

Hyperledger Fabric Engineer (Bootcamp)

Course Summary

Description

This course starts from the beginning of standing up a Hyperledger Fabric v1.4 Network. This course will accommodate architects with very little-to-no experience on Fabric, and give them the knowledge necessary for perform the role of a Fabric Architect, Administrator and Developer.

This Hyperledger training course is designed for developers and who want to take a comprehensive deep dive on Hyperledger Fabric v1.4. his course has been created to walk you through Chaincode Development, Testing, and Deployment for a Hyperledger Fabric Network catering specifically toward Golang written Chaincode (Fabric's original Chaincode Language) . Additionally as an Application Developer you will learn how to write, and prepare Client Applications using the most mature Standard Development Kit in Hyperledger Fabric, NodeJS.

Objective

This course is a combination of these two courses:

- *Hyperledger Fabric v1.4: Architecting, Designing and Deploying a Network*
- *Hyperledger Training: Developing on Hyperledger Fabric*

At the completion of this course, Students will:

- Understand why Blockchain is needed and where
- Explore the major components of Blockchain
- Learn about Hyperledger Fabric and the structure of the Hyperledger Architecture
- Lean the features of the Fabric model including chaincode, SDKs, Ledger, Security and Membership Services
- Perform comprehensive labs on writing chaincode
- Explore the architecture of Hyperledger Fabric
- Understand and perform in depth labs on Bootstrapping the Network
- Perform comprehensive labs to integrate/develop an application with Hyperledger Fabric running a smart contract
- Build applications on Hyperledger Fabric

Topics

- Introduction To Blockchain
- How Blockchain Works
- Introduction To Hyperledger Fabric
- Getting Started With Fabric Model
- Chaincode
- Architecture Of Hyperledger Fabric
- Bootstrapping
- Introduction To Hyperledger Explorer
- Introduction To Hyperledger Composer
- Hyperledger Composer Playground

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Course Summary (cont.)

Prerequisites

To best benefit from this course:

- Knowledge of basic Linux system administration commands, and navigation
- Knowledge of Command line basics
- Strong knowledge of containerization and Docker
- Knowledgeable on Golang Basics & Node JS basics
- Familiarity with NoSQL databases and general understanding of CouchDB
- Strong understanding of Blockchain basics
- Familiarity with Hyperledger Fabric Component Structure & purposes
- Minimal Command Line Interface Familiarity

Duration

Five Days

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Course Outline

Developing on Hyperledger Fabric 1.4

This Hyperledger training course is designed for developers who want to take a comprehensive deep dive on Hyperledger Fabric v1.4. This course has been created to walk you through Chaincode Development, Testing, and Deployment for a Hyperledger Fabric Network catering specifically toward Golang written Chaincode (Fabric's original Chaincode Language). Additionally as an Application Developer you will learn how to write, and prepare Client Applications using the most mature Standard Development Kit in Hyperledger Fabric, NodeJS.

I. *Introduction To Blockchain*

- A. Introduction to Blockchain
- B. What is Blockchain
- C. Types of network
 - 1. Public network
 - 2. Permissioned network
 - 3. Private network
- D. Need for Blockchain Components of Blockchain
 - 1. Consensus
 - 2. Provenance
 - 3. Immutability
 - 4. Finality
- E. Where can Blockchain be used
- F. Example on Blockchain

II. *How Blockchain Works*

- A. How Blockchain Works
- B. Structure of Blockchain
 - 1. Block
 - 2. Hash
 - 3. Blockchain
 - 4. Distributed
- C. Lifecycle of Blockchain
- D. Smart Contract
- E. Consensus Algorithm
 - 1. Proof of Work
 - 2. Proof of Stake
 - 3. Practical Byzantine
 - 4. Fault Tolerance
- F. Actors of Blockchain
 - 1. Blockchain developer
 - 2. Blockchain operator
 - 3. Blockchain regulator
 - 4. Blockchain user
 - 5. Membership service provider
- G. Building A Small Blockchain Application

III. *Introduction To Hyperledger Fabric*

- A. Introduction to Hyperledger
 - 1. What is Hyperledger
 - 2. Why Hyperledger
 - 3. Where can Hyperledger be used
- B. Hyperledger Architecture
 - 1. Membership
 - 2. Blockchain
 - 3. Transaction
 - 4. Chaincode
- C. Hyperledger Fabric
- D. Features of Hyperledger
- E. Fabric Installation of prerequisite

IV. *Getting Started With Fabric Model*

- A. The Fabric Model
- B. Features of Fabric Model
 - 1. Chaincode
 - 2. SDKs
 - 3. Ledger
 - 4. Privacy through channels
 - 5. Security and Membership services
 - 6. Assets
 - 7. Consensus
- C. Components of Fabric Model
 - 1. Peer
 - 2. Orderer
 - 3. Certificate Authority
- D. Building your network

V. *Chaincode*

- A. Chaincode
 - 1. Chaincode API
 - 2. How to write a Chaincode
- Lab Work

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Course Outline (cont.)

VI. *Architecture Of Hyperledger Fabric*

- A. Architecture of Hyperledger Fabric
 1. Transaction
 2. Ledger
 3. Nodes
 4. Peer
 5. Endorser
 6. Ordering Nodes
 7. Channels
 8. Certificate Authority
- B. Transaction Flow
 - Lab Work

VII. *Bootstrapping*

- A. Bootstrapping the Network
- B. Introduction
 - Lab Work
 - Task 1 - Generate the crypto material for the various participants.
 - Task 2 - Generate the genesis block for the Orderer node and start ordering service (solo node).
 - Task 3 - Generated the configuration transaction block to create a new channel.
 - Task 4 - Sign the configuration block and create the new channel.
 - Task 5 - Make peers of all the organizations join the channel that we created in Task 4

VIII. *Introduction To Hyperledger Explorer*

- A. Block Details Peer List
- B. Chaincode List
- C. Transaction Details
- D. Installation of Hyperledger Explorer
- E. Starting the Explorer App

IX. *Introduction To Hyperledger Composer*

- A. Introduction
- B. Components of Hyperledger Composer
- C. Benefits of Hyperledger Composer
- D. Key Concepts
- E. Hyperledger Composer Solution
- F. Installation

X. *Hyperledger Composer Playground*

- A. Hyperledger Composer Playground
- B. Introduction
- C. Playground Overview Lab Work

Labs:

- Writing the Chaincode
- Unit Testing Using Mockstub
- Packaging & Deploying the Chaincode
- Creating the Connection Profile
- SDK Development Pt 1
- SDK Development Pt 2