Kubernetes for Administrator

Course Overview

Container Technology has become a crucial technology in this era, serving as a foundational knowledge base for the world of information technology, both for System Administrators and Software Developers. As demands increase and systems requiring management grow larger and more complex, Kubernetes steps in to manage systems utilizing Container Technology. Functioning as a Container Orchestration tool, it ensures the efficient management of numerous containers. Kubernetes is a widely popular tool used by large organizations worldwide.

This course is designed for System Administrators who need to understand the principles of Kubernetes and are responsible for managing it. It covers essential foundational knowledge of Kubernetes, cluster management, and storage and security aspects related to Kubernetes.

Course Objective

- Understand the principles, architecture, and management of a Kubernetes Cluster
- Understand how to manage the various components of an application for installation and configuration within a Kubernetes Cluster
- Understand how to manage Services to enable user access to applications within a Kubernetes Cluster
- Understand the networking management of a Kubernetes Cluster
- Understand storage management within a Kubernetes Cluster

Course Prerequisites

- Basic knowledge of Docker
- Basic knowledge of Linux
- Basic knowledge of Networking

Course Contents

- Kubernetes
  - What is Kubernetes?
  - Cluster Architecture
  - Cluster Installation and Upgrade

- Workloads
  - Basic YAML
  - Pods
  - Static Pods
  - Workload Resources
  - ReplicaSets
  - Deployments
  - DamonSets

- Namespaces
- Labels and Selectors
- Resource Requirements and Limits

- Scheduling
  - Manual Scheduling
  - Taints and Tolerations
  - Node Selectors
  - Node Affinity

- Services, Loadbalancing and Networking
  - Services
  - ClusterIP
  - NodePort
  - LoadBalancer
  - ExternalName
  - DNS for Services and Pods
  - Ingress controllers and Ingress resources

- Application Management
  - Application Logs
  - Commands and Arguments
  - ConfigMaps in Applications
  - Secrets in Applications
  - Configure Environment Variables
  - Rolling Updates and Rollbacks
  - Scale Applications
  - Multi Container PODs
  - InitContainers

- Security
  - Kubeconfig
  - Role Based Access Controls
  - Image Security
  - Network Policy

- Storage
  - Volumes
  - Persistent Volumes
  - Persistent Volume Claims
  - Persistent Volume Claims in PODs
  - Storage Class

Course Length:

3 Days

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