

AIM¹-001: Changeable Validator Set

liayoo 2021-01-20

Problem Description

- As of writing, the validator set is static, meaning it is set when a genesis block is created and cannot be changed later on. This AIM addresses the issue and proposes ways to make the validator set incrementally flexible.

Proposed Changes

AS-IS

- Whitelist
 - ref: /consensus/whitelist/\${address}: 250
 - set by owner at genesis
 - determined by NUM_VALIDATORS or the default (accounts 0...4)
- Stake
 - default deposit expiration = 30 days
- Validator prerequisites
 - whitelisted
 - but voting only allowed if staked (checked by write rules)
- Can't restart after a consensus failure
 - e.g. No / not enough validators (=> failed to elect proposer)

TO-BE

Stage 1 (ComCom-only)

- Whitelist
 - write rule: "auth === getValue('/sharding/config/sharding_path') === '/' ? '0xAAAf6f50A0304F12119D218b94bea8082642515B' : getValue('/sharding/config/shard_owner')"
 - determined by GENESIS_WHITELIST
- Stake
 - deposit request ref: /deposit/consensus/\${address}/\${key}/value
 - deposit ref: /deposit_accounts/consensus/\${address}: { value, expire_at }

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

- default deposit expiration = 6 months (180 days)
- 2 ways
 - env var: STAKE=250
 - json rpc: SET_VALUE at /deposit/consensus/\${address}/\${key}/value
- Validator prerequisites
 - whitelisted && staking
 - whitelisted = getValue(`/consensus/whitelist/\${address}`) === true
 - staking = getValue(`/deposit_accounts/consensus/\${address}/value`) > MIN_STAKE_AMOUNT_PER_VALIDATOR && getValue(`/deposit_accounts/consensus/\${address}/expire_at`) > Date.now() + THRESHOLD
- GENESIS_WHITELIST
 - owner sets the /consensus/whitelist as GENESIS_WHITELIST

```
GENESIS_WHITELIST = {
  "0x000AF024FEDb636294867bEff390bCE6ef9C5fc4": true,
  "0x001Ac309EFFFF6d307CbC2d09C811aCD7dD8A35d": true,
  "0x002A273ECd3aAEc4d8748f4E06eAdE3b34d83211": true,
  "0x003AD6FdB06684175e7D95EcC36758B014517E4b": true,
  "0x004A2550661c8a306207C9dabb279d5701fFD66e": true
}
```

- MIN_NUM_VALIDATORS = 5
 - consensus protocol begins iff MIN_NUM_VALIDATORS validators stake
- MIN_STAKE_AMOUNT_PER_VALIDATOR = 100
- Deprecate NUM_VALIDATORS
- In case of consensus failure (no / not enough validators)
 - option 1. set validators to GENESIS_WHITELIST
 - option 2. get validators from N - 100 block

Stage 2 (Permissioned / Public)

- Penalties (slashing)
- Whitelist
 - write rule: "auth === '\$OWNER_ADDRESS'"

Document History

Date	Who	Change	Notes
2021-01-20	liayoo	Initial draft	
2021-02-02	liayoo, platfowner, minsulee2, cshcomcom, shyun-comcom	Internal review	

2021-05-13	platfowner	Published	