



Smart Contract Security Audit Report

GALA

June 2022

Security Status



www.hacksafe.io



Audit Details



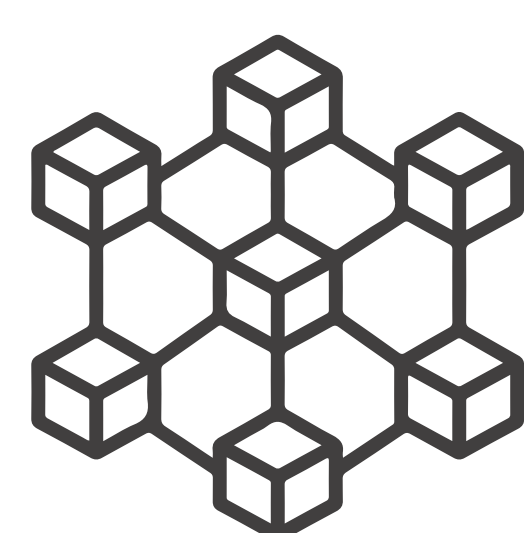
Audited project
GALA



Deployer address
0xB46e97059BB733510a32fcB9E2D1B3655CD84E03



Client contacts
GALA team



Blockchain
Ethereum



Website
<https://app.gala.games/>

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

Procedure

Step 1 - In-Depth Manual Review

Manual line-by-line code reviews to ensure the logic behind each function is sound and safe from various attack vectors. This is the most important and lengthy portion of the audit process (as automated tools often cannot find the nuances that lead to exploits such as flash loan attacks).

Step 2 - Automated Testing

Simulation of a variety of interactions with your Smart Contract on a test blockchain leveraging a combination of automated test tools and manual testing to determine if any security vulnerabilities exist.

Step 3 – Leadership Review

The engineers assigned to the audit will schedule meetings with our leadership team to review the contracts, any comments or findings, and ask questions to further apply adversarial thinking to discuss less common attack vectors.

Step 4 - Resolution of Issues

Consulting with the team to provide our recommendations to ensure the code's security and optimize its gas efficiency, if possible. We assist project team's in resolving any outstanding issues or implementing our recommendations.

Step 5 - Published Audit Report

Boiling down results and findings into an easy-to-read report tailored to the project. Our audit reports highlight resolved issues and any risks that exist to the project or its users, along with any remaining suggested remediation measures. Diagrams are included at the end of each report to help users understand the interactions which occur within the project.

Background

HackSafe was commissioned by GALA to perform an audit of smart contracts:

- <https://etherscan.io/address/0x15D4c048F83bd7e37d49eA4C83a07267Ec4203dA#code>

The purpose of the audit was to achieve the

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be understood to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

Contract Details

Token contract details for 15.06.2022

Token Type	: ERC20
Contract name	: GALA
Contract address	: 0x15D4c048F83bd7e37d49eA4C83a07267Ec4203dA
Compiler version	: v0.6.2+commit.bacdbe57
Total supply	: 37,670,636,116.64977434
Token Ticker	: GALA
Decimals	: 8
Token Holders	: 139,687
Top 100 token holder's dominance	: 89.79%
Transactions count	: 1,240,804
Contract deployer address	: 0xB46e97059BB733510a32fcB9E2D1B3655CD84E03
Owner address	: 0xB46e97059BB733510a32fcB9E2D1B3655CD84E03

