Getting Ready to Run in Kubernetes

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Overview

Introduce Kubernetes

Anatomy of a "Deployment"

- Your focal point as a developer

Components of a "Cluster"

- Concepts you should be aware of

Experiment locally

- Enable with Docker Desktop
- Sample k8s manifests for solution

Recommendations and resources

Introducing Kubernetes (k8s)

Automation tool

Containerized applications

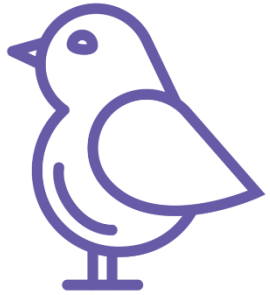
- Deployment
- Scaling
- Management

Open source

- Developed by Google
- https://kubernetes.io

Kubernetes Benefits Deployment

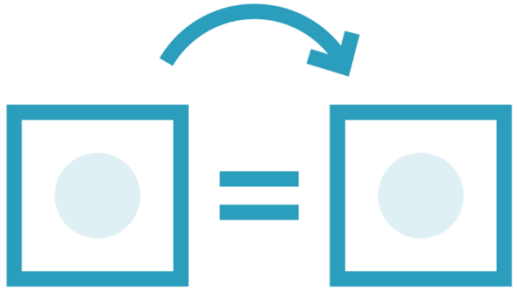
Scaling up and down



Deployments

Rollbacks

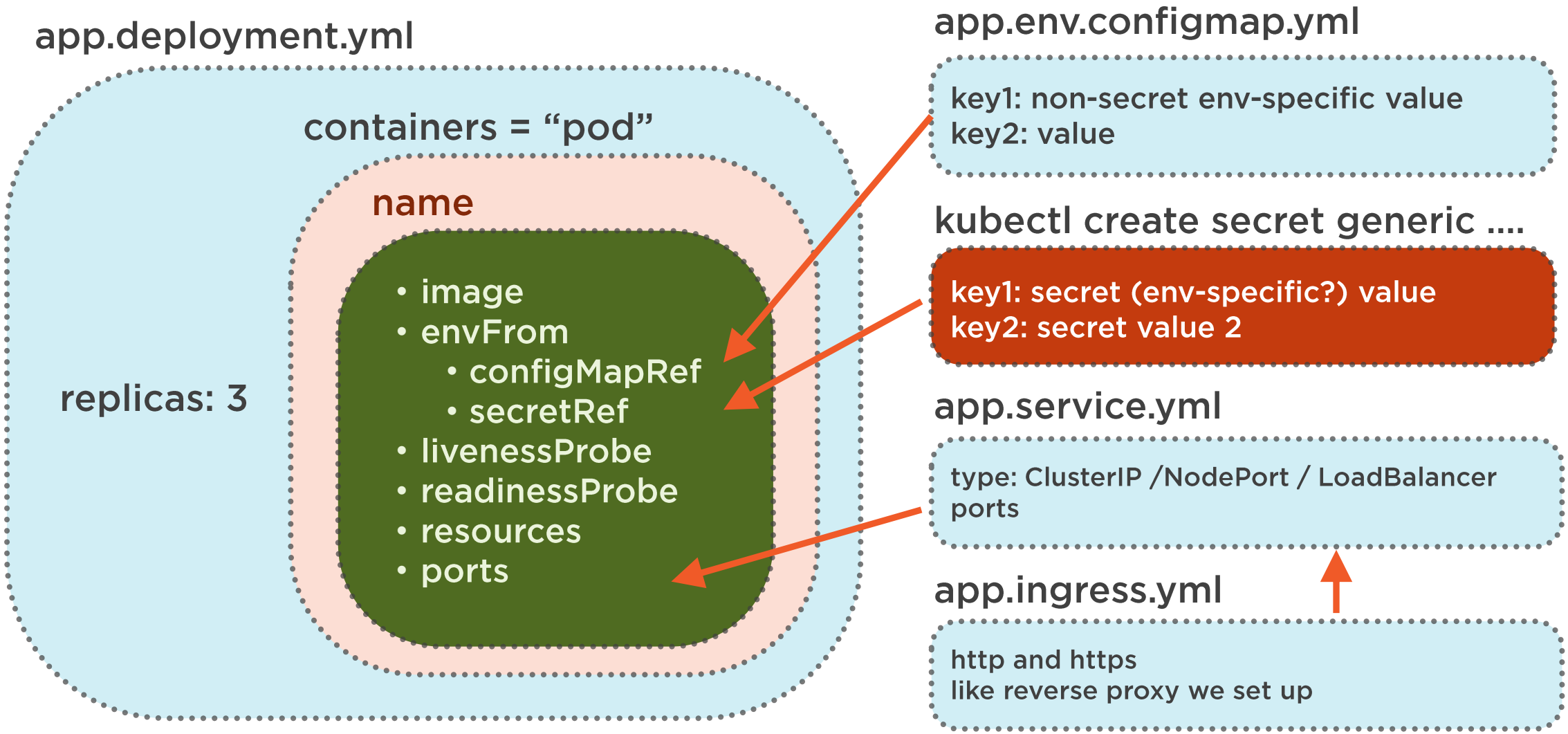
Monitoring



Environments

Cost

Anatomy of a Deployment



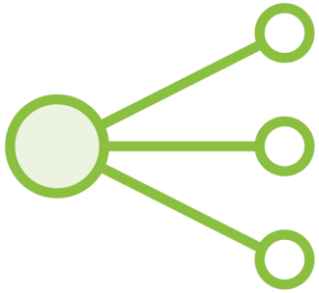
Components of a K8s Cluster

Nodes

Mgmt API
RBAC
Autoscalers

K8s Services

Namespaces

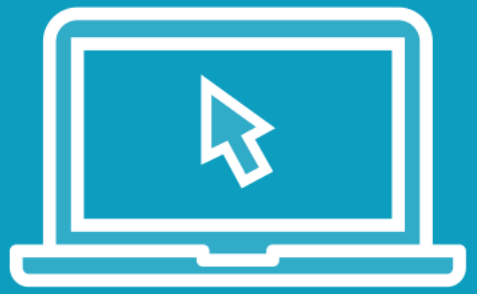


Ingress Controller

Networking

Storage

Demo



Enable Kubernetes within Docker Desktop

- kubectl -> “k” alias
  - `apply -f <filename>`
  - `get [all|services|pods|ingress|deployments]`
  - `describe [type] [name]`
  - `delete [type] name`
- Dashboard

Get Seq, smpt4dev, and SQL running

Add Ingress Controller

Add IdentityServer project

Recommendations for .NET Apps

Write to enable deployment anywhere

Know your configuration

- Environment-specific
- Secret vs non-secret
- Use environment variables to overlay app settings

Use health checks

Consciously define resource limits

Get logging squared away

- Omit health checks?

So Many More Great Resources

Source documentation:

- docs.docker.com
- kubernetes.io

Great authors:

- Dan Wahlin / Nigel Poulton / Elton Stoneman / Marcel de Vries / more

Learning Paths:

- Using Kubernetes as a Developer
- .NET Microservices

Summary

We made it!

Zero to Docker to Docker Compose to Kubernetes!

- Great terminal
- Docker Desktop and Visual Studio tooling

Use public containers

Containerize your apps

Add orchestration to simplify setup

Kubernetes can offer deployment benefits


Fram! Confidently embrace containers in your projects!