Using Docker and Kubernetes in Production

4-Day Hands-On Program

GuruTeam course code: GTK8SG

Course Overview

Designed and written by Docker and Kubernetes Guru, this Docker and Kubernetes in Production training is an intensive instructor-led course which combines developer and operator's knowledge. It brings you from zero to the main concepts in developing distributed applications and managing them with Kubernetes. It also covers operational knowledge of Kubernetes with security and advanced application configuration.

Target Audience

- Developers who want to containerize their applications and run them in production via Kubernetes
- Operators/System Administrators who want to learn about Kubernetes components, API and security features
- Cloud Architects who want to take advantage of cloud native technologies in their enterprise

Prerequisites

- Working knowledge of Linux and proficiency with the terminal
- Knowledge of Go and/or Python a plus
- Prior attendance of our Docker GTDK1 course would be beneficial

> " Instructor's ability to demonstrate new features that are not part of the course help show his mastery as well as prepare us for changes in the technology. Great work.
> *Using Docker & Kubernetes in Production*
> *Oct '18* "

Register Your Interest *in joining a public course in a city near you.*

Course Outline

DAY 1: DOCKER

Morning:
- Introduction to containers
- The Docker CLI
- Managing containers
- Using Docker Images
- Managing Images
- Building containers from SCRATCH

Afternoon:
- Understanding Images (Layers and manifests)
- Building Docker Images with a Dockerfile
- Docker registry and automated builds
- Container Security (privilege containers and capabilities)
- Docker Volumes and Network

DAY 2: KUBERNETES

Morning:
- Introduction
- Architecture and main components
- Networking concepts (CNI and overlay add-ons)
- Installation (kubeadm)

Afternoon:
- API Access
- Pods/ReplicaSets
- Deployments and Services
- Ingress objects

DAY 3: KUBERNETES Ctd.

Morning:
- Rolling updates and Rollbacks
- Application configuration (configmap and secrets)
- Stateful Applications
- Volumes

Afternoon:
- Security concepts
- Network Policies
- Role Based Access Control
- Pod Security Policies
- Admission Control

DAY 4: KUBERNETES Ctd.

Morning:
- Scheduling concepts
- Monitoring with Prometheus
- Logging with Fluentd
- Troubleshooting

Afternoon:
- Helm and application configuration
- Declarative vs Imperative object management
- Intro to kustomize and GitOps

GURUTEAM
specialist ICT learning

Linux Professional Institute APPROVED ACADEMIC PARTNER

THE LINUX FOUNDATION AUTHORIZED TRAINING PARTNER

DevOps INSTITUTE REGISTERED EDUCATION PARTNER

CompTIA AUTHORIZED PARTNER

CLOUD CREDENTIAL COUNCIL ACCREDITED PARTNER

Course Overview

This 3-day course covers all the core features of Docker including: container creation and management, interacting with Docker hub, 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. Emphasis is placed on best practices and how to secure Docker installations and containers. The course culminates with comprehensive labs where students use Docker, Git, and a continuous integration server to automate the testing of containerized applications. This training will get sysadmins proficient with Docker so that they can immediately be productive as organizations continue to move applications onto containers.

Supported Distributions:
- Red Hat Enterprise
- Linux 7
- Ubuntu 16.04 LTS

Target Audience
- System administrators who will need to install and manage Docker hosts.
- Developers who want to use Docker containers.

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

View our Scheduled Dates

Duration 3 days

> " I particularly liked the heavy hands on sessions that went on with the training. Other than that, I really liked the instructor's training style. His experience in the field really shines through.
>
> *Feb '19* "

Course Outline

1. 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
- Docker Ecosystem (cont.)

Lab Tasks
- Container Concepts runC
- Container Concepts Systemd

2. Installing Docker
- Installing Docker
- Docker Architecture
- Starting the Docker Daemon
- Docker Daemon Configuration
- Docker Control Socket
- Enabling TLS for Docker
- Validating Docker Install

Lab Tasks
- Installing Docker
- Protecting Docker with TLS

3. 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

Lab Tasks
- Managing Containers
- Configure a docker container to start at boot

4. Managing Images
- Docker Images
- Listing and Removing Images
- Searching for Images
- Downloading Images
- Uploading Images
- Export/Import Images
- Save/Load Images
- Committing Changes

Lab Tasks
- Docker Images
- Docker Platform Images

5. 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

Lab Tasks
- Dockerfile Fundamentals
- Optimizing Image Build Size
- Image Builds and Caching

6. 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

Lab Tasks
- Docker Internal Volumes
- Docker External Volumes

7. 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

Lab Tasks
- Docker Compose
- Docker Engine Swarm Mode

8. 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

Lab Tasks
- Docker Networking
- Exposing Ports
- Docker Networking

9. 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

Lab Tasks
- Logging to syslog

A. Docker Registry Lab Tasks
- Docker Registry
- Docker Registry (secured)
- Docker Content Trust

Contact us to learn more...

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