



Crypto Cloud Disk Net

Summary

CCDN (Crypto Cloud Disk Net) is a comprehensive ecosystem based on physical storage and related business, which includes main modules as: cloud storage, node router, mining farm, mining machines, wallet, exchange, digital mall. CCDN provides public services including technical support, participants can use CCDN for transaction and business applications. The CCDN participants purchase and transfer storage equity certificates, and support the platform's storage and node service capacity expansion via mining.

CCDN helps users to sell their storage space in a new way of shared economic. In the future, CCDN will also help users to realize the commercial value by sharing the stored original digital content (photos, videos, articles, live broadcasts, etc.) CCDN uses blockchain technology to achieve value transfer and reconstructs the cloud storage industry ecology with distributed technology.

CCDN is open to global storage hardware, users can become nodes of the network by sharing their idle storage. As all network nodes work together, the storage capacity can be expanded indefinitely, and has natural characteristic of disaster recovery backup. The distributed storage chain with self-recovery capability forms a more secure, faster and more practical massive distributed cloud storage. Massive service nodes can directly provide users with cloud storage services with low latency, large network bandwidth, and large connectivity.

CCDN is designed directly by the scheme of the next generation internet, implementing the memory as the node, and boosting the information transmission between the nodes to realize free network relay of the whole network. The advantages of CCDN include:

1. Trust: Decentralized operation through blockchain technology, avoiding any kind of organization/personal manipulation.
2. Privacy: All users have their private keys to manage their storage space.
3. Effectiveness: CCDN encourages the release and dissemination of high-quality content, and encourages the support of quality storage and relay, hence the providers of quality services could receive returns of their services.

In the future, various application ecosystems such as websites and APPs on the current internet can be built on CCDN and further realize more advantages of the internet.

Keywords: mining machine, cloud storage, mines, wallets, exchanges, next generation internet

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1. CCDN Overview

1.1、 Cloud storage

Cloud storage is a model of online storage, which stores data on multiple virtual servers that are usually hosted by third parties, rather than on special servers. Large data centers are operated by hosting companies. Customer can satisfy the demand of data storage by purchasing or renting storage space from a hosting company. The data center operator prepares the storage virtualization resources on the back end according to the customer's demands, and provides service in the form of a storage pool. Customer can use this storage resource pool to store files or other objects. In fact, these resources may be distributed across numerous server hosts. Cloud storage services access these resources through web service application programming interfaces (APIs) or web-based user interfaces.

Cloud storage is a system that uses a cluster application, or a grid technology, or a distributed file system to assembly a large variety of different types of storage devices on the network, and this work together to provide data storage and service access functions through application software. Compared to local storage, cloud storage guarantees data security and saves storage space. For short, cloud storage is an emerging solution for putting storage resources on the cloud for people to access. Users can connect to the cloud and easily access data from any network device and any time, anywhere.

Advantages of cloud storage

Cloud storage is a trend of future of storage development. In addition to convenient data transmission, cloud storage provides users with the following benefits:

I. Lower cost

In the long run, the biggest feature of cloud storage is to reduce costs for small businesses. Based on cloud storage, server vendors can serve thousands of small businesses and can serve different consumer groups through segmentation. Compared with the traditional storage expansion, the cloud storage architecture adopts the mode of parallel expansion. When the customer needs to increase the capacity, the server can be purchased according to the requirements, and the capacity can be

expanded simply by adding new devices. The new device only needs to install the operating system and the cloud storage software. After adding the device on to the network, the cloud storage system can automatically recognize and add capacity to the storage pool to complete the expansion. There are no restrictions on the expansion.

II. Better local data backup and work offsite

If a natural disaster happens in your office, it is very safe because your data is stored off-site. Even if there is a natural disaster, you can't access the data through the network, but the data is still safe. If the problem only occurs in your office or in your company, then you can go to another place to use your notebook to access important data and update data. Cloud storage allows you to keep working under harsh conditions.

III. Improved storage efficiency

Virtualization technology solves the waste of storage space, which can automatically redistribute data, and improve the utilization of storage space. At the same time, cloud storage has load balancing and redundancy strategies, which can achieve scale effect and flexible expansion, reducing operating costs, and avoid the waste of resources.

1.2、 Problem of traditional cloud storage

According to related statistics, the first-line cloud storage service providers in China have increased the amount of user data per day to reach the PB level. Every day, hundreds of millions of users are uploading and downloading various files to their cloud storage space. In this situation, in addition to network bandwidth consumption, traditional cloud storage still has the following problems:

I, Limited participants

All cloud storage services are provided by enterprises. Individuals also have a large amount of spare storage capacity, but cannot provide cloud storage services. This results in a huge waste of space for a large amount of personal storage devices.

II. Copyright risk

In the domestic network disk service, some individuals or groups will upload the files with the film and television music as the main content to the network disk through the cloud storage client, and then provide downloading to the circle through sharing, this includes a large amount of copyrighted video or music. It was spread by special piracy method, and this type of sharing is temporarily a regulatory blank.

III. Risk of personal privacy disclosure

Many mobile platform users like to quickly upload photos and videos taken by their mobile phones or tablets to the network disk through cloud storage, which can quickly and easily retrieve photos in different places or even instantly through WEB or PC client. What you don't understand is that every photo or other file you upload may be saved in clear text on the cloud storage server. Administrators can view and delete user-uploaded files directly from the server's platform, many of which are user's confidential files or contain user privacy. Although large-scale servers at the current stage are constraining the professional managers by establishing strict procedures, there is no guarantee that other people will never look at the privacy of documents.

IV, Data security risks

Cloud storage servers have long been the target of hacking, because there are not only infinite user data on the server, but the hijacking of such large user groups is an important source of black revenue. The security of the server directly affects the security of user uploading data. Under the support of server virtualization technology, the reliability of V2V migration is quite high. Most cloud storage vendors prepare security protection solutions, but they cannot ignore the existence of hackers. A centralized deployment of enterprise solutions with a fixed IP is actually a living target, and being attacked is only a matter of time.

