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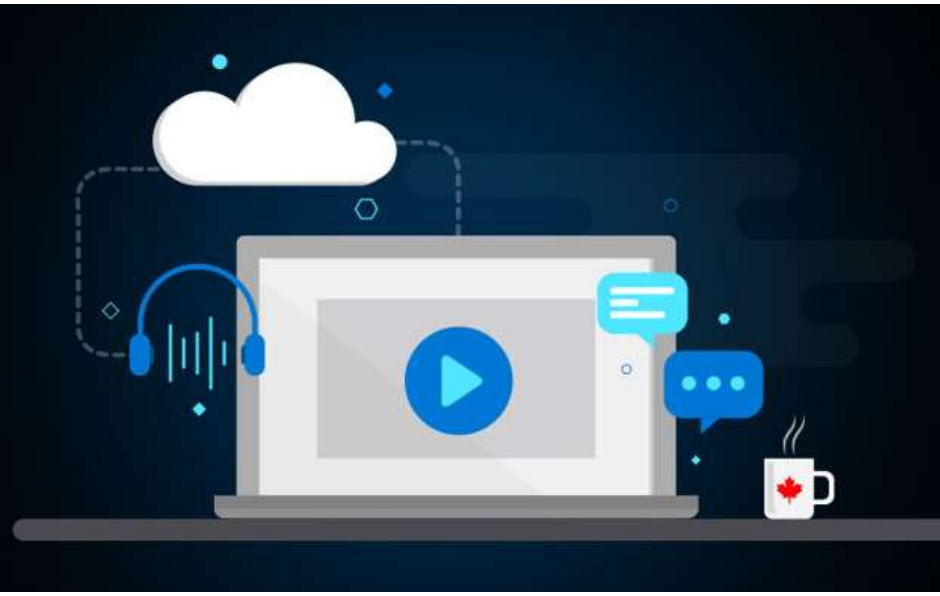


Webinar: **Getting Started With Kubernetes On Azure**

Speaker: Diego Casati, Cloud Solution Architect

Agenda

What is Kubernetes and Why I should care?

