Containers...

The **benefits** of using containers

Agility

Ship apps faster

Portability

Easily move workloads

Density

Achieve resource efficiency

Rapid scale

Scale easily to meet demand
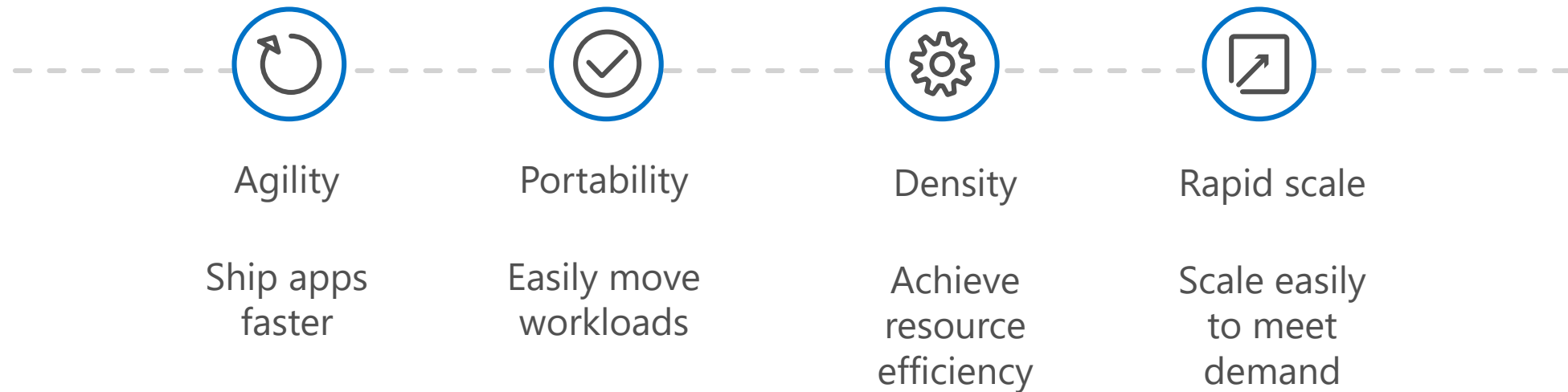
The **benefits** of using containers

| Any OS	Anywhere	Any app	Any language
Linux	On-premises	Monolith	Java
Windows	Cloud	Microservice	.Net
			Python
			Node

Containers **momentum**

"By 2020, more than **50%** of enterprises will run **mission-critical, containerized cloud-native applications** in production."
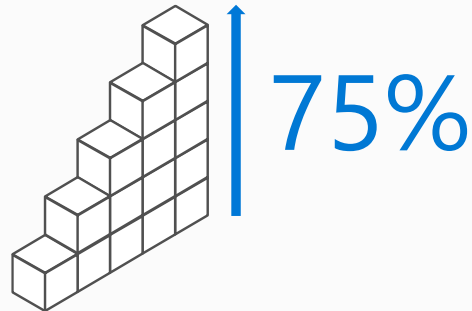
Gartner.

Half of container environment is orchestrated.[1]

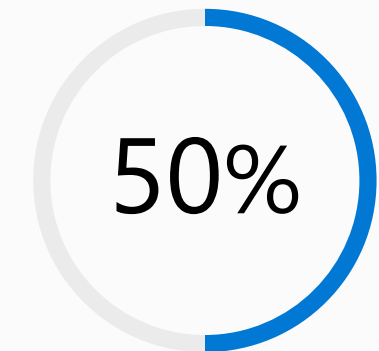**77%** of companies[2] who use container orchestrators choose Kubernetes.

77%
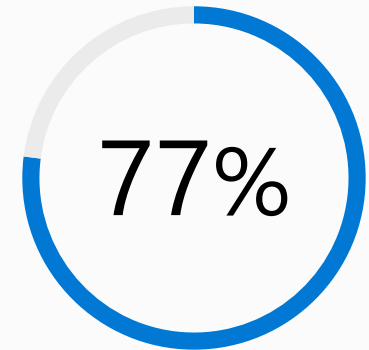
The average size of a container deployment has grown 75% in one year. [1]

75%

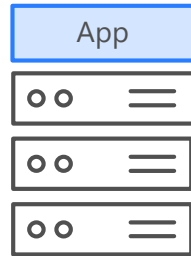## Larger companies are leading the adoption.[1]

Nearly **50%** of organizations[1] running 1000 or more hosts have adopted containers.