V, Risk of operation cease, etc.

In the current Internet environment, enterprises carry out large-scale construction in order to carry out massive services, and concentrate on a large amount of storage hardware. Concentration of operations means that risks are concentrated. Even with a small number of backups, enterprise cloud storage will still suffer irreversible losses due to regional risks, energy supply risks, and related destruction risks. At the same time, the cost of providing public cloud storage services, the annual

investment of more than several hundred million dollars, the current cloud storage profit model provided by individuals is not clear, the general enterprise does not have the ability or policy to license some high-profit services. The current intra-licensing service has already become the 'Red Sea' because of heavy competition, and almost all of them are compensating for customers. In this case, not many companies can continue to provide cloud storage services forever, and it is difficult for enterprises to collect fees in the case of radical competition. Finally, most companies were forced to stop operating due to loss problems and earnings problems. At the same time, taking into account the risk of policy supervision, enterprises have high risk of shutting down under supervision, including the removal of some content (such as Wei Mi Encyclopedia) at the request of the government. The service provider will shut down the service at a certain time is the biggest hidden danger. In China, the public cloud disk represented by 360 cloud disk and Jinshan fast disk has already withdrawn from the historical stage.

1.3、 What is CCDN?

CCDN was designed to solve the problems in the traditional cloud storage industry.

CCDN helps users to sell their idle storage space in a way of shared economic. CCDN will also help users realize the commercial value by sharing the stored original digital content (photos, videos, articles, live broadcasts, etc.) in the future. CCDN uses blockchain technology to achieve value transfer and reconstructs the cloud storage industry ecology with distributed technology.

CCDN is open to global storage hardware, users can become nodes of the network by sharing their idle storage. As all network nodes work together, the storage capacity can be expanded indefinitely, and has natural characteristic of disaster recovery backup. The distributed storage chain with self-recovery capability forms a more secure, faster and more practical massive distributed cloud storage. Massive service nodes can directly provide users with cloud storage services with low latency, large network bandwidth, and large connectivity.

CCDN is a comprehensive ecosystem based on physical storage and related business, which includes main modules as: cloud storage, node router, mining farm, mining machines, wallet, exchange, digital mall. CCDN provides public services including technical support, participants can use CCDN for transaction and business applications. The CCDN participants purchase and transfer

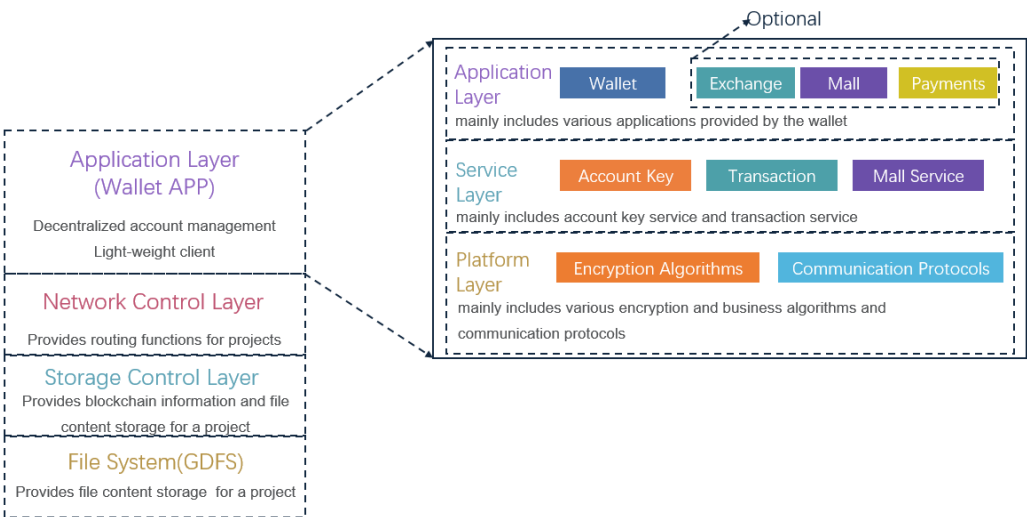
storage equity certificates, and support the platform's storage and node service capacity expansion via mining.



2. CCDN System Architecture

2.1、 Layered framework

The layering of the CCDN includes a plurality of different levels, such as an application layer, a network node layer, a blockchain consensus layer, a storage node layer, and a file system layer.



Distributed storage node: A node that provides blockchain information and file content storage for a project;

Distributed network node: A network node that provides routing functions for projects;

Distributed File System: Globally Distributed File System (GDFS);

Application layer: Wallet APP (IOS、Android、Windows、Linux);

Blockchain consensus layer: The consensus mechanism is based on POC (Proof of Capacity).

2.2、 Wallet DAPP

The main part of the wallet DAPP is a lightweight block-chain client. The service structure includes the application layer, service layer and platform layer, providing decentralized account management and transaction interface, and built-in secure transaction function.

- Application layer:

mainly includes various applications provided by the wallet.

- Service layer:

mainly includes account key service and transaction service.

- Platform layer:

mainly includes various encryption and business algorithms and communication protocols.

- Basic functions:

Wallet address registration, account import, account export, transaction password management and other functions. The user's wallet file and private key are kept by the user, and the user's rights are completely owned by the user, and the system is more private and secure. Once the user's private key is lost, the wallet will never be retrieved. The transaction password is only used to protect the user's daily operational security and can be reset by the private key.

- Asset function:

Coin/Token transfer and redemption functions.

- Query function:

Coin/Token query, transaction information query.

2.3、CCDN technology advantages

The main advantage of CCDN is that the underlying technology framework not only realizes the basic functions of blockchain, cloud storage, P2P communication, but also integrates functions such as exchanges, digital malls, and wallets. In addition to the essential basic functions, other functions are modularized and plugged-in. These functions can be customized either when purchasing a mining machine or through DAPP settings provided by the platform. CCDN supports the whole process of production, trading and consumption, and becomes a complete ecosystem based on physical storage business. At present, there is no company or group in the entire blockchain industry to integrate such technology and business integration.

