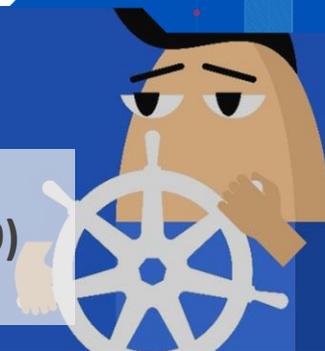




# Kubernetes for App Developers (LFD459)



CONNECTION TECHNOLOGY 裝備未來  
**FUTURE SKILLS**

Course Fee: HK\$18,000 (May apply up to HK\$12,000 subsidy)

\*Maximum saving, with the final grant subjects to approval.



This course will teach participants how to containerize, host, deploy, and configure an application in a multi-node cluster. Starting with a simple Python script, participants will define application resources and use core primitives to build, monitor and troubleshoot scalable applications in Kubernetes. Working with network plugins, security and cloud storage, participants will be exposed to many of the features needed to deploy an application in a production environment.

The topics covered are directly aligned with the knowledge domains tested by the Cloud Native Computing Foundation Certified Kubernetes Application Developer (CKAD) Program and will substantially increase students' ability to become certified.

## Award of Certificate of Accomplishment

This is the Linux Foundation's official training and participants with full attendance will obtain the certificate of completion by the Linux Foundation.

Also, full Attendance will also be awarded a Certificate of Accomplishment issued by the Hong Kong Productivity Council.

Programme code

10012208

Duration and time

4 half days & 2 full days  
 Tue & Thu: 19:00-22:00  
 Sat: 9:30-17:00

Venue

1/F, HKPC Building,  
 78 Tat Chee Avenue, Kowloon Tong

Medium

Cantonese, supplemented with English terminology

Course fee

HK\$18,000  
 (May apply up to HK\$12,000\* subsidy)

Prerequisite

- This course is for experienced application developers who need to containerize, host, deploy, and configure an application in a multi-node cluster.
- Basic Linux command line and file editing skills and be familiar with using a programming language (such as Python, Node.js, Go). Knowledge of Cloud Native application concepts and architectures.
- We encourage participants to complete Kubernetes Fundamentals (3 Days)

**Bring Your Own Device (BYOD):** Windows 10 / Mac OS 10.x or above with minimum 2 GB RAM and 20 GB hard disk

This course is an approved Reindustrialisation and Technology Training Programme (RTTP), which offers up to 2/3 course fee reimbursement upon successful applications. For details: <https://rttp.vtc.edu.hk>.

## 1. Introduction

- Objectives, Who You Are
- The Linux Foundation & its Training
- Certification Programs and Digital Badging
- Preparing Your System
- Course Registration & Labs

## 2. Kubernetes Architecture

- What Is Kubernetes?
- Components of Kubernetes & Challenges
- The Borg Heritage, Kubernetes Architecture
- Terminology
- Master Node
- Minion (Worker) Nodes
- Pods, Services, Controllers / Operators
- Single IP per Pod
- Networking Setup
- CNI Network Configuration File
- Pod-to-Pod Communication
- Cloud Native Computing Foundation
- Resource Recommendations & Labs

## 3. Build

- Container Options
- Containerizing an Application
- Creating the Dockerfile
- Hosting a Local Repository
- Creating a Deployment
- Running Commands in a Container
- Multi-Container Pod
- readinessProbe, livenessProbe
- Testing & Labs

## 4. Design

- Traditional Applications: Considerations
- Decoupled Resources
- Transience, Flexible Framework
- Managing Resource Usage
- Using Label Selectors, Multi-Container Pods
- Sidecar Container, Adapter Container
- Ambassador, Points to Ponder
- Jobs & Labs

## 5. Deployment Configuration

- Volumes Overview, Introducing Volumes
- Volume Spec, Volume Types,
- Shared Volume Example
- Persistent Volumes and Claims
- Persistent Volume, Persistent Volume Claim
- Dynamic Provisioning, Secrets

- Using Secrets via Environment Variables
- Mounting Secrets as Volumes
- Portable Data with ConfigMaps
- Using ConfigMaps
- Deployment Configuration Status
- Scaling and Rolling Updates
- Deployment Rollbacks
- Labs

## 6. Security

- Security Overview
- Accessing the API
- Authentication, Authorization
- ABAC, RBAC
- RBAC Process Overview
- Admission Controller
- Security Contexts
- Pod Security Policies
- Network Security Policies
- Network Security Policy Example
- Default Policy Example
- Labs

## 7. Exposing Applications

- Service Types
- Services Diagram
- Service Update Pattern
- Accessing an Application with a Service
- Service without a Selector
- ClusterIP, NodePort
- LoadBalancer, ExternalName
- Ingress Resource, Ingress Controller
- Service Mesh
- Labs

## 8. Troubleshooting

- Troubleshooting Overview
- Basic Troubleshooting Steps
- Ongoing (Constant) Change
- Basic Troubleshooting Flow: Pods
- Basic Troubleshooting Flow: Node and Security
- Basic Troubleshooting Flow: Agents
- Monitoring, Logging Tools
- Monitoring Applications
- System and Agent Logs
- Conformance Testing
- More Resource & Labs

### RTTP Training Grant Application

Companies should submit their RTTP training grant application for their employee(s) via <https://rttp.vtc.edu.hk/rttp/login> at least two weeks before course commencement. Alternatively, [application form](#) could be submitted by email to [rttp@vtc.edu.hk](mailto:rttp@vtc.edu.hk) along with supporting documents.

## About CKAD Certification exam



The Certified Kubernetes Application Developer (CKAD) has been developed by The Linux Foundation and the Cloud Native Computing Foundation (CNCF), to help expand the Kubernetes ecosystem through standardized training and certification. This exam is an online, proctored, performance-based test that consists of a set of performance-based tasks (problems) to be solved in a command line.

This international certification is for Kubernetes engineers, cloud engineers and other IT professionals responsible for building, deploying, and configuring cloud native applications with Kubernetes. **All participants completing the course will be registered for CKAD exam.**

## Special to HKCS members

- ❖ May enjoy up to HK\$300 Bookstore Coupon. **Promo Code: CS11HK2020**
- ❖ Can apply for the **certification of CPD hours**, this course hours will be counted.  
Please visit: <http://www.hkcs.org.hk/continuous-professional-development-cpd/> for your information about CPD Hours.

## Trainer Information

**Sunny CHAN** has 14 years of post-education working experience. He became a Chief Software Architect of a Local software house for 7 years. Afterwards, he has switched to the domain of Cloud-related infrastructure and infrastructure as code with Red Hat<sup>®</sup> since 2015. Sunny has been working in Kubernetes for over 4 years.

## Enrolment Methods

1. Scan the QR code to complete the enrolment and payment online OR
2. Mail the crossed cheque with payee name "Hong Kong Productivity Council" (in HK dollar) to HKPC Academy, Hong Kong Productivity Council, 3/F, HKPC Building, 78 Tat Chee Avenue, Kowloon (attention to Mr Desmond CHAN). Please indicate the course name and course code on the envelope.



[Enrolment Link](#)

Supporting Organisations (In arbitrary order)

