Smart Contract Security Audit V1

Transparent Proxy Smart Contract Audit

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Background

The purpose of the audit was to achieve the following:

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

The information in this report should be used 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.

Project Information

- **Platform**: Binance Smart Chain
- **Name**: TransparentProxy
- **Language** : Solidity
- **Contract Address**: Not deploy yet
- **Code Source**: https://github.com/TerraDharitri/drt-pREWA/tree/main/contracts

WHAT IS TRANSPARENTPROXY?

A custom smart contract extending OpenZeppelin's TransparentP*ropxy* with Enhanced Admin Controls for managing proxy logic and admin roles.

WHAT IS TRANSPARENTPROXY?

A custom smart contract extending QpenZeppelin's TransparentUpgradablePro Implements the *IProxy* inferface for managing proxy logic and admin roles.

0.9.28

KEY FEATURES

Upgradeability
Supports upgrading to new implementation. contracts with or without initiallization data.

Admin Control
Admin-only runctions to view/ change implementation and admin addresses.

Safety Checks
Validates logic and admin addresses to prevent zero addresses or non-contracts.

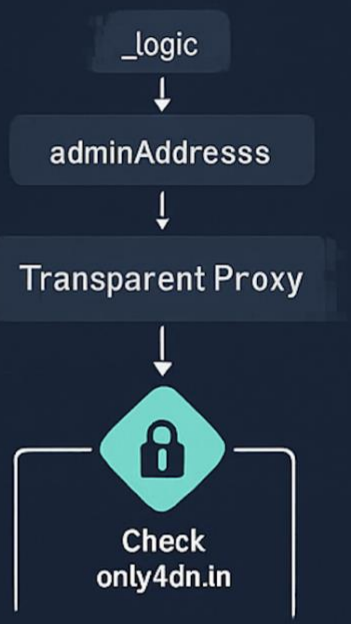
CORE FUNCTIONS

- **implementa(()**
- **admin()**
- **changeAdmin (newaamin)**
- **upgradeTo** (newimplementation)
- **upgradeToAnd** Calunximpenentale data)
- **getAdminSio()** a'@almplenentatrarstot
- **getAdminSiott/** geninplementationSort

All functions require mag sender to be the admin

CONSTRUCTOR

INITIAL SETUP



Intializes proxy with:
_logle: Address of the implementation contrtact
*adnin*Address: Admin (e.g. Proxyndmin contract)
_data. Qptional initialization data

Ensures., logic is a contract and both addresses are no-zero

FUNCTIONS

CORE FUNCTIONS (ADMIN-ONLY)

- Inherits OpenZeppelin's battle rested transparenet UpgradableProxy

Executive Summary

According to our assessment, the customer`s solidity smart contract is **Well-Secured**.

Well Secured	✓
Secured	
Poor Secured	
Insecure	

Automated checks are with remix IDE. All issues were performed by the team, which included the analysis of code functionality, manual audit found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the audit overview section. The general overview is presented in the Project Information section and all issues found are located in the audit overview section.

Team found 0 critical, 0 high, 0 medium, 0 low, 0 very low-level issues and 2 notes in all solidity files of the contract

The files:

TransparentProxy.sol

Audit Score:

100% secure

File and Function Level Report

File in Scope:

Contract Name	SHA 256 hash	Contract Address
TransparentProxy.sol	2bdb08cc2b1a856e46be46fa3edbcc91c24c0842	

- Contract: TransparentProxy
- Inherit: TransparentUpgradeableProxy, IProxy
- Observation: All passed including security check
- Test Report: passed
- Score: passed
- Conclusion: passed

Function	Test Result	Type / Return Type	Score
admin	✓	Read / public	**Passed**
getImplementationSlot	✓	Read / public	**Passed**
getAdminSlot	✓	Read / public	**Passed**
implementation	✓	Read / public	**Passed**
upgradeToAndCall	✓	Write / payable	**Passed**
upgradeTo	✓	Write / public	**Passed**
changeAdmin	✓	Write / public	**Passed**

Issues Checking Status

SWC Attack Analysis

The Smart Contract Weakness Classification Registry (SWC Registry) is an implementation of the weakness classification scheme proposed in EIP-1470. It is loosely aligned to the terminologies and structure used in the Common Weakness Enumeration (CWE) for more info check https://swcregistry.io/

