

Swipe Security Assessment September 22nd, 2020

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What is a CertiK report?

- A document describing in detail an in depth analysis of a particular piece(s) of source code provided to CertiK by a Client.
- An organized collection of testing results, analysis and inferences made about the structure, implementation and overall best practices of a particular piece of source code.
- Representation that a Client of CertiK has indeed completed a round of auditing with the intention to increase the quality of the company/product's IT infrastructure and or source code.



Project Summary	
Project Name	Swipe
Description	Swipe has designed and implemented Governance and Timelock smart contracts as the basis for the voting functionality in their SXP token staking system.
Platform	Ethereum; Solidity, Yul
Codebase	GitHub Repository
Commits	1. ce376c7d141df0e47a6031626b958e515309053c 2. b735346945fd363c7afb01c5e4c74bd65fde1cec
Audit Summary	
Delivery Date	Sep. 22, 2020
Method of Audit	Static Analysis, Manual Review

Vulnerability Summary

Consultants Engaged

Timeline

Total Issues	10
Total Critical	0
Total Major	0
Total Minor	5
Total Informational	5

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Aug. 31, 2020 - Sep. 2 2020



ID	Title	Туре	Severity
SGT-01	Multiple Solidity versions used	Language Specific	Informational
SGT-02	Duplicate require statements	Language Specific	Informational
SGT-03	Duplicate functionality	Language Specific	Informational
SGT-04	Duplicate require statements	Language Specific	Informational
SGT-05	Incorrect requirement condition	Logic	Minor
SGT-06	Unused return value	State Change	Minor
SGT-07	Unused return value	State Change	Minor
SGT-08	Insufficient gas use	Performance	Informational
SGT-09	Unused return value	State Change	Minor
SGT-10	Unused return value	State Change	Minor



SGT-01: Multiple Solidity versions used

Туре	Severity	Location
Language Specific	Informational	See List

Description:

Different Solidity compiler version requirements were used throughout the provided smart contracts:

File	Version
Governance.sol	^0.5.16
GovernanceEvent.sol	^0.5.16
GovernanceProxy.sol	^0.5.0
GovernanceStorage.sol	^0.5.16
GovernanceTimelock.sol	^0.5.16
GovernanceTimelockEvent.sol	^0.5.16
GovernanceTimelockProxy.sol	^0.5.0
GovernanceTimelockStorage.sol	^0.5.16
GovernanceTimelock.sol	^0.5.0
IStaking.sol	^0.5.0

Recommendation:

We recommended using Solidity compiler version [0.5.16] or greater for the [GovernanceProxy.sol], [GovernanceTimelock.sol] and [Istaking.sol] files.

Alleviation:



SGT-02: Duplicate require statements

Туре	Severity	Location
Language Specific	Informational	Governance.sol
Language Specific	Informational	GovernanceTimelock.sol

Description:

Both the Governance and GovernanceTimelock contracts has multiple duplicate instances of the same requirement related to access restriction that the message sender should be the guardian account and the authorizedNewGuardian account.

Recommendation:

We recommended that this behavior could be abstracted in a new Guardian contract which inherits from and extends the previously-verified OpenZeppelin Ownable contract to encapsulate Guardian account functionality such as non-guardian access restriction and transferring to new guardian accounts. This can be re-used across the Governance and GovernanceTimelock contracts through inheritance to improve code re-use, shorten overall code length and eliminate room for error in future refactoring.

Alleviation:



SGT-03: Duplicate functionality

Туре	Severity	Location
Language Specific	Informational	Governance.sol
Language Specific	Informational	GovernanceTimelock.sol

Description:

Both the Governance and GovernanceTimelock contracts has duplicate functions related to assuming guardianship.

Recommendation:

We recommended that this behavior could be abstracted in a new Guardian contract which inherits from and extends the previously-verified OpenZeppelin Ownable contract to encapsulate Guardian account functionality such as non-guardian access restriction and transferring to new guardian accounts. This can be re-used across the Governance and GovernanceTimelock contracts through inheritance to improve code re-use, shorten overall code length and eliminate room for error in future refactoring.

Alleviation:



SGT-04: Duplicate require statements

Туре	Severity	Location
Language Specific	Informational	Governance.sol

Description:

The Governance contract has multiple duplicate instances of the same requirement that a proposal identifier is valid.

Recommendation:

We recommended creating a validProposal modifier to improve code re-use, shorten overall code length and eliminate room for error in future refactoring.

Alleviation:



SGT-05: Incorrect requirement condition

Туре	Severity	Location
Logic	Minor	Governance.sol, L172-L175

Description:

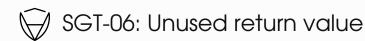
The Governance.propose function had a requirement with an incorrect condition that the sender's internal voting power should be greater than the proposal threshold instead of being at least the proposal threshold.

Recommendation:

Based on the documentation for the proposal threshold, we recommended changing the condition for the requirement in the Governance.propose function so that the sender's voting power must be greater than or equal to the proposal threshold.

Alleviation:

The issue was fixed in Swipe's develop branch in commit 8dfbc6131236a65506fbc754e3a69843421b652d.



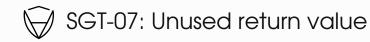
Туре	Severity	Location
State Change	Minor	Governance.sol, L275-L281

The Governance.internalQueueOrRevert function makes a call to the _timelock state variable's GovernanceTimelock.queueTransaction function and ignores the returned transaction hash bytes.

Recommendation:

We recommended determining if the transaction hash returned from the call to the timelock's GovernanceTimelock.queueTransaction function is necessary and considering incorporating it into the system or emitting an event.

Alleviation:



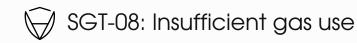
Туре	Severity	Location
State Change	Minor	Governance.sol, L292-L302

The Governance.execute function has a loop over the queued proposal's actions in which a call is made to the GovernanceTimelock.executeTransaction function for each proposal action and ignores the data returned from the call to each target.

Recommendation:

We recommended determining if the data returned from the call to the timelock's GovernanceTimelock.executeTransaction function is necessary and considering incorporating it into the system or emitting an event.

Alleviation:



Type	Severity	Location
Performance	Informational	Governance.sol, L334-L360

The Governance.getProposal function makes insufficient use of gas by copying Proposal field values from a storage pointer, which has a higher gas cost than copying the Proposal structure into memory.

Recommendation:

We recommended using a memory pointer instead of a storage pointer when retrieving the Proposal entry from the Proposals state variable.

Alleviation:



Туре	Severity	Location
State Change	Minor	Governance.sol, L558-L564

The Governance.queueAuthorizeGuardianshipTransfer function makes a call to the _timelock state variable's GovernanceTimelock.queueTransaction function and ignores the returned transaction hash bytes.

Recommendation:

We recommended determining if the transaction hash returned from the call to the timelock's GovernanceTimelock.queueTransaction function is necessary and considering incorporating it into the system or emitting an event.

Alleviation:



Туре	Severity	Location
State Change	Minor	Governance.sol, L573-L579

The Governance.executeAuthorizeGuardianshipTransfer function makes a call to the _timelock state variable's GovernanceTimelock.executeTransaction function and ignores the returned transaction hash bytes.

Recommendation:

Determine if the data returned from the call to the timelock's GovernanceTimelock.executeTransaction function is necessary and consider incorporating it into the system or emitting an event.

Alleviation: