

Intro

Alexander Young – Cloud Solution Architect @Microsoft

Peter Lithner – Cloud Solution Architect @Microsoft

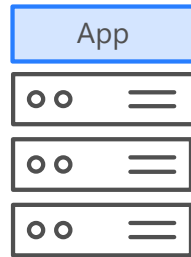
Agenda

- Intro
- Container introduction – slides
- Workshop introduction - slides
- Hands on work – 1 hour-ish
- Kubernetes introduction – slides
- Lunch – 45 minutes
- Hands on work – 2 hours

Containers...

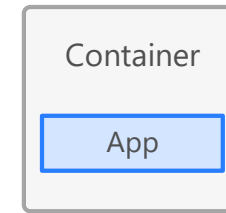


What is a **container**?



Virtual machines

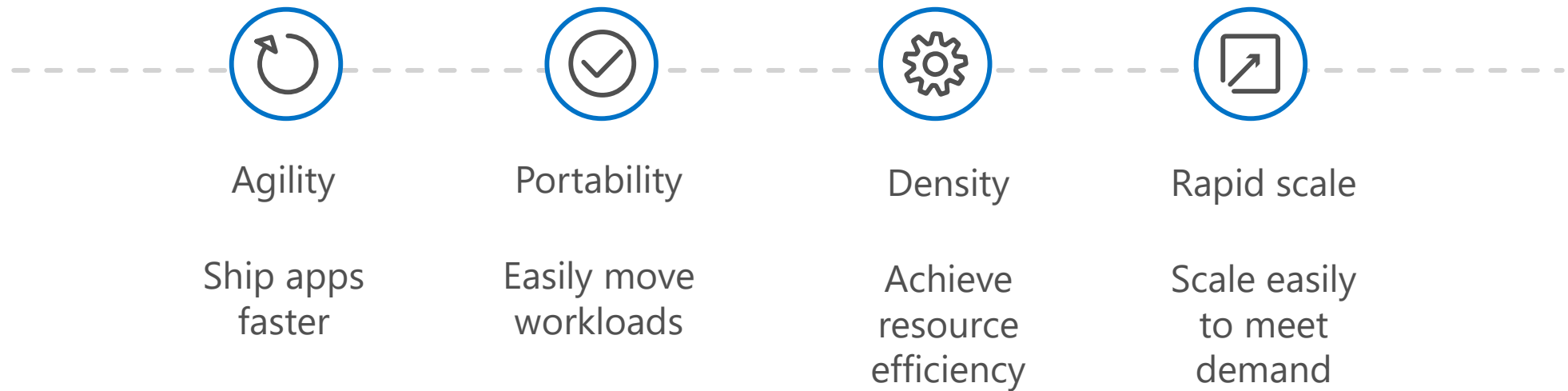
- Virtualize the hardware
- VMs as units of scaling



Containers

- Virtualize the operating system
- Applications as units of scaling

The **benefits** of using containers



The **benefits** of using containers

Any OS



Linux



Windows

Anywhere



On-premises



Cloud

Any app



Monolith



Microservice

Any language



Java



.Net



Python



Node

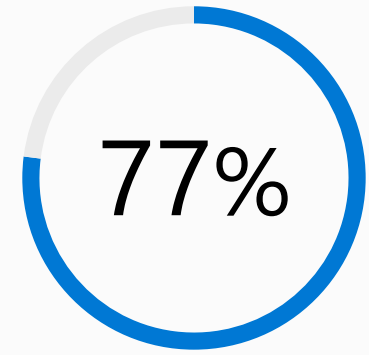
Containers **momentum**

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

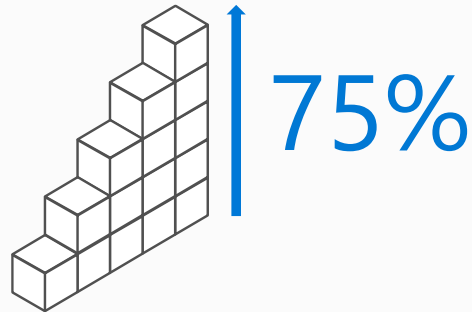
Gartner

Half of container environment is orchestrated.¹

77% of companies² who use container orchestrators choose Kubernetes.

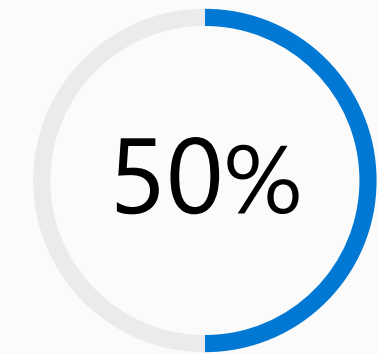


The average size of a container deployment has grown **75%** in one year. ¹



Larger companies are leading the adoption.¹

Nearly **50%** of organizations¹ running 1000 or more hosts have adopted containers.



