Different Ways to Mine Cryptocurrency

Generally, the idea of mining cryptocurrency is already a bit confusing and complicated. But even more so, people on the outskirts of the crypto mining community do not normally think about the different ways there are to mine crypto (which can be even more bewildering). This article will simply highlight the progression and advances in mining technology so you can be a crypto mining expert.

The Beginning of Crypto Mining

In the grand scheme of things, Cryptocurrency hasn’t been around for very long. It’s only been 10 years since the first cryptocurrency, bitcoin, was created. August 2008, the domain name bitcoin.org is registered, and later that month a cryptic person by the name of Satoshi Nakamoto publishes a paper called “Bitcoin: A peer-to-peer Electronic Cash System. The first bitcoin transaction happens on January 12 2009, when Nakamoto sends a computer programmer by the name of Hal Finney 10 bitcoin.

Cryptomining attempts to solve complex mathematical equations that are a part of the blockchain encryption mechanism. The first individual or group to solve these compound algorithms gets rewarded a block. For example, a bitcoin block has 12 bitcoin. Each bitcoin is currently worth over $6,400. The most powerful mining rigs are able to mine the most cryptocurrency.

Next Level Power

Before mining bitcoin was available to the public. The small cryptocurrency community was mining bitcoin from their CPUs. In December of 2009, Nakamoto published a letter that said, “We should have a gentleman’s agreement to postpone the GPU arms race as long as can for the good of the network. It’s much easier to get new users up to speed if they don’t have to worry about GPU drivers and compatibility. It’s nice how anyone with just a CPU can compete fairly equally right now.”

Most people believe that a person with the pseudonym, ArtForz, was the first person to mine bitcoin with GPUs, but there are conflicting stories that have Lazlo Hanyecz actually doing it a couple months before. Artforz is also thought to have used FPGAs and early structured ASICs to mine over 26,000 bitcoins over the course of 9 months.

In 2010, Hanyecz infamously traded 10,000 bitcoins for a couple pizzas. Eight years later, these two pizzas are worth over $8.6 million.

Later that year, the code for mining bitcoin was released to the general public.

In 2011, other cryptocurrencies begin to emerge including Litecoin, Namecoin, and Swiftcoin.

During this time, GPUs were still the most widely used among miners. Normally used for rendering video, animation, and images—the extra processing power was great for mining. It was efficient and fast, but wasn’t as flexible as a CPU, and it also requires more specialized programming to leverage its power, but it is noticeably more powerful on many accounts. It usually contains thousands of cores that are very capable of performing repetitive tasks at a high level. GPU mining rigs are powerful computers that can be modified to mine any cryptocurrency.

Professional Mining Power

Because most people used GPUs to mine crypto, people were looking for faster and

more efficient ways to mine the currency. By 2011, Field-Programmable Gate Arrays became more popular.

