Dithereum: A Platform Empowering Smart Contracts and Decentralized Applications

Version 1.0

www.dithereum.org
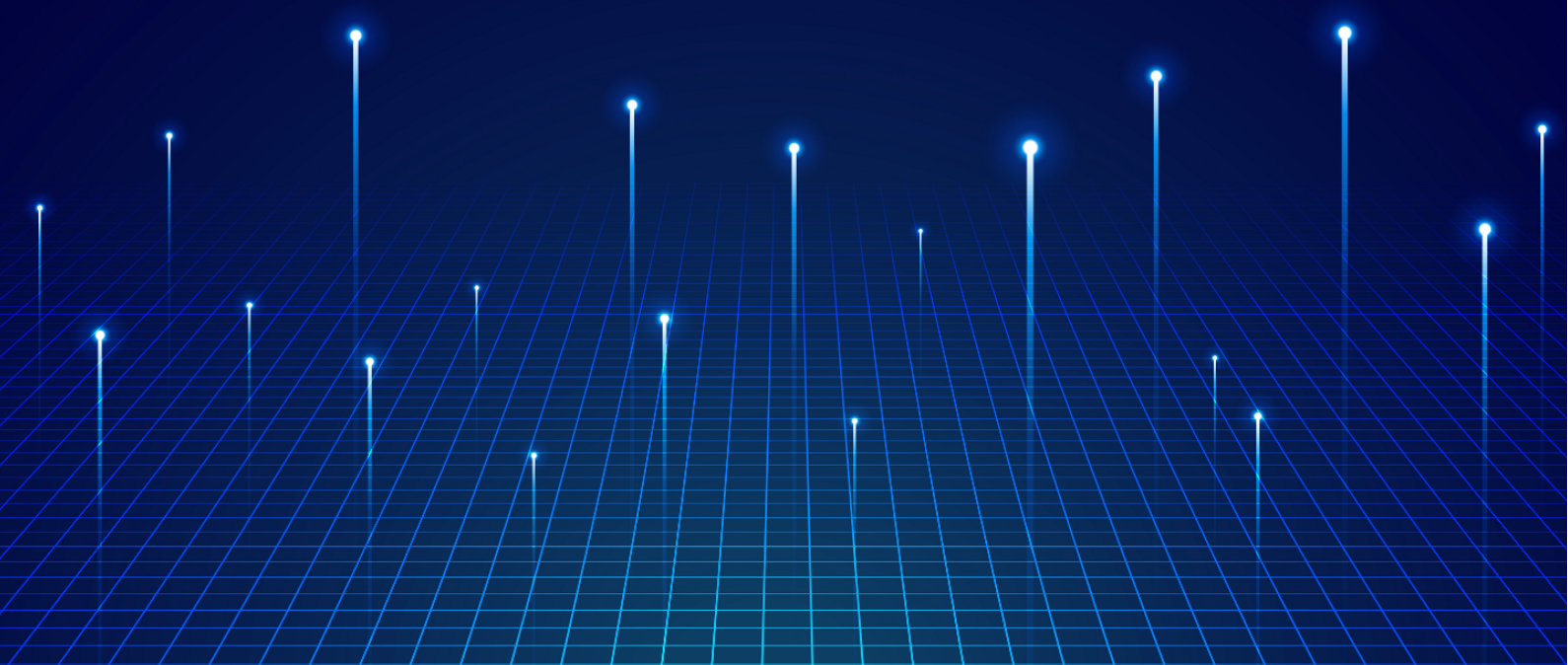
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Introduction to the Dithereum

The Dithereum Platform is a unified infrastructure platform based on technical, traffic and ecological resources, and will be gradually open to the blockchain industry. It will make the construction of decentralized applications more efficient and cost-effective, and provide comprehensive empowerment in aspects of promotion, traffic, and resources. The Dithereum Platform is an EVM compatible blockchain that solves the biggest problem of the Dapp industry. The Dithereum Platform will provide global developers with a series of diverse innovative facilities and services.

Solving the market's biggest problem

Decentralized applications (Dapps) running on any blockchain contribute to the biggest use case of the blockchain industry. Many such Dapps face cash flow problems. They have many users and lots of transactions in their smart contracts, but they do not gain anything from those transactions. All the transaction fees paid by the users go to miners (or stakers in PoS blockchain). This creates a scenario of "Rich getting richer and poor getting poorer". We solved this painful industry problem through our innovative technology, where smart contract deployers also gain some percentage of the transaction fee paid by the smart contract user. This will create a huge positive cash flow to the Dapp developers and help them run the Dapp project smoothly and they can carry on their innovative development in the blockchain ecosystem.

Vision

Dithereum's vision is not only to be the best public blockchain, but also to focus on the discovery and support of high-potential developers and innovative projects. Relying on the world's largest trading ecosystem, Dithereum is committed to becoming the birthplace of innovative technologies and innovative businesses, and building a complete ecological loop of technology development, application promotion, and trading.

Dithereum's Performance

- TPS: 3000+
- Average block interval: 3s

Economic Model

The endogenous token on the chain is DTH; the transactions consume DTH as gas fee.

Miners pledge DTH to become validator nodes. The reward of nodes is gas fee, which is distributed according to the mortgage proportion.

