Scaling Blockchain

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Summary

Currently Bitcoin supports less than 7 transactions per second. Comparing this to a transaction rate of 47,000 transactions per second which can be achieved by the Visa network, it's clear that the current state of blockchains are not suited to drive the global economy. A decentralized blockchain ledger will likely never achieve anything close to the transaction throughput achieved in centralized payment systems, like Visa. But still there are some techniques we can use in order to improve on what we have today.

There are some obvious strategies to scaling blockchains, including:

On-chain scaling which consists of making changes to the base protocol. This requires creating a hard fork of the existing solution. An example of this is changing the base protocol to start utilizing sharding in order to spread the network load.

Off-chain scaling which involves building on top of the base protocol. This can be done through smart contracts. An example of this is using rollups to collect multiple payments into one transaction.

Side-chain scaling which incorporates compatible blockchains running in parallel. Parallel blockchains runs independently but are connected through two-way bridges.