Introduction to Kubernetes

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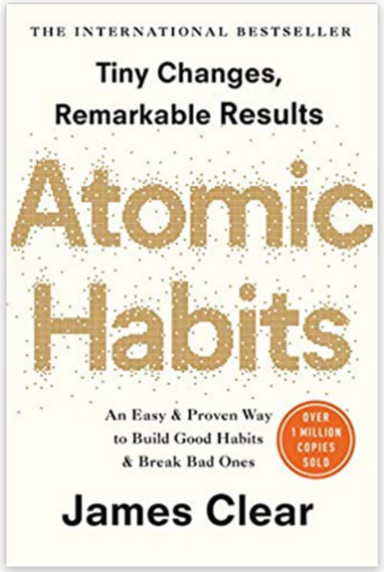
Before Microservices ...

Blick ins Buch



Hörprobe

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Dem Autor folgen

James Clear + Folgen

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von James Clear (Autor)

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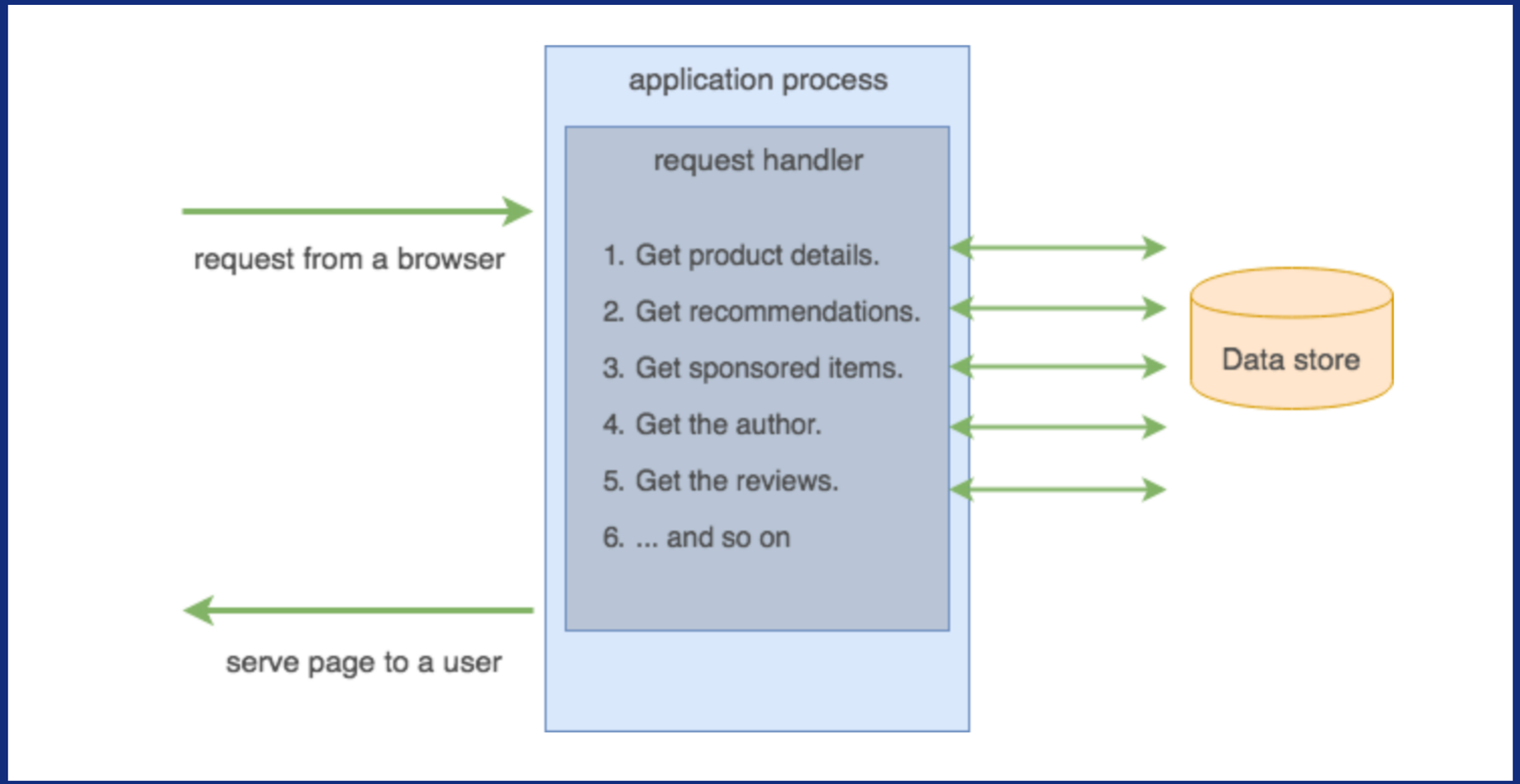

