



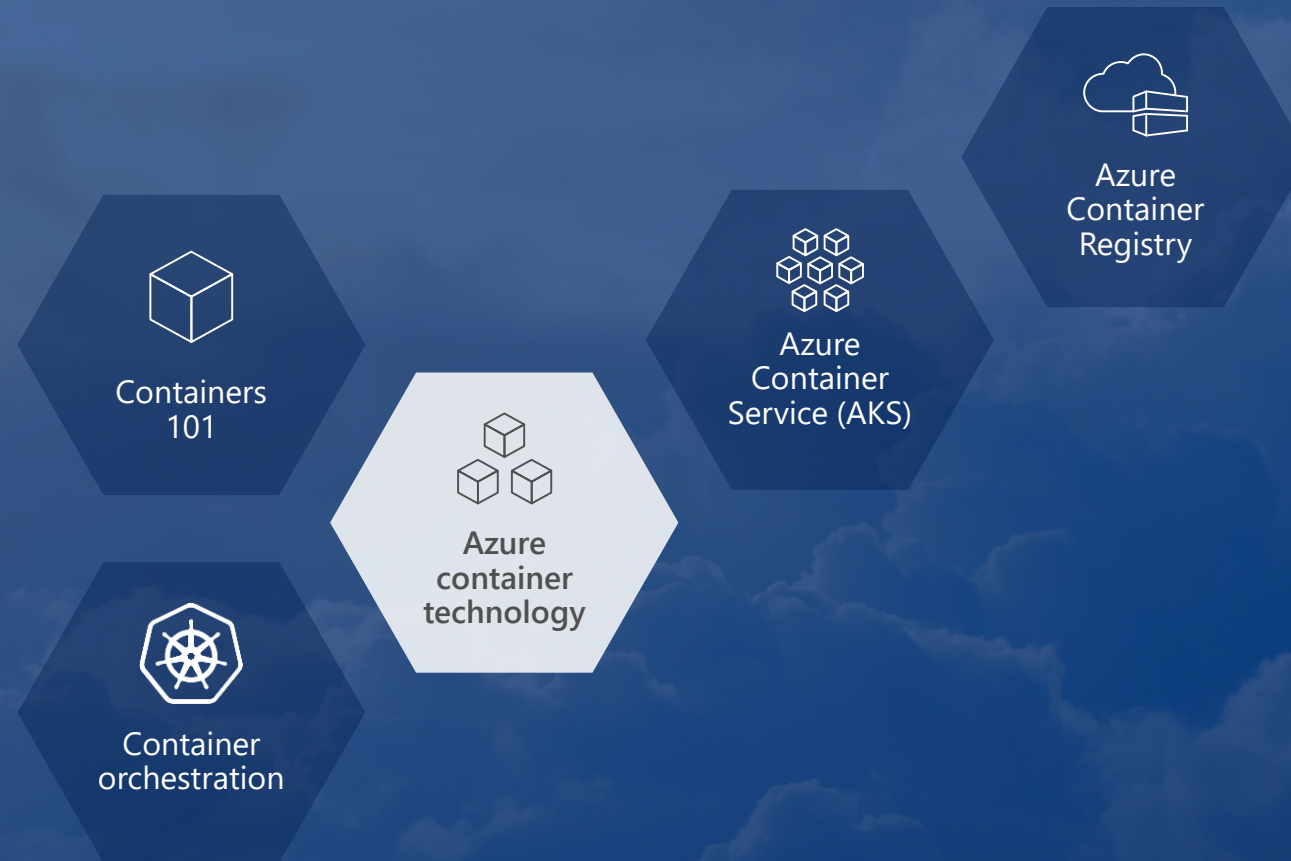
Container Orchestration with Kubernetes

Ben Coleman

Cloud Architect & Evangelist
@BenCodeGeek



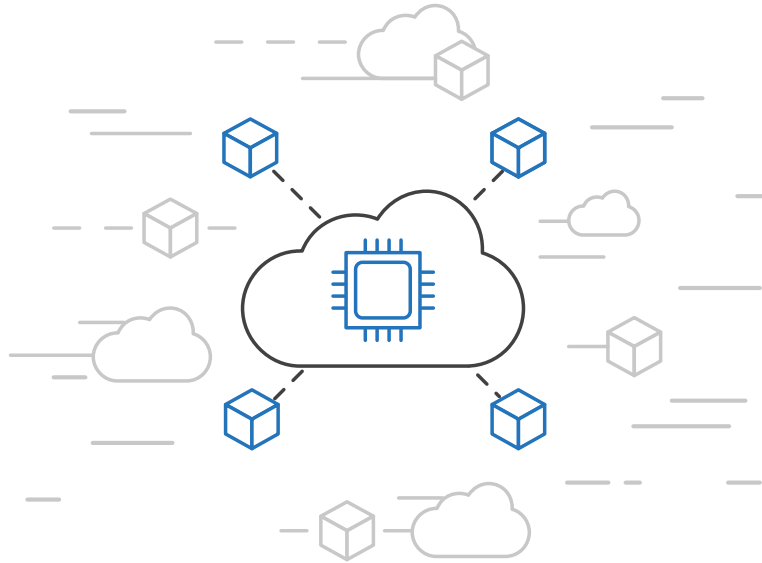
Azure container technology



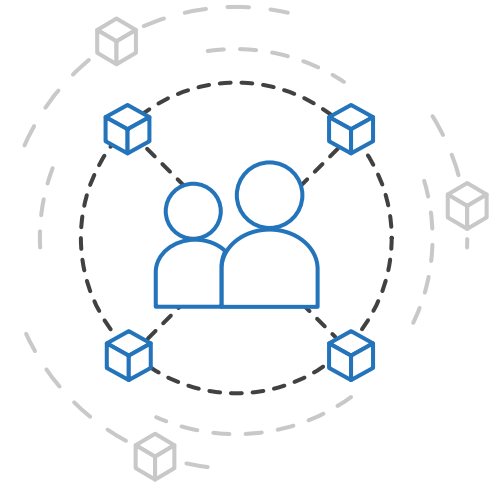
Azure container **strategy**



Embrace containers
as ubiquitous

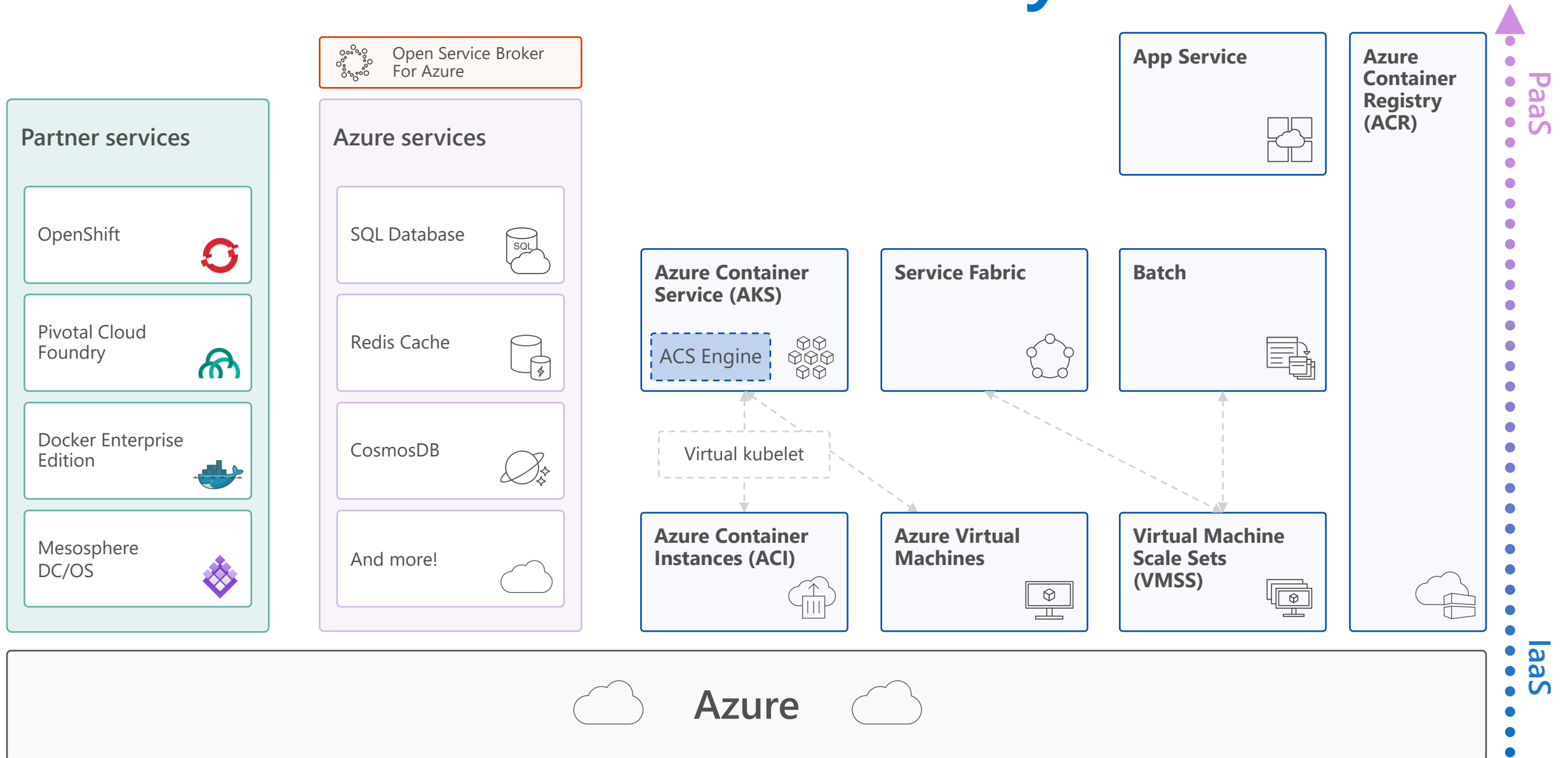


Support containers
across the compute
portfolio

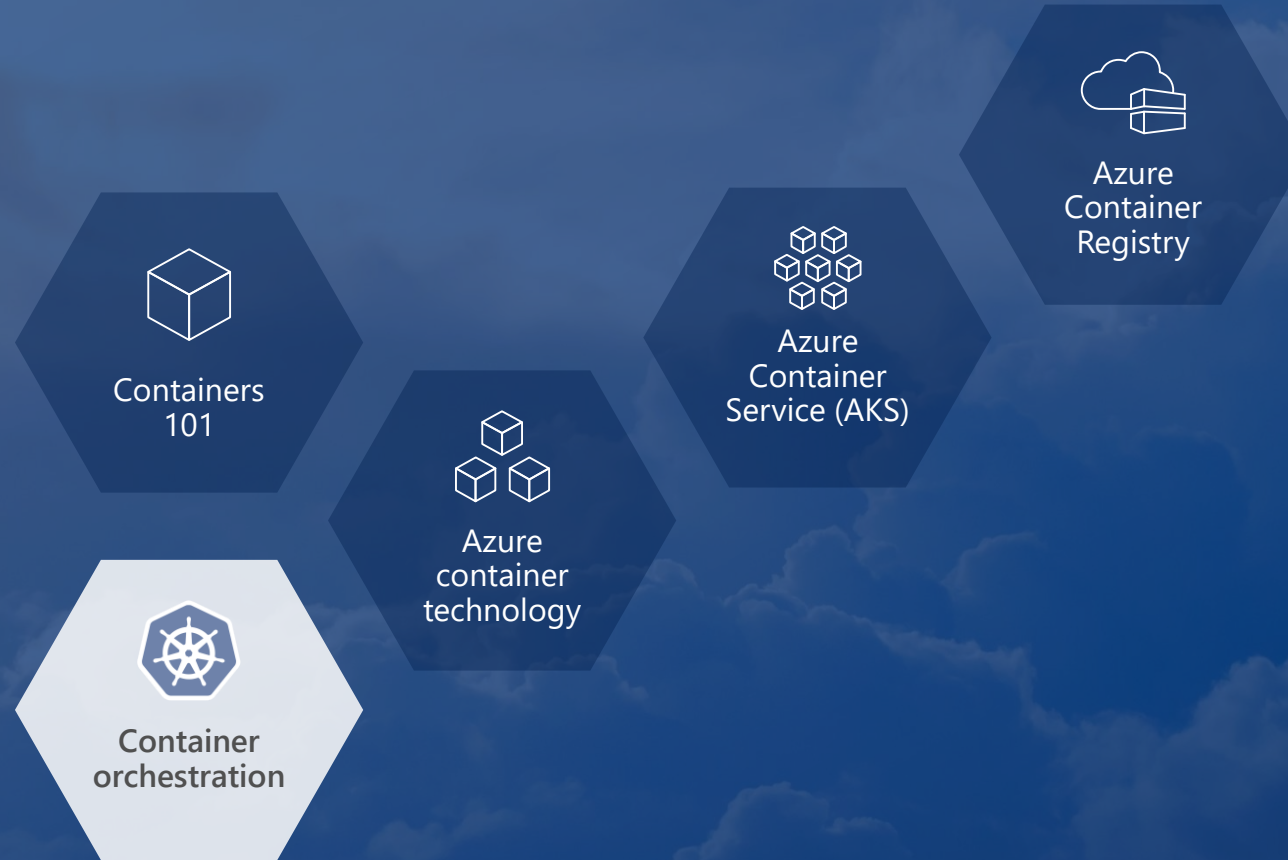


