

Containers for Dummies



A COMPUTER



- ▶ Hardware
- ▶ Kernel ("kernel space")
- ▶ Software ("user space")



- ▶ Translate machine code
- ▶ Run software for x86 on ARM
- ▶ "Slow"
- ▶ QEMU



- ▶ Abstract hardware
- ▶ Can be transferred between physical computers
- ▶ Requires dedicated hardware
- ▶ "Long-term"
- ▶ QEMU
- ▶ VirtualBox (x86 only)
- ▶ May run at almost the same speed as the host



Demo: QEMU and virtual machines



- ▶ Namespace isolation
- ▶ Tree / branches are namespaces
- ▶ Sharing hardware with all other containers and the host
- ▶ Images — "templates"
- ▶ "Short-term"

CONTAINERS

SOFTWARE



- ▶ Open Container Initiative (OCI)
- ▶ Repositories
 - ▶ Dockerhub
 - ▶ Github Container Repository
- ▶ Docker
- ▶ Podman
- ▶ Containerd
- ▶ Singularity
- ▶ LXC



Demo

Docker Desktop/Rancher Desktop

Using a container

Dockerfile

Docker-compose



- ▶ Container orchestration
- ▶ Originates from Google



Demo: DC-Kube