

## Introduction to Containers with Docker

---

### Course Summary

#### Description

Docker gives you a foundation for DevOps. It applies to both developers and system administrators so that you can create distributed applications. You can focus on setup and maintenance of development environments instead of focusing on creating new features, fixing issues, and shipping software.

We cover all of the fundamentals of Docker, and teach students how to create, deploy, and manage a virtual network for connecting containers, monitor Docker apps and containers, secure Docker containers with ease. We also cover how to deploy Docker in production and the GUI applications.

#### Topics

- Docker 30,000ft overview
- Understanding Docker images
- Reducing image size
- Naming and inspecting containers
- Container networking basics
- Local development workflow with Docker
- Advanced Dockerfiles
- Deep dive into container internals
- Docker Engine and other container engines

#### Prerequisites

Basic computer skills and Internet Access

#### Duration

Three Days

## Introduction to Containers with Docker

---

### Course Outline

- I. *Docker 30,000ft overview***
  - A. History of containers ... and Docker
  - B. Our training environment
  - C. Installing Docker
  - D. Our first containers
  - E. Background containers
  - F. Restarting and attaching to containers
- II. *Understanding Docker images***
  - A. Building images interactively
  - B. Building Docker images with a Dockerfile
  - C. CMD and ENTRYPOINT
  - D. Copying files during the build
- III. *Reducing image size***
  - A. Multi-stage builds
  - B. Publishing images to the Docker Hub
  - C. Tips for efficient Dockerfiles
  - D. Dockerfile examples
- IV. *Naming and inspecting containers***
  - A. Labels
  - B. Getting inside a container
- V. *Container networking basics***
  - A. Container network drivers
  - B. The Container Network Model
  - C. Service discovery with containers
  - D. Ambassadors
- VI. *Local development workflow with Docker***
  - A. Windows Containers
  - B. Working with volumes
  - C. Compose for development stacks
  - D. Managing hosts with Docker Machine
- VII. *Advanced Dockerfiles***
  - A. Application Configuration
  - B. Logging
  - C. Limiting resources
- VIII. *Deep dive into container internals***
  - A. Namespaces
  - B. Control groups
  - C. Security features
  - D. Copy-on-write filesystems
- IX. *Docker Engine and other container engines***
  - A. The container ecosystem
  - B. Orchestration, an overview
  - C. Links and resources