

Draft
Security Assessment for

45-LogicBug-Union (10K-WOI) (1Positive-FLP)

July 24, 2023

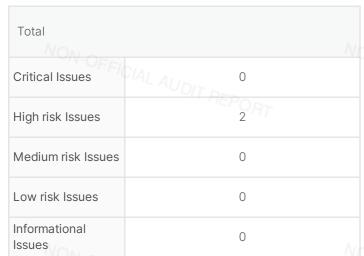
The issue can cause large economic losses, large-scale data



Executive Summary

Overview OFFICIAL AND	
Project Name	45-LogicBug-Union (10K-WOI) (1Positive-FLP)
Codebase URL	https://github.com/metatrust- demo/LogicBug-Union
Scan Engine	Al Analyzer
Scan Time	2023/07/24 00:19:41
Commit Id	7de2fc3

Critical Issues	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.







Summary of Findings

MetaScan security assessment was performed on July 24, 2023 00:19:41 on project 45-LogicBug-Union (10K-WOI) (1Positive-FLP) with the repository https://github.com/metatrust-demo/LogicBug-Union on branch default branch. The assessment was carried out by scanning the project's codebase using the scan engine Al Analyzer. There are in total 2 vulnerabilities / security risks discovered during the scanning session, among which 0 critical vulnerabilities, 2 high risk vulnerabilities, 0 medium risk vulnerabilities, 0 low risk vulnerabilities, 0 informational issues.

ID	Description	Severity
MSA-001	MWE-200: Insecure LP Token Value Calculation	High risk
MSA-002	MWE-209: Wrong Order for Interest or ExchangeRate	High risk





Findings



Critical (0)

No Critical vulnerabilities found here

FICIAL AUDIT REPORT 4 High risk (2)



1. MWE-200: Insecure LP Token Value Calculation





Liquidity token value/price can be manipulated to cause flashloan attacks.

File(s) Affected

contracts/market/UToken.sol #357-364

```
NON-OFFICIAL AUDIT REPORT
function exchangeRateStored() public view returns (uint256) {
   uint256 totalSupply_ = uErc20.totalSupply();
   if (totalSupply_ == 0) {
       return initialExchangeRateMantissa;
       return (totalRedeemable * WAD) / totalSupply_;
```



contracts/market/UToken.sol #620-659

```
function _redeemFresh(
      address payable redeemer,
      uint256 redeemTokensIn,
      uint256 redeemAmountIn
   ) internal {
      require (redeemTokensIn == 0 || redeemAmountIn == 0, "one of redeemTokensIn or redeemAmountIn mu
      IAssetManager assetManagerContract = IAssetManager(assetManager);
       uint256 exchangeRate = exchangeRateStored();
      uint256 redeemTokens;
      uint256 redeemAmount;
       if (redeemTokensIn > 0) {
            ^{\star} We calculate the exchange rate and the amount of underlying to be redeemed:
            * redeemTokens = redeemTokensIn
* redeemAmount = redeemTokensIn x exchangeRateCurrent
          redeemTokens = redeemTokensIn;
          redeemAmount = (redeemTokensIn * exchangeRate) / WAD;
       } else {
         /*
            * We get the current exchange rate and calculate the amount to be redeemed:
            * redeemTokens = redeemAmountIn / exchangeRate
           * redeemAmount = redeemAmountIn
          redeemTokens = (redeemAmountIn * WAD) / exchangeRate;
                                          WAD, ...
-OFFIGIAL AUDIT
          redeemAmount = redeemAmountIn;
       require(totalRedeemable >= redeemAmount, "redeem amount error");
       totalRedeemable -= redeemAmount;
       uErc20.burn(redeemer, redeemTokens);
       require (assetManagerContract.withdraw(underlying, redeemer, redeemAmount), "UToken: Failed to "
       emit LogRedeem(redeemer, redeemTokensIn, redeemAmountIn, redeemAmount);
```

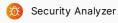
Recommendation

Do not use AMM pool or custom liquidity calculation to caculate LP token value/price.



2. MWE-209: Wrong Order for Interest or ExchangeRate





Update of interest or exchange rate should be executed before calculating new balance, share, stake, loan or fee.

File(s) Affected

contracts/market/UToken.sol #396-438

```
function borrow(uint256 amount) external onlyMember(msg.sender) whenNotPaused nonReentrant {
         IAssetManager assetManagerContract = IAssetManager(assetManager);
         require(amount >= minBorrow, "UToken: amount less than loan size min");
         require(amount <= getRemainingLoanSize(), "UToken: amount more than loan global size max");</pre>
         uint256 fee = calculatingFee(amount);
         require (borrowBalanceView (msg.sender) + amount + fee <= maxBorrow, "UToken: amount large than k</pre>
         require(!checkIsOverdue(msg.sender), "UToken: Member has loans overdue");
         require (amount <= assetManagerContract.getLoanableAmount(underlying), "UToken: Not enough to le</pre>
        require(
               uint256(_getCreditLimit(msg.sender)) >= amount + fee,
                  "UToken: The loan amount plus fee is greater than credit limit"
         );
         require(accrueInterest(), "UToken: accrue interest failed");
         uint256 borrowedAmount = borrowBalanceStoredInternal(msg.sender);
         if (accountBorrows[msg.sender].lastRepay == 0) {
                 accountBorrows[msg.sender].lastRepay = getBlockNumber();
         uint256 accountBorrowsNew = borrowedAmount + amount + fee;
         uint256 totalBorrowsNew = totalBorrows + amount + fee;
         uint256 oldPrincipal = accountBorrows[msg.sender].principal;
         accountBorrows[msg.sender].principal += amount + fee;
         uint256 newPrincipal = accountBorrows[msg.sender].principal;
         IUserManager(userManager).updateLockedData(msg.sender, newPrincipal - oldPrincipal, true);
         accountBorrows[msq.sender].interest = accountBorrowsNew - accountBorrows[msq.sender].principal;
         accountBorrows[msg.sender].interestIndex = borrowIndex;
         totalBorrows = totalBorrowsNew;
         // The origination fees contribute to the reserve
         totalReserves += fee;
         require (assetManagerContract.withdraw(underlying, msg.sender, amount), "UToken: Failed to withdraw(underlying, msg.sender, amount), "UToken: Failed to wit
         emit LogBorrow (msg.sender, amount, fee);
```

Recommendation

Check the business logic and move the statements about updating exchange rate or interest forward.



♠ Medium risk (0)

No Medium risk vulnerabilities found here



A Low risk (0)

No Low risk vulnerabilities found here es ic. IL AUDIT REPORT



(?) Informational (0)

No Informational vulnerabilities found here



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