METATRUST

Security Assessment for

KTX Finance

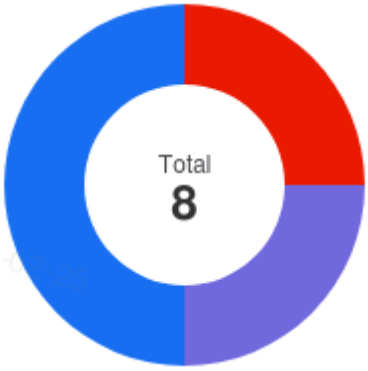
February 25, 2023

Executive Summary

Overview	
Project Name	KTX-core/
Codebase Path	git://github.com/https://github.com/KTX-finance/KTX-core/
Scan Engine	Security Analyzer
Scan Time	2023/02/25 21:35:26
Source Code	https://github.com/KTX-finance/KTX-core/ commit:b882729

Total	
Critical Issues	2
High risk Issues	0
Medium risk Issues	0
Low risk Issues	2
Informational Issues	4

Critical Issues	The issue can cause large economic losses, large-scale data disorder, loss of control of authority management, failure of key functions, or indirectly affect the correct operation of other smart contracts interacting with it.
High Risk Issues	The issue puts a large number of users' sensitive information at risk or is reasonably likely to lead to catastrophic impacts on clients' reputations or serious financial implications for clients and users.
Medium Risk Issues	The issue puts a subset of users' sensitive information at risk, would be detrimental to the client's reputation if exploited, or is reasonably likely to lead to moderate financial impact.
Low Risk Issues	The risk is relatively small and could not be exploited on a recurring basis, or is a risk that the client has indicated is low-impact in view of the client's business circumstances.
Informational Issue	The issue does not pose an immediate risk but is relevant to security best practices or Defence in Depth.



Critical Issues	25%	2
High risk Issues	0%	0
Medium risk Issues	0%	0
Low risk Issues	25%	2
Informational Issues	50%	4

Summary of Findings

MetaScan security assessment was performed on **February 25, 2023 21:35:26** on project **KTX-core/** with the repository **https://github.com/KTX-finance/KTX-core/** on branch **default branch**. The assessment was carried out by scanning the project's codebase using the scan engine **Security Analyzer**. There are in total **8** vulnerabilities / security risks discovered during the scanning session, among which **2** critical vulnerabilities, **0** high risk vulnerabilities, **0** medium risk vulnerabilities, **2** low risk vulnerabilities, **4** informational issues.

ID	Description	Severity	Alleviation
MSA-001	Unuseable functions with no return value	Critical	Fixed
MSA-002	Wrong Target Address in the balanceOf Function	Critical	Fixed
MSA-003	Unused return value in contracts/tokens/YieldToken.sol.json	Low risk	Acknowledged
MSA-004	Unused return value in contracts/tokens/YieldToken.sol.json	Low risk	Acknowledged
MSA-005	Redundant payable keyword	Informational	Fixed
MSA-006	Lack of Check on the Arrays' Length	Informational	Acknowledged
MSA-007	Unused Imports	Informational	Fixed
MSA-008	Boolean equality in contracts/tokens/TokenVesting.sol	Informational	Fixed

2023-02-25

Findings

Critical (2)

1. Unuseable functions with no return value

Critical Security Analyzer

In function `balanceOf` and `totalSupply`, there is no return value in the function body, the return value `balanceOf` and `totalSupply` will return 0

File(s) Affected

contracts/staking/StakedKlp.sol #65-71

Examples

```
65      function balanceOf(address _account) external view returns (uint256) {
66          IRewardTracker(stakedKlpTracker).depositBalances(_account, klp);
67      }
...
69      function totalSupply() external view returns (uint256) {
70          IERC20(stakedKlpTracker).totalSupply();
71      }
```

Recommendation

Add return keyword with `return IRewardTracker(stakedKlpTracker).depositBalances(_account, klp);` and `return IERC20(stakedKlpTracker).totalSupply();`

Alleviation Fixed

-

2. Wrong Target Address in the balanceOf Function

Critical Security Analyzer

The target address in the balanceOf function is stakedKlpTracker. However, the target address of the balanceOf function in the GMX protocol is feeGlpTracker instead of stakedKlpTracker. `function balanceOf(address _account) external view returns (uint256) { return IRewardTracker(feeGlpTracker).depositBalances(_account, glp); }`

File(s) Affected

contracts/staking/StakedKlp.sol #65-68

Examples

```
65      function balanceOf(address _account) external view returns (uint256) {
66          IRewardTracker(stakedKlpTracker).depositBalances(_account, klp);
67      }
68
```

Recommendation

We advise correcting the target address of the `balanceOf` function.`

Alleviation Fixed

-

High risk (0)

No High risk vulnerabilities found here

Medium risk (0)

No Medium risk vulnerabilities found here

Low risk (2)

1. Unused return value in contracts/tokens/YieldToken.sol.json

Low risk Security Analyzer

Either the return value of an external call is not stored in a local or state variable, or the return value is declared but never used in the function body.