Social profiles

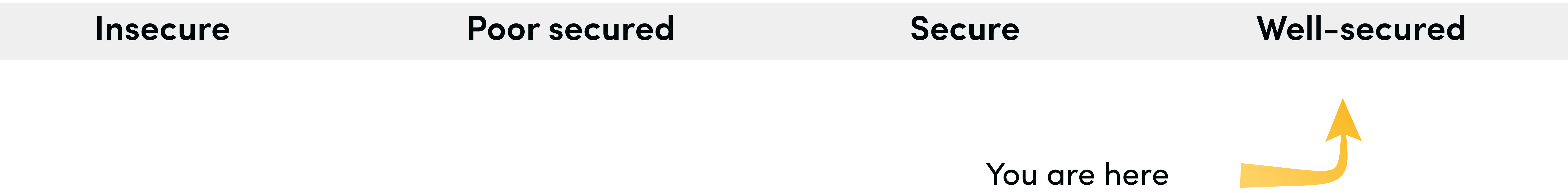
Twitter Profile	: https://twitter.com/GoGalaGames
Facebook Profile	: https://www.facebook.com/GoGalaGames
Telegram Profile	: https://t.me/GoGalaGames
Medium Profile	: https://gogalagames.medium.com/the-gala-games-node-ecosystem-9760d8156af7
Coinmarketcap profile	: https://coinmarketcap.com/currencies/gala/
Coingecko profile	: https://www.coingecko.com/en/coins/gala

Claimed Smart Contract Features

Claimed Feature Detail	Our Observation
<p>Tokenomics :</p> <ul style="list-style-type: none">• Name : GALA• Symbol : GALA• Decimals : 8• Protocol : ERC20• Max Total supply : 500000000000	<p>Yes, This is valid.</p>

Audit Summary

According to the standard audit assessment, Customer`s solidity smart contracts are “Well Secure”. This token contract does contain owner control, which do make it fully decentralized as owner does have control over smart contract.



We used various tools like Slither, Mythril and Remix IDE. At the same time this finding is based on critical analysis of the manual audit. All issues found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the Audit overview section. General overview is presented in AS-IS section and all identified issues can be found in the Audit overview section.

We found 0 critical, 0 high, 0 medium and 1 low and some very low-level issues. These issues are not critical ones.

GALA Distribution

💡

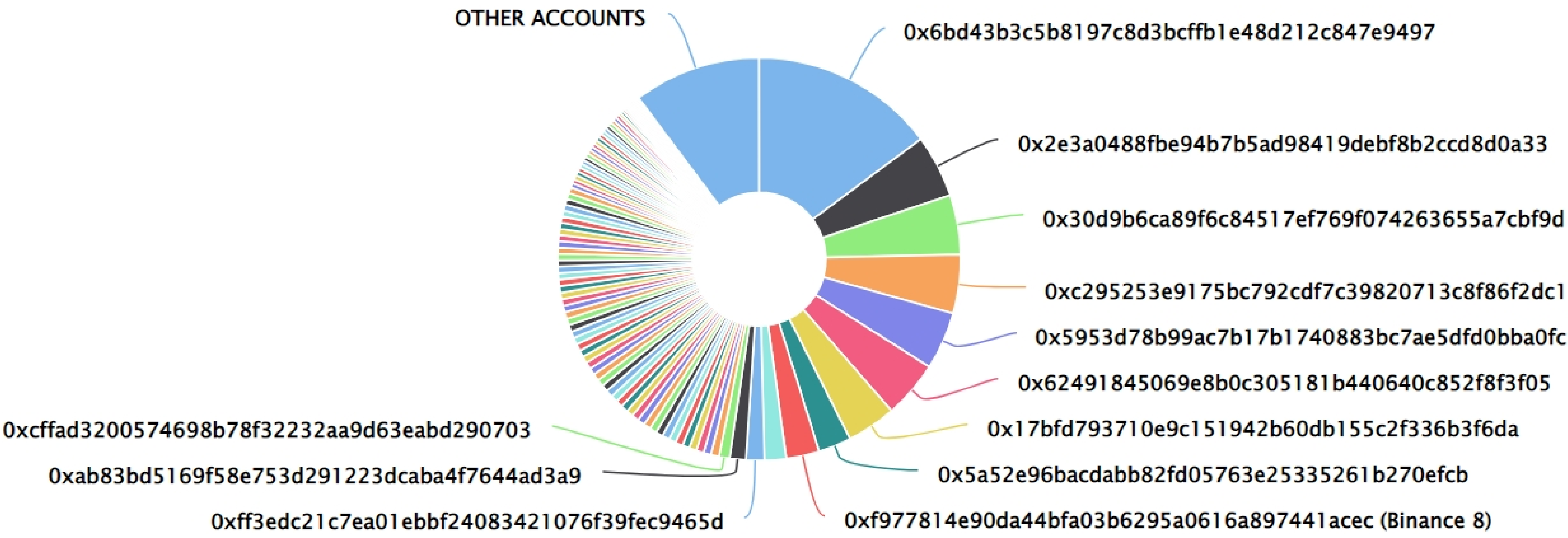
The top 100 holders collectively own 89.79% (33,824,117,609.54 Tokens) of Gala

