

Blockchain explained

The difference between public and private blockchain

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There are a number of explanations on what blockchain is and what exactly is the difference between another area where I get many questions, is the difference between public and private blockchain.

The similarities of public and private blockchain

Many flavors of blockchain have evolved over the years and the terminology is often misconstrued. and private blockchain have many similarities:

- Both are decentralized peer-to-peer networks, where each participant maintains a replica of a digitally signed transactions.
- Both maintain the replicas in sync through a protocol referred to as consensus.
- Both provide certain guarantees on the immutability of the ledger, even when some participant

So, how are they different?

Public blockchain and known participants

The sole distinction between public and private blockchain is related to who is allowed to participate in the *consensus* protocol and maintain the shared ledger. A public blockchain network is completely open to anyone who wants to participate in the network. The network typically has an incentivizing mechanism to encourage more participation. Bitcoin is one of the largest public blockchain networks in production today.

One of the drawbacks of a public blockchain is the substantial amount of computational power that is required to maintain the distributed ledger at a large scale. More specifically, to achieve consensus, each node in a network must solve an intensive cryptographic problem called a proof of work to ensure all are in sync.

Another disadvantage is the openness of public blockchain, which implies little to no privacy for transactions. This is a weak notion of security. Both of these are important considerations for enterprise [use cases](#) of blockchain.

What's your potential blockchain ROI?

Private blockchain and enterprise

A private blockchain network requires an invitation and must be validated by either the network starter or a subset of the network. Businesses who set up a private blockchain, will generally set up a *permissioned* network with restrictions on who is allowed to participate in the network, and only in certain transactions. Participants need *permission* to join. The access control mechanism could vary: existing participants could decide who can join; a central authority could issue licenses for participation; or a consortium could make the decisions instead. In a private network, it will play a role in maintaining the blockchain in a decentralized manner.

What's the difference between public and private blockchain?

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The Linux Foundation's [Hyperledger Fabric](#) is an example of a permissioned blockchain framework. Hyperledger projects hosted by The Linux Foundation. It has been designed ground up to cater to

This type of permissioned blockchain model offers the ability to leverage more than 30 years of technology and experience to deliver significant benefits. [Digital identity](#) in particular, is fundamental for most industry use cases, be it for supply chain, disrupting the [financial industry](#), or facilitating security-rich patient/provider data exchanges in [healthcare](#). Each entity participating in a particular transaction will have knowledge and access to it — other entities will have no access. blockchains also permit a couple of orders of magnitude greater scalability in terms of transaction volume.

The next steps on your blockchain journey

The immense promise and accelerated development of permissioned blockchain technology, coming from a wide range of industries, is acting as a perfect stimulant for more and more enterprises to step into production. I envision these permissioned networks will soon directly or indirectly influence every aspect of our lives.

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