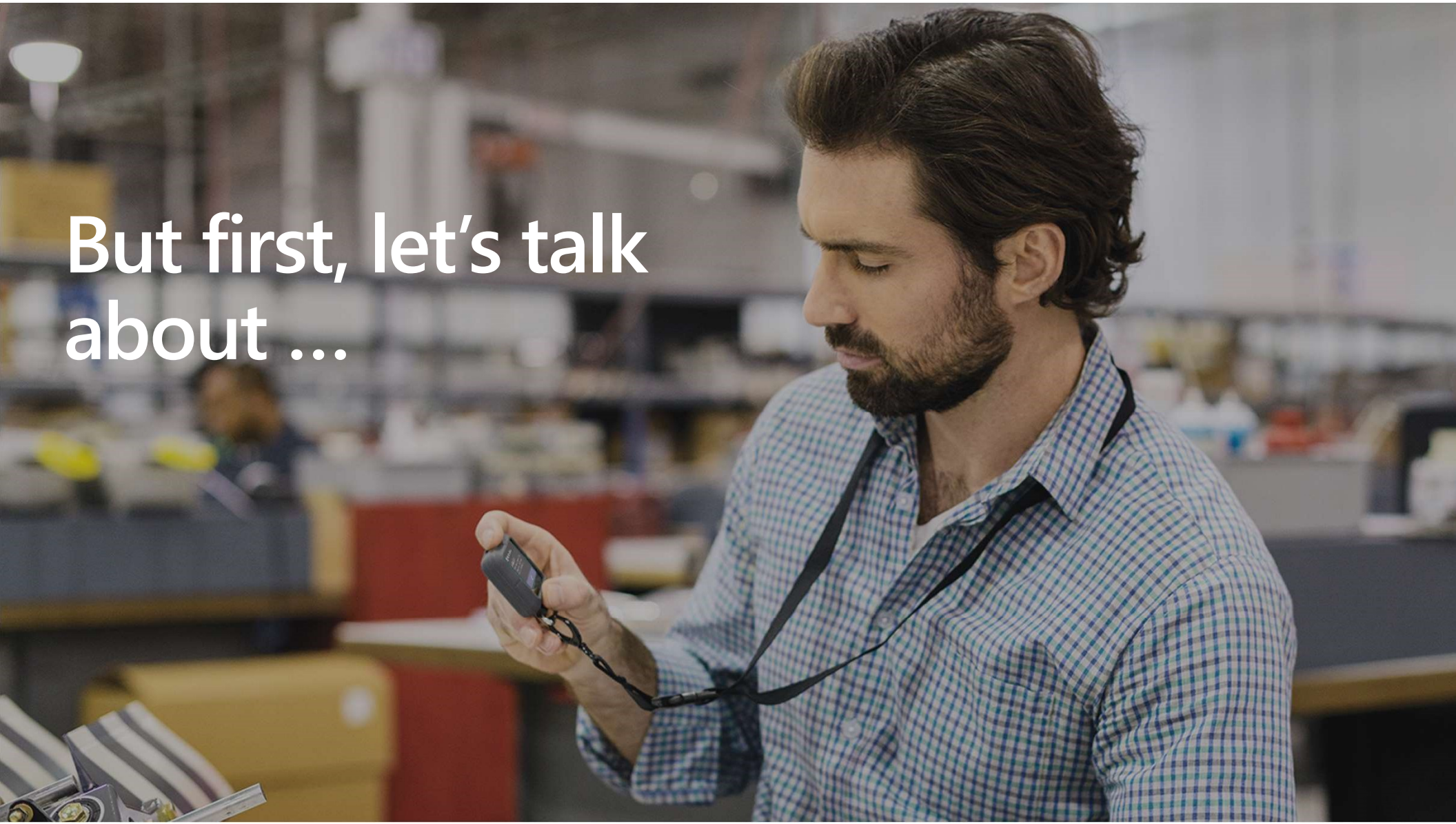
Setting up a cluster on Azure

Getting to know the system

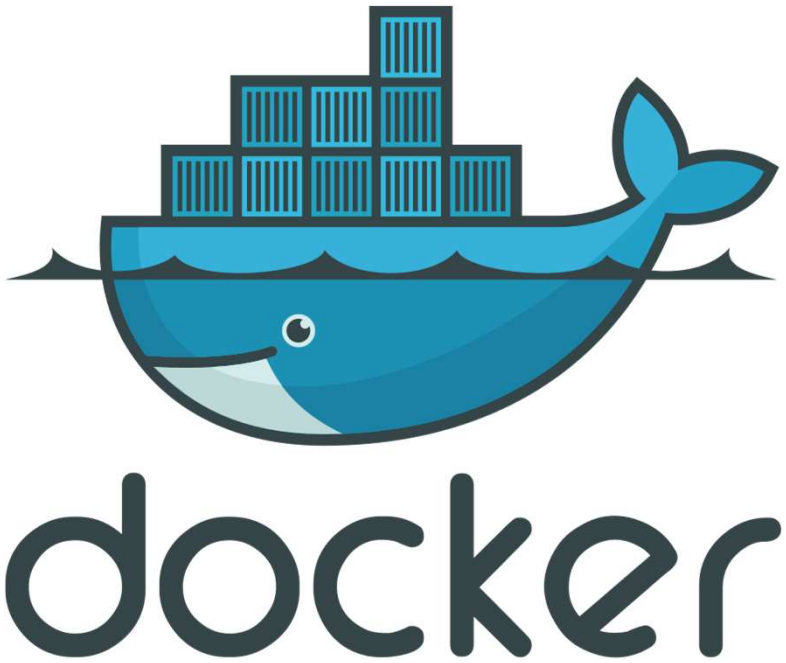
Deploying your first application

Basic troubleshooting tips

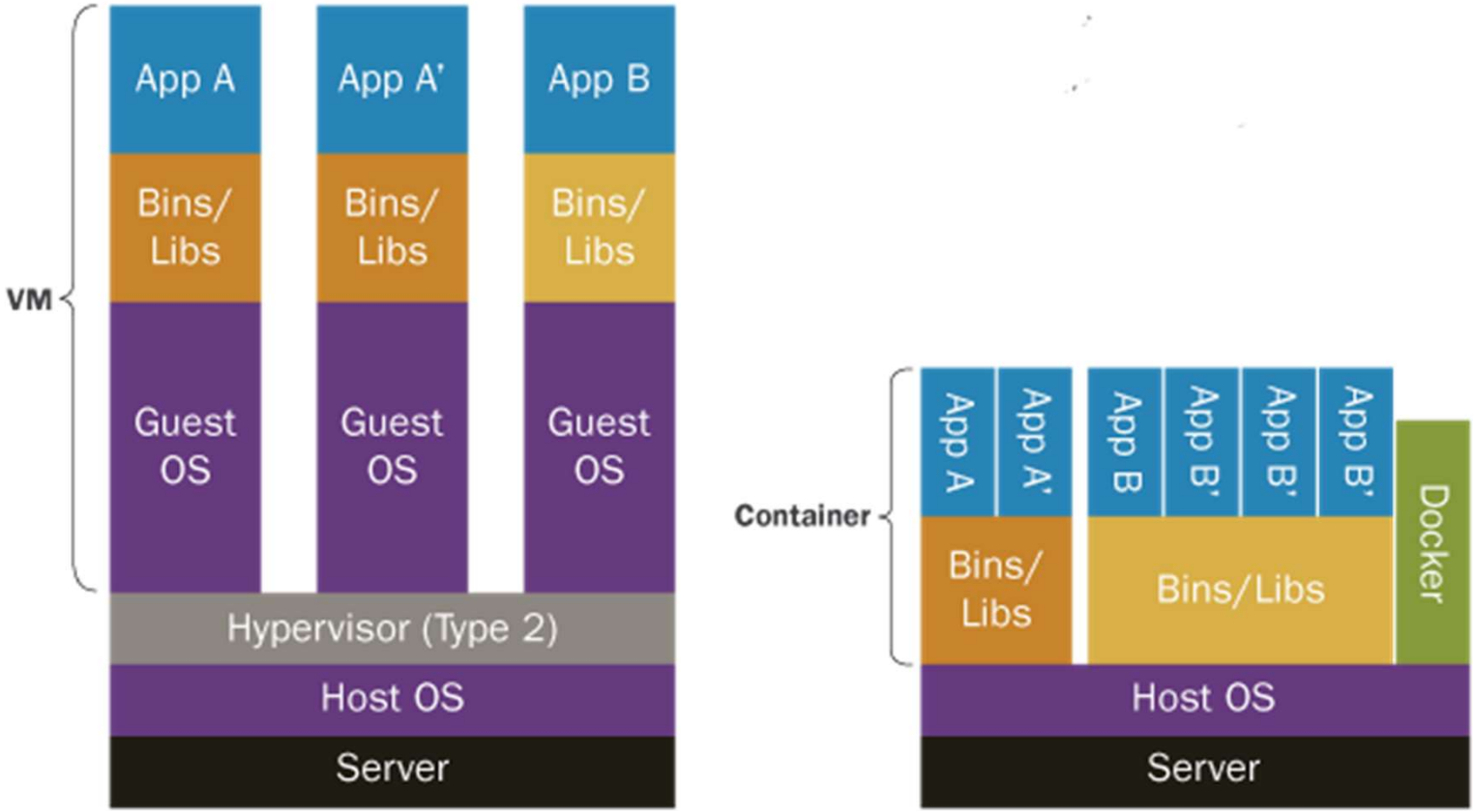
Q&A


But first, let's talk
about ...


Containers


docker

Docker (Containers) vs VMs

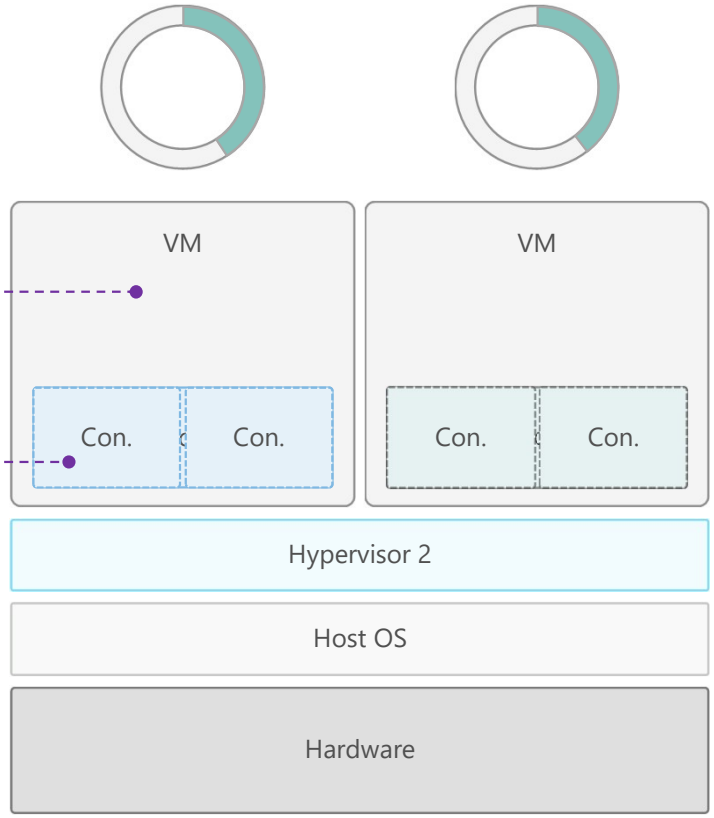


The container advantage

Traditional virtualized environment

Low utilization of container resources

Containerization of applications and their dependencies

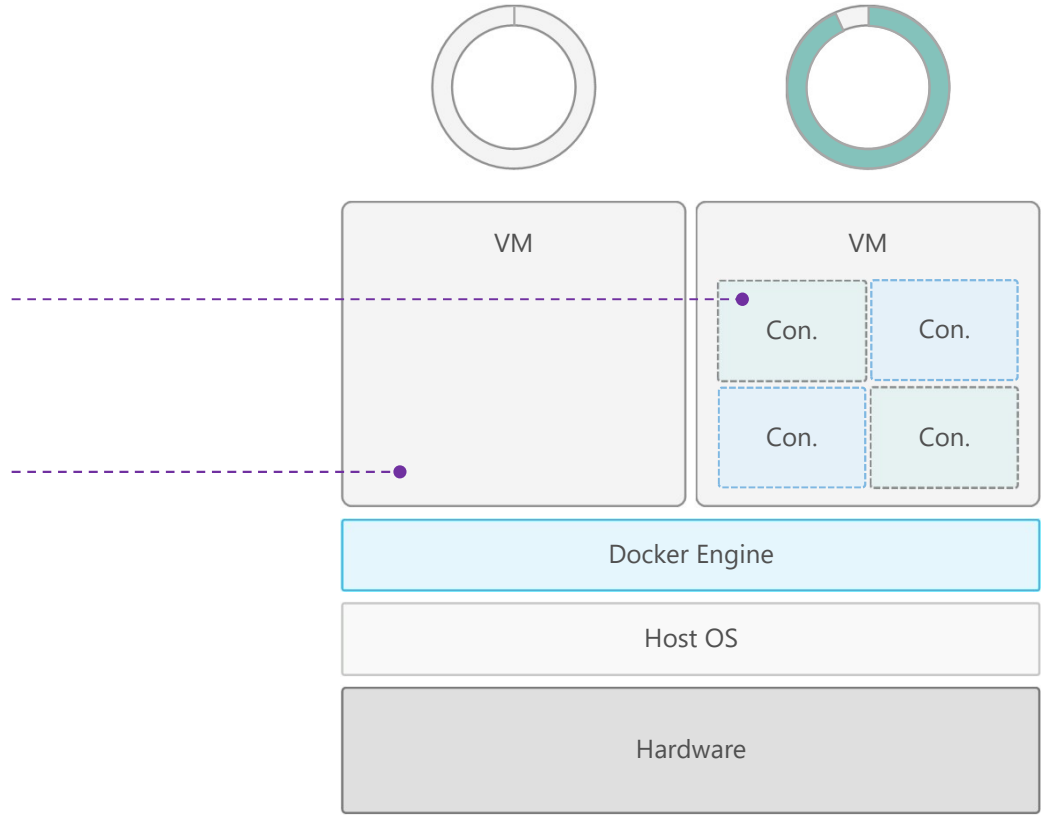


The container advantage

Containerized environment

Migrate containers and their dependencies to underutilized VMs for improved density and isolation