application process
request handler
request from a browser
1. Get product details.
2. Get recommendations.
3. Get sponsored items.
4. Get the author.
5. Get the reviews.
6. ... and so on
Data store
serve page to a user

Microservices

Product

Review

Reco

...

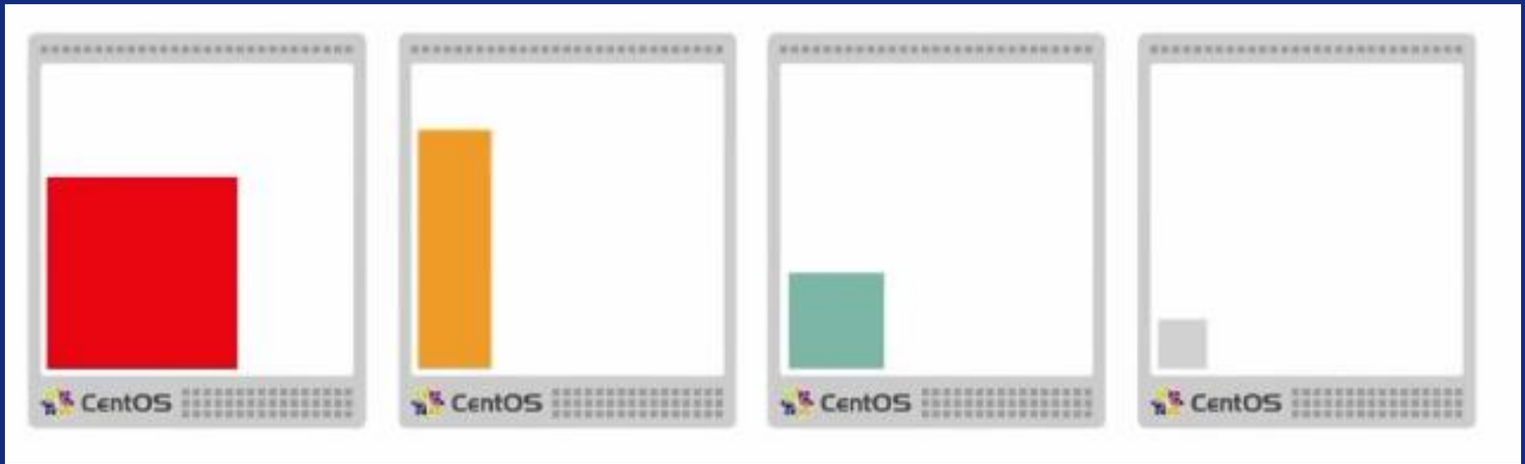
Why Microservices ?

- Independent deployments
- Smaller scope for each release, less risk.
- We can use different stacks
- Autonomous, Cross-functional Teams
- It can lead to faster development

