ANGELO NETWORK

Core Technology Overview

ANGELO NETWORK IS A HYBRID DISTRIBUTED LEDGER NETWORK

Angelo Network connects cloud storage buckets and micro instances of Amazon AWS, Microsoft Azure, and Google Cloud Platform into peer nodes to form a hybrid distribute ledger network, aka. Hybrid Blockchain Network for enterprises to store data and run applications with better security compare to centralized offerings and more cost-effective compare to a pure blockchain solution. The Angelo Network team built its solution on top of IBM Hyperledger Fabric, Blockchain for Enterprise.

1. Why Hyperledger Fabric?

One of the many compelling Fabric features is the enablement of a network of networks. Members of a network work together, but because businesses need some of their data to remain private, they often maintain separate relationships within their networks.

For example, a purchaser may work with different sellers, selling the same product. The transactional relationship between the purchaser and each of the sellers should remain private and not visible across all sellers. This is made possible via the “channels” feature in Hyperledger Fabric if you need total transaction isolation, and the “private data” feature if you’d like to keep data private while sharing hashes as transaction evidence on the ledger (private data can be shared among “collection” members, or with a specific organization on a need-to-know basis.

Rather than an open, permissionless system, Fabric offers a scalable and secure platform that supports private transactions and confidential contracts. This architecture allows for solutions developed with Fabric to be adapted for any industry, thus ushering in a new era of trust, transparency, and accountability for Businesses.

From the very beginning, Hyperledger Fabric was designed for enterprise use. It is intended as a foundation for developing applications or solutions with a modular architecture. Its modular and versatile design satisfies a broad range of industry use cases.

It offers a unique approach to consensus that enables performance at scale while preserving privacy. Unlike some other distributed ledger technologies that were originally designed for ad hoc, public use (where there is no privacy and no governance) which had to be significantly redesigned to add in support for permissions and privacy; Hyperledger Fabric was designed with these features as

foundational. In this regard, Hyperledger Fabric has had a head start over many of the competing frameworks. For example, while there may be promise in some of the Ethereum 2.0 implementations, these are still mostly oriented to public network use, and in the Ethereum public network, the new architecture has still yet to be rolled out while Hyperledger Fabric has reached its version 2.0 milestone.

Below are some of the key features of Hyperledger Fabric and what differentiates it from other distributed ledger technologies.

- Permissioned architecture
- Highly modular
- Pluggable consensus
- Open smart contract model – flexibility to implement any desired solution model (account model, UTXO model, structured data, unstructured data, etc)
- Low latency of finality/confirmation
- Flexible approach to data privacy: data isolation using ‘channels’, or share private data on a need-to-know basis using private data ‘collections’
- Multi-language smart contract support: Go, Java, Javascript
- Support for EVM and Solidity
- Designed for continuous operations, including rolling upgrades and asymmetric version sup-port
- Governance and versioning of smart contracts
- Flexible endorsement model for achieving consensus across required organizations
- Queryable data (key-based queries and JSON queries)

2. Production hybrid blockchain solution built with Hyperledger Fabric

Blockchain technology has moved beyond the hype and there exist hundreds of networks in production today. Many of the production blockchain solutions in production today are built with Hyperledger Fabric including the Hybrid Solution developed by the Angelo Network research team.

3. Overview of Angelo Network Hybrid Blockchain

Angelo Network essentially is a decentralized computation platform with guaranteed privacy, where centralized nodes are used and have a special role (i.e., responsible to store larger data chunk compare to other nodes in the network). Our goal is to enable developers to build ‘privacy by design’, end-to-end decentralized applications, without a trusted third party.

Angelo Network hybrid distributed ledger network is a private network. Data queries are computed in a distributed way, without a trusted third party. Data is split between different nodes, and they compute functions together without leaking information to other nodes. No single party ever has access to data in its entirety; instead, every party has a meaningless (i.e., seemingly random) piece of a file, so even a data server admin is unable to read the file. Because random bit and bytes would have little value to hackers, it removes complicated and expensive security layers on larger nodes (i.e., centralized data centers) to offset the cost of adding more minor nodes to the hybrid network.

For more information and background behind the Angelo Network technology (codename Michelangelo), you can read more about the Michelangelo research project here.

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