

**Introduction to Docker**

**Course Number:** DVOP-110  
**Duration:** 3 days

**Overview**

Accelebrate's Introduction to Docker training course teaches attendees how to create and manage containers, interact with Docker hub, use Dockerfile to create and manage custom images, and more. Students also learn how to build an application using Docker, Git, and a continuous integration server to automate the testing of containerized applications. This Docker course can be taught privately online or at your site for your team.

**Prerequisites**

All students should have proficiency with the Linux CLI and a broad understanding of Linux system administration.

**Materials**

Students in our Docker courses receive comprehensive courseware.

**Software Needed on Each Student PC**

A complete remote environment is included for each student in the class. You will need Internet access, a modern web browser, and an SSH client to access the environment. The Docker platform can run on various operating systems, including Linux, Windows, and macOS.

**Objectives**

* Install Docker
* Build and manage containers
* Work with images
* Use advanced Docker networking
* Safely expose container services to the world and link containers
* Use Docker volumes to manage persistent data
* Use Docker Compose to build multi-container applications
* Secure Docker installations and containers
* Build and deploy fully functional applications
* Implement best practices

**Outline**

* Introduction
* 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
* Installing Docker
  + Installing Docker
  + Docker Architecture
  + Starting the Docker Daemon
  + Docker Daemon Configuration
  + Docker Control Socket
  + Enabling TLS for Docker
  + Validating Docker Install
* 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
* Managing Images
  + Docker Images
  + Listing and Removing Images
  + Searching for Images
  + Downloading Images
  + Uploading Images
  + Export/Import Images
  + Save/Load Images
  + Committing Changes
* 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
* 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
* 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
* 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
* 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
* Conclusion