

Complete guide to bitcoin mining for beginners

In the previous sections, TipsMake introduced you to all information about bitcoin, including what bitcoin is, where to sell and buy bitcoin, as well as show you 2 ways to mine bitcoin using Raspberry Pi and Raspberry Pi2. , this TipsMake article will guide you on how to mine bitcoin completely.

Before you start, you need to know that not everyone can become a bitcoin miner. Because of the competitive returns and volatility in bitcoin prices, it can be difficult to realize currency gains without price speculation.

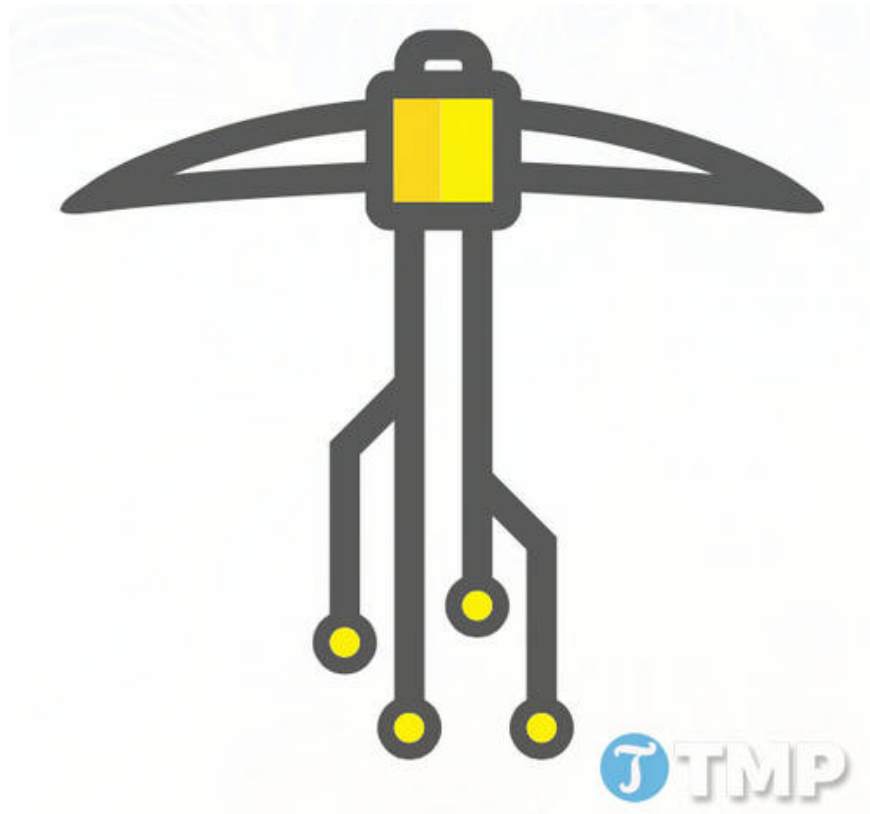
If you only intend to mine bitcoin for fun, it makes more sense to learn about or support bitcoin security without worrying about profit.

If you want to earn bitcoins based on a fixed amount of bitcoin mining, but don't want to run your own actual hardware, you can buy a bitcoin mining contract.

Additionally Bitcoin payment cards allow people to load debit cards with funds through bitcoin.

The complete method of mining bitcoin below will give you concepts, mining instructions and some types of specialized hardware equipment used to mine bitcoin so you can best understand the basic knowledge when starting to make money from Bitcoin.

What is bitcoin mining?



Bitcoin mining is like when you play the lottery, you have to compete with everyone on the internet with your bitcoin mining hardware to earn bitcoins. The faster the bitcoin mining hardware, the higher your chances of winning, the bitcoin network adjusts itself approximately every two weeks to ensure an average time between each block of 10 minutes

Taking a deeper look, bitcoin mining secures transactions recorded in Bitcoin's public ledger, called the block chain. By conducting a random lottery, where electricity and specialized equipment are fully equipped, it costs bitcoin miners to disrupt the Bitcoin network.