💡

Token Total Supply: 37,670,747,101.65 Token | Total Token Holders: 139,686

Gala Top 100 Token Holders


Source: Etherscan.io



GALA Distribution

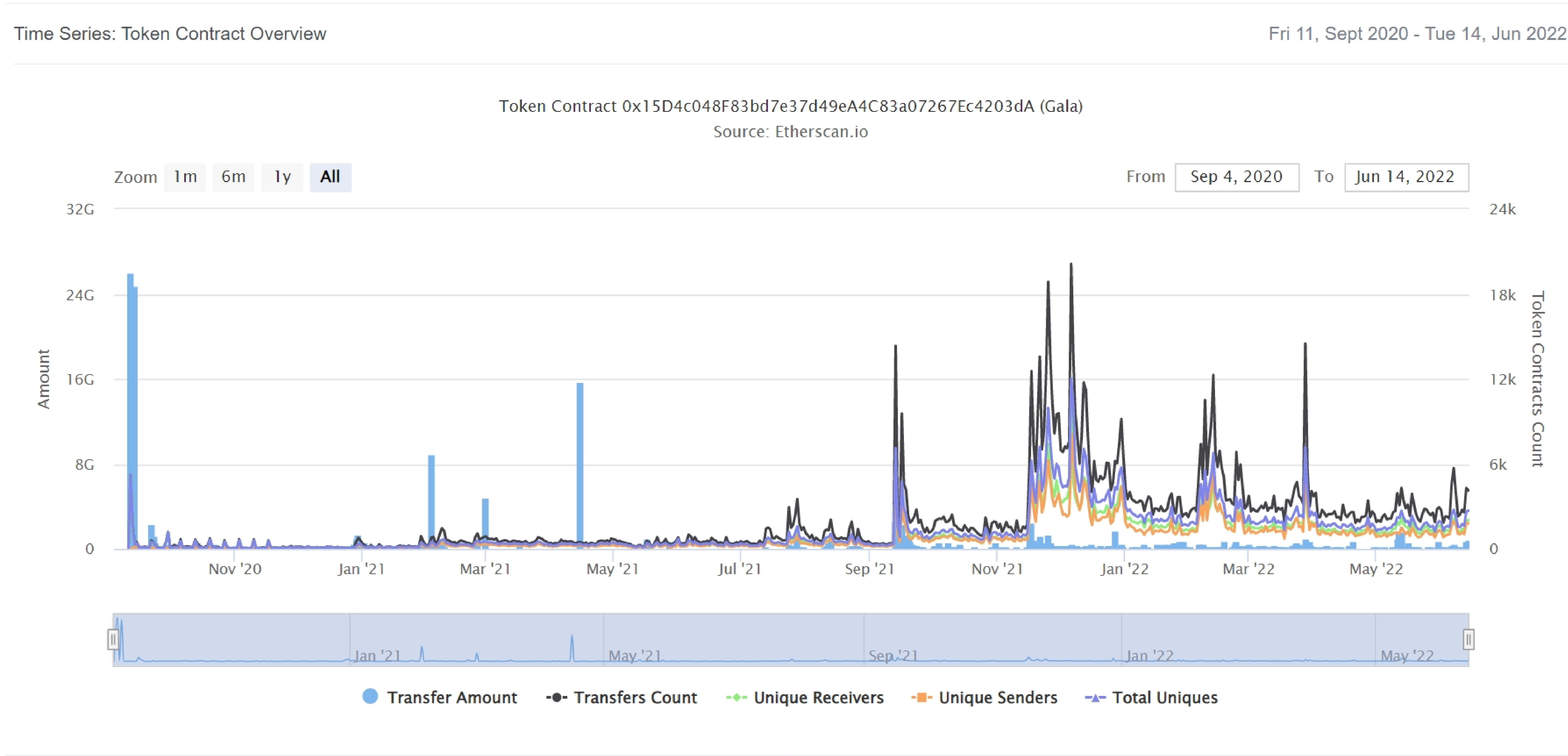
GALA Top 20 Token Holders

(A total of 33,824,117,609.54 tokens held by the top 100 accounts from the total supply of 37,670,747,101.65 token)

Rank	Address	Quantity (Token)	Percentage
1	0x6bd43b3c5b8197c8d3bcffb1e48d212c847e9497	5,594,229,934.534	14.8503%
2	0x2e3a0488fbe94b7b5ad98419debfb8b2ccd8d0a33	1,885,353,690	5.0048%
3	0x30d9b6ca89f6c84517ef769f074263655a7cbf9d	1,806,023,469	4.7942%
4	0xc295253e9175bc792cdf7c39820713c8f86f2dc1	1,773,099,991	4.7068%
5	0x5953d78b99ac7b17b1740883bc7ae5dfd0bba0fc	1,745,971,581	4.6348%
6	0x62491845069e8b0c305181b440640c852f8f3f05	1,735,145,595	4.6061%
7	0x17bfd793710e9c151942b60db155c2f336b3f6da	1,488,006,000	3.9500%
8	0x5a52e96bacdabb82fd05763e25335261b270efcb	1,000,000,000	2.6546%
9	Binance 8	1,000,000,000	2.6546%
10	0x381e840f4ebe33d0153e9a312105554594a98c42	655,109,689.4331226	1.7390%
11	0xff3edc21c7ea01ebbf24083421076f39fec9465d	550,000,000.00000023	1.4600%
