



## **Docker and Kubernetes Training**

[www.cognixia.com](http://www.cognixia.com)

# About Cognixia

Cognixia- A Digital Workforce Solutions Company is dedicated to delivering exceptional trainings and certifications in digital technologies. Founded in 2014, we provide interactive, customized training courses to individuals and organizations alike, and have served more than 130,000 professionals across 45 countries worldwide.

Our team of more than 7000 industry experts facilitate more than 450 comprehensive digital technologies courses, along with state-of-the-art infrastructure, to deliver the best learning experience for everyone. Our comprehensive series of instructor-led online trainings, classroom trainings and on-demand self-paced online trainings cover a wide array of specialty areas, including all of the following:

- IoT
- Big Data
- Cloud Computing
- Cyber Security
- Machine Learning
- AI & Deep Learning
- Blockchain Technologies
- DevOps

Cognixia is ranked amongst the top five emerging technologies training companies by various prestigious bodies. We're also RedHat Enterprise Partner, Microsoft Silver Learning Partner and an authorized training partner for ITIL, Automation Anywhere and ISC2.



# OUR AWARDS & AFFILIATIONS

**Best Workplace Amongst Emerging Enterprises** Awarded By **Great Indian Workplace Awards – 2018** Mumbai, India



**Best Training Provider of the Year** Awarded By **The Golden Globe Tiger Awards – 2018** Kuala Lumpur, Malaysia



**TOP 5 Big Data TRAINING INSTITUTES 2017** **siliconindia**

**WORLD HRD CONGRESS** Cognixia is awarded as **Training Company of the Year, 2018**

**Top 10 IoT Training Companies for the Second consecutive year.**



**TOP 10 IoT TRAINING INSTITUTES PROMISING IN INDIA 2017** **HIGHER EDUCATION Review**

**World HRD Congress** has awarded for **Excellence in Training (Asia)**



**TOP 5 CLOUD TRAINING INSTITUTIONS INDIA 2016** **HIGHER EDUCATION Review**



**Asian Training & Leadership Award, Dubai**

**siliconindia** BEST TRAINING PROVIDER **BIG DATA HADOOP DEVELOPER OF THE YEAR 2016**

**Top 10 IoT Training Institutes – 2016**



**Top 10 LinkedIn Best of Pages, 2019**



**ISO 9001:2015 CERTIFIED** ISO 9001:2015 Certified Quality Management System



**ISO/IEC 27001:2013 CERTIFIED** ISO/IEC 27001:2013 Certified Information Security Management System



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# Who should enroll for this Training?

Kubernetes and Docker have become hugely popular among developers, especially in the DevOps world. The course would be very useful professionals interested in learning more container orchestration and management. Microservices architecture and containers are immensely popular technologies in the market today, and this training will equip you with the right skills to build a successful career in the field.

## Prerequisites

To enroll for this course, participants need to have:

- Basic command knowledge of Linux
- Basic understanding of DevOps
- Basic knowledge of YAML programming language (beneficial, not mandatory)

## About Docker and Kubernetes

Kubernetes is an open-source orchestration system for automating management, placement, scaling and routing of containers. It provides an API to control how and where the containers would run. Docker is also an open-source container-file format for automating the deployment of applications as portable, self-sufficient containers that can run in the cloud or on-premises. Together, Kubernetes and Docker have become hugely popular among developers, especially in the DevOps world.

Both Docker and Kubernetes are huge open-source technologies, largely written in the Go programming language, that use human-readable YAML files to specify application stacks and their deployment.

# Latest Industry Trends

- In 2019, 87% of the companies surveyed by the Cloud Native Computing Foundation reported using container orchestration solutions, and 40% were using Kubernetes.
- The application container market is expected to grow at a CAGR of 29% during 2020-2025.
- One of the world's largest retail electronic payments networks – Visa, refactored two of their critical payment processing applications using Docker enterprise container platform. In six months, they achieved over 10x increase in scalability.
- Kubernetes is now nearly as popular in containerized environments on Azure as it is on GCP. Among organizations running containers in AWS, popularity of Kubernetes has doubled to over 45% in the past two years.



# Course features

- 32 hours of online training with a live point of contact and hands-on assignments
- Interactive, online, live session with an industry expert trainer
- Dedicated technical team to answer your queries at anytime
- Best price guarantee, aligning with the quality of our course deliverables

# Course objectives

The course will help participants understand:

- Fundamentals of Docker
- Fundamentals of Kubernetes
- Running Kubernetes instances on Minikube
- Creating and working with Kubernetes clusters
- Working with resources
- Creating and modifying workloads
- Working with Kubernetes API and key metadata
- Working with specialized workloads
- Scaling deployments and application security
- Understanding the container ecosystem

# Detailed Curriculum: Modules

## Docker

1. Docker Overview
2. Docker Underlying Technology
3. Docker-containers-and-virtual-machines
4. Docker Installation
5. Test Your Installation
6. Docker Images
7. Docker Containers
8. Docker Custom Images
9. Docker Save & Load Images
10. Docker Registry
11. Docker File
12. Docker Storage
13. Docker Networking
14. Docker Compose
15. Docker Swarm
16. Docker Swarm Setup
17. Docker Swarm Visualizer
18. Docker Swarm Service
19. Docker Swarm Service Commands
20. Docker Swarm - Stacks
21. Docker Swarm - Backup and Restore

## Kubernetes

1. Introduction
2. Install Kubernetes with Kubeadm using Calico Pod network Plugin
3. Pod Overview
4. Assigning Pods to Nodes
  - 4.1 Static Pods
5. ConfigMaps
6. Secrets
7. Replication Controller
8. Replica Set
9. Deployment
10. DaemonSet
11. Jobs
12. Namespaces
13. Dashboard
14. Service Accounts
  - RBAC
15. Services
16. Volumes
17. Resource Quota
18. Kubernetes -the-hard-way
19. Liveness and Rediness
20. Helm Charts
21. Init Containers
22. Pod Security
23. Metrics Server
24. StatefulSet
25. Horizontal Pod AutoScaling
26. Monitoring, Logging, Debugging, Troubleshooting
27. Prometheus
28. Garfana



# Capstone project for Docker and Kubernetes

## **Project: Setting up the infrastructure for automating a CI/CD pipeline using Jenkins**

### **Synopsis:**

This project would help the participant learn how to set up the required infrastructure for automating the CI/CD pipeline. The applications would be deployed on Docker containers. The front-end applications would be written in php, while the back-end applications would be written in MySQL.

Infrastructure requirements for the project:

- The developers would need to set up the development environment, and commit the code to GitHub. The code would also need to be automatically built and tested.
- Testing environment would test the build code as well as the integrated application.
- A UAT environment would need to be set up, which would be the same as the production environment. Here, the client would be able to perform the testing.
- The production environment for these applications would need to be set up using Docker and Kubernetes. Each node in the cluster would need to have anti-virus installed.
- To ensure zero downtime, the rolling update would need to be installed using the blue/green process.
- A backup process would need to be set up for the DB log files.
- Multiple masters would need to be created in the clusters for ensuring fault-tolerance.
- Applications need to be load balanced.
- An easy rollback of the applications to their previous versions should be possible, when required.
- Applications would be verified on the basis of their smooth functioning without any issues during production.

### **Tools to be used in the project:**

- GitHub
- Maven
- Docker
- Kubernetes
- Jenkins

# Cognixia USPs

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# POTENTIAL CAREER OPTIONS

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DevOps developers

DevOps engineers

Java developers

C#/.Net developers

Software engineers

Backend developers

IoT architects

QA engineers



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