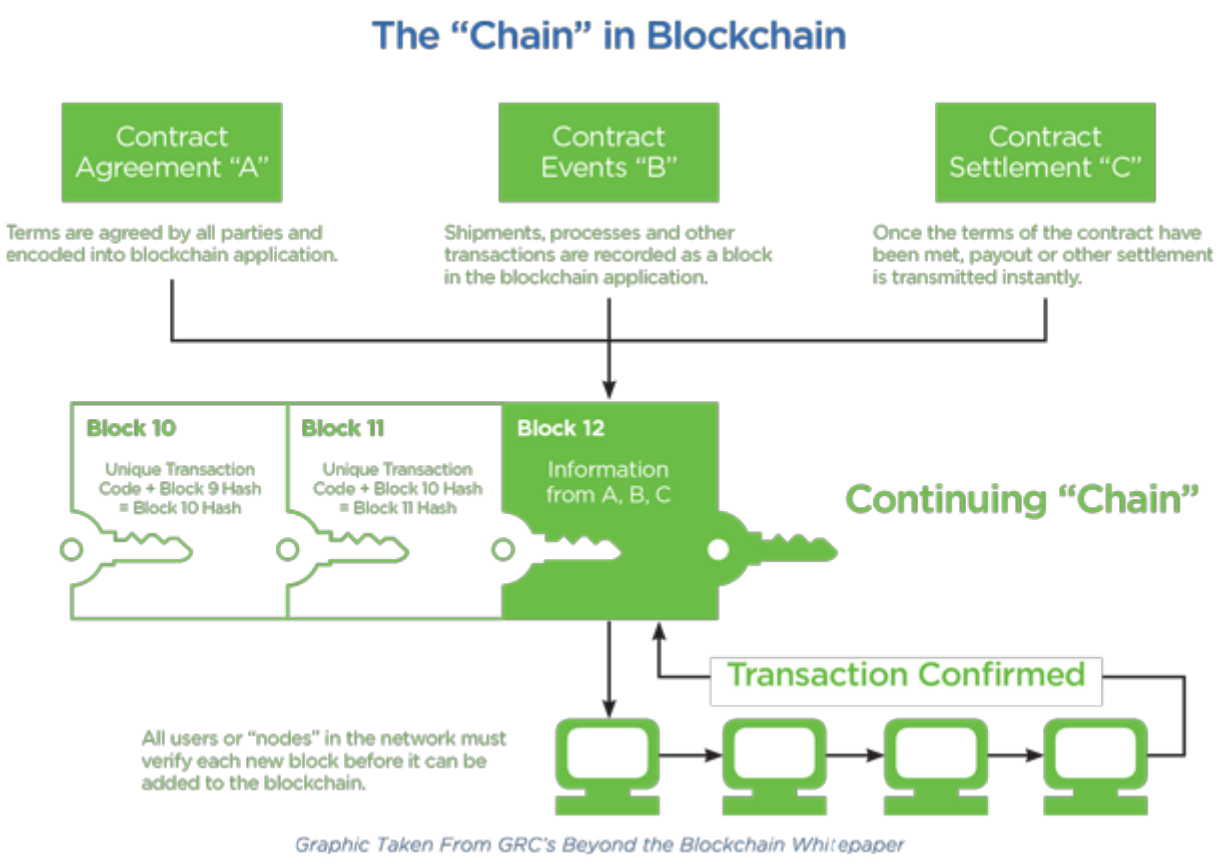
After a bit of configuration troubleshooting, miners were able to successfully use FPGAs to mine cryptocurrency effectively while using less power.

While, these machines were powerful at the time—mining at a speed of around 25 GH/s—they were also extremely loud, needing massive cooling fans.

FPGAs are quite popular because they can implement any logical function. However, FPGAs need to use software called HDL or Hardware Descriptive Language. This program is used to program the devices including gate arrays and static IP, but having to do it manually has become a burden to many miners. FPGAs are a great way to mine crypto, but it has been hard to compete with modern professional mining rigs. This is where modern ASIC mining rigs come into the picture.

ASIC or Application-Specific Integrated Circuit Miners are known as professional mining computers. FPGA and ASIC systems have many things in common. First off, they are their own form of processing chip. These chips are used specifically to mine cryptocurrency without any other functions. They can both process logic-based operations, and can use power more efficiently than previous CPUs and GPUs. Unlike a GPU mining rig, ASIC miners are designed to solve for one specific algorithm. This can be positive or negative. By narrowing down the algorithm focus,the miner uses less electricity and is usually cheaper than most GPU rigs. ASIC miners will earn more per day than any other system. Here are some examples of the best hashing or mining power from each:

CPU (Intel i7 2600k) – H/s: 49



Graphic Taken From GRC's Beyond the Blockchain Whitepaper

GPU (AMD Radeon 6990 Pro 4GB) – H/s: 84,000

FPGA (Xilinx Spartan6 CM1) – H/s: 1,6000,000

ASIC (KNC Miner Juptier) – H/s: 400,000,000

As you can see, ASIC miners are the most powerful of the lot. Some other good examples of ASIC miners are the Bitmain Antminer S9i and S9i, Antminer S7, AvalonMiner 761, and the WhatsMiner M3.

Cooling Innovations and Costs

The power & cooling costs it takes to mine cryptocurrency is astounding. Because the servers used to mine cryptocurrency are being worked to their maximum capabilities—these servers need the most advanced cooling systems available. Green Revolution Cooling, who patented liquid immersion cooling technology, has seen an

incredible growth in sales over the past year. According to Data Center Knowledge, last year, GRC increased their revenue by five times what it had been the past year. Many of these sales can be attributed to the mining of cryptocurrencies, and the launch of their new products GRC's HashRaQ, designed as a single rack immersion system, and the HashTank, a six-rack immersion system.

