kubernetes

Dev-Ops Daily Dose- DAY 1

- Sachin Vastrad

Om, may God protect both teacher and student

May He nourish us together

May we work together with great energy

May our studies be enlightening.

May there be no hate among us

Sachin Vastrad

15 years of IT industry Experience

5+ years of Teaching Exp for Mtech program

100+ CSE BE final year project development exp

Founder of a startup product based “Sachi Soft solution”

Objective : Every one in Group , should able to Learn, understand and appreciate DEVOPS SKILL

Vision : To develop a workable devops pipeline.

Mission : spend Daily 30 mins in daily session and spend few hours on your own daily to **achieve** this target in 30 days.

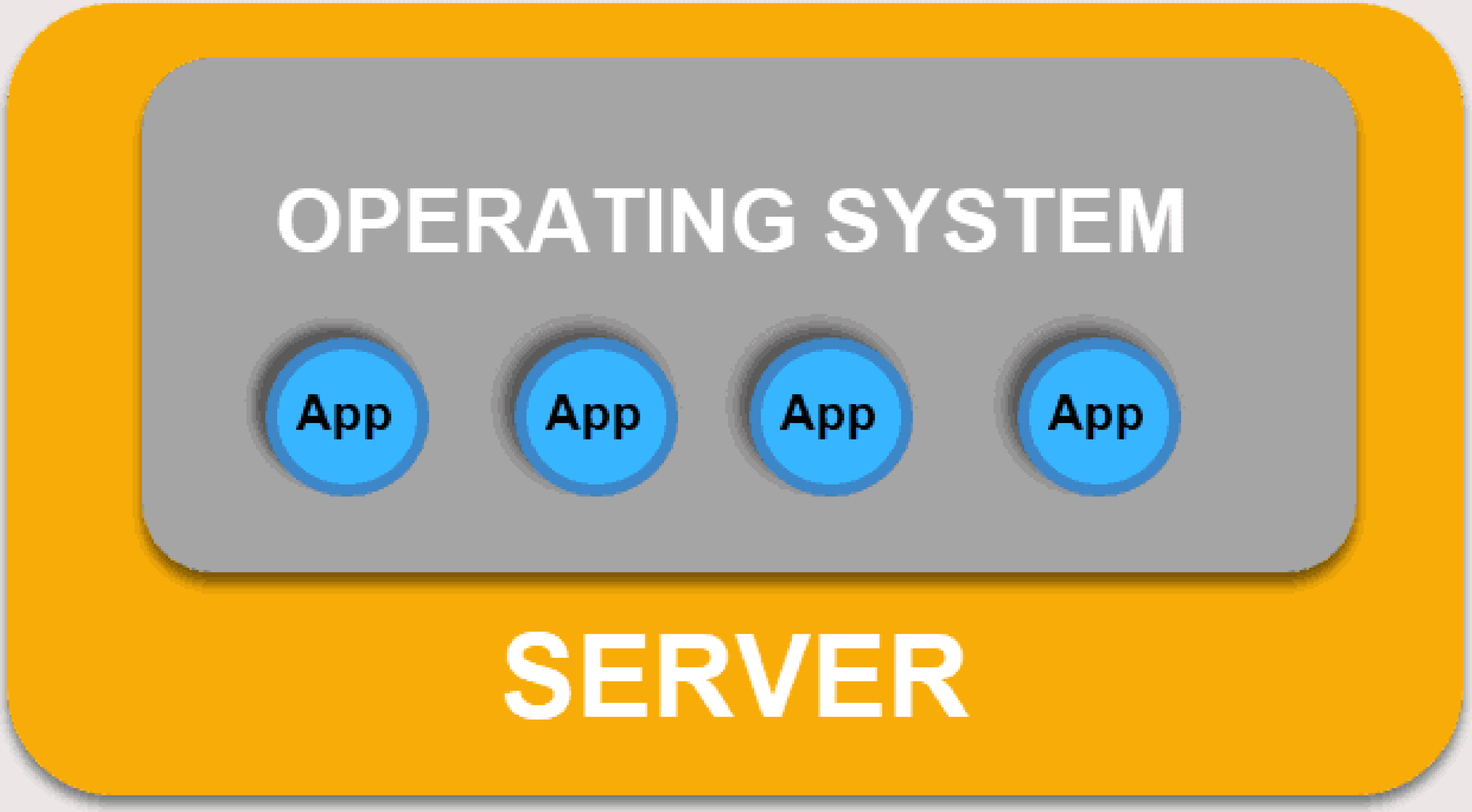
Technology Covered : K8, docker , CI/CD (azure pipeline),azure cloud ,GIT Hub , jenkins , simple spring boot , rest api.