No.	Issue Description	Checking Status
136	Unencrypted Private Data On-Chain	**Passed**
135	Code With No Effects	**Passed**
134	Message call with hardcoded gas amount	**Passed**
133	Hash Collisions With Multiple Variable Length Arguments	**Passed**
132	Unexpected Ether balance	**Passed**
131	Presence of unused variables	**Passed**
130	Right-To-Left-Override control character (U+202E)	**Passed**
129	Typographical Error	**Passed**
128	DoS with block gas limit.	**Passed**
127	Arbitrary Jump with Function Type Variable	**Passed**
126	Insufficient Gas Griefing	**Passed**
125	Incorrect Inheritance Order	**Passed**
124	Write to Arbitrary Storage Location	**Passed**
123	Requirement Violation	**Passed**
122	Lack of Proper Signature Verification	**Passed**
121	Missing Protection against Signature Replay Attacks	**Passed**
120	Weak Sources of Randomness from Chain Attributes	**Passed**
119	Shadowing State Variables	**Passed**

118	Incorrect Constructor Name	**Passed**
117	Signature Malleability	**Passed**
116	Block values as a proxy for time	**Passed**
115	Authorization through tx.origin	**Passed**
114	Transaction Order Dependence	**Passed**
113	DoS with Failed Call	**Passed**
112	Delegatecall to Untrusted Callee	**Passed**
111	Use of Deprecated Solidity Functions	**Passed**
110	Assert Violation	**Passed**
109	Uninitialized Storage Pointer	**Passed**
108	State Variable Default Visibility	**Passed**
107	Reentrancy	**Passed**
106	Unprotected SELFDESTRUCT Instruction	**Passed**
105	Unprotected Ether Withdrawal	**Passed**
104	Unchecked Call Return Value	**Passed**
103	Floating Pragma	**Not Passed**
102	Outdated Compiler Version	**Passed**
101	Integer Overflow and Underflow	**Passed**
100	Function Default Visibility	**Passed**

Severity Definitions

Risk Level	Description
Critical	Critical vulnerabilities are usually straightforward to exploit and can lead to tokens loss etc.
High	High-level vulnerabilities are difficult to exploit; however, they also have 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 tokens lose
Low	Low-level vulnerabilities are mostly related to outdated, unused etc. code snippets, that can't have significant impact on execution
Note	Lowest-level vulnerabilities, code style violations and info statements can't affect smart contract execution and can be ignored.

Audit Findings

Critical:

No Critical severity vulnerabilities were found.

High:

No High severity vulnerabilities were found.

Medium:

No Medium severity vulnerabilities were found.

Low:

No Low severity vulnerabilities were found.

Very Low:

No Very Low severity vulnerabilities were found.

Notes:

#No Access Logging

Description
Admin view functions like implementation() or admin() could be logged for auditing.

Recommendation
Consider emitting logs or access metrics depending on your monitoring requirements.
P.S: useful in large systems.