File(s) Affected

contracts/tokens/YieldToken.sol #101-106 #108-113

Examples

```
101     function recoverClaim(address _account, address _receiver) external onlyAdmin {
102         for (uint256 i = 0; i < yieldTrackers.length; i++) {
103             address yieldTracker = yieldTrackers[i];
104             IYieldTracker(yieldTracker).claim(_account, _receiver);
105         }
106     }
107
```

Recommendation

Ensure the return value of external function calls is used. Remove or comment out the unused return function parameters.

Alleviation Acknowledged

-

2. Unused return value in contracts/tokens/YieldToken.sol.json

Low risk Security Analyzer

Either the return value of an external call is not stored in a local or state variable, or the return value is declared but never used in the function body.

File(s) Affected

contracts/tokens/YieldToken.sol #101-106 #108-113

Examples

```
101     function recoverClaim(address _account, address _receiver) external onlyAdmin {
102         for (uint256 i = 0; i < yieldTrackers.length; i++) {
103             address yieldTracker = yieldTrackers[i];
104             IYieldTracker(yieldTracker).claim(_account, _receiver);
105         }
106     }
107
```

Recommendation

Ensure the return value of external function calls is used. Remove or comment out the unused return function parameters.

Alleviation Acknowledged

Informational (4)

1. Redundant payable keyword

Informational Security Analyzer

The token token is an ERC20 token. Its transfer does not require an address to be a payable address. Thus, there is no need to do the type conversion to make vestingSchedule.beneficiary a payable address.

File(s) Affected

contracts/tokens/TokenVesting.sol #228-246

Examples

```
238         uint256 vestedAmount = _computeReleasableAmount(vestingSchedule);
239         require(vestedAmount >= amount, "tv: no enough vested");
240         vestingSchedule.released = vestingSchedule.released.add(amount);
241         address payable beneficiaryPayable = payable(
242             vestingSchedule.beneficiary
243         );
244         vestingSchedulesTotalAmount = vestingSchedulesTotalAmount.sub(amount);
245         token.safeTransfer(beneficiaryPayable, amount);
246     }
247
248     /**
```

Recommendation

We advise removing the redundant type conversion.

Alleviation Fixed

-

2. Lack of Check on the Arrays' Length

Informational Security Analyzer

The token token is an ERC20 token. Its transfer does not require an address to be a payable address. Thus, there is no need to do the type conversion to make vestingSchedule.beneficiary a payable address.

File(s) Affected

contracts/peripherals/Timelock.sol #559-567
contracts/core/ShortsTracker.sol #92-99

Examples

```
559     function batchSetBonusRewards(
560         address _vester,
561         address[] memory _accounts,
  •••
565             _accounts.length == _amounts.length,
566             "Timelock: invalid lengths"
567         );
```

Recommendation

We advise removing the redundant type conversion.

Alleviation Acknowledged

-

3. Unused Imports

Informational Security Analyzer

The imported contract console.sol is unused in the protocol. Thus, it could be removed. The console.sol contract is used for debugging, and its usages in the TokenVesting contract are already marked as comments. Thus, it could be removed along with comments in the TokenVesting contract related to it.

File(s) Affected

contracts/tokens/TokenVesting.sol #1-10
contracts/core/VaultUtils.sol #1-10
contracts/core/Vault.sol #1-14

Examples

```
// contracts/TokenVesting.sol
// SPDX-License-Identifier: Apache-2.0
pragma experimental ABIEncoderV2;
...
import "../libraries/token/SafeERC20.sol";
import "../libraries/utils/ReentrancyGuard.sol";
import "../access/Governable.sol";
```

Recommendation

We advise removing the unused imported contract.

Alleviation Fixed

-

4. Boolean equality in contracts/tokens/TokenVesting.sol

Informational Security Analyzer

Boolean constants can be used directly and do not need to compare to true or false.

File(s) Affected

contracts/tokens/TokenVesting.sol #57-60 #65-69 #191-209 #326-372

Examples

```
     * @dev Reverts if no vesting schedule matches the passed identifier.
     */
    modifier onlyIfVestingScheduleExists(bytes32 vestingScheduleId) {
        require(vestingSchedules[vestingScheduleId].initialized == true);
        _;
    }
```

Recommendation

Just use boolean constants directly.

Alleviation Fixed

-

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