DeHacker

Code Security Assessment

Cipher

May 29th, 2024

Contents

Summary

DeHacker's objective was to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices.
Possible issues we looked for included (but are not limited to):

- Transaction-ordering dependence
- Timestamp dependence
- Mishandled exceptions and call stack limits
- Unsafe external calls
- Integer overflow/underflow
- Number rounding errors
- Reentrancy and cross-function vulnerabilities
- Denial of service/logical oversights
- Access control
- Centralization of power
- Business logic contradicting the specification
- Code clones, functionality duplication
- Gas usage
- Arbitrary token minting

Issue Categories

Every issue in this report was assigned a severity level from the following:

Critical severity issues

A vulnerability that can disrupt the contract functioning in a number of scenarios or creates a risk that the contract may be broken.

Major severity issues

A vulnerability that affects the desired outcome when using a contract or provides the opportunity to use a contract in an unintended way.

Medium severity issues

A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.

Minor severity issues

A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.

Informational

A vulnerability that has informational character but is not affecting any of the code.

Overview

Project Summary

Project Name	Chiper
Platform	Polygon
website	cipher.co
Type	Defi
Language	Solidity
Codebase	https://polygonscan.com/token/ 0xaa404804ba583c025fa64c9a276a6127ceb355c6#code

Vulnerability Summary

Vulnerability Level	Total	Pending	Declined	Acknowledged	Partially Resolved	Resolved
Critical	0	0	0	0	0	0
Major	2	0	0	1	0	1
Medium	0	0	0	0	0	0
Minor	0	0	0	0	0	0
Informational	0	0	0	0	0	0
Discussion	0	0	0	0	0	0

Audit scope

ID	File	SHA256 Checksum
PER	PowerfulERC20.sol	a402eacca5ac7c72f9b154818e74bce92669f603e27f5ea3a1bef40e9f57c064

Findings

ID	Issue	Severity	Status
GLOBAL-01	CENTRALIZATION RELATED RISKS	MAJOR	RESOLVED
PER-02	INITIAL TOKEN DISTRIBUTION	MAJOR	Acknowledged

MAJOR

GLOBAL-01 | CENTRALIZATION RELATED RISK

Issue	Severity	Location	Status
CENTRALIZATION	Major		RESOLVED

Description

In the contract AccessControl the role adminRole has authority over the following functions:
grantRole()
revokeRole()
Any compromise to the adminRole account may allow the hacker to take advantage of this authority and grant associatedrole to any account or revoke the role from any account . Note that DEFAULT_ADMIN_ROLE is the admin role for all roles.
In the contract AccessControl the role role has authority over the following function:
renounceRole()Any compromise to the role account may allow the hacker to take advantage of this authority and renounce correspondingprivileges to functions within other contracts

Recommendation

In the contract AccessControl the role role has authority over the following function:
renounceRole()Any compromise to the role account may allow the hacker to take advantage of this authority and renounce correspondingprivileges to functions within other contracts with enhanced security practices, e.g., multisignature wallets.
Indicatively, here are some feasible suggestions that wouldalso mitigate the potential risk at a different level in terms of short-term, long-term and permanent.

MAJOR

PER-01 | INITIAL TOKEN DISTRIBUTION

Issue	Severity	Location	Status
Language Specific	Informational	contracts/ tokens/PetToken .sol: 6	Acknowledged

Description

initialBalance_ amount of tokens are sent to the contract deployer. This is a centralization risk because the deployer candistribute tokens without obtaining the consensus of the community. Any compromise to the address may allow a hacker tosteal and sell tokens on the market, resulting in severe damage to the project.

Recommendation

It is recommended that the team be transparent regarding the initial token distribution process. The token distribution planshould be published in a public location that the community can access. The team should make efforts to restrict access tothe private keys of the deployer account or EOAs. A multi-signature (⅔, ?) wallet can be used to prevent a single point offailure due to a private key compromise. Additionally, the team can lock up a portion of tokens, release them with a vestingschedule for long-term success, and deanonymize the project team with a third-party KYC provider to create greateraccountability.

Disclaimer

This report is based on the scope of materials and documentation provided for a limited review at the time provided. Results may not be complete nor inclusive of all vulnerabilities. The review and this report are provided on an as-is, where-is, and as-available basis. You agree that your access and/or use, including but not limited to any associated services, products, protocols, platforms, content, and materials, will be at your sole risk. Blockchain technology remains under development and is subject to unknown risks and flaws. The review does not extend to the compiler layer, or any other areas beyond the programming language, or other programming aspects that could present security risks. A report does not indicate the endorsement of any particular project or team, nor guarantee its security. No third party should rely on the reports in any way, including for the purpose of making any decisions to buy or sell a product, service or any other asset. To the fullest extent permitted by law, we disclaim all warranties, expressed or implied, in connection with this report, its content, and the related services and products and your use thereof, including, without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement. We do not warrant, endorse, guarantee, or assume responsibility for any product or service advertised or offered by a third party through the product, any open source or third-party software, code, libraries, materials, or information linked to, called by, referenced by or accessible through the report, its content, and the related services and products, any hyperlinked websites, any websites or mobile applications appearing on any advertising, and we will not be a party to or in any way be responsible for monitoring any transaction between you and any third-party providers of products or services. As with the purchase or use of a product or service through any medium or in any environment, you should use your best judgment and exercise caution where appropriate.