Outcome: basic skills on above technology , which is enough to develop practical solution

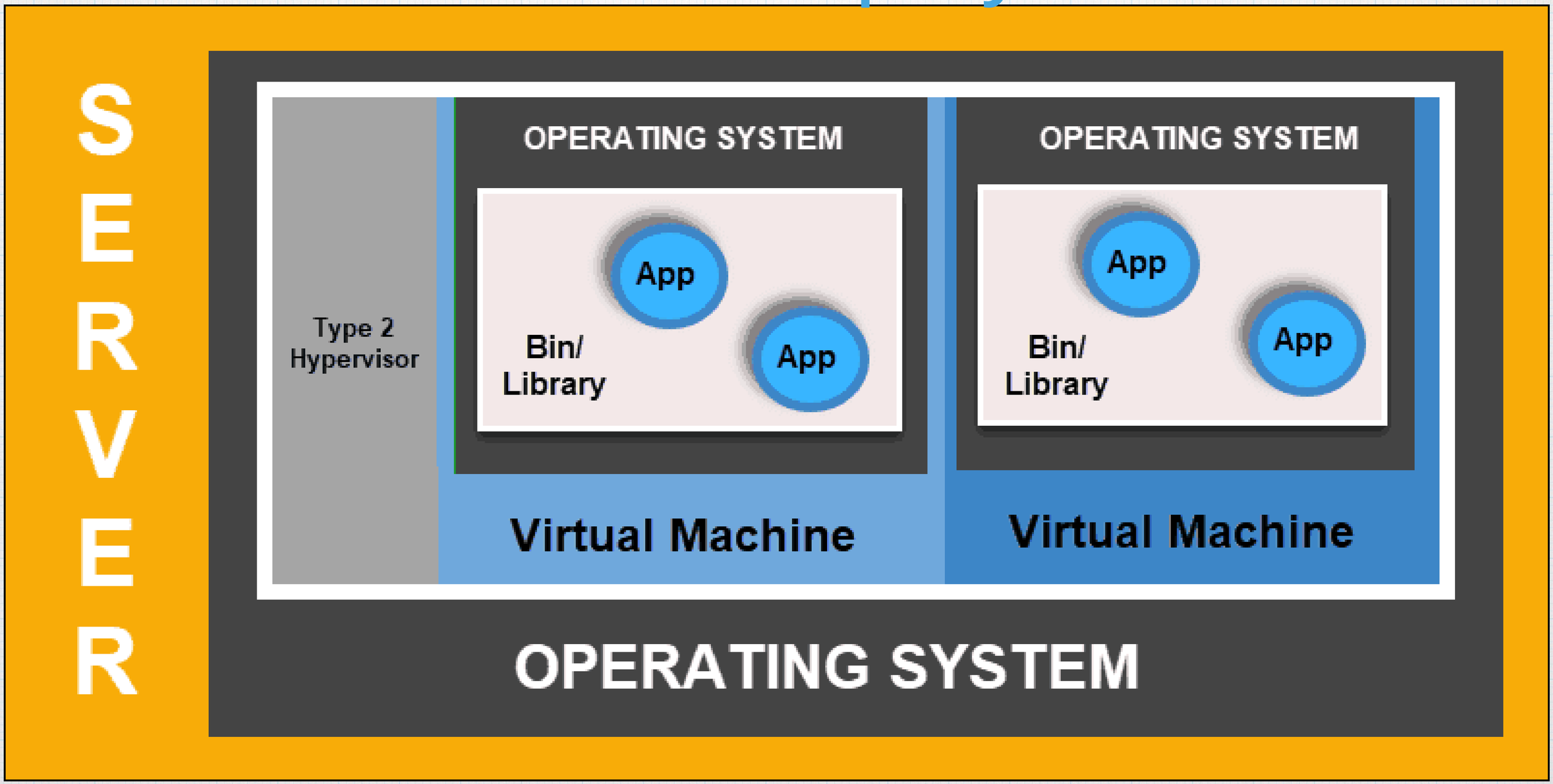
Agenda

1. Basics
2. K8 Arch
3. Vocabulary
4. MiniKube
5. Demo
6. Few Commands

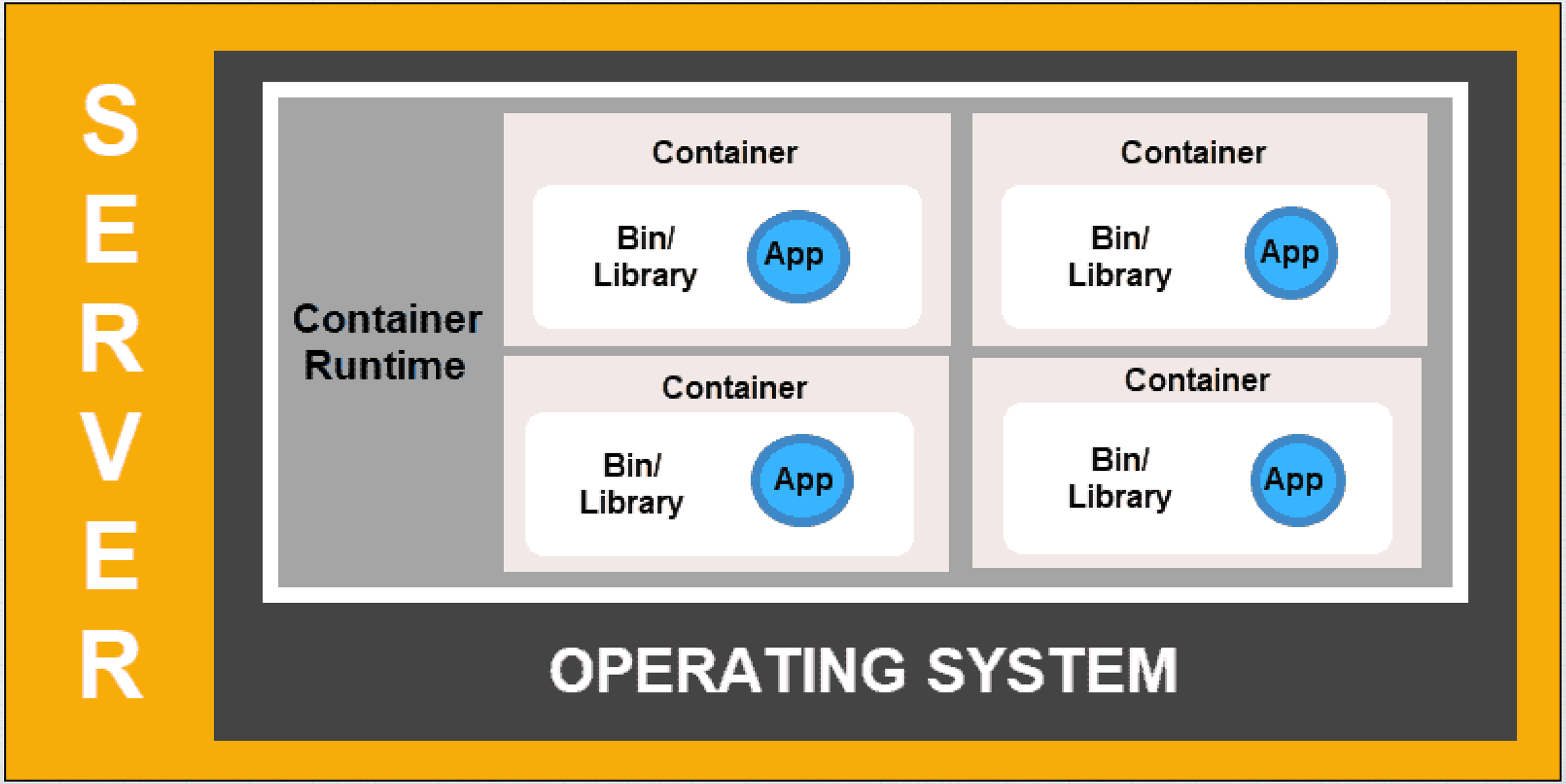
Traditional Deployment

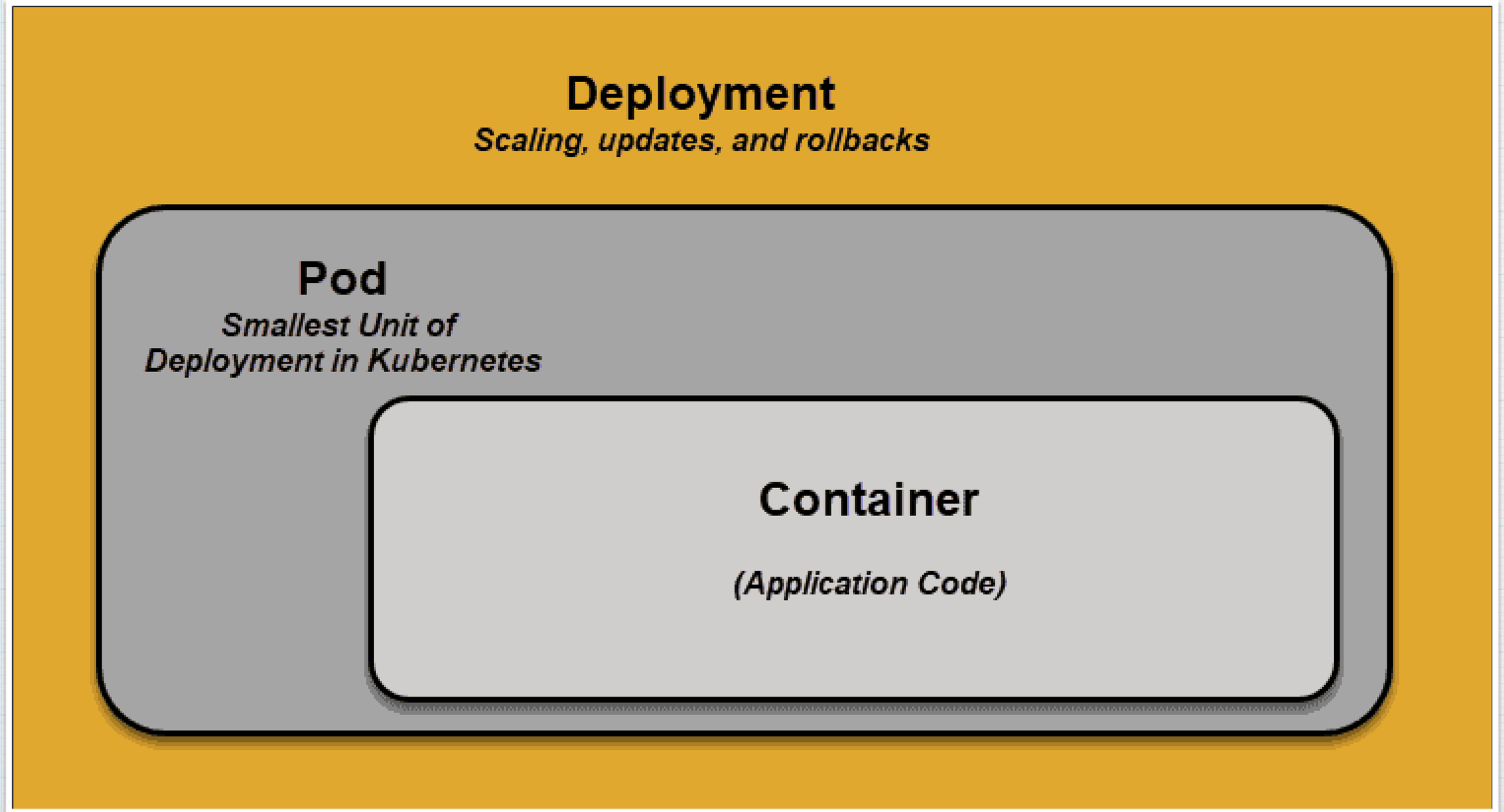


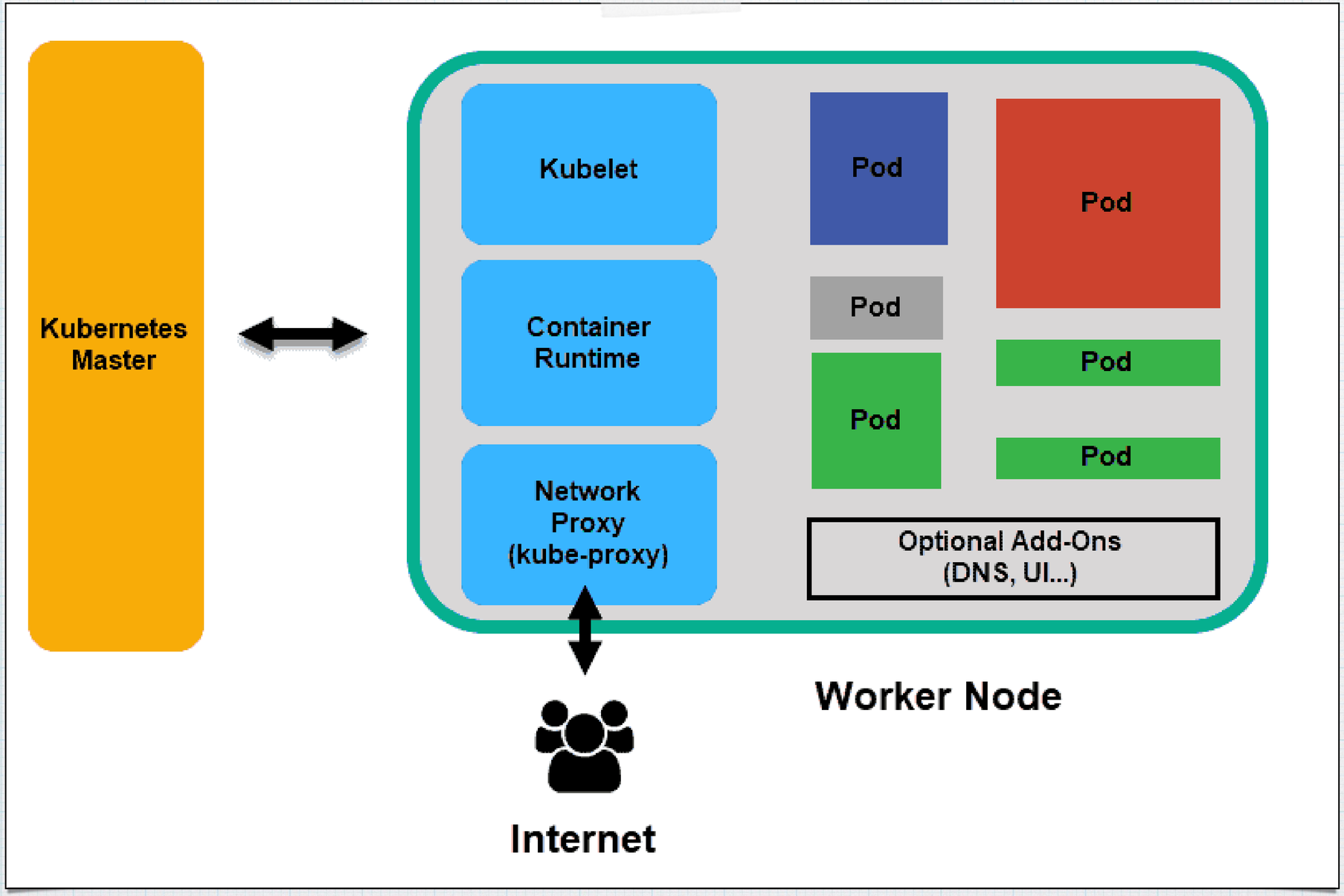
VM Based Deployment



Containers Based Deployment




Deployment
Scaling, updates, and rollbacks
Pod
Smallest Unit of
Deployment in Kubernetes
Container
(Application Code)


Kubernetes Master
Kubelet
Container Runtime
Network Proxy (kube-proxy)
Pod
Pod