The exchanges embedded in the platform can either buy or sell manually, or import the trading strategy to automatically place orders, and the exchanges in the platform support the sharing, and trading of indicators and formulas.

The mall embedded in the platform supports various mainstream virtual currencies such as BTC, ETH, EOS, USDT and platform currency for payment, which is convenient for users to purchase mining machines and other commodity services.

The wallet in the platform supports both platform account management and platform currency transactions, and will also support the management of major virtual currencies such as BTC, ETH, EOS, USDT and account management. The mobile wallet DAPP also supports POS transactions.

3. Blockchain Design

3.1、Consensus

The consensus algorithm uses POC (Proof of Capacity).

POC (Proof of Capacity) is a consensus algorithm that uses computer hard disk space to mine. At present, most digital currency mining uses POW (Proof of Work). Only BHD and Burst use the POC mining mode.

POC is very similar to POW, just using storage instead of computing in POW. POC is related to MHF and POR (Proof of Retrievability), but there are also large differences.

The POC is a small piece of data sent by the prover to the verifier, which confirms that the prover has reserved a certain amount of space. For practical reasons, the verification process needs to be as efficient as possible, i.e. consume as little space and time as possible. For fairness considerations, if the verifier does not retain the stated amount of space, then it should be difficult to pass verification. One way to implement POC is by using a graph that is difficult to implement Pebbling. The verifier requests the prover to build a "non-pebbling map" tag. The certifier submits the token, and the verifier requests the certifier to open multiple random locations in the submission.

Due to the general nature of storage and the lower energy consumption required for storage, POC is considered a more fair and green alternative.

3.2、 Consensus process

POC turns the workload of guessing numbers into the workload of "plotting" in hard disk space. Each block is bound to a dedicated "mystery". Before the mining has started, the network will store the solutions for cracking the puzzle in your hard disk space. Some of these calculation methods are faster and some are slower. If you have a calculation method on your hard disk, it is the "fastest solution" corresponding to the puzzle in this block recently generated, then you win. The billing right of this block - the reward for mining is yours. The real mining algorithm behind the POC, if the real-time calculation is very complicated, and the time to generate a block is too short (on average, one new block is generated every 1 minute), the calculation method of this mining must be stored in the hard disk drive in advance. In the end, if you have more calculations (also known as plots) in your hard drive space, you can use the fastest speed to crack the puzzles in the current block, and the greater the probability of implementation. If the POC consensus mechanism is that all miners use computational power to find a random hash number to packing blocks, then the POC consensus mechanism can be simply understood as: generating a large number of pseudo-random numbers through some established algorithm, and Random numbers are stored in the hard disk. When competing for packing blocks, they only need to be randomly matched by the scan disk (also called read disk) to pack the blocks.

Expressed in a more popular language is to use the CPU, GPU budget to produce a bunch of lottery numbers, and then fill the hard drive, mining is to find the winning lottery number. Therefore, before

the miner mines, it involves a process of “Plotting disk”. The process of this Plotting disk is the process of writing random numbers into the hard disk by CPU or graphics card. An average 8T hard drive takes 10 hours to drive a plotting work, which can be understood as a process for making a soft miner.

The difference between the CCDN mining machine and the ASIC mining machine is that even if the user does not want to mine in the future, the hard disk of the mining machine can be used as an ordinary hard disk after being formatted. The hard disk is a very valuable general-purpose computer device. There is no monopoly, and the price of hard disk is stable. The value preservation rate of used hard disk is very high.

4. Technical Solutions

The CCDN user account is indeed a wallet address. Each user saves his private key and the algorithm of the public key to the storage chain.

On the one hand, CCDN users promote the entire project to implement related functions for the storage, reading, and sharing of files; on the other hand, users need to consume resources when storing and reading files, thereby stimulating storage service nodes on the project, and assisting the verification of the ordered operation of the node.

The specific technical implementation of CCDN consists of file storage, file query and decryption reading. Crypto Cloud Coin (CCC) is required for storing, downloading, and decrypting.

4.1、 File storage

When node A saves a file, it first set the number of copies M to be backed up and the number of pieces of each file fragment N (parameters M and N have maximum and minimum values, respectively, and the range of maximum and minimum values is dynamic, determined by the algorithm). Then the desired stored file is fragmented and encrypted (hashed), and the Merkle tree of the file fragment is formed. Then the corresponding fragment storage request message is broadcast to the storage chain, and the content includes the task serial number, file fragment size, hash value, node broadcast hop count ($M*N$), broadcast validity period, and paid CCC. After the

storage chain verifies the CCC of the node A, it freezes the CCC it pays, and then broadcasts the message to be sent to the outside to prevent the CCC insufficient user from wasting the storage resource behavior. After receiving the broadcast of the task, the storage chain node and the routing node check whether the wallet address of node A is true and whether the CCC is sufficient. After verifying the authenticity of the task, it determine whether to respond to the current storage task (whether the node can complete storage this time is determined by the algorithm). If the node can perform the current storage task, the number of broadcast hops of the information is decremented by one, and the broadcast to other nodes is continued. The wallet address, network information, and public key information are posted to the storage chain. If the node does not participate in this task, it broadcasts directly to other nodes without reducing the number of broadcast hops. The node in turn pushes the message broadcast until the hop count is reduced to 0. All nodes participating in this task are directly connected to node A. At this point, node A will decide the next operation according to the number of nodes P in the response storage file and the number of copies $Q(M*N)$ to be stored: If $P < Q$, the smart contract causes the P nodes to perform this storage. At the same time, a second broadcast is additionally initiated. In the second broadcast content, the number of copies that the node user needs to store is changed to $P-Q$, and the CCC paid is also reduced to the CCC that the unfinished node deserves. At this time, the node that has performed the storage of this file will choose to ignore the current storage task according to the hash value judgment, and broadcast directly to the storage chain node without reducing the broadcast hop count. This continues until the storage task of node A is fully executed by the node of the storage chain, and the storage chain verifies each node that is to perform this task. After the verification is passed, node A sends the encrypted data to each execution node. After the node finishes executing, it sends a message to the storage chain to broadcast the execution. After the storage chain is verified, node A goes to the final Q node, and completely pay the CCC corresponding to this storage service and put the results of this implementation consensus into the blockchain.

