

Course duration

- 3 days

Course Benefits

- Learn the core features and get started with Docker.

Course Outline

1. Container Technology Overview
 1. Instructor " Docker Demo
 2. Application Management Landscape
 3. Application Isolation
 4. Resource Measurement and Control
 5. Container Security
 6. OverlayFS Overview
 7. Container Security
 8. Open Container Initiative
 9. Docker Alternatives
 10. Docker Ecosystem
 11. Docker Ecosystem (cont.)
 12. Lab Tasks
 1. Container Concepts runC
 2. Container Concepts Systemd
2. Installing Docker
 1. Installing Docker
 2. Docker Architecture
 3. Starting the Docker Daemon
 4. Docker Daemon Configuration
 5. Docker Control Socket
 6. Enabling TLS for Docker
 7. Validating Docker Install
 8. Lab Tasks
 1. Installing Docker
 2. Protecting Docker with TLS
3. Managing Containers
 1. Creating a New Container
 2. Listing Containers
 3. Managing Container Resources
 4. Running Commands in an Existing Container
 5. Interacting with a Running Container

6. Stopping, Starting, and Removing Containers
7. Copying files in/out of Containers
8. Inspecting and Updating Containers
9. Docker Output Filtering & Formatting
10. Lab Tasks
 1. Managing Containers
 2. Configure a docker container to start at boot.
4. Managing Images
 1. Docker Images
 2. Listing and Removing Images
 3. Searching for Images
 4. Downloading Images
 5. Uploading Images
 6. Export/Import Images
 7. Save/Load Images
 8. Committing Changes
 9. Lab Tasks
 1. Docker Images
 2. Docker Platform Images
5. Creating Images with Dockerfile
 1. Dockerfile
 2. Caching
 3. docker image build
 4. Dockerfile Instructions
 5. ENV and WORKDIR
 6. Running Commands
 7. Getting Files into the Image
 8. Defining Container Executable
 9. HEALTHCHECK
 10. Best Practices
 11. Multi-Stage builds with Dockerfile
 12. Lab Tasks
 1. Dockerfile Fundamentals
 2. Optimizing Image Build Size
 3. Image Builds and Caching
6. Docker Volumes
 1. Volume Concepts
 2. The docker volume Command
 3. Creating and Using Internal Volumes
 4. Internal Volume Drivers
 5. Removing Volumes
 6. Creating and Using External Volumes
 7. SELinux Considerations
 8. Mapping Devices
 9. Lab Tasks
 1. Docker Internal Volumes
 2. Docker External Volumes

7. Docker Compose/Swarm

1. Writing YAML Files
2. Concepts
3. Compose CLI
4. Defining a Service Set
5. Compose Versions
6. Docker Engine Swarm Mode
7. Docker Swarm Terms
8. Docker Swarm Command Overview
9. Creating a Swarm
10. Creating Services
11. Creating Secrets
12. Stack Files
13. Stack Command
14. Swarm Placements
15. Swarm Resource Limits & Reservations
16. Swarm Networking
17. Swarm Networking Troubleshooting
18. Lab Tasks
 1. Docker Compose
 2. Docker Engine Swarm Mode

8. Docker Networking

1. Overview
2. Data-Link Layer Details
3. Network Layer Details
4. Hostnames and DNS
5. Service Reachability
6. Container to Container Communication
7. Container to Container: Links (deprecated)
8. Container to Container: Private Network
9. Managing Private Networks
10. Remote Host to Container
11. Lab Tasks
 1. Docker Networking
 2. Exposing Ports
 3. Docker Networking

9. Docker Logging

1. Docker Logging
2. Docker Logging with json-file and journald
3. Docker Logging with syslog
4. Docker Logging with Graylog or Logstash
5. Docker Logging with Fluentd
6. Docker Logging with Amazon or Google
7. Docker Logging with Splunk
8. Lab Tasks
 1. Logging to syslog

Class Materials

Each student will receive a comprehensive set of materials, including course notes and all the class examples.

Class Prerequisites

Experience in the following *is required* for this DevOps class:

- Proficiency with the Linux CLI. A broad understanding of Linux system administration.