

CryTech Mining: Decentralized cloud mining, easy and secure investment

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October 7, 2019

Abstract

An ERC-20 token backed with hashrates. By purchasing 1 Token you own 1 Gigahash processing power of the mining device in CryTech's farms forever. This lifetime hash power will mine for you until you sell your token. After deducting the fees and maintenance costs, your net profit will be transferred to your account weekly. If a mining device is broken or outdated, it will be replaced with a new one (compensated from the maintenance costs), and you will not suffer any loss or expenses. The maintenance costs is a fixed price per token which is clearly specified in the Smart Contract. The number of circulating tokens is controlled by a Smart Contract, so that there is no way to generate tokens without sufficient backing hashpower. The token will be liquidable by getting listed in Exchange(s) and you can cash it out whenever you want. In the second phase, the project will be implemented completely decentralized and will provide a platform for communication between the miners and investors, which means CryTech will have no control over the process.

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1 Introduction

Since the advent of Bitcoin and Crypto-currencies, their mining has formed. Initially, mining was carried out through home computers, but eventually with the increase in Bitcoin's price was eventually rising and more miners were coming, mining got more and more difficult. Therefore, miners needed more powerful computers. The growth of difficulty was inevitable and more people started mining, first using their laptops and PCs, then with Graphic Cards, and finally with the ASIC hardwares produced by manufacturers specifically for this purpose.

Nowadays, mining has turned to a technical and professional industry. It is no more possible to mine at home and take profit with small budget and low information. There are lots of problems that need to be managed. Problems and risks like high electricity costs, devices' loud noise, heat disposal, device failure and repairs, choosing efficient device, high power supply, high-current electricity hazards management, etc.

To tackle these problems, cloud mining services emerged. But these services also have their own problems that causes not getting popular and inclusive. Problems such as lack of transparency, Unreliability, high prices that effectively do not leave much profit for the investors (if they do at all). Even on most cases possibility of losses are much higher than profits.

Despite the 10 years history of mining Crypto-Currencies, there is still no safe, easy, and quick way to invest in mining. To solve these problems, we invented a decentralized cloud mining based on the Smart Contract platform to do most of the mining processes transparently. This makes it possible for the investors to invest in mining without the need for technical knowledge.

2 Our vision

After researching in the field of Blockchain and Crypto-Currencies, we found its future bright and promising. In May 2017, we formed the CryTech team with three co-founders and started working in the fields of trading, making trading bots, and mining crypto-currencies. Currently, our team has over ten members and is still growing. We are active in various aspects of Blockchain and crypto-currencies, including: mining, trading (automated trading, technical analysis, fundamental analysis), creating new Blockchain products and services, etc. We believe that Blockchain and its products, including crypto-currencies will play a very important role in the world and we try to be part of this Movement.

3 Cloud mining based on Smart Contract

The purpose is to set up a decentralized cloud mining, with most of activities through an Ethereum based token and a Smart Contract that performs the control and management of the token and validity of the process.

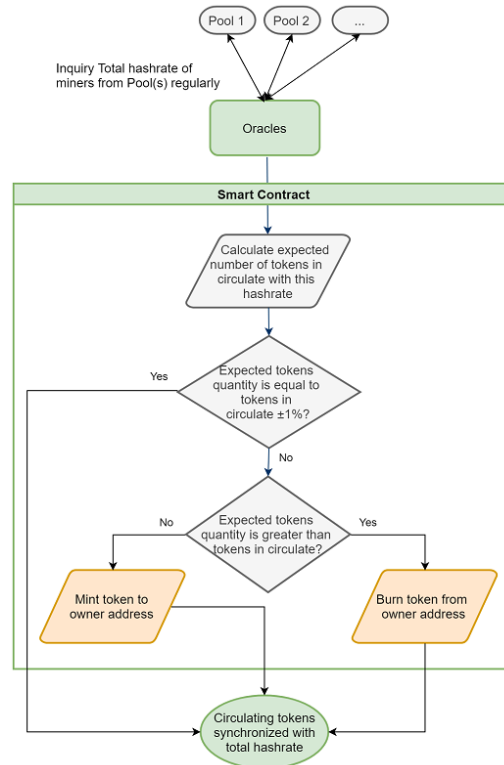
By purchasing each token, the user owns 1 Gigahash of SHA-256 algorithm or alternative hashrate in other algorithms (1). Later in this document hashrate of other alternative algorithms will be described in detail. In regular periods, the profit from mining of the owned hashrate will be payed to owner.

