

Hyper Ledger Fabric

Introduction to Hyperledger Fabric

Hyperledger Fabric is an open-source enterprise platform for developing decentralized blockchain solutions.

It is a permissioned blockchain that allows for a more secure and efficient way of conducting transactions.

Hyperledger Fabric is developed by the Linux Foundation and is one of the most popular blockchain platforms used by businesses today.

The graphic features a dark blue background with white text and graphics. In the top left corner is the Blockchain Council logo, which consists of a stylized blue cube icon followed by the text "Blockchain Council™". In the center, the text "IS HYPERLEDGER FABRIC A RIGHT CANDIDATE FOR 5G USE-CASES" is displayed in white, with "HYPERLEDGER FABRIC" in yellow. To the right is a white circle containing a white network graph with nodes and connecting lines. At the bottom left of the dark blue area is the website address "www.blockchain-council.org".

Components of Hyperledger Fabric

Hyperledger Fabric consists of several components, including a peer-to-peer network, smart contracts, and a consensus mechanism.

The peer-to-peer network is used to connect all the participants in the blockchain network and share transaction data.

Smart contracts are used to automate the execution of transactions and ensure that they are executed accurately.

Advantages of Hyperledger Fabric

Hyperledger Fabric offers several advantages over other blockchain platforms, including scalability, privacy, and security.

The use of permissioned blockchain allows for greater control over who can participate in the network and access transaction data.

Hyperledger Fabric also supports modular architecture, making it easier to customize the platform to meet specific business needs.

WHY SHOULD YOU BECOME A HYPERLEDGER FABRIC EXPERT?

- High Paying Job Positions
- Greater Hire Rate
- Lack of Skilled Professionals
- Unique Yet Simple Network Architecture
- Exclusive Job Positions
- Higher Job Security

WHAT ARE THE BENEFITS OF HYPERLEDGER FABRIC CERTIFICATION?

- Build your Private-Permissioned Blockchain Businesses
- Prove your Hyperledger Fabric skills
- Grasp In-Depth Understanding of Hyperledger Fabric
- Implement Your Skills to Any Blockchain Projects
- Start A Lucrative Career as A Hyperledger Expert
- Gain Competitive Advantage in Your Career

WHY SHOULD YOU USE 101 BLOCKCHAINS TO GET CERTIFIED?

- Interactive Learning Structure
- High-Quality and Up-to-date Content
- Proof of Your Professional Skills
- First-class Support System
- Exclusive Bonus Materials
- Extensive Personal Guidance

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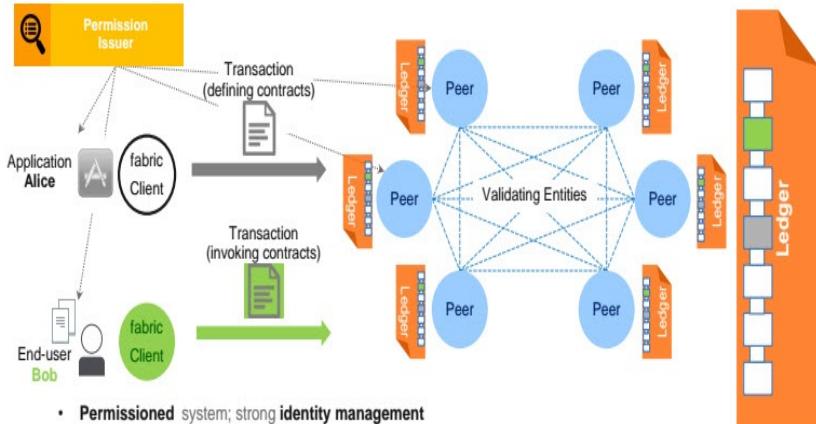
Hyperledger Fabric Architecture

The Hyperledger Fabric architecture consists of several layers, including the application layer, smart contract layer, and consensus layer.

The application layer is used to interact with the blockchain network and submit transactions.

The smart contract layer is responsible for executing transactions and enforcing business rules.