¹ Datadog [report](#): 8 Surprising Facts About Real Docker Adoption

² CNCF [survey](#): cloud-native-technologies-scaling-production-applications

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"]
```

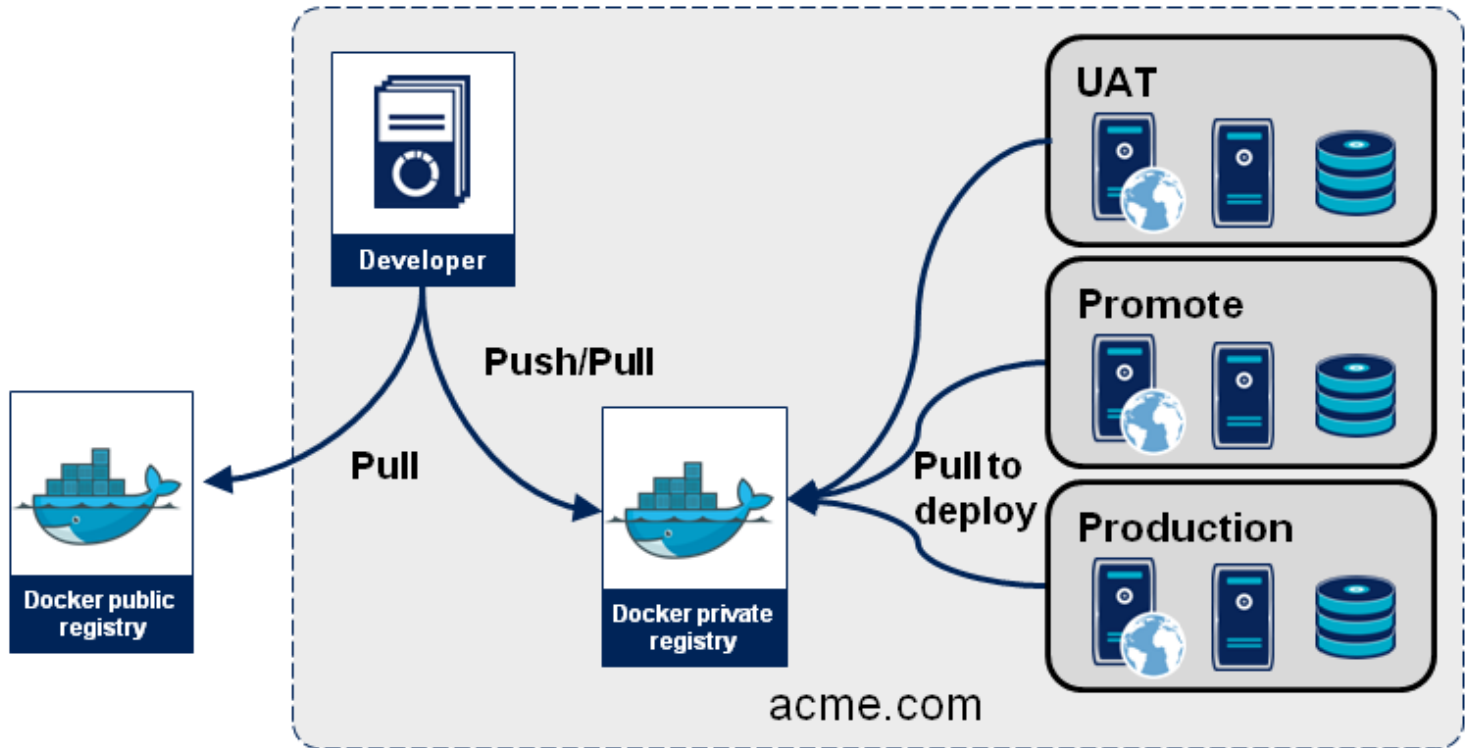
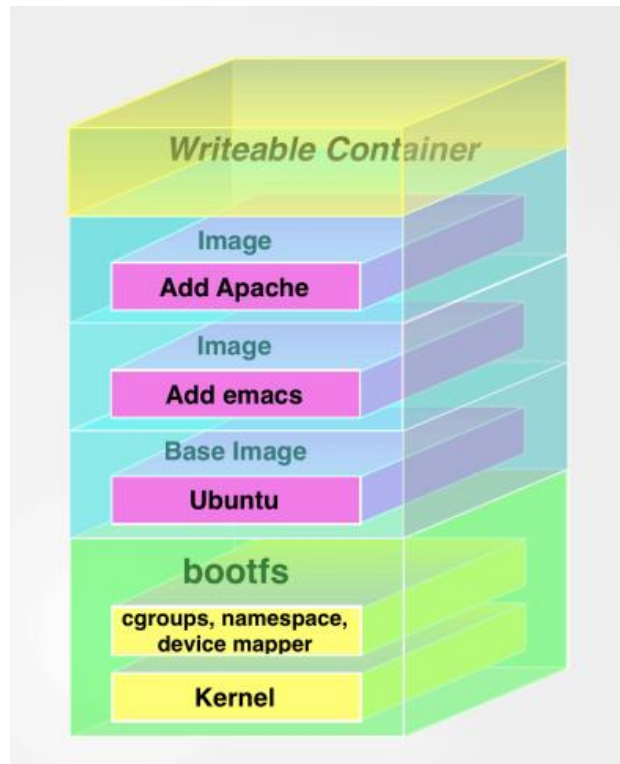
```
# Build it
```

```
$ docker build -t hello-world .
```

```
# And run it...
```

```
$ docker run hello-world
```


Docker concepts



<https://microbadger.com/>

<https://github.com/pelithne/k8s>

#TODO

- Use Azure Portal and Azure Cloud Shell
- Setup Azure Container Registry to build and store docker images
- Create Kubernetes Cluster using AKS (Azure Kubernetes Service)
- Deploy application to Kubernetes
- Use Helm to create templated Kubernetes applications
- Use Azure DevOps to setup up build and release pipelines

Azure Portal and Azure Cloud Shell

- Azure Portal is your GUI to Azure
 - During the workshop we will primarily interact with azure using command line
- Azure Cloud Shell
 - Web based bash shell (or powershell) which is pre-installed with several useful tools like kubectl, helm, draft, curl, code, etc, etc

Azure Container Registry (ACR)

- 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`
- Build and store docker images

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

Helm

- Quick exercise to get familiarized with Helm
- Build and install the same app as before, but with Helm

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
- Automatically deploy the docker container to AKS

Final Words

Read the instructions!