Decommission unused resources for efficiency gains and cost savings



Docker Container Anatomy

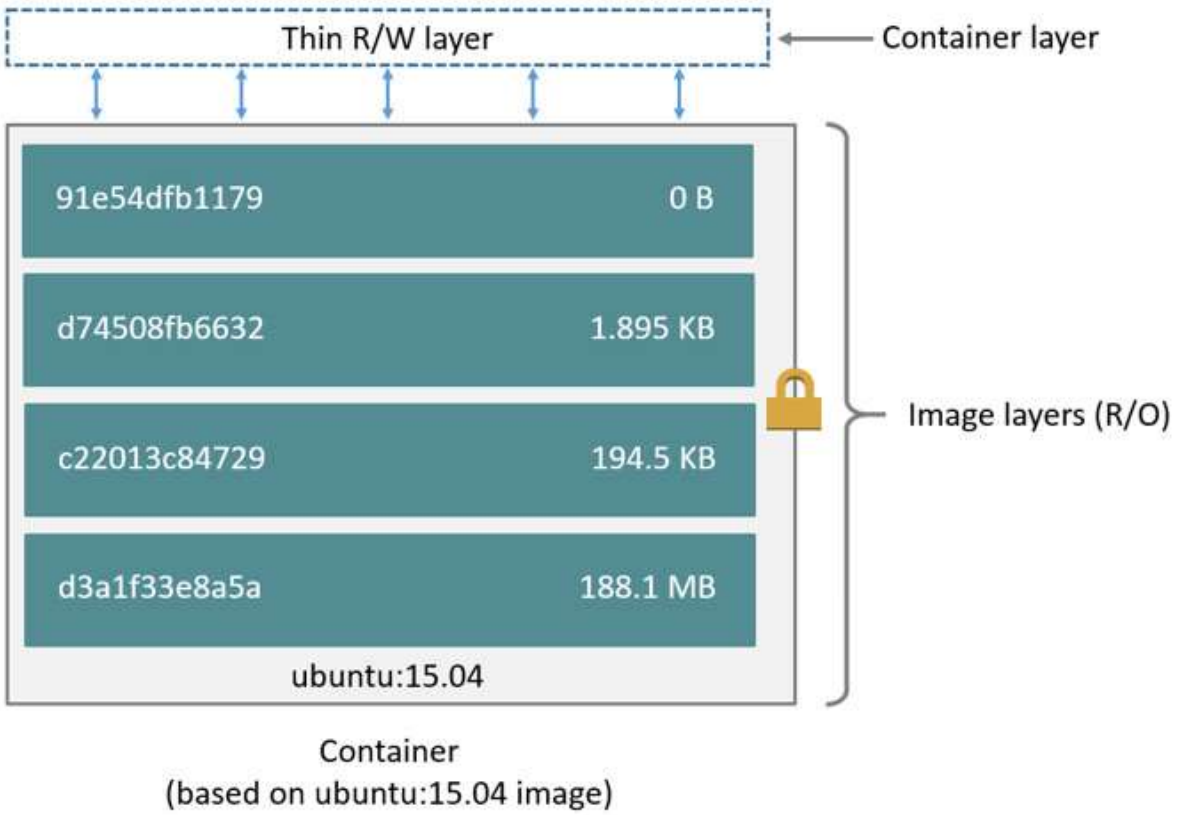


Image source: https://docs.docker.com/engine/userguide/storagedriver/imagesandcontainers/#images-and-layers

Anatomy of a Dockerfile

```
FROM nginx

ARG VERSION=0.59.1

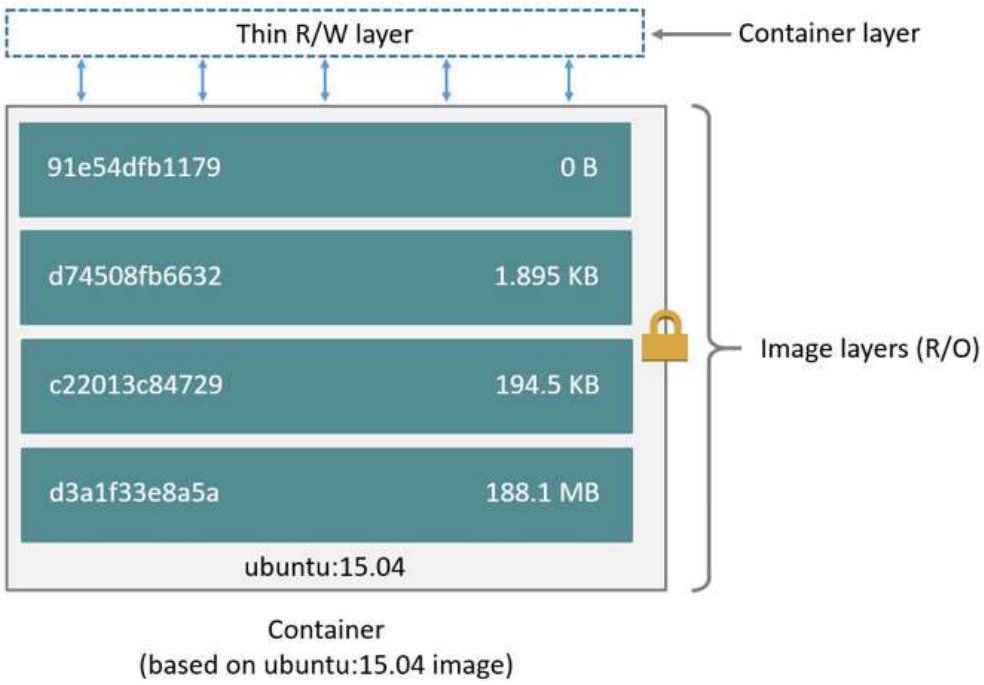
ADD
https://github.com/gohugoio/hugo/releases/download/v${VERSION}/hugo_${VERSION}_Linux-64bit.tar.gz
/hugo.tar.gz

RUN tar -zxvf hugo.tar.gz
RUN /hugo version

WORKDIR /hugo-site
COPY hugo-site .

RUN /hugo -v -s /hugo-site -d /usr/share/nginx/html

EXPOSE 80
```



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RUN /hugo version

WORKDIR /hugo-site
COPY hugo-site .

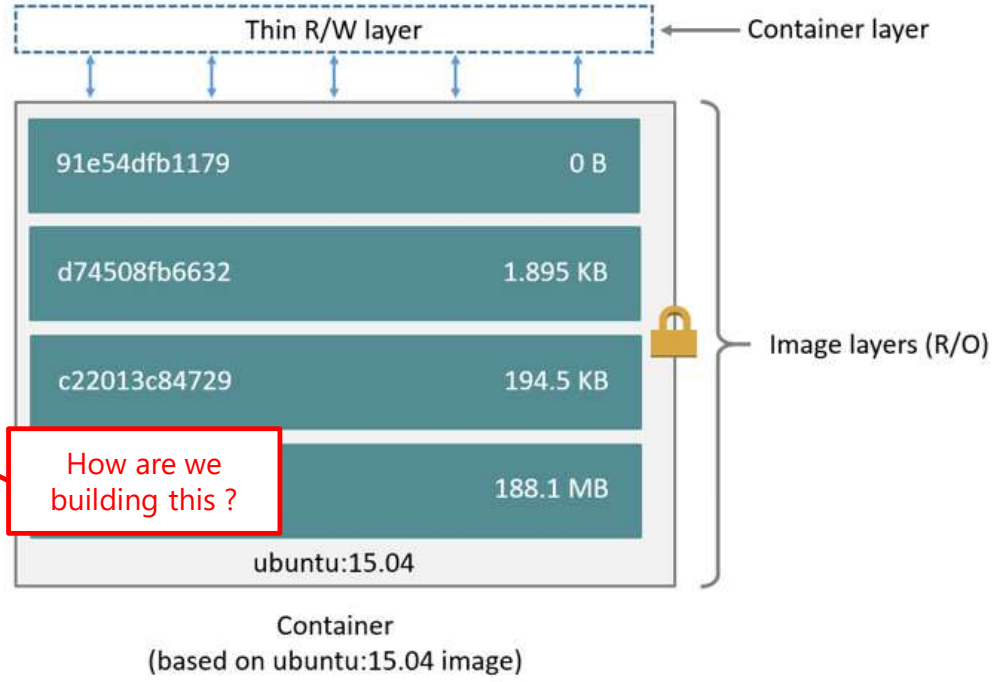
RUN /hugo -v -s /hugo-site -d /usr/share/nginx/html