Hyperledger-fabric model



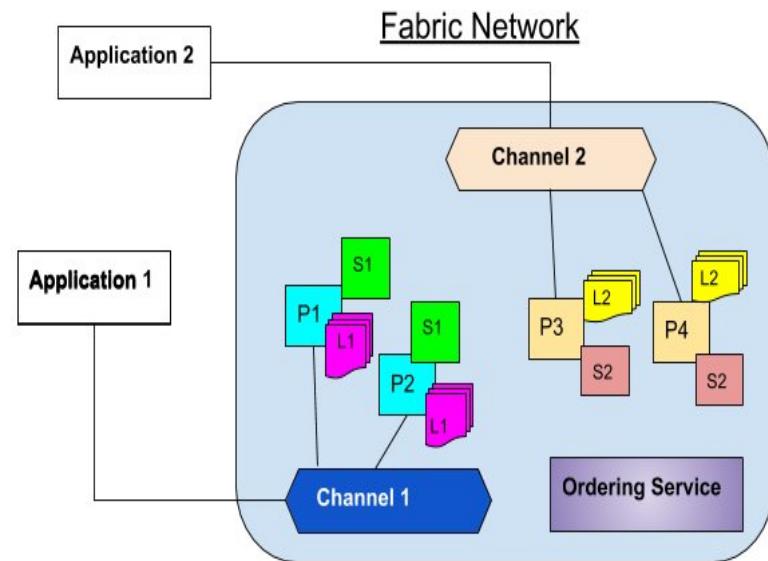
- Permissioned system; strong identity management
- Distinct roles of users, and validators
- Users deploy new pieces of code (chaincodes) and invoke them through deploy & invoke transactions
- Validators evaluate the effect of a transaction and reach consensus over the new version of the ledger
- Ledger = total order of transactions + hash (global state)
- Pluggable consensus protocol, currently PBFT & Sieve

Chaincode in Hyperledger Fabric

Chaincode is the term used to describe the smart contracts that are used in Hyperledger Fabric.

Chaincode is written in a programming language such as Go and is executed within a Docker container.

Chaincode can be customized to meet specific business needs.



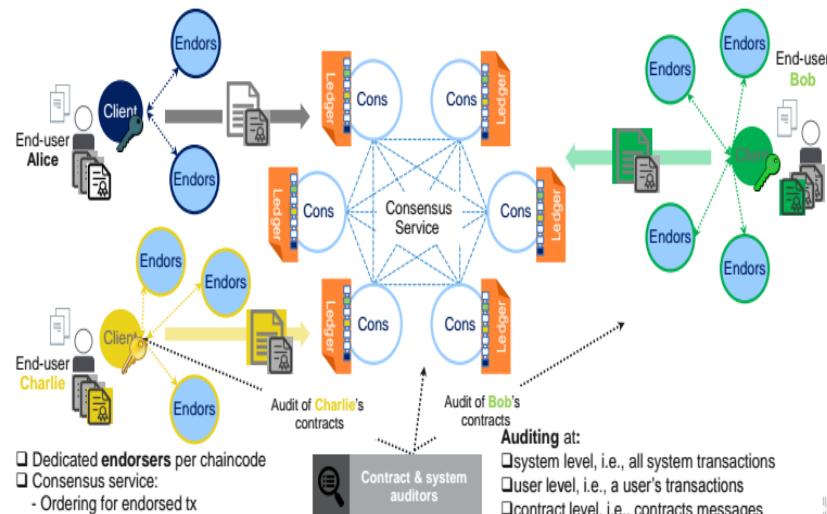
Hyperledger Fabric Consensus Mechanism

Hyperledger Fabric uses a consensus mechanism called Practical Byzantine Fault Tolerance (PBFT).

PBFT allows for faster transaction processing and greater scalability than other consensus mechanisms.

PBFT also ensures that transactions are accurate and secure.