Democratize
container technology

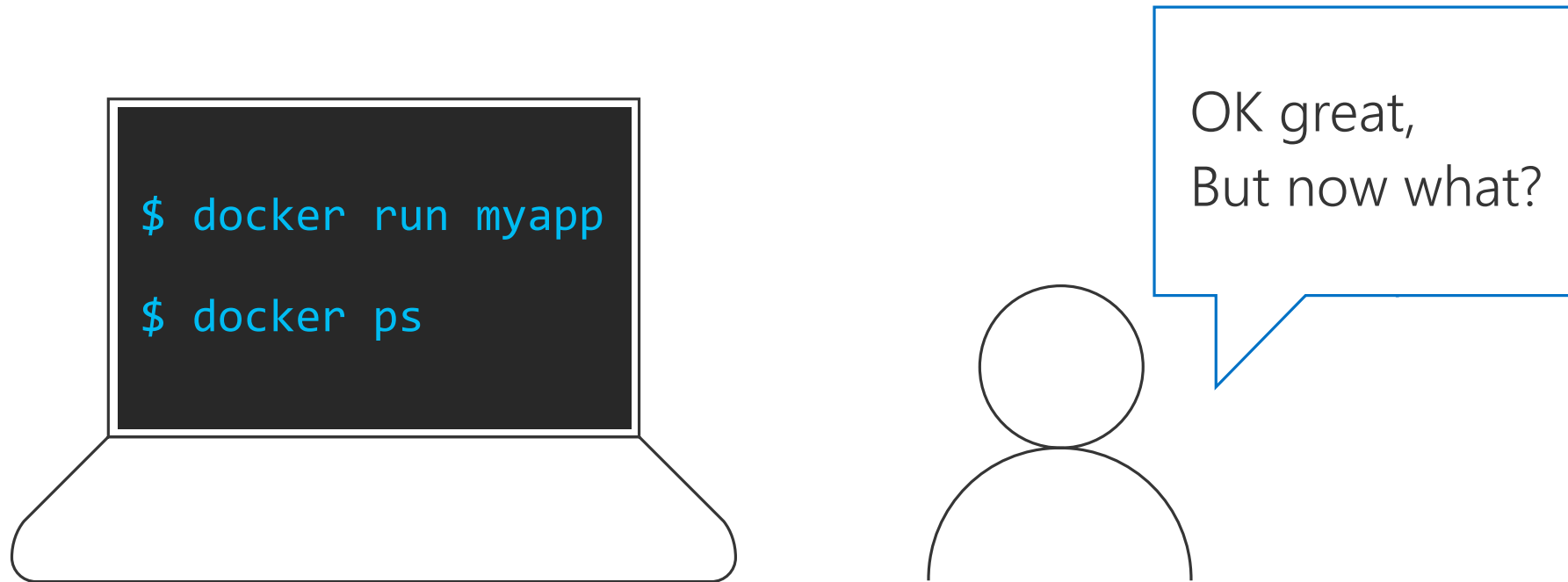
Azure container ecosystem



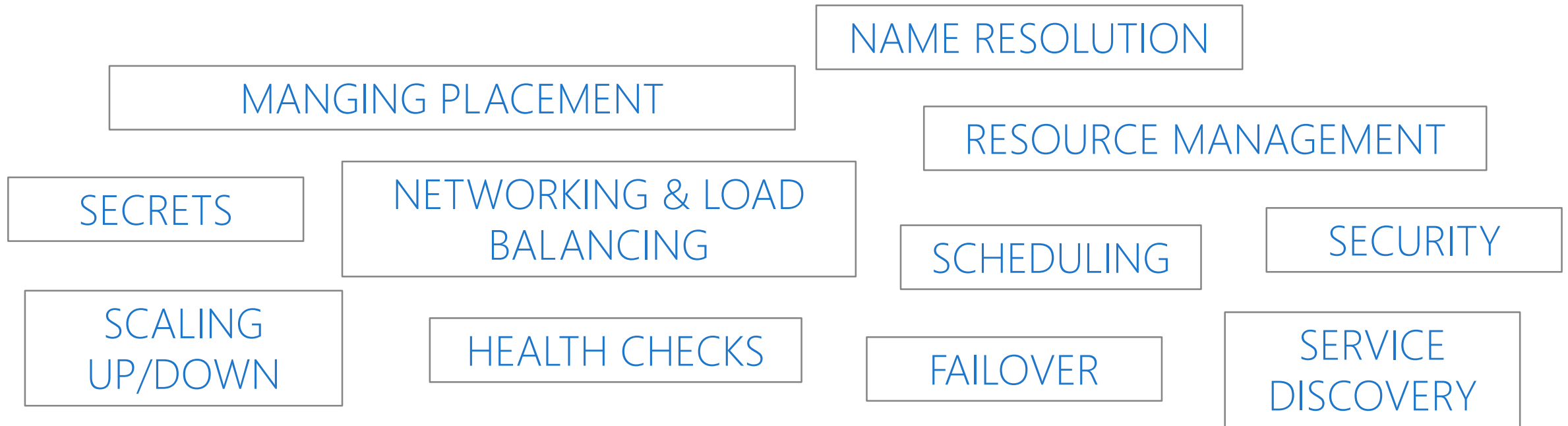
Container orchestration



The need for **orchestration**

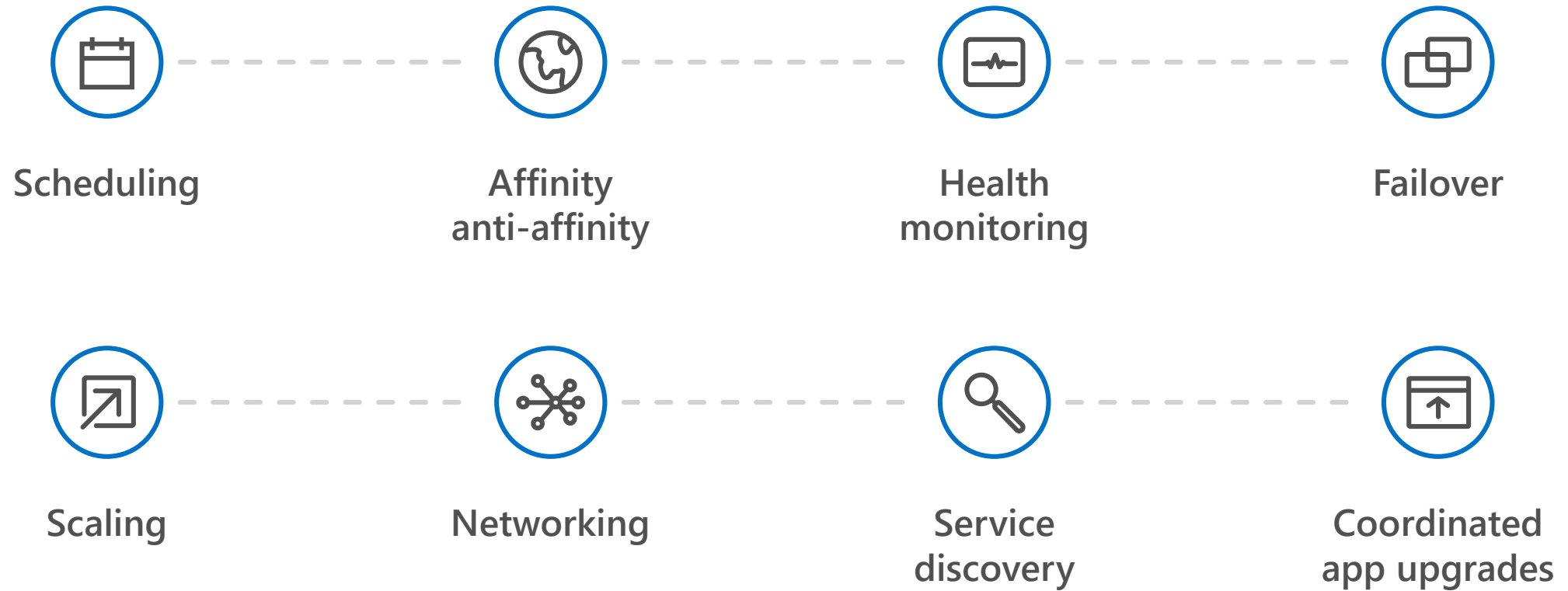


The need for **orchestration**



Production And At Scale

The elements of **orchestration**



Kubernetes: empowering you to do more



Deploy your
applications quickly
