are never called by the contract should be declared external to save gas.

```
getAmountsOut  
getAmountsIn  
getAmountOut  
quote  
getAmountIn
```

### Recommendation

Use the external attribute for functions never called from the contract.

## L04 - Conformance to Solidity Naming Conventions

<b>Criticality</b>	minor / informative
<b>Location</b>	src/swap/Router.sol#L325,91,563,323,356
<b>Status</b>	Unresolved

### Description

Solidity defines a naming convention that should be followed. Rule exceptions:

- Allow constant variable name/symbol/decimals to be lowercase.
- Allow \_ at the beginning of the mixed\_case match for private variables and unused parameters.

```
PERMIT_TYPEHASH  
WETH  
DOMAIN_SEPARATOR  
MINIMUM_LIQUIDITY
```

### Recommendation

Follow the Solidity naming convention.

<https://docs.soliditylang.org/en/v0.4.25/style-guide.html#naming-conventions>.

## L09 - Dead Code Elimination

<b>Criticality</b>	minor / informative
<b>Location</b>	src/swap/Router.sol#L36
<b>Status</b>	Unresolved

### Description

Functions that are not used in the contract, and make the code's size bigger.

```
safeApprove
```

### Recommendation

Remove unused functions.



## L14 - Uninitialized Variables in Local Scope

<b>Criticality</b>	minor / informative
<b>Location</b>	src/swap/Router.sol#L521,1088,888
<b>Status</b>	Unresolved

### Description

There are variables that are defined in the local scope and are not initialized.

```
i
```

### Recommendation

All the local scoped variables should be initialized.

# Contract Functions

Contract	Type	Bases		
	Function Name	Visibility	Mutability	Modifiers
<b>IERC20</b>	Interface			
	name	External		-
	symbol	External		-
	decimals	External		-
	totalSupply	External		-
	balanceOf	External		-
	allowance	External		-
	approve	External	✓	-
	transfer	External	✓	-
	transferFrom	External	✓	-
<b>IWakandaFactory</b>	Interface			
	feeTo	External		-
	feeToSetter	External		-
	getPair	External		-
	allPairs	External		-
	allPairsLength	External		-
	createPair	External	✓	-
	setFeeTo	External	✓	-
	setFeeToSetter	External	✓	-
<b>TransferHelper</b>	Library			
	safeApprove	Internal	✓	
	safeTransfer	Internal	✓	
	safeTransferFrom	Internal	✓	
	safeTransferETH	Internal	✓	

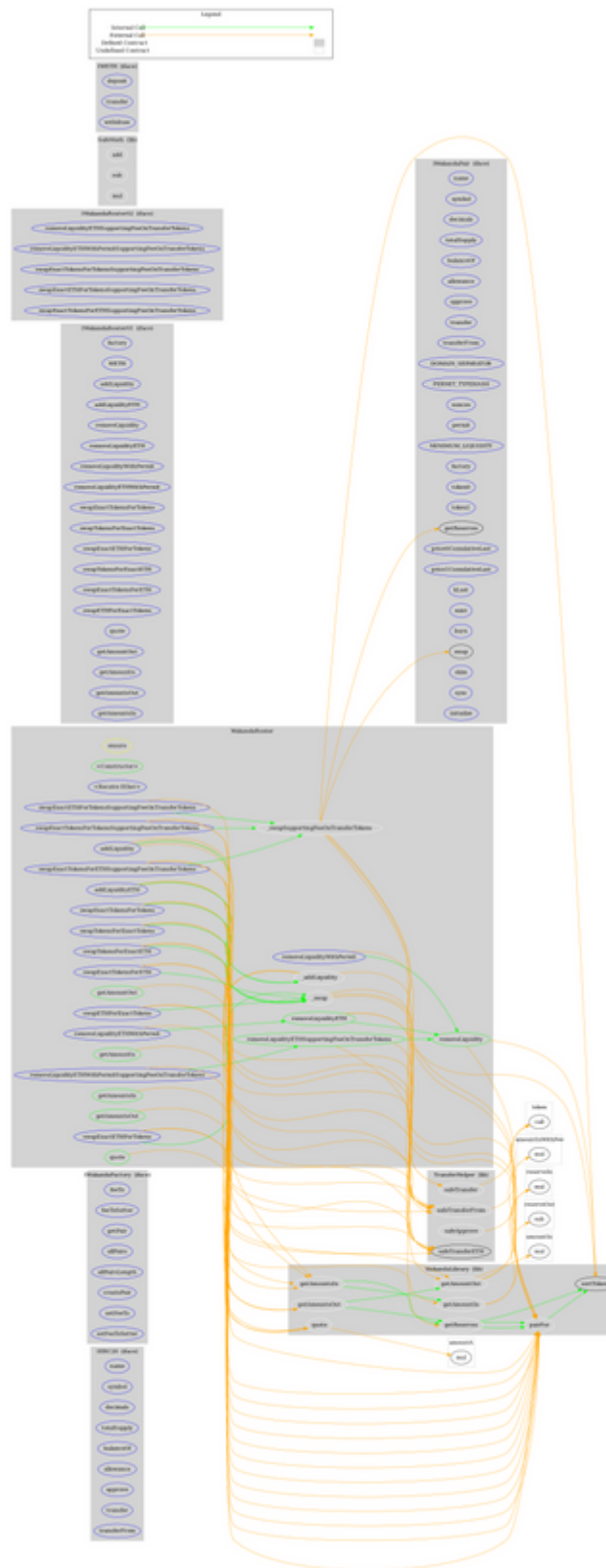
<b>IWakandaRouter01</b>	Interface			
	factory	External		-
	WETH	External		-
	addLiquidity	External	✓	-
	addLiquidityETH	External	Payable	-
	removeLiquidity	External	✓	-
	removeLiquidityETH	External	✓	-
	removeLiquidityWithPermit	External	✓	-
	removeLiquidityETHWithPermit	External	✓	-
	swapExactTokensForTokens	External	✓	-
	swapTokensForExactTokens	External	✓	-
	swapExactETHForTokens	External	Payable	-
	swapTokensForExactETH	External	✓	-
	swapExactTokensForETH	External	✓	-
	swapETHForExactTokens	External	Payable	-
	quote	External		-
	getAmountOut	External		-
	getAmountIn	External		-
	getAmountsOut	External		-
	getAmountsIn	External		-
<b>IWakandaRouter02</b>	Interface	IWakandaRouter01		
	removeLiquidityETHSupportingFeeOnTransferTokens	External	✓	-
	removeLiquidityETHWithPermitSupportingFeeOnTransferTokens	External	✓	-
	swapExactTokensForTokensSupportingFeeOnTransferTokens	External	✓	-
	swapExactETHForTokensSupportingFeeOnTransferTokens	External	Payable	-
	swapExactTokensForETHSupportingFeeOnTransferTokens	External	✓	-
<b>IWakandaPair</b>	Interface			
	name	External		-