4.2、 File query

When node A needs to query a file, it broadcasts the M fragments of the file to the storage chain. The node on the storage chain queries whether there is a fragment Hash that is executed this time. If it exists, the fragment data is broadcast to the storage. In the chain, node A receives the

fragmentation data on the storage chain, assembles it according to the Merkle tree, compares the assembled root hash with the locally saved file hash. After the verification is passed, node A completely pays to the final M node, and the CCC corresponding to the query service and the consensus of the results of this execution are on the blockchain.

4.3、 File decryption and cloud browsing

When uploading a file, the uploader will encrypt some of the file information (such as file type, description and virtual path) and then broadcast it to the storage chain. After each node receives the broadcast information, it logs the information to the local state database.

Since other nodes cannot decrypt the extra data in the upload request, only the current account is accessed by the node for the file path and other description information, and the device is located at the node where the node is located. The user needs to download and decrypt when obtaining the file, and then read the file content through the common operating system and program, and consume CCC when downloading and decrypting the file.

If the uploader node device fails and data is lost, he or she only need to log in to own node on any device. After restarting, one can restore the file storage structure by synchronizing the block history data and re-indexing it. With this feature, the uploader uploads a convenient, secure, and recoverable file browsing interface from the beginning.

5. Incentive Mechanism

The establishment of the CCDN requires initial mining, where the user provides storage space and receives CCC as a reward.

The process of initial mining and exporting blocks is the process of searching for marks and creating a dense cloud network space in the existing disk space. After the creation of the CCDN space mark is completed, the distributed mark is performed according to the available space of the entire network. The size of the CCDN space of the most cell block is 1 KB, and the limit of the manageable space of CCDN is 1 BB.

Within the CCDN, nodes that provide storage space and traffic relay services can all receive CCC in return. Among them, the storage reward reflects the workload contributed by the node for the accumulation of available space of CCDN. The traffic reward reflects the contribution of the node to the stable and efficient propagation of the nodes of the CCDN.

5.1、 Mining incentive algorithm

The establishment of CCDN requires initial mining. When the user initially mines and generates standard blocks, the reward is A.

The total amount of CCC is 1,073,741,824. The time of output of the mining is constant (blocking every 1 minute), and 1 CCC is awarded for each GB found. For each 50% of the remaining total, one space for CCC needs to be discovered. The number will double until it finally finds that the next available space in CCDN is 1EB and stops rewarding.

After the available space of the whole network reaches 1EB, the CCC double-identifies the new standard storage space beyond 1EB, and finally realizes the mark of CCC 2-layer. After the 2-layer is marked, the maximum management space of CCDN is 1BB.

Space discovery: space discovery does not mean the size of the actual storage space, but the identity of the standard partitions of different sizes.

Consensus Incentive: The speed of mining in CCDN is not constant. It is determined by the degree of participation of the overall network. The speed of standard space generated per minute is $1/524288$ of the total effective storage space of the whole network. When the effective node participation amount reaches 1EB, the discovery speed of the new block is raised to the limit, and the mark of 2048G space can be set at the earliest minute, and the corresponding CCC reward per minute reaches 2048. The speed of the discovery block is directly proportional to the total network storage space. For example, if the storage capacity of the entire network node is only 1G, then a standard block can be generated after 524288 minutes, and a CCC reward is obtained.

Under this kind of consensus design, every standard space of CCDN needs to run continuously for 364 days in order to obtain the standard reward with the same mark of its own space capacity,

ensuring the stability of CCDN effective space for up to one year. After the reward stops, the miner continues to receive storage fees.

5.2、 Flow excitation algorithm

The number of CCCs flow obtained by a node per day is B:

B = The flow of the node in the whole network accounts for the proportion of the flow to the whole network. * The stability coefficient of the flow.

Flow mining does not enjoy the discovery of block rewards, but transaction fees can be obtained. The flow handling fee and the storage fee form a proportional relationship, initially set at 0.01, and further adjusted according to the actual resource utility.

5.3、 Accounting and rental storage space

The number of CCCs obtained by each storage node for storage account and rental space is C:

C = The fee that users pay for using storage space on CCDN.

The content stored by the user in CCDN is distributed under the system algorithm and stored in the storage space of different hardware. The possibility of the storage space being used is related to the total space capacity, the effective days of the disk, and the online stability. While the content is being stored in space, the owner of the corresponding account will receive a CCC reward.