and predictably

Scale your
applications on
the fly

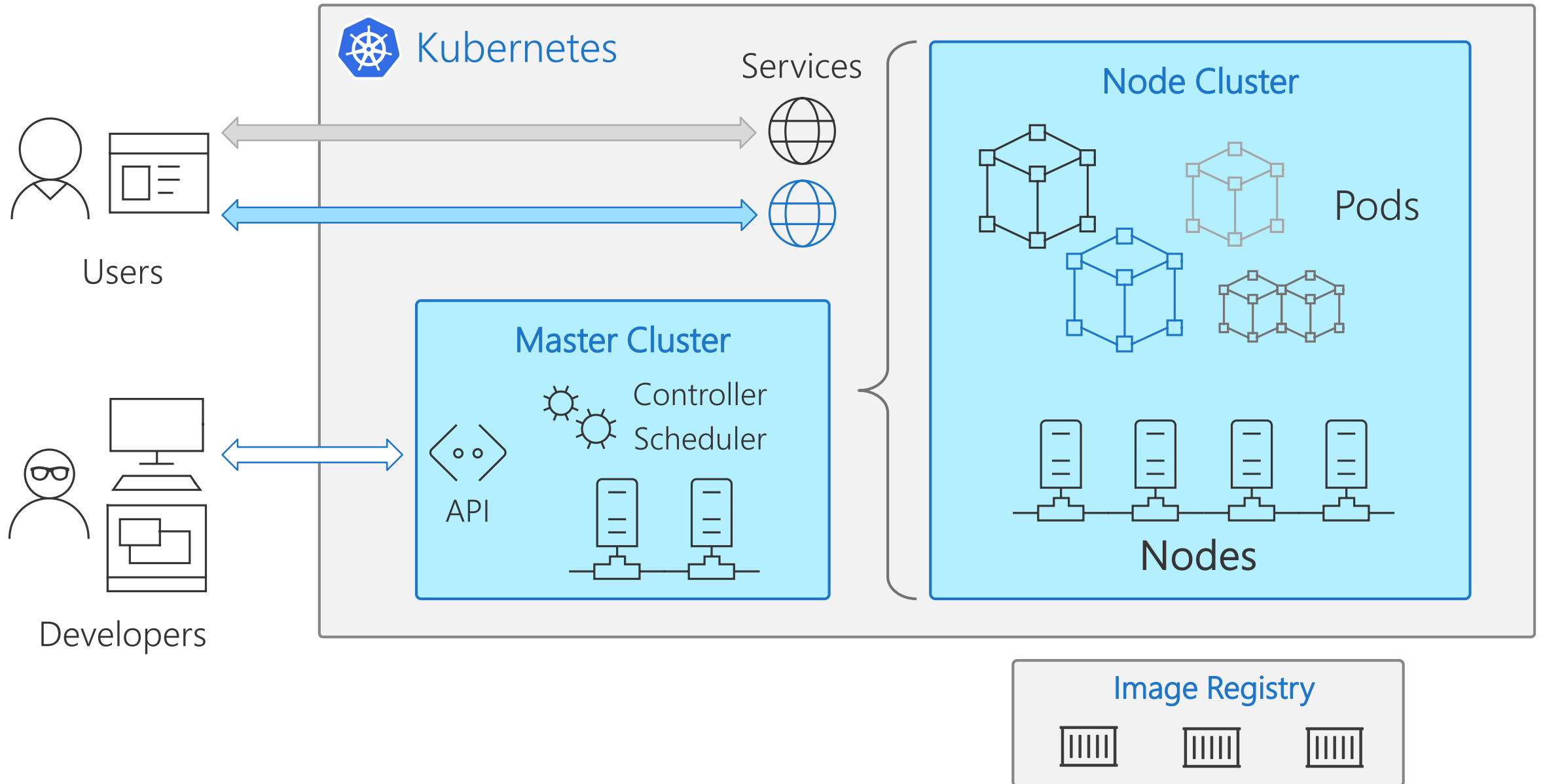
Roll out
new features
seamlessly

Limit hardware
usage to required
resources only

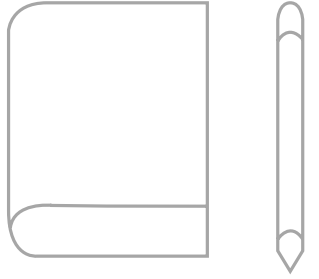


CLOUD NATIVE
COMPUTING FOUNDATION

Kubernetes Simplified Architecture



Kubernetes Concepts and Terms



Node

A worker machine (VM) normally clustered, each capable of running pods



Deployment

