Kubernetes Administration – Part 2

Course Outline

Overview
In this course you'll learn how to install and configure a production-grade Kubernetes cluster, from network configuration to upgrades to making deployments available via services. Also handle the ongoing tasks necessary for Kubernetes administration.

This course does not focus on one vendor's tools. Most courses are vendor-locked. We use kubeadm to deploy the cluster and focus on tools that would work on anyone's Kubernetes cluster.

Prerequisites
Students should have an understanding of Linux administration skills, comfortable using the command line. Must be able to edit files using a command-line text editor.

Duration
2 days

Course Outline

- Setup and Manage HA in Kubernetes Cluster
- Perform a version upgrade on a Kubernetes cluster using Kubeadm
- Implement etcd backup and restore
- Setup Horizontal PodAutoscaleer
- Create and manage Statefulset
- Understand Advance networking – network policy (Isolate Namespaces using Network Policy)
- Create and apply the secret – TLS
- Introduction to Scheduling
- Logging and Troubleshooting (Set up the popular EFK (Elasticsearch + Fluentd + Kibana))
- Custom Resource Definition
- Working with Helm and Charts

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Exam Details

Certified Kubernetes Administrator (CKA)
A certified K8s administrator has demonstrated the ability to do basic installation as well as configuring and managing production-grade Kubernetes clusters. They will have an understanding of key concepts such as Kubernetes networking, storage, security, maintenance, logging and monitoring, application lifecycle, troubleshooting, API object primitives and the ability to establish basic use-cases for end users.

The online exam consists of a set of performance-based items (problems) to be solved in a command line and candidates have 2 hours to complete the tasks.

The Certification focuses on the skills required to be a successful Kubernetes Administrator in industry today. This includes these general domains and their weights on the exam:

Domain	***Weight***
Cluster Architecture, Installation & Configuration • *Manage role based access control (RBAC)* • *Use Kubeadm to install a basic cluster* • *Manage a highly-available Kubernetes cluster* • *Provision underlying infrastructure to deploy a Kubernetes cluster* • *Perform a version upgrade on a Kubernetes cluster using Kubeadm* • *Implement etcd backup and restore*	25%
Workloads & Scheduling • *Understand deployments and how to perform rolling update and rollbacks* • *Use ConfigMaps and Secrets to configure applications* • *Know how to scale applications* • *Understand the primitives used to create robust, self-healing, application deployments* • *Understand how resource limits can affect Pod scheduling* • *Awareness of manifest management and common templating tools*	15%
Services & Networking • *Understand host networking configuration on the cluster nodes* • *Understand connectivity between Pods* • *Understand ClusterIP, NodePort, LoadBalancer service types and endpoints* • *Know how to use Ingress controllers and Ingress resources* • *Know how to configure and use CoreDNS* • *Choose an appropriate container network interface plugin*	20%
Storage • *Understand storage classes, persistent volumes* • *Understand volume mode, access modes and reclaim policies for volumes* • *Understand persistent volume claims primitive* • *Know how to configure applications with persistent storage*	10%

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Troubleshooting • *Evaluate cluster and node logging* • *Understand how to monitor applications* • *Manage container stdout & stderr logs* • *Troubleshoot application failure* • *Troubleshoot cluster component failure* • *Troubleshoot networking*	30%

The cost is USD395 and includes one free retake.

- Duration of Exam 2 hours
- Certification Valid for 3 Years
- Includes 12 Month Exam Eligibility
- PDF Certificate and Digital Badge
- Performance-Based Exam
- Exam Simulator.