3.1 Distribution and controlling Circulating Supply

To produce a token, CryTech has to purchase mining devices (plus other required equipments), set them up and connect them to the project's account in the pool. As soon as the account's hashrate increases, new tokens will be generated by the Smart Contract and deposited into the CryTech's address. On the other hand, with the decrease of the hashrate, adequate number of tokens in the CryTech's address is automatically burned to guarantee that 1 token always equals 1 Gigahash (or equivalent in other algorithms).

3.2 Obtaining hashrate from pool

Oracle Services are used to provide a Smart Contract relationship with the outside world of the Blockchain. They are used to enable the Smart Contract to receive the current hashrate from pool. Oracle uses pool API to get the current hashrate. This operation will be periodically ran (at intervals of 1 to 10 days) with the help of dApps that add the timing possibilities to the Blockchain.



3.3 Profit Sharing

After deducting hosting costs such as electricity, location rentals, human resource costs, depreciation, updating devices, etc., 50% of the profit is deducted as a commission fee and the rest is paid to CRY owners. Maintenance fee for every CRY token is 0.00016 USD daily. Snapshot (owners address balance) will be taken everyday in a given or random hour and at the end of week the average is calculated. Profit payment is carried out according to the average balance weekly.

In case of listing CRY on an any exchange, the exchange shall support the Profit Sharing method. In Ethereum-based DEXes (2) no additional work is needed since they are already adaptable.

3.4 Fairness and Transparency

Mining income control, payment of maintenance costs, profit sharing, average account balance calculation, and etc. are done and monitored by a Smart Contract and an open source software; therefore, distribution reports are visible to users. Expected mining income is calculated with the help of mining calculation tools such as BTC.com. If the mined coins are less than the expected mining income, the shortage will be deducted from CryTech's fee to guarantee the payment of the CRY tokens in accordance with the expected mining income.

An example of a distribution report that is visible to users is like the following:

Latest payment: [19 Aug 2019]
Circulating supply: [10,000,000]

	Amount	Expected
Mined Bitcoins	0.024504 (245 \$)	0.02506 (251 \$)
Maintenance Costs	154 \$	154 \$
CRY Owners' profit	45.5 \$	45.5 \$
CryTech's profit	40 \$	45.5 \$

3.5 Other Algorithms

To let the platform mine other coins than Bitcoin, we need a formula that specifies how much hashpower of a given algorithm equals 1 Gigahash of Bitcoin. We determine multiplier for different algorithms depending on the cost of obtaining hashpower for each specific algorithm. For example, if 1 Gigahash of SHA256 algorithm (the Bitcoin mining algorithm) is equivalent to 1 CRY token, then:

$$1 \text{ GHash} = 1,000,000,000 \text{ Hash}$$
$$\text{SHA256 multiplier} = \frac{1}{1,000,000,000} = 0.000,000,001$$

Now, if we assume the cost of supplying 200 Megahash of Ethash equals the cost for supplying 1 Gigahash of SHA256 algorithm, we have:

$$200 \text{ MHash} = 200,000,000 \text{ Hash}$$

$$\text{Ethash multiplier} = 1/200,000,000 = 0.000,000,005$$

Suppose the total power hash of the CryTech mining network is 100,000 Gigahash SHA256 and 5 million Megahash Ethash. Number of tokens for 100,000 Gigahash SHA256 is:

$$\text{Tokens in circulation} = \text{SHA256 HashPower} * \text{SHA256 multiplier}$$

$$(100,000 * 1,000,000,000) * 0.000000001 = 100,000$$

Number of tokens for 5,000,000 Megahash Ethash:

$$\text{Tokens in circulation} = \text{Ethash HashPower} * \text{Ethash multiplier}$$

$$\Rightarrow (5,000,000 * 1,000,000) * 0.000000005 = 25,000$$

So $100,000 + 25,000 = 125,000$ Tokens must be circulating.

$$\text{Ethash mining share} = \frac{25,000}{125,000} = 20\%$$

$$\text{SHA256 mining share} = \frac{100,000}{125,000} = 80\%$$

$$1 \text{ Token} = 80\% * 1\text{GHash}(\text{SHA256}) + 20\% * 200\text{Mhash}(\text{Ethash})$$

$$\Rightarrow 1 \text{ Token} = 0.8 \text{ Ghash SHA256} + 40 \text{ Mhash Ethash}$$

So 1 CRY token equals $0.8 \text{ Gigahash SHA256} + 40 \text{ Megahash Ethash}$ mining power, in this case.

