

# AIM<sup>1</sup>-008: Chained Native Function Calls and Write Permissions

*platfowner 2020-03-02*

## Problem Description

- How to handle chained native function calls?
  - How to handle their write permissions?
  - How to handle execution results (success or failure) of chained native functions?

## Terminology

- External function call
  - The function is triggered by explicit writing to the database (e.g. using SET\_VALUE)
- Internal function call
  - The function is triggered without explicit writing to the database (e.g. calling transferInternal())

## Proposed Changes

### AS-IS

- **Either** auth.addr or auth.fid is set for permission check
  - Examples:

`auth.addr === $from || auth.fid === '_deposit'`
- Both internal call and external call are used
  - Internal call examples:
    - \_deposit, \_withdraw calls transferInternal()
  - External call examples:
    - \_claim calls setServiceAccountTransferOrLog() (-> setValueOrLog()) which sets value to trigger \_transfer
    - Execution logs and results are recorded separately

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<sup>1</sup> AI Network Improvement Memo. Visit <https://docs.ainetwork.ai> for the full list.

## TO-BE

- Set **both** `auth.addr` and `auth.fid` for permission check
  - where `auth.addr` is the address of the initial transaction signer and `auth.fid` is the id of the current native function
  - Use cases:

```
auth.addr === $from && auth.fid === '_deposit'
```

- Use **only external** calls from native functions
  - Execution log and result are recorded in **each** triggering point

## Further Topics

We have the following topics to be tackled in the future:

- How to make chained function calls atomic (i.e., result of all succeeding function calls)?
  - Idea: Let's wait until all succeeding functions finish before writing results.
- How to differentiate between functionA -> functionB and functionC -> functionB calls in permission eval?
  - Idea: Let's provide fid stack in auth

## Links

- AIP-012: Escrow Service ([link](#))

## Document History

Date	Who	Change	Notes
2021-03-02	platfowner	Initial draft	
2021-03-02	liayoo	Reviewed	
2021-03-03	platfowner, liayoo	Internal function calls -> external function calls	
2021-03-09	platfowner, liayoo, minsulee2, cshcomcom	Internal review	
2021-05-13	platfowner	Published	

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