Technical Overview of the Cwd.Global Blockchain Platform

Technology Stack

Cwd.global is a public, decentralized, open-source blockchain platform.

Blockchain is based on a fast, modern, democratic DPoS (Delegated Proof of Stake) consensus, allowing each user of the platform to vote with their funds for a witness node that handles the verification and assembly of blocks.

Each user can build their own witness node using the open source code and configure it.

The open source code of the project is freely accessible on GitHub at https://github.com/crowdwiz-biz/crowdwiz-core, where everyone can study the source codes of the core and check all the algorithms of the blockchain.

The core of the blockchain is written in the C++ programming language. User applications can be written in virtually any programming language that supports websocket. Programs written in C++ are the fastest and, when combined with the DPoS consensus algorithm, they allow the blockchain to perform up to 100,000 transactions per second. A block is created every 5 seconds.

As in any blockchain, each new block contains a cryptographic link to the previous one, thus eliminating the possibility of falsifying historical data.

Interaction with the blockchain is through an API that uses websocket technology to exchange messages in JSON format. The clients of this API can be any applications that support websocket technology, including web applications (the main example is the website cwd.global, which runs entirely in the client's browser, without its own back-end server, and communicates directly with blockchain nodes that users can choose themselves), custom applications written in Python and C++ (as there are ready-made libraries and source code examples available for them).

The guarantee of any blockchain operation is the crypto-algorithms that are used for transactions. Cwd.global uses algorithms that are currently the standard for the crypto-industry, i.e. ECDSA Secp256k1, which are used to generate public and private keys, as well as to sign and verify transactions. Due to the use of public and private key mechanism, users are always in control of their own funds, and it is impossible to gain access to a user's account without their private key.

The cwd.global blockchain is built according to the principle of typed smart contracts (referred to as "transactions" in the context of the platform), i.e. the blockchain core contains pre-programmed typical transactions that can be performed by the user (currently, more than 120 transactions). If the community decides that any new functionality is needed, the blockchain core is upgraded (via hardfork), and then the community votes for those production nodes that supported this change and moved to the new version of the core.

Blockchain Nodes and Decentralization

The server where the blockchain core runs has different names and is most commonly called Witness, but also the node or the blockchain node.

All nodes form a fully connected peer-to-peer network. By its architecture, the blockchain core is a noSQL database and communication interface. That is, the core receives a transaction from the client as a JSON object, checks it, and if it is correct, sends it to the nodes with which it is linked, and the nodes that received the transaction also check it and send it to the nodes with which they are linked.

Each blockchain node keeps a complete copy of the blockchain, which is reconciled with the other nodes through a consensus algorithm so that the blockchain copies on each node are identical. This is how technological decentralization is achieved.

We should note that there are several kinds of nodes and each server performs one or more functions:

- Seed-node is a node that informs nodes about other nodes. All witnesses are seed-notes by default. Each witness is connected to another witness in the network, and they exchange information about blocks and transactions between them. As soon as a new witness connects to one of the active nodes, such node communicates information to it about other active nodes in the network, and the witness connects to them as well.
- API-node is a witness that can be an API server and provide information to clients. It stores the history of transactions for different clients, and also prepares data for clients. In addition, clients transmit their transactions to the crowdwiz network via the API nodes. API servers are flexible enough to be configured for different needs and can serve as a basis for writing different robots or services. They can be public or private.
- Block-production node is a witness that produces blocks.

When someone deploys a new blockchain node, it connects to one of the seed nodes, which informs it of the other nodes, and then the new node connects to those nodes and downloads its own copy of the blockchain from them. This process is called "node synchronization". When the history is downloaded, all transactions and operations are also verified.

Functionality Overview

Cryptocurrency

For a blockchain to function in a decentralized manner, the people who ensure its operation must be motivated to maintain their servers. This is usually done through cryptocurrency mining mechanisms to pay a reward in cryptocurrency for building blocks.

The cwd.global blockchain also has a base cryptocurrency, CWD, where "base" means that no one can influence its issuance, and issuance is done according to the rules contained in the blockchain core. Currently, the blockchain pays rewards in the base currency to the nodes for building blocks. Besides, it pays rewards for staking (freezing its own funds for a certain period of time to take them out of circulation and create a deficit).

In addition to the CWD base currency, the cwd.global blockchain also has another base cryptocurrency, GCWD, which is essentially shares of the platform. Dividends accrue in the name of a GCWD holder in the form of a portion of the fees that users pay for transactions. No blockchain transaction can be free, it is a prerequisite in order to control resource consumption. Whenever a transaction fee is paid, a part of it is consumed and can later be paid out as a reward to block assemblers – some parts are allocated to GCWD, some are distributed through referral programs of the system.

Accounts

Registration of new users takes place through special registration servers which do not store the user's private keys. Each user can deploy their own registration server, but it needs at least one active account to operate. This approach allows the use of human-readable account names instead of wallet addresses (as in many blockchains).

In the future, if users wish, this approach can also be used to register verified accounts and implement a KYC technology (but, unlike centralized exchanges, the key will still always belong to the client), if required by law.

A multilevel multisign system using weights and thresholds can be used to manage the account. That is, in order to make a transaction, it must be validated by several other accounts. In addition to increasing security, this is a good basis for creating workflow and financial management systems.

