DYNAMIC • NEW • ADAPTABLE

Whitepaper

ver. 1.41 ENG

DYNAMIC • NEW • ADAPTABLE

Table of contents

Nowadays the virtual space is facing a hurricane of cryptocurrencies stirring up millions of people's minds around the world. The glory and success of Bitcoin project inspires many enthusiasts, so almost every day there are more and more new digital coins and tokens being created.

Unfortunately, the quality of ~90% of blockchain projects leaves much to be desired, and is sometimes really appalling. Seekers of profit and making money at the expense of others, scammers and crooks creating clones of well-known cryptocurrencies, faking names, logos, injecting hidden viruses in source code and binaries – the cryptoworld has never been such a dangerous place as it is now.

In the midst of this carnival of the faceless altcoins being created only for speculations, a group of cryptoenthusiasts accustomed to high quality and throughout professional approach, have come to an idea.

The idea of creating a project, which electronic world and fans of the new digital economy have never seen before.

The project combining all the positive aspects of successful digital currencies and, at the same time, taking into account all of their flaws and weak points.

The project satisfying miners, investors, and even ordinary people with no idea about the new digital reality of our days.

The project bringing tangible benefits not only to the digital world but also to the real one.

The project conquering the hearts of all users and firmly standing in line with Ethereum, Dash, Neo, Zcash, Monero, and others.

In the process, we relied on several principles:

- Our project must solve a number of specific problems related to modern cryptocurrencies.
- Our project must satisfy both miners and investors.
- Our project should bring real benefits to humanity.

Only adherence to these principles made us possible to create something more than just a digital currency and to build a sustainable chain between the virtual and the real world.

The chain, which would be firmly entwined in the objective reality with chains of events, relationships, family ties, and with the most hi-tech chains – chains of blocks.

The life is inconceivable without such chains, so we proudly present to you the brand new and revolutionary digital cryptocurrency – XDNA.

XDNA Features

BitGun
Innovative principle for dynamic change of block reward

T.N.T.
Advanced multi-level masternodes concept –
Triple Node Technology

XDNA Foundation
Non-commercial charity cryptocurrency fund

Technical specifications

- Name & ticker: XDNA
- Consensus algorithm: PoW/POS
- POW phase duration: 1440000 blocks
- PoW block reward: Dynamic, 4-511 XDNA
- Instamine protection: First 720 blocks
- Hashing algorithm: Keccak
- Estimated XDNA supply during POW: 138,000,000
- POS starting block: 1440001
- POS phase duration: Unlimited
- POS block reward: 57 XDNA lowering by 4 coins every 525600 blocks until block reward is 1 XDNA
- POS block reward distribution: SeeSaw
- Estimated XDNA supply during 15 years of POS: 228,000,000
- Premine: 971,712 XDNA (0.7% of POW total supply)
- Blocksize: 1 MB
- Blocktime average: 1 min (DGW3)
- Number of transaction confirmations: 6
- Maturity: 60 confirmations

Problems most modern cryptocurrencies have and solutions we offer

At the edge of XX and XXI century, Bitcoin appeared in our life. This event touched every single progressive person on Earth – all of them watched then and still keep tracking both the development of BTC and the creation and implementation of new types of digital currencies.

However, in the sphere of cryptocurrencies (as in any other high-tech sphere) there are a number of problems such as scalability, security, the congestion of network with microtransactions, and some others. These problems are usually of fundamental nature and they cannot be solved efficiently by known methods.

Along with the fundamental problems related to cryptocurrencies, there is a whole number of minor flaws, some of which have already been fixed in several projects, while the importance of others is still being unfairly underestimated.

These flaws come to mind as a result of cursory analysis of the cryptocurrency sphere.

1. Long lasting transaction confirmations.

Considering the dynamic development of our world, the wait duration of 30, or even 60 minutes is an unaffordable luxury.

2. Emerging of ASICs that support POW algorithms.

Considering the cost of equipment, application of hashing algorithms such as Scrypt, X11, Sha256, and some others in cryptocurrencies makes mining completely inaccessible for the vast majority of the population. In addition, application of ASICs causes considerable damage to the decentralization of the system, which is contrary to the General principles formulated by Satoshi Nakamoto.

3. “Instamine”.