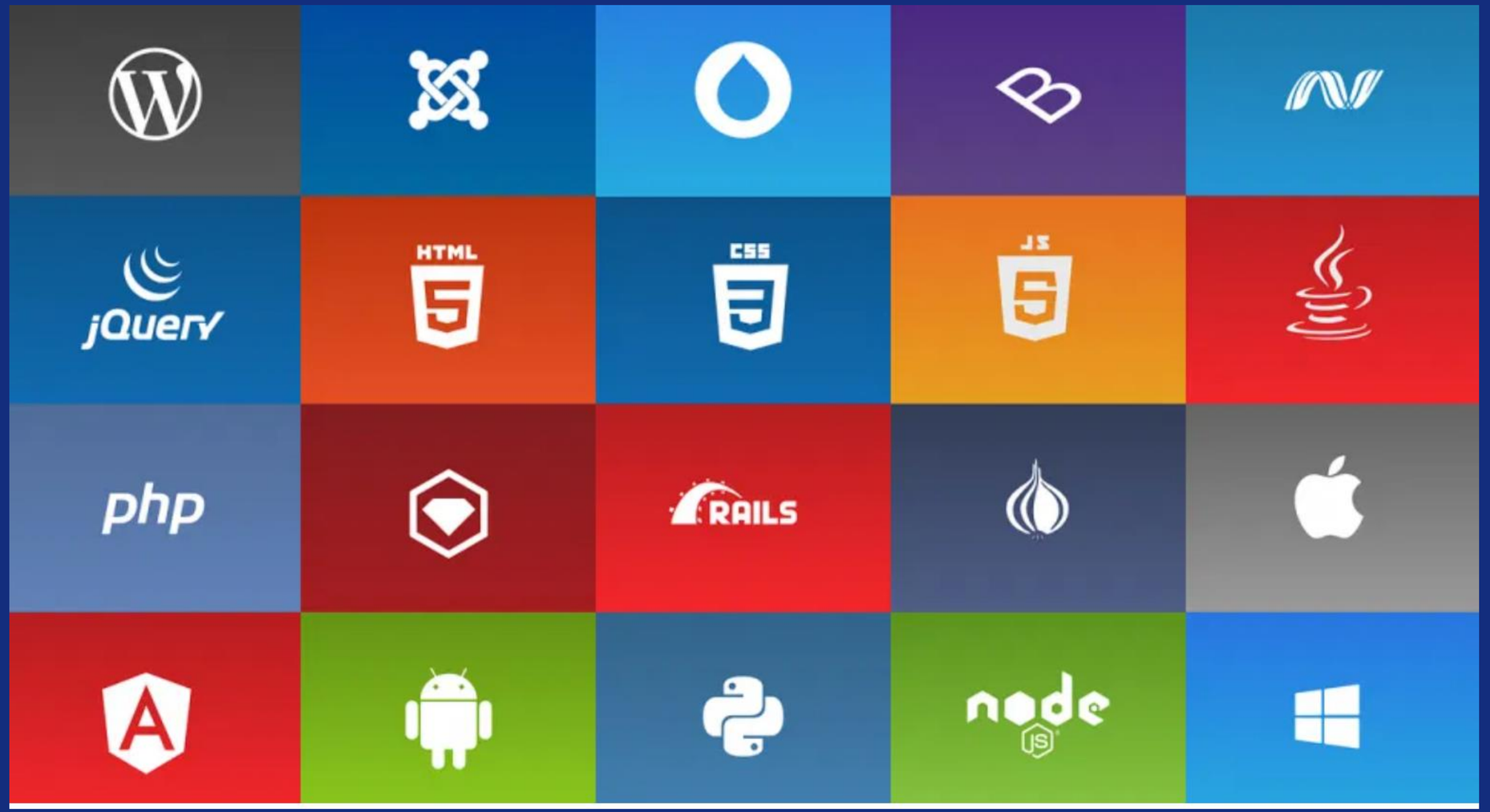
How we used to do Infrastructure

And with microservices..

But now our applications are smaller ..



