Training: Component Soft

KBS-103 Kubernetes administration and CKA exam.prep.

TRANING TERMS

2026-12-01 | 3 days | Virtual Classroom

TRAINING GOALS:

Kubernetes is the de-facto system for container orchestration, e.g. automating the deployment, scaling and management of microservices-based, containerized applications.

This training introduces participants to the basic concepts and architecture of Kubernetes, its initial install, setup and access control, Kubernetes Pods and Workloads, Scheduling and node management, Accessing the applications, Persistent storage in Kubernetes as well as its Logging, Monitoring and Troubleshooting facilities.

This course doesn’t only prepare delegates for the daily administration of Docker & Kubernetes systems but also for the official Certified Kubernetes Administrator (CKA) and Certified Kubernetes Application Developer (CKAD) exams of the Cloud Native Computing Foundation (CNCF).

Structure: 50% theory 50% hands on lab exercises.

Target audience: System administrators, developers and devops who want to understand and use Kubernetes in cloud and data center environments.

CONSPECT:

- Module 1: Kubernetes introduction
  - Cloud computing in general
  - Cloud types
  - Cloud native computing
  - Container orchestration
  - Kubernetes
  - Kubernetes concepts
  - Kubernetes objects categories
  - Custom resource definitions
  - Kubernetes architecture
  - Kubernetes master

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- Kubernetes node
- Kubernetes Lab: Health check

- Module 2: Accessing Kubernetes
  - Accessing the Kubernetes cluster
  - Controlling access to the API
  - Authorization
  - Role Based Access Control
  - Roles and ClusterRoles
  - Role bindings
  - Admission control
  - Kubernetes Lab: Accessing API
- Module 3: Kubernetes Workloads
  - The pod
  - Our first Pod
  - Operations on pods
  - Pod Status and Lifecycle Pod Status and Lifecycle (cont)
  - Pod probe examples
  - RestartPolicy examples
  - InitContainers Pod resource management
  - Pod security context
  - Patterns for Composite Containers
  - ReplicationController and ReplicaSet
  - Working with ReplicationController, ReplicaSet
  - Deployments
  - Working with Deployments
  - Kubernetes Lab: Workloads
- Module 4: Scheduling and node management
  - The Kubernetes Scheduler
  - Pod priorities and preemption
  - Assigning Pods to Nodes
  - Assigning Pods to Nodes – Node affinities Assigning Pods to Nodes – Pod affinities
  - Taints and tolerations
  - Managing nodes
  - Kubernetes Lab: Scheduling
- Module 5: Accessing the applications
  - Services

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- Service types
- Working with Services
- Working with Services
- Ingress
- Ingress definition
- Working with Ingress
- Network Policies
- Network Policy example
- Kubernetes Lab: Accessing Applications

- Module 6: Persistent storage in Kubernetes
  - Volumes Volume example Volume types
  - Persistent Volumes
  - Persistent Volume example
  - Dynamic PVC provisioning
  - Secrets
  - Using Secrets as environmental variables
  - Using Secrets as volumes
  - ConfigMaps
  - Kubernetes Lab: Persistent Storage
- Module 7: Kubernetes Special Workloads
  - StatefulSets StatefulSets - Limitations
  - StatefulSet example
  - StatefulSet example with PVC
  - Jobs, CronJobs
  - Jobs example
  - CronJobs example
  - DaemonSets
  - Kubernetes Lab: Special workloads
- Module 8: Logging, monitoring and troubleshooting
  - Logging architecture
  - Monitoring
  - Troubleshooting
  - Kubernetes Lab: Logging and Monitoring
- Module 9: Installing and upgrading Kubernetes
  - Picking the right solution
  - One node Kubernetes install

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- Kubernetes universal installer
- Install using kubeadm on CentOS
- Upgrading Kubernetes
- Kubernetes Networking Kubernetes
- Lab:Upgrading Kubernetes

- Appendix: Application containers
  - Application containers
  - Containers on Linux
  - Container runtime

REQUIREMENTS:

Proficiency with Linux CLI. A broad understanding of Linux system administration. Basic knowledge of Linux containers, e.g. Docker.

Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by Component Soft (course completion).

TRAINER:

Certified Component Soft Trainer.

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