Mining a high amount of cryptocurrency tokens in the initial period of network launch by coin developers themselves, who delay announcements on the appropriate resources.

4. “Premine”.

Developers gain a significant amount of cryptocurrency tokens in the first blocks. Unfortunately, developers of cryptocurrencies tend to set a high premine percentage, and then use it for personal gain, selling a significant amount of tokens during the first days after exchange lists a coin. This is closely related to the following problem.

5. Developers of new cryptocurrencies often lack resources and see their projects as means for mere personal enrichment, lacking the willingness to apply their creation to charitable purposes.

Indeed, considering market capitalization of the most successful projects, very few people think of applying premined coins to the field of charitable activity. At the same time, there is still a huge number of people in the world in need of food, clean water, medicines, and other essentials things.

6. A significant amount of each block reward is paid to the developers.

Some of the cryptocurrency creators use part of the block reward as payment for their trouble, however, in some projects the size of this fee is too high.

7. Significant decrease of miner reward.

Along with total nethash, difficulty also increases, which in its turn leads to reduced “wages” of miners supporting the functionality of the blockchain. The latter problem is caused by quite obvious reasons. Miner’s income is directly proportional to the currency price and inversely proportional to the total nethash.

8. Masternode cost.

Too high masternode cost leads to the inability to run it by a “common miner”, whereas in case the cost is too low, investors lack interest in its acquisition.

We created XDNA in order to:

- Partially solve the above problems and negate the disadvantages of the existing cryptocurrencies
- Make harmony between miners and investors
- Bring benefits to the real world
- Change the established paradigm of reducing miners' income with increasing network capacity

Solution to Problem 1

To overcome the problem of low transaction speed, block time of 60 seconds is set in XDNA code. DarkGravityWave3 algorithm is used to provide network difficulty correction at each block.

Only 6 confirmations are necessary for transaction validation, and therefore any transaction in XDNA to any place in the world will not take more than 6 minutes.

XDNA also utilizes InstantSend [1], an instant transaction mechanism allowing instant broadcast of given transaction through masternodes with balance immediately showing in recipient's wallet.

Solution to Problem 2

Proof-of-work hashing algorithm Keccak is used to achieve consensus in a network during PoW phase of network functioning. That algorithm has proved good enough to be used with GPUs from different manufacturers. In addition, this algorithm is not supported by ASICs, so miners all over the world can safely maintain the XDNA network using their GPUs, with no risk of being flooded by huge capacities of industrial mining centres.

But why Keccak?

First of all, again, this algorithm is not supported by ASICs.

Second, you can effectively use both “red” and “green” cards for the mining process.

Third, Keccak can be used in dual mining, which allows you to diversify the use of your mining equipment.

And finally, in 2012 the hashing algorithm Keccak received the prize of the Cryptographic Hash Algorithm Competition promoted by the National Institute of Standards and Technology (NIST), USA.

We do not create a trendy hashing algorithm, which is a basic sequence of several well-known algorithms. Having opted for Keccak, we pay tribute to the scientists in the field of cryptography, who created the algorithm. It is not a secret that without scientists and the results of their research there would not have been cryptography and e-currencies, and thus there would not have been XDNA.

We express our sincere gratitude to the authors of the Keccak algorithm: *Guido Bertoni, Joan Daemen, Michael Peeters and Gilles Van Assche.*

Solution to Problem 3

To prevent instamine, block reward of 1 XDNA is set for the first 720 blocks.

Solution to Problem 4

Some cryptocurrency creators premine up to 50% of the maximum coin supply in first blocks.

The XDNA team have a realistic philosophy, so our premine is only 0.7% from the total estimated supply during POW, or 971,712 XDNA.

You can learn more about the XDNA premine distribution in the appropriate section.

Solution to Problem 5

The XDNA team sincerely believes that there is a huge number of people in need under the sun. Sufficient part of premine, namely 350.000 XDNA, will be used to create a charity fund – XDNA Foundation. This will allow raising and distributing funds to help various organizations and people in need around the world.

Together with the international community, we can create way more than just a cryptocurrency!

Solution to Problem 6

As a compensation to the XDNA developer team, 1% of each block reward is used, which is comparable with the size of the commissions used by the pools.

We do not make a crazy premine. Neither we perform an ICO. We have nothing to hide.

1%.

That is all of it.