EXPOSE 80
```

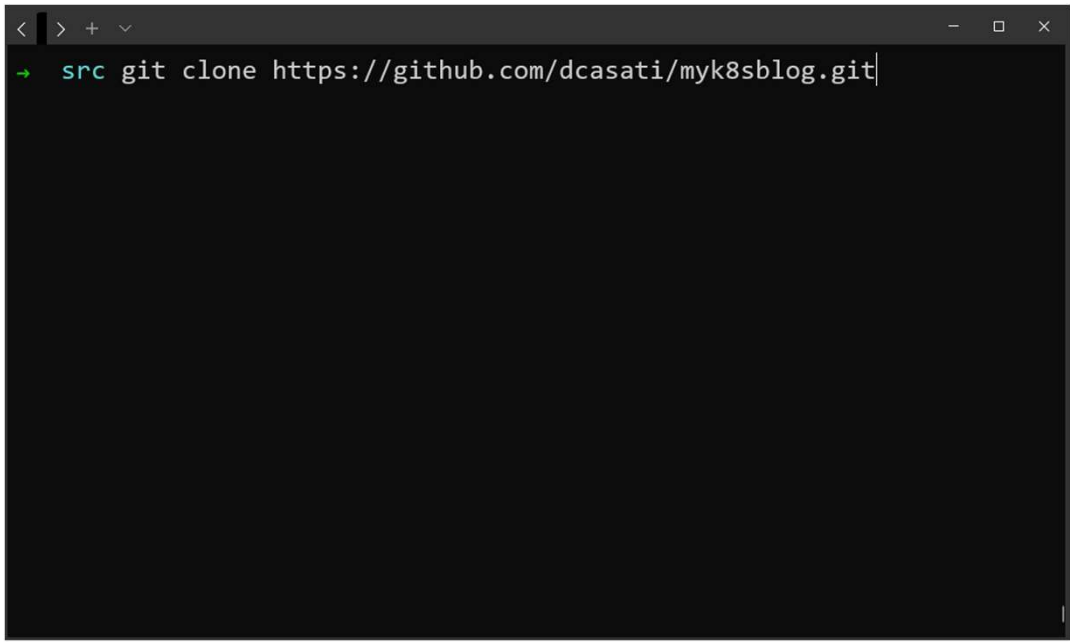
Our base – from where we should start to build this container

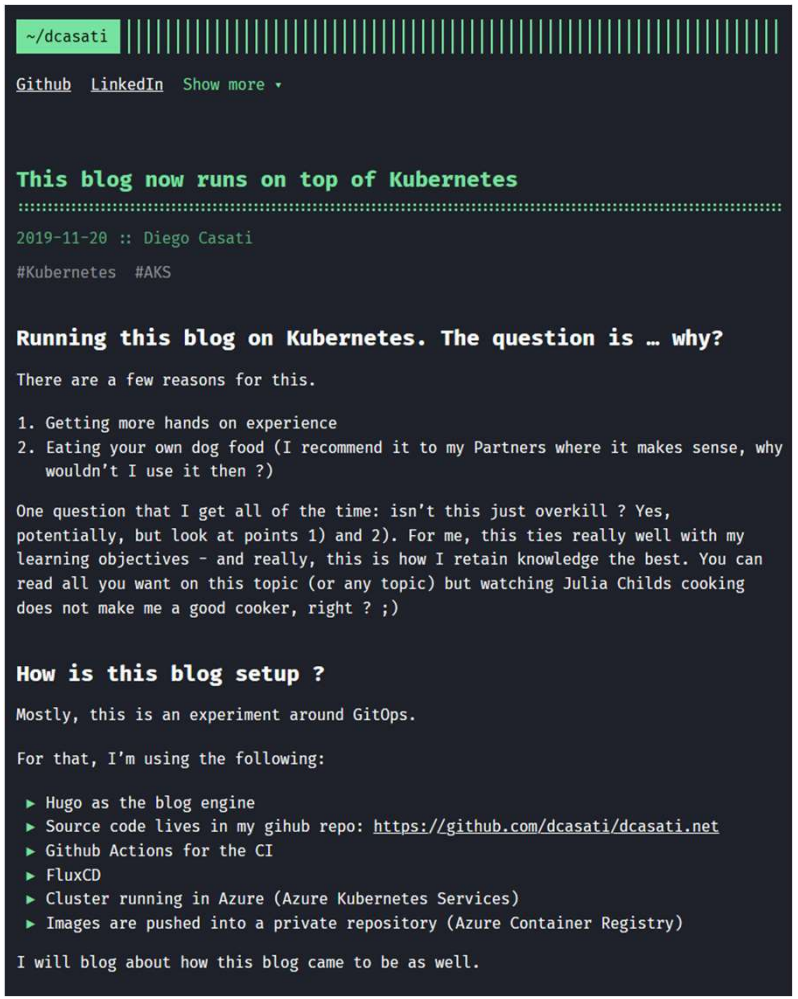
Where are we listening for traffic?

How are we building this ?

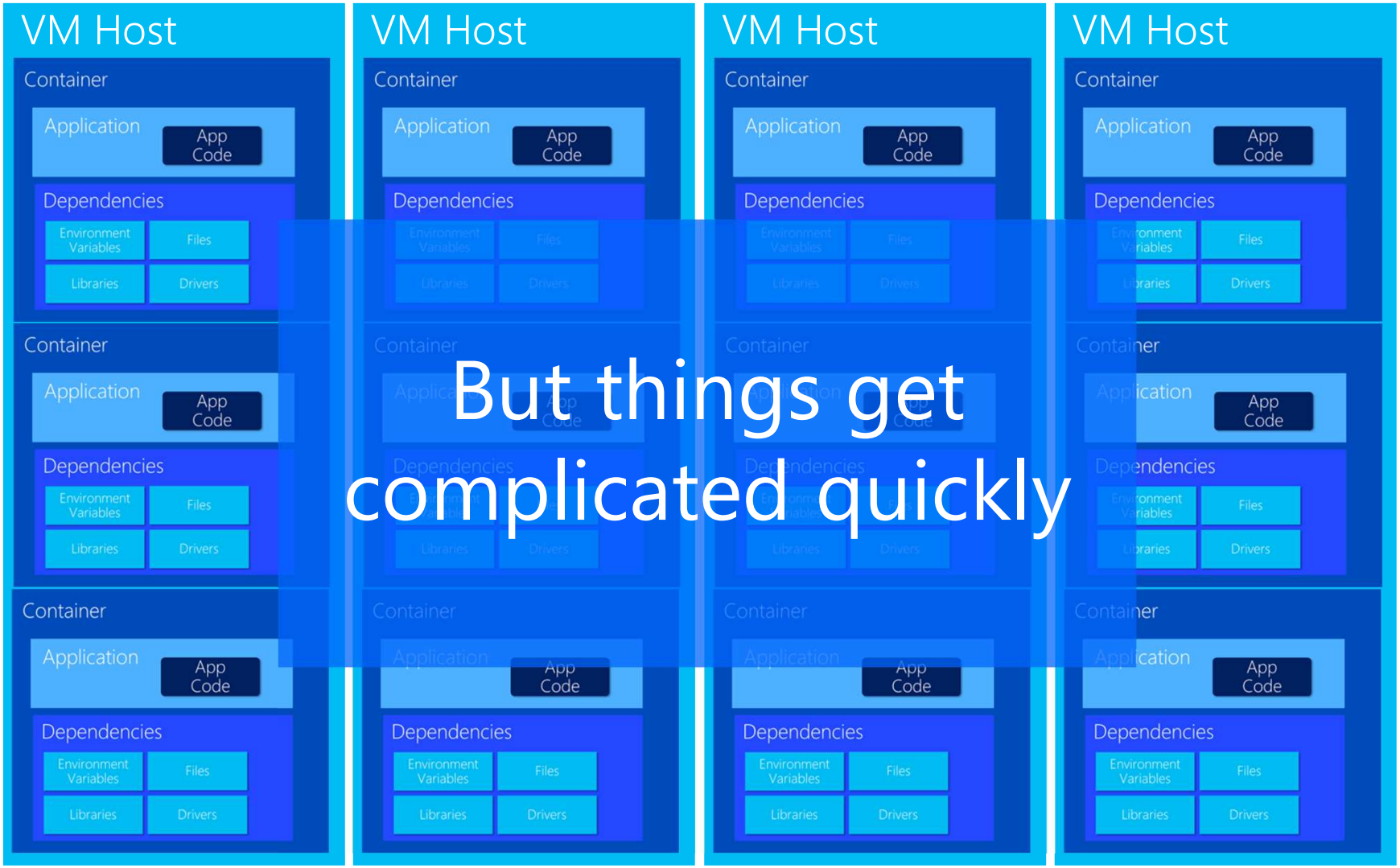


The Application





Time for some hands-on with Docker


VM Host
VM Host
VM Host
VM Host
Container
Application
App Code
Dependencies
Environment Variables
Files
Libraries
Drivers
But things get complicated quickly


VM Host
Container
Application
App Code
Dependencies
Environment Variables
Files
Libraries
Drivers
Very Quickly

Container Orchestration

The elements of orchestration

Scheduling

Affinity/anti-affinity

