COINSCOPE

Audit Report

Brawl Stars

December 2021

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Contract Review

Contract Name	BrawlStarsToken
Compiler Version	v0.8.4+commit.c7e474f2
Optimization	200 runs
Licence	None
Explorer	https://bscscan.com/token/0xdde57967990daf1f47296000 505e4364f236805e
Symbol	BSD
Decimals	18
Total Supply	100,000,000
Website	https://supercell-brawlstars.com/

Audit Updates

Initial Audit	8th of December 2021
Corrected	

Contract Analysis

Pass	Description
✓	Contract Owner is not able to mint new tokens
✓	Contract Owner is not able to burn new tokens
✗	Contract Owner is not able to increase fees more than a reasonable percent (25%)
✓	Contract Owner is not able to stop or pause transactions
✓	Contract Owner is not able to transfer tokens from specific address
✗	Contract Owner is not able to increase the amount of liquidity taken by dev wallet more than a reasonable percent
✗	Contract Owner is not able to blacklist wallets from selling

UIF - Unlimited Increase Fees

Criticality	high
Location	https://bscscan.com/address/0xdde57967990daf1f47296000505e4364f236805e#code#F1#L28,L33,L38

Description

The contract owner has the authority to increase fees without limit. The owner may take advantage of it by calling the `setOperationFee` function with a high percentage value.

```
function setOperationFee(uint256 _fee) external onlyOwner {
    operationFee = _fee;
}
```

Recommendation

The contract could embody a check for the maximum acceptable value.

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. That risk can be prevented by temporarily locking the contract or renouncing ownership.

ULTW - Unlimited Liquidity to Team Wallet

Criticality	high
Location	https://bscscan.com/address/0xdde57967990daf1f47296000505e4364f236805e#code#F1#L82,L83

Description

The contract owner has the authority to transfer funds without limit to the team wallet. These funds have been swiped from the `swapTokensForEthAndSend` feature. The owner may take advantage of it by setting a high fee to variables like the `_operationFee`.

```
uint256 _p2eFee = amount.mul(p2eFee).div(100);
super._transfer(sender, p2eAddress, _p2eFee);

uint256 _mktFee = amount.mul(mktFee).div(100);
uint256 _operationFee = amount.mul(operationFee).div(100);
super._transfer(sender, address(this), _mktFee.add(_operationFee));

swapTokensForEthAndSend(_mktFee, mktAddress);
swapTokensForEthAndSend(_operationFee, owner());
```

Recommendation

The contract could embody a check for the maximum acceptable value.

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. That risk can be prevented by temporarily locking the contract or renouncing ownership.

BC - Blacklisted Contracts

Criticality	high
Location	https://bscscan.com/address/0xdde57967990daf1f47296000505e4364f236805e#code#F1#L42

Description

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

```solidity
function addBlacklist(address b, bool enable) external onlyOwner {
    blacklist[b] = enable;
}
```

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. That risk can be prevented by temporarily locking the contract or renouncing ownership.

Contract Diagnostics

Pass	Name
✓	Integer Underflow
✓	Parity Multisig Bug
✓	Callstack Depth Attack
✓	Transaction-Ordering Dependency
✓	Timestamp Dependency
✓	Re-Entrancy

Contract Functions

Contract	Type	Bases		
	Function Name	Visibility	Mutability	Modifiers
BrawlStarsToken	Implementation	BEP20		
		Public	✓	BEP20
	setP2eAddress	External	✓	onlyOwner
	setMktAddress	External	✓	onlyOwner
	setOperationFee	External	✓	onlyOwner
	addBlacklist	External	✓	onlyOwner
	swapTokensForEthAndSend	Private	✓	
	_transfer	Internal	✓	
Address	Library			
	isContract	Internal		
	sendValue	Internal	✓	
	functionCall	Internal	✓	
	functionCall	Internal	✓	
	functionCallWithValue	Internal	✓	
	functionCallWithValue	Internal	✓	
	functionStaticCall	Internal		

	functionStaticCall	Internal		
	functionDelegateCall	Internal	✓	
	functionDelegateCall	Internal	✓	
	verifyCallResult	Internal		
BEP20	Implementation	Context, IBEP20, Ownable		
		Public	✓	-
	getOwner	External		-
	name	Public		-
	decimals	Public		-
	symbol	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	✓	
	_burnFrom	Internal	✓	
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
IBEP20	Interface			
	totalSupply	External		-
	decimals	External		-
	symbol	External		-
	name	External		-
	getOwner	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
IUniswapV2Factory	Interface			

	feeTo	External		-
	feeToSetter	External		-
	getPair	External		-
	allPairs	External		-
	allPairsLength	External		-
	createPair	External	✓	-
	setFeeTo	External	✓	-
	setFeeToSetter	External	✓	-
IUniswapV2Router01	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		-
IUniswapV2Router02	Interface	IUniswapV2Router01		
	removeLiquidityETHSupportingFeeOnTransferTokens	External	✓	-
	removeLiquidityETHWithPermitSupportingFeeOnTransferTokens	External	✓	-
	swapExactTokensForTokensSupportingFeeOnTransferTokens	External	✓	-
	swapExactETHForTokensSupportingFeeOnTransferTokens	External	Payable	-
	swapExactTokensForETHSupportingFeeOnTransferTokens	External	✓	-
Ownable	Implementation	Context		
		Public	✓	-
	owner	Public		-

