Containerize Python Applications and Deploy to Kubernetes

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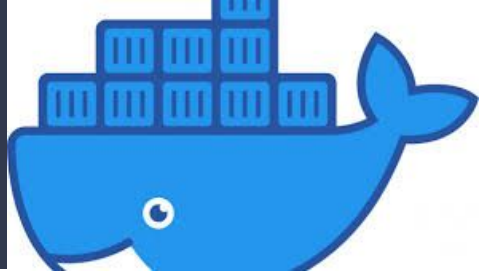
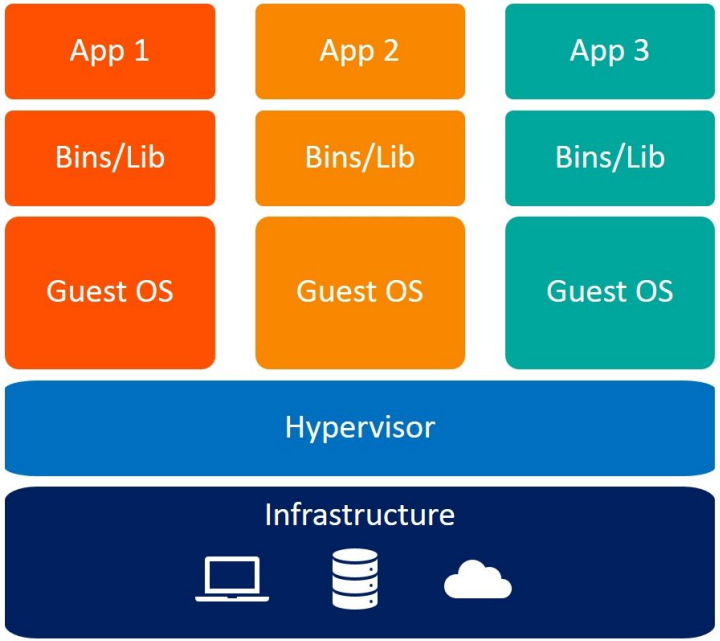
Containers in a Nutshell

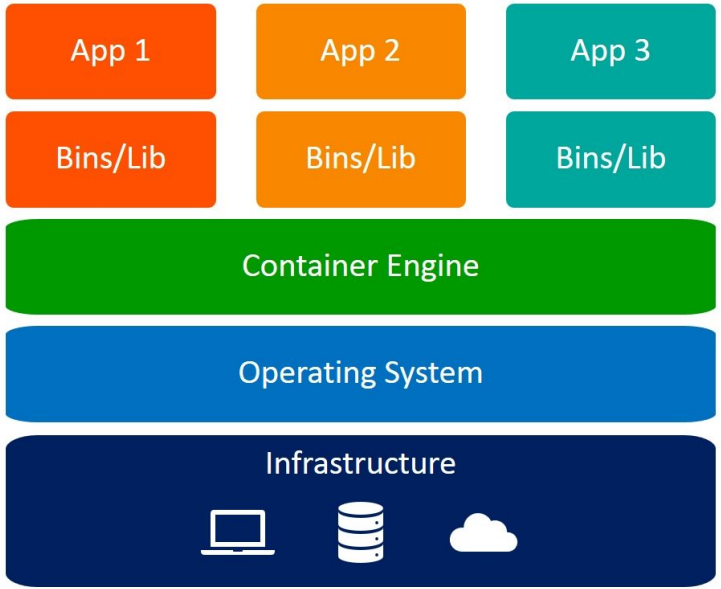


- **Containers allow you to package your application with its runtime and all dependencies**
  - **Similar to virtual machines, but more lightweight**
- **Support both Linux and Windows operating systems**
- **Containers have a standardized format and can be used by Docker or Kubernetes**

Virtual Machines vs Containers



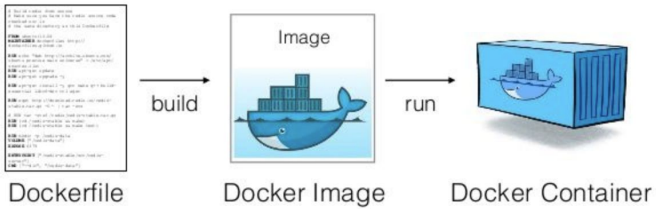
Virtual Machines



Containers

Terminology: Container vs Image

- **An image is an inert, immutable file that is a snapshot of a container**
- **A container is created by running an image**
- **Programming analogy: If an image is a class, a container is an instance of that class**