A logical object for managing a replicated application (i.e. set of pods)



Label

Metadata attached to any object for configuration and selection



Pod

A group of one or more containers that is lifecycle managed



Service

Network access to a resource, e.g. pod or port. Typically load balanced



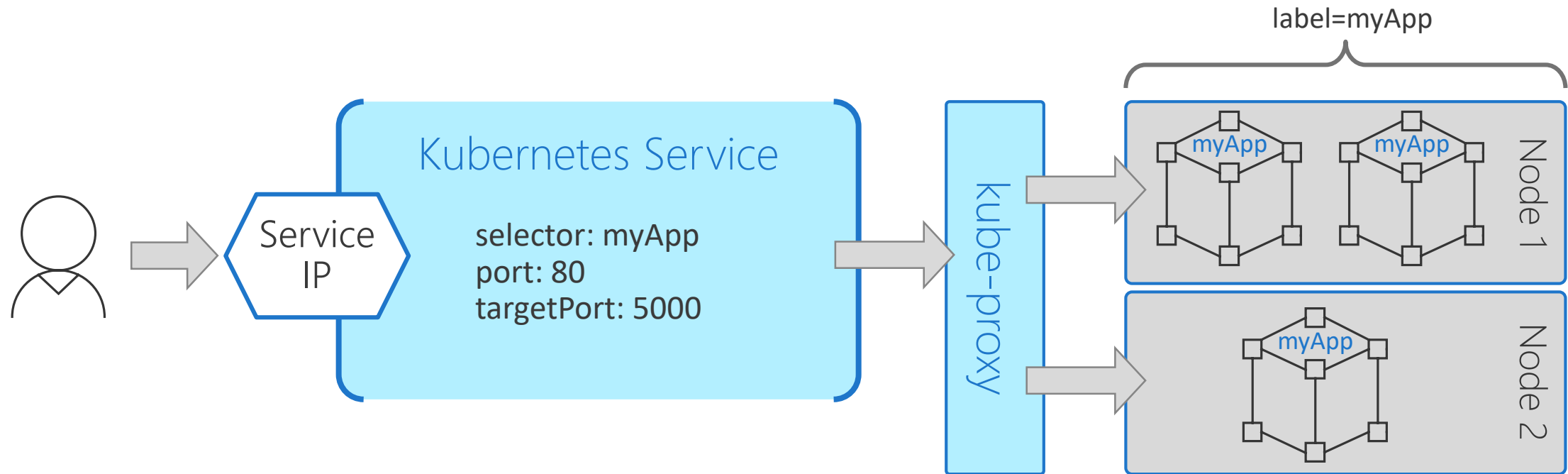
Replica Set

A set of one or more pods that is distributed and replicated across Nodes



Kubernetes Services (Simplified!)