12	 0xab83bd5169f58e753d291223dcaba4f7644ad3a9	493,391,642.0217396	1.3097%
13	0xcffad3200574698b78f32232aa9d63eabd290703	316,016,926.46611383	0.8389%
14	0x2ee555c9006a9dc4674f01e0d4dfc58e013708f0	243,584,588.67561969	0.6466%
15	Binance 14	231,196,933.94594803	0.6137%
16	0xd55b0ea22d39267d6a8b9080a75fc539a94123a2	225,445,386	0.5985%
17	Bittrue	220,874,092.9369233	0.5863%
18	0x9584f7512cb58bd06d10424654d7c83421bff3aa	219,598,142	0.5829%
19	0x912c322895db6ac99ecba4240c097e1d6f33590a	219,013,075	0.5814%
20	0x63599156394cd76108df1e116f7db22f78eb9c02	218,856,829	0.5810%

GALA Distribution

GALA Contract Overview



Contract functions details

Gala.sol

+Gala (ERC20, ERC20Burnable, MinterRole)

- [Pub] <constructor> #
- [Int] _mint #
- [Pub] cap
- [Pub] totalMinted
- [Pub] mintBulk #
 - modifiers: onlyMinter
- [Int] _beforeTokenTransfer #
- [Pub] addMinter #
 - modifiers: onlyOwner
- [Pub] removeMinter #
 - modifiers: onlyOwner

Address.sol

+ [Lib] Address

- [Int] isContract
- [Int] sendValue
- [Int] functionCall
- [Int] functionCall
- [Int] functionCallWithValue
- [Int] functionCallWithValue
- [Pvt] _functionCallWithValue