Dependencies



Containers

All the dependencies are packaged inside

Lighter vm's that share the kernel

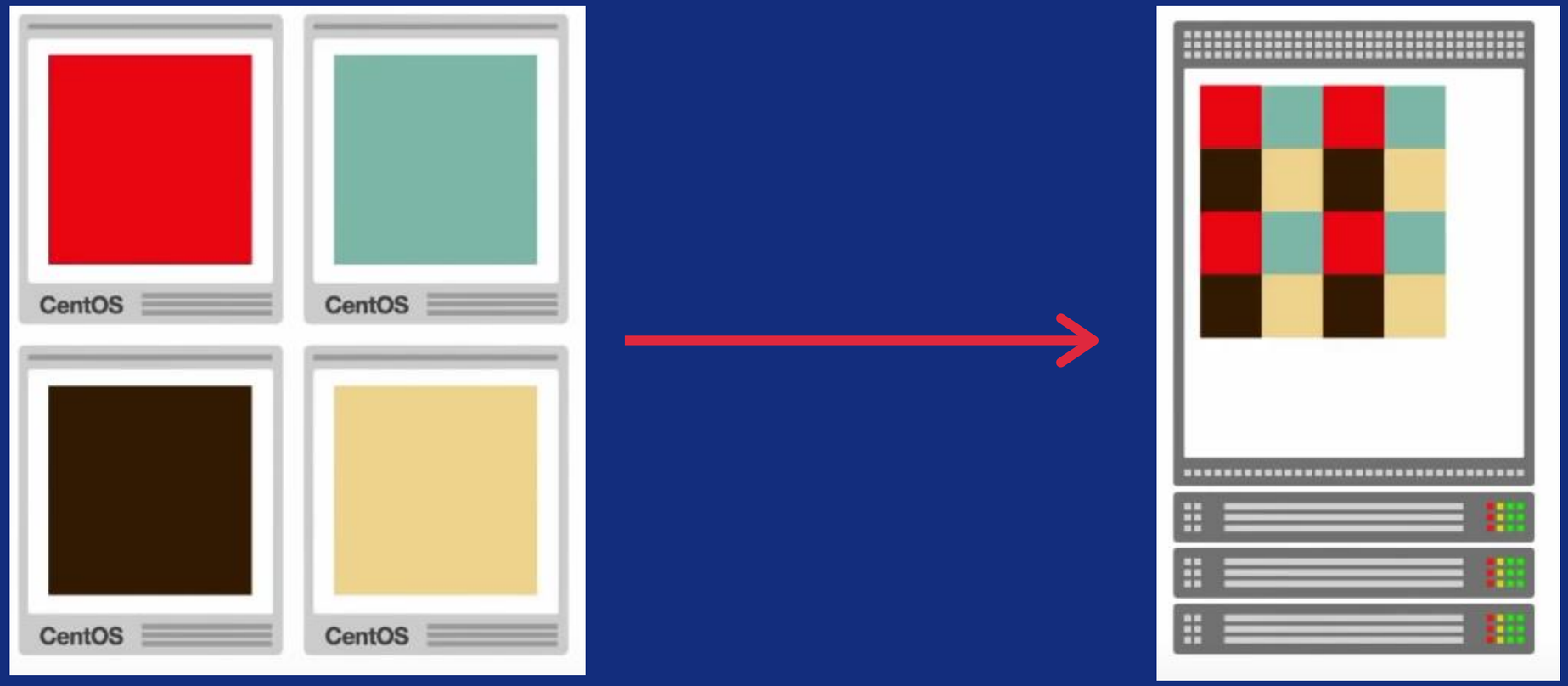
Runs the same on every machine

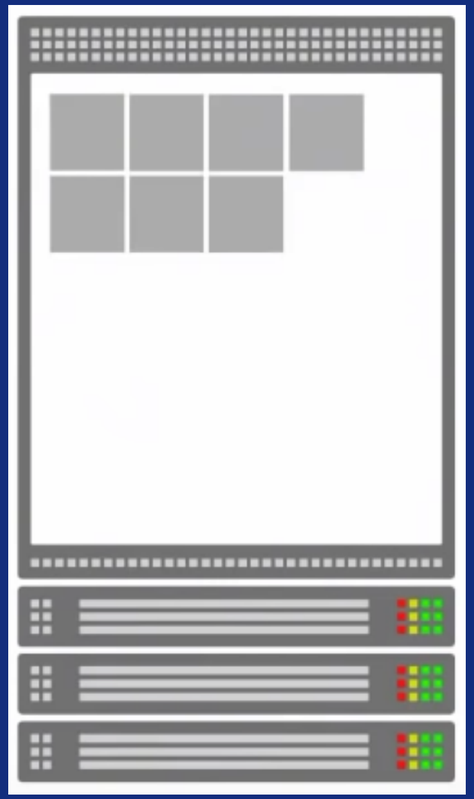
Difference between Microservices and Containers

- Container is just a method of packaging, deploying and running a Linux program/process
- A microservice is a software design pattern.