Mining cryptocurrency can be very costly with energy expenses alone. For example, Antonio Villas-Boas from Business Insider, put together a small mining rig that can mine 0.0015 bitcoin a day. His small setup has an electricity cost of $5.32 a day or about $1945 a year. He currently makes $4500 in mining each year with a gross of $2555.

GRC's immersion cooling systems can reduce build-out costs by as much as 50% and lower cooling energy costs by up to 95%. Many people are taking advantage of these numbers and increasing there overall mining profits.

Conclusion: What's Next?

As long as mining for these algorithms are profitable—people will continue to innovate their rigs to be more powerful. We don't quite know what the future holds for the cryptocurrency, but for now, it looks promising.

From CPUs to GPUs, and FPGAs to ASICs. Mining is getting more powerful. Along with this—we also see major advancements in the field of server cooling. Immersion cooling systems are allowing miners to hash at speeds that were unthinkable when cryptocurrency mining first came to be.

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Transforming Data Centers with Blockchain

Traditional data centers aren't always able to meet the demands of a large number of users who need to retrieve data in real time. The dramatic increase in the use of big data is putting pressure on data centers to increase their data transmission speed to accommodate more internet users. Data centers are therefore shifting from storage to real-time data analysis on demand as their primary function.

This functionality shift makes blockchain an increasingly attractive option for verifying data set changes across multiple data centers. However, this approach also requires an infrastructure that can provide rapid, secure data transmission for sources that require high bandwidth such as data, video and voice. Many data centers are now changing their traditional network architecture to one that can accommodate the data processing demands of block chain systems.

Infrastructure Changes

Traffic in traditional data centers is primarily between clients and servers, but server-to-server traffic predominates in internet data centers that support cloud-computing applications. Internet data centers must also provide an uninterrupted

experience for a large number of users with diversified demands. The network architecture of these data centers therefore needs to be more efficient to handle the traffic spikes they routinely experience.

The architecture currently in use by most data centers is a tree network consisting of three levels, including core, aggregation and access layers. This model can be effective when transmissions are primarily between client and server, but less so for applications requiring high bandwidth where latency becomes a concern. Large data centers are now migrating to a spine-and-leaf network architecture, which is more efficient at transferring data directly between servers.

However, the cabling for this architecture is much more complex since a leaf switch is needed to connect each spine switch. The main distribution area (MDA) of a data center using a spine-and-leaf architecture also has a higher server density, which requires greater cooling capacity. An MTP-to-LC module is beneficial for this architecture, since it can achieve the full mesh of the leaf switches without breaking the spine switch’s 40G port into four 10G channels.

Data centers will be able to secure their data more effectively once their infrastructure can support the required traffic. Blockchains are becoming a popular solution to data security, since they distribute data across multiple servers using cryptographic methods. This approach makes blockchains difficult to hack, since each block typically contains only a cryptographic hash of the previous block. Blockchains were originally used to protect cryptocurrencies such as Bitcoin, but they’re also being used to provide data security outside the financial sector. Data centers that store sensitive data have been among the first to adopt blockchains as a secure storage method.

Future Demands

Data center infrastructures will need to support many more devices with internet connectivity due to the increasing proliferation of 5G networks and the Internet of Things (IoT). They will also need to meet the demands of increased traffic and secure storage during this transformation. A spine-and-leaf network architecture will provide an economical solution to distributed data management through the use of servers that can tolerate higher densities. This architecture has already enabled large data centers to upgrade their bandwidth from 10G to 40G and will help ensure the transition to 100G networks in the near future. Data centers will adopt blockchain technology to improve the security of their data storage.

Conclusion

Green Revolution Cooling’s liquid-cooled server racks can help you use blockchain technology in your data center by reducing build-out costs as much as 60 percent and cooling costs by up to 95 percent. Our immersion cooling systems provide up to 100 kW of cooling power per rack, allowing you greatly increase hardware density. GRC’s modular, pre-engineered solutions also allow you to deploy in any powered shell, including warehouses and breweries.