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Appendix

Finding Categories

Centralization / Privilege

Centralization / Privilege findings refer to either feature logic or implementation of components that act against the nature of decentralization, such as explicit ownership or specialized access roles in combination with a mechanism to relocate funds.

Coding Style

Coding Style findings usually do not affect the generated bytecode but rather comment on how to make the codebase more legible and, as a result, easily maintainable.

Volatile Code

Volatile Code findings refer to segments of code that behave unexpectedly on certain edge cases that may result in a vulnerability.

Logical Issue

Logical Issue findings detail a fault in the logic of the linked code, such as an incorrect notion on how block. timestamp works.

Checksum Calculation Method

The "Checksum" field in the "Audit Scope" section is calculated as the SHA-256 (Secure Hash Algorithm 2 with digest size of 256 bits) digest of the content of each file hosted in the listed source repository under the specified commit.

The result is hexadecimal encoded and is the same as the output of the Linux “sha256sum" command against the target file.

About

DeHacker is a team of auditors and white hat hackers who perform security audits and assessments. With decades of experience in security and distributed systems, our experts focus on the ins and outs of system security. Our services follow clear and prudent industry standards. Whether it's reviewing the smallest modifications or a new platform, we'll provide an in-depth security survey at every stage of your company's project. We provide comprehensive vulnerability reports and identify structural inefficiencies in smart contract code, combining high-end security research with a real-world attacker mindset to reduce risk and harden code.

BLOCKCHAIINS

Ethereum
Cosmos
Eos
Substrate

TECH STACK

Python
Solidity
Rust
c++

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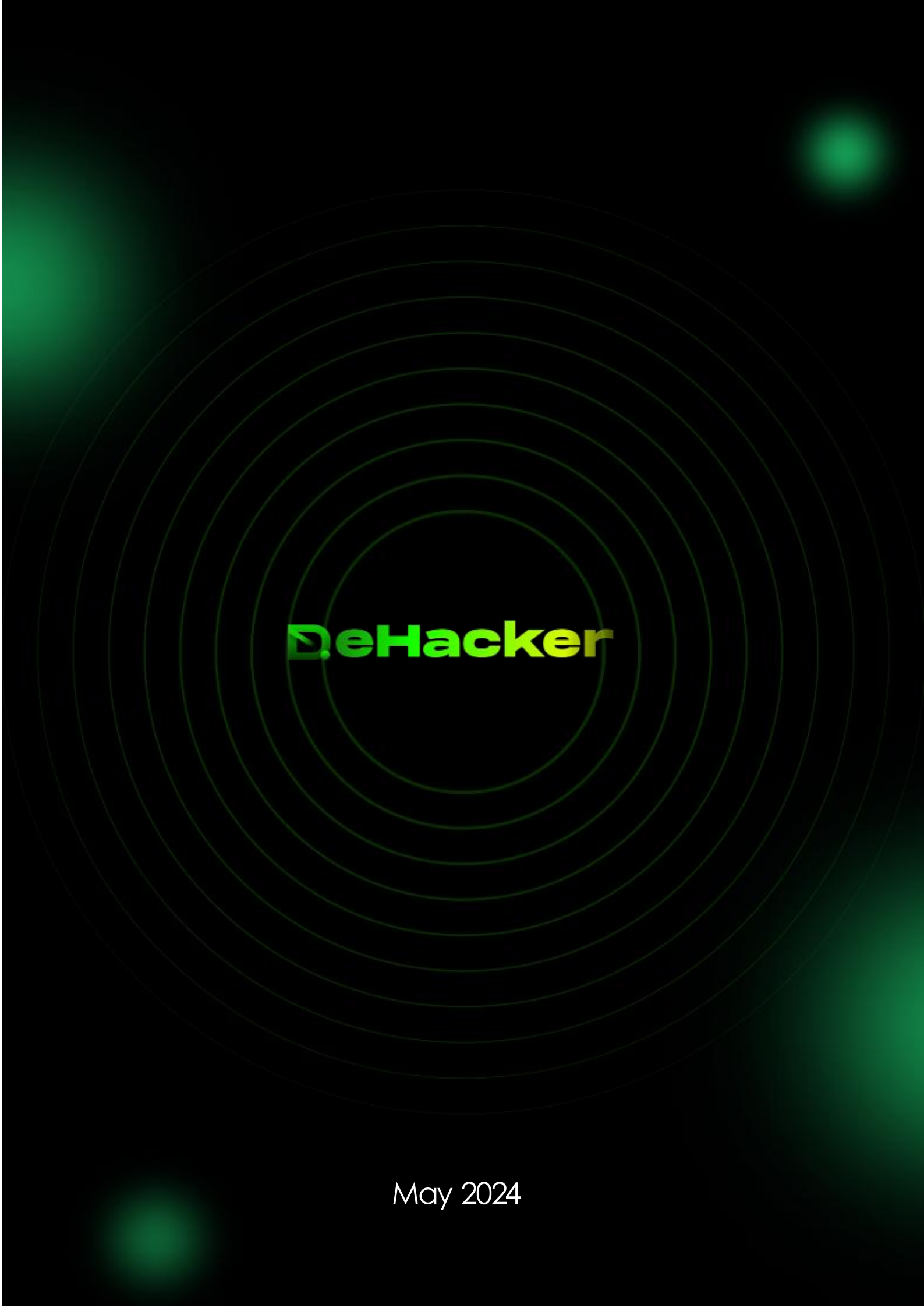

May 2024