You could have one giant **monolithic** application as a container and you could have a swarm of microservices that do not use containers

Infrastructure with Containers

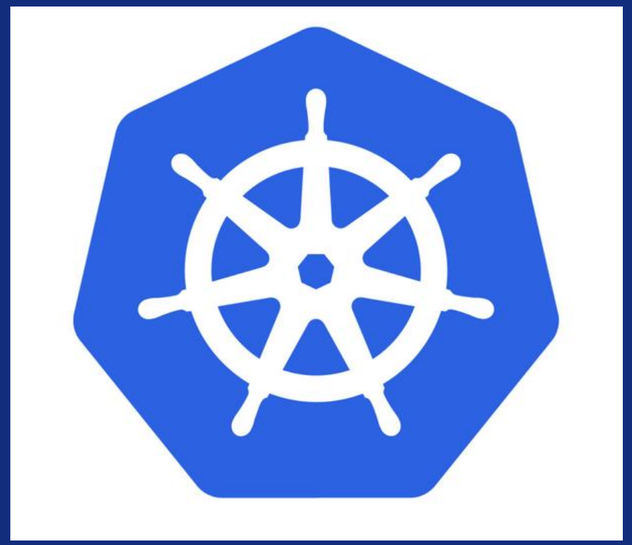




How can we manage all those containers ?

What Does “Kubernetes” Mean?

Greek for “pilot” or
“Helmsman of a ship”



What is Kubernetes?

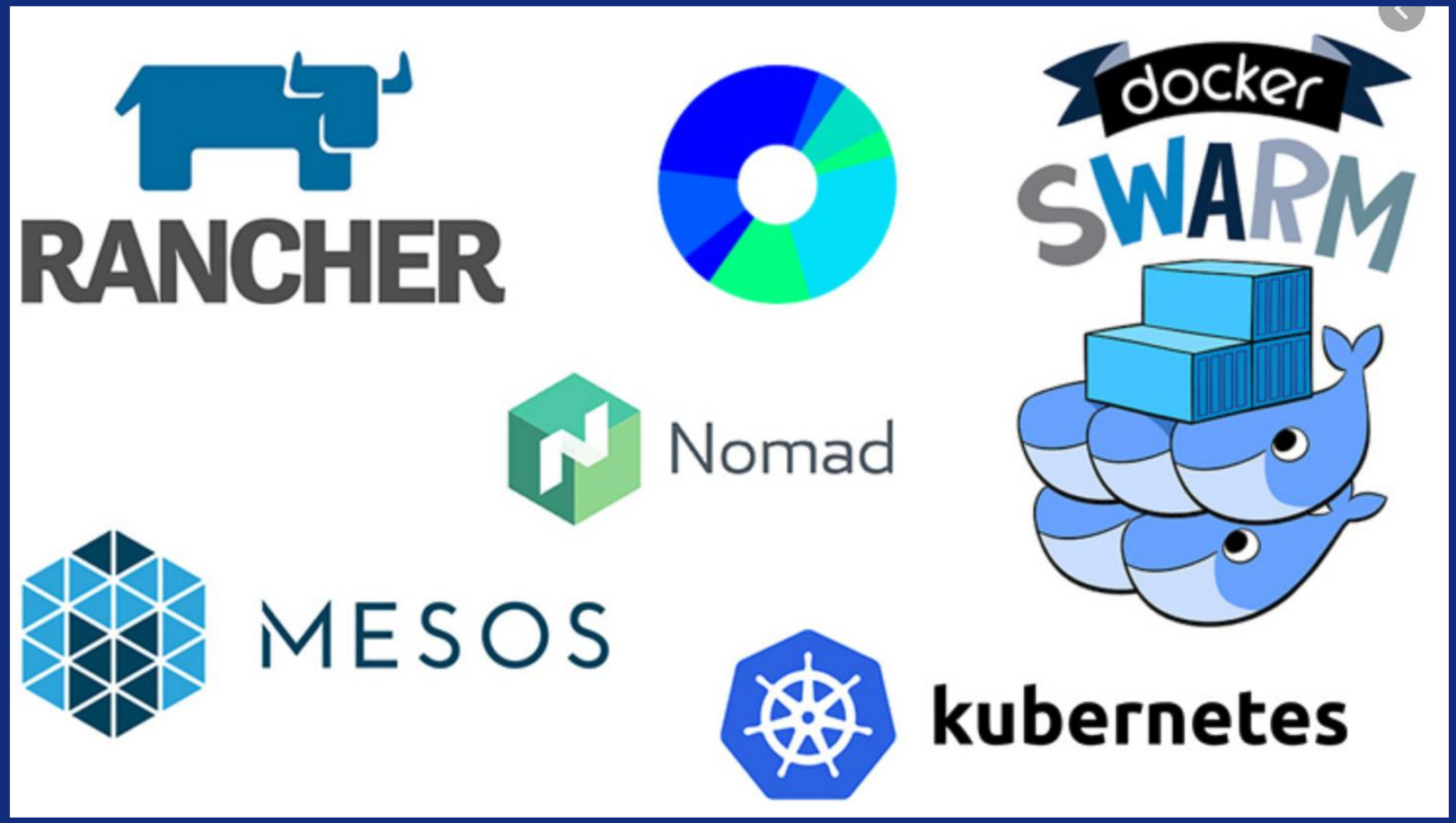
- Spun out of Google as an open source container orchestration platform.
- Built from the lessons learned in the experiences of developing and running Google's Borg and Omega.

