WHAT ARE BITCOIN MINING POOLS?

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One of the first questions that anyone interested in mining cryptocurrencies faces is whether to mine solo or join a 'pool'. There are a multitude of reasons both for and against mining pools. However, if the hash rate distribution across the bitcoin network is anything to go by (and it is) then most miners are opting to join a pool. Here's what you need to know.

PROS AND CONS

Pros and cons If you're deciding whether to join a mining pool or not, it can be helpful to think of it like a lottery syndicate – the pros and cons are exactly the same. Going solo means you won't have to share the reward, but your odds of getting a reward are significantly decreased. Although a pool has a much larger chance of solving a block and winning the reward, that reward will be split between all the pool members.

Therefore, joining a pool creates a steady stream of income, even if each payment is modest compared to the full block reward (which currently stands at 25 XBTC).

It is important to note that it is important for a mining pool to not exceed over 51% of the hashing power of the network. If a single entity ends up controlling more than 50% of a cryptocurrency network's computing power, it could – theoretically – wreak havoc on the whole network. In early 2014, many voiced concerns that the GHash.io bitcoin mining pool was approaching this threshold, and miners were urged to leave the pool.

CURRENCY DIFFICULTY

In bitcoin's case, the current difficulty level is so high that it's practically impossible for soloists to make a profit mining. Unless, of course, you happen to have a garage full of ASICs sitting in Arctic conditions. If you're a beginner, joining a mining pool is a great way to reap a small reward over a short period of time. Indeed, pools are a way to encourage small-scale miners to stay involved.

WHAT TO MINE?

Flip coins Of course, bitcoin is not the only currency out there – it's easy to find lists of mining pools for your chosen cryptocurrency.

One method of mining that bitcoin facilitates is "merged mining". This is where blocks solved for bitcoin can be used for other currencies that use the same proof of work algorithm (for example, namecoin and devcoin). A useful analogy for merged mining is to think of it like entering the same set of numbers into several lotteries.

First-time miners who lack particularly powerful hardware should look at altcoins over bitcoin – especially currencies based on the scrypt algorithm rather than SHA256. This is because the difficulty of bitcoin calculations is far too high for the processors found in regular PCs.

If you're not sure which currency to mine, there is a pool called 'Multipool' which will automatically switch your mining hardware between the most profitable altcoin. Multipool updates every 30 minutes, and over time youll see balance grow in multiple altcurrencies. If required, the pool does allow you to fix your hardware on just one altcurrency too.

However, Mark from nut2pools.com said of this type of switching pool: "Loyal coin followers hate them because as soon as the difficulty of a coin drops, the profitability of it rises. Then all the multipools swing round, push the difficulty through the roof in a few hours, then leave again. It leaves the loyal coin followers having to mine the difficulty back down again at very low profitability."

POOL REWARDS

When deciding which mining pool to join, you need to weigh up how each pool shares out its payments and what fees (if any) it deducts.

There are many schemes by which pools can divide payments. Most of which concentrate of the amount of ‘shares’ which a miner has submitted to the pool as ‘proof of work’.

Shares are a tricky concept to grasp. Keep two things in mind: firstly, mining is a process of solving cryptographic puzzles; secondly, mining has a difficulty level. When a miner ‘solves a block’ there is a corresponding difficulty level for the solution. Think of it as a measure of quality. If the difficulty rating of the miner’s solution is above the difficulty level of the entire currency, it is added to that currency’s block chain and coins are rewarded.

Additionally, a mining pool sets a difficulty level between 1 and the currency’s difficulty. If a miner returns a block which scores a difficulty level between the pool’s difficulty level and the currency’s difficulty level, the block is recorded as a ‘share’. There is no use whatsoever for these share blocks, but they are recorded as proof of work to show that miners are trying to solve blocks. They also indicate how much processing power they are contributing to the pool – the better the hardware, the more shares are generated.

MorCryp

POOL REWARDS

The most basic version of dividing payments this way is the 'pay per share' (PPS) model. Variations on this puts limits on the rate paid per share; for example, equalised shared maximum pay per share (ESMPPS), or shared maximum pay per share (SMPPS). Pools may or may not prioritise payments for how recently miners have submitted shares: for example, recent shared maximum pay per share (RSMPPS). More examples can be found on the bitcoin wiki.

The other factor to consider is how much the pool will deduct from your mining payments. Typical values range from 1% to 10%. However, some pools do not deduct anything.

STARTING TO MINE WITH A POOL

Having decided which currency to mine and which pool you'll work for, it's time to get started. You need to create an account on the pool's website, which is just like signing up for any other web service. Once you have an account, you'll need to create a ‘worker’. You can create multiple workers for each piece of mining hardware you’ll use. The default settings on most pools are for workers to be assigned a number as their name, and ‘x’ as their password, but you can change these to whatever you like.