Kubernetes in a Nutshell

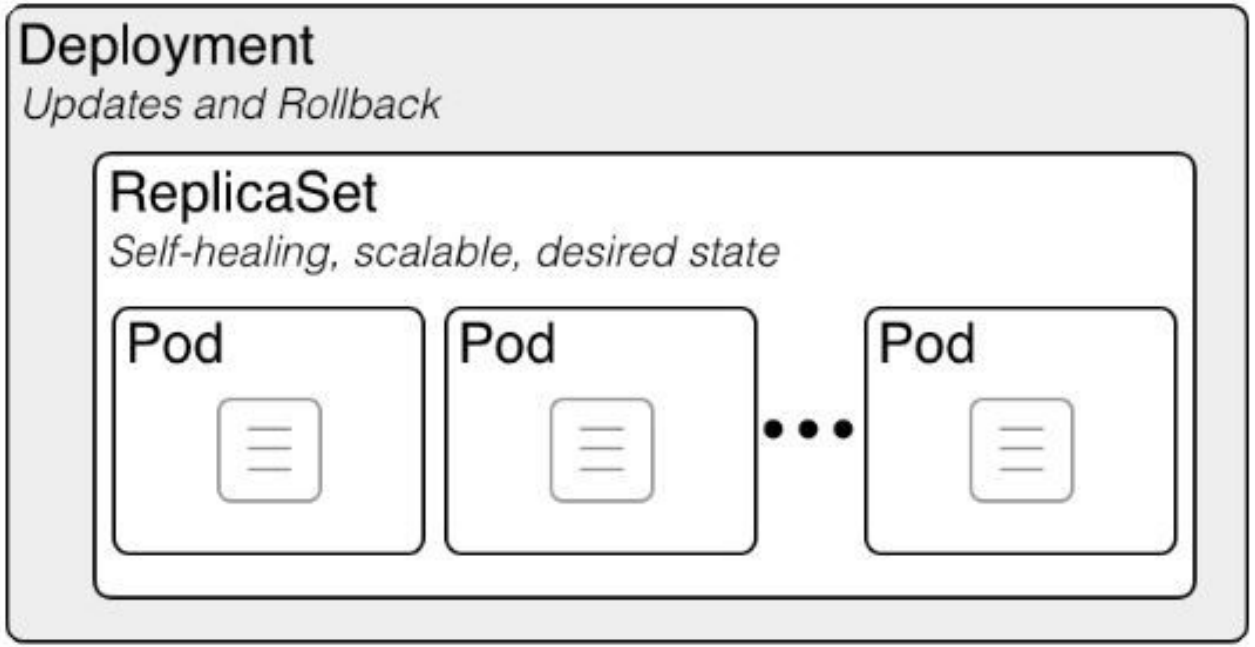
- **Open-source container-orchestration system for automating computer application deployment, scaling, and management**
- **Runs containerized applications on clusters of servers**
- **Kubernetes is often abbreviated online as “k8s”**
- **Is administered by a command line tool called `kubectl` (pronounced “kube-control” or “kube-cuttle”)**
  - **This is done by feeding information to `kubectl` in YAML format**
  - **For example: `kubectl apply -f my-deployment.yaml`**

Example of Kubernetes YAML

object1.yaml

```yaml
apiVersion: apps/v1beta1
kind: Deployment
metadata:
  name: nginx-deployment
spec:
  replicas: 3
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
      - name: hello-world
        image: hello-world:latest
        ports:
        - containerPort: 80
```

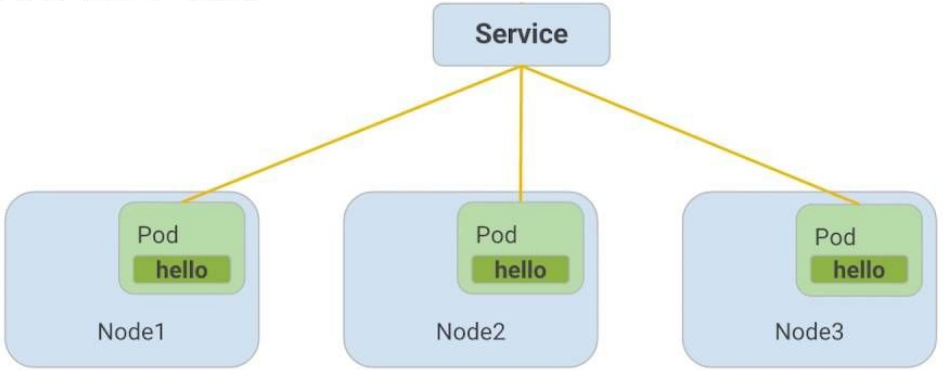
Kubernetes Deployments, ReplicaSets, and Pods



Kubernetes Services

Services

Persistent Endpoint for Pods



Thank You!
Any Questions?

Email: fbush@vmware.com

- Presentation content available at: https://github.com/fjb4/containerize-and-deploy-to-k8s