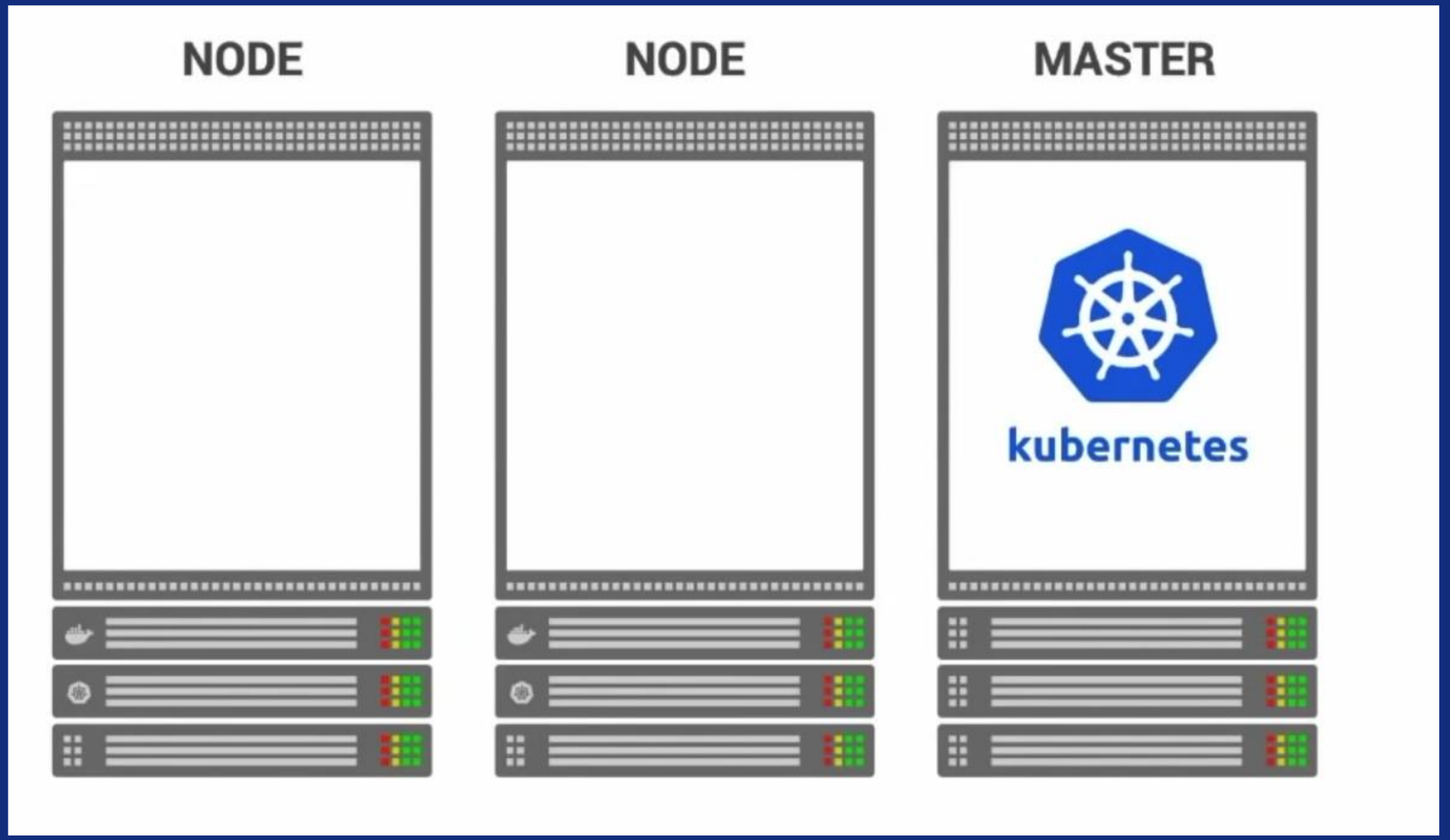
Over 55,000 stars on Github

2000+ Contributors

70,000+ users in Slack Team

What is Kubernetes?




NODE
NODE
MASTER
kubernetes

PODS

- Atomic unit or **smallest** “unit of work” of Kubernetes.
- Pods are **one or MORE** containers that share volumes, a