	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
	_setOwner	Private	✓	
SafeMath	Library			
	tryAdd	Internal		
	trySub	Internal		
	tryMul	Internal		
	tryDiv	Internal		
	tryMod	Internal		
	add	Internal		
	sub	Internal		
	mul	Internal		
	div	Internal		
	mod	Internal		
	sub	Internal		
	div	Internal		
	mod	Internal		

Contract Flow
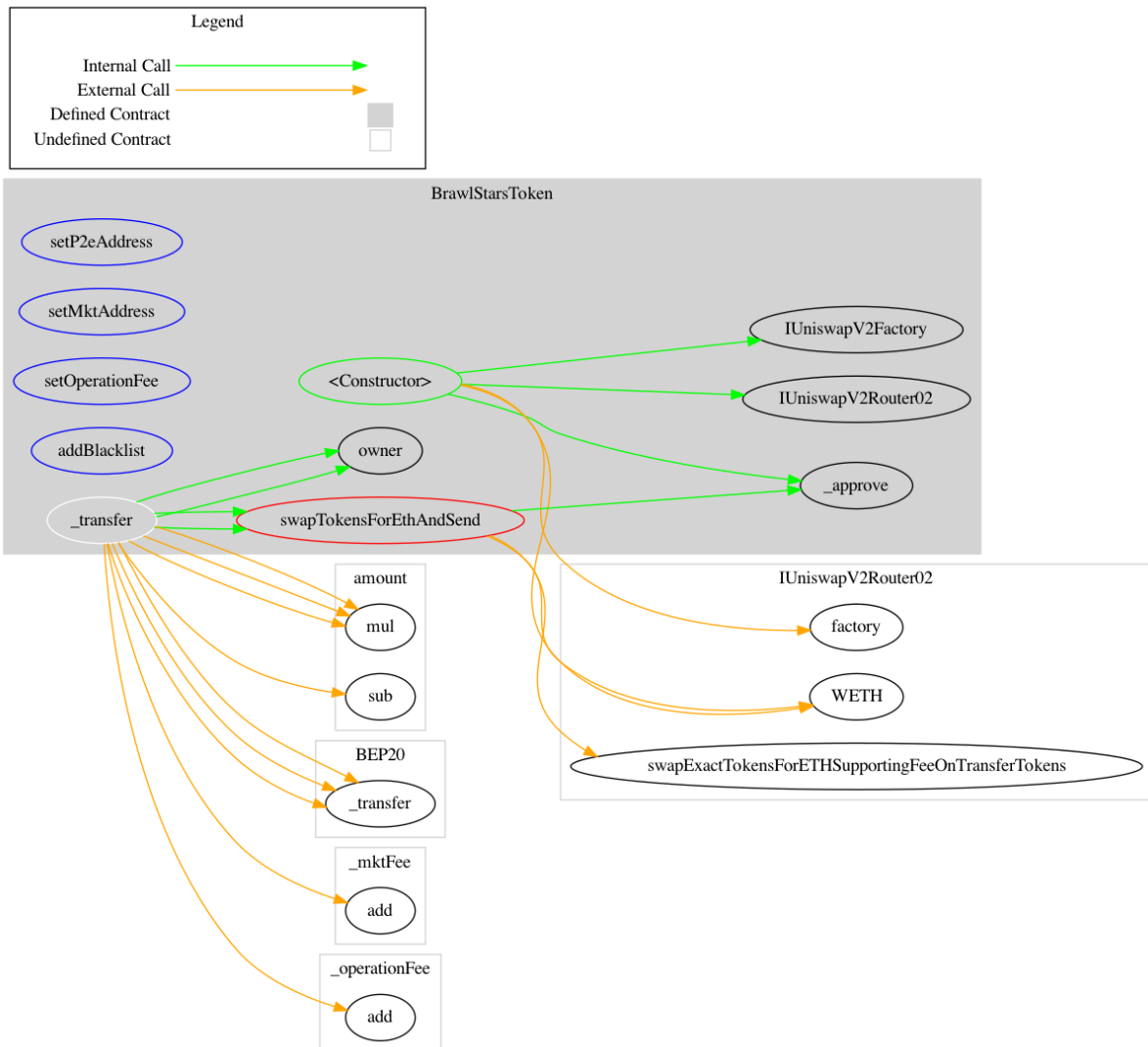
Domain Info

Domain Name	supercell-brawlstars.com
Registry Domain ID	9449260542_DOMAIN_COM-VRSN
Registrar WHOIS Server	whois.diymysite.com
Registrar URL	www.diymysite.com
Updated Date	2021-12-02T20:10:16.0Z
Creation Date	2021-12-02T20:10:16.0Z
Registry Expiry Date	2022-12-02T20:10:16.0Z
Registrar	Cloud Yuqu LLC
Registrar IANA ID	3824

The domain has been created 6 days before the creation of the audit. It will expire in one year.

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

Summary

Brawl Stars is a team competitive mobile game developed by Finland supercell. Players will operate various heroes in the wild chaos in the game and compete according to different map mechanisms. The contract analysis reported 3 critical issues. There are some functions that can be abused by the owner, like manipulating fees without limitations and blacklisting addresses. A multi-wallet signing pattern or renouncing the ownership will eliminate all the contract threats. Finally, KYC or doxxing the team is advised in order to gain confidence and trust from the community.

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Coinscope is aiming to make crypto discoverable and efficient globally. It provides all the essential tools to assist users draw their own conclusions.

The Coinscope.co team

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