Context.sol

+ Context

- [Int] _msgSender
- [Int] _msgData

ERC20.sol

+ ERC20 (Context, IERC20)

- [Pub] <constructor> #
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer
- [Pub] allowance

Contract functions details

- [Pub] approve
- [Pub] transferFrom
- [Pub] increaseAllowance #
- [Pub] decreaseAllowance #
- [Int] _transfer #
- [Int] _mint#
- [Int] _burn #
- [Int] _approve #
- [Int] _setupDecimals #
- [Int] _beforeTokenTransfer #

ERC20Burnable.sol

+ ERC20Burnable (Context, ERC20)

- [Pub] burn #
- [Pub] burnFrom #

IERC20.sol

+ [Int] IERC20

- [Ext] totalSupply
- [Ext] balanceOf
- [Ext] transfer
- [Ext] allowance
- [Ext] approve
- [Ext] transferFrom

MinterRole.sol

+MinterRole

- [Int] <constructor> #
- [Pub] isMinter
- [Pub] addMinter #
 - modifiers: onlyMinter
- [Pub] renounceMinter #
- [Int] _addMinter #
- [Int] _removeMinter #

Roles.sol

+ [Lib] Roles

- [Int] add
- [Int] remove
- [Int] has

Contract functions details

SafeMath.sol

+[Lib] SafeMath

- [Int] add
- [Int] sub
- [Int] sub
- [Int] mul
- [Int] div
- [Int] div
- [Int] mod
- [Int] mod

(\$) = payable function

= non-constant function

Issues Checking Status

No.	Title	Status
1.	Unlocked Compiler Version	Low issue
2.	Missing Input Validation	Passed
3.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
4.	Possible delays in data delivery	Passed
5.	Oracle calls.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Passed
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	Private use data leaks.	Passed
13.	Malicious Event log.	Passed
14.	Scoping and Declarations.	Passed
15.	Uninitialized storage pointers.	Passed
16.	Arithmetic accuracy.	Passed
17.	Design Logic.	Passed
18.	Safe Open Zeppelin contracts implementation and usage.	Passed
19.	Incorrect Naming State Variable	Passed

Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to assets loss or data manipulations.
High	High-level vulnerabilities are difficult to exploit; however, they also have a significant impact on smart contract execution, e.g., public access to crucial functions
Medium	Medium-level vulnerabilities are important to fix; however, they can't lead to assets loss or data manipulations.
Low	Low-level vulnerabilities are mostly related to outdated, unused, etc. code snippets that can't have a significant impact on execution.

Security Issues

✔ Critical Severity Issues

No critical severity issue found.

✔ High Severity Issues

No high severity issue found.

✔ Medium Severity Issues

No medium severity issues found.

✔ Low Severity Issues

One low severity issue found.

1. Unlocked Compiler Version.

- **Description**

The contract utilizes an unlocked compiler version. An unlocked compiler version in the contract's source code permits the user to compile it at or above a particular version. This, in turn, leads to differences in the generated bytecode between compilations due to differing compiler version numbers. This can lead to ambiguity when debugging as compiler-specific bugs may occur in the codebase that would be difficult to identify over a span of multiple compiler versions rather than a specific one.

- **Recommendation**

It is advisable that the compiler version is alternatively locked at the lowest version possible so that the contract can be compiled. For example, for version v0.6.2 the contract should contain the following line:

```
pragma solidity 0.6.2;
```

Centralization

Owner Privileges (in the period when the owner is not renounced) :

- GALA CHAIN Contract:
 - Owner can add and remove minter.

This smart contract has some functions which can be executed by the Admin (Owner) only. If the admin wallet private key would be compromised, then it would create trouble. Following are Admin functions:

- Addminter : Owner can add new minter.
- Removeminter : owner can remove minter.

Conclusion

Smart contract contains one low severity issues! The further transfer and operations with the fund raised are not related to this particular contract.

HackSafe note: Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.