

# Taashee Linux Services

## Whitepaper



## Why use Hyperledger?

Exploring the reasons behind Hyperledger's global bull run as the IT industry's favorite blockchain framework



## What is Hyperledger?

IBM joined hands with other companies to collaborate and develop an open source, production-ready, business blockchain framework, which caters to modern business demands. The result of this collaboration was Hyperledger, which is hosted by The Linux Foundation.

Hyperledger supports distributed ledger-based solutions on permissioned networks for a variety of industries. It sports a modular architecture, which maximizes the confidentiality, resilience, and flexibility of blockchain solutions [1].

In this white paper, we delve into the reasons that grant Hyperledger an edge over other similar platforms such as Ether, making it globally, the most preferred blockchain framework [2].

### **Permissioned membership**

Hyperledger is a framework for permissioned networks, where all participants have known identities. When considering a permissioned network, you should think about whether your blockchain use case needs to comply with data protection regulations. Many use cases — in the financial sector and healthcare industry, in particular — are subject to data protection laws that require knowing who the members of the network are and who is accessing specific data.

## **Performance, scalability, and levels of trust**

Hyperledger Fabric is built on a modular architecture that separates transaction processing into three phases: distributed logic processing and agreement (“chaincode”), transaction ordering, and transaction validation and commitment. This separation confers several advantages: Fewer levels of trust and verification are required across node types, and network scalability and performance are optimized.

## **Data on a need-to-know basis**

Businesses, due to competitiveness, protection laws, and regulation on confidentiality of personal data dictate the need for privacy of certain data elements, which can be achieved through data partitioning on the blockchain. Channels, supported in Hyperledger Fabric, allow for data to go to only the parties that need to know.

## **Rich queries over an immutable distributed ledger**

The ledger is the sequenced record of state transitions for the blockchain application. Each transaction results in a set of asset key-value pairs that are committed to the ledger as creates, updates, or deletes. The immutable source of truth for v1.0 is appended into the file system of the peer, which also has LevelDB embedded.

LevelDB has, by default, a key value database and supports keyed queries, composite key queries, and key range queries. If you also need complex, rich queries, CouchDB supports the basic capabilities of LevelDB, and adds the full data-rich queries. With optional support of a document database such as CouchDB, the content is JSON and fully queryable, where the data model is compatible with existing key/value programming model. As a result, the application changes are not required when modeling chaincode data as JSON when utilizing CouchDB.