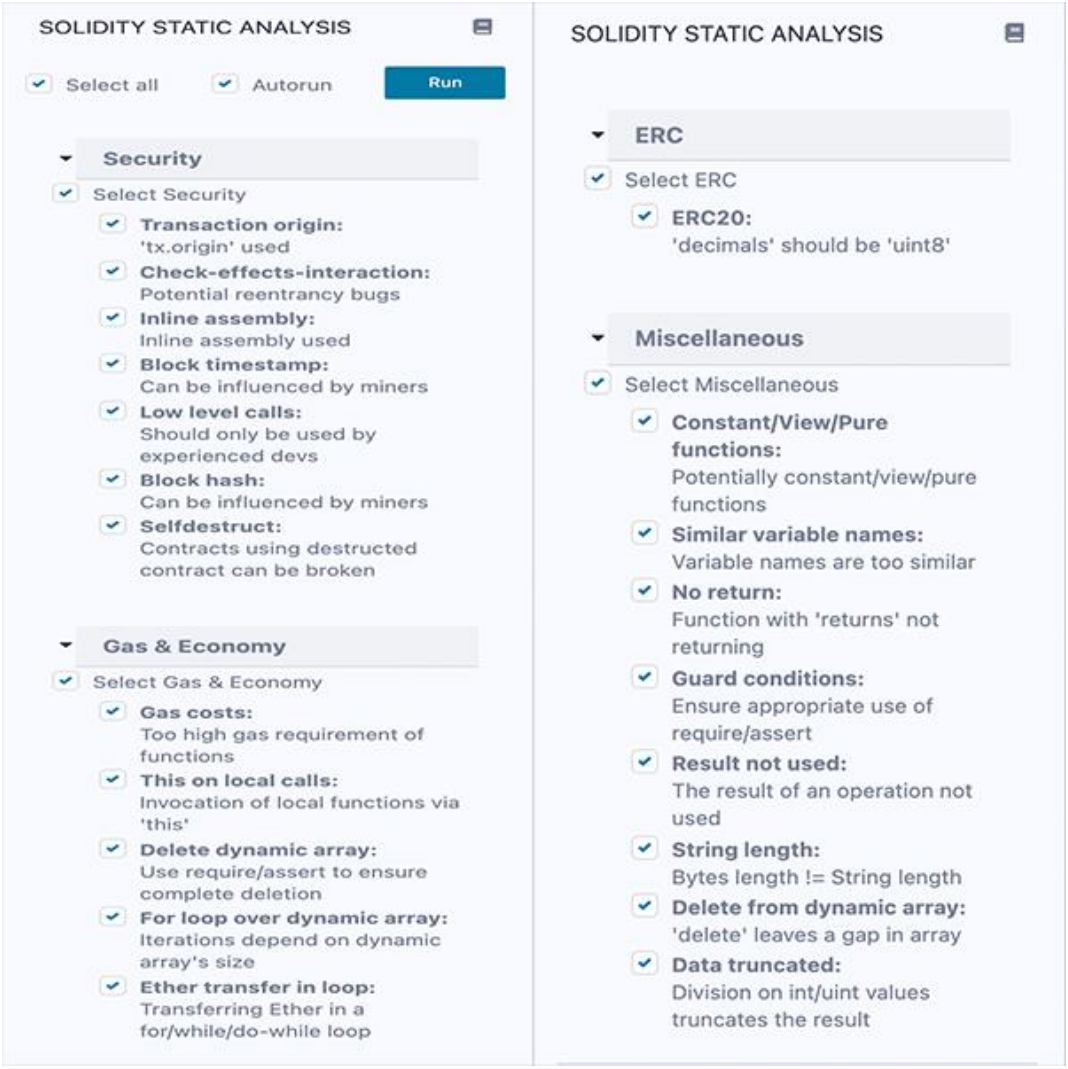
#Pragam version not fixed

Description
It is a good practice to lock the solidity version for a live deployment (use 0.8.28 instead of ^0.8.28). contracts should be deployed with the same compiler version and flags that they have been tested the most with. Locking the pragma helps ensure that contracts do not accidentally get deployed using, for example, the latest compiler which may have higher risks of undiscovered bugs. Contracts may also be deployed by others and the pragma indicates the compiler version intended by the original authors. And avoid Solidity compiler Bugs check here
https://sepolia.etherscan.io/solcbuginfo

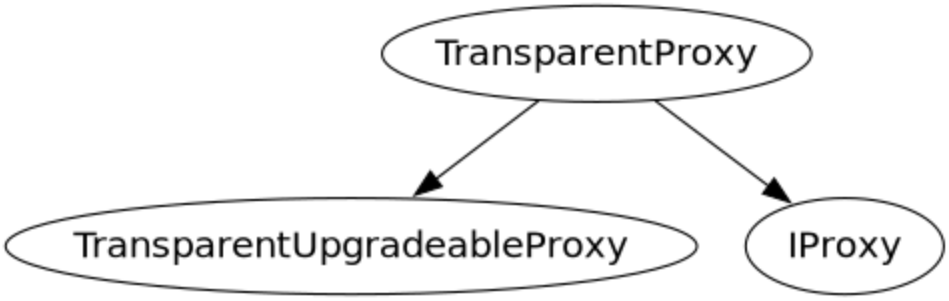
Remediation
Remove the ^ sign to lock the pragma version.