Health monitoring

Failover

Scaling

Networking

Service discovery

Coordinated app upgrades

Kubernetes: the de-facto orchestrator

Portable

Public, private, hybrid, multi-cloud

Extensible

Modular, pluggable, hookable, composable

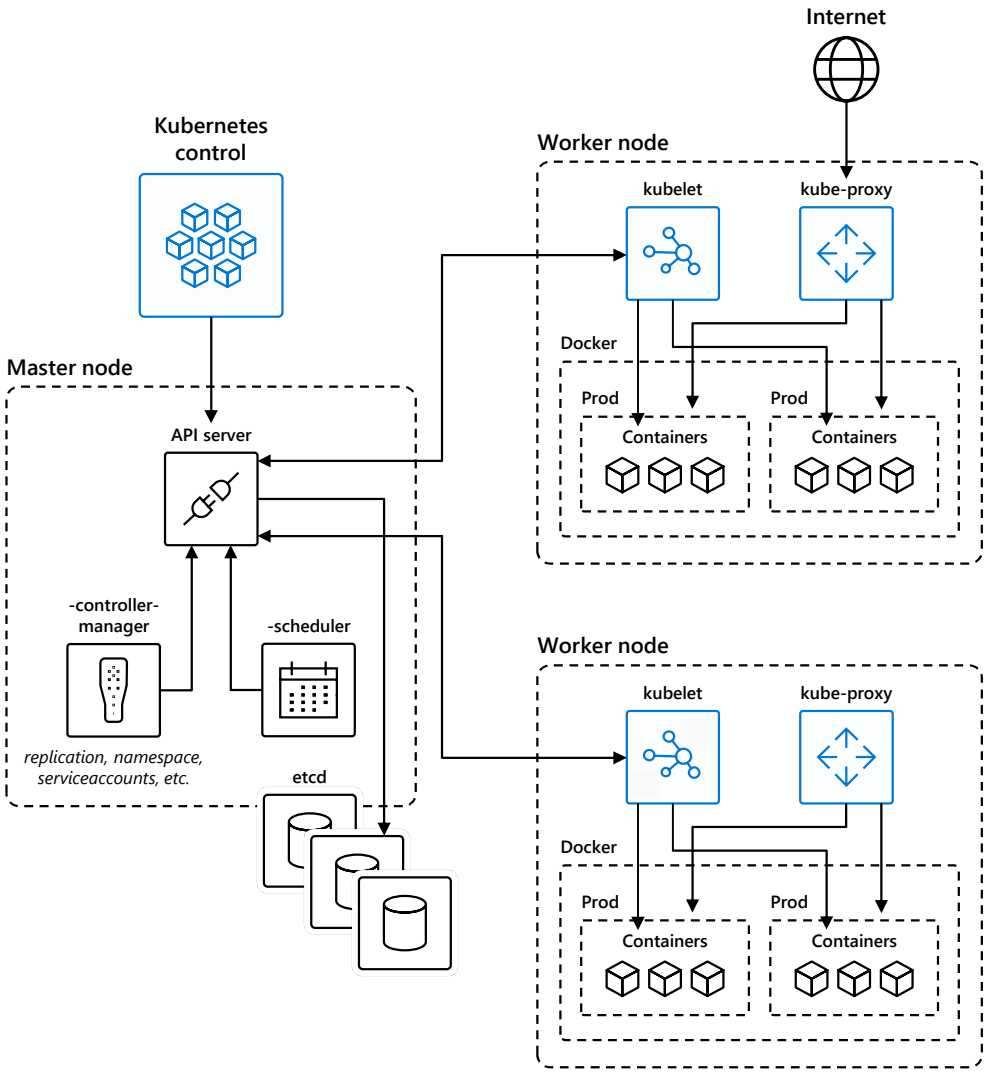
Self-healing

Auto-placement, auto-restart, auto-replication, auto-scaling

Kubernetes 101 – Here we go !

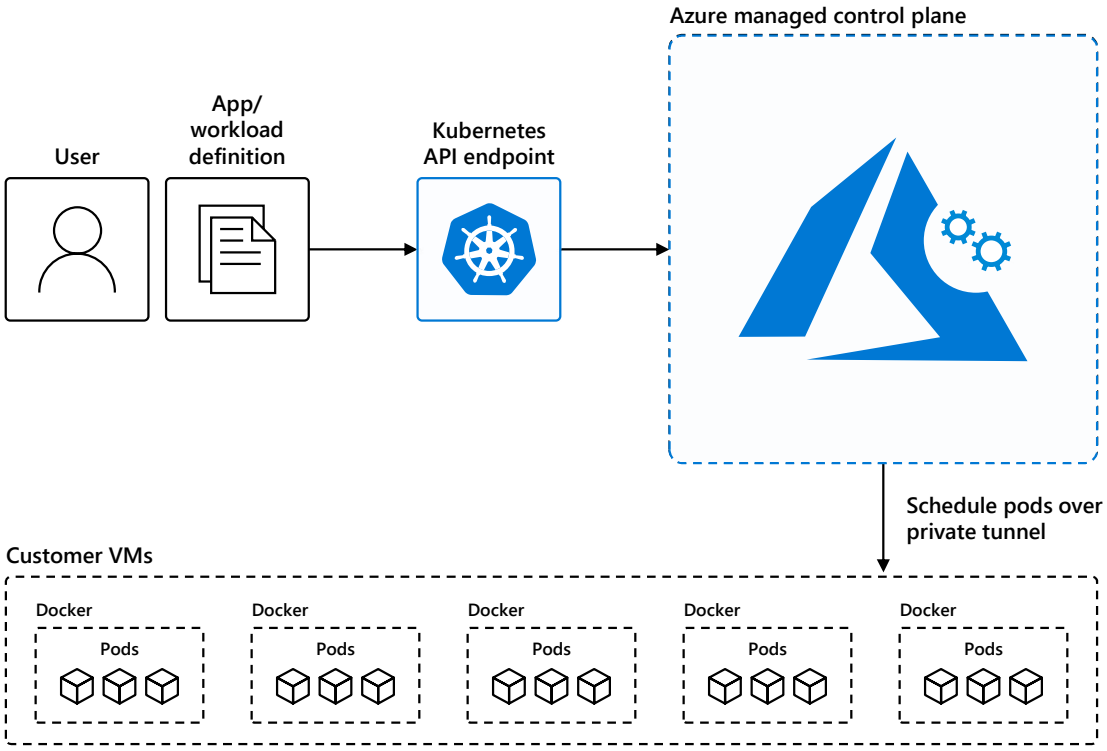
Kubernetes 101

1. Kubernetes users communicate with API server and apply desired state
2. Master nodes actively enforce desired state on worker nodes
3. Worker nodes support communication between containers
4. Worker nodes support communication from the Internet