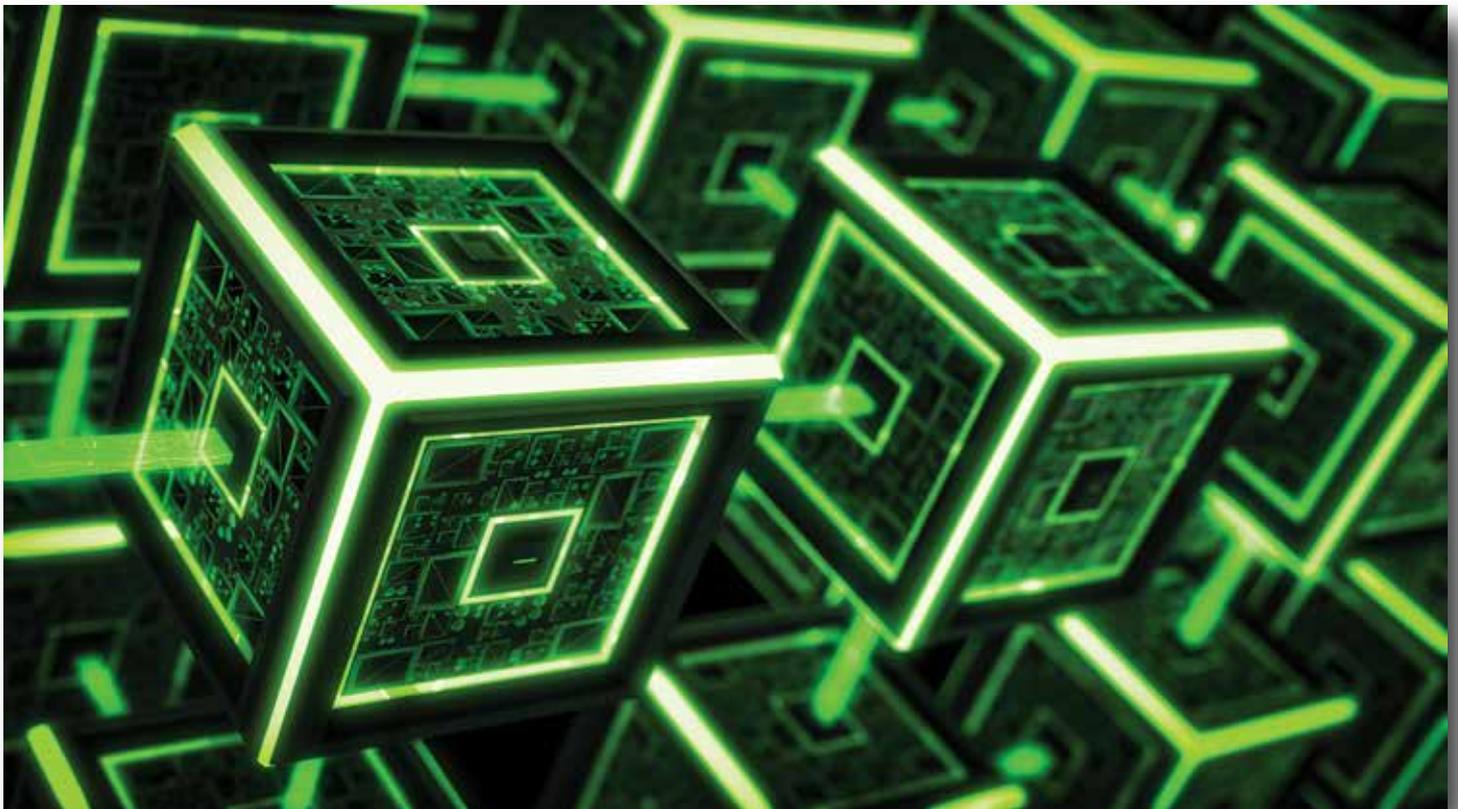
This JSON format helps minimize the work required to produce simple reports and perform audit functions. For example, in supply-chain scenarios, you can use JSON document style to help outline specific data for goods and transportation entities. You can easily produce a report on an asset for the different locations and transportation entities that were used in delivery to the asset’s final destination.

## **Modular architecture supporting plug-in components**

The modularity of Hyperledger Fabric architecture enables network designers to plug in their preferred implementations for components, which is an advantage. One of the most requested areas for modularity is “bring your own identity.” Some multi-company networks already have identity management and want to reuse instead of rebuild. Other components of the architecture that can be easily plugged in include consensus or encryption, where some countries have their own encryption standards.

## **Protection of digital keys and sensitive data**

HSM (Hardware Security Module) support is vital for safeguarding and managing digital keys for strong authentication. Hyperledger Fabric provides modified and unmodified PKCS#11 for key generation, which supports cases like identity management that need more protection. For scenarios dealing with identity management, HSM increases the protection of keys and sensitive data.



# Advantages over Ethereum

Hyperledger possesses a few key advantages that set it apart from its closest competition, Ethereum [3]:

- ◆ Ethereum is absolutely transparent and every transaction is visible to everyone on the network which is a drawback when you require enterprise-level peer to peer shielded transactions.
- ◆ Ethereum can be either public or private without any permissions while Hyperledger is much more flexible, providing both options based on pre-set permissions.
- ◆ With Ethereum, all the network participants (or nodes) have to reach consensus over all the transactions whereas Hyperledger allows nodes to choose between No-op (no consensus needed) and an agreement protocol (PBFT) whereby two or more parties can agree on a key in such a way that both influence the out-
- ◆ Hyperledger doesn't require a cryptocurrency backbone for transactions. It doesn't have a built-in native cryptocurrency like Ethereum's token, Ether, which allows for scalable consensus algorithm that is capable of handling high transaction rates required by most enterprise applications.

**Curious to understand how Hyperledger can help your business reach new heights?**

Write to us at [info@taashee.com](mailto:info@taashee.com) and get to know about our blockchain based product offerings built specifically keeping your needs in mind!

## References

1. HL\_Whitepaper\_IntroductiontoHyperledger.pdf
2. Top 6 technical advantages of Hyperledger Fabric for blockchain networks – IBM Developer
3. Hyperledger vs Ethereum | Key Differences and Comparison | Edureka