

# Container Orchestration



**kubernetes**

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Big Data Management & Analytics in  
datenzentrischen Wissenschaften

# Was ist Kubernetes ?

- Open-source Tool für Container-Orchestrierung
- Von Google entwickelt
- Containerized Anwendungen in verschiedenen Environments verwalten



**kubernetes**

# Warum Kubernetes?

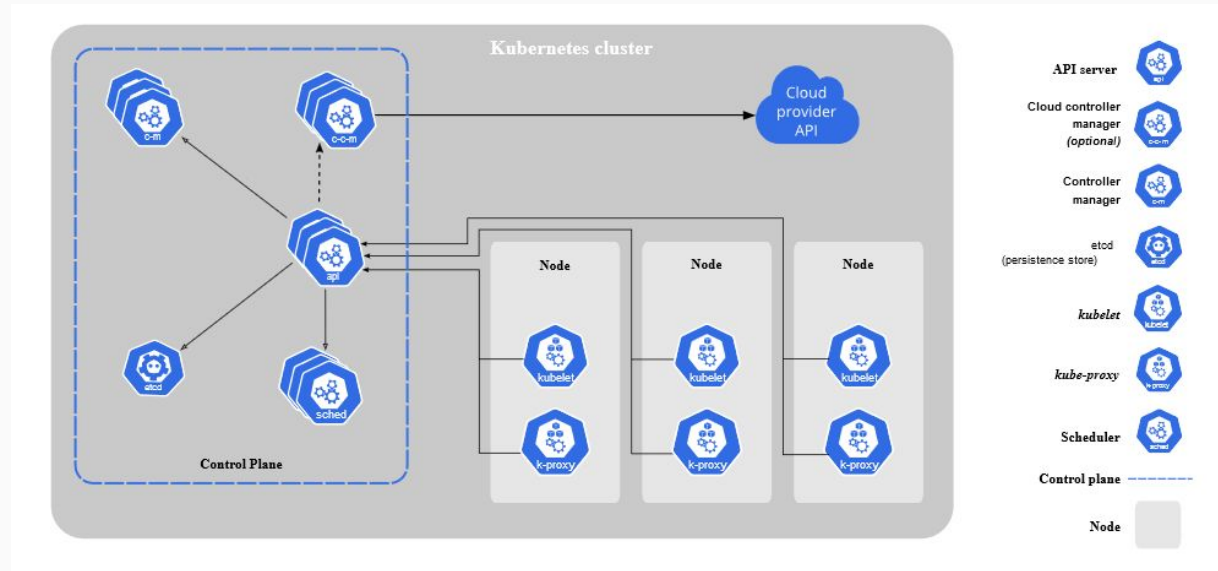
- Trend von Monolith zu Microservices
- Verstärkter Einsatz von Containern
- Container-Verwaltung Herausforderungen



# Kubernetes Architektur

Mindestens ein Master

Node und ein Worker Node

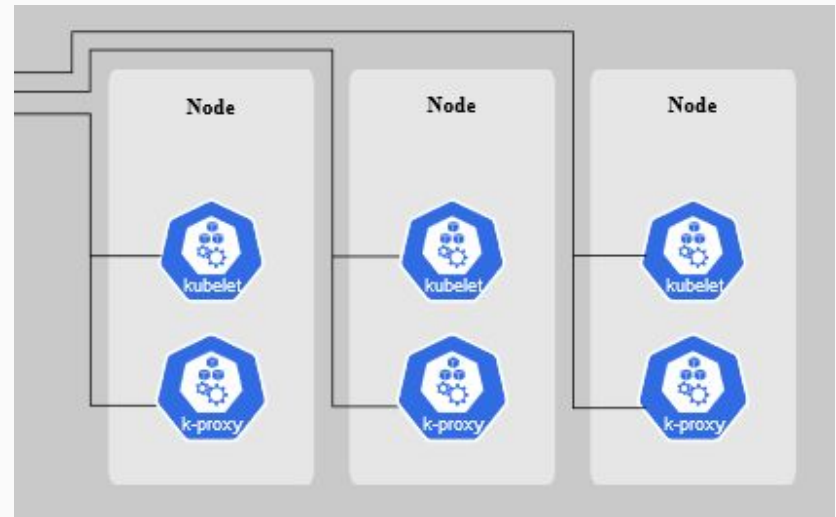


[Source](#)

# Worker Node



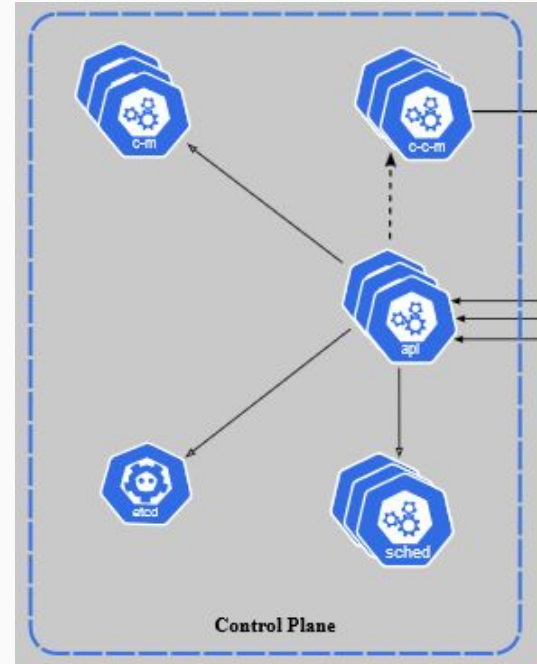
1. Kubelet
2. kube-proxy
3. Container-runtime
4. Pods



# Master Node



1. API Server
2. Controller Manager
3. Scheduler
4. etcd



# Kubernetes Configuration Beispiel

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: my-app
  labels:
    app: my-app
spec:
  replicas: 2
  selector:
    matchLabels:
      app: my-app
  template:
    metadata:
      labels:
        app: my-app
    spec:
      containers:
        - name: my-app
          image: my-image
          env:
            - name: SOME_ENV
              value: $SOME_ENV
          ports:
            - containerPort: 8080
```

# Big Data?

Apache Hadoop vs Kubernetes




[Source](#)



## BLOG

# Kubernetes is Removing Docker Support, Kubernetes is Not Removing Docker Support

December 15, 2020 | by Scott McCarty

A decorative graphic consisting of several overlapping, semi-transparent 3D cubes and rectangular prisms in shades of gray, arranged in a cluster on the left side of the page.

TL;DR: as of [Kubernetes 1.20](#), [support of the Docker container engine is deprecated](#), but users will still be able to use Docker container images and registries, as well as create containers that look identical at runtime.

# Vorteile/Nachteile

- + Hohe Verfügbarkeit oder kein Downtime
- + Skalierbarkeit und hohe Performanz
- + Disaster Recovery
- Fehlende Persistent-Storage
- Latenz zwischen Nodes

# Quellen

- <https://medium.com/sfu-cspmp/kubernetes-and-big-data-a-gentle-introduction-6f32b5570770>
- <https://kubernetes.io/docs/concepts/overview/components/>
- [https://www.youtube.com/watch?v=VnvRFRk\\_51k](https://www.youtube.com/watch?v=VnvRFRk_51k)
- <https://www.openshift.com/blog/kubernetes-is-removing-docker-support-kubernetes-is-not-removing-docker-support>