Bitcoin mining is the process of adding transaction records to bitcoin's public ledger of past transactions. The ledger of bitcoin transactions was formerly known as **the Block chain** . Block chains are used to confirm transactions with the rest of the network.

Bitcoin nodes use the block chain to distinguish valid bitcoin transactions to reuse bitcoin that has been spent elsewhere.

Bitcoin mining is designed to be resource intensive and difficult so that the number of miners mining each day remains stable.

Each individual block must have proof of work to be considered valid. This proof of work is verified by Hashcash bitcoin nodes.

The main purpose of bitcoin mining is to allow bitcoin nodes to achieve secure, tamper-proof consensus. Bitcoin mining is also the mechanism used to introduce bitcoins into the system: miners must pay any transaction fees as well as the "subsidy" of the newly created currency.



CPU

Initially CPU mining was the only way and was done using the original Satoshi client. In the quest to secure the network and earn more bitcoins, miners have innovated in many ways, and over the years, CPU mining for bitcoins has been relatively useless. You can use your laptop but you won't earn a single penny.

GPU

About a year and a half after **the bitcoin network**, it was discovered that high-end graphics cards were much more efficient at mining bitcoin, and things began to change from here.

CPU has been given way to GPU (**Graphical Processing Unit**). The parallel processing nature of some GPUs allows bitcoin mining capacity to be increased by up to 50x to 100x, using less power.

Although it is possible to use modern GPUs for bitcoin mining, AMD's GPU architecture is superior to the nVidia architecture for bitcoin mining and the ATI Radeon HD 5870 is the most cost-effective choice at the time. .

FPGA

Just like the transition from CPUs to GPUs, the bitcoin mining world has developed a series of **Field Programmable Gate Array** technology developments . With the successful launch of the Butterfly Labs 'Single' FPGA, bitcoin mining hardware has given way to specialized hardware made just for mining bitcoins.

While FPGAs do not increase mining speed by 50x-100x like switching from CPU to GPU, the benefits that FPGAs provide come through power efficiency and ease of use. A typical graphics card consumes over 400W of power, while a typical FPGA data mining device delivers 826 MH/s bandwidth at 80W.

The 5x innovation gave rise to the first bitcoin mining farms that operated for profit. The bitcoin mining industry was born.

ASIC

The world of bitcoin mining is now 'more firmly established' in the **Application Specific Integrated Circuit** (ASIC) era. ASICs are chips specifically designed to do one thing only. Unlike FPGAs, ASICs are not used to perform other tasks.

ASICs are designed for bitcoin mining purposes only. Although not flexible, ASICs provide up to 100x hashing power while consuming less energy than all previous bitcoin mining technologies.

Unlike previous generations of ASIC hardware, when it comes to 'breakthroughs' in bitcoin mining technology, ASIC can be considered a new breakthrough. CPUs gave way to GPUs, then GPUs gave way to FPGAs and finally FPGAs gave way to ASICs. Up to this point, nothing can replace ASIC and not even in the near future.

ASIC products will be refined and increased in performance, but will not provide the 50x - 100x increase in hashing power or 7x reduction in conversion power from previous technologies. That's why power consumption on ASIC devices is the most important factor in any ASIC product, the life of ASIC devices is longer and more useful when mining bitcoin.

To put it simply, suppose if you buy an ASIC device today, that device will still be able to mine bitcoins for 2 years if the device has enough energy efficiency and the electricity cost does not exceed the output. Mining profits are also determined by exchange rates, but in all cases the more efficient the mining power, the higher the profits.

Bitcoin mining software

There are two basic ways to fully mine bitcoin: own or own part of a bitcoin mining pool or use **Bitcoin cloud mining** and make sure you are not using a fraudulent Bitcoin cloud mining service. Almost all miners choose bitcoin mining. Before joining a bitcoin mining pool, make sure you already own a bitcoin wallet to store your bitcoins.

