TechyEdz Solutions

Training | Consulting | Developement | Outsourcing

Dockers + Kubernetes

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Dockers + Kubernetes Combo Course

Course Overview:

This Docker Kubernetes Complete Course will help you to understand how to run, deploy and maintain your applications on Kubernetes. If you are into DevOps, then this is a technology you need to learn. Kubernetes has gained a lot of popularity lately and it is a well-aimed skill by companies.

The course will show you how to build apps in containers using docker and how to deploy it Kubernetes cluster. On the other hand,this Kubernetes Course will explain you how to set up your Kubernetes cluster on your desktop, or on the cloud using AWS.

This comprehensive 2-in-1 Course follows a step-by-step approach and focuses on how to use Docker and Kubernetes to package application services into standardized units of deployment. These units are easy to deploy and run on any platform on-premise and in the cloud. Initially, you'll write Dockerfiles for each of the application services, develop, test and run service code running inside a container and optimize your Dockerfiles to use multi-stage builds to minimize the size of the resulting Docker images used in production. Moving further, you'll learn to make an informed decision on Container orchestration in Azure. You'll also learn to deploy, configure and manage Azure Kubernetes service clusters. Finally, you'll learn to deploy applications to Azure Kubernetes Service and manage Container workloads at Scale.

If you're looking to ship and run distributed applications with Docker as well as manage container workloads at scale with Microsoft Azure then this Course is perfect for you!

Dockers

Course Outline:

1. Container Technology Overview

- Instructor Docker Demo
- Application Management Landscape
- Application Isolation
- Resource Measurement and Control
- Container Security
- OverlayFS Overview

- Container Security
- Open Container Initiative
- Docker Alternatives
- Docker Ecosystem
- Docker Ecosystem (cont.)

2. Installing Docker

- Installing Docker
- Docker Architecture
- Starting the Docker Daemon
- Docker Daemon Configuration
- Docker Control Socket
- Enabling TLS for Docker
- Validating Docker Install

3. Managing Containers

- Creating a New Container
- Listing Containers
- Managing Container Resources
- Running Commands in an Existing Container
- Interacting with a Running Container
- Stopping, Starting, and Removing Containers
- Copying files in/out of Containers
- Inspecting and Updating Containers
- Docker Output Filtering & Formatting

4. Managing Images

- Docker Images
- Listing and Removing Images
- Searching for Images
- Downloading Images
- Uploading Images
- Export/Import Images
- Save/Load Images
- Committing Changes

5. Creating Images with DOCKERFILE

- Dockerfile
- Caching
- docker image build
- Dockerfile Instructions
- ENV and WORKDIR
- Running Commands
- Getting Files into the Image
- Defining Container Executable
- HEALTHCHECK
- Best Practices
- Multi-Stage builds with Dockerfile

6. Docker Volumes

- Volume Concepts
- The docker volume Command
- Creating and Using Internal Volumes
- Internal Volume Drivers
- Removing Volumes
- Creating and Using External Volumes
- SELinux Considerations
- Mapping Devices

7. Docker Compose/SWARM

- Writing YAML Files
- Concepts
- Compose CLI
- Defining a Service Set
- Compose Versions
- Docker Engine Swarm Mode
- Docker Swarm Terms
- Docker Swarm Command Overview
- Creating a Swarm
- Creating Services
- Creating Secrets
- Stack Files

- Stack Command
- Swarm Placements
- Swarm Resource Limits & Reservations
- Swarm Networking
- Swarm Networking Troubleshooting

8. Docker Networking

- Overview
- Data-Link Layer Details
- Network Layer Details
- Hostnames and DNS
- Service Reachability
- Container to Container Communication
- Container to Container: Links (deprecated)
- Container to Container: Private Network
- Managing Private Networks
- Remote Host to Container

9. Docker Logging

- Docker Logging
- Docker Logging with json-file and journald
- Docker Logging with syslog
- Docker Logging with Graylog or Logstash
- Docker Logging with Fluentd
- Docker Logging with Amazon or Google
- Docker Logging with Splunk

Kubernetes Administrator

Course Outline:

1. Application Lifecycle Management

- Understand deployments and how to perform rolling update and rollbacks
- Know various ways to configure applications
- Know how to scale applications
- Understand the primitives necessary to create a self-healing application

2. Installation, Configuration & Validation

- Design a Kubernetes Cluster
- Install Kubernetes Masters and Nodes
- Configure secure cluster communications
- Configure a highly-available Kubernetes cluster
- Know where to get the Kubernetes release binaries
- Provision underlying infrastructure to deploy a Kubernetes cluster
- Choose a network solution
- Choose your Kubernetes infrastructure configuration
- Run end-to-end tests on your cluster
- Analyze end-to-end test results
- Run Node end-to-end Tests
- Install and use kubeadm to install, configure, and manage Kubernetes clusters

3. Core Concepts

- Understand the Kubernetes API primitives
- Understand the Kubernetes cluster architecture
- Understand Services and other network primitives

4. Networking

- Understand the networking configuration on the cluster nodes
- Understand Pod networking concepts
- Understand Service Networking
- Deploy and configure network load balancer
- Know how to use Ingress rules
- Know how to configure and use the cluster DNS
- Understand CNI

5. Scheduling

- Use label selectors to schedule Pods
- Understand the role of DaemonSets

- Understand how resource limits can affect Pod scheduling
- Understand how to run multiple schedulers and how to configure Pods to use them
- Manually schedule a pod without a scheduler
- Display scheduler events

6. Security

- Know how to configure authentication and authorization
- Understand Kubernetes security primitives
- Know how to configure network policies
- Create and manage TLS certificates for cluster components
- Work with images securely
- Define security contexts
- Secure persistent key value store

7. Cluster Maintenance

- Understand Kubernetes cluster upgrade process
- Facilitate operating system upgrades
- Implement backup and restore methodologies

8. Logging / Monitoring

- Understand how to monitor all cluster components
- Understand how to monitor applications
- Manage cluster component logs
- Manage application logs

9. Storage

- Understand persistent volumes and know how to create them
- Understand access modes for volumes
- Understand persistent volume claims primitive
- Understand Kubernetes storage objects
- Know how to configure applications with persistent storage

10. Troubleshooting

- Troubleshoot application failure
- Troubleshoot control plane failure
- Troubleshoot worker node failure
- Troubleshoot networking

- **Prerequisites:**

- Should have proficiency with the Linux CLI and a broad understanding of Linux system administration.
- Basic understanding of computer science concepts: About operating system and executable unit
- Basic understanding on docker and containers
- Be comfortable at the Linux, MacOS, or Windows command-line (we'll guide you through, but just a bit of familiarity is needed)
- Basic understanding of cloud computing will help you but it is not necessary

- **Who Can Attend:**

- All IT professionals who actively develop, test, and/or deploy code
- Anyone who are interested in developing applications for production
- Engineers, Admins, and DevOps personnel that run,deploy & maintain applications
- Project and Functional Managers,and architects who need to understand application deployment

- **Number of Hours: 70hrs**
- **Certification: Docker Certified Associate (DCA) and Certified Kubernetes Administraor (CKA)**
- **Key Features:**

- One to One Training
- Online Training
- Fastrack & Normal Track
- Resume Modification
- Mock Interviews
- Video Tutorials
- Materials
- Real Time Projects
- Virtual Live Experience

- Preparing for Certification