What Is a Hard Fork?

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There have been several pretty significant hard forks in the history of crypto and blockchain — how exactly do they work?

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A **hard fork** (or hardfork) is a new software update implemented by a **blockchain** or **cryptocurrency's** network nodes that is incompatible with the existing blockchain protocol, causing a permanent split into two separate networks that run in parallel. Unlike **soft forks**, which are essentially backwards-compatible updates, hard forks establish a permanent change in a blockchain protocol's rules, with each version propagating their own transactions and blocks.

As a result of these networks' conflicting rules, a blockchain's nodes that implement the upgraded software will cease to use the previous version, causing incompatibility issues and forcing miners to choose between either updating to the new version and its rules, or continuing on an obsolete version.

In November 2020, both **Ethereum** and **Bitcoin Cash** underwent hard forks for different reasons that not only split their blockchains, but caused division in their communities. In Bitcoin Cash's instance, a new chain, **Bitcoin Cash Node (BCHN)** was created and is now considered to be the official Bitcoin Cash due its dominating mining power.

What Is a Blockchain Protocol?

Each blockchain is governed by a set of different rules — a protocol — that must be followed by network participants. These rules create certain parameters and standards for **mining**, **staking**, node connections, transaction specifics and more that must be adhered to by all participants.

Why Do Hard Forks Happen?

Things change, and they often change faster and more frequently in the crypto industry than in other industries due to the fast-moving nature of blockchain innovation. As a result, a cryptocurrency's underlying code is in some ways always a work of progress, open to both exploitation and improvement as technology changes.

Software updates usually create hard forks for a number of valid reasons. It could be to add new functions and features to the blockchain protocol in order to make it better, more competitive or even cross-compatible with other blockchains. Of course, community developers often disagree on which changes can improve their cryptocurrency project, and these opinions occasionally result in irreconcilable differences that can only be remedied with divergent versions of their cryptocurrency.

Blockchain and crypto asset developers continuously work on new features that iterate on the protocol's open-source software and improve its security, stability and scale.

In some cases, a simple network upgrade is not enough, and a drastic overhaul of existing code is required. A good analogy here are new-gen video game consoles or mobile phones, which are often not compatible with older-generation games or applications.

Crypto hard forks can help to patch security holes in protocols, introduce new features or better functionality, and change mining rewards or transaction fees, as well as the speed and scale at which a blockchain's transactions are validated. Importantly, hard forks can help smaller blockchains to reverse malicious transactions where bad actors hacked or scammed users out of their funds.

The most notable example of such a reverse was the creation of the new Ethereum chain after the original chain, now called **Ethereum Classic**, suffered a devastating $150 million hack in 2016 due to security vulnerabilities. In order to restore the funds of victims, the Ethereum Foundation implemented a new update that rolled back the **DAO** hackers' subsequent illicit transactions.

Of course, the most famous hard fork is surely 2017's **Bitcoin's** hard fork, which created **Bitcoin Cash**. A long-running community dispute came to a head, when Bitcoin Cash miners updated to a protocol version that increased the block size from 1MB to 8MB. As a result, Bitcoin and Bitcoin Cash now

exist as two vastly different blockchains, catering to different communities with their own rules and objectives.

It is important to note that while forks, especially hard forks, can cause a lot of disruption, they're very much needed to fix security issues and help cryptocurrencies function better. As the song goes, **it's evolution baby!**