Pod
Pod
Pod
Pod
Optional Add-Ons (DNS, UI...)
Worker Node
Internet

K8 Vocabulary

Kube-proxy

The **kube-proxy** makes sure that each node gets its IP address, implements local *iptables* and rules to handle routing and traffic load-balancing.

Pod

A **pod** is the smallest element of scheduling in Kubernetes. Without it, a container cannot be part of a cluster. If you need to scale your app, you can only do so by adding or removing pods.

Container Runtime

The **container runtime** pulls images from a **container image registry** and starts and stops containers. A 3rd party software or plugin, such as Docker, usually performs this function.

Kubelet

The **kubelet** runs on every node in the cluster. It is the principal Kubernetes agent. By installing kubelet, the node's CPU, RAM, and storage become part of the broader cluster. It watches for tasks sent from th

kubectl

Today Command to install Minikube on Mac

Install virtualBox or hyperkit

```
brew install hyperkit
brew install minikube
```

```
minikube start --driver=hyperkit
```

```
kubectl  run -it ubuntu1 --image=ubuntu --restart=Never -- bash
```

```
minikube status
```

```
minikube dashboard
```

```
kubectl create namespace sample-app-cdt
```

Steps to install Minikube on Windows

step 1: install oracle virtual box //https://www.virtualbox.org/wiki/Downloads

step2 : open powershell

step3: run this command " Get-ExecutionPolicy" If it returns Restricted, then run Set-ExecutionPolicy AllSigned or Set-ExecutionPolicy Bypass -Scope Process.

step 4: run command " Set-ExecutionPolicy Bypass -Scope Process -Force; [System.Net.ServicePointManager]::SecurityProtocol = [System.Net.ServicePointManager]::SecurityProtocol -bor 3072; iex ((New-Object System.Net.WebClient).DownloadString('https://chocolatey.org/install.ps1')) "

step 5: Add to environment PATH variable e,g C:\ProgramData\chocolatey\bin

step 6: check choco version

Steps to install Minikube on Windows

```
PS C:\Windows\system32> choco
Chocolatey v0.10.15
Please run 'choco -?' or 'choco <command> -?' for help menu.
PS C:\Windows\system32>
```

step 7: choco install kubernetes-cli

Step 8: install minikube
https://github.com/kubernetes/minikube/releases

create a DIR in C:\k8 and copy downloaded file

kubectl run -it sachin-pod --image=ubuntu --restart=Never -- bash

MiniKube

K8 on Local Machine

Today’s Demo

Install minikube
Create a pod with ubuntu image
Run few commands on shell

Thank You