Solution to Problem 7

Finally, the initial reason for XDNA creation. To solve the problem of reducing miner rewards, a unique feature of changing block reward depending on the total nethash was developed – the BitGun, called so after one of XDNA developers.

The BitGun principle is in gradual multi-stage block reward increase, allowing miners to receive a relatively stable reward (within certain limits) for

maintaining the XDNA network functionality, unlike the conventional block reward distribution methods.

You can read more about BitGun in the according chapter.

Solution to Problem 8

To attract both miners and investors to setting up XDNA masternodes we have developed a system that allows simultaneous functioning and interaction of 3 types of masternodes. Each type requires different amount of coins for collateral and has different reward size. We have named this system T.N.T. - TripleNodeTechnology.

You can read more about T.N.T. in the according chapter.

BitGun

To change that long established paradigm of miner rewards being inversely proportional to network hashrate we have developed the advanced BitGun feature.

Usually a miner's reward directly depends on network hashrate, meaning larger nethash results in lower reward portion going to each miner. In other words, if the amount of GPUs in the network grows 1000 times, the average miner's reward within given time frame will become 1000 times less. Some cryptocurrencies use non-linear dependencies, but their principle also remains the same, higher the network hashrate, less each miner receives. BitGun uses another approach – as total network hashrate grows, the block reward gradually increases, allowing to keep an average miners reward relatively stable.

This is how it works.

The reward size for each block changes every time at the moment of block generation, depending on the total average nethash recorded for the previous 24 blocks.

The reward size for each block changes in accordance with a set of "levels" reflecting the Fibonacci series. There are 15 levels.

Table 1 presents the levels defined by total nethash and the corresponding block reward size .

For the block reward size to change automatically, the total XDNA nethash must overcome the corresponding threshold value from the table.

What are the advantages of using this approach?

Comparing with the conventional block reward calculation methods, BitGun allows us to stabilize the reward amount received by miners in a certain period of time. With a sufficient growth of network hashrate the average reward slightly decreases, remaining, however, much larger than in systems with traditional distribution.

Table 1

Level	Network hashrate (Th/s)	Block reward
1	1	4
2	2	5
3	3	7
4	5	9
5	8	11
6	13	15
7	21	20
8	34	27
9	55	39
10	89	57
11	144	85
12	233	131
13	377	204
14	610	321
15	987	511

Table 2 shows comparison of an average reward for one Nvidia GTX 1080Ti GPU for 24 hours using classical calculation method and BitGun.

Table 2

	Approximate amount of 1080ti	XDNA/1080ti/day	XDNA/1080ti/day with BitGun
Levels 1-5	1,000	4.032	4.032
	3,000	1.344	2.352
	5,000	0.8064	1.8144
Levels 6-10	10,000	0.4032	1.512
	30,000	0.1344	0.9072
	50,000	0.08064	0.78624
Levels 11-15	150,000	0.02688	0.5712
	300,000	0.01344	0.68544
	450,000	0.000896	0.45696

As shown in the table above, at low network hashrate the rewards remain almost identical, but as network grows the advantage of BitGun becomes obvious.

Figure 1 presents the comparison of daily reward for a single Nvidia GeForce GTX 1080ti GPU depending on total network hashrate, stated in the number of mining GPUs.

Mathematical modelling was performed for levels 1-8. For this simulation, we used the following conditions: a miner gets a reward from each block; hashrate of a single GPU is 1.35 gh/s for Keccak algorithm.

