

“Decentralized Storage Home” (DSH) - Whitepaper

1. Introduction

With the launch of distributed storage projects such as Swarm, Filecoin and Crust, decentralized storage provides powerful data storage capability because of their practical utility, low cost, and information security mechanisms. This project was created to further expand the application of decentralized distributed storage. DSH's purpose is to establish an information and functional community which provides convenient and applicable toolset for miners, developers, and users to advance the application of decentralized storage ecosystems. There are three phases to carry out the project. Phase 1: achieving SWARM network's application functions; Phase 2: Supporting Crust network's application; Phase 3: realizing Filecoin network compatibility.

2. Product Functionality

This project is developed for miners, developers and users. For the miners, this project provides graphical display and query information related to the distributed storage network, including average network connection data, average bandwidth, average profit data, average transaction price and other data which are calculated from other miners' nodes. Data is collected through network nodes and miner nodes who volunteers access to their data.

For developers, this project is open sourced so the technical documentation and source code generated by this project are all published on Github. This allows access to any developers who are interested this project to contribute to optimizing the code, making the product easier to use and creating more functionality for the product.

For data storage and users, this project provides easy-to-use user and operation interface, so that users can use the distributed storage network like regular interfaces they are used to daily without having specialized knowledge. The functions include but are not limited to file upload, file download, file retrieval, etc.

2.1 User Management

User management mainly realizes user registration, login, personal center, user information modification, user data management, user information management and other functions. Helping our three types of users to operate functions such as information recording, retrieval and query, and information and data management.

User social dashboard. The platform can provide social dashboard which facilitates social interactions with others.

2.2 File Upload /Download

Providing file upload and download functions based on simple UI window, including local file query, file upload to the network, and file download from the network to the local drives. It is technically necessary to integrate relevant network client node applications and programs.

2.3 Wallet Management

Let users conveniently manage private wallet address, user payment, token transfer, settlement, and other functions. To ensure the security of the user's wallet, any inputs of private key address will not be supported.

2.4 File Search Engine

Provides functions such as information aggregation, file metadata management, file data release, file information database management, and file retrieval. Making the use of file CID and file meta-information to locate files and provide download support.

2.4.1 File Information Collection and Aggregation

There are two ways to collect file information: 1. The user uploads file-related information and agrees to release it publicly. When user uploads a file, the user chooses from three types of privacy mode, available to public, available to social dashboard, private. 2. Automatic program initiated scraping from public websites.

2.4.2 File Search Engine

The file search engine provides file blurry query, file CID query, file type information query, file metadata query, etc. These files can be downloaded to the local through the file upload/download module.

2.5 Network Explorer

Aggregate node data based on the bandwidth, files, fees, storage, and other information to simulate the operational status of the entire network for miners and users.

2.5.1 Network Node Registration

Miner node registration function, uploads the network information of the relevant node, and realizes the network access and network connection of this product to the node. Establish information association and management between miner users and their nodes.

2.5.2 Network Explorer

1) Average bandwidth

Count the average upload and download bandwidth of the node group. Calculating the average value and recording the data at different time intervals. The recording cycle can be dynamically configured.

2) The average number of files stored by the node

The average number of file blocks stored and cached by a node.

3) Storage utilization

The ratio of the number of file blocks stored by the node to the storage capacity of the node. This data mainly presents the storage space utilization of the node.

4) File transmission frequency

The transmission frequency of the file block of each node in a specific time period. Calculated as the ratio of the number of transmissions to the total storage value.

5) Node revenue

The node's token revenue in the process of storing and transmitting files, including total revenue and unit file block revenue. (The reward of different documents is different, and the average reward needs to be calculated).

6) File download/upload efficiency

The ratio of the number of upload/download file blocks (fixed size) to the required time (bandwidth data). Record this value over certain period of time and record average value of the whole network.

7) Network Strength

Statistics of changes in the number of neighboring nodes of each node. In principle, the more neighboring nodes or the higher the number of neighbors, the more robust the network is.