

PLAN Blockchain

2020

White Paper ver 1.0

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1. Introduction

All sensational and revolutionary components of the Bitcoin protocol and the ideas underlying it, in general, were known until 2009. But it was the Bitcoin creators who managed to bring everything together and make it work, and it was in 2009. The authors of the cryptocurrency idea wanted to make an innovative means of payment that will be flexible, without the need for a trusted third party like a bank or governments, available everywhere and easy to use. The creators of Bitcoin had a task: to make it functional upon condition that the system is decentralized, nobody trusts no one, and they have done it. Cryptocurrency is functioning!

In order to enjoy massive popularity, virtual money must be not only convenient, but also secure. No one is interested in a currency that is easy to hack, or that can suddenly «die» when it becomes uninteresting to its creators. To prevent this from happening, use the decentralization of the network.

a. Decentralization

Decentralization of cryptocurrency is the dispersal of its main resources (data) around the world, with multiple duplication for preventing their loss. The data chain (blockchain) is not kept on some main server, but is located on many computers of users around the world.

b. Proof-of-Work

Mining is the process by which individuals, groups or companies use powerful computers to solve complex mathematical equations to validate blocks of transactions. These math problems are a part of the encryption process that protects transactions from hackers and third-party access. The first one who successfully solves the problem and signs the block of transactions receives a reward. Along with a large BTC has many advantages and disadvantages, and here are some of them:

The constant complication of the mining process, in which the amount of reward for each new block decreases. This requires constant increasing production capacity in order to receive relatively stable profits. Millions of computers verify the same transactions according to the same rules, perform identical work, write the same thing to the blockchain, and keep the entire history for all time, same for everyone.

Deficiency of SMART contracts. Bitcoin's blockchain does not allow setting conditions for making a transaction in a new block, since it only contains information about the transaction itself.

2. Smart-contract

The principle of smart contracts was described by the American cryptographer and programmer Nick Szabo back in 1996, long before the development of blockchain technology. According to Szabo's concept, smart contracts are digital protocols for transmitting information that use mathematical algorithms to automatically execute a transaction after meeting specified conditions and full control process. This definition, which was more than ten years ahead of its time, remains accurate to this day. However, in 1996 this concept could not be implemented: at that time the necessary technologies did not exist as the blockchain. Nevertheless, the development of technology served as an impetus for the development of smart contracts

3. Ethereum

Ethereum is a global open source platform for decentralized applications. Therefore, when it comes to the Ethereum, first of all, we are talking about the platform, and only secondly about the cryptocurrency. With Ethereum, you can write world-wide digital data management programs that work exactly as intended. The Ethereum blockchain platform made it possible to use smart contracts in practice. The market today offers many platforms that allow the use of smart contracts, but Ethereum remains one of the most widespread.

The innovative solution moved Satoshi Nakamoto's blockchain on the second place, provided Ethereum with unprecedented popularity. Due to the ease of enforcing smart contracts, Ethereum has become the main platform for ICOs, the number is growing from year to the next. Although it all looks like a successful story, brand awareness did the dirty on Ethereum. Since Ethereum was the main ICO platform, the number of transactions and operations on the network grows daily, which exposes its main problem - the lack of productivity. In addition to numerous ICOs, the load on Ethereum is also provided by the developed decentralized applications (DAPP), and its own domain name service (ENS). The bandwidth issue makes the future prospects of the network rather hazy - more and more contracts are being executed, and a dramatic increase in productivity is needed to keep them running at full capacity. (Bandwidth of nodes)

a. POW-POS

With the transition to the new version, an Ethereum bandwidth will increase gradually. Initially, the developers will improve the scalability of the data, and then they will work on improving the value parameter for general computing.