50%

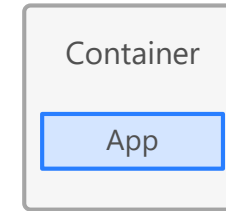[1] Datadog report: 8 Surprising Facts About Real Docker Adoption
[2] CNCF survey: cloud-native-technologies-scaling-production-applications

What is a **container**?

Virtual machines

- Virtualize the hardware
- VMs as units of scaling

Containers

- Virtualize the operating system
- Applications as units of scaling

What is 🐳 docker?

An open source container runtime

Mac, Windows and Linux support

```
# The world's simplest Dockerfile
$ cat Dockerfile
FROM scratch
COPY hello /
CMD ["/hello"]

# Build it
$ docker build –t hello-world .

# And run it…
$ docker run hello-world
```
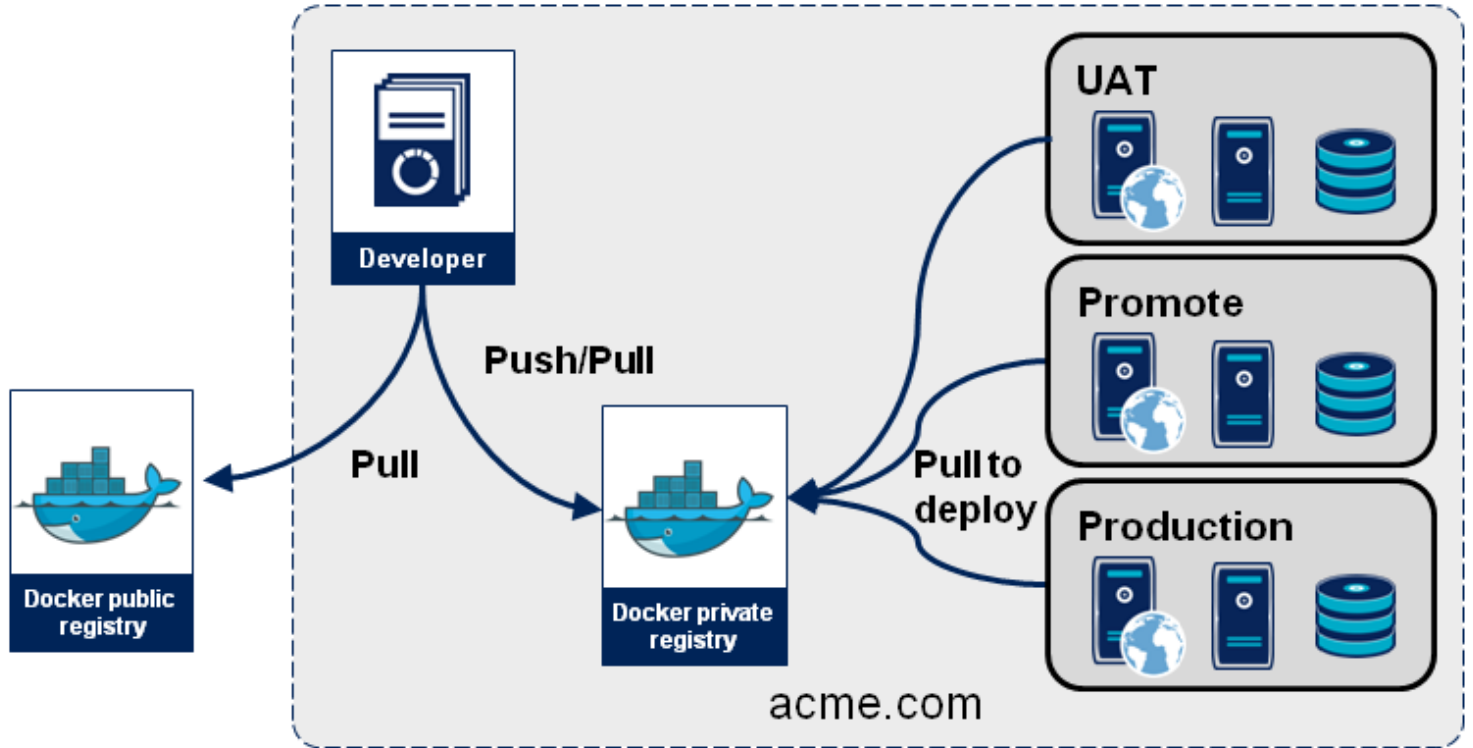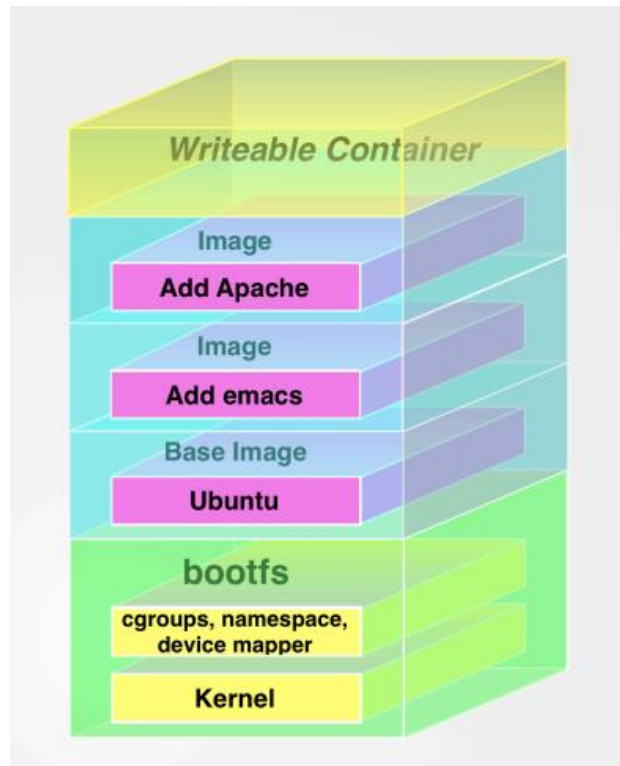
Docker concepts