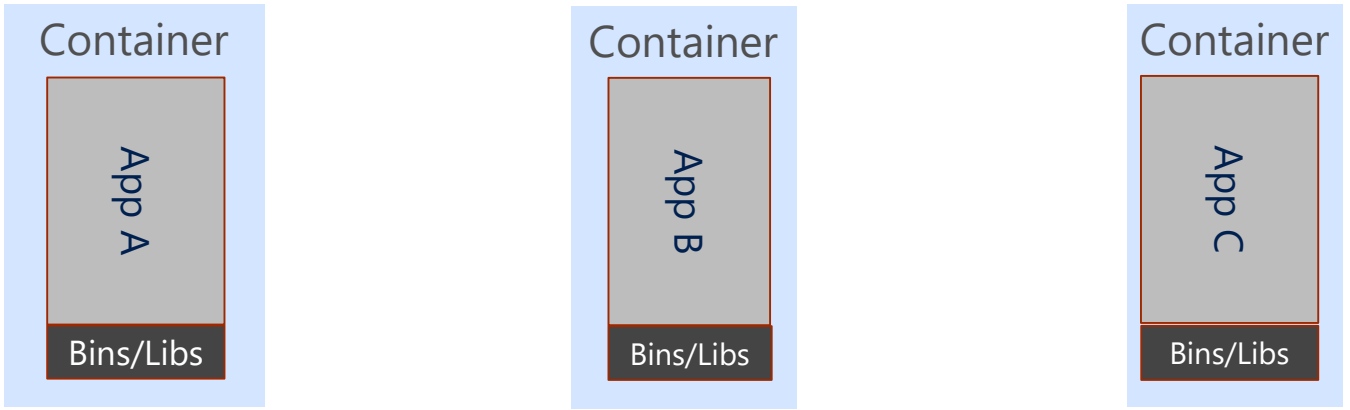
How managed Kubernetes on Azure works

- Automated upgrades, patches
- High reliability, availability
- Easy, secure cluster scaling
- Self-healing
- API server monitoring
- At no charge



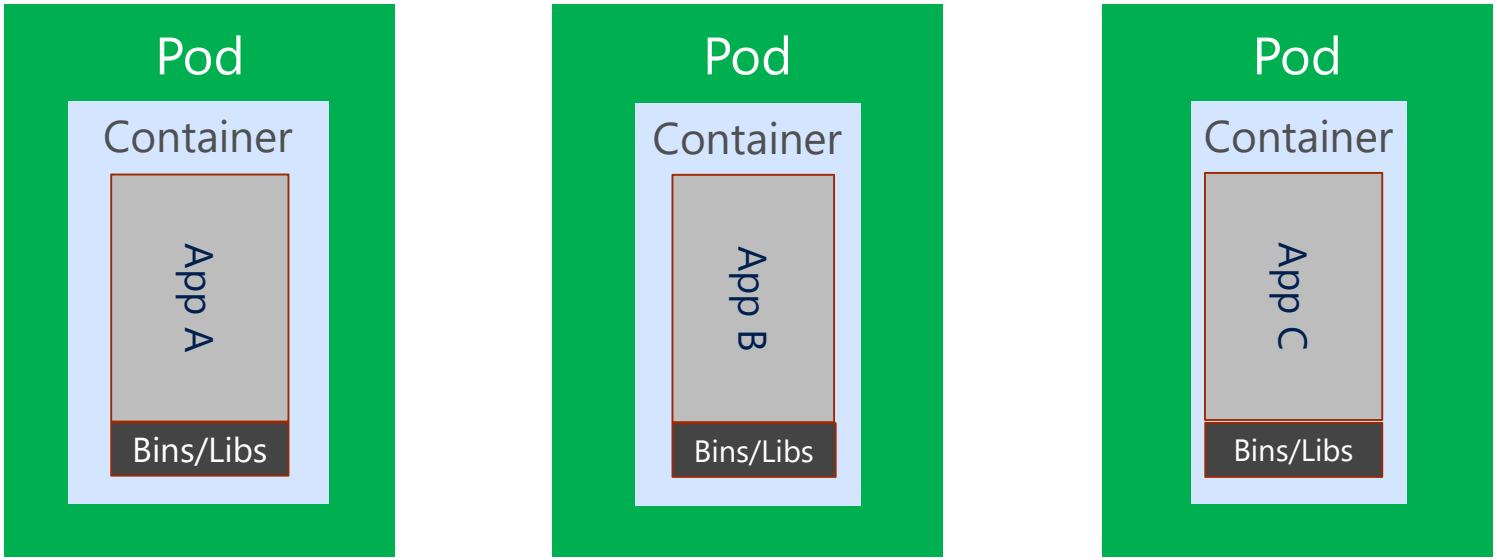
Kubernetes Architecture Components

Where do the Containers go?



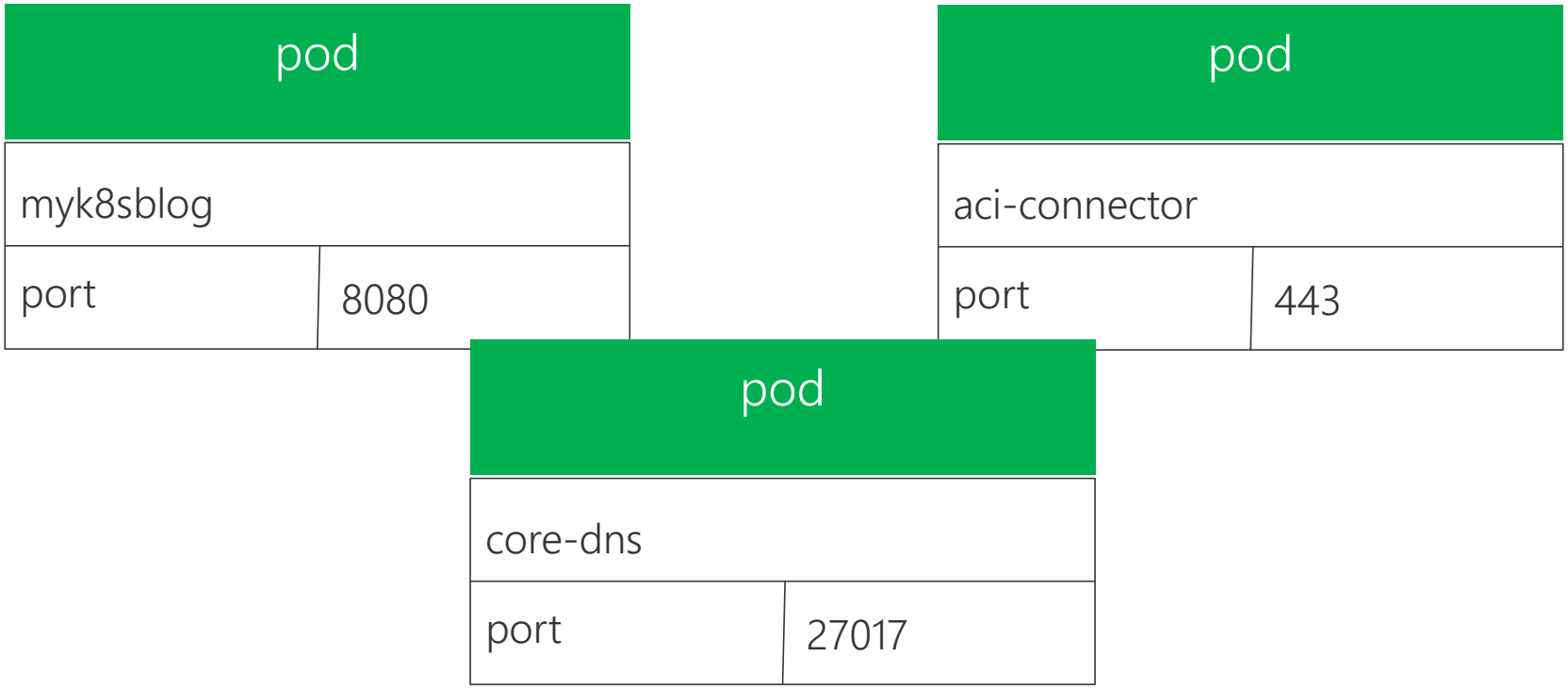
Kubernetes Architecture Components

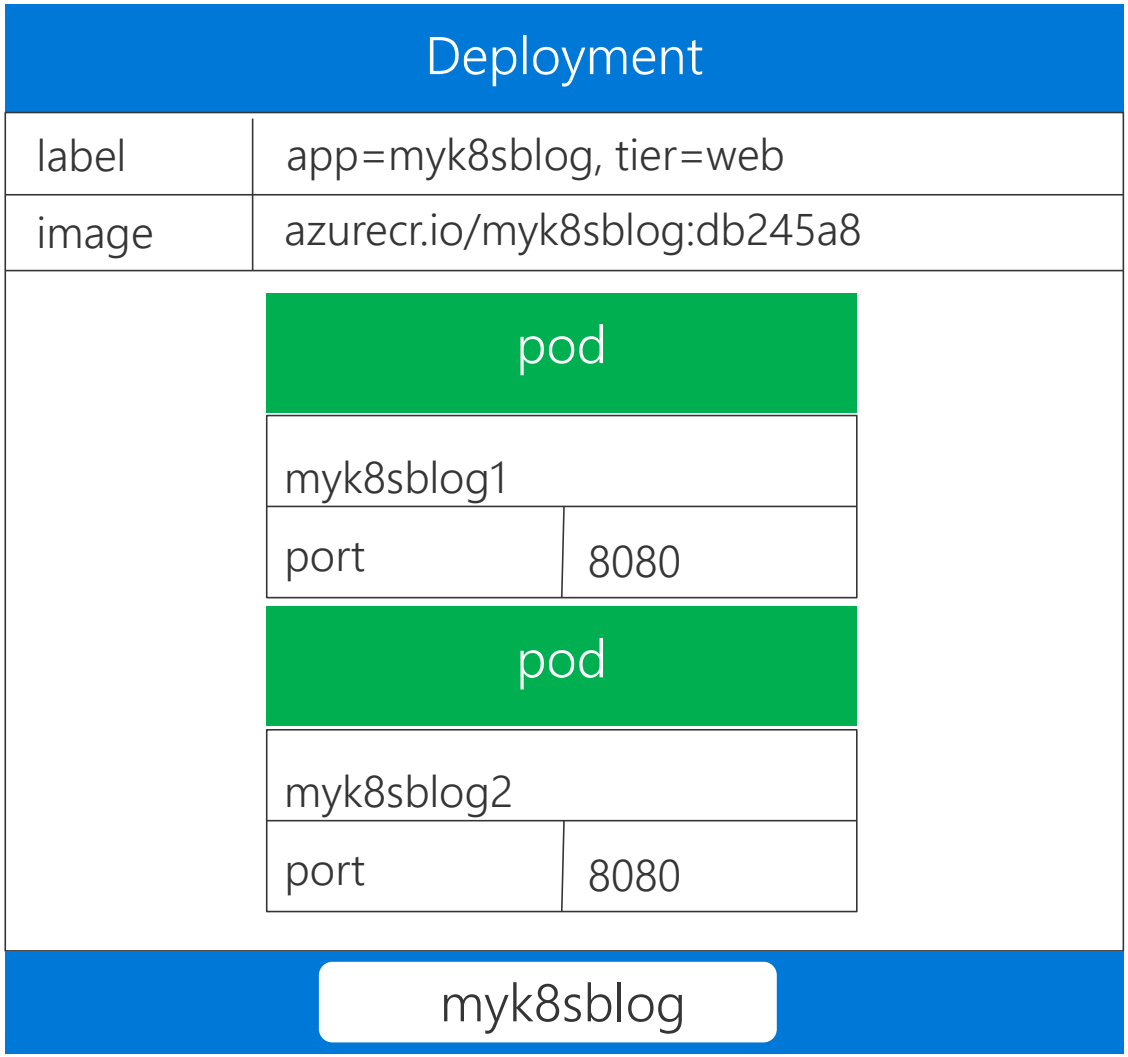
Introducing…. Pods!



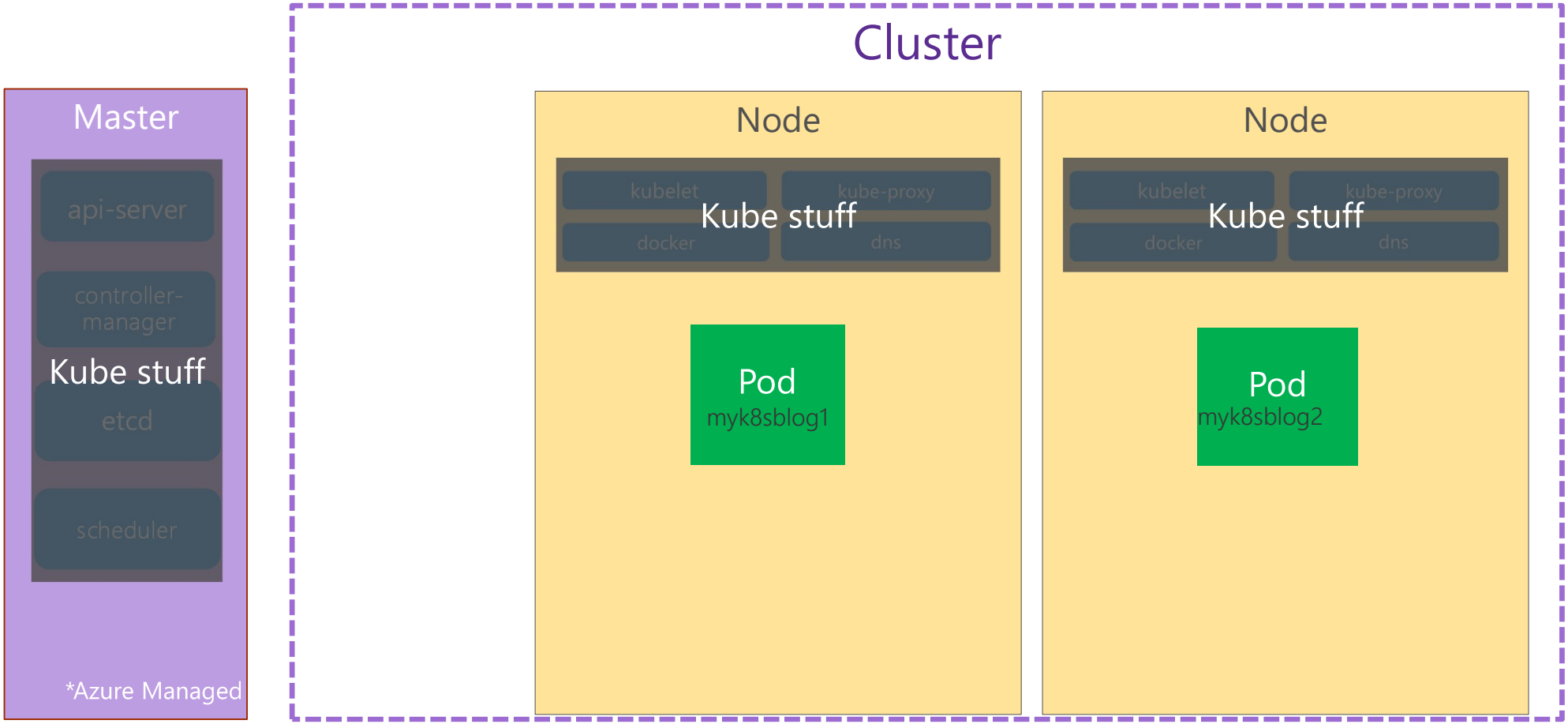
Containers go inside Pods!

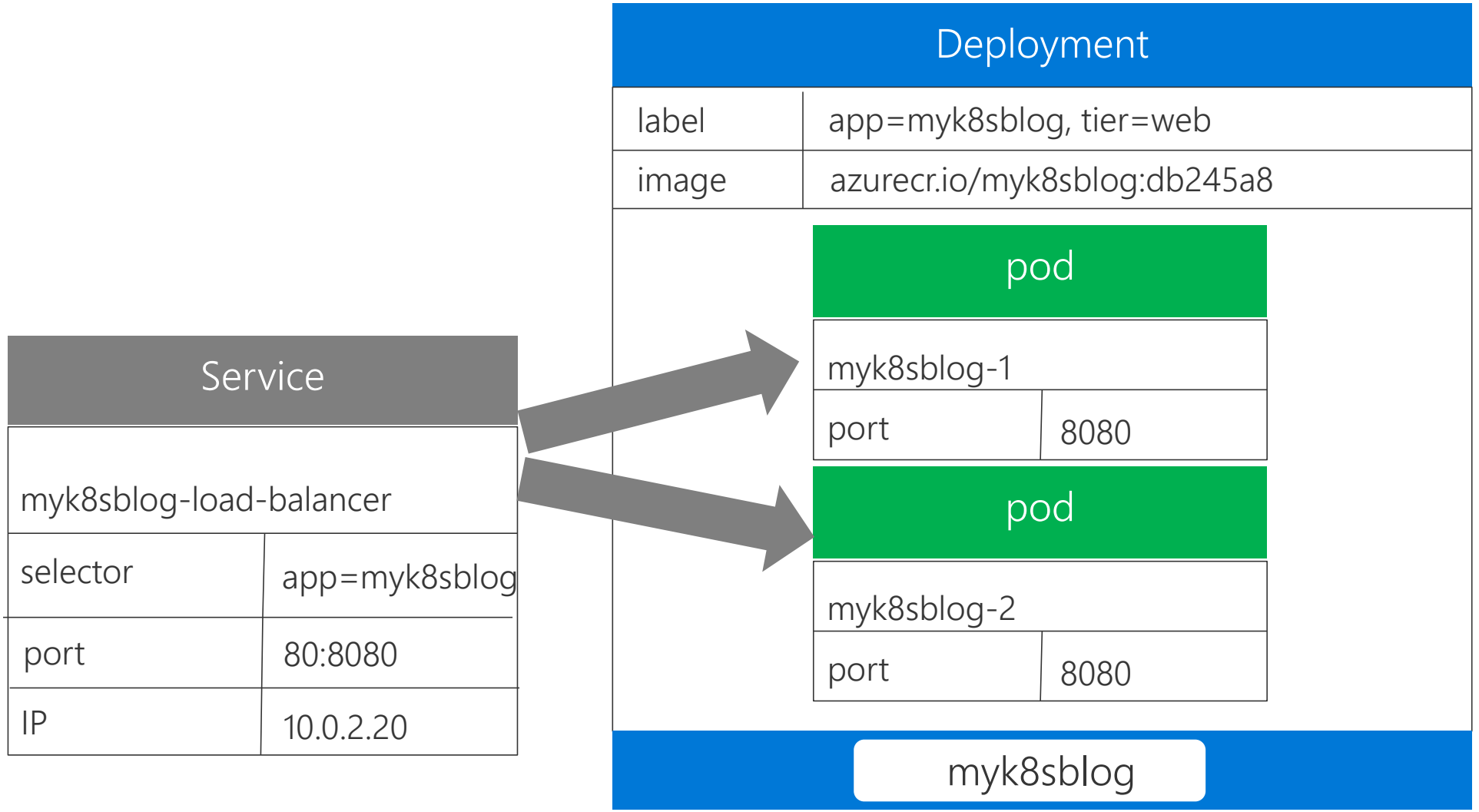
Pods


pod
myk8sblog
port
8080
pod
aci-connector
port
443
pod
core-dns
port
27017


