



Hyperledger Fabric Components

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Hyperledger Fabric lets you create a distributed network consisting of many nodes which communicate with each other. The Blockchain has the chaincode, ledger data and executes transactions over it. Following are the components that constitute the complete Fabric architecture:

- Transactions
- Data Structures
 - State
 - Ledger
- Nodes
 - Client
 - Peer
 - Ordering Service

Transactions

There are two types of transactions in Hyperledger Fabric:

- **Deploy Transactions:** These transactions create a new chaincode and deploy them over the Blockchain.
- **Invoke Transactions:** These transactions perform operations from the previously deployed chaincode. These transactions can update the state of Blockchain or return some values back to the invokers.

Deploy transactions are special case for invoke transactions where they create a new chaincode.

Data Structures

Blockchain data structures are the main components to create a ledger. The data is maintained as:

- **State:** The state of the Blockchain is maintained as versioned key-value store (KVS). The entries in state are manipulated by chaincode. The states are stored persistently. This data structure is maintained by peers, not by orderers and clients. State data structure supports state partitioning and also cross-chaincode transactions.
- **Ledger:** It provides a verifiable history of all the state changes in the ledger. This data structure is constructed by ordering service where hashes are used to create the complete chain. An order is established in all the blocks and transactions over the ledger. This data structure is available at all the peers.

Nodes

Nodes are communication entities in the Blockchain. There are three type of nodes in Hyperledger Fabric:

- **Client:** Clients are the transaction innovators, they submit the transaction to endorsers and ordering service.
- **Peer:** These maintain the state and copies of the ledger. Peers can take up a special role of endorsers who endorses the transaction before committing over the ledger.
- **Ordering Service:** This provides a shared and secure communication channel between clients and peers. Ordering Service implements a delivery guarantee and total order broadcast.