# Course Abstract

Attendees will deepen their understanding of container and image optimization techniques. Participants will explore advanced strategies for optimizing Dockerfiles, fine-tuning container performance, and enhancing the overall efficiency of containerized applications.

The course covers a range of topics, from basic container architecture to advanced resource tuning and image optimization. Through hands-on exercises and practical examples, students will gain the skills necessary to significantly improve the performance and efficiency of their Docker containers and images.

# Audience

This course is designed for Developers, DevOps Engineers, System Administrators, and IT professionals interested in optimizing containers and images.

# Prequisites

* Basic understanding of containerization concepts
* Experience with Docker or similar container platforms
* Familiarity with the Linux command line

# Duration

Half Day

# Learning Objectives

Students will master a comprehensive suite of techniques for optimizing and tuning container images and runtime environments, ensuring applications run efficiently and cost-effectively. They will gain hands-on experience with various open-source tools for analyzing and optimizing containers, learning how to identify and implement performance improvements swiftly. Furthermore, the course will equip participants with best practices in container resource management, image optimization, and performance monitoring, enabling them to maintain high-performance, scalable containerized applications.

# Course Topics

**Introduction to Container Performance**

Overview of container architecture

Importance of image size and container efficiency

Performance metrics for containers

**Container Image Optimization**

Analyzing and reducing image sizes

Multi-stage builds for efficient Dockerfiles

Selecting appropriate base images

Minimizing layers and optimizing caching

**Container Resource Tuning**

CPU and memory limits and requests

Network performance optimization

Storage optimization strategies

Configuring container logging for better performance

**Utilizing Open-Source Tools for Optimization**

Introduction to tools like Dive and Trivy for image analysis

Using Docker Bench for Security

Exploring container profiling tools

# Course Code

CU3152