Deployment
label
app=myk8sblog, tier=web
image
azurecr.io/myk8sblog:db245a8
pod
myk8sblog1
port
8080
pod
myk8sblog2
port
8080
myk8sblog

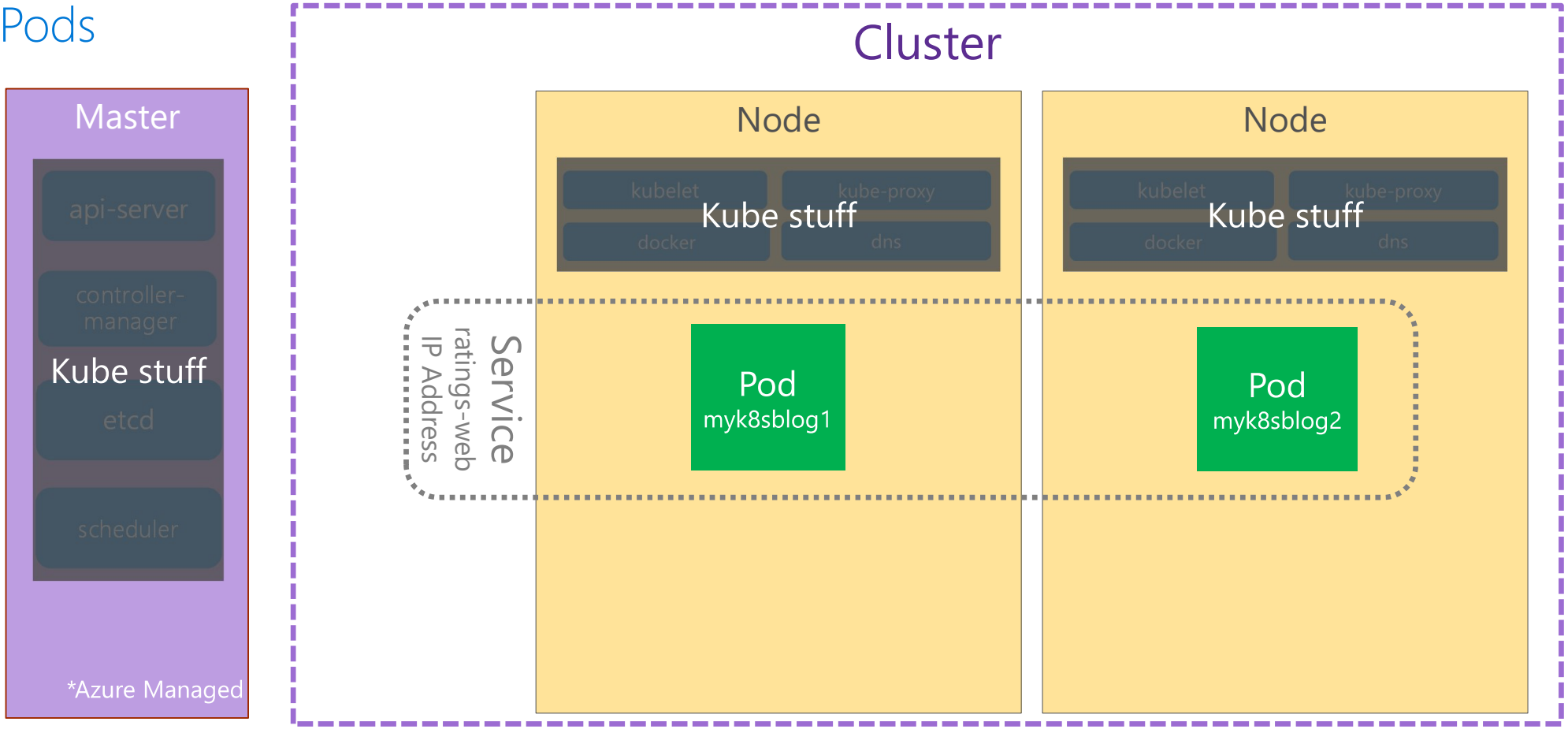
Kubernetes Architecture Components




Deployment
label
app=myk8sblog, tier=web
image
azurecr.io/myk8sblog:db245a8
pod
myk8sblog-1
port
8080
pod
myk8sblog-2
port
8080
myk8sblog
Service
myk8sblog-load-balancer
selector
app=myk8sblog
port
80:8080
IP
10.0.2.20

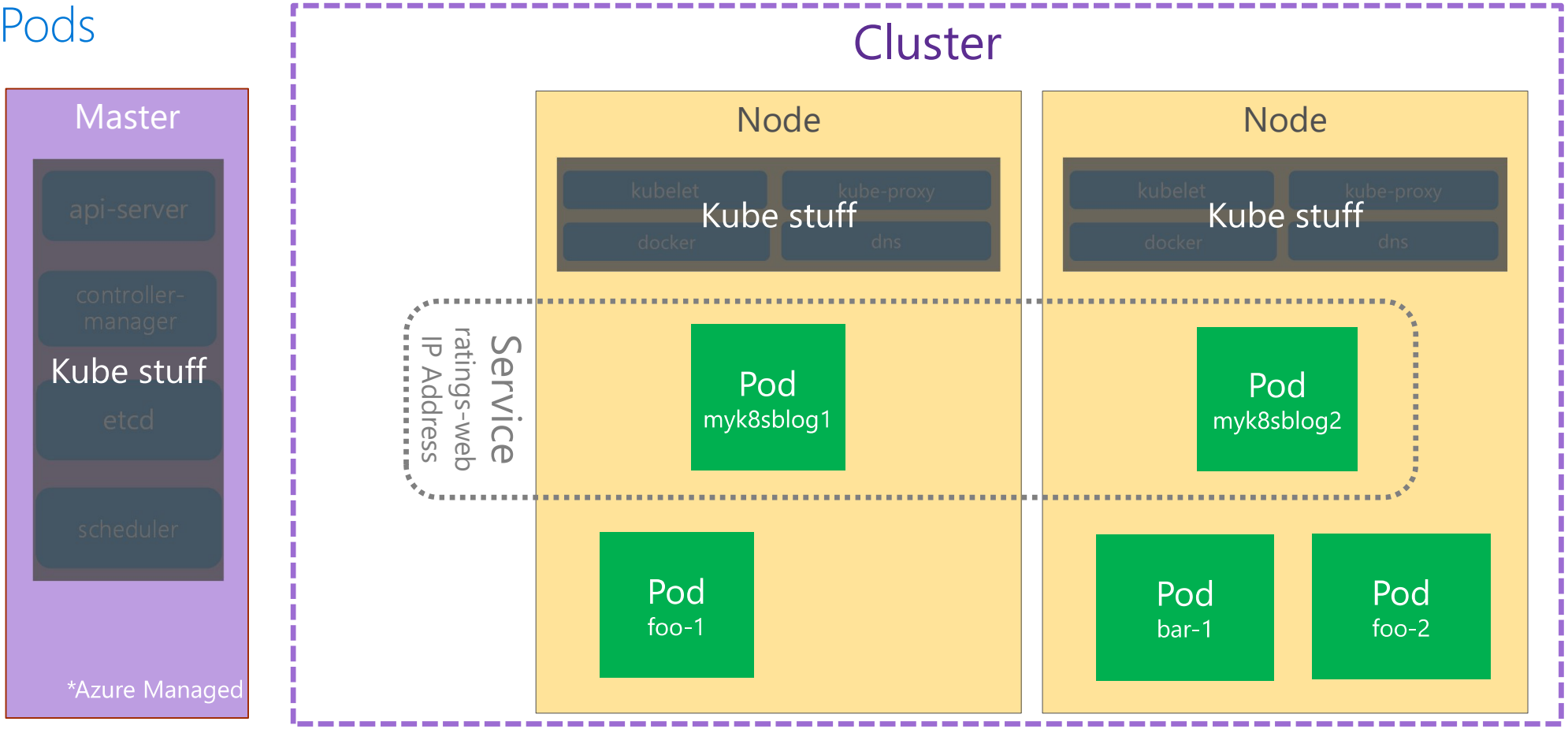
Kubernetes Architecture Components

Pods



Kubernetes Architecture Components

Pods



Time for some hands-on with Kubernetes

Getting Started with AKS – Start here

How do I create a cluster on Azure ?

