

Full Nodes

How do you enforce the rules to which you agree? You have to run a fully validating Bitcoin node and actually use it to verify payments you receive. Nodes act as your personal sentinel, protecting you against fraudulent activity. They reject actions undertaken by rule breakers, even while you're busy or asleep. While some claim that running a node today is purely altruistic, there are indirect incentives for doing so:

- Full nodes offer the best privacy model. If you're using a centralized wallet, you have no privacy — the wallet provider knows all of your transactions and addresses. If you're using an SPV wallet, your privacy is not obviously as terrible, but is nonetheless fundamentally broken. With a full node, you download all the blockchain data and only query for addresses / transactions locally — network observers can't see what you're interested in.
- Full nodes offer the strongest security model. When you have a copy of the ledger that you have validated yourself, you no longer have to trust a third party to be honest about the state of the ledger. If you're using a centralized wallet, you're completely trusting that they are running nodes that enforce the rules of the network. If you're using an SPV wallet, you're trusting that the majority of hashpower is validating the rules of the network to which you agree.

If you configure your node to accept incoming connections, it helps the network by sending blocks and transactions to other full nodes to help them sync, and it services data requests from lightweight wallets. From this standpoint full nodes altruistically support the health of the network. Some users may wish to do this in order to protect their investment in Bitcoin. From a macro perspective, full nodes keep the network honest. The more entities who are actively running nodes to audit their economic interactions, the more robust the network is against attacks. If you're thinking from a nation-state attack scenario, more nodes = more "doors that have to be kicked down" in order to coerce the node owner into making changes against their will.

With regard to the great Bitcoin scaling debate, Andreas Antonopoulos laid out the reasoning behind keeping the block size small — and thus keeping the cost of running a fully validating node low. Suffice to say, blocks can never be large enough to meet global demand. The scaling debate has revealed a fundamental economic conflict between users who want fast, cheap transactions and users who want fast, cheap cost of full ledger validation. As Andreas notes in his talk, this isn't an issue of scale, it is an issue of maintaining the more important principles underpinning the system: autonomy, privacy, security, and liberty. Keep this in mind when you hear of plans to "scale up" Bitcoin so that only the wealthiest individuals and institutions can afford to run fully validating nodes. Keep this in mind when some people try to convince you that Bitcoin is ruled by "Nakamoto Consensus" and the only nodes that matter are those owned by miners. Do you disagree with such a vision for the future of Bitcoin? Empower yourself by running a full node — no one can take this power away from you.