

Chapter 6. Coin, Gas and Mining

▪ The Incentive to Supporters of Locus Chain System

Voluntary participation of Locus Chain accounts and nodes are essential to keep Locus Chain system running. Locus chain has the concept of the Coin and the Gas, as well as other Blockchain systems, to incentivize participating Nodes and Accounts. While any data could be added to Locus Chain system, the Coin and the Gas are special baked-in system values required for Locus Chain.

▪ The Coin and the Gas

The Coins are numbers representing general measure values in Locus Chain. The Coin can be moved between accounts. An account must receive some amount of Coin when created. In other words, the first transaction of every account must be a Coin-receiving transaction. (Except for the accounts created on genesis round)

The Gases are numbers representing system-internal values for operating the Locus Chain system. For example, an account must pay Gas for creating a transaction. Additional Gas may be required if the transaction contains additional service like smart contracts. If the account has not enough Gas, Coin may be consumed("burned") instead.

Amount of Coin and Gas are public information. Any participant can calculate the amount of Coin and Gas of every account from transaction history.

▪ Coin Stake

An important role of Coin is valuing influence (or importance) of an Account. The amount of Coin (or Stake) of each account is used as a weight-value for electing Committee members for each round. Locus Chain forms delegated-Proof-of-Stake(dPoS) scheme, which means accounts with more stake have more chance for election.

An account may delegate its stake to another account. Offline accounts may delegate its stake to another active online node to utilize the stake. A node's stake is a sum of its primary account and all delegatee accounts.

▪ Epoch: Calculating Incentives

The Coin is an incentive to nodes and accounts contributed to operating Locus Chain system. Coin incentives are calculated based on the history of transactions and round-states, using pre-fixed formula. Any node can calculate the incentive for each round, and the result will be the same.

Transactions are fixed and agreed on a per-round basis. Incentives are calculated for several rounds for efficiency. Currently, Locus Chain calculates incentives for a bunch of rounds for one

whole day. We call the round that calculated incentives applied, as an 'Epoch.' In other words, incentives are calculated and generated on the per-epoch basis.

A round used as a basis of incentive calculation is called an 'epoch pivot round.' Normally an epoch pivot round points to several hours before the epoch-changing round. Each node in a shard executes the calculation using the ledger information at the epoch pivot round. The calculation delivers incentive Coin and Gas numbers, and reference total-stake and reference node count, which are important parameters for round consensus. The reference total-stake and node count value are fixed constant values effective until next epoch.

Calculated incentive values are submitted for round consensus to make agreed. When agreed, the next round will be an epoch-change round that calculated numbers are in effect.

Each account eligible for receiving Coin and Gas must submit incentive-receiving transactions to collect the incentives.

Gas as an incentive is automatically given to the corresponding account on a per-round basis. Additionally, for each epoch, each account's Gas may be filled to a certain amount ('Free Gas Amount') if the account has less Gas than the amount.

▪ **Coin as an Incentive Value**

Coin generated as an incentive is an assessed value of the contribution of each Account on Locus Chain System. Several factors are considered in evaluating the contribution. For example, the amount of Coin rewarded is designed to be gradually reduced over time to incentivize early participants. Also, the Coin Stake and actual generated Coin is somewhat non-linearly balanced to encourage new participants.

▪ **Gas**

Gas is the internal value required to issue a transaction. Gas is currently cannot be purchased or given. Each account may receive some free gas for each epoch. Accounts participated in a round consensus may receive some an additional Gas.

Gas enables micro-transactions by allowing accounts to submit transactions without consuming Coin. The limited amount of free Gas prevents transaction spamming. An account must use Coin to submit transactions when Gas is empty.

Gas is also a compensation for contributors of Round Consensus. Unlike the Coin, which requires epoch change, Gas is quickly generated on a per-round basis.

In the next chapter, we will talk about the cryptographies of Locus Chain.