ETH 2.0 (also known as Serenity) refers to the next major update to the underlying Ethereum protocol. It brings together some improvements to the basic Ethereum protocol (level 1) and the transition to Proof-of-Stake

b. Proof-of-Stake

Proof of Stake represents a class of consensus algorithms in which validators vote for the next block, and the weight of the vote depends on the size his rates. This is considered an improvement over Proof of Work (PoW) due to lower power consumption, reduced centralization risks, 51% protection against various types of attacks, and many others.

c. Advantages

What kind of advantages has PoS of PoW?

- It does not need to consume a lot of electricity in order to secure the blockchain.
- Due to the lack of high requirements for electricity consumption, there are not many new coins to be issued to motivate participants continue to participate in the network
- Proof-of-stake opens the door to a wider range of methods using game-theoretic mechanisms to more effectively discourage the formation of centralized cartels.
- Reducing the risks of centralization.
- Ability to use economic penalties to make various forms of attacks 51% significantly more expensive than Proof of Work. To paraphrase Vlad Zamfir, «your ASIC farm burned down if you participated in the attack by 51%»

There are many kinds of consensus algorithms and many ways of assigning rewards to validators that participate in the consensus algorithm, so there are many varieties of PoS. However, from an algorithmic point of view, there are two main types:

Chain-based PoS and BFT style. In BFT-style PoS, validators are randomly assigned the right to propose blocks, but agree which block is canonical is carried out through a multi-stage process, when each validator sends a «vote» for some

a specific block during each round, and at the end of the process all validators constantly agree if any given block is part of chains. Please note that blocks can still be linked to each other; the first key difference is that block consensus can come within one block and does not depend on the length or size of the chain after it.

4. Inevitable development

Having considered the leading blockchains, I propose to highlight the fundamental theses that are an integral part of the development of modern cryptocurrency:

- Decentralization, as the process of distributing power, finance or effort without the intervention of a global governing body
- Scalability, as the ability of the blockchain to cope with the influx of a large number of transactions at one time.
- Smart contract as a instrument of making and (or) executing a transaction.
- Democracy as a fundamental principle of honesty and openness embedded in the development policy of the blockchain.
- Safety,
- Simplicity and availability.

Now that we know the main vectors of development of the world leading cryptocurrencies, and those modern solutions to which they resort. And now let's move on to the PLAN Blockchain.

5. PLAN Blockchain powered by Cosmos SDK & Tendermint

a. Cosmos

The most progressive technology of the year is Cosmos and the Cosmos Network ecosystem «Global blockchain network» in which different systems can directly exchange their tokens. On the network, this phenomenon is called Blockchain 3.0 and it is on this modular framework Cosmos SDK and Tendermint developed the PLAN blockchain.

Let's move on to a more detailed study of the Cosmos SDK, Tendermint and DPoS-mining.

b. Tendermint

Byzantine Fault Tolerant (BFT) protocols are another class of consensus protocols. The term «Byzantine» was used because of the similarity of the problem faced by the generals of the Byzantine army, who tried to coordinate their actions to attack Rome, using only message deliverer, where one of the generals may be a traitor.

Tendermint is a Byzantine fail-proof consensus algorithm. Byzantine falls are some kind of malicious actions. Unlike Nakamoto consensus where the chain with the most work is chosen, in Tendermint the chain is chosen where 2/3 of the network participants voted for the block.

High level of security

High performance speed (up to 1000 tr / sec.)

Scalability

Availability in use

Tendermint BFT is an application-independent «consensus engine» that can transform any deterministic application to distributed blockchain replication. Connection to the blockchain application is used by the Application Blockchain Interface - an interface that defines the boundary between the blockchain engine and the final application.

c. Delegated Proof-of-Stake (DPoS)

DPoS - Delegated Proof of Stake. The Delegated Proof of Stake (DPoS) Agreed Algorithm was developed by Daniel Larimer in 2014, and is one of the varieties of the POS algorithm.

(DPoS) is an algorithm by which distributed nodes in a network agree on a data item, in which a certain node (validator) gets the right to add a new block to the chain.