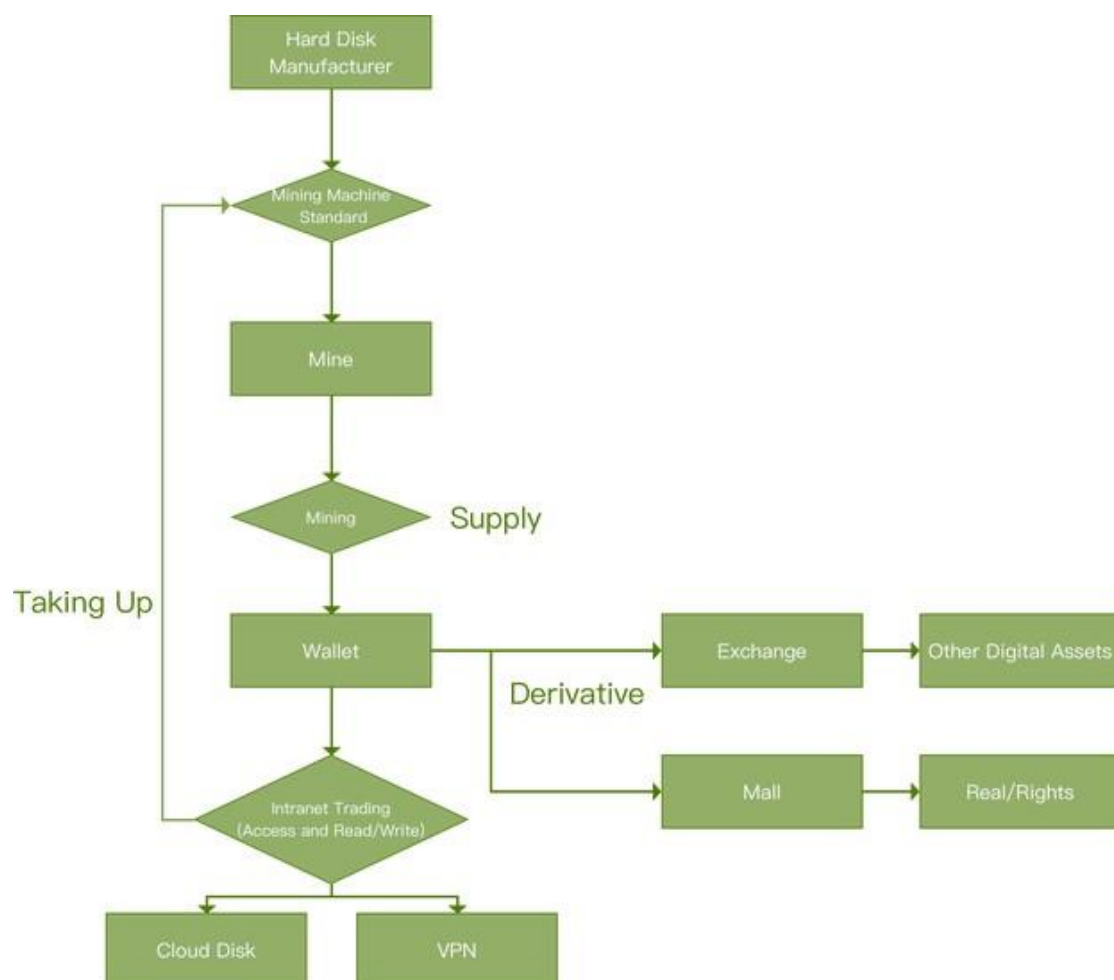
5.4、 CCDN cleaning mechanism

CCDN has targeted the problem of resource waste caused by account loss; every 524,288 minutes, the entire network account will conduct a round of statistics, there is no account for any transfer out of the current round, the CCC of the corresponding account will be cleared. This part of CCC will become the future mining incentive. The incentive speed is consistent with the mining mechanism. From 1 GB per discovery, 1 CCC will be awarded to continue the reward until the total CCC reaches the maximum.

CCDN will also adjust the parameters such as the ratio of daily storage capacity, historical storage capacity ratio, and future development ratio of each node. When the network has insufficient capacity, it encourages more nodes to join the storage network to enhance the capacity, thus promoting and guaranteeing the healthy and stable development of the project.

6. Economic Model

CCDN is a comprehensive ecosystem based on physical storage services. According to the service module, it can be divided into the following parts: mining machines, cloud storage, node relay, mining farm, wallet, exchange, digital mall. CCDN provides public services including technical support, participants can use CCDN for transaction and business applications. The CCDN participants purchase and transfer storage equity certificates, and support the platform's storage and node service capacity expansion via mining.

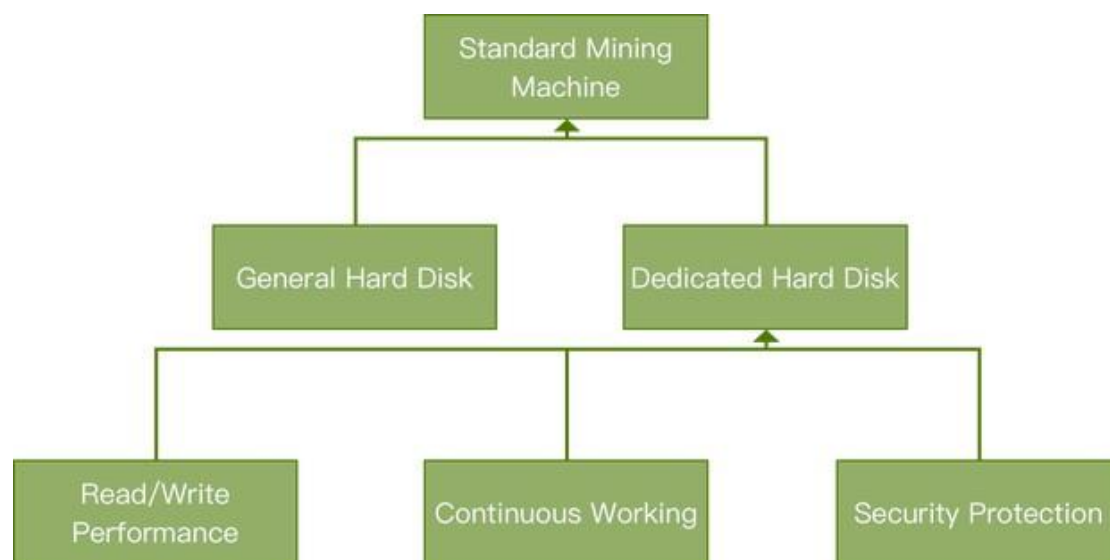


CCDN is designed to be a deflation model, in which application consumption mechanism and evaluation mechanism is employed to maintain the healthy development of the CCDN ecosystem. The discovery reward for the standard block will be completed within 15 years. After that, the CCDN business will be supported by the transaction, cloud disk service and node relay service. At the same time, CCDN's intelligent storage solutions will continue to be optimized, including cloud

site services, promotion and search services, and pan-media storage access services. The current businesses are illustrated as follows:

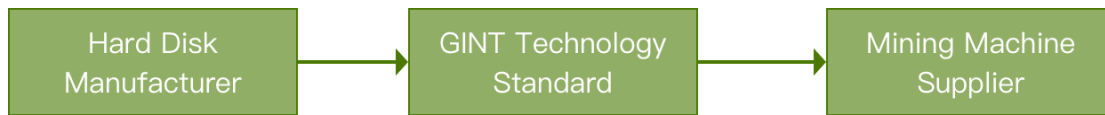
6.1、 Formulating the standard of the mining machine

The mining of CCDN is essentially a standardized storage space process. Similar to Bitcoin's computing power, CCDN requires the storage capacity of the hard disk. CCDN cooperates with mainstream hard disk manufacturers to create a hard disk that is easy to standardize, and has excellent storage and reading efficiency as a mining machine in a mature hard disk design. It can quickly form a block with the support of standard network bandwidth.