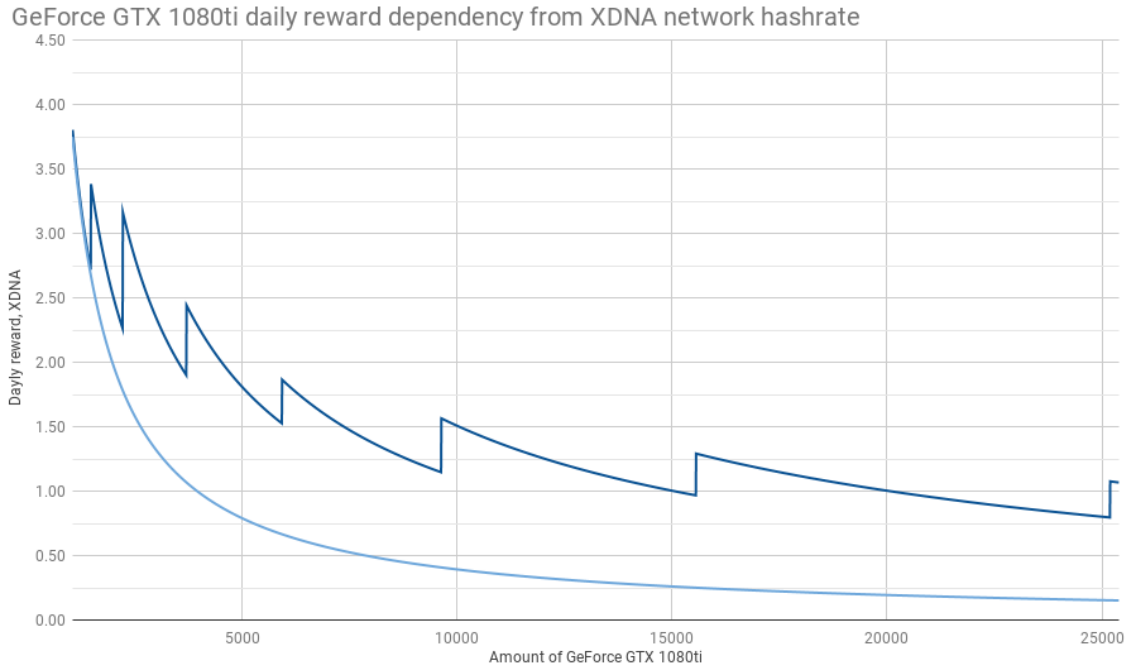


Figure 1

As we see even with a significant increase in network hashrate each given GPU will keep receiving relatively stable reward within one BitGun level, this reward is much larger than a reward, calculated using classic system would be.

These simulation results are valid for Levels 2-14 and can be successfully approximated for any time interval.

The novelty of this approach is primarily in the fact that it changes the very paradigm of pseudolinear inverse relation of miner`s income to the nethash.

BitGun also has another, not so obvious advantage. If ASIC miners for Keccak algo are ever developed, XDNA won't have to change it's consensus,

algorithm, or to implement a hardfork in order to keep GPU miners happy. Few minor amendments in BitGun parameters should be enough.

Miners from all over the world can now count on decent mining rewards even if the network hashrate suddenly grows 1000 times.

T.N.T.

Relying only on the most advanced aspects of the world leading cryptocurrencies, we propose to use masternodes to ensure network stability.

However, given the experience of creating and using masternodes in different projects, we put harmony between miners and investors' wishes and possibilities on the first place at XDNA. To make it possible for everyone to set up a masternode, we have developed three types of them. Each type takes a different amount of XDNA and brings a variety of income. This system is called T.N.T. – TripleNodeTechnology.

1. Light Node – requires 1,000 XDNA.
2. Medium Node – requires 3,000 XDNA.
3. Full Node – requires 5,000 XDNA.

During POW masternodes will receive the following reward (different for each type) for maintaining network stability and performing additional functions:

Light Node – 3% from total block reward
Medium Node – 9% from total block reward
Full Node – 15% from total block reward

During POS the masternode reward proportion will remain but the amounts will be determined by the SeeSaw algorithm [2].

Despite the main masternodes task being network stability, they are also an excellent means of investment.

Series of calculations have been done to determine the profitability and reward for different types of masternodes.

It should be noted that BitGun levels are directly affecting masternodes profitability – block reward at higher nethash increases, therefore masternodes income increases as well.

Fig. 2 shows the calculation results for the payback of different masternode types at various BitGun levels, depending on masternodes amount in the network.