	symbol	External		-
	decimals	External		-
	totalSupply	External		-
	balanceOf	External		-
	allowance	External		-
	approve	External	✓	-
	transfer	External	✓	-
	transferFrom	External	✓	-
	DOMAIN_SEPARATOR	External		-
	PERMIT_TYPEHASH	External		-
	nonces	External		-
	permit	External	✓	-
	MINIMUM_LIQUIDITY	External		-
	factory	External		-
	token0	External		-
	token1	External		-
	getReserves	External		-
	price0CumulativeLast	External		-
	price1CumulativeLast	External		-
	kLast	External		-
	mint	External	✓	-
	burn	External	✓	-
	swap	External	✓	-
	skim	External	✓	-
	sync	External	✓	-
	initialize	External	✓	-
<b>SafeMath</b>	Library			
	add	Internal		
	sub	Internal		
	mul	Internal		
<b>WakandaLibrary</b>	Library			
	sortTokens	Internal		

	pairFor	Internal		
	getReserves	Internal		
	quote	Internal		
	getAmountOut	Internal		
	getAmountIn	Internal		
	getAmountsOut	Internal		
	getAmountsIn	Internal		
<b>IWETH</b>	Interface			
	deposit	External	Payable	-
	transfer	External	✓	-
	withdraw	External	✓	-
<b>WakandaRouter</b>	Implementation	IWakandaRouter02		
	<Constructor>	Public	✓	-
	<Receive Ether>	External	Payable	-
	_addLiquidity	Internal	✓	
	addLiquidity	External	✓	ensure
	addLiquidityETH	External	Payable	ensure
	removeLiquidity	Public	✓	ensure
	removeLiquidityETH	Public	✓	ensure
	removeLiquidityWithPermit	External	✓	-
	removeLiquidityETHWithPermit	External	✓	-
	removeLiquidityETHSupportingFeeOnTransferTokens	Public	✓	ensure
	removeLiquidityETHWithPermitSupportingFeeOnTransferTokens	External	✓	-
	_swap	Internal	✓	
	swapExactTokensForTokens	External	✓	ensure
	swapTokensForExactTokens	External	✓	ensure
	swapExactETHForTokens	External	Payable	ensure
	swapTokensForExactETH	External	✓	ensure
	swapExactTokensForETH	External	✓	ensure
	swapETHForExactTokens	External	Payable	ensure
	_swapSupportingFeeOnTransferToken	Internal	✓	

	ns			
	swapExactTokensForTokensSupportingFeeOnTransferTokens	External	✓	ensure
	swapExactETHForTokensSupportingFeeOnTransferTokens	External	Payable	ensure
	swapExactTokensForETHSupportingFeeOnTransferTokens	External	✓	ensure
	quote	Public		-
	getAmountOut	Public		-
	getAmountIn	Public		-
	getAmountsOut	Public		-
	getAmountsIn	Public		-

# Contract Flow



## Domain Info

<b>Domain Name</b>	wakandainu.com
<b>Registry Domain ID</b>	2650366346_DOMAIN_COM-VRSN
<b>Creation Date</b>	2021-10-26T11:48:53.00Z
<b>Updated Date</b>	2021-11-11T12:32:24.22Z
<b>Registry Expiry Date</b>	2026-10-26T11:48:53.00Z
<b>Registrar WHOIS Server</b>	whois.namecheap.com
<b>Registrar URL</b>	<a href="http://www.namecheap.com">http://www.namecheap.com</a>
<b>Registrar</b>	NAMECHEAP INC
<b>Registrar IANA ID</b>	1068

The domain was created 11 months before the creation of the audit. It will expire in about 4 years.

There is no public billing information, the creator is protected by the privacy settings.



## Summary

The smart contract analysis reported no critical or compiler issues. This audit focused on investigating security issues and potential improvements.

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Coinscope audit and K.Y.C. service has been rebranded to Cyberscope.

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The Cyberscope team

<https://www.cyberscope.io>