Automatic Testing

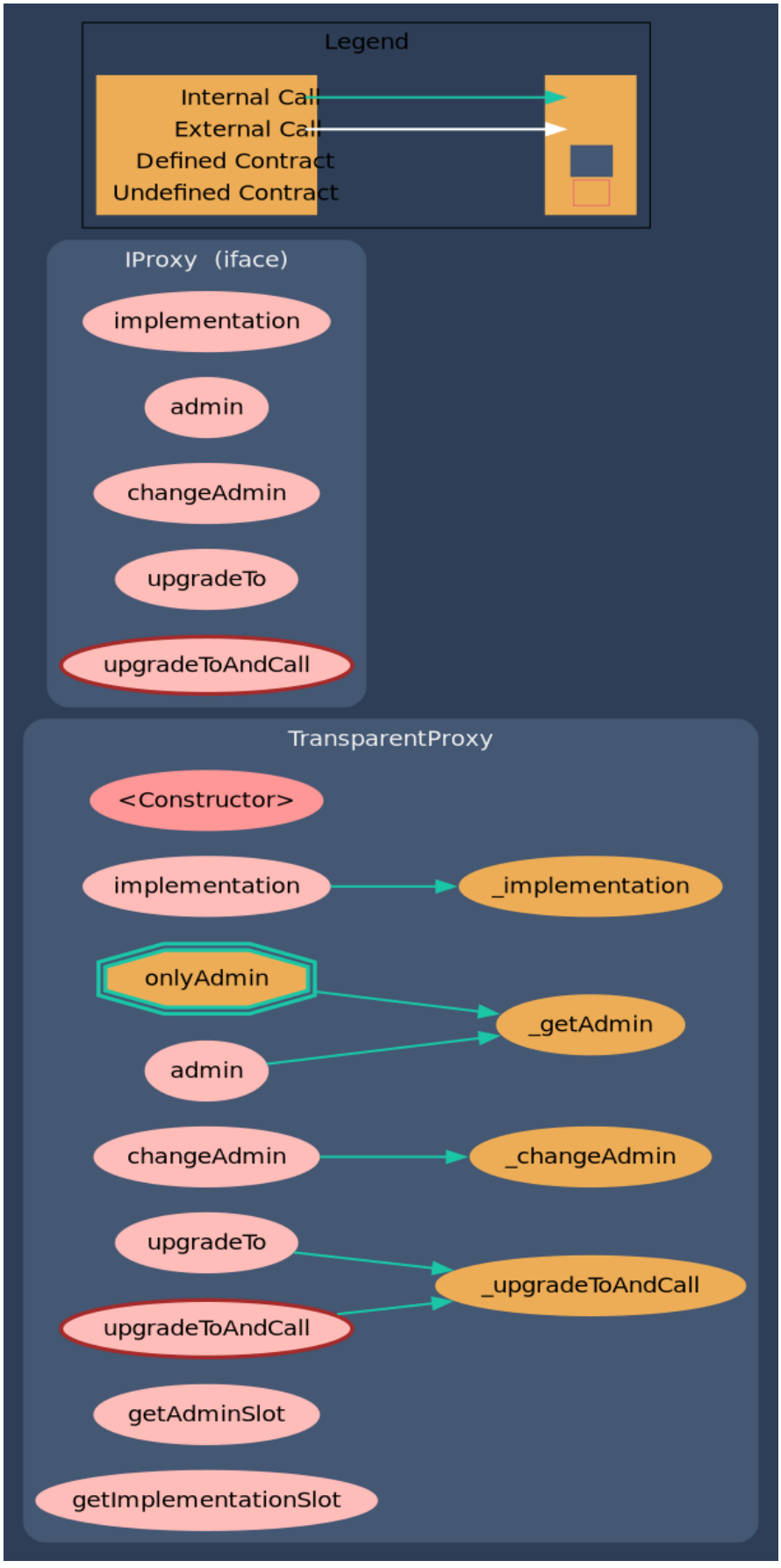
1- SOLIDITY STATIC ANALYSIS



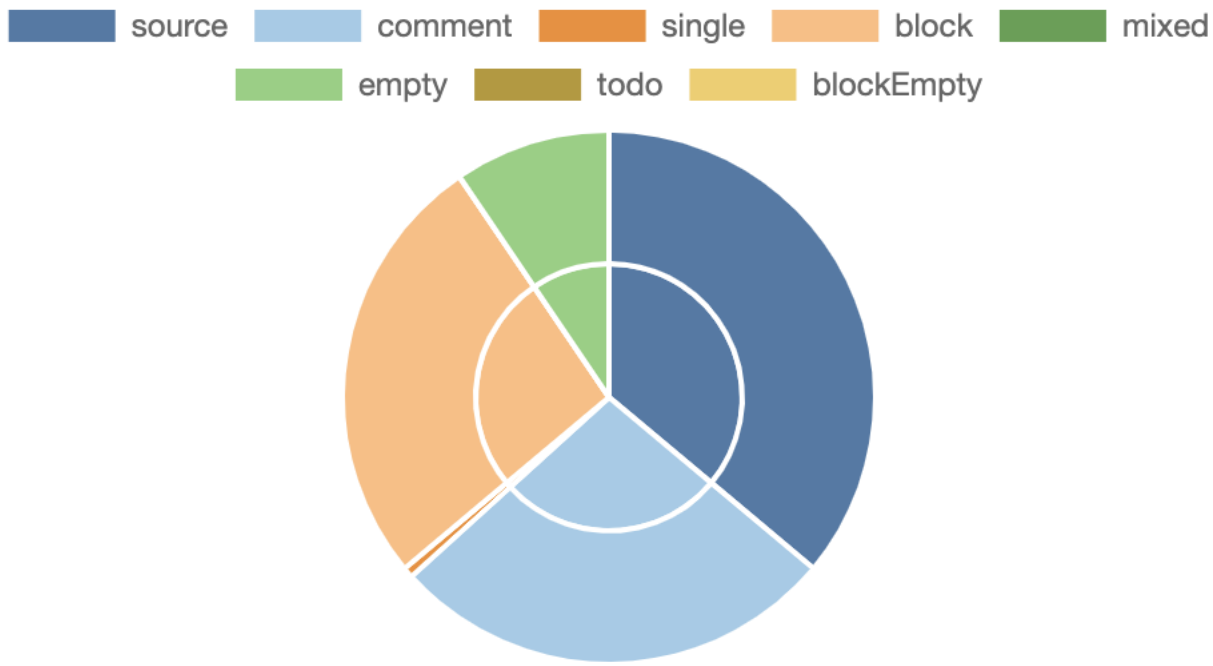
2- Inheritance graph



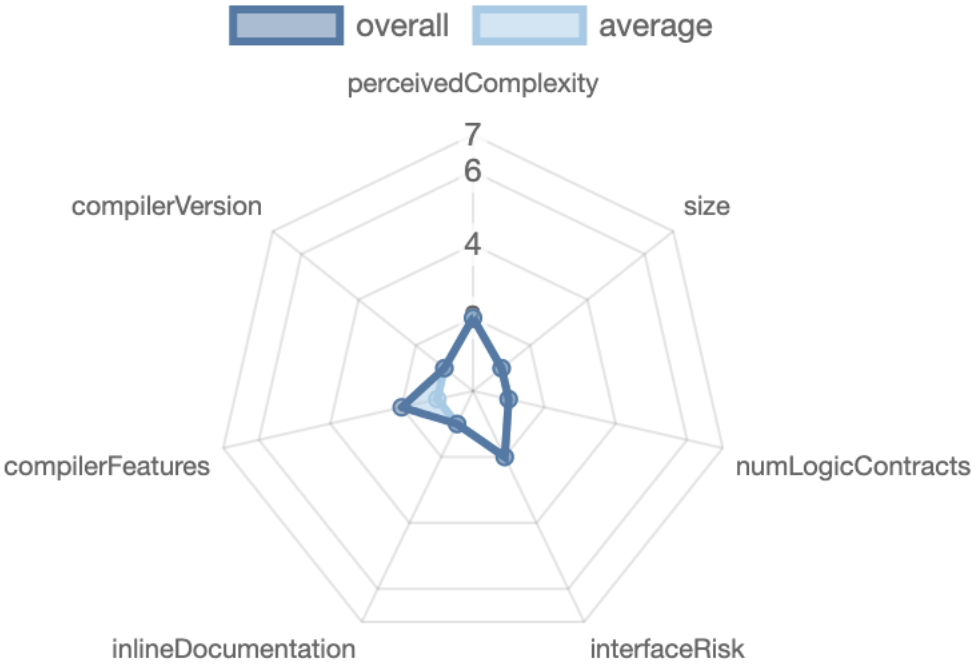
3- Call graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
IProxy (iface)
implementation
admin
changeAdmin
upgradeTo
upgradeToAndCall
TransparentProxy
<Constructor>
implementation
_implementation
onlyAdmin
_getAdmin
admin
changeAdmin
_changeAdmin
upgradeTo
_upgradeToAndCall
upgradeToAndCall
getAdminSlot
getImplementationSlot

Source lines



Risk level



Source units in scope

Source Units in Scope

Source Units Analyzed: `1`
Source Units in Scope: `1` **(100%)**

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
📝	contracts/proxy/TransparentProxy.sol	1	———	115	115	57	43	68	🖥💰
📝	**Totals**	**1**	———	**115**	**115**	**57**	**43**	**68**	🖥💰

Legend: [➖]

- **Lines**: total lines of the source unit
- **nLines**: normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
- **nSLOC**: normalized source lines of code (only source-code lines; no comments, no blank lines)
- **Comment Lines**: lines containing single or block comments
- **Complexity Score**: a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

Capabilities

Components

📝Contracts	📚Libraries	🔍Interfaces	💊Abstract
1	0	0	0

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.