Dithereum Technical Characteristics

- An open and decentralized network to maintain the security of the network and assets.
- Support the programmability of EVM, the compatibility of smart contracts to reduce development or migration costs.
- Meta-transaction function: gas fee reduction, effectively reducing the cost of developers and users on the chain.
- Support cross-chain asset transfer to optimize users' experience.

Consensus

Dithereum adopts a DPoS consensus mechanism with low transaction cost, low transaction latency, high transaction concurrency, and supports up to 21 validators.

DPoS is a combination of PoA and Pos. To become a validator, you need to submit a proposal first and wait for other active validators to vote on it. After more than half of them pass, you will be eligible to become a validator. Any address can stake to an address that qualifies to become a validator, and after the validator's staking volume ranks in the top 21, it will become an active validator in the next epoch.

All active verifiers are ordered according to predefined rules and take turns to pack out blocks. If a validator fails to pack out a block in time in its own round, the active validators who have not been involved in the past $n/2$ (n is the number of active validators) blocks will randomly perform the block-out. At least $n/2+1$ active validators work properly to ensure the proper operation of the blockchain.

The difficulty value of a block is 2 when the block is generated normally and 1 when the block is not generated in a predefined order. When a fork of the block chain occurs, the block chain selects the corresponding fork according to the cumulative maximum difficulty.

Glossary

- validator. Responsible for packaging out blocks for on-chain transactions.
- active validator. The current set of validators responsible for packing out blocks, with a maximum of 21.
- epoch. Time interval in blocks, currently 1epoch = 200block on `Dithereum`. At the end of each epoch, the blockchain interacts with the system contracts to update active validators.

System contracts

Dithereum-System-Contracts

The management of the current validators are all done by the system contracts.

- Proposal Responsible for managing access to validators and managing validator proposals and votes.
- Validators Responsible for ranking management of validators, staking and unstaking operations, distribution of block rewards, etc..
- Punish Responsible for punishing operations against active validators who are not working properly.

Blockchain call system contracts:

- At the end of each block, the `Validators` contract is called and the fees for all transactions in the block are distributed to active validators.
- The `Punish` contract is called to punish the validator when the validator is not working properly.
- At the end of each epoch, the `Validators` contract is called to update active validators, based on the ranking.

Staking

For any account, any number of coins can be staked to the validator, and the minimum staking amount for each validator is `32DTH`. If you want to unstake, you need to do the following:

1. Send an unstaking transaction for a validator to the `Validators` contract;
2. Waiting for `86400` blocks before sending a transaction to `Validators` contract to withdraw all staking coins on this validator;

Punishment

Whenever a validator is found not to pack block as predefined, the `Punish` contract is automatically called at the end of this block and the validator is counted. When the count reaches 24, all income of the validator is punished. When the count reaches 48, the validator is removed from the list of active validators, and the validator is disqualified.

Cross-Chain

Assets such as BTC, ETH and stable coins can be mapped to Dithereum by an asset bridge. The realization method is to lock a certain number of tokens on the original chain then generate a corresponding number of tokens on Dithereum.

Dithereum encourages developers to provide more decentralized cross-chain solutions.

Meta Transaction Function

A meta-transaction is essentially an operation that fulfils a fee payment in proxy. Address1 gives the transaction to be sent to Address2. And Address2 signs the information related to the fee deduction and places it in the data segment of the transaction. The transaction is then broadcasted and the blockchain processes the transaction according to the rules.

The meta-transaction allows users to reduce gas fees step-wise, and Dithereum will cover the payment of the reduced part. The meta-transaction function allows to minimize the migration cost of DApp developers, as well as to effectively reduce the cost of DApp users.

The Genesis Block

Both the mainnet and testnet genesis information of `Dithereum` chain have been hardcoded in blockchain, and the corresponding genesis files are listed below for verification.

- chainId The unique identification of the chain.
- `homesteadBlock` `eip150Block` `eip150Hash` `eip155Block` `eip158Block` `byzantiumBlock` `constantinopleBlock` `petersburgBlock` `istanbulBlock` `muirGlacierBlock` Hard fork height configuration.
- `congress` Consensus parameters `period` is time interval of blocks. `epoch` is set for a period in `block`, and at the end of each `epoch`, the validators are adjusted accordingly.
- `number gasUsed parentHash nonce timestamp extraData gasLimit difficulty` are all parameters for genesis block.
- `extraData` The initial validators is set up here.
- `alloc` Configured initial account information that can be used for asset pre-allocation and pre-initialization of system contracts.
    - 0xdaf88b74fca1246c6144bc846aaa3441ed095191 //Genesis account for DTH
    - 0000000000000000000000000000000000000f000 //validators contract address
    - 0000000000000000000000000000000000000f001 // punish contract address
    - 0000000000000000000000000000000000000f002 // proposal contract address
- System contract repo: Dithereum-System-Contracts

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- Github: Dithereum

Risk Warning

- All users and developers can participate in the current test environment and subsequent stages of Dithereum for free, and there is no charging scenario.
- All users must distinguish the test environment from the Mainnet. The assets generated in the test environment have no value. Be aware of counterfeit currency fraud.
- Dithereum announces authorization, promotion and other collaborations only through the official social media platform. Developers and users should check carefully to avoid losses.
- Do not misread the official website (Dithereum.org), and be cautious with private key phishing.