The CCDN customized hard disk has been comprehensively upgraded in terms of basic read/write performance, fragmentation acceleration, continuous working capability and security protection, ensuring the performance, stability and security of the mining machine service in CCDN. The general hard disk can also join the network to become a mining machine, however, because the corresponding quality of the general hard disk has a larger gap than the customized hard disk, the mining efficiency will be compromised.

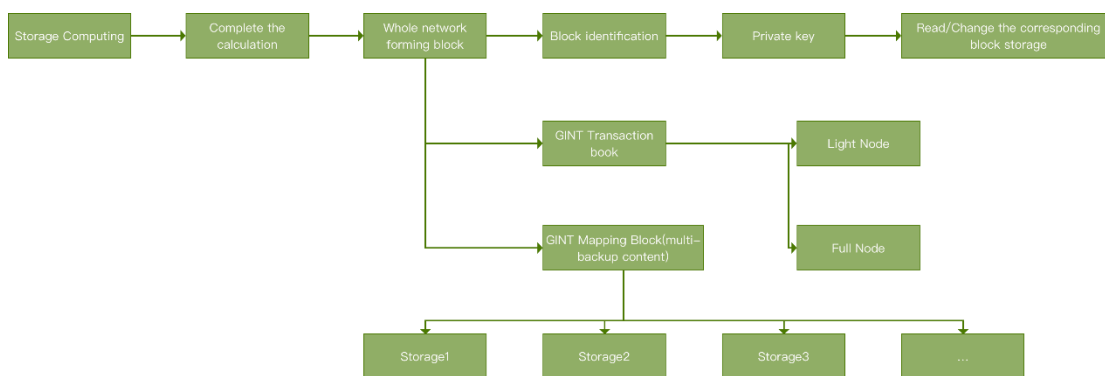
The production of the CCDN mining machine has advanced the technological innovation of the general standard of storage hardware. Compared with the special calculation of the bitcoin mining machine, the CCDN mining machine makes full use of resources and supports diversified businesses. As the standard improvement of storage hardware does not consume too much power, CCDN is a very energy-saving and environmentally friendly blockchain service.



After accepting the technical standards of CCDN, hard disk manufacturers can provide standardized mining machines. At the same time, hard disk manufacturers' hard disks can have more application models, with mature technology and more stable supply chain.

6.2、 Cloud storage service based on standard mining machine

After having a standard hardware standard, the standard blocks generated by mining constitute the basic business service of CCDN and cloud storage.



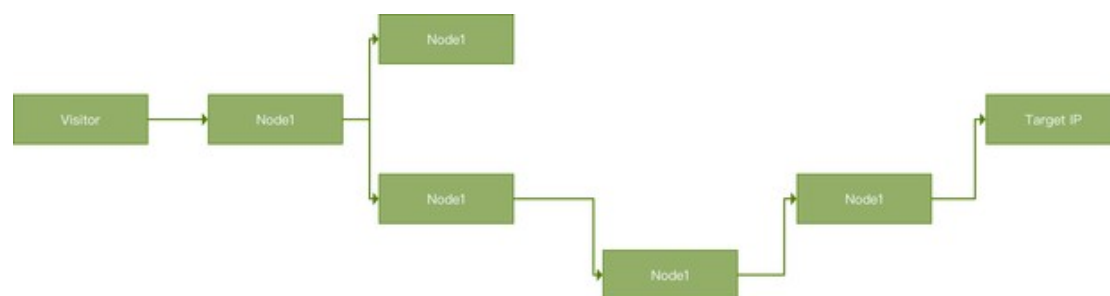
Storage mining is equivalent to establishing a standard block of storage space and using storage space in the CCDN network. For the participants who provide hard disk for mining, in addition to forming storage space in its own hard disk, the mirror of the storage space is also generated in multiple backup nodes of the network, which ensures the security and non-tamperability of the storage content after excavating the block. Users who have CCDN can operate this part of the storage space by paying CCDN and read and write at the same time. The more the storage space provided in the network, the more space the user can store. As the continuous access to the content storage, the block needs to consume the CCDN, hence providing the storage space is economically compensated and forms a good business ecology.

According to the principle that high-quality content should correspond to the quality standard, those frequently accessed content will be optimally distributed in the system to a stable hardware environment (including hardware stability and network stability), so that after the standard block is mined, CCDN users who provide storage space on the network can not only get financial

compensation, but also get corresponding access payment rewards according to the size, stability and network status of the total storage they provide.

6.3、 Private node relay service

People with a large number of mining machines will gain the advantage of mining, and at the same time CCDN offers many individuals the opportunity to gain a lot of revenue. The mining machine stays online while it is running. There is an IP address in the Internet to correspond. Having an IP address means that the node can provide jump services for various types of communication. Such network nodes in CCDN are mainly composed of personal home mining access points and mobile access points. Due to the centralized characteristics of mining machines in large mining farm, IP often has only one external export and is not suitable for providing dynamic jumps. At this time, a large number of personal nodes in the CCDN node network become providers of relay services, and individual users obtain corresponding incentives by providing jumping channels. The CCDN user can jump access on each node by paying CCC, and eliminate the access trace after the access is completed.



CCDN Node Cloud

Each user can provide their own idle network bandwidth and a small amount of storage space for the relay node of the VPN. The entire CCDN node service is decentralized, which improves the security of users' internet access and gives individuals effective privacy protection. Compared with existing VPN service providers, the CCDN node network is more stable and has more coverage capabilities (supporting mobile devices as Node), therefore CCDN can provide a real decentralized secure network service.