A system of user contracts (a contract is a sort of an account status) is also implemented on the platform. At the moment there are 4 types of contracts, each extending the basic functionality of the account to a certain extent.

Since an existing account must be specified as a referral account to register a new account, the platform is an ideal tool for creating network/referral marketing systems. Moreover, the core of the system already includes a referral mechanism for distribution of transaction fees.

Also, each account has at least 3 different types of key pairs, one of which is responsible for data encryption. This functionality enables an exchange of encrypted messages that can only be read by the sender and the recipient.

Basic Transactions

The basic transactions of any blockchain typically involve transferring assets from one account to another. The cwd.global blockchain supports simple transfers, transfers with encrypted comments, bulk payouts, blind transfers (more anonymous than regular key-to-key transfers and not requiring any account linked), and arbitrage transfers.

Decentralized Exchange

One of the main functions of the platform is a decentralized exchange (DEx), an exchange that does not require trust in brokers/traders and other intermediaries, where all the quotes are the result of users' actions and cannot be faked. In a decentralized exchange you always manage your own funds, the blockchain guarantees the execution of transactions with your assets. Decentralized exchange is part of the blockchain core functionality. The cwd.global blockchain allows you to issue your own custom tokens, and the moment a custom token is issued, it automatically becomes available for purchase and sale on the decentralized exchange. Thus, the platform not only allows to issue custom tokens, but also to conduct ICO/ITO, placing your assets on DEx. Any platform user can trade on the decentralized exchange.

Decentralized P2P Exchanger

A unique world-class functionality is a decentralized P2P exchanger embedded in the blockchain. This functionality allows users to exchange other cryptocurrency or fiat money for basic CWD cryptocurrency. Every user of the platform can become an exchanger, post an ad and earn from the difference in buy/sell rates. Transaction integrity for both participants is guaranteed by the smart contracts of the blockchain core.

Proof-of-Crowd Staking

Every 90 days, the platform votes using smart contracts for the staking reward percentages for the next 90 days. The community votes for the desired percentages, and then the platform removes the extremes and calculates an average value which is fixed in the blockchain. Then the assets can be submitted to staking (to be frozen for a certain period) and receive a community-defined reward. When voting, people understand that if the interest is too high, issuance will increase and the value of the underlying asset may decrease; if the percentages are very low, no one will use staking.

Other Financial Instruments

The cwd.global platform also has other financial instruments, one of which is **credit**. A user can take a credit from the platform, and it will be automatically repaid from the user's referral fees. Also very popular is the **collateral** mechanism that allows to borrow and give one currency against the collateral of another currency for a predetermined period of time and at a predetermined fee. There is also a **vesting** mechanism that allows to freeze any tokens on the platform for a certain period of time with various unfreezing options. This mechanic is often used in various affiliate products.

Decentralized Gaming Zone

The cwd.global platform has several decentralized gaming products, where the blockchain itself acts as the random number generator, thanks to a unique development called "Block From the Future". This technology enables decentralized generation of identical random numbers on different nodes. The result is determined as honestly as possible, transparently and without human involvement. All games in the gaming zone are smart contracts of the blockchain core. At the moment, the games include Drawings, Heads or Tails, and Matrix. Importantly, on the platform you always play with another user, everyone has the same rights and opportunities, and you cannot play against the platform. The smart contracts of the platform act as a guarantor.

Self-Development and Self-Management

There are various technical parameters of the cwd.global platform such as fee size, witness remuneration, block build time and a number of other parameters that can and should be revised from time to time. Changing such parameters is the responsibility of an elected committee which forms proposals to change the parameters, and then a majority of that committee must vote on the proposed change.

Like everything described above, honesty and transparency of voting is guaranteed by blockchain.

There is also a built-in mechanism to reward the most active users of the platform, those who bring the most value. There is a special game mechanic called the Big Race, whose participants receive prizes for developing the platform, and the winners of the race become Apostles, they receive funding from the blockchain which they allocate to its further development.

There is also a worker mechanism: the platform has a budget that it allocates to its own improvement, meaning someone makes a proposal to improve the platform and determines the necessary budget, and if the community votes for that proposal, the platform pays out that reward.

Due to these features, users are interested in both technological and economic development of the platform, and all decisions are made in a decentralized way by the entire community.

Off-Chain Development

Since all interaction with the cwd.global blockchain platform takes place via an API interface and keys are used as authorization mechanisms, any user action can also be reproduced by various bots. This opens up a huge field for automating any processes on the platform, from developing exchange or gaming bots to creating analytics systems, automation and integration with the Internet of Things. The platform can also be used as a payment gateway for any business: even now the platform is used by dozens of affiliate services. It is possible to store and transmit data through secure communications and enable the interaction of people, programs and things around the world.

Plans for Platform Development

Decisions to develop the platform are made by the community, but in the meantime, a development team needs to be found to make these changes to the code of the core. Currently, research is underway in the areas of cross-chain exchanges (cwd.global will allow transferring tokens between other blockchains, such as Bitcoin, Ethereum and others), and the development of the DPoS consensus algorithm towards even greater decentralization is also discussed. Besides, the implementation of NFT functionality is also possible.