€TRAINING

Docker and Kubernetes Essentials

17 - 21 November 2024
Sharm El-Sheikh (Egypt)

Docker and Kubernetes Essentials

Introduction:

This training program provides participants with essential knowledge and skills in Docker and Kubernetes. It equips them with the expertise to leverage containerization and orchestration technologies effectively for modern application development and deployment.

Program Objectives:

At the end of this program, participants will be able to:

- Understand the fundamentals of Docker and containerization.

- Learn how to build, manage, and deploy Docker containers.

- Gain knowledge about Kubernetes architecture and core concepts.

- Deploy, scale, and manage containerized applications with Kubernetes.

- Implement best practices for security, networking, and storage in Docker and Kubernetes environments.

Targeted Audience:

- Software Developers.

- System Administrators.

- DevOps Engineers.

- IT Professionals involved in application deployment and management.

Program Outline:

Unit 1:

Introduction to Docker:

- Overview of containerization and its benefits.

- Introduction to Docker architecture and components.

- Building Docker images and managing Docker containers.

- Docker networking and storage.

- Docker Compose for multi-container applications.

Unit 2:

Docker in Practice:

- Best practices for writing Dockerfiles.

- Managing container lifecycle and orchestration with Docker Swarm.

- Container security and best practices.

- Using Docker in Continuous Integration/Continuous Deployment CI/CD pipelines.

- Monitoring and logging Docker containers.

Unit 3:

Introduction to Kubernetes:

- Overview of Kubernetes architecture and core components.

- Kubernetes objects: Pods, Services, Deployments, ConfigMaps, and Secrets.

- Kubernetes networking and service discovery.

- Persistent storage in Kubernetes.

- Setting up a Kubernetes cluster Minikube, kubeadm.

Unit 4:

Kubernetes Application Deployment:

- Deploying applications with Kubernetes Deployments and StatefulSets.

- Managing application configurations with ConfigMaps and Secrets.

- Implementing scaling and auto-scaling in Kubernetes.

- Rolling updates and rollbacks in Kubernetes.

- Service mesh and advanced networking with Kubernetes.

Unit 5:

Advanced Kubernetes Management:

- Monitoring and logging in Kubernetes Prometheus, Grafana, EFK stack.

- Kubernetes security best practices RBAC, network policies.

- Helm for Kubernetes package management.

- Implementing CI/CD pipelines with Kubernetes.

- Troubleshooting and optimizing Kubernetes clusters.