



## Kubernetes Administration KUB201v1.26

- 2 Days
- Lecture and Hands-on Labs

### Course Overview

This two-day partner delivered course is designed for system administrators, DevOps, system engineers and others who need an introduction to Containers, Kubernetes. The course begins with an introduction to containers and container orchestration. Students will learn about and explore Kubernetes, including launching applications, configuring networking, storage and security, and using Helm to deploy applications. The course includes comprehensive presentation content to introduce new concepts and processes and extensive hands-on experience.

### Who Should Attend

This course is designed for system administrators and others who want to administer Kubernetes.

### What You'll Learn

Attendees will be taught the following concepts and skills: - Containers and Orchestration Concepts - An introduction to Kubernetes - The Basics of Kubernetes - Kubernetes Cluster Administration - Networking, Storage and Security for Kubernetes - Helm and Helm Charts - AI LLM prompt engineering for relevant configuration snippets and solutions

### Outline

- 📖 Lecture + Lab: Start the Lab Environment
- 🗣️ Lecture: Introduction to Containers and Container Orchestration
- 🗣️ Lecture: Basic Kubernetes Administration
  - 📖 Lecture + Lab: Use Basic kubectl Commands
  - 📖 Lecture + Lab: Work with Namespaces in Kubernetes
  - 📖 Lecture + Lab: Work with Labels and Selectors
- 🗣️ Lecture: Kubernetes Workload Administration
  - 📖 Lecture + Lab: Deploy Basic Pods Using a Deployment
  - 📖 Lecture + Lab: Delete and Redeploy a Deployment
  - 📖 Lecture + Lab: Update Pods in a Deployment
  - 📖 Lecture + Lab: Work with Node Selectors
  - 📖 Lecture + Lab: Work with Taints and Tolerations
  - 📖 Lecture + Lab: Scale a Deployment
  - 📖 Lecture + Lab: Configure Horizontal Pod Autoscaling
- 🗣️ Lecture: Configuration for Kubernetes Objects
  - 📖 Lecture + Lab: Use Environment Variables in a Pod
  - 📖 Lecture + Lab: Use ConfigMaps to Set Environment Variables
  - 📖 Lecture + Lab: Define and Access ConfigMaps as Volumes
  - 📖 Lecture + Lab: Define and Access Secrets as Volumes
  - 📖 Lecture + Lab: Define and Access Secrets as Environment Variables
  - 📖 Lecture + Lab: Create a TLS Secret

- 📖 Lecture + Lab: Create an ssh-auth Secret
- 🗣️ Lecture: Cluster Networking, Services, and Ingress in Kubernetes
  - 📖 Lecture + Lab: Create and Edit a Service for an Application Using a Manifest
  - 📖 Lecture + Lab: Create a Service for an Application from the CLI
  - 📖 Lecture + Lab: Configure Ingress for an Application
  - 📖 Lecture + Lab: Configure Ingress with TLS for an Application
- 🗣️ Lecture: Storage in Kubernetes
  - 📖 Lecture + Lab: Configure ReadWriteMany Persistent Storage with NFS
- 🗣️ Lecture: Application Management on Kubernetes with Kustomize
  - 📖 Lecture + Lab: Manage Applications with Kustomize
- 🗣️ Lecture: Application Management on Kubernetes with Helm
  - 📖 Lecture + Lab: Add a Repository to Helm
  - 📖 Lecture + Lab: Deploy an Application with Helm
- 🗣️ Lecture: Resource Usage Control in Kubernetes
  - 📖 Lecture + Lab: Define Default Limits for Pods in a Namespace
  - 📖 Lecture + Lab: Define Limits for Containers and Pods
  - 📖 Lecture + Lab: Define Quotas for a Namespace
  - 📖 Lecture + Lab: Test Quotas for a Namespace
- 🗣️ Lecture: Role Based Access Controls Security in Kubernetes
  - 📖 Lecture + Lab: Create Service Accounts
  - 📖 Lecture + Lab: Create kubeconfig Files for User Accounts
  - 📖 Lecture + Lab: Create Roles and ClusterRoles
  - 📖 Lecture + Lab: Create RoleBindings and ClusterRoleBindings
  - 📖 Lecture + Lab: Test RBAC in Kubernetes

## Prerequisites

Attendees should have familiarity with the Command Line, Linux System Administration skills and attention to details. SUSE Certified Administrator (SCA) in Enterprise Linux or SUSE Certified Linux Engineer (SCE) in Enterprise Linux certification or level of experience recommended.

## Next Courses

SUSE Rancher Operations