

“Docker - containerisation in practice”

Training information:

Duration: 3 days (24 hours)

Training hours: 09:00-17:00

Form: on-line

Teaching methods: lectures, workshops, laboratories

Document confirming the completion of training: certificate

Language: Polish

Proce online course: 3 100 PLN net (3 813 PLN gross)

Trener: **Paweł Ufnalewski**

Staff DevOps Engineer at Fandom.com and co-founder of the SysOps/DevOps Poland group on Facebook. He is an infrastructure architect with several years of experience. He designs and implements high-availability environments based on Linux and Windows. After hours a big fan of LEGO and fooding.

Requirements:

- The trainee should have his **own laptop with any operating system** installed. The software needed for the training will be installed on a virtual machine and available in the public cloud.
- Grafana will be accessed through any **web browser**, such as firefox, chrome, which should be installed on the participant's computer.
- Participants will need any **SSH client** that enables ssh login to the VM.
- Knowledge of the **Linux** operating system, package management and **SSL certificates** (including let's encrypt certificate generation) is required.

- Each participant must have **Docker Desktop or Docker for Linux software installed.**

Course syllabus:

1. Docker and its architecture.

2. Installation and configuration.

3. Docker Engine:

- installation,
- rootless mode,
- configuration and status (images, containers, networks, volume, etc.),
- debugging and analysing problems with the unstable Docker Engine.

4. Docker Client:

- working with Docker in the terminal, launching, creating, managing containers, creating and optimising Dockerfiles.

5. Image and container:

- understanding the layered structure of images,
- learning about the image from the inside (layers, 'lower', 'upper' and 'merged' directories, image manifest),
- image optimisation and size reduction techniques, multi-stage builds,
- versioning of docker images and their checksums.

6. Monitoring:

- checking status and resource consumption,
- available logging controllers and their capabilities,
- Dry and Portainer tools.

7. Debugging:

- PID 1,
- signal handling,
- container PID mode,
- container network mode,

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- use of tools such as strace, tcpdump, ngrep or htop to analyse the operation of one container with another container,
- browsing the container file system,
- layering of OverlayFS.

8. Security:

- 'least privilege' principle,
- running processes as 'root' in a container,
- container isolation levels,
- capabilities,
- limiting access to CPU, RAM and disk,
- Docker-in-Docker and security.

9. Docker Registry:

- starting the local image registry,
- configuring authentication, garbage-collector and local Docker Hub mirror,
- external storage based on Google Cloud, AWS or Azure.

10. Building a multi-container environment (Docker Compose).

11. Building a cluster of containers (Docker Swarm).

12. Orchestrating and managing multiple containers (Docker Stack).

13. Docker versus Kubernetes - MicroK8s.

14. Moving files from Docker Compose to Kubernetes.

Materials: presentation slides, digital authoring exercises.

Post-training support: materials ready for use in your company.

Knowledge and skills after training

After the training, the trainee will be able to, among other things:

- efficiently monitor, debug and troubleshoot applications running in containers,

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- place a program and its dependencies
- in a virtual container using Docker,
- achieve lightweight and secure virtualisation.

Information about the Organizer

Name: Fundacja SysOps/DevOps Polska

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