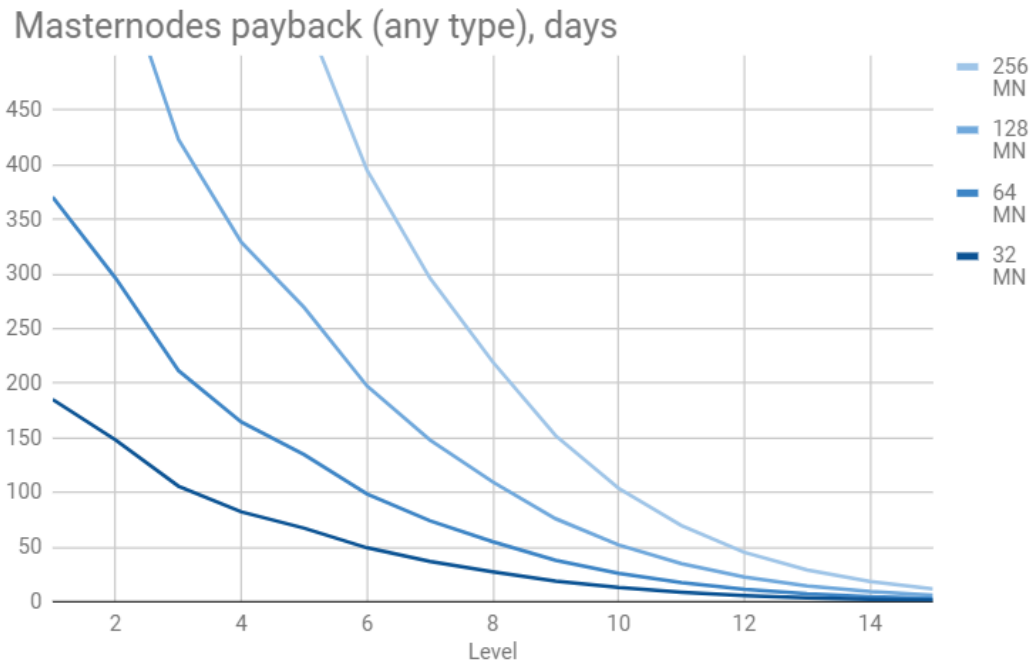


Figure 2

We have also calculated daily masternode payouts for a set number of 50 masternodes depending on their type and BitGun level functioning in the network (Fig.3) and annual ROI depending on BitGun level for each masternode type when 100 masternodes of each type exist in the network (Fig. 4).

