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Preferential DPoS: A Scalable Blockchain Schema for High-Frequency Transaction

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TREO Talk Paper

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Abstract

Blockchain is a distributed database solution that keeps track of a growing list of data entries that are verified by the nodes that make up the network. In a typical blockchain platform, the information is kept in a public ledger, which includes details on every transaction ever made. Every transaction that has ever been performed in the blockchain is shared and accessible to all nodes. This feature means obtaining a fast consensus in a large-scale blockchain network often requires excessive energy for calculation and storing the complete blockchain for verification, which becomes the technical limit for further commercialization. To compete with centralized systems, blockchain technology must have a consensus algorithm that leads to low transaction costs and increased bandwidth to accommodate more transactions per second, such as *Proof of Work* and *Proof of Stake* (Bouraga 2021). Under the category of Proof of Stake, the Delegated Proof of Stake or DPoS voting schema used a reputation-based voting approach to reach consensus and any user who has holdings can vote on which nodes should validate transactions on the network. A user's voting power is determined by the size of holdings he or she stakes (Larimer 2013).

In this study, we proposed a revised DPoS schema (Bitshares 2016), the *Preferential Delegated Proof of Stake (PDPoS)*, as new variety. This algorithm allows blockchain to have an L2 network on top of the existing network, or mainnet. Users could choose to send the transaction request to either L2 or the mainnet for processing.

The transaction that goes straight to the mainnet is called "Preferential Delegated of Stake," The user will be charged more because it will reach finality faster than the L2. The mainnet would have DPoS, but block producers would have to stake more tokens to validate the transaction, and the voting and validating incentives would be higher than on the L2 network. The L2 network would also provide DPoS consensus, but the transaction would not be finalized, and the user would be charged more to send the transaction directly to L1. Every transaction on L2 would eventually become part of the mainnet. This would happen after 24 hours or whenever the throughput to the mainnet was extremely low. The number of block producers would differ between the L2 and mainnet transactions; the mainnet would have 24 block producers, but the L2 would have 12. The block producers of L2 cannot participate in mainnet and vice versa. Because L2 would have lower gas prices, the reward for validating would be smaller. On the mainnet, L2 TPS is projected to be around 60,000, with a transaction rate of roughly 20,000.

This consensus schema would improve the network's transaction speed by decongesting the mainnet and allow users to benefit from the capabilities of blockchain at a lesser cost. This agreement would allow customers to pay according to the urgency and use case. The customers would trace their transactions and receive an update when they transfer from L2 to mainnet. If the user is in a rush to have the transaction validated, he will have to pay an additional cost, but his transaction will travel straight to the network and obtain an instant confirmation. To store the hash, the platform would use an external database to be taken in use in case of a missed or failed transaction from l2 to mainnet.

Reference

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