6.4、 Wallets and assets

CCDN has its own standard wallet solution, including online wallet and offline wallet. Users can easily access the wallet using web pages, apps or hardware cards/USB sticks, and use the assets in their wallet. The CCDN uses a valid active tag for the wallet compared to the case where the bitcoin private key loss results in permanent loss. The CCDN will record the activity level of the wallet address in use. If the activity information does not appear in the whole network for more than certain time, the CCC in the wallet will be completely destroyed and the whole network will be notified, and become the amount of subsequent mining awards. In any case, the total amount of CCC in the network does not exceed the maximum constraint value.

Each wallet corresponds to an address whose attributes include the public key, private key, balance, and latest active time.

After participating in the mining, the user first finds that the address of the new block is obtained by CCC and is stored in the wallet balance. The user uses the assets in the wallet to conduct the transaction, and obtain/maintain the right to use the CCDN network. One can also buy and sell on the exchange, and exchange to other items in the mall.

6.5、 Digital asset exchange

In the CCDN ecosystem, the corresponding exchange has been established to trade CCC, and it is also convenient to exchange CCC with other digital assets. The Digital Asset Exchange provides cross-chain liquidity for CCC and acts as a financial stabilizer in CCC.

BitAmex is a high-performance, secure, multi-language support, multi-platform client-supported digital asset trading platform under the CCDN ecosystem.

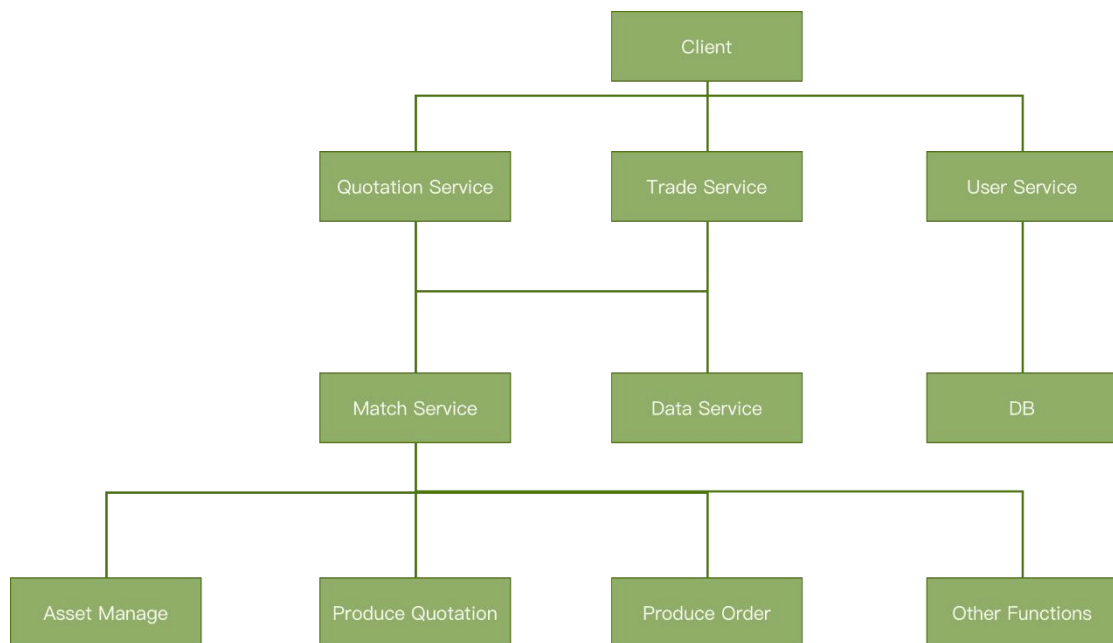
1. High performance: The trading system adopts memory matching technology, and the order processing speed is up to 100,000/second. It can guarantee the order processing without any delay and stagnation, and can support up to 500,000 simultaneous online users.

2, Security and stability: we use multi-layered, multi-cluster system architecture digital asset trading platform. The design of the multi-layer architecture improves the performance, security and stability of the system.

3, Multi-language support: currently supports English, Chinese-simplified, Chinese-traditional. Subsequent support will include other languages such as Japanese and Korean.

4, Multi-platform client support: IOS client, Android client, follow-up will gradually support Window, Mac, WeChat, Web.

The business structure diagram is showed as follows:



The CCDC-operated exchange supports mainstream digital currencies such as BTC, ETH and ERC standards, EOS, etc., while CCC is also on the line in more exchanges to improve liquidity in different regions.

6.6、 Digital mall

CCC can not only be used for exchanging other cryptocurrency, but also cooperates with the digital mall to exchange various financial and physical products.

Linkbuy is an e-commerce ecosystem based on blockchain technology in the CCDN ecosystem to create and build a decentralized business. Linkbuy connects digital assets with the value of physical business, and combines powerful offline experience services with efficient blockchain internet finance to provide more efficient and valuable smart services for businesses and merchants. As the blockchain commercial services, Linkbuy supports the following functions:

Support for digital asset payment: Users can use the digital assets to deduct all or part of the amount deposited in the mall, thus realizing the extension of the digital asset offline consumption scenario.

Shopping rebate: users can generate digital consumption rebate in the mall to stimulate further consumption.

Invitation rewards: users can invite others to register to receive rewards for digital assets, which can motivate users to develop more participants autonomously.

Supporting marketing: the mall record the user's consumption browsing data on the blockchain and cooperate with the data marketing company. Users who use the data can also get rewards for digital assets.

Trusted product review: record the user's product review data on the blockchain, where the product review data is not tamperable and authentic.