```
az aks create -g myResourceGroup -n myCluster --generate-ssh-keys
```

How do I install the kubectl ?

```
az aks install-cli
```

How do I access my cluster?

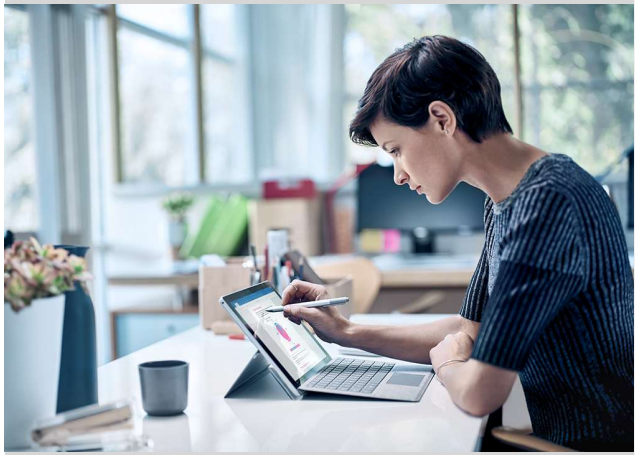
```
$ az aks get-credentials -g myResourceGroup -n myCluster
```

What's Next?

https://aka.ms/learnkubernetes

Q&A

Next steps in your learning journey



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