Allow virtual network access to one or more pods



LoadBalancer

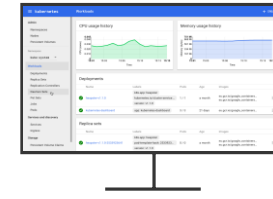
Uses cloud provider to present an external load-balanced IP

ClusterIP

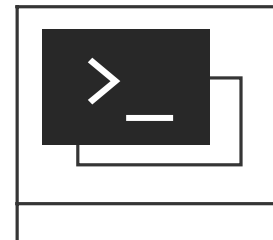
Internal virtual IP, only accessible by other pods/services

Object Driven Management

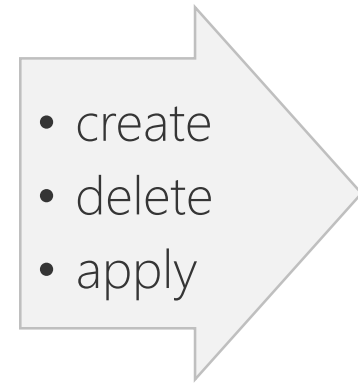
```
apiVersion: apps/v1
kind: Deployment # Deployment top level object
metadata:
  name: dotnetcore-deployment
spec:
  selector:
    matchLabels:
      thing: dotnet-app
  replicas: 4 # run 4 pods matching the template
  template:
    metadata:
      labels:
        thing: dotnet-app
    spec: # create pods using this container definition
      containers:
        - name: dotnet-container
          image: microsoft/aspnetcore:2.0.5
          ports:
            - containerPort: 5000
```



Dashboard



kubectl



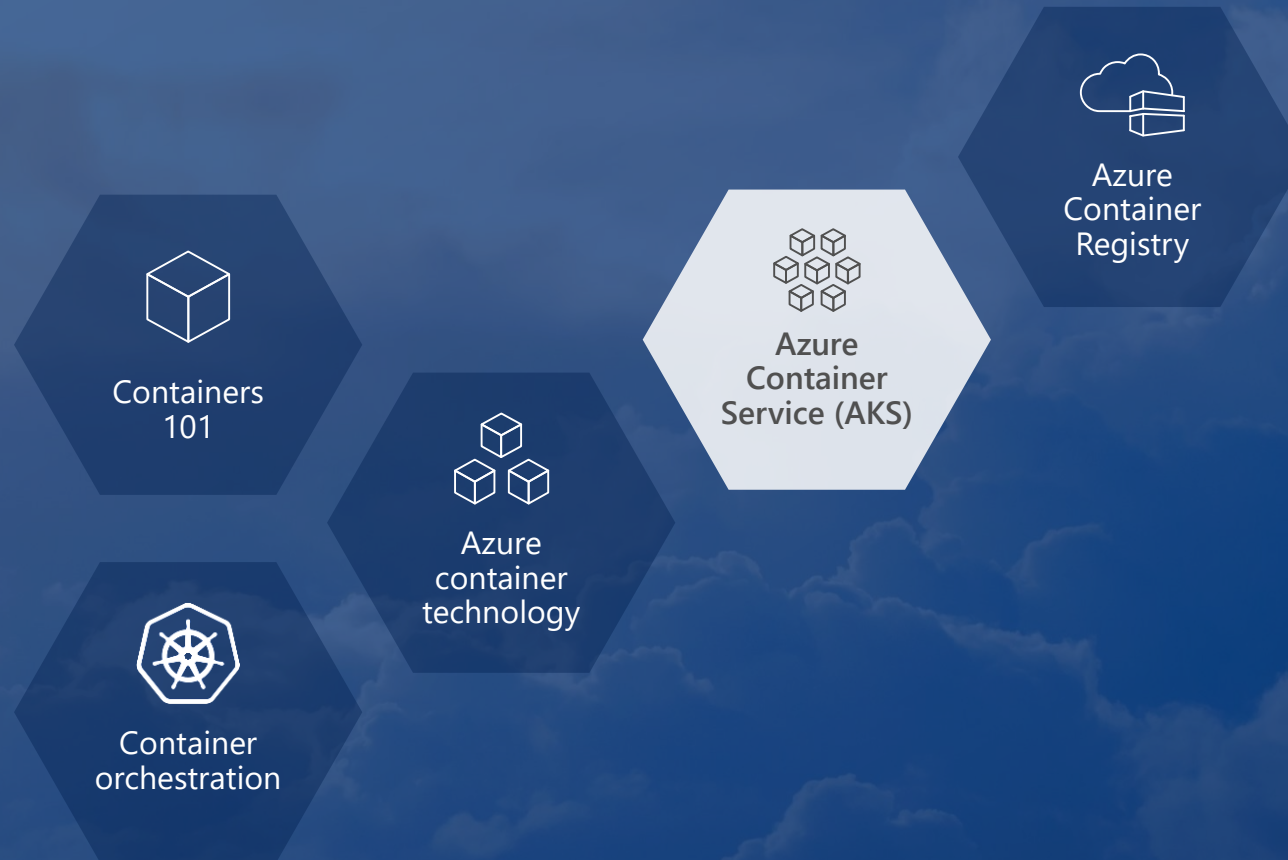
Imperative and
declarative models

Work with multiple
tools

Use YAML or JSON



Azure Container Service (AKS)





Azure Container
Service (AKS)



Azure Container
Instances (ACI)



Azure Container
Registry



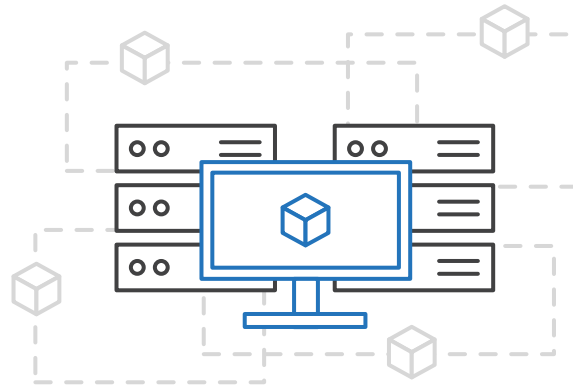
Open Service
Broker API (OSBA)



