Docker Administration and Operations («DOCKER»)

After the training, attendees will have a theoretical and practical knowledge of the Docker platform.

Duration: 3 days
Price: 2'700.–

Content

1. Quick Wins
   - Some examples of the immediate benefits brought by using Docker
2. Useful concepts
   - Linux containers' building blocks
   - Containers vs Virtual Machines
   - Micro-services architecture
   - Cloud Native application
   - DevOps
3. The Docker platform
   - Client / server architecture
   - Essentials concepts
   - Installation
   - Online playground
   - Exercises :
     - Installation
     - First command on «Play With Docker»
4. Docker containers
   - Container creation
   - Ports publication
   - Bind-mount
   - Resources limitation
   - Base commands
   - Useful aliases
   - Exercises :
     - Containers creation
     - Base commands
5. Docker images
   - Definition
   - Union filesystem & Copy-On-Write
   - Dockerfile
   - Images creation
   - Multi-stages build
   - Cache
   - Build context
   - Base commands
   - Exercises :
     - Images creation
     - Review of Dockerfile's instructions
     - Usage of the multi-stage build
6. Registry
   - Usage
   - Various providers
   - Docker Hub
   - Registry Open Source

- Docker Trusted Registry
- Exercises :
  - Setup and configuration of the open source registry

7. Storage
   - Container and data persistence
   - Volumes
   - Volume drivers
   - Storage orchestration with REX-Ray
   - Exercises :
     - Volume creation
     - Ceph cluster with REX-Ray

8. Docker Machine
   - Usage
   - Commands
   - Host creation
   - Communication with a remote host
   - Exercises :
     - Creation of a host on VirtualBox
     - Creation of a host on a cloud provider

9. Docker Compose
   - Usage
   - Docker-compose.yml file format
   - Docker-compose binary
   - Deployment of the VotingApp as a Docker Compose application
   - Usage in development
   - Exercises :
     - Deployment of a stack Elastic

10. Docker Compose
    - Presentation
    - The docker-composes.yml file format
    - Basic instructions
    - The docker-composing binary and its use
    - Practical work:
      - Deploying applications with Docker Compose
      - Example with an Elastic stack

11. Orchestration
    - Docker Swarm
    - Role of the nodes
    - Services deployment
    - Rolling update and rollback
    - Secrets and Configs
    - Stack
    - Management interfaces
    - Exercises :
      - Setup a Swarm on a cloud provider
      - Creation of Services
      - Creation of a Stack
      - Usage of Secrets and Configs

12. Network
    - Container Network Model
    - Network drivers
    - Networks on a single host
    - Networks in a Swarm
    - Routing mesh

13. Security
    - Isolation and resources limitation

- o Linux Security Modules
- o Capabilities / Seccomp
- o Vulnerability scanning
- o Content Trust
- o Security in a Swarm
14. Log management
    - o Best practices
    - o Log drivers
    - o Exercises :
        - Send logs entries to an Elastic stack
        - Send logs entries to Sumologic cloud solution
15. Monitoring
    - o Prometheus stack
    - o Netdata
    - o Exercises :
        - Deployment of a Prometheus stack
16. CI/CD
    - o Principles
    - o Workflow
    - o Setup with GitLab
17. Docker Enterprise
    - o Overview
    - o Deployment on a cloud provider
    - o Demo

Key Learnings

- Understanding the building blocks of the Linux containers
- Configuring and running the Docker daemon
- Running containers with various options
- Building Docker images
- Setup of an image registry
- Using Docker Machine to deploy Docker hosts
- Using Docker Compose to build and deploy complex applications
- Setup of a Swarm cluster
- Deploy services and applicative stacks on a Swarm
- Using various storage options
- Understanding the default security components available in Docker
- Understanding of how containers can communicate with each other
- Setup of a supervision stack
- Using a centralized log management solution
- Setup of a simple CI/CD pipeline

Methodology & didactics

This training is made up of several parts. Each part contains some theory, demos, and practical exercises.

Target audience

This course is targeted at people who wish to become a qualified Docker professional in the administration and operation of this first platform of software containers.

Any questions?

We are happy to advise you on +41 44 447 21 21 or info@digicomp.ch. You can find detailed information about dates on www.digicomp.ch/courses-it-provider/unix-linux/course-docker-administration-and-operations

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