https://microbadger.com/

TechDays 2019 pre-day workshop

A few words about today´s hands-on exercises

<> Code   ⓘ Issues 0   ⋔ Pull requests 0   ▥ Projects 0   📖 Wiki   🛡 Security   📊 Insights   ⚙ Settings

No description, website, or topics provided.

Manage topics

Edit

| 🕐 **161** commits | ⑂ **1** branch | 🏷 **0** releases | 👥 **3** contributors | ⚖ **MIT** |

Branch: master ▾   New pull request

Create new file   Upload files   Find file   **Clone or download ▾**

👤 **pelithne** wip   Latest commit a0a574e 19 hours ago

📁 application	wip	17 days ago
📁 infrastructure	wip	17 days ago
📁 media	Azure DevOps (#3)	23 hours ago
📁 vmsetup	updating path to ARM template	7 days ago
📄 LICENSE	Initial commit	11 months ago
📄 README.md	wip	19 hours ago
📄 cheatsheet.md	wip	21 hours ago
📄 workshop.md	wip	19 hours ago

📖 **README.md**   ✏

This repository contains instructions for a Kubernetes and DevOps workshop using Azure Kubernetes Service (AKS) and Azure Devops.

To get started, click here!

https://github.com/pelithne/techdays2019

#TODO

- Create a VM (Virtual machine) to use as your dev environment
- Create Kubernetes Cluster using AKS (Azure Kubernetes Service)
- Build and test docker images "locally" on your development VM
- Create Azure Container Registry (ACR)
- Push images to ACR
- Deploy application to Kubernetes
- Setup CI/CD pipelines using Azure DevOps
- Use Helm to create templated Kubernetes applications

Create a development VM

- You will work in a Virtual Machine running in Azure, with Ubuntu Server 18.04 -LTS

- Server is pre-provisioned with Docker, Azure CLI, git, Helm, Kubectl...