Release
Automation Tools

Azure Container Service (AKS)

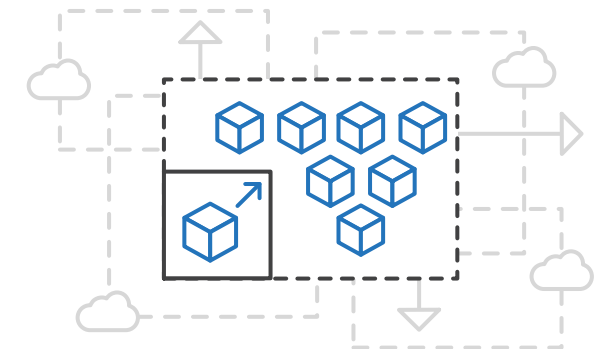
Simplify the deployment, management, and operations of Kubernetes



Focus on your
containers not the
infrastructure



Work how you
want with open-
source APIs



Scale and run
applications with
confidence





Azure Container
Service (AKS)



Azure Container
Instances (ACI)



Azure Container
Registry



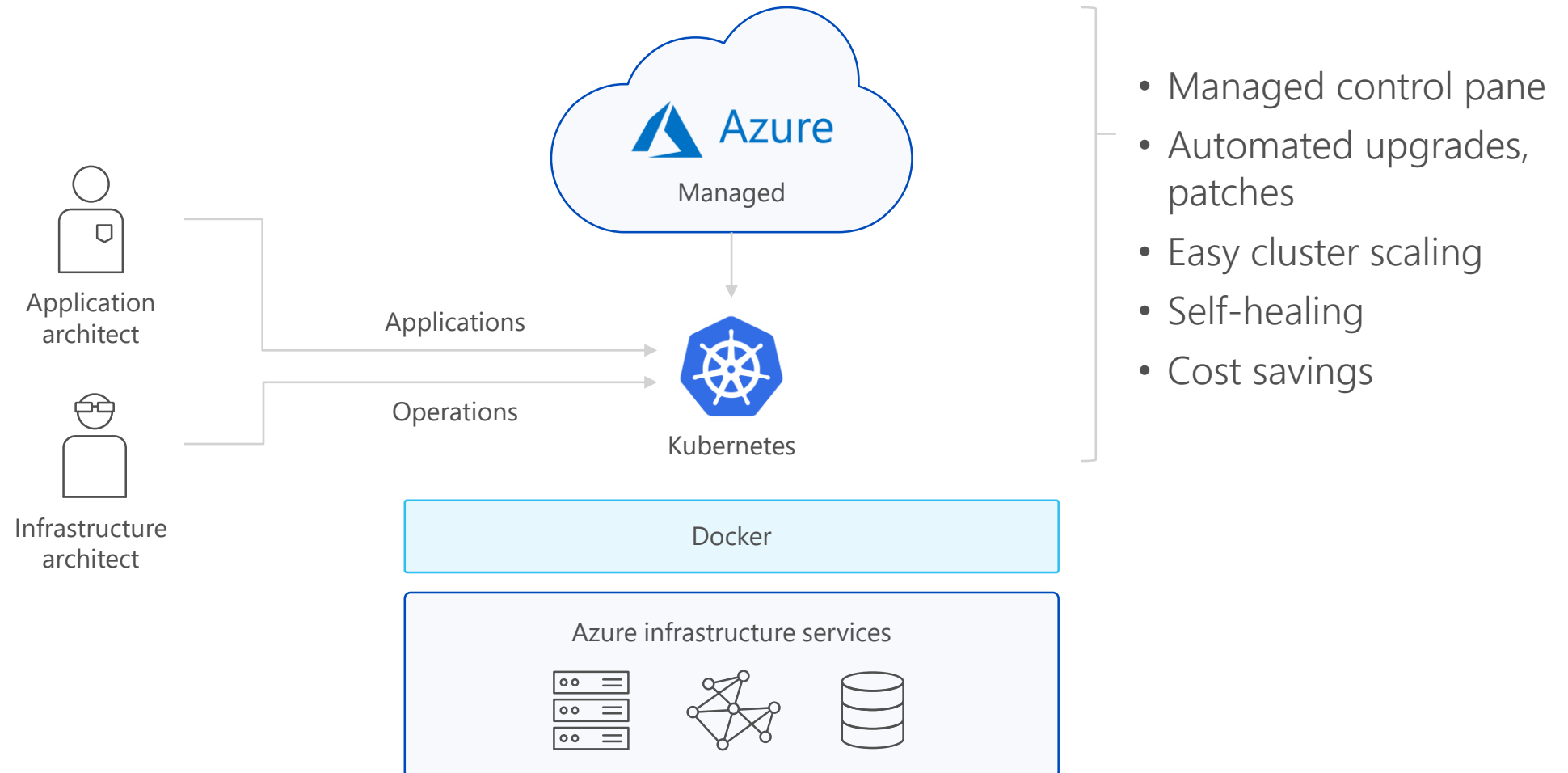
Open Service
Broker API (OSBA)



Release
Automation Tools

Azure Container Service (AKS)

Managed Kubernetes clusters





Azure Container
Service (AKS)



Azure Container
Instances (ACI)



Azure Container
Registry



Open Service
Broker API (OSBA)



Release
Automation Tools

Azure Container Service (AKS)

Get started easily

```
$ az aks create -g myResourceGroup -n myCluster --generate-ssh-keys  
\ Running ..
```

```
$ az aks install-cli  
Downloading client to /usr/local/bin/kubectl ..
```

```
$ az aks get-credentials -g myResourceGroup -n myCluster  
Merged "myCluster" as current context ..
```

```
$ kubectl get nodes
```

NAME	STATUS	AGE	VERSION
aks-mycluster-36851231-0	Ready	4m	v1.9.6
aks-mycluster-36851231-1	Ready	4m	v1.9.6
aks-mycluster-36851231-2	Ready	4m	v1.9.6



Azure Container
Service (AKS)



Azure Container
Instances (ACI)



Azure Container
Registry



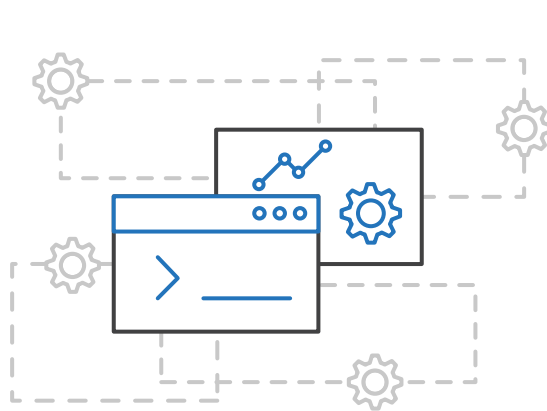
Open Service
Broker API (OSBA)