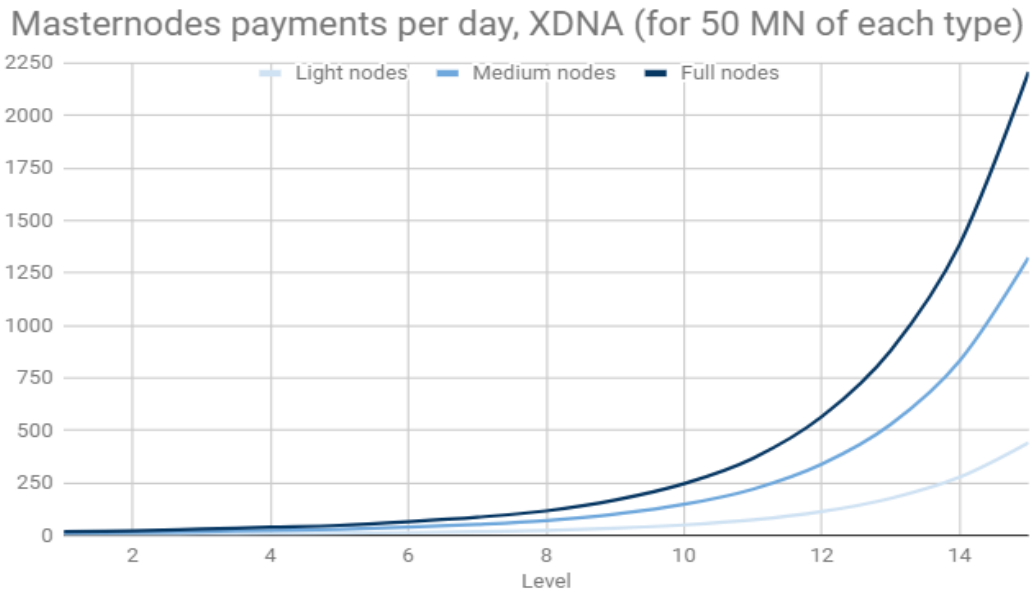


Figure 3

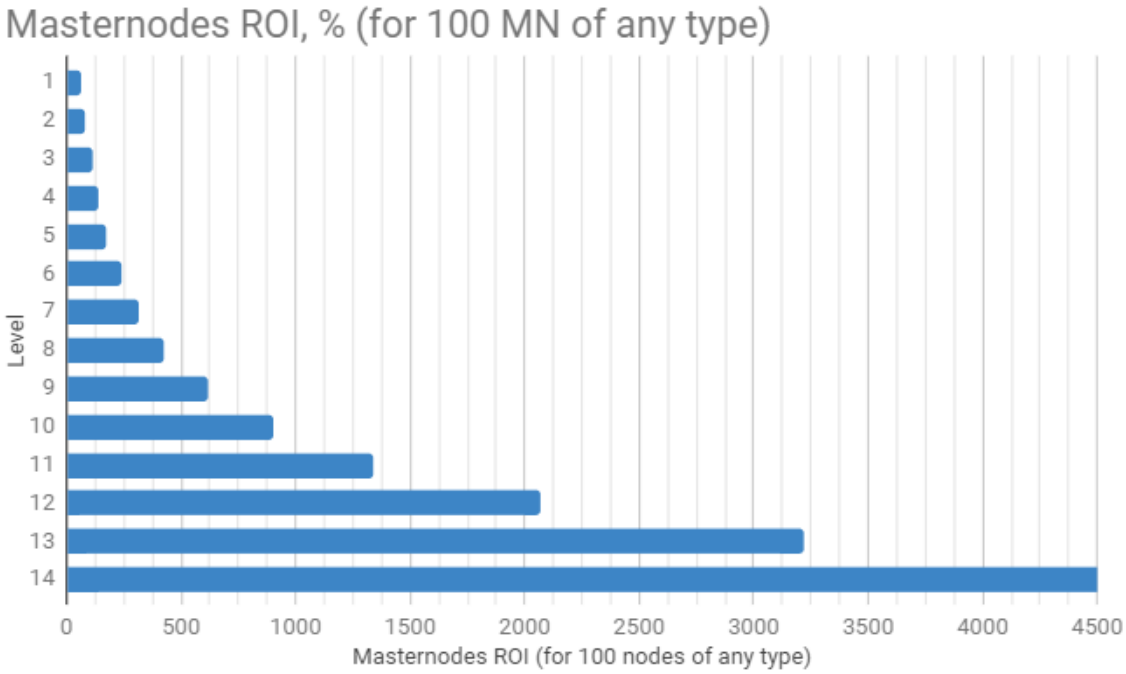


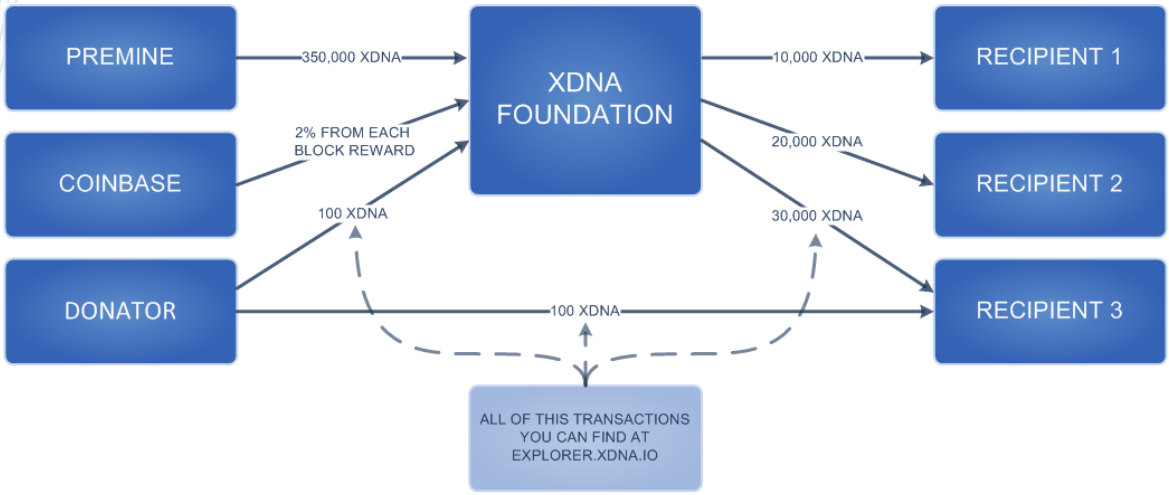
Figure 4

XDNA Foundation

We think about the world. We realize that there are many charity organizations under the sun providing free assistance to those in need. We also want to be a part of something bright and good, helping people.