network namespace, and are a part of a single context.

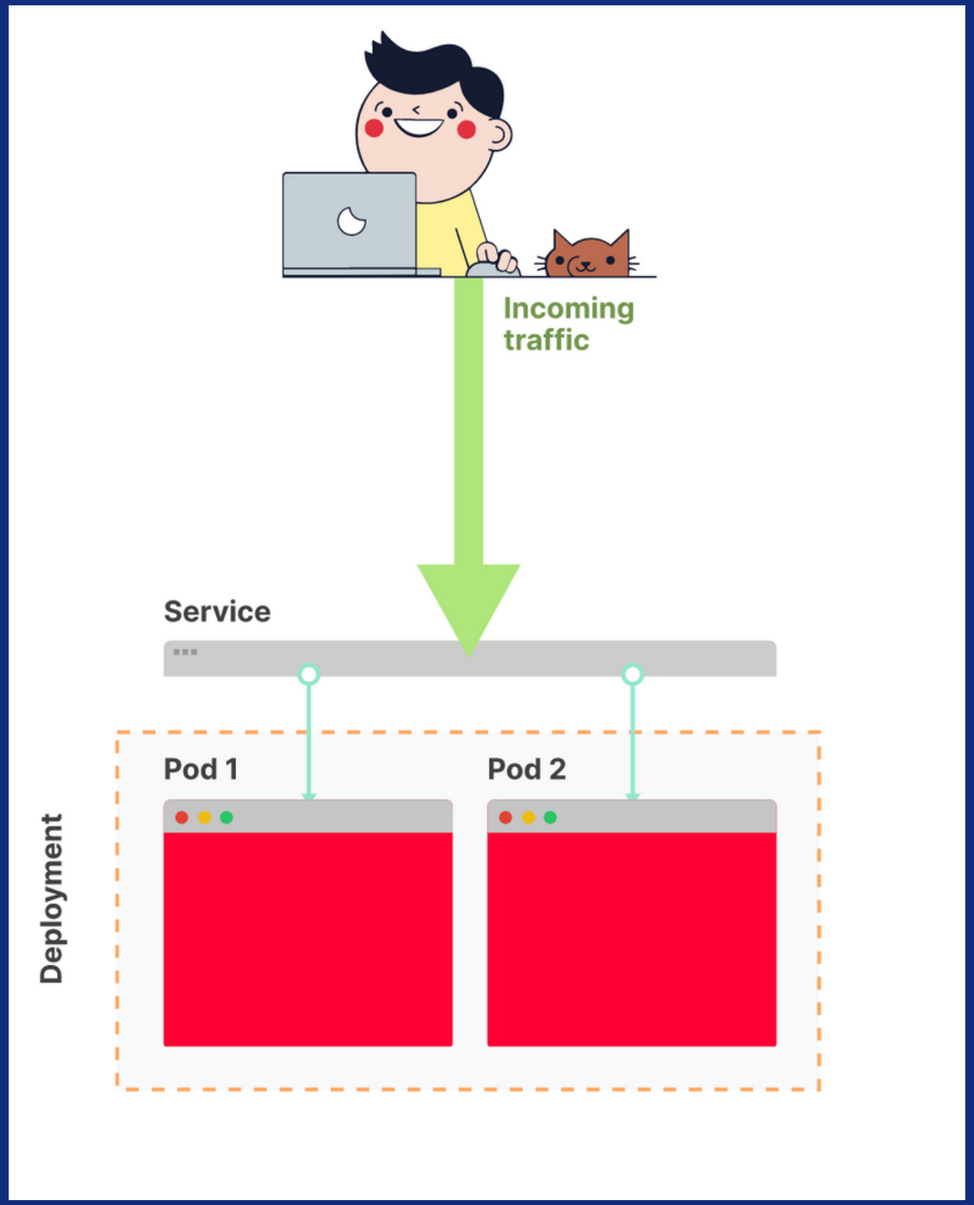
pod-definition.yml

```yaml
apiVersion: v1
kind: Pod

metadata:
 name: myapp-pod
 labels:
    app: myapp
    type: front-end
spec:
  containers:
  - name: nginx-container
    image: nginx
```