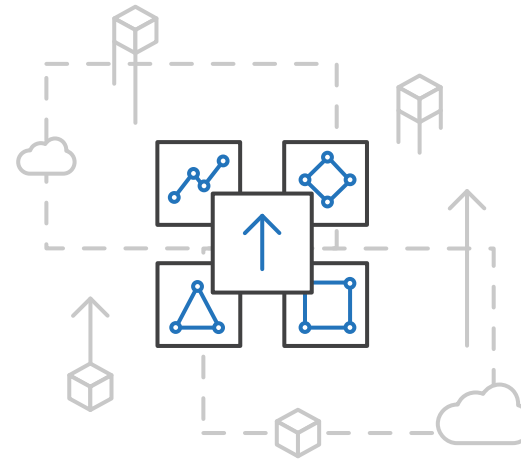
Release
Automation Tools

Azure Container Service (AKS)

Azure Container Service Engine (ACS-Engine)



A proving ground
for new features



Enables customized
clusters & features

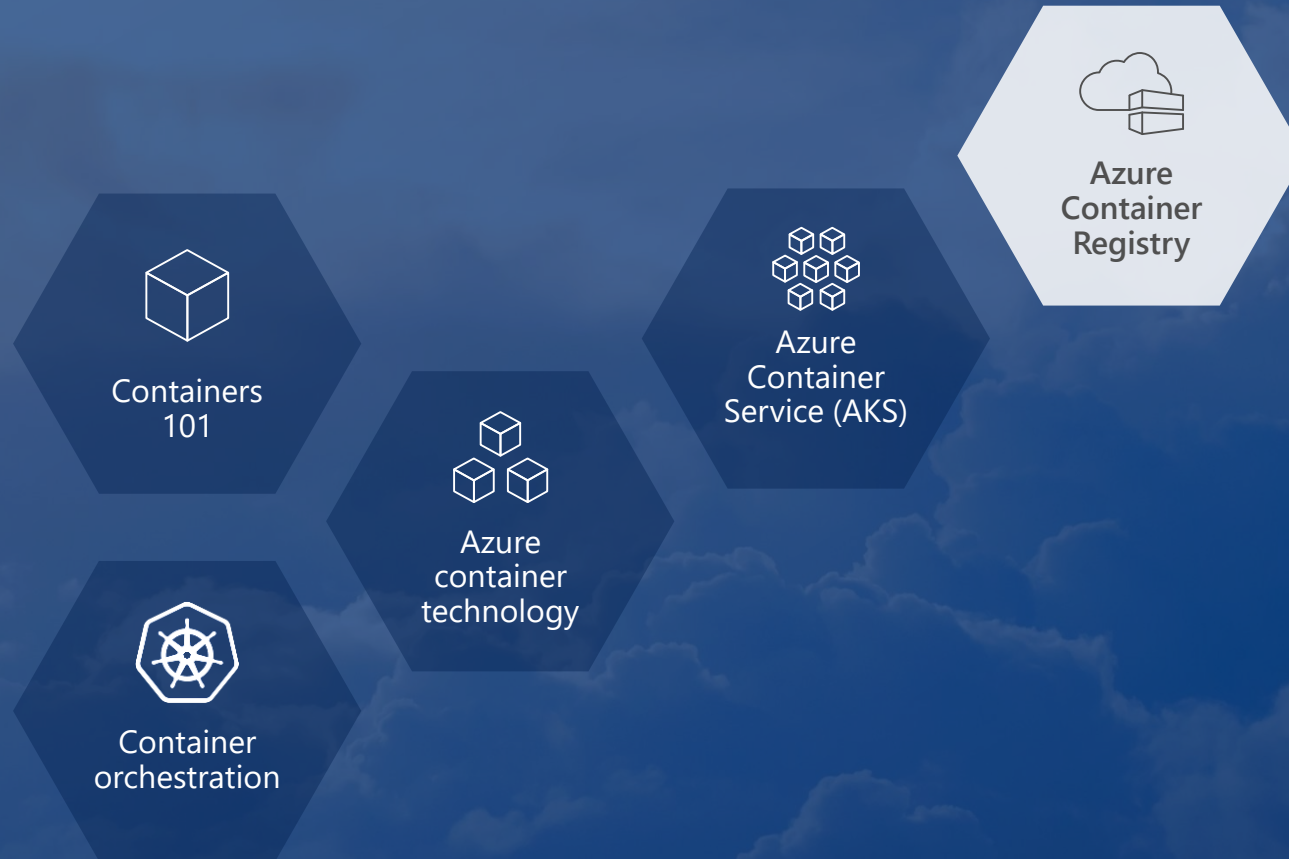


Open source
and on GitHub



github.com/azure/acs-engine

Azure Container Registry





Azure Container
Service (AKS)



Azure Container
Instances (ACI)



Azure Container
Registry



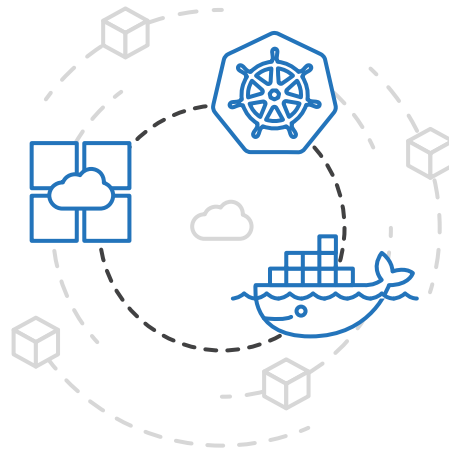
Open Service
Broker API (OSBA)