Next you will have to join a bitcoin mining pool and set up your miner to connect to that mining pool. In a bitcoin mining pool, the profits from any block that the pool members generate are divided among the pool members according to the number of hashes they contribute.

How much bandwidth does bitcoin mining require? If you are using a miner to mine bitcoin, the amount of bandwidth is negligible, about **10MB/day** . But what you need is a special connection to receive job updates as quickly as possible.

This allows members of the bitcoin pool to regularly pay out more consistently (also known as reduced variance), but your payouts may be reduced as the bank may charge whatever fees .

Mining bitcoin solo alone will bring you larger profits. Although solo bitcoin mining only brings you small profits, if you mine regularly and add the profits of your bitcoin mining sessions together, you will clearly have a large profit if you are using the mine. Mining is not a long-term fee

Bitcoin Cloud Mining

By purchasing Bitcoin Cloud Mining contracts, investors can earn bitcoins without having to deal with bitcoin mining hardware, software, electricity, bandwidth, and other offline issues.

Below are some Bitcoin Cloud Mining services, however not all of them are authenticated. There have been many Bitcoin cloud mining scams.

- **Hashflare Review** : Hashflare offers SHA-256 for bitcoin mining, and SHA-256 is more profitable as auto payouts remain in BTC. Customers must purchase at least 10 GH/s.

- **Genesis Mining Review** : Genesis Mining is the largest provider of Bitcoin and cloud mining encryption. Genesis Mining offers 3 Bitcoin cloud mining plans at reasonable prices. Zcash mining contracts are also available.

- **Hashing 24 Review** : Hashing24 has been involved in bitcoin mining since 2012. They have facilities in Iceland and Georgia. Hashing24 uses BitFury's state-of-the-art ASIC chips delivering the maximum possible performance and efficiency.



What is Proof of Work?

Proof of Work is a piece of data that is difficult (expensive, time-consuming) to produce, to meet certain transaction requirements. It is no longer important to check whether the data meets those requirements.

Proof of work generation can be a random, low-probability process, so there is a lot of trial and error before proof of work is proven to be valid. Bitcoin uses proof of work Hashcash.

Computational problems - difficulty

To mine a bitcoin block is not simple because the SHA-256 hash of the bitcoin block must be lower or equal to the target for the bitcoin network to accept the block.

To simplify this problem: the hash of a block must start with certain zeros. The probability of computing a hash starting with many zeros is very low, so more effort must be made. To generate each round a new hash, the nonce must be incremented.

Difficulty finding bitcoins

Bitcoin mining difficulty is a measure of how difficult it is to find a new block compared to the simplest possible way. Every 2016 blocks, the bitcoin system will automatically adjust the difficulty of mining bitcoins based on the time previous blocks were mined to ensure the average time between each block is 10 minutes.

As more bitcoin miners join, the block creation rate will increase. As the biomass generation rate increases, the difficulty will increase which will push the mass generation rate back. Any blocks mined by miners that do not meet the target difficulty requirements will very simply be rejected by everyone on the bitcoin network and those bitcoin blocks are worth nothing.

Reward

When someone discovers a block of bitcoins, the bitcoin discoverer can reward himself with a certain amount, which is accepted by everyone in the network. Currently this bounty is 25 bitcoins, which will be halved every 210,000 blocks.

Additionally miners are rewarded with other fees due to users submitting transactions. Fees are the 'incentive' for miners, these fees cover the transactions in their blocks. In the future, as the number of new bitcoin mines created per land block shrinks, fees will account for a much higher percentage of bitcoin mining income.

So TipsMake has just shown you how to mine bitcoin completely. If you have any comments or questions, share your opinions with TipsMake in the comments section below the article.

Before starting to mine Bitcoin, it should be noted that not everyone can succeed. High competition and Bitcoin price fluctuations make it difficult to achieve profits without price speculation. However, there will be some tips to help you mine coins effectively, see **how to mine Bitcoin on your phone** for more detailed information.

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