Separating transaction endorsement from consensus

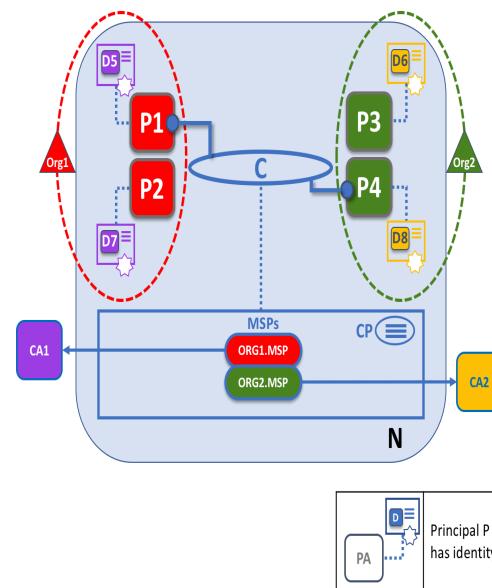


Hyperledger Fabric Membership Services

Hyperledger Fabric uses a membership service provider (MSP) to manage the identities of participants in the network.

The MSP ensures that only authorized participants can access the network and perform transactions.

The MSP also provides a way to revoke access to the network if necessary.



N	Blockchain Network	P	Peer
C	Channel	Org	Organization
Identity	PA	C	Principal PA (e.g. P1,P4) communicates via channel C.
CP	Channel policy	MSP	Membership Service Provider
CA	A1	R	Organization R owns application A1 and peers P1, P2.
C	CP	MSPL	Channel policy CP contains MSPs: MSP1 and MSP2.
CP	MSPL	CA1	MSP1 selects the Certificate Authority CA1 to provide certificates for it.

Hyperledger Fabric Channels

Hyperledger Fabric channels are used to create sub-networks within a larger blockchain network.

Channels allow for greater privacy and security by restricting access to transaction data.

Channels can be customized to meet specific business needs.

Hyperledger Fabric Use Cases - Supply Chain Management

Hyperledger Fabric is well-suited for supply chain management use cases.

It allows for greater transparency and efficiency in the supply chain, allowing businesses to track products from the source to the end consumer.

Hyperledger Fabric also supports the use of smart contracts to automate transactions and ensure accuracy.

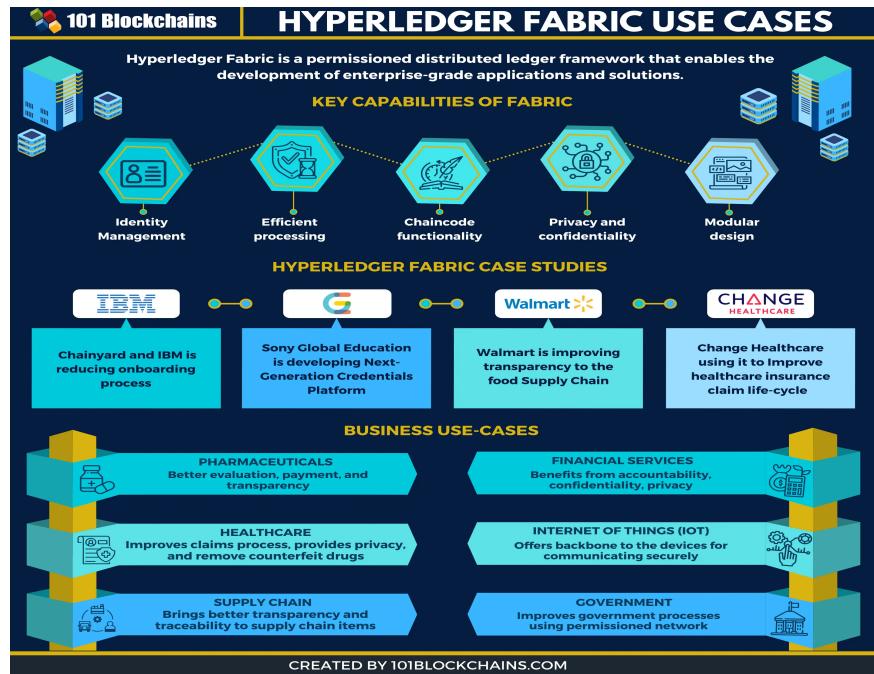


Hyperledger Fabric Use Cases - Financial Services

Hyperledger Fabric is also well-suited for financial services use cases.

It allows for faster and more secure transaction processing, reducing the risk of fraud and errors.

Hyperledger Fabric also supports the use of smart contracts to automate transactions and ensure regulatory compliance.