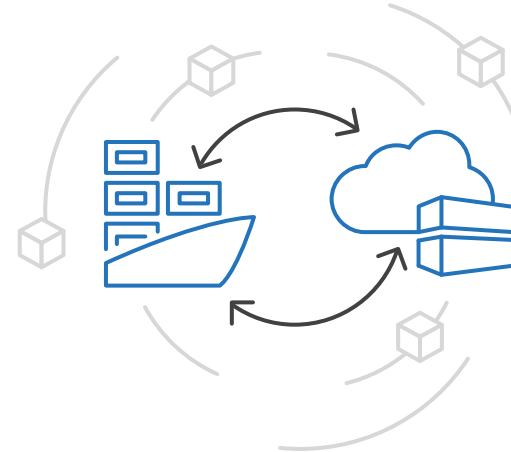
Release
Automation Tools

Azure Container Registry

Manage a Docker private registry as a first-class Azure resource



Manage images for all
types of containers



Use familiar, open-
source Docker CLI tools

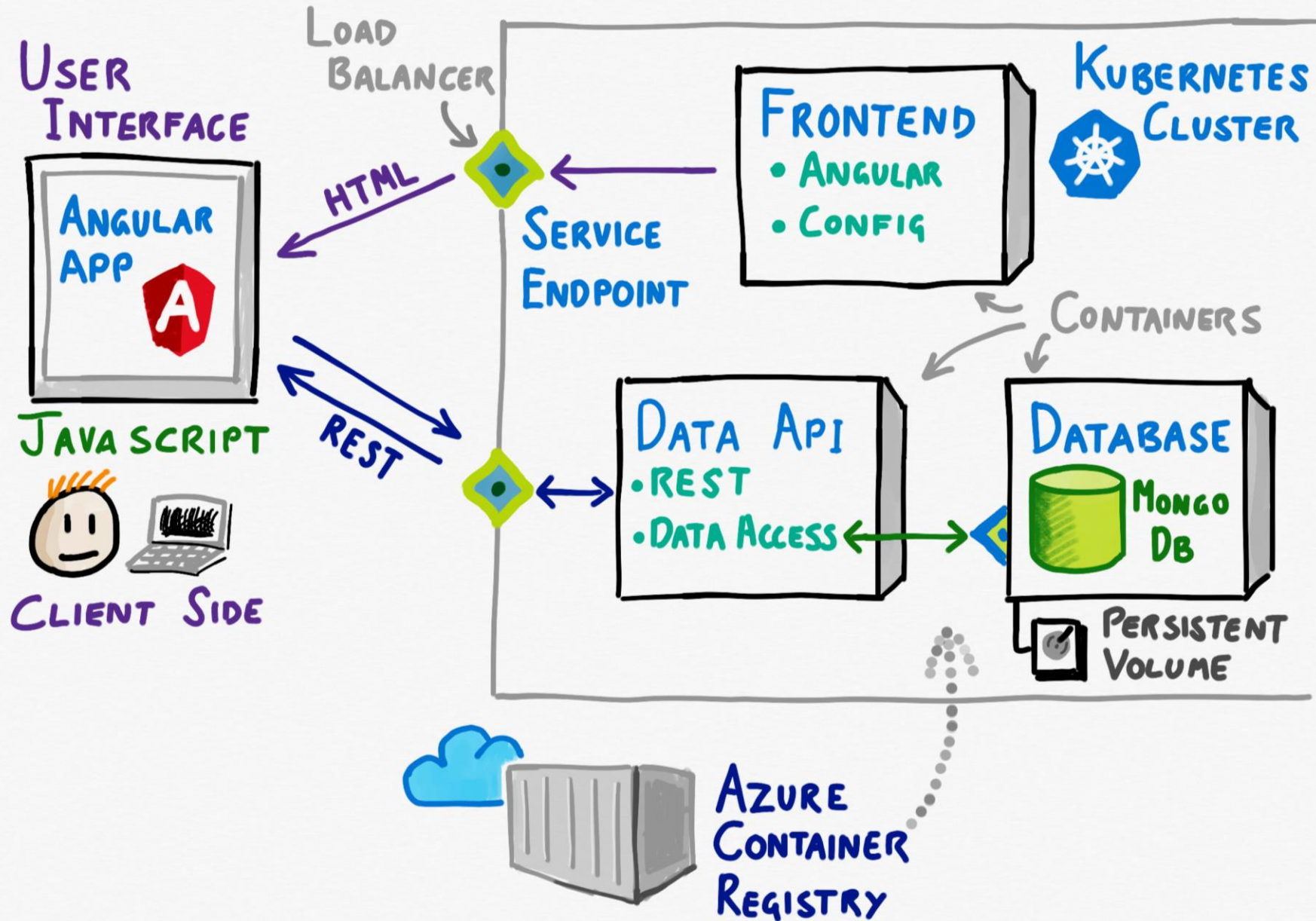


Azure Container Registry
geo-replication



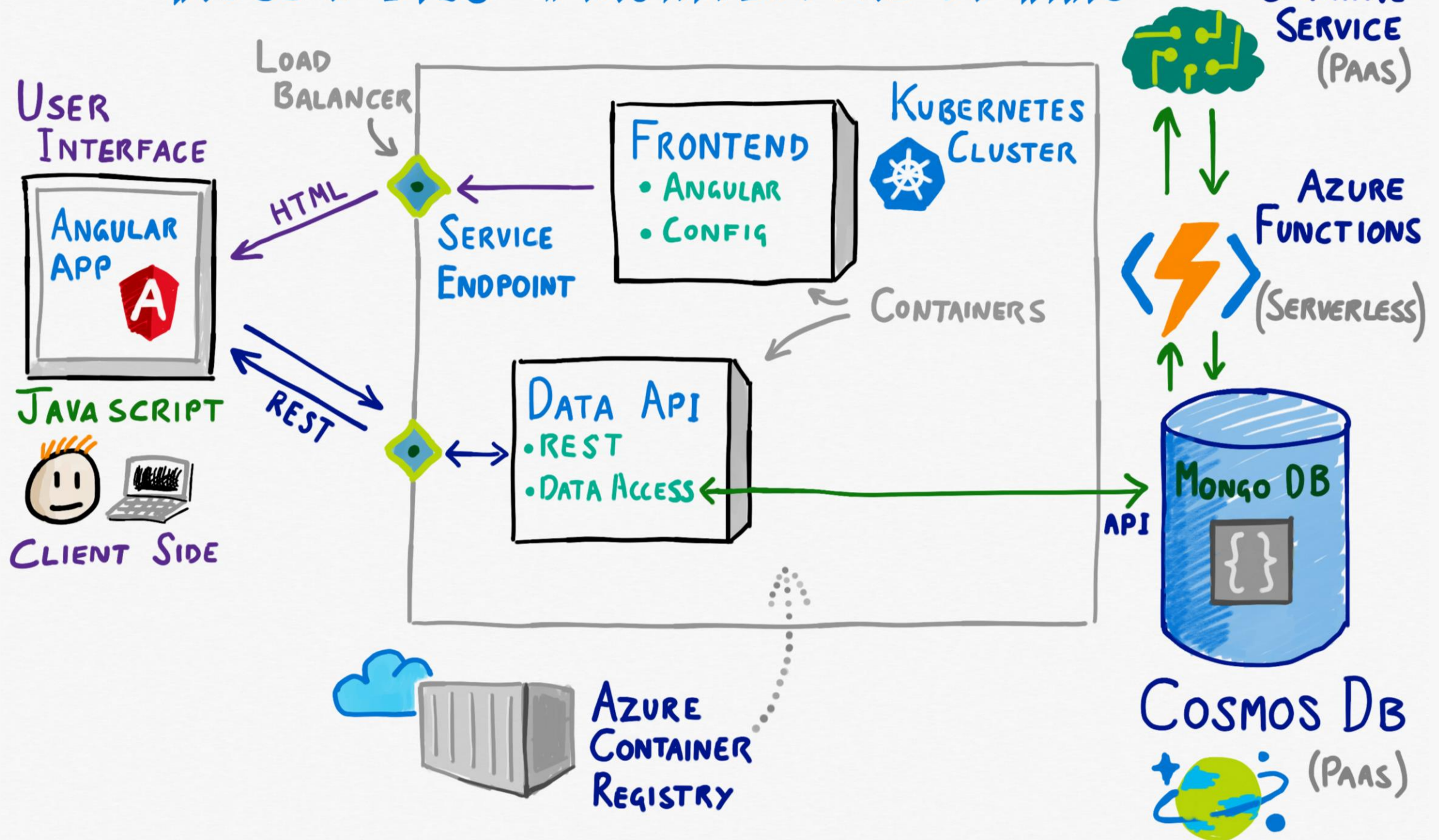
Demo - Intro

KUBERNETES ARCHITECTURE



Demo

KUBERNETES ARCHITECTURE & PaaS



Demo



AKS Simplified Architecture