In DPoS, holders of a stake in the system can choose validators who will vote on their behalf. All nodes produce blocks - one at a time at a time - on a cyclical basis. This prevents the node from publishing consecutive blocks, thus preventing it from performing double spend attacks. If the validator does not produce a block in the allotted time interval, then this time interval is skipped and the next validator produces the next block. If the validator continually misses its blocks or publishes invalid transactions, then it is fined and the holders of the stake vote against him and replace him with another validator.

The main advantages of the DPoS algorithm are:

- Shareholders have the ability to delegate their votes without transferring the balance itself.
- Holders of balance sheets have the opportunity to receive additional income from their ownership,
- Minimizing the costs of supporting the Blockchain network, reducing the amount of «unnecessary work» when choosing the next voter.

6. PLAN Blockchain

PLAN blockchain powered by Cosmos SDK and Tendermint

The PLAN blockchain is created and developed by a very large team, where each member of the community contributes to the creation of a modern powerful and secure ecosystem, the development prospects of which are simply endless. The team has tremendous experience in creation and implementation of a large number of programs, ideas and projects, where the ideology of development is closely intertwined with such concepts like honesty and openness. According to this ideology, a partner not only can but must enter. And only with this approach can we talk about the long-term perspective of work and development.

To implement all programs and projects, you need a reliable, modern and high-quality tool, the development of which will go to keep up with the times, use all the technologies and innovations of the modern blockchain world. That is why PLAN Blockchain is powered by Cosmos SDK and Tendermint.

a. Advantages

- Decentralization as the process of distributing power, finance or effort without the intervention of a global governing body.
- Scalability, the ability of the blockchain to cope with the influx of a large number of transactions at one time, more than 1000 t / sec
- Smart contracts as a means of making and (or) executing a transaction through the Cosmos Network and the Cosmos Hub.
- Democracy as a fundamental principle of honesty and openness embedded in the blockchain development policy through voting.
- High level of security.
- Simplicity and ease of use.
- Open source on GitHub

b. Mining

The economic model of the PLAN blockchain is such that every coin user has the right to receive a reward in the form of additional coins.

Option 1. A validator is a node that is involved in maintaining the network and creating blocks. With honest work, such a node receives a part of the reward from the 1. commissions that were collected from those transactions that were included in the block.

Option 2. A delegator is a network participant who delegates his coins to the validator (but does not transfer the right to own them) thereby voting and adds its coins to the validator stack, sharing the block creation reward with it.

Option 3. PoS mining - The most interesting part of the PLAN blockchain participant reward.

Personal wallet coins		Referrals' wallet coins		Number of days since the last transaction	
Number of coins	Growth of number of coins per day, %	Number of referrals' coins	Multiplying factor	Days	Extra factor
1+	0,08	0+	1.0	0+	1.0
100+	0,11	10 000+	1.9	30+	1.6
1 000+	0,12	100 000+	2.2	90+	1.8
10 000+	0,14	1 000 000+	2.4	180+	2
100 000+	0,16	10 000 000+	2.6	270+	2.2

7. Supplement

<https://docs.ethhub.io/>
<https://github.com/cosmos/cosmos/blob/master/WHITEPAPER.md#appendix>
<https://github.com/tendermint/tendermint>
<https://cosmos.network/intro>
<https://cosmos.network/sdk>
<https://hub.cosmos.network/master/hub-overview/overview.html>
<https://www.homeonrails.com/>
<https://docs.tendermint.com/master/spec/consensus/consensus.html>
<https://medium.com/cosmos-russia/>
<https://blog.cosmos.network/tendermint-explained-bringing-bft-based-pos-to-the-public-blockchain-domain-f22e274a0fdb>
<https://smart-contracts.ru/cosmos.html>

Consider this version of the White Paper as White Paper ver 1.0 which will be supplemented and refined as the PLAN Blockchain is updated.

The perversion, substitution or forgery of the basic concepts and fundamental principles laid down in the PLAN Blockchain is excluded.