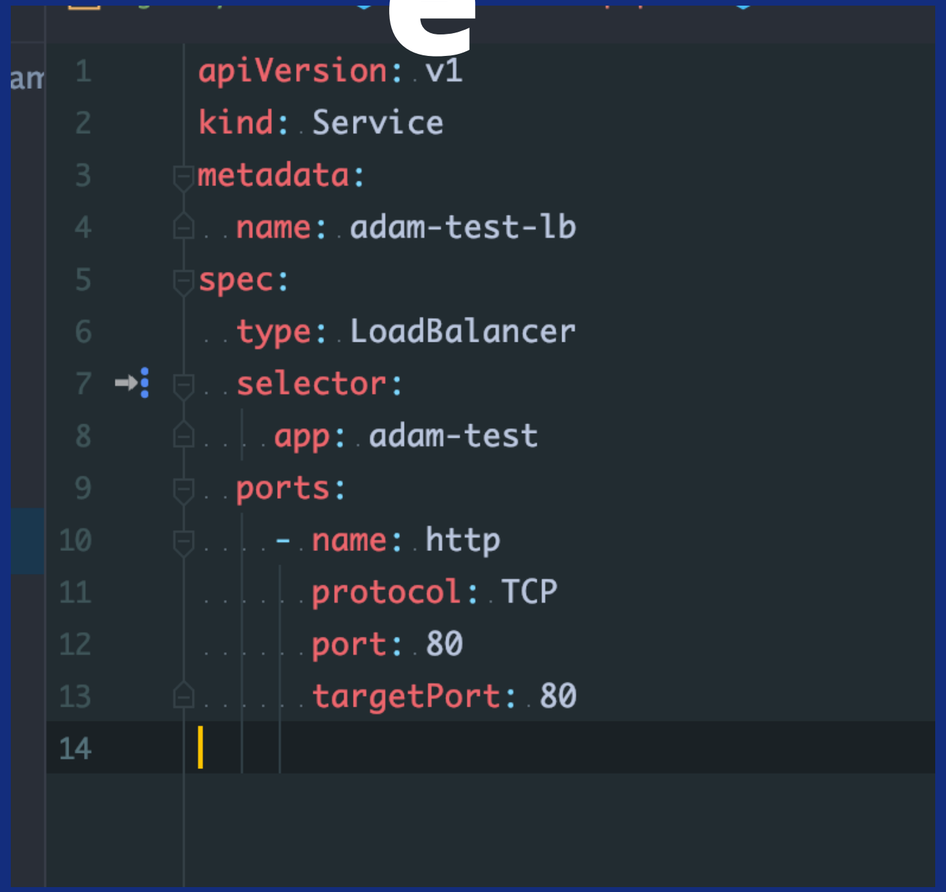
Deployment

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: myapp-deployment
  labels:
      app: myapp
      type: front-end
spec:
  template:
    metadata:
      name: myapp-pod
      labels:
        app: myapp
        type: front-end
    spec:
      containers:
      - name: nginx-container
        image: nginx

  replicas: 3
  selector:
    matchLabels:
```

Deployment


Incoming traffic
Service
Pod 1
Pod 2
Deployment

Servic
e


apiVersion: v1
kind: Service
metadata:
name: adam-test-lb
spec:
type: LoadBalancer
selector:
app: adam-test
ports:
- name: http
protocol: TCP
port: 80
targetPort: 80

DEMO