We have created the XDNA Foundation – the cryptocurrency charity fund aimed at providing targeted assistance to organizations and funds with insufficient or no funding.

To start up the Foundation, 350,000 XDNA have been allocated. The assets of this Fund are credited to a special address assigned to the Foundation. The amount of XDNA in the Foundation`s purse is public and controlled information: it is enough to open the blockexplorer and search for the wallet address available on the XDNA official website in the appropriate section.



This is how it works.

If you are a member of a charity organization with very low funding, community/social project coordinator, a youth sports team manager or just need help from the XDNA Foundation, you should do the following:

Fill out the form in the appropriate section of the website, briefly describing your organization, the related problems and difficulties.

Attach pictures, paperwork and generally as much information as you can.

If we feel the request is genuine and fits into our objectives it will be reviewed and marked “under consideration” in the appropriate section. After doing fact-checking, the XDNA Foundation management will make the final decision and if it’s positive we will mail you (or present in person) a paper

wallet pre-loaded with XDNA. In order to avail the funds, you will need to install a XDNA PC wallet and restore them. Then you will be able to swap the received XDNA for BTC or cash on any exchange of your choice and use them.

If you want to help people or organizations using XDNA, nothing is as simple as that. Buy XDNA on any of the exchanges and transfer them on the Fund wallet address. It is really that simple. Want to make a transfer to the Foundation in another cryptocurrency? No problem, we will exchange it for XDNA and transfer them to the Foundation.

You can be sure that not a coin of the XDNA Foundation will be wasted.

If any organization around the world wants to implement the sale of food, water or medical supplies for XDNA, even for charity purposes – join us, together we'll make this world a better place!

Timeline and block reward distribution

XDNA lifespan can be divided into 2 phases – Proof-Of-Work and Proof-Of-Stake. During these phases the block reward size and distribution differ.

During POW the block reward is determined by BitGun, the following block reward distribution applies:

- 70% to miners;
- 15% to Full Nodes;
- 9% to Medium Nodes;
- 3% to Light Nodes;
- 2% to XDNA Foundation;
- 1% to developers team.

Based on above, block reward distribution during PoW phase will be as shown on Figure 5.

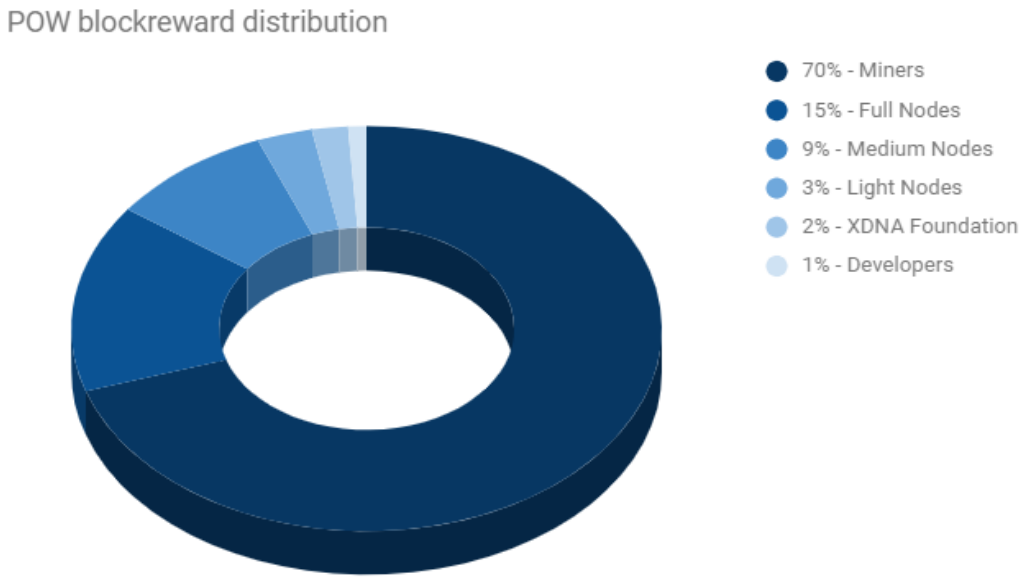


Figure 5

At block 1440000 or in approximately 1000 days XDNA will switch to POS.