3.6 Token Price

The final cost of 1 Gigahash includes the price of mining device; electricity facilities; required equipments such as: power transformer, cable modem, switch, cooling systems, etc.; location mortgage; human resource costs for purchasing and setting up of mining devices; etc. for a Gigahash of SHA256 algorithm mining power. At the time of writing this white paper, the final cost is about 0.045 dollars for 1 Gigahash.

3.7 Circulating Supply

Equal to the total hashrate of the network based on Gigahash.

4 Disaster Management

To manage disasters such as floods, fires and any kind of tragedy that causes the loss of mining devices, we should take adequate measurements in advance. Given that the CryTech's share is 50 percent of the mining profits, mining devices must be divided into at least three different locations (farms), and no single farm should be allowed to host more than 40% of total hashpower. If and only if the mining devices are split likewise, CryTech can guarantee to compensate the loss of even losing one whole farm. We will try to split the mining devices in at least three countries to lower the risks as much as possible. With these measurements, we can make sure that in case of a disaster, the loss will not be over 40% of total hashpower, hence CryTech can cover the loss by decreasing its share and the CRY owners will not be affected at all. In such circumstances, CryTech must either spend its remaining profit on replacing mining devices -until the hashpower gets back to its old amount- or burn up enough of its own Tokens. In case of token shortage, CryTech buys tokens from owners, to burn and bring the balance back between Circulating Supply and total hashpower of the network.

5 Ways of profitting from CRY token

There are multiple opportunities for investors and traders to take profit in this project.

5.1 Mining profit

By holding CRY tokens, you receive a weekly mining profit. According to the Bitcoin price of \$10400 and the 74 Ehash of Bitcoin network at the time of writing this white paper, the annual profit is about 60% for the investor. Of course, it is obvious that the price of Bitcoin and the network difficulty is not fixed and is always changing. In default, the user receives a mining profit in Ethereum. But user is able to choose to receive the mining profit in CRY token. In this case, your profit will also produce a profit (Compound Interest). With a simple calculation, choosing to receive CRY tokens will result in about 100% annual interest. Albeit, generating CRY tokens needs adding new hardware to the network; therefore, payment of profit as CRY is possible if CryTech holds enough CRY tokens.

5.2 CRY value growth

Due to the high profitability of the CRY tokens and the time it takes for new tokens to produce, the price of the token will increase. This makes the investor profit from the increase in the token value, especially early investors. Also, with the increase in the Bitcoin price, the mining profit and thus the price of the CRY token increases. Thus, investors who intend to invest in Bitcoin, gain both from the Bitcoins growth (CRY value increase) and mining profit.

5.3 Buy at dumps

Suppose the price of a CRY token is equal to 0.05 dollars and each token yields 0.0025 dollar of mining profit per month, which brings 5% profit (compared to the token price). Now, if for any reason the price of the token in the market goes down or dumps, e.g., the price reaches 0.02 dollars, the same 0.0025 USD profit becomes actually a 12.5% monthly interest. So by buying tokens at this price, you will earn double monthly profits. Consequently, the profitability of the mining can ensure that the price of the token is stable and reliable. In fact, each token is truly supported with 1 Gigahash of processing power that converts it into a powerful and solidly-backed crypto-currency.

6 Farm Diversity

6.1 Locations

To select the project location (farms), different countries have been studied and factors such as electricity prices, fuel prices, renewable energy conditions, mining laws and regulations, investment security, etc.

Three countries with best scores are nominated as below:

- **China** Reasonable price of electricity and low maintenance costs, as well as manufacturing nearly all mining equipment, that will reduce the cost and time of delivery to the farm.
- **Russia** Access to inexpensive hydroelectric power plants, transparent and straight regulations for the launch of farms, super low air temperature, are among the factors that make mining in Russia attractive.
- **Iran** Recently, the Government of Iran has accepted mining as an industry, and has put it under the tax exemption list. They also offer special conditions for setting up hydroelectric power plants, which can provide us with electricity cheaper than 3 cents. Iran is the third country in the world's construction dam and many of these dams still have no hydroelectric power plant which makes it a good opportunity for mining investment.

