En-lighten Technology Ltd

Docker Fundamentals

Overview

Linux containers are rapidly changing the way applications are developed and deployed. This course covers all the core features of Docker including: container creation and management, interacting with registries, using Dockerfile to create and manage custom images, advanced Docker networking (how to safely expose container services to the world, and link containers), the use of Docker volumes to manage persistent data, and Docker Compose to build multi-container applications.

Attendees will learn

- Understand the core principles of containerization on a single Docker node
- Create an image using Dockerfile best practices
- Use volumes in the application development process
- Apply concepts of the Docker networking model
- Understand the goal of services as a method of scaling containers
- Utilize an orchestrator to deploy an application

Audience and Recommended Background

The course is a hands-on course with lots of practical exercises. Attendees should have working knowledge of unix commands.

Course Approach

Taught material will be delivered in short sessions and will be followed by the opportunity to practice what has been taught and reflect on how to put it into practice.

Course Duration: 2 days

Course Content

Up and Running with Docker

- Creating and running containers
- Stopping and restarting
- Investigating a container
- Viewing the logs
- Looking at processes
- Removing a container and its data

Managing Images

- What is an image?

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- Listing and searching for images
- Building images from Dockerfile
- Working with the build cache
- Launching containers from images

Docker Networking

- Networking modes
- Container linking and naming
- Port mapping
- Creating and managing custom networks
- Networking over many Docker hosts
- Communication between containers and the wider world
- Configuring DNS
- IPv6 with Docker
- How Docker networks a container
- Editing network configuration files
- Restricting ssh access from one container to another

Managing Data in Containers

- Docker data volumes
- Host directories and files as data volume
- Data volume containers
- Data volumes shared between Docker hosts
- Backup and restore of data volumes

Deploying Applications with Docker

- Introducing Docker compose
- Compose file structure
- Comprehensive compose file configuration
  - Services
  - Networks
  - Volumes
- Advanced compose file configuration
  - Controlling start up order
  - Using environment variables
  - The role of environment files
  - Multiple compose files
  - Performing admin tasks
  - Extending services
- Compose best practices
- Kubernetes