At POS start the block reward will be 57 XDNA, which is equal to 10th BitGun level.

This amount will lower by 4 coins every 525600 blocks (or approx. every year) until eventually block reward will become 1 XDNA, which is expected in around 15 years at block 87984401.

During POS the block reward distribution is handled by SeeSaw [2] algorithm. Masternodes reward proportion will remain, but proportion between total masternodes reward and staking wallets reward will be dynamically changing.

Apart from that, 2% from each block reward will keep going to XDNA Foundation and 1% will go to Developers fund.

As we cannot predict total network hashrate during POW it's not possible to calculate the maximum coin supply for POW phase. To estimate this we used an average block reward size and basing on that we expect total supply during POW to be approx. 138,000,000 XDNA.

In 15 years of POS phase with annual block reward decrease the emission will be approx. 228,000,000 XDNA.

According to above mentioned calculations the total coin supply in 18 years will be approx. 366,000,000 XDNA.

This amount doesn't include the premine of 971,712 XDNA, which equals to 7 days of mining supply with an average block reward size.

Here is how the premine is divided:

- 350,000 XDNA – creation of XDNA Foundation.
  1. XDNA vote project
  2. Infrastructure for social fund
  3. Direct charity activities
  4. Legal support
  5. Operating expenses
- 271,712 XDNA – developing team reimbursement, including:
  1. Initial salary for Developers
  2. Renting VPSes for seed-nodes
  3. Site creation and domain rights
  4. Design works
  5. SSL certificates and other expenses during project creation.
- 350,000 XDNA – marketing expenses, including:
  1. Bounty campaigns
  2. Social media promotion
  3. Community draws and contests
  4. Sponsorships

5. Offline media events
6. Exchange listing fees
7. Crypto-charts listing fees
8. Souvenir production
9. Advertising through blogs, video blogs etc
10. Marketing expenses for printed press and other sources.

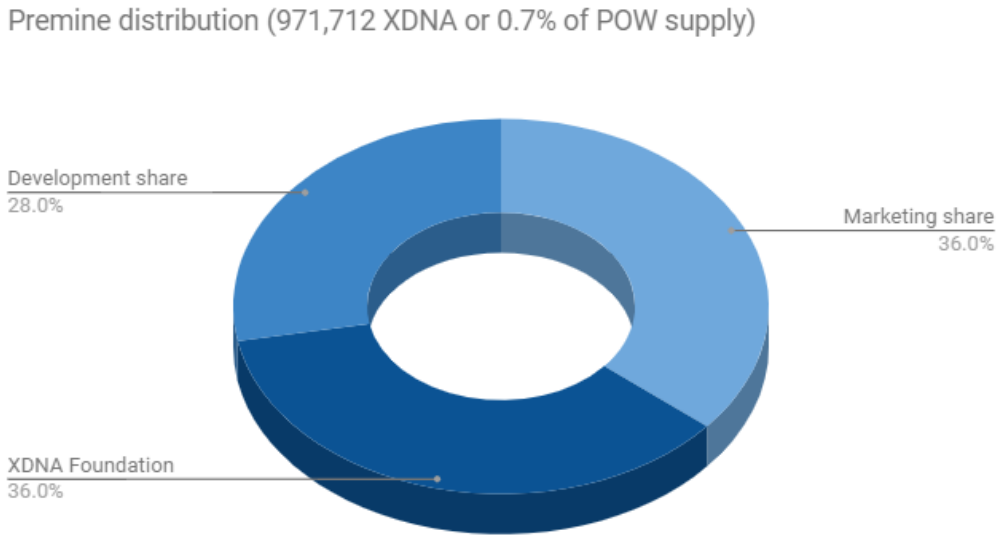


Figure 6

Reference list

1. DASH Masternodes https://dashpay.atlassian.net/wiki/
/display/DOC/Masternode.

2. Seesaw Reward Balance System Whitepaper. Revision 0.7e, January 24, 2017 https://pivx.org.

Credits

XDNA team would like to acknowledge and thank the following people for their research, development, testing and support of XDNA project:

S.F.Vakano
Gunbit
Kamir
George a.k.a. Commie
nullptr
a.kapone
koksoks
SiriS
Imbalance911
msbishop
TheUnknownHero
Allison
B52
oGrlnGo
Satt
Kaseman
TeMbl4
marikun