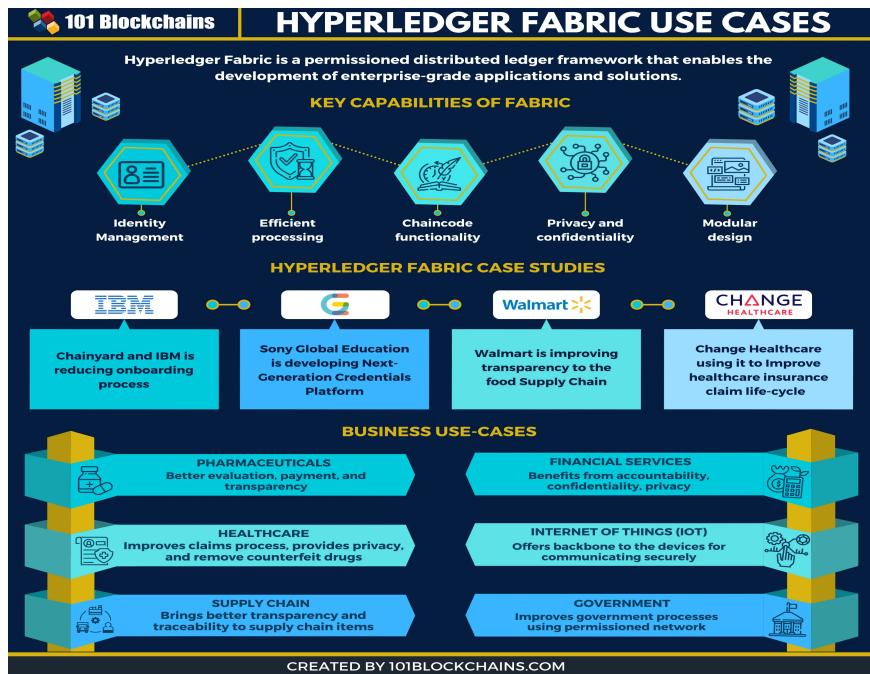


Hyperledger Fabric Use Cases - Healthcare

Hyperledger Fabric is also being used in healthcare to improve patient data management and sharing.

It allows for greater privacy and security of patient data, ensuring that only authorized personnel can access it.

Hyperledger Fabric also supports the use of smart contracts to automate healthcare workflows and ensure accuracy.



Hyperledger Fabric Use Cases - Government

Hyperledger Fabric is also being used by governments to improve transparency and efficiency in various areas.

For example, it can be used to track voting records, property ownership, and other government-related transactions.

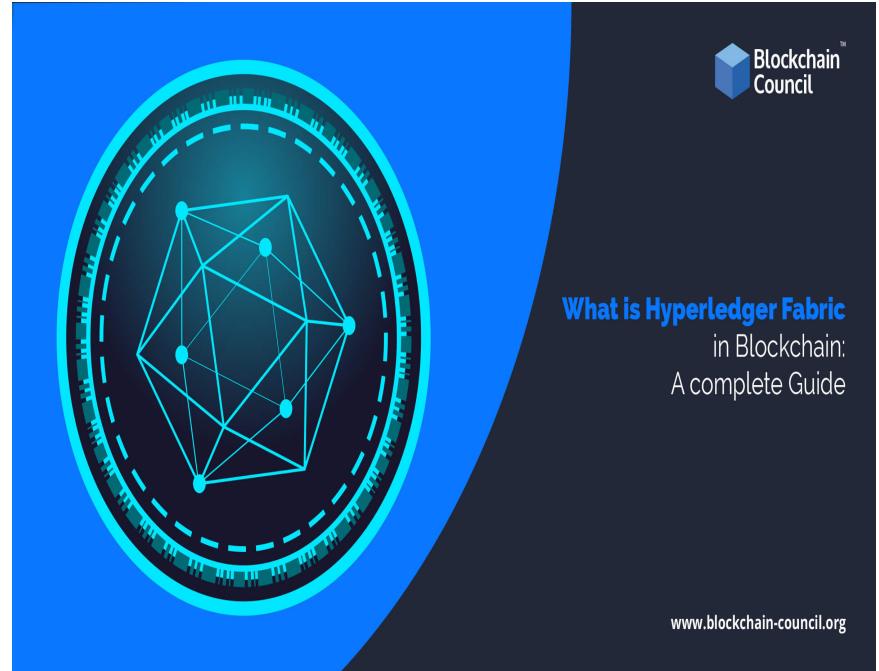
Hyperledger Fabric allows for greater privacy and security of government data, reducing the risk of fraud and errors.