🌐Public	💰Payable
7	1

External	Internal	Private	Pure	View
7	3	0	2	2

StateVariables

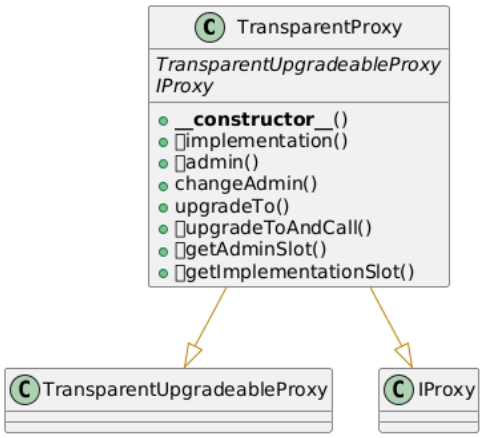
Total	🌐Public
0	0

Capabilities

Solidity Versions observed	🧪 Experimental Features	💰 Can Receive Funds	🖥 Uses Assembly	💣 Has Destroyable Contracts
`^0.8.28`		`yes`	`yes` (3 asm blocks)	———

📩 Transfers ETH	⚡ Low-Level Calls	👥 DelegateCall	🧱 Uses Hash Functions	🧼 ECRecover	🌀 New/Create/Create2
———	———	———	———	———	———

Unified Modeling Language (UML)



Functions signature

Function Name	Sighash	Function Signature
implementation	5c60da1b	implementation()
admin	f851a440	admin()
changeAdmin	8f283970	changeAdmin(address)
upgradeTo	3659cfe6	upgradeTo(address)
upgradeToAndCall	4f1ef286	upgradeToAndCall(address,bytes)
getAdminSlot	9ad5c59a	getAdminSlot()
getImplementationSlot	7a34c821	getImplementationSlot()

Automatic general report

Files Description Table

File Name	SHA-1 Hash
/Users/macbook/Desktop/drt-pREWA/contracts/proxy/TransparentProxy.sol	2bdb08cc2b1a856e46be46fa3edbcc91c24c0842
/Users/macbook/Desktop/drt-pREWA/contracts/proxy/interfaces/IProxy.sol	36b989d4dcc83011c7a0d54ae2e8abfd07fa001e

Contracts Description Table

Contract	Type	Bases			
└	**Function Name**	**Visibility**	**Mutability**	**Modifiers**	
TransparentProxy	Implementation	TransparentUpgradeableProxy, IProxy			
└	<Constructor>	Public ❗	🛑	TransparentUpgradeableProxy	
└	implementation	External ❗		onlyAdmin	
└	admin	External ❗		onlyAdmin	
└	changeAdmin	External ❗	🛑	onlyAdmin	
└	upgradeTo	External ❗	🛑	onlyAdmin	
└	upgradeToAndCall	External ❗	💵	onlyAdmin	
└	getAdminSlot	External ❗		NO❗	
└	getImplementationSlot	External ❗		NO❗	
IProxy	Interface				
└	implementation	External ❗		NO❗	
└	admin	External ❗		NO❗	
└	changeAdmin	External ❗	🛑	NO❗	
└	upgradeTo	External ❗	🛑	NO❗	
└	upgradeToAndCall	External ❗	💵	NO❗	

Legend

Symbol	Meaning
🛑	Function can modify state
💵	Function is payable

Conclusion

The contracts are written systematically. Team found no critical issues. So, it is good to go for production.

Since possible test cases can be unlimited and developer level documentation (code flow diagram with function level description) not provided, for such an extensive smart contract protocol, we provide no such guarantee of future outcomes. We have used all the latest static tools and manual observations to cover maximum possible test cases to scan Everything.

Security state of the reviewed contract is “Well Secured”.

✓ No volatile code.
✓ No high severity issues were found.

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as of 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 the team on the basis of what it says or doesn't say, or how team produced it, and it is important for you to conduct your own independent investigations before making any decisions. team go into more detail on this in the below disclaimer below – please make sure to read it in full.

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