6.2 Power Supply

According to the research CryTech's engineering team has done, several sources and methods of supplying electricity for mining seem appropriate:

- **Renewable Power Plants** especially hydroelectric power plants, which are also environmentally friendly.
- **Old Factory Optimization** We have found a remarkable number of factories that need to produce heat in the production process. They do so by using fossil fuels with a high rate of energy dissipation. We offer optimizing the heat generation process with the help of CHP engines plus a heat to electricity transducer. From this process optimization, we provide the required electricity for mining.
- **Gas Power Plants** Iran's government provides gas for power plants that produce electricity for mining with a special 30% discount.

7 Mining Decentralization

In addition to CryTech, individual miners and mining farms can also be defined as Miner in the system and present their hashrate to the network. To do so, they must be approved by a Verifier.

Verification is accomplished through the following steps:

1. Miner connects their mining device(s) to CryTech Mining Accounts in the pool.
2. Verifier, guarantees Miner's Ethereum address in exchange for some fee.
3. The Smart Contract mints adequate number of tokens in accordance with the provided hashrates, and deposits them to the Miner's address.
4. Now the Miner is able to sell their CRY tokens.

Here, 50 percent of mining profit goes to CRY owner's pockets, 30 percent plus Maintenance Fees goes to Miner's pocket, and 20 percent of profit is allocated to CryTech.

7.1 Miner Verification Models

Guarantee using collateralizing CRY Tokens Every CRY owner can become a Verifier. Verifier collateralizes CRY tokens (on the Smart Contract) equal to the hashrate the miner offers. The verifier receives a commission from miner in return. If the Miner discontinues the promised hashrate, the Smart Contract will not pay the profit to the Verifier (CRY owner of the according miner), or it will burn the collateral tokens left so that the loss of the hashrate does not affect any other CRY owners. *The Verifier shall either guarantee a miner whom they trust, or get a signed written contract or some kind of collateral in the real world from the miner, to avoid probable loss.*

Guarantee by CryTech Since a part of the mining profit belongs to CryTech, it can guarantee miner to let the miner join the network. If the Miner discontinues the promised hashrate, the loss will be deducted from the CryTech's profit to avoid other CRY token owner from getting affected.

Guarantee by Verifiers who are elected through a voting system CryTech can nominate well-known Miners and they will join the network if they gain enough votes from CRY owners.

7.2 Profit Distribution Process by the Smart Contract

1. Miner deposits the mining income weekly into the smart contract account, after converting to Ethereum. According to the CRY token that they have taken from the Smart Contract, the Miner must provide a certain amount of hashrate to the network. And that hashrate has a clear and calculatable amount of income.
2. The Smart Contract, with the help of Oracle Services, calculates the expected mined amount. If the deposit is lower than the expected amount, Smart Contract can compensate via different methods:
 - (a) Reduce Miner's profit share (30% of the mining profit belongs to Miner)
 - (b) Reduce the Verifier's profit share
 - (c) If the Miner did not deposit mining profit for 90 days, the bail that the Verifier has collateralized will be burned to avoid loss for other CRY owners.
3. The maintenance fee is deposited into the Miner's account. The maintenance fee includes the cost of electricity, human resources, internet, rent, and other maintenance costs of miner. It is measured by the unit of CRY/Day, specified in the Smart Contract. Changing maintenance fee requires community consent (triggered by CryTech, voted by CRY owners).
4. The remaining income is the mining profit, 50% of which is paid to the CRY owners, 30% to the miners, and 20% to the CryTech. A snapshot is taken everyday to save the available balance of each address, to be used at the end of the week for profit sharing purpose, by the Smart Contract.

For clarification and transparency reasons, each round of *Profit Distribution* is followed by a detailed report published on [Project's website](#).

8 Managed by Community

Management and controlling activities are carried out using the Smart Contract with the voting of the CRY owners. Activities such as changing maintenance costs, changing the coefficient of algorithms, etc.

9 Roadmap

- Sep. 2019** Prepare Alpha version of Whitepaper
Discuss the idea with crypto-community and get feedback.
- Oct. 2019** Whitepaper version 1, run website
Prepare beta version of Smart Contract (token)
Announce ICO date.
- Nov. 2019** Smart Contract (token) version 1.
- Dec. 2019 & Jan. 2020** Execute ICO and start setting up farms.
- Feb. 2020** Start mining and pay the first round of profits.
- Apr. 2020** Dashboard for user to view statistics and profits, buy CRY token, other user-related features and reports.
- Q2 2020** Get listed on an exchange (or more).
- Q3 2020** Run first hydroelectric power plant
Run DEX with support for CRY, ETH, USDT, USDC, etc.
- Q4 2020** Implement decentralized profit sharing.