Hyperledger Fabric vs. Other Blockchain Platforms

Hyperledger Fabric offers several advantages over other blockchain platforms such as Ethereum and Bitcoin.

It is more scalable and supports permissioned blockchain, allowing for greater control over who can access the network.

Hyperledger Fabric also supports modular architecture, making it easier to customize the platform to meet specific business needs.



Hyperledger Fabric Adoption

Hyperledger Fabric is being adopted by businesses and organizations across various industries.

Some of the companies using Hyperledger Fabric include IBM, Walmart, and Maersk.

Hyperledger Fabric is expected to continue to grow in popularity as more businesses adopt blockchain technology.

The graphic features the Blockchain Council logo at the top left. In the center, the text "IS HYPERLEDGER FABRIC A RIGHT CANDIDATE FOR 5G USE-CASES" is displayed in white, bold, sans-serif font. To the right is a large, stylized graphic of a network or mesh structure, composed of white lines connecting small white dots, set against a dark blue circular background.

www.blockchain-council.org

Hyperledger Fabric Challenges

Hyperledger Fabric is still a relatively new technology and faces several challenges, including regulatory issues and interoperability with other blockchain platforms.

There is also a lack of standardization in the industry, making it difficult for businesses to adopt blockchain technology.

Third bullet

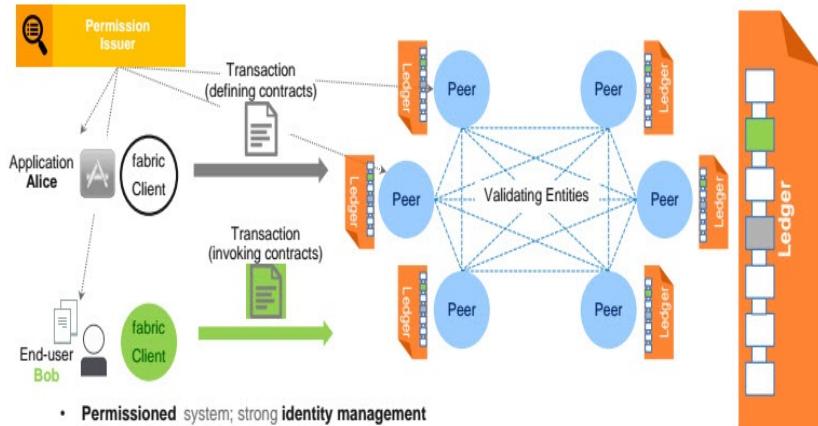
Hyperledger Fabric Future Developments

Hyperledger Fabric is expected to continue to evolve and improve over time.

Future developments include improved scalability, interoperability with other blockchain platforms, and greater standardization in the industry.

Third bullet

Hyperledger-fabric model



- **Permissioned** system; strong **identity management**
- Distinct roles of **users**, and **validators**
- Users **deploy** new pieces of code (chaincodes) and **invoke** them through **deploy & invoke** transactions
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- **Ledger** = total order of transactions + hash (global state)
- **Pluggable consensus** protocol, currently PBFT & Sieve

Hyperledger Fabric Resources

There are several resources available for learning more about Hyperledger Fabric, including online tutorials, documentation, and forums.

The Linux Foundation also offers training and certification programs for Hyperledger Fabric.

Hyperledger Fabric Community

Hyperledger Fabric has a large and active community of developers and users.

The community is dedicated to improving the platform and driving innovation in the blockchain industry.

The community also offers support and resources for businesses and organizations using Hyperledger Fabric.

Hyperledger Fabric Summary

Hyperledger Fabric is an open-source enterprise platform for developing decentralized blockchain solutions.

It offers several advantages over other blockchain platforms, including scalability, privacy, and security.

Hyperledger Fabric is being adopted by businesses and organizations across various industries and is expected to continue to grow in popularity.

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