- You can run on your laptop, but that is harder to setup

Build and test an application "locally"

- You will use docker to run the application on your dev machine

- VM has a Network Security Group, which is open for http
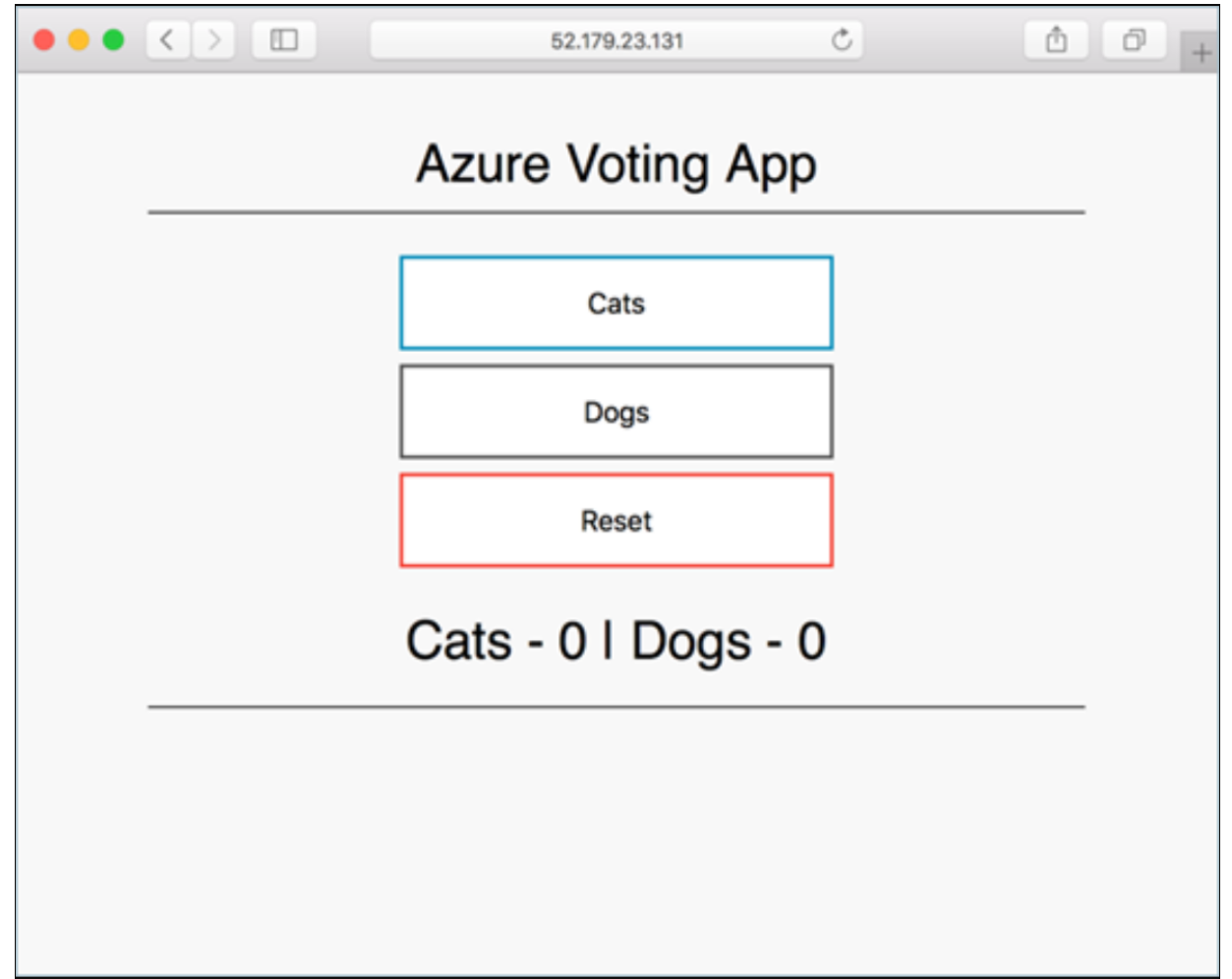
Azure Container Registry

- Public or Private container registry.

- Compatible with docker (i.e. dockerhub)

- Creation is a one-liner
  - az acr create --name acr-name --resource-group techdays --sku basic

Kubernetes Cluster

- Creation is a one-liner:
  - `az aks create --resource-group techdays --name mycluster --disable-rbac --generate-ssh-keys --attach-acr techdays2019`

- Will create a cluster with default settings for hardware types, etc...

- Use kubectl to deploy resources to K8S

- Use manifest files to describe the application

Setup CI/CD pipelines

- Use Azure DevOps to create pipelines

- Automatically build an application on check-in

- Automatically build the docker container for the application

- Automtically deploy the docker container to AKS

Helm

- If time permits...

Final words

Read the instructions!