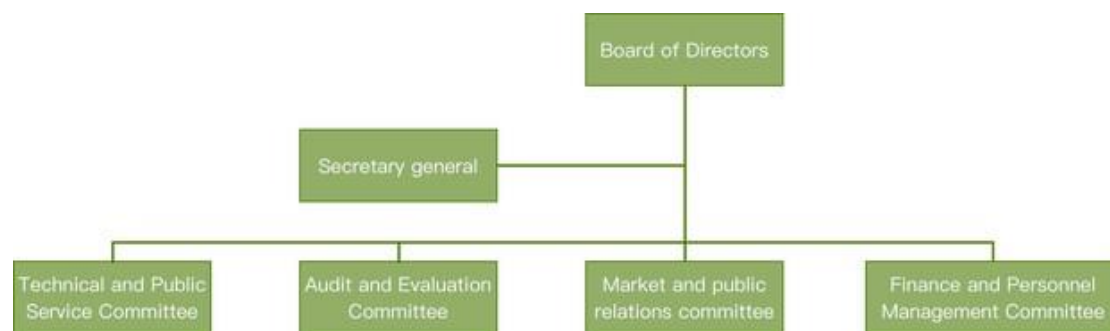
7. Roadmap

- 1) 2019.06: The first business user supporting the CCDN platform – a P2P company signed the cooperation agreement with CCDN
- 2) 2019.08: The first standard mining machine goes online
- 3) 2019.09: Stable version of the mining machine goes online and signs cooperation agreement with the hard disk manufacturer
- 4) 2019.10: Access to 1024 nodes worldwide
- 5) 2019.12: Access to 10000 nodes worldwide
- 6) 2020.01: CCC enters the exchange
- 7) 2020.03: CCC enters the digital mall

8. Governance Structure

CCDN ecological governance is multi-agent cooperative, including technical support, cloud disk and VPN business, mining machine standard setters, exchanges, and shopping malls. CCDN's technical support uses the Foundation's structure, and the Foundation is the standing management body established by the project's founding team. As an independent non-profit entity, the Foundation is responsible to the CCDN community to promote and develop the CCDN ecosystem as its primary goal.

The organization chart of the Foundation is as follows:



CCDN Foundation

Board of Directors: The decision-making body of the Foundation, whose functions include nominating and voting executives (Secretary-General) and heads of various functional committees; making important decisions; holding emergency meetings. The members of the Board of Directors and the Chairman shall serve for a term of two years and the term of office of the President shall not exceed two terms.

The members of the first CCDN Foundation Board of Directors are selected from the following groups: core team, partners and consultants with rich experience in the industry and mine representatives. After the ecological operation is mature, the corresponding personnel will be added to the board from the platform third-party service providers and other ecological participants, so that the board members can represent the interests of the vast majority of members.

Executive (Secretary-General): The highest responsible person of the Foundation's administrative affairs, unified guidance and coordination of daily operation management, technology development,

market development, community maintenance, public relations, etc. The Secretary-General is elected by the Council and reports regularly to the Council.

Technical and Public Service Committee: composed of technical teams in the CCDN team, responsible for technical development and decision making, underlying technology development, open port development and audit, technical patent development and auditing, etc.; Provide public services such as trading market integration, tools maintenance, and reliable consulting and screening. In addition, members of the committee regularly learn about the dynamics and hotspots of the community and industry, communicate with community members, and hold technical exchanges from time to time.

Audit and Evaluation Committee: consists of financial analysts and experienced media practitioners. Responsible for assessing the value and feasibility of the platform user after the application for derivative issuance, and provide corresponding guidance. In addition, it is responsible for the final review of controversial news information before the establishment of a mature news arbitration mechanism.

Market and Public Relations Committee: Ecological development and community building have always been the core work of CCDN. Under the supervision of the Finance Committee, this committee will use the initial capital and digital assets income from community operations to carry out marketing and business cooperation to motivate top trading experts. Third-party service providers enter the platform to attract more users into the ecology and promote ecological sustainable development. At the same time, the committee will also be responsible for all external publicity and public relations operations.

Finance and Personnel Management Committee: responsible for the use and review of foundation funds, personnel recruitment and compensation management, and daily operating expenses management.

9. Team Profile

The CCDN team consists of a technical research team of 30 people and a product operation team of 20 people. The team has experience in product design and development in computer software system, blockchain technology, data storage, big data algorithms, artificial intelligence. The team leaders are master of mature technology and advanced R&D management processes.

7.1、 Core team members

Loris.W: Founder, Doctor of Computer Science

Senior experts in blockchain technology and ecological operations led the design and development of multiple blockchain and digital currency business products including public chain, exchanges and payment.

Ricky.Y: Doctor of Computer Science

Software technology expert, senior blockchain technology development and large storage architecture solution expert.

Joel.Z: Advanced Blockchain R&D Engineer

Proficient in a variety of public, private chain technology and wallet technology.

Bruce.H: A well-known American scholar, mathematician, and statistician.

Big data and complex algorithm experts, proficient in big data analysis and complex financial model algorithm design.

Bill.C: Has extensive experience in blockchain enterprise applications and eco-design, and has participated in and operated multiple blockchain projects.

AMC Foundation Ltd.: The AMC Foundation was established in Singapore in 2018 to focus on asset management projects and assist related project parties in the issuance of asset passes. These projects include agricultural products, precious metals, life sciences, equity products, and quantitative products. Most of these projects continue to operate. AMC focus on the economic model design of the project and the defoaming of non-performing assets.

10. Appendix

Glossary

Transaction: In this paper, transaction is a computer term. It does not refer to transactions in the business context. It is only because of the customary translation in the context of blockchain. For "transactions", this article follows this habit.

Virtual Machine: In this paper, it refers to state machine technology, rather than the so-called virtualization technology (such as VMWare), which is the operating environment of the programming language of smart contracts.

Distributed: A distributed system is a system of computer nodes that communicate over a network and coordinate to work together to accomplish common tasks.

Consensus Mechanism: Consensus is a process in a distributed system that implements data consistency and agreement on a proposal across all nodes in a network involving multiple unreliable nodes.

GDFS: CCDN underlying file storage system

CCDN: